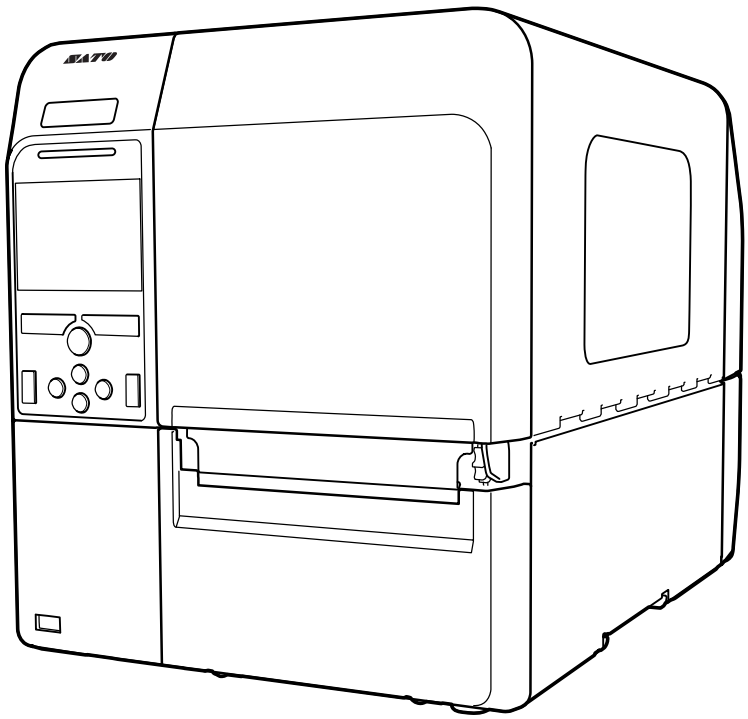
Service Manual

For printer model:

CL4NX
CL6NX



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Version: GBS-CL4NX_CL6NX-r06-27-06-16SM

Table of Contents

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1 Introduction

1.1 About This Manual

This service manual gives all the information necessary for you to adjust and repair the CL4NX/CL6NX printer. This service manual is written only for SATO authorized service personnel. The information in this manual is confidential to general users.
This service manual is used as an extension of the operator manual. For basic specification, installation, operation and configurations of the printer, refer to the operator manual of the CL4NX/CL6NX printer.

1.2 Safety Precautions

For your safety and to protect valuable equipment, always read and follow all warnings, cautions and instructions carefully before you operate or repair the printer.

Pictographic Symbols

The warning and caution symbols in this manual alert you of the information that you should follow. The symbol explanations are as follows.

 Warning	The Warning symbol indicates that you can cause death or serious injury if you do not follow the instruction or procedure.

 Caution	The Caution symbol indicates that you can cause injury or property damage if you do not follow the instruction or procedure.

⚠ WARNING

- Always power off the printer and disconnect the AC power cord from the outlet before you start any maintenance procedures. Perform maintenance procedures with the printer power on could cause injury to people or damage to equipment. Power on the printer only when you are instructed to do so.
- Wear a properly grounded static wrist strap when you perform maintenance procedures.
- Wear proper gloves when you perform maintenance procedures.
- Do not touch the printing element with your bare hand when you replace the print head.
- Hold the circuit board on the sides. Do not touch the components or bend the circuit board when you remove or install the circuit board.
- Do not touch the cutter with your hands, nor place objects into the cutter. Doing so could cause an injury.
- The print head will become hot after printing. Be careful not to touch it when replacing media or cleaning immediately after printing, to avoid being burned.

⚠ CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

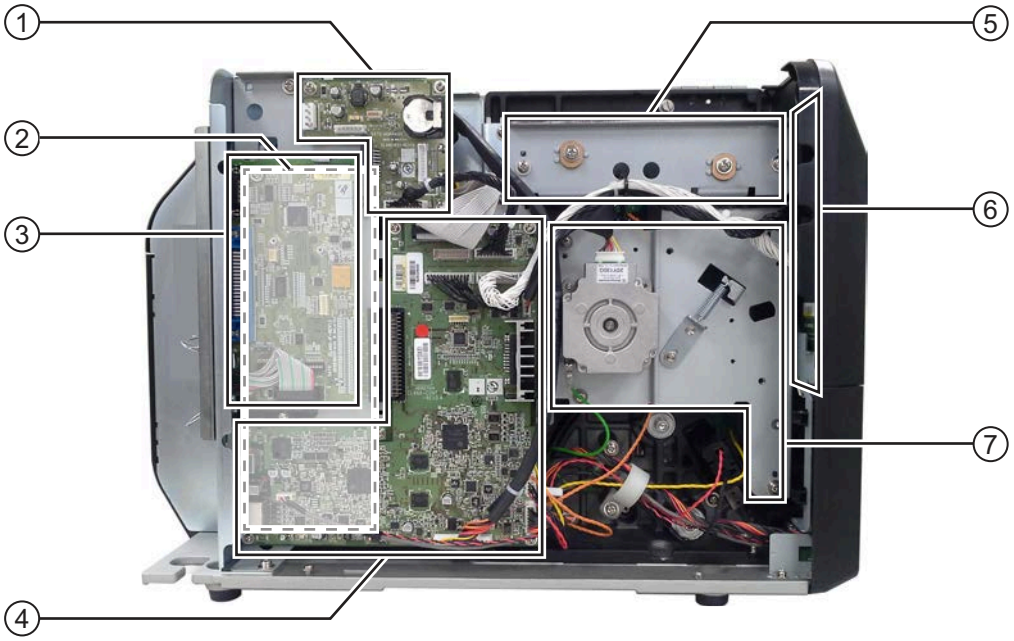
1.3 Parts Identification of the Printer

For the parts identification of the external view of the printer, refer to **Section 1.1 Parts Identification of the Printer** of CL4NX/CL6NX operator manual.

Note

The pictures in this manual show the CL4NX printer, unless otherwise stated.

1.3.1 Internal View with Left Housing Cover Removed (CL4NX)



① **Optional EXT PCB board**

The optional EXT PCB is added when installing the optional RTC (Real Time Clock) kit, dispenser unit or RFID kit.

② **Power supply unit**

This is the power board, which is located behind the main (CONT) PCB. It contains the printer's transformers, relays, etc., for transference of electrical current from the supply source to the printer's control circuits.

③ **Interface board**

④ **Main (CONT) PCB board**

The main (CONT) PCB is the primary brain center for all printer activities.

⑤ **Ribbon frame**

To support the ribbon supply spindle and ribbon rewind spindle.

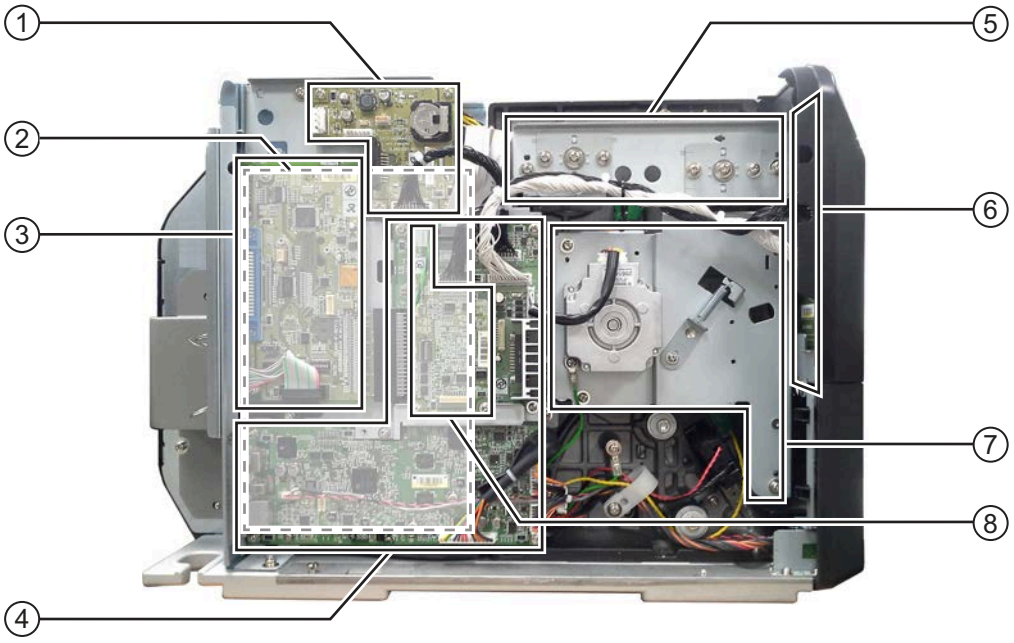
⑥ **Operator panel (KB) PCB board**

This PCB provides the user interaction functionality via the operational buttons and as well as the LCD.

⑦ **Gearbox**

The stepper motor, timing belt and gears in the gearbox provide the main rotation motion for precise print positioning.

1.3.2 Internal View with Left Housing Cover Removed (CL6NX)



① **Optional EXT PCB board**

The optional EXT PCB is added when installing the optional RTC (Real Time Clock) kit, dispenser unit or RFID kit.

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To support the ribbon supply spindle and ribbon rewind spindle.

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This PCB provides the user interaction functionality via the operational buttons and as well as the LCD.

⑦ **Gearbox**

The stepper motor, timing belt and gears in the gearbox provide the main rotation motion for precise print positioning.

⑧ **FPGA PCB board**

The FPGA (Field Programmable Gate Array) board is used as a TPH (Thermal Print Head) controller. It controls the general of printing such as print strobe and etc. The main purpose is for history control of printing.

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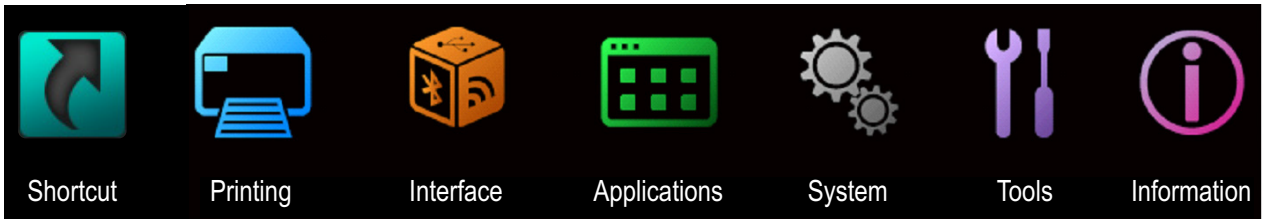
2 Operation and Configuration

This is supplementary information to the **Chapter 4 Operation and Configuration** of the CL4NX/CL6NX operator manual. For other detailed information on operation and configuration, refer to the CL4NX/CL6NX operator manual. In this chapter, we only explain the operation and configuration in the **Service** menu.

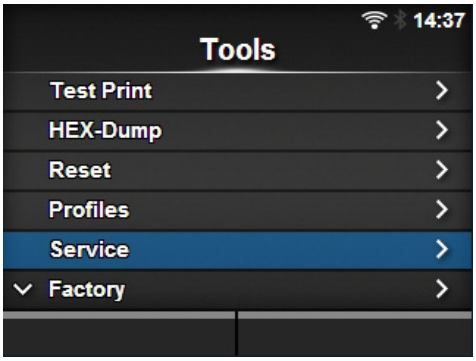
2.1 About Service Menu

In settings mode, the following menus show:



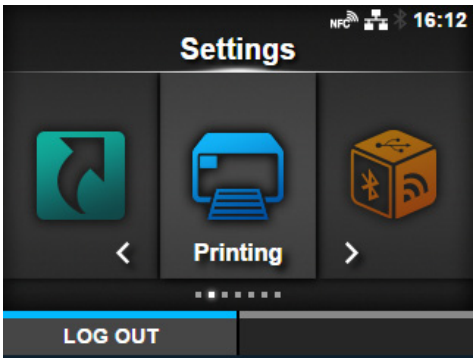
Menu	Description
Shortcut	Directly access frequently used settings.
Printing	Access the settings related to printing.
Interface	Access the settings related to the interfaces.
Applications	Access the settings related to the printer command.
System	Access the settings related to the display language, buzzer volume etc.
Tools	Access the test print, initialization and other settings.
Information	Access the printer information and help videos.

You can find the **Service** menu in the **Tools** menu. However, users cannot access the **Service** menu without password. This menu is only for SATO authorized service personnel use.



When you select **Service** in the **Tools** menu, the printer shows the **Password** screen.
You need to enter the correct password in order to access the menu.
The default password to access the **Service** menu is 6677.

After a successful login, **LOG OUT** shows on the bottom left of the **Settings** menu screen.
Press the left soft button if you want to log out immediately.
Password is required to enter the settings mode again.



Note

With password enabled, if no button is pressed for about ten minutes after login, the login session will end automatically. Password is required to enter the settings mode again.

2.1.1 Reset Passwords

If you have forgotten the customized password, you can reset it back to the default password.

1. Power off the printer.
2. Press and release the ⏻ power button while pressing and holding the ⮌ back button, ◄ and ► buttons simultaneously until the buzzer beeps once.

Note

This key sequence allows users to access the settings menu with the default passwords as a temporary solution.
After accessing the settings menu with the default password, you must customize the password again in the **System** > **Passwords** > **Change Password** menu.
For more information about changing the password, refer to the chapter 4 of the CL4NX/CL6NX operator manual.

2.2 Tools Menu Tree Structure

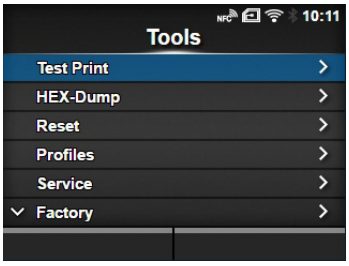
The table below outlines only the tree structure for the **Service** menu in the **Tools** menu. Refer to the tree structure to understand where information is located in the **Tools** menu. Click on the items in blue to link directly to the details of the selected items.

Tools	Submenus		
Test Print			
HEX-Dump			
Reset			
Profiles			
Service	**RFID**	**RFID Mode**	
		Module	
		Region	
		Inventory Check	
		Inventory Timeout	
		Verify	
		PREND Type 3/4	
	NFC Mode		
	Hide Help Videos		
	Wi-Fi Region		
	Wi-Fi Roam Adjust	**Enable**	
		Roam Threshold	
	Reset	**Select**	**Data**
			Data & Settings
			Settings
		Counters	
	Maintenance	**Printer Serial**	
		USB Serial	**Change USB Serial**
			USB Serial
	Position Check	**Enable**	
		+ Check Value	
		- Check Value	
	Factory Offset		
	Factory Pitch		
Certificates			
Barcode Reader			
Clone			
Startup Guide			

2.3 Details of the Settings Menu Screen

2.3.1 Tools Menu

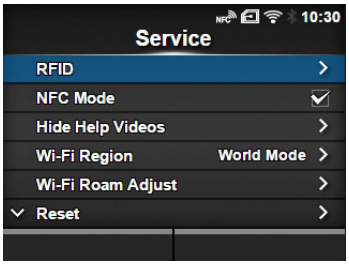
The following settings are available in the **Tools** menu:

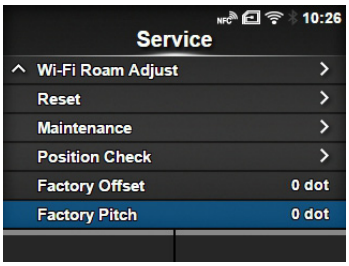
Tools			
1	Test Print	Perform a test print.	
2	HEX-Dump	Save the hex dump print data or dump data from the receive buffer to the USB memory.	
3	Reset	Initialize the configuration or counter of the printer.	
4	Profiles	Utilize the printer configurations as profiles.	
5	Service	These are the setting items for service. Strictly for SATO authorized service personnel use.	
6	Factory	These are the setting items for factory. Strictly for SATO factory personnel use.	
7	Certificates	Set the wireless LAN authentication. * Available only if you have installed the USB memory.	
8	Barcode Reader	Set the barcode check function.	
9	Clone	Save the setting information of the printer to USB memory. * Available only if you have installed the USB memory.	
10	Startup Guide	Enable or disable the startup guide.	

Service

Tools > Service

These are the setting items for SATO authorized service personnel used only.
The setting items are as follows:





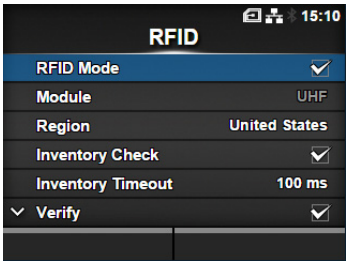
1	RFID	Set the functions for RFID. *Shows only if you have installed the optional RFID kit.
2	NFC Mode	Allow you to use NFC function. *Shows only if the printer is installed with the NFC module. *This feature has been supported on printers since February 2016 production (serial number 6Bxxxxxx or later).
3	Hide Help Videos	Set the guidance video that you do not wish to show on the Information > Help screen.
4	Wi-Fi Region	Set the region of the wireless LAN. *Shows only if you have installed the optional wireless LAN.
5	Wi-Fi Roam Adjust	Adjust the threshold level for low RSSI roaming of the wireless LAN. *Shows only if you have installed the optional wireless LAN.
6	Reset	Initialize the settings and counter information of this printer.
7	Maintenance	Set the Printer Serial or USB Serial manually.
8	Position Check	Check the offset position of the label and show the error.
9	Factory Offset	This is a setting item for factory. Strictly for SATO factory personnel use.
10	Factory Pitch	This is a setting item for factory. Strictly for SATO factory personnel use.

RFID

Tools > *Service* > *RFID*

Set the functions for RFID.
The setting items are as follows:

1	RFID Mode	Enable or disable the RFID mode.
2	Module	Shows the type of RFID module installed on the printer.
3	Region	Set the region where you use the printer. *Shows only if you have installed the UHF RFID module.
4	Inventory Check	Enable or disable the inventory check function. *Shows only if you have installed the UHF RFID module.
5	Inventory Timeout	Set the timeout period of the inventory check. *Shows only if you have installed the UHF RFID module.
6	Verify	Enable or disable the verification of data written on tag.
7	PREND Type 3/4	Set the external output signal of the PREND.

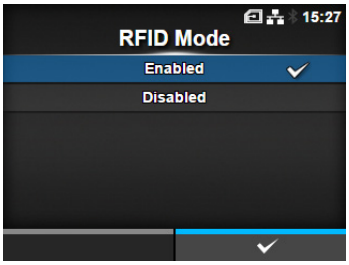


RFID Mode

Tools > *Service* > *RFID* > *RFID Mode*

Enable or disable the RFID mode.
When **RFID Mode** is set to **Enabled**, the **RFID** menu shows in the **Interface** mode menu.
The options are as follows:

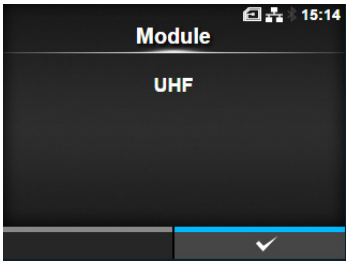
- **Enabled**: Enable the RFID mode.
- **Disabled**: Disable the RFID mode.



Module

Tools > *Service* > *RFID* > *Module*

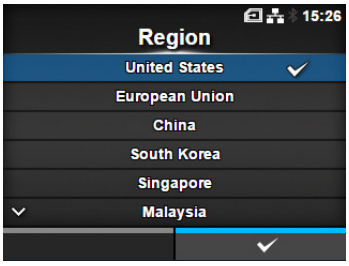
Shows the type of RFID module installed on the printer.



Region

Tools > Service > RFID > Region

Set the region where you use the printer.
Shows only if you have installed the UHF RFID module.
Select the region (frequency band) where you use the printer from a list.

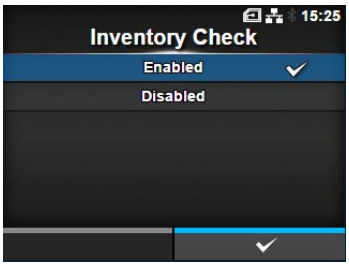


Inventory Check

Tools > Service > RFID > Inventory Check

Enable or disable the inventory check function.
Shows only if you have installed the UHF RFID module.
The options are as follows:

- **Enabled**: Perform the inventory check of the RFID tags. The printer checks the taken tag number before writing to/read from the tag. An error occurs when the number is other than one.
- **Disabled**: Do not perform the inventory check of the RFID tags.

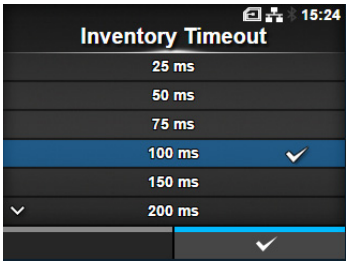


Inventory Timeout

Tools > Service > RFID > Inventory Timeout

Set the timeout period of the inventory check.
Shows only if you have installed the UHF RFID module.
The options are as follows:

- **25 ms**
- **50 ms**
- **75 ms**
- **100 ms**
- **150 ms**
- **200 ms**
- **300 ms**
- **500 ms**

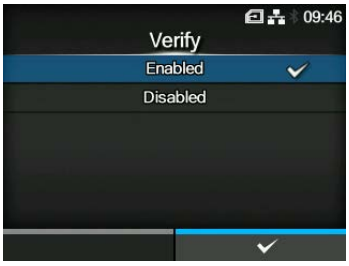


Verify

Tools > Service > RFID > Verify

Enable or disable the verification of data written on tag.
The options are as follows:

- **Enabled**: Perform the verification by reading the data of the written tag. If not match, the printer prints **VERIFY TAG ERR** on the label.
- **Disabled**: Do not perform the verification of the written tag.



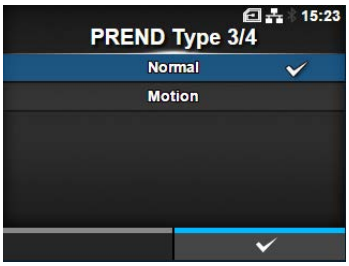
PREND Type 3/4

Tools > Service > RFID > PREND Type 3/4

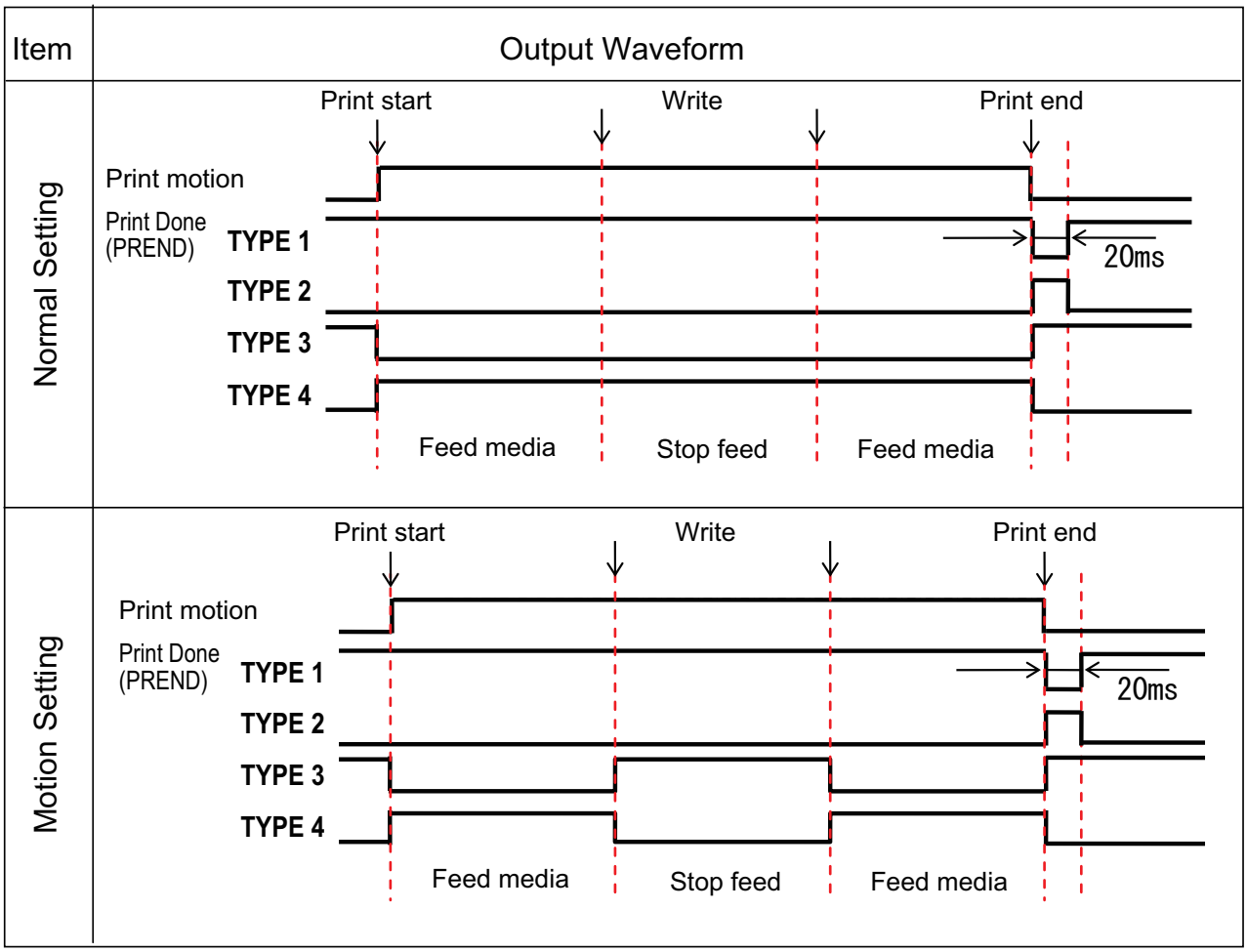
Set the output content of the external signal PREND (Print Done).
Reflect the timing of write (stop media feed) of RFID tag to the TYPE3 and TYPE4 waveforms of PREND (Print Done) signal.
The options are as follows:

- **Normal**: Use the usual PREND signal.
- **Motion**: Reflect the timing of write (stop media feed) of tag to the PREND signal.

For the waveforms during the settings of **Normal** and **Motion**, refer to the timing chart as follow.



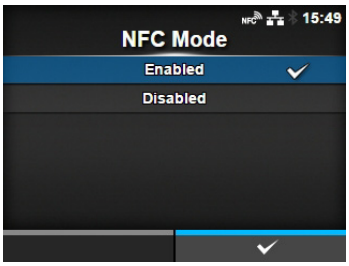
The timing chart when writing to tag



NFC Mode

Tools > Service > NFC Mode

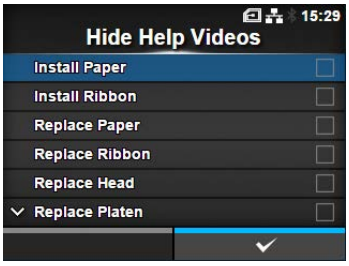
Enable the NFC (Near Field Communication) function.
Shows only if the printer is installed with the NFC module.
This feature has been supported on printers since February 2016 production (serial number 6Bxxxxxx or later).



Hide Help Videos

Tools > Service > Hide Help Videos

Set the guidance video that you do not wish to show on the Information > Help screen.
The items with a check mark on the right are the selected videos that will not show on the Help screen.



Wi-Fi Region

Tools > Service > Wi-Fi Region

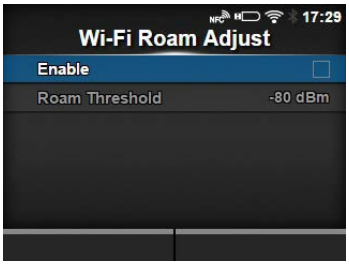
Set the region of the wireless LAN.
Shows only if you have installed the optional wireless LAN.
Select the region (frequency band) where you use the printer from a list.

Wi-Fi Roam Adjust

Tools > Service > Wi-Fi Roam Adjust

Adjust the threshold level for low RSSI roaming of the wireless LAN.
Shows only if you have installed the optional wireless LAN.
The setting items are as follows:

1	Enable	Enable or disable the Wi-Fi roaming adjustment.
2	Roam Threshold	Set the Wi-Fi roaming threshold level.



Enable

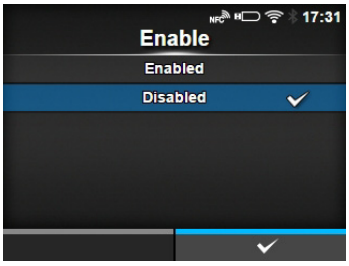
Tools > Service > Wi-Fi Roam Adjust> Enable

Enable or disable the Wi-Fi roaming adjustment.
Shows only if you have installed the optional wireless LAN.
The options are as follows:

- **Enabled**: Enable the Wi-Fi roaming adjustment.
- **Disabled**: Do not enable the Wi-Fi roaming adjustment.

Note

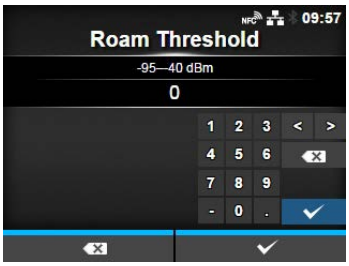
- The setting will be effective only if you power on the printer again.
- Wi-Fi Direct will be disabled if this adjustment is enabled.



Roam Threshold

Tools > Service > Wi-Fi Roam Adjust> Roam Threshold

Set the RSSI roaming threshold level.
Shows only if you have installed the optional wireless LAN.
The setting range is from -95 to -40 dBm.
A higher value will make the printer roam more often while a lower value will make the printer more reluctant to roam.
The roaming is disabled if set to -95 dBm but the printer will change AP if the current AP is out of range or powered off.

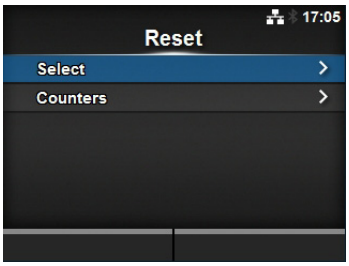


Reset

Tools > Service > Reset

Initialize the configuration or counter of the printer.
The setting items are as follows:

1	Select	Select the items to be initialized.
2	Counters	Select the counter information to be initialized.

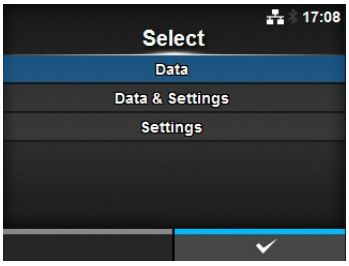


Select

Tools > *Service* > *Reset* > *Select*

Select the items to be initialized.
The setting items are as follows:

1	Data	Initialize the data saved in the printer.
2	Data & Settings	Initialize the data and setting values of the printer.
3	Settings	Initialize the setting values of the printer.

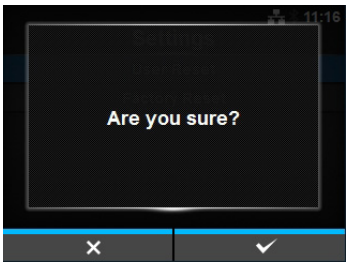


Data

Tools > *Service* > *Reset* > *Select* > *Data*

Initialize the data saved in the printer.
The data to be initialized are the fonts and graphics registered in the printer.
When you select **Data**, the confirmation screen shows.
Press the left soft button to cancel or right soft button to perform the initialization.
The printer will reboot after reset.

CAUTION
It is generally not necessary to perform the initialization. Doing so could change the print conditions.

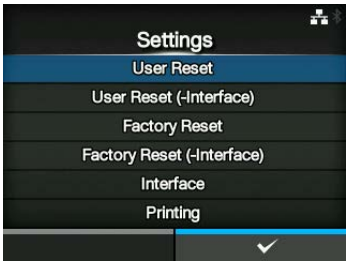


Data & Settings

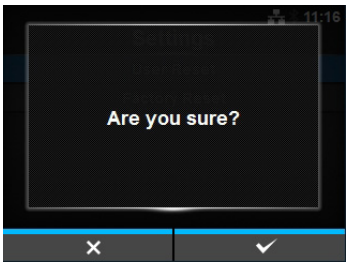
Tools > *Service* > *Reset* > *Select* > *Data & Settings*

Initialize the data and setting values of the printer.
Select the setting items to be initialized.
The options are as follows:

- **User Reset**: Initialize the data and setting values.
- **User Reset (-Interface)**: Initialize the data and setting values that are not included in the **Interface** menu.
- **Factory Reset**: Initialize to the status after factory shipment.
- **Factory Reset (-Interface)**: Initialize the items that are not included in the **Interface** menu to the status after factory shipment.
- **Interface**: Initialize the data and setting values in the **Interface** menu.
- **Printing**: Initialize the data and setting values in the **Printing** menu.



Select the item to be initialized using the ▲/▼ buttons, then press the right soft button to perform the initialization.
The confirmation screen shows.
Press the left soft button to cancel or right soft button to perform the initialization.
The printer will reboot after reset.



Refer to **Section 7.1 List of Initial Value** of the CL4NX/CL6NX operator manual and **Section 2.4 Initial Values in Tools Menu** of this manual for the initial value of each setting item.

Note
The data to be initialized are the fonts and graphics registered in the printer.

Settings

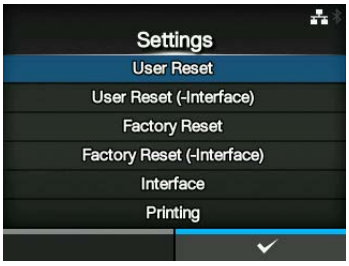
Tools > Service > Reset > Select > Settings

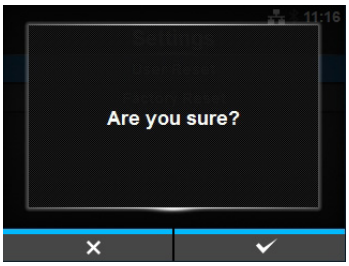
Select the setting items to be initialized.
The options are as follows:

- **User Reset**: Initialize the setting values.
- **User Reset (-Interface)**: Initialize the setting values that are not included in the **Interface** menu.
- **Factory Reset**: Initialize to the status after factory shipment.
- **Factory Reset (-Interface)**: Initialize the items that are not included in the **Interface** menu to the status after factory shipment.
- **Interface**: Initialize the setting values in the **Interface** menu.
- **Printing**: Initialize the setting values in the **Printing** menu.

Select the item to be initialized using the ▲/▼ buttons, then press the right soft button to perform the initialization.
The confirmation screen shows.
Press the left soft button to cancel or right soft button to perform the initialization.

Refer to **Section 7.1 List of Initial Value** of the CL4NX/CL6NX operator manual and **Section 2.4 Initial Values in Tools Menu** of this manual for the initial value of each setting item.





Counters

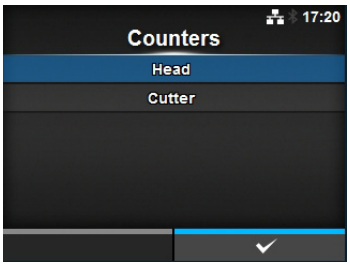
Tools > Service > Reset > Counters

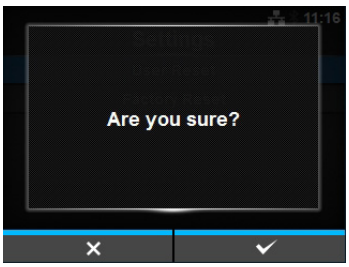
Select the counter information to be initialized.
The options are as follows:

- **Head**: Initialize the head counter (media feed distance).
- **Cutter**: Initialize the cutter counter (number of cuts).

Select the item to be initialized using the ▲/▼ buttons, then press the right soft button to perform the initialization.
The confirmation screen shows.
Press the left soft button to cancel or right soft button to perform the initialization.

Refer to **Section 7.1 List of Initial Value** of the CL4NX/CL6NX operator manual and **Section 2.4 Initial Values in Tools Menu** of this manual for the initial value of each setting item.



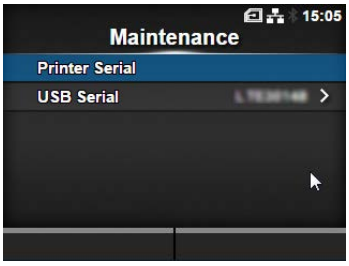


Maintenance

Tools > *Service* > *Maintenance*

Set the Printer Serial or USB Serial manually.
The setting items are as follows:

1	Printer Serial	Manually enter the serial number of the printer after replacing the main (CONT) PCB.
2	USB Serial	Enable or disable the change of USB serial number after replacing the main (CONT) PCB.



Printer Serial

Tools > *Service* > *Maintenance* > *Printer Serial*

Manually enter the serial number of the printer after replacing the main (CONT) PCB.

USB Serial

Tools > *Service* > *Maintenance* > *USB Serial*

Enable or disable the change of USB serial number after replacing the main (CONT) PCB.
Replacing the main (CONT) PCB makes the PC recognizes that a new printer is installed and connected, and users will be prompted to install the USB device. To avoid being prompted to install the USB device, change the USB serial back to the previous USB serial of the old board.

The setting items are as follows:

1	Change USB Serial	Enable or disable the change of USB serial.
2	USB Serial	Allow you to change USB serial if the setting is enabled.

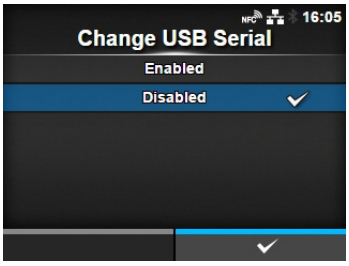
CAUTION
If two printers that have the same USB serial connected to the same PC, it may cause the PC to show blue screen error.

Change USB Serial

Tools > *Service* > *Maintenance* > *USB Serial* > *Change USB Serial*

Enable or disable the change of USB serial.

The options are as follows:
- **Enabled**: Enable the change of USB serial.
- **Disabled**: Do not enable the change of USB serial.



USB Serial

Tools > *Service* > *Maintenance* > *USB Serial* > *USB Serial*

Manually enter the USB serial number if Change USB Serial is enabled. You can enter 8 characters including alphabet (capital and small letters), numbers and symbols.

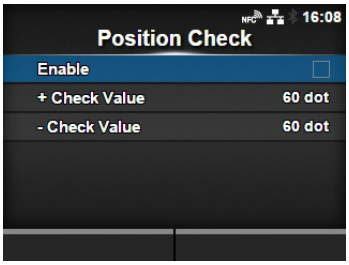
Position Check

Tools > *Service* > *Position Check*

Check the offset position of the label after the printer is powered on or after closing the print head, and show “Media Error” if there is an error.

The setting items are as follows:

1	Enabled	Enable or disable the position check.
2	+ Check Value	Set the tolerable offset range opposite the feed direction.
3	- Check Value	Set the tolerable offset range in the feed direction.



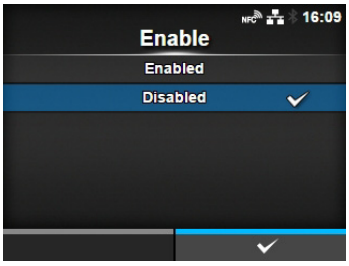
Note
- To use this function, the Check Media Size in Advanced under Printing menu must be disabled.
- When error occurs, open/close the print head and feed the label two times to clear the error.

Enable

Tools > *Service* > *Position Check* > *Enable*

Enable or disable the position check.

The options are as follows:
- **Enabled**: Enable the position check.
- **Disabled**: Do not enable the position check.

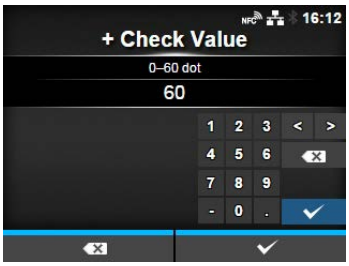


+ Check Value

Tools > *Service* > *Position Check* > *+ Check Value*

Set the tolerable offset range opposite the feed direction.
The setting range is as follows:
The setting range varies depending on the print resolution of the printer.
- 203 dpi: 0 to 40 dots
- 305 dpi: 0 to 60 dots
- 609 dpi: 0 to 120 dots

Media error will not be prompted if the offset is within the set range.

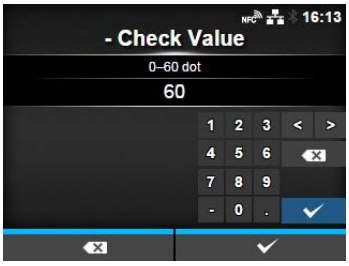


- Check Value

Tools > *Service* > *Position Check* > *- Check Value*

Set the tolerable offset range in the feed direction.
The setting range is as follows:
The setting range varies depending on the print resolution of the printer.
- 203 dpi: 0 to 40 dots
- 305 dpi: 0 to 60 dots
- 609 dpi: 0 to 120 dots

Media error will not be prompted if the offset is within the set range.



2.4 Initial Values in Tools Menu

The initial value of the service items are as follows:

Setting Item	Initial Value	User Reset	Factory Reset
Service	—	—	—
RFID	—	—	—
RFID Mode	Enabled	No	Yes
Module	—	No	Yes
Region	United States	No	Yes
Inventory Check	Enabled	No	Yes
Inventory Timeout	100 ms	No	Yes
Verify	Enabled	No	Yes
PREND Type 3/4	Normal	No	Yes
NFC Mode	Enabled	No	Yes
Hide Help Videos	—	No	No
Wi-Fi Region	World Mode	No	No
Wi-Fi Roam Adjust	—	—	—
Enable	Disabled	No	No
Roam Threshold	-80	No	No
Reset	Enabled	—	—
Select	—	—	—
Counters	—	No	Yes, not life
Maintenance	—	—	—
Printer Serial	—	No	No
USB Serial	—	—	—
Change USB Serial	Disabled	—	—
USB Serial	00000000	—	—
Position Check	—	—	—
Enabled	Disabled	Yes	Yes
+ Check Value	203 dpi: 40 dot, 305 dpi: 60 dot, 609 dpi: 120 dot	Yes	Yes
- Check Value	203 dpi: 40 dot, 305 dpi: 60 dot, 609 dpi: 120 dot	Yes	Yes
Factory Offset	0 dot	No	—
Factory Pitch	0 dot	No	—

2.5 Downloading Firmware

You can easily use the USB thumb drive memory to download the firmware.

⚠ CAUTION

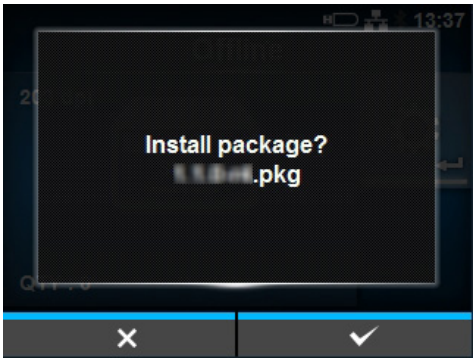
Be sure to perform a virus check for the USB memory before connecting it to the printer. SATO Corporation shall not be held responsible for a malfunction of the printer caused by a virus infection through the USB memory.

1 Save the pkg-file to the USB thumb drive memory.

2 Press the ⏻ power button on the operator panel for more than one second to power on the printer.

3 Insert the USB thumb drive memory into the USB connector (Type A).

The **Install package** screen shows.



Note

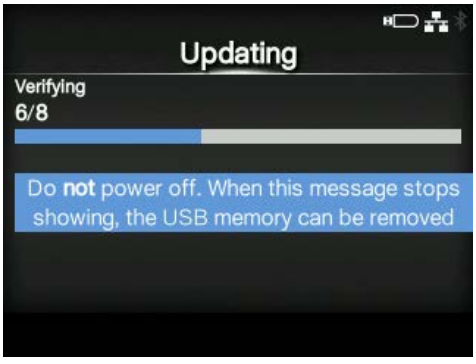
You can use either front or rear USB connector (Type A).

4 Press the right soft button to start downloading the firmware package.

The **Password** screen shows if **USB** or **Always** is selected in the **Install Security** menu.
Enter the password used for **level1** or **manager** to proceed downloading the firmware package.

5 The printer starts to prepare and download the firmware to the printer.

The **Updating** screen shows the status of the process and a warning message.
Do not power off the printer and do not remove the USB memory while the printer is updating.



6 After the update process is completed, the printer reboots.

You can remove the USB memory and insert into another printer for downloading.

- If the USB is removed. No more messages are shown. The printer enters online mode.
- If the USB is still in the printer and the firmware is updated, the **Install package** screen shows again. Press the left soft button and remove the USB memory from the printer. The printer enters offline mode.

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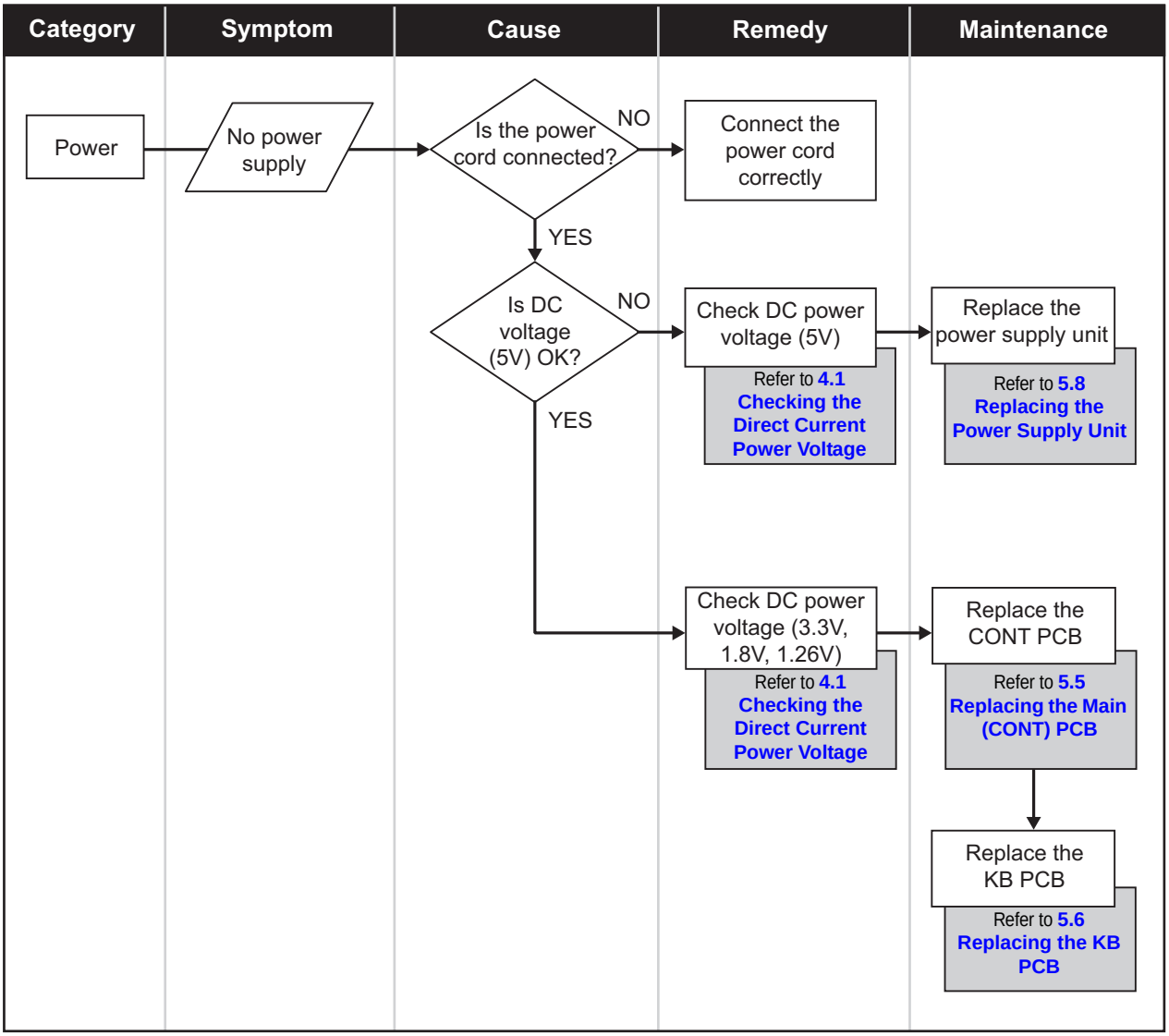
3 Troubleshooting

You can first refer to the **Chapter 6 Troubleshooting** of CL4NX/CL6NX operator manual to identify the cause of errors or problems with the printer. If you cannot find the solution to the problem, continue with the following troubleshooting flowchart.

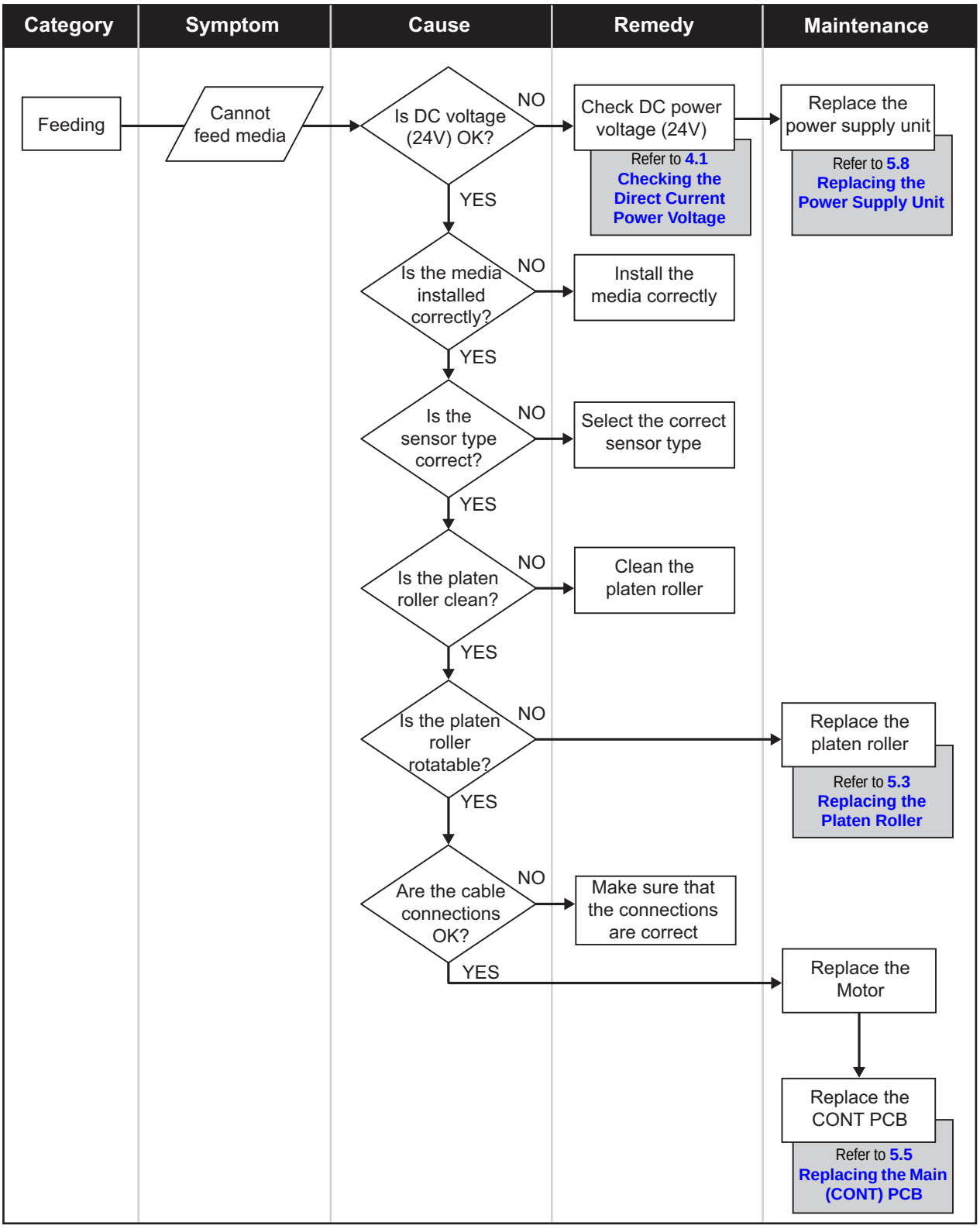
3.1 Troubleshooting Flowchart

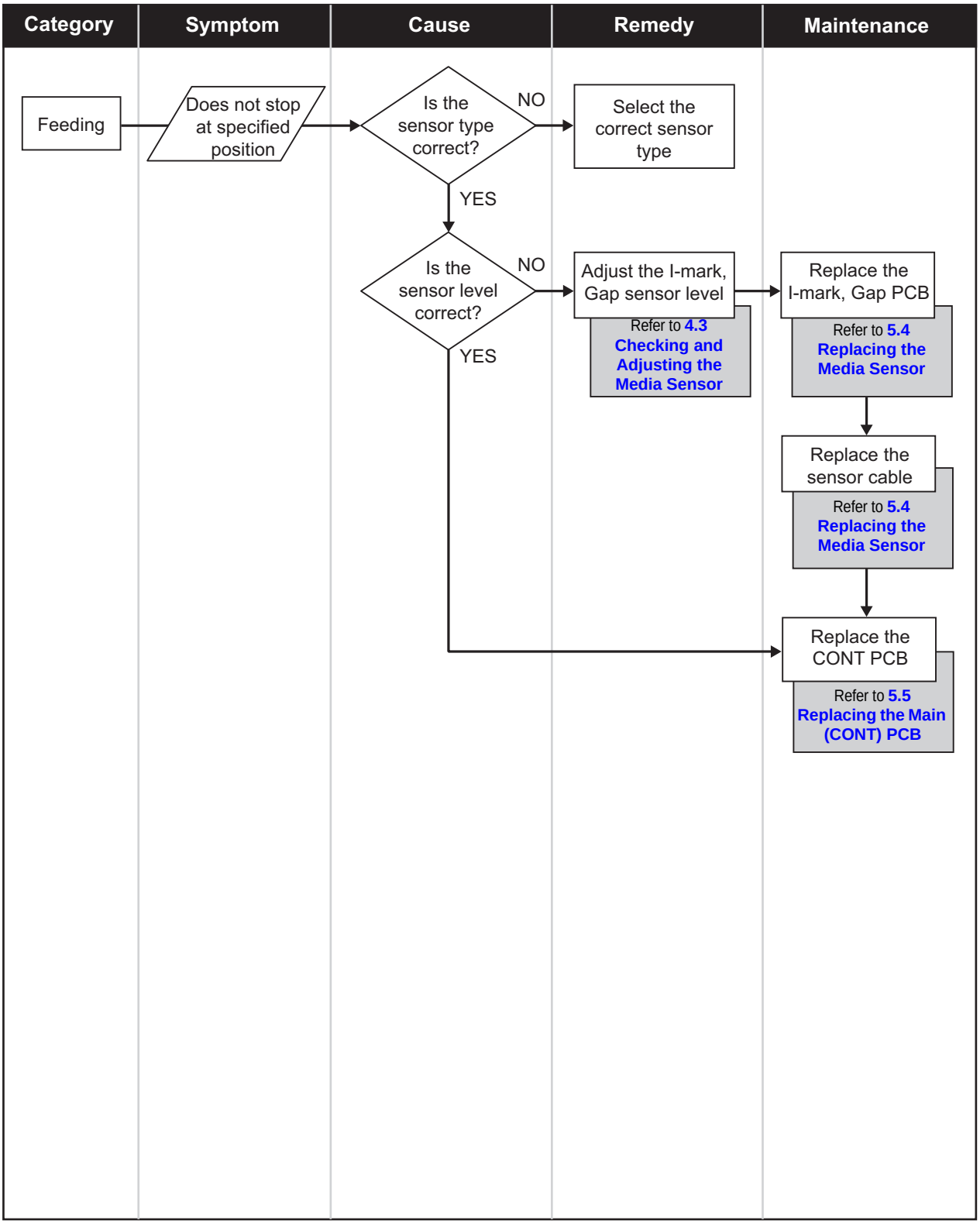
When a problem occurs, you can easily trace the solution with the following troubleshooting flowcharts. For each problem, the chart shows its symptoms, possible causes, and suggested corrective actions.

3.1.1 Power Problem

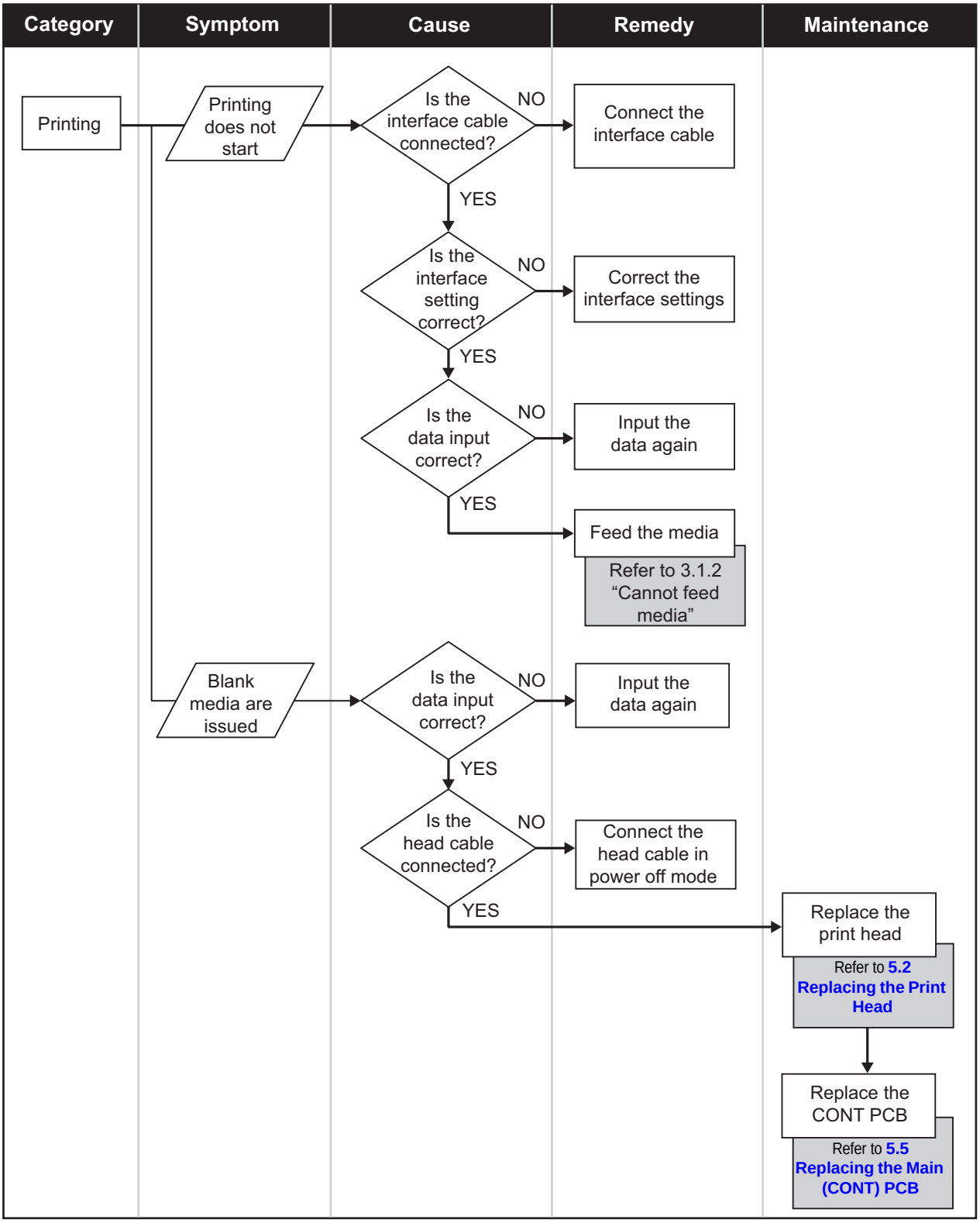


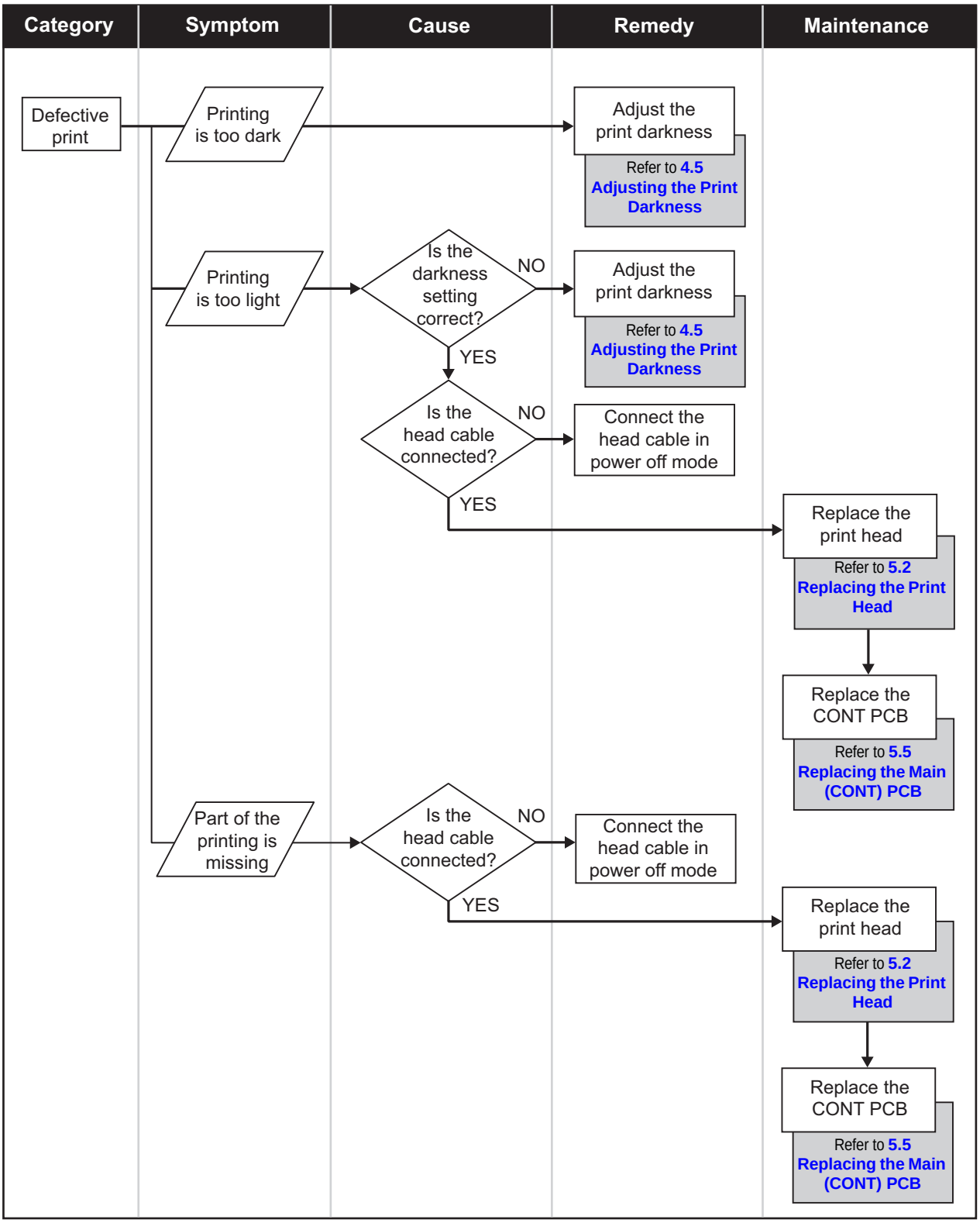
3.1.2 Feed Problem

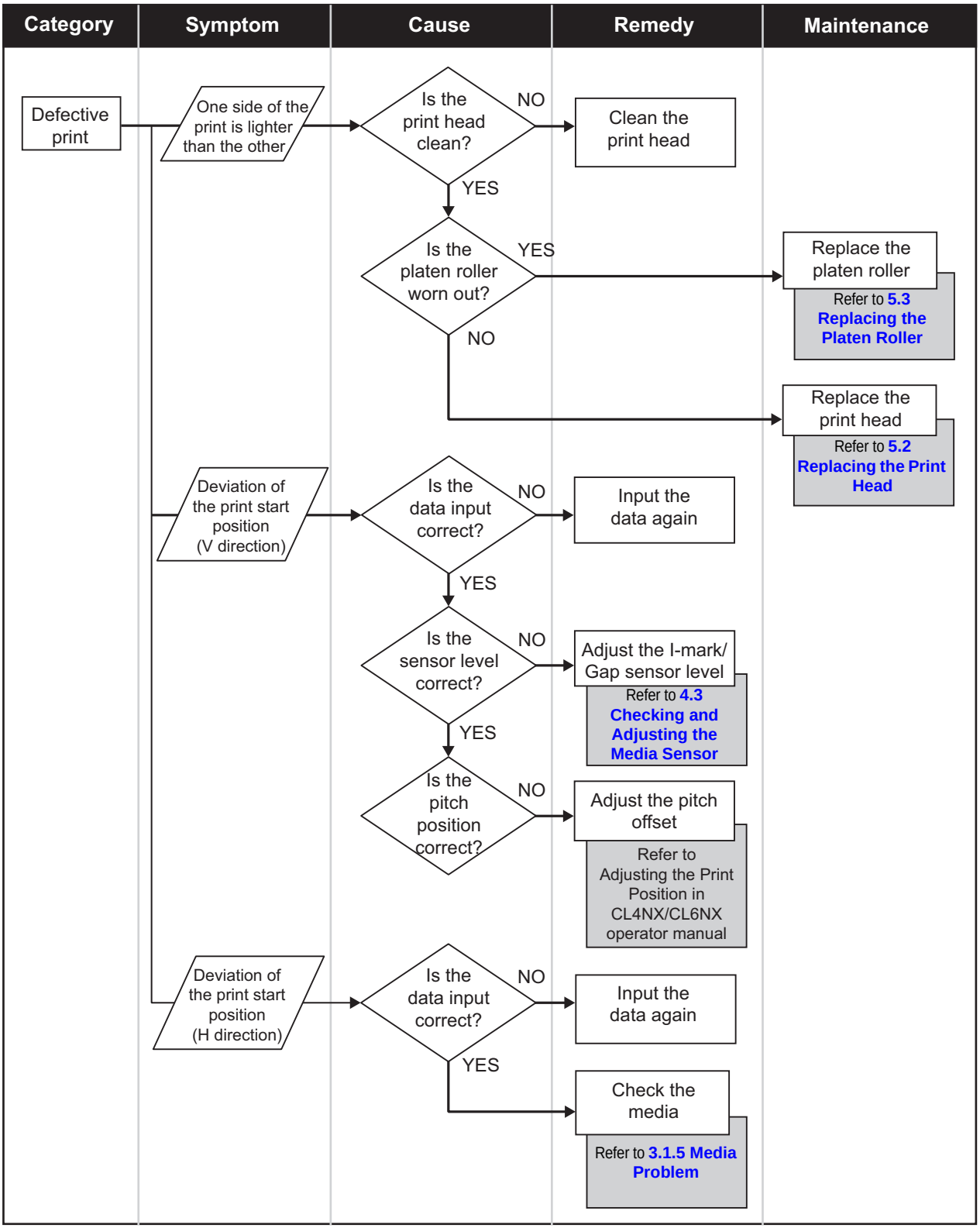


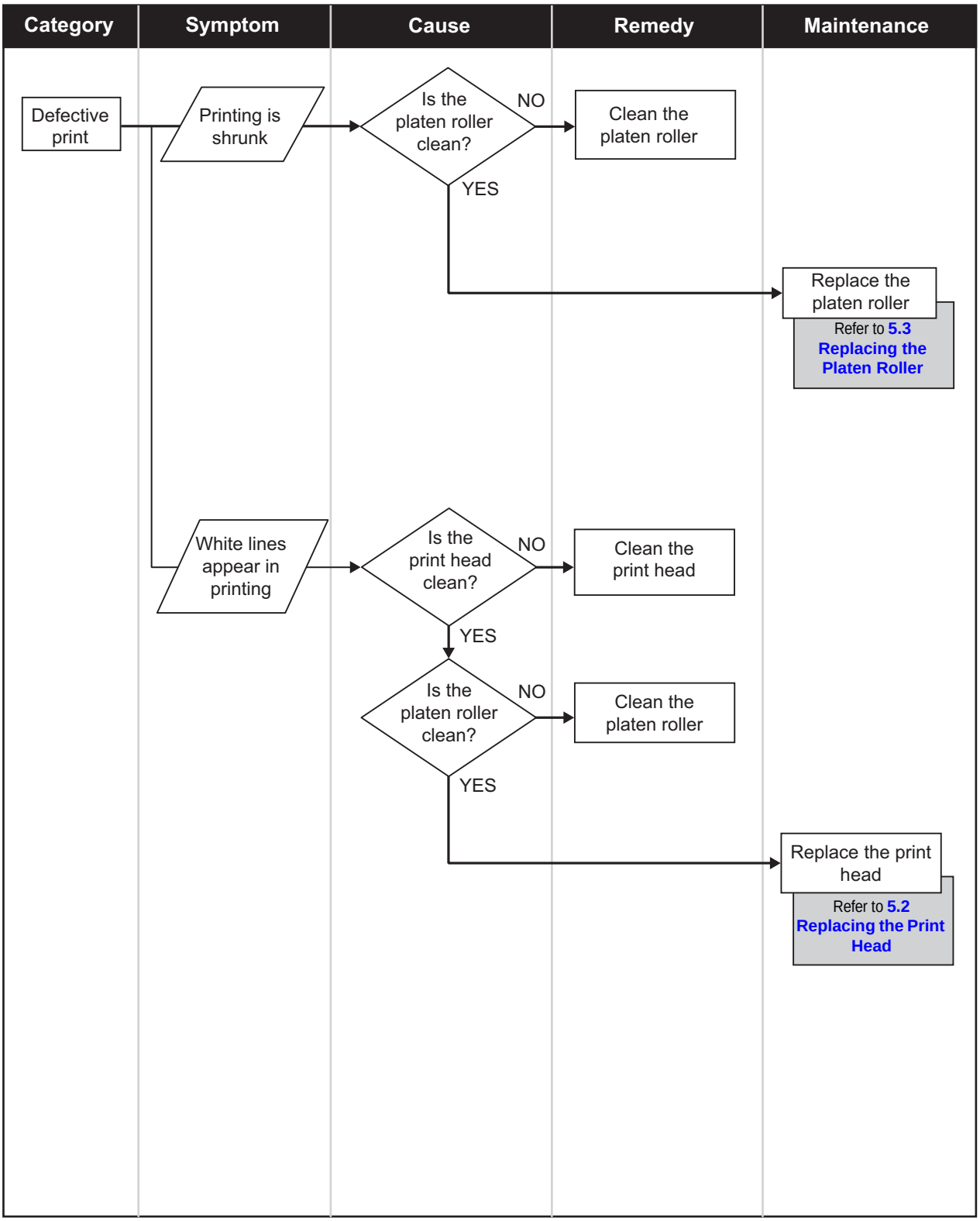

Category
Symptom
Cause
Remedy
Maintenance
Feeding
Does not stop at specified position
Is the sensor type correct?
NO
Select the correct sensor type
YES
Is the sensor level correct?
NO
Adjust the I-mark, Gap sensor level
Refer to 4.3 Checking and Adjusting the Media Sensor
Replace the I-mark, Gap PCB
Refer to 5.4 Replacing the Media Sensor
YES
Replace the sensor cable
Refer to 5.4 Replacing the Media Sensor
Replace the CONT PCB
Refer to 5.5 Replacing the Main (CONT) PCB

3.1.3 Print Problem

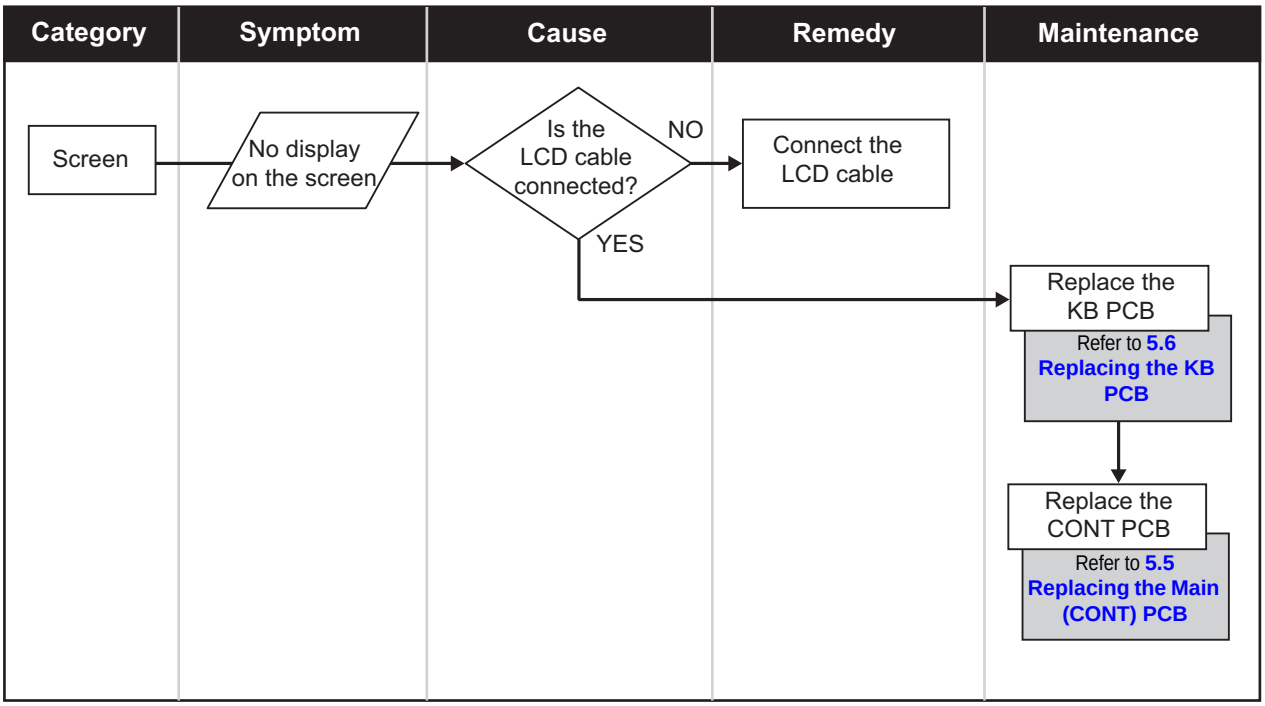



Category
Symptom
Cause
Remedy
Maintenance
Defective print
Printing is too dark
Adjust the print darkness
Refer to 4.5 Adjusting the Print Darkness
Printing is too light
Is the darkness setting correct?
NO
Adjust the print darkness
Refer to 4.5 Adjusting the Print Darkness
YES
Is the head cable connected?
NO
Connect the head cable in power off mode
YES
Replace the print head
Refer to 5.2 Replacing the Print Head
Replace the CONT PCB
Refer to 5.5 Replacing the Main (CONT) PCB
Part of the printing is missing
Is the head cable connected?
NO
Connect the head cable in power off mode
YES
Replace the print head
Refer to 5.2 Replacing the Print Head
Replace the CONT PCB
Refer to 5.5 Replacing the Main (CONT) PCB

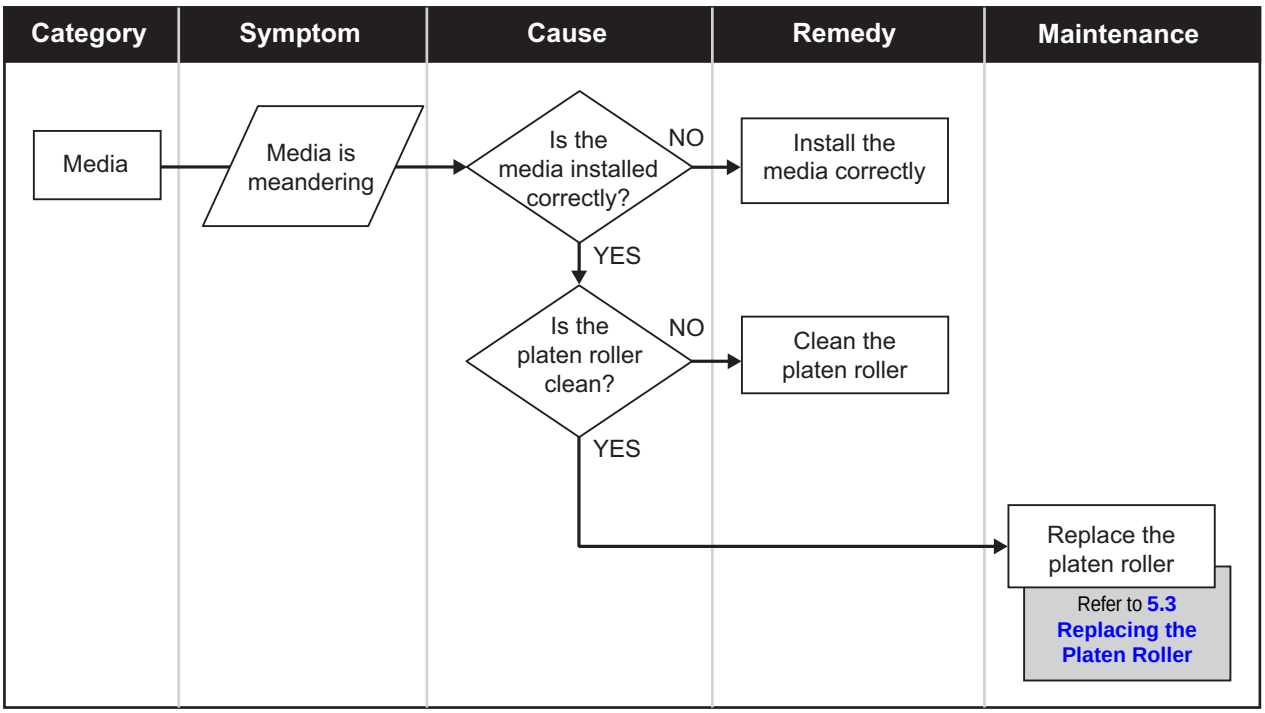

Category
Symptom
Cause
Remedy
Maintenance
Defective print
One side of the print is lighter than the other
Is the print head clean?
NO
Clean the print head
YES
Is the platen roller worn out?
YES
Replace the platen roller
Refer to 5.3 Replacing the Platen Roller
NO
Replace the print head
Refer to 5.2 Replacing the Print Head
Deviation of the print start position (V direction)
Is the data input correct?
NO
Input the data again
YES
Is the sensor level correct?
NO
Adjust the I-mark/ Gap sensor level
Refer to 4.3 Checking and Adjusting the Media Sensor
YES
Is the pitch position correct?
NO
Adjust the pitch offset
Refer to Adjusting the Print Position in CL4NX/CL6NX operator manual
Deviation of the print start position (H direction)
Is the data input correct?
NO
Input the data again
YES
Check the media
Refer to 3.1.5 Media Problem


Category
Symptom
Cause
Remedy
Maintenance
Defective print
Printing is shrunk
Is the platen roller clean?
NO
Clean the platen roller
YES
Replace the platen roller
Refer to 5.3 Replacing the Platen Roller
White lines appear in printing
Is the print head clean?
NO
Clean the print head
YES
Is the platen roller clean?
NO
Clean the platen roller
YES
Replace the print head
Refer to 5.2 Replacing the Print Head

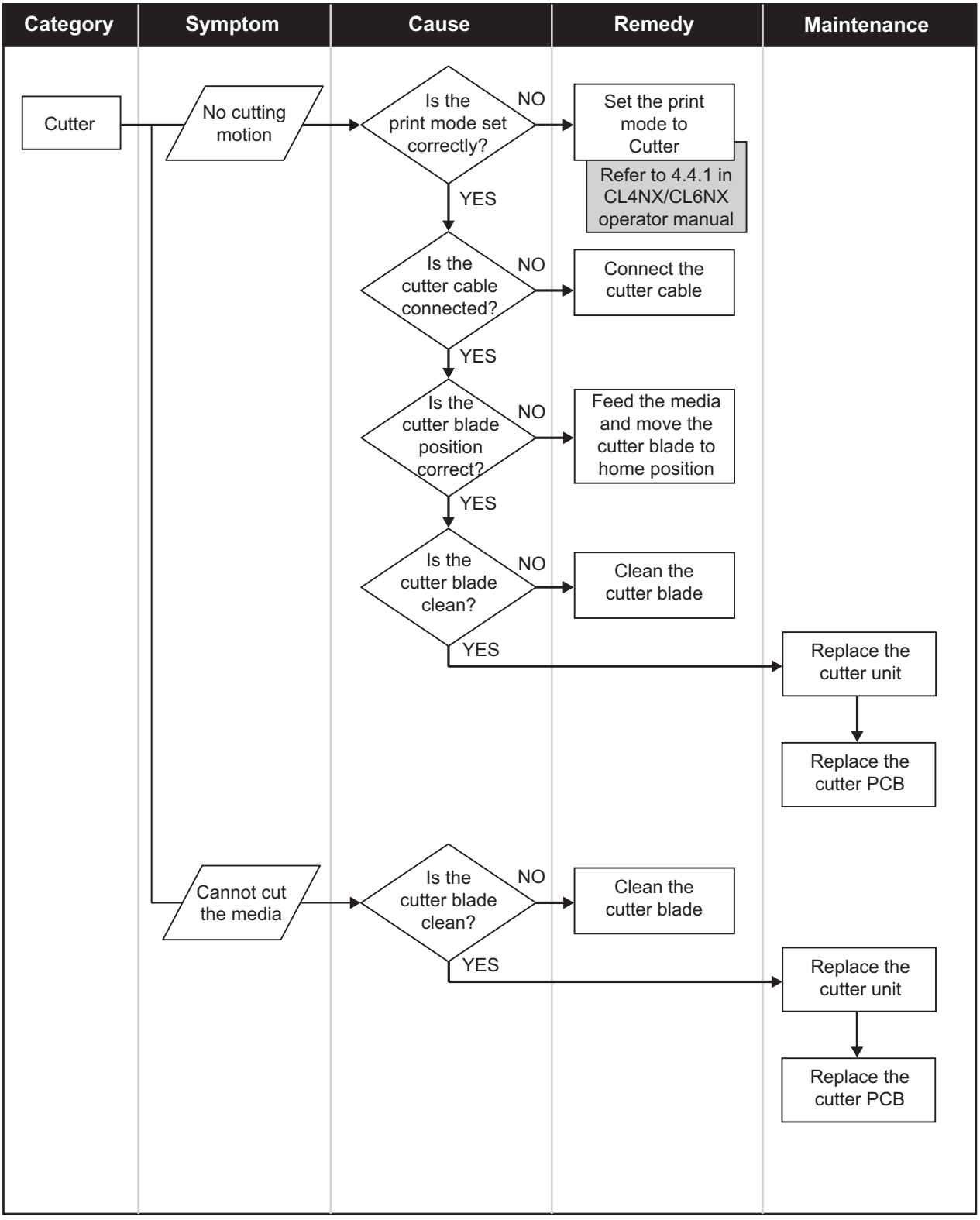
3.1.4 Screen Problem



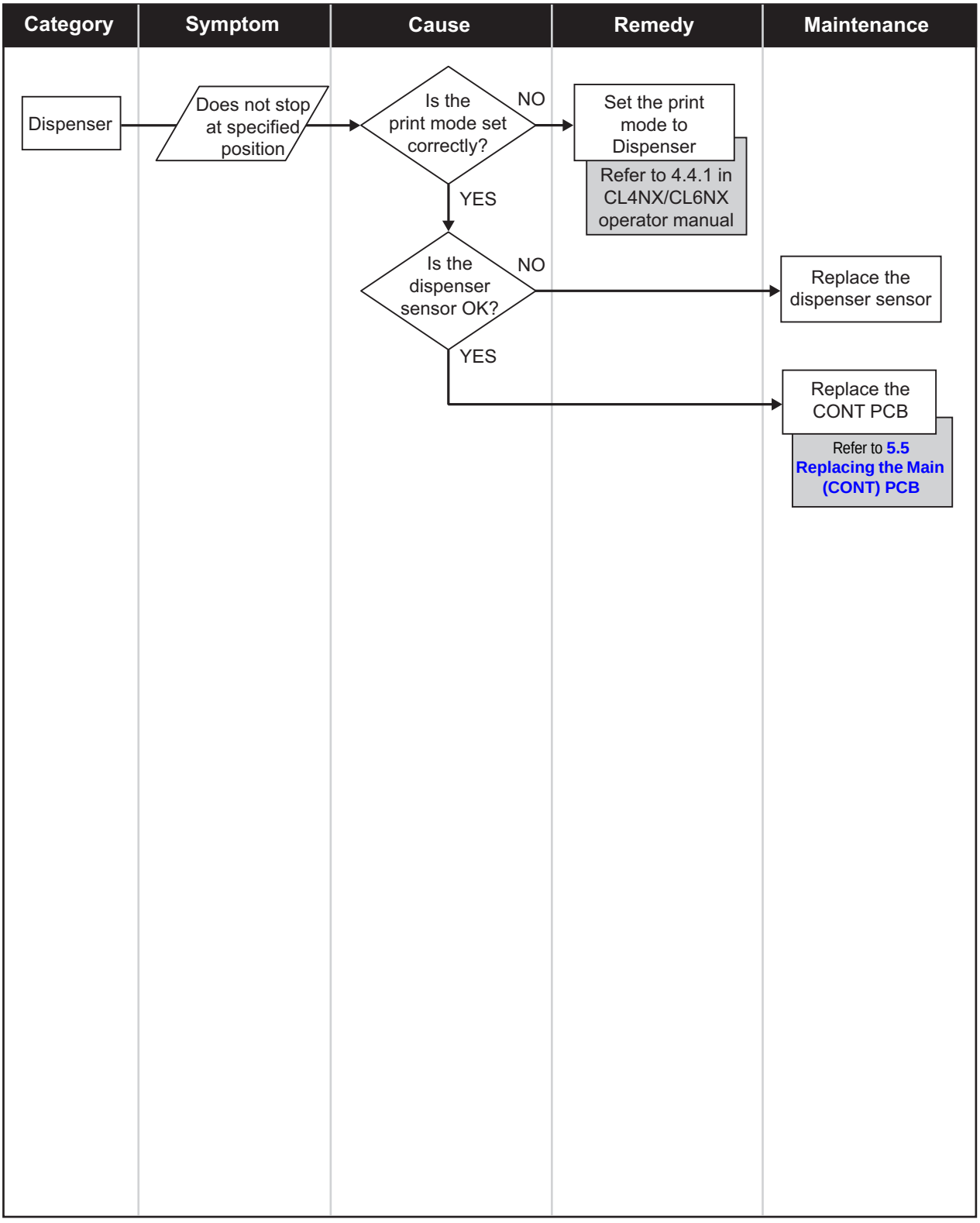
3.1.5 Media Problem



3.1.6 Cutter Problem



3.1.7 Dispenser Problem



4 Checking and Performing Printer Adjustments

This chapter contains more procedures for checking the printer's performance during maintenance and troubleshooting, or after replacement of parts. This chapter also contains procedures for making adjustments to ensure the optimum performance of the printer.

The checking and adjusting procedures described in this section are as follows.

4.1 Checking the Direct Current Power Voltage

This procedure enables checking various direct current voltages of the main (CONT) PCB board.

Required tools:
- Digital multimeter
- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the left housing cover from the printer.

Refer to **Section 5.1.1 Remove the Left Housing Cover** for details.

3 Set the digital multimeter to direct current, voltage mode.

4 Connect the power cord to an AC outlet.

5 Press the ⏻ power button on the operator panel for more than one second to power on the printer.

6 Touch the negative measurement probe to the [**GND**] point of the main (CONT) PCB. And then touch the positive probe to the test point [**TP**] as indicated below.

Refer to the **Figure 4.1** for the position of the test points.
- Touch the positive probe to the [**5VC**] point and measure the voltage of +5.0 V.
- Touch the positive probe to the [**TP5**], [**TP7**], or [**TP26**] points and measure the voltage of +3.3 V.
- Touch the positive probe to the [**TP16**], [**TP50**] (for CL4NX printer) or [**1.8V**] (for CL6NX printer) point and measure the voltage of +1.8 V.
  Note: For CL6NX printer, the **FPGA PCB** assembly blocks the [**TP50**] point. Use the [**1.8V**] test point to measure the voltage of +1.8 V.
- Touch the positive probe to the [**TP13**] or [**TP47**] points and measure the voltage of +1.26 V (MPU).
- Touch the positive probe to the [**TP12**] or [**TP46**] points and measure the voltage of +1.1 V (CORE).

Criteria

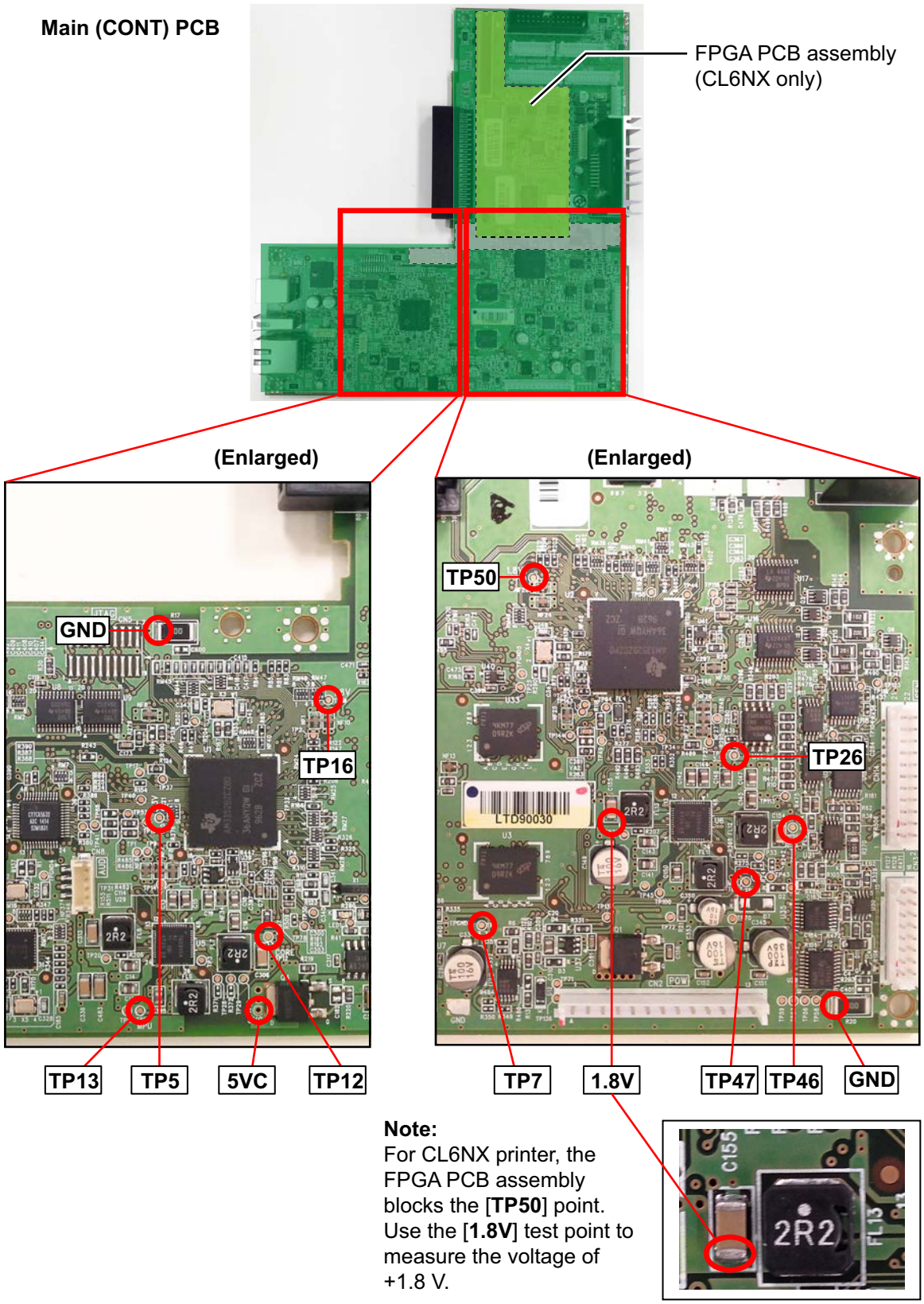
Table of Normal Performance Values:	
+5.0 V	+4.8 V to +5.2 V
+ 3.3 V	+3.2 V to +3.4 V
+1.8 V	+1.7 V to +1.9 V
+1.26 V	+1.21 V to +1.326 V
+1.1 V	+1.056 V to +1.144 V

7 Replace the main (CONT) PCB if the supply voltage of +5.0 V/ +3.3 V/ +1.8 V/ +1.26 V / 1.1 V does not meet the criteria.

Refer to **Section 5.5 Replacing the Main (CONT) PCB** for details.

8 Power off the printer.

Position of the test points



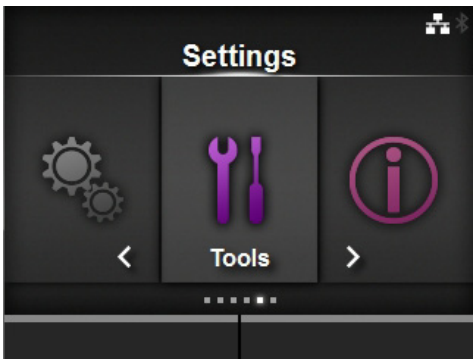
Note:
For CL6NX printer, the FPGA PCB assembly blocks the [**TP50**] point. Use the [**1.8V**] test point to measure the voltage of +1.8 V.

Figure 4.1

4.2 Counter Clear Mode

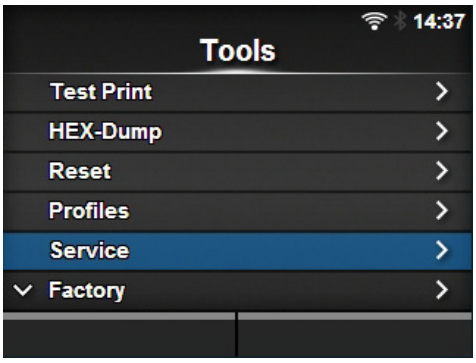
The printer has integrated counters to measure the accumulative activity of some features. These counters include head counter and cutter counter.
In this mode, you can initialize these counters to zero.

1. Press the ⏻ power button on the operator panel for more than one second to power on the printer.
2. When the printer is in online mode, press the ⏯ button on the operator panel to change to offline mode.
3. Press the ↵ button to show the **Settings** menu.
4. Press the ◄/► buttons to select **Tools** and then press the ↵ button.



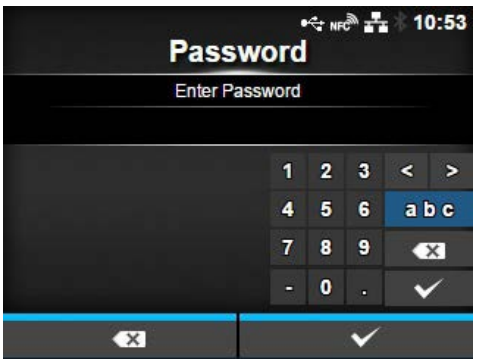
5. Press the ▲/▼ buttons to select **Service** and then press the ↵ button.

   The Password screen shows.



6 Press the ◄/►/▲/▼ buttons to select the number. And then press the ↵ button to enter the number to the password text box.

The password for the Service menu is 6677.

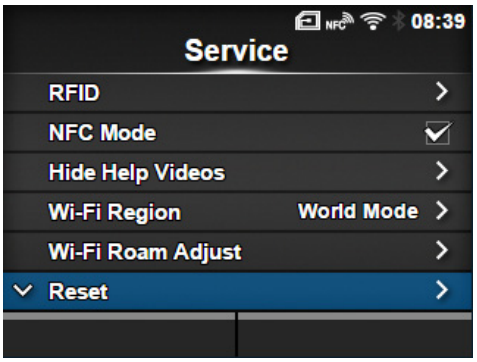


7 Press the right soft button to verify the password and goes to the next screen.

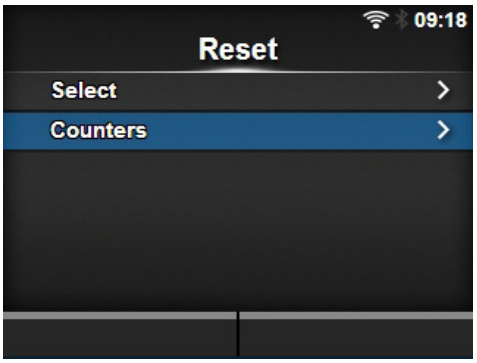
The Service menu shows.

8 Press the ▲/▼ buttons to select **Reset** and then press the ↵ button.

The Reset screen shows.

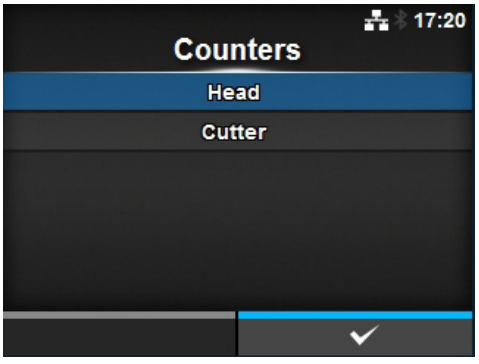


9 Press the ▲/▼ buttons to select **Counters** and then press the ↵ button.



10 Press the ▲/▼ buttons to select the counter you want to reset.

- Select **Head** to initialize the head counter. You have to initialize each time you replaced the print head.
- Select **Cut** to initialize the cutter counter. You have to initialize each time you replaced the cutter.



11 Press the right soft button or ↵ button to perform initialization.

The confirmation screen shows.

12 Press the left soft button to cancel or right soft button to perform the initialization.

4.3 Checking and Adjusting the Media Sensor

In the **Printing** > **Advanced** > **Calibrate** menu, you can check the media sensor condition and calibrate the media sensor level for the optimum performance.

4.3.1 Auto-calibration

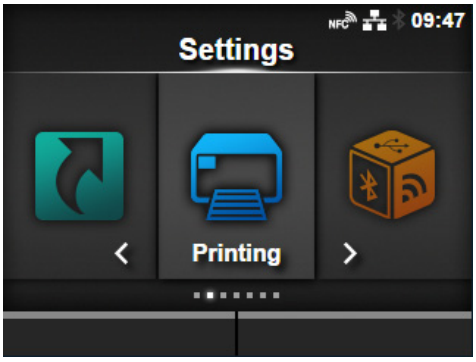
Perform the auto-calibration for the selected media sensor.
Auto-calibration is not available if you have installed the optional linerless kit.

1 Press the ⏻ power button on the operator panel for more than one second to power on the printer.

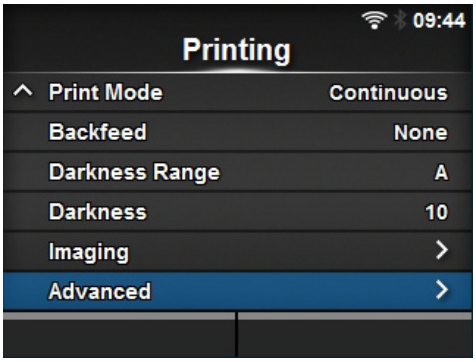
2 When the printer is in online mode, press the ⏯ button on the operator panel to change to offline mode.

3 Press the ↵ button to show the **Settings** menu.

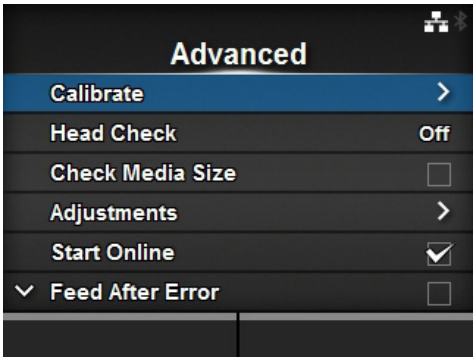
4 Press the ◀/▶ buttons to select **Printing** and then press the ↵ button.



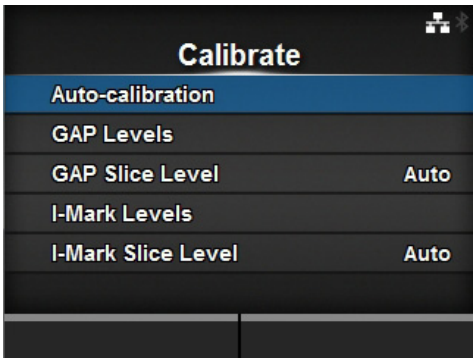
5 Press the ▲/▼ buttons to select **Advanced** and then press the ↵ button.



6 Press the ▲/▼ buttons to select **Calibrate** and then press the ↵ button.



7 Press the ▲/▼ buttons to select **Auto-calibrate** and then press the ↵ button.

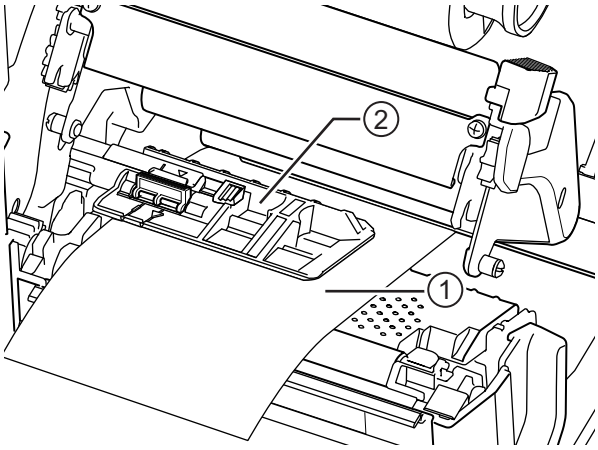


8 Pass the **media** ① below the **media sensor guide** ②.

If you are using labels, remove the label from the liner. Align it so that the media sensor does not sense the I-mark (black mark).

9 Close the print head.

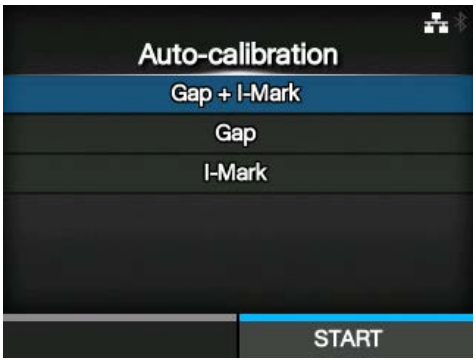
To get the correct adjustment result, adjust after you have closed the print head.



10 Press the ▲/▼ buttons to select the type of sensor to be adjusted.

- **Gap + I-Mark**: Perform the adjustment for both the Gap sensor and I-mark sensor.
- **GAP**: Perform the adjustment for the Gap sensor.
- **I-Mark**: Perform the adjustment for the I-mark sensor.

11 Press the right soft button or ↵ button to start the sensor adjustment.



12 The sensor adjustment result shows. To exit the adjustment, press the right soft button.

13 Set to offline mode. Press the right soft button to confirm that the media feeds correctly.

14 If the media does not feed correctly after the **Auto-calibration**, clean the sensor portion and then try again.

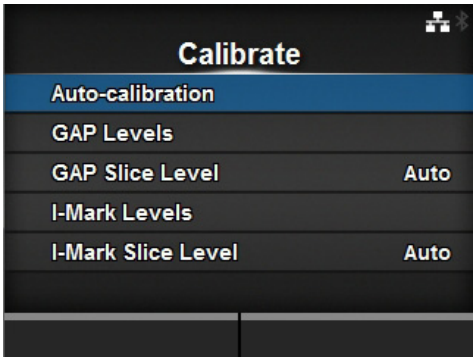
If the problem persists, adjust the sensor level manually. Refer to **Section 4.3.2 Adjusting the Gap Sensor Sensitivity** and **Section 4.3.4 Adjusting the I-mark Sensor Sensitivity**.

4.3.2 Adjusting the Gap Sensor Sensitivity

Manually set the Gap sensor level.

1 Perform steps 1 through 6 of **Section 4.3.1 Auto-calibration**.

The **Calibrate** screen shows.

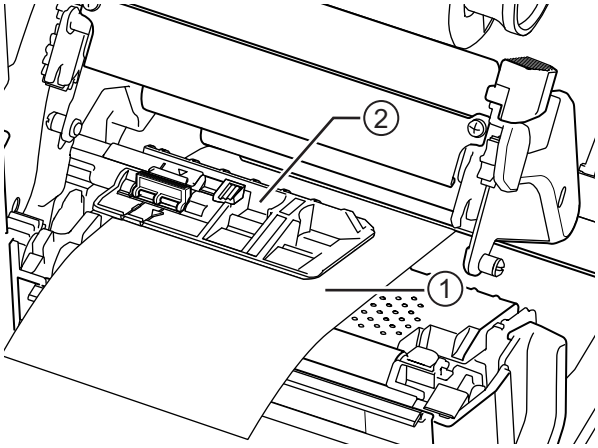


First, adjust the "Low" level (voltage) of the Gap sensor.

2 Remove the label from the liner.

3 Pass the **liner** ① below the **media sensor guide** ②.

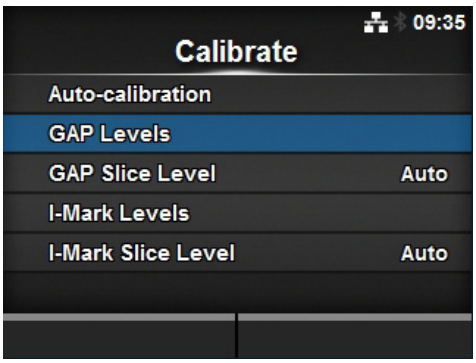
Align it so that the media sensor does not sense the I-mark (black mark).



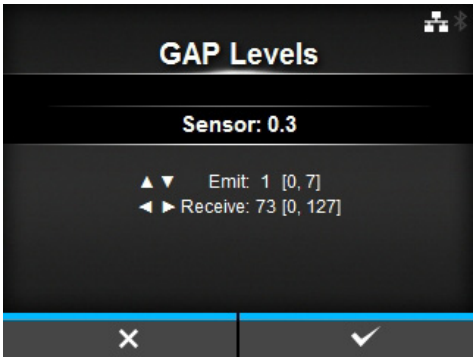
4 Close the print head.

To get the correct adjustment result, adjust after you have closed the print head.

5 Press the ▲/▼ buttons to select the **GAP Levels** in the **Calibrate** menu and press the ↵ button.



6 Press the ▲/▼ buttons to change the **Emit** value until the **Sensor** value is below 0.5 (V). Set the **Emit** value as low as possible.



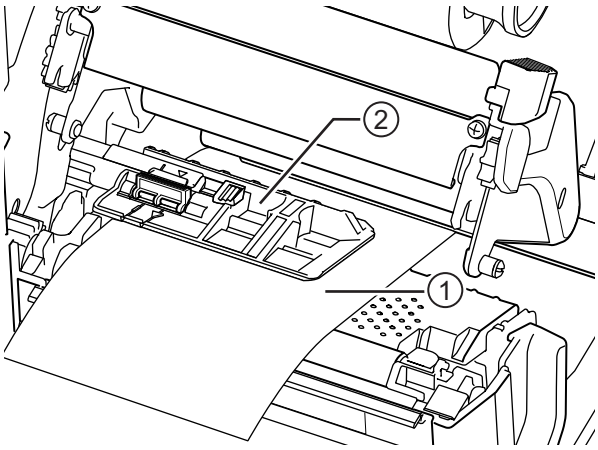
7 If the **Sensor** value does not decrease below 0.5 after you changed the **Emit** value, press the ◄/► buttons to change the **Receive** value.

8 Take a note of the **Sensor** value from the above procedure. This is the “Low” level value for the Gap sensor.

Next, check the “High” level (voltage) of the Gap sensor as follows:

9 Pass the **media** ① (if label, attached with liner) below the **media sensor guide** ②.

Align it so that the media sensor does not sense the I-mark (black mark).



10 Close the print head.

11 Check the **Sensor** value.

If the value is 1.0 (V) higher than the “Low” level value you have recorded, then this is the “High” level value for the Gap sensor.
If the difference between the “High” and the “Low” levels is less than 1.0, adjust the **Emit** and **Receive** values so that the difference is more than 1.0, or perform the adjustments again from step 2.

12 The standard values for the “High” and “Low” levels for the Gap sensor are as follows:

- Low (with only liner) ≤ 0.5 (V)
- High (media attached with liner) - Low ≥ 1.0 (V)

13 If both “High” and “Low” levels comply with the standard value, press the right soft button to confirm the value.

14 If you cannot adjust the sensor level, clean the sensor, check the connection of the connector, and try again.

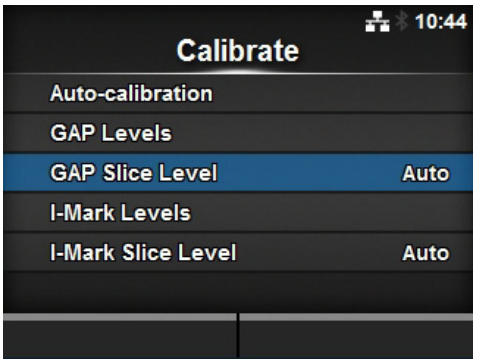
If the problem persists, replace the sensor. Refer to **Section 5.4 Replacing the Media Sensor** for details.

4.3.3 Adjusting the Gap Sensor Slice Level

Set the Gap sensor slice level.

1 Perform steps 1 through 6 of **Section 4.3.1 Auto-calibration**.

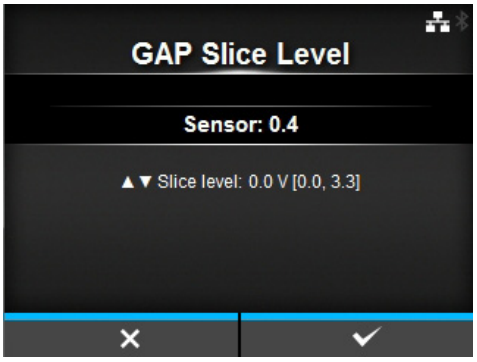
The **Calibrate** screen shows.



2 Press the ▲/▼ buttons to select the **GAP Slice Level** in the **Calibrate** menu and press the ↵ button.

3 Press the ▲/▼ buttons to change the **Slice level** value. Set the **Slice level** to the level calculated from the following formula.

[(High level - Low level) x 0.3 + Low level = slice level]



4 Press the right soft button to confirm the value.

Note

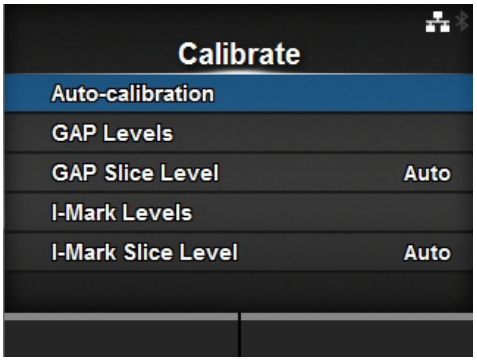
If you set the **Slice Level** to 0.0 (V), the printer sets the slice level automatically.

4.3.4 Adjusting the I-mark Sensor Sensitivity

Manually set the I-mark sensor level.

1 Perform steps 1 through 6 of **Section 4.3.1 Auto-calibration**.

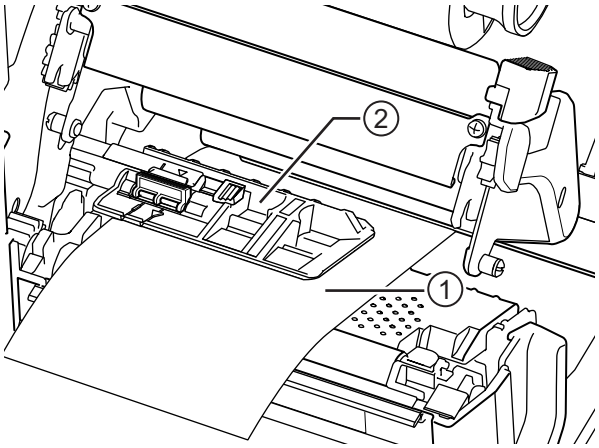
The **Calibrate** screen shows.



First, adjust the “Low” level (voltage) of the I-mark sensor.

2 Pass the **media** ① (if label, attached with liner) below the **media sensor guide** ②.

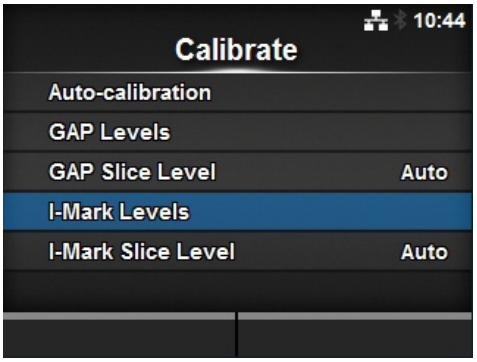
Align it so that the media sensor does not sense the I-mark (black mark).



3 Close the print head.

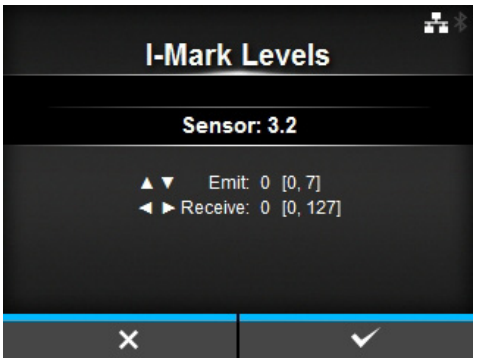
To get the correct adjustment result, adjust after you have closed the print head.

4 Press the ▲/▼ buttons to select the **I-Mark Levels** in the **Calibrate** menu and press the ↵ button.



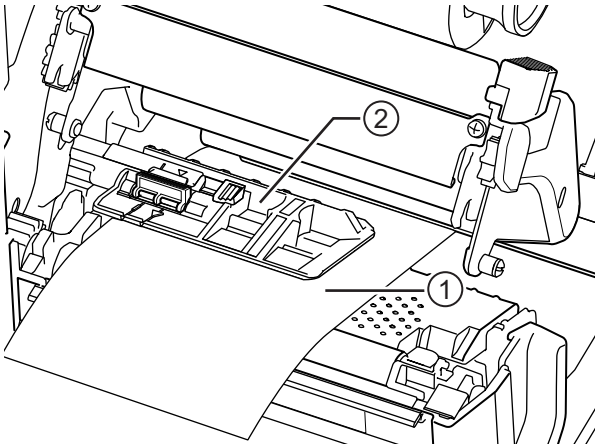
5 Press the ▲/▼ buttons to change the **Emit** value until the **Sensor** value is below 0.5 (V). Set the **Emit** value as low as possible.

6 If the **Sensor** value does not decrease below 0.5 after you changed the **Emit** value, press the ◄/► buttons to change the **Receive** value.



7 Take a note of the **Sensor** value from the above procedure. This is the “Low” level value for the I-mark sensor.

Next, check the “High” level (voltage) of the I-mark sensor as follows:



8 Pass the **media** ① below the **media sensor guide** ② so that the media sensor can sense the I-mark (black mark).

9 Close the print head.

10 Check the **Sensor** value.

If the value is 1.0 (V) higher than the “Low” level value you have recorded, then this is the “High” level value for the I-mark sensor.
If the difference between the “High” and the “Low” levels is less than 1.0, adjust the **Emit** and **Receive** values so that the difference is more than 1.0, or perform the adjustments again from step 2.

11 The standard values for the “High” and “Low” levels for the I-mark sensor are as follows:

- Low (without I-mark) ≤ 0.5 (V)
- High (with I-mark) - Low ≥ 1.0 (V)

12 If both “High” and “Low” levels comply with the standard value, press the right soft button to confirm the value.

13 If you cannot adjust the sensor level, clean the sensor, check the connection of the connector, and try again.

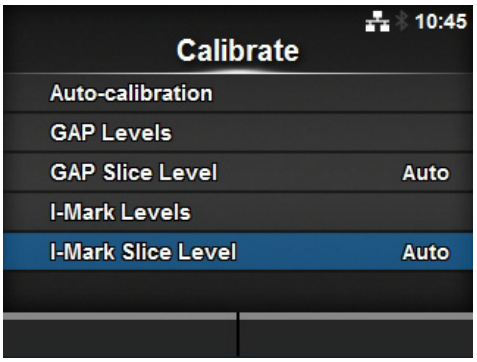
If the problem persists, replace the sensor. Refer to **Section 5.4 Replacing the Media Sensor** for details.

4.3.5 Adjusting the I-mark Sensor Slice Level

Set the I-mark sensor slice level.

1 Perform steps 1 through 6 of **Section 4.3.1 Auto-calibration**.

The **Calibrate** screen shows.



2 Press the ▲/▼ buttons to select the **I-Mark Slice Level** in the **Calibrate** menu and press the ↵ button.

3 Press the ▲/▼ buttons to change the **Slice level** value. Set the **Slice level** to the level calculated from the following formula.

[(High level - Low level) x 0.3 + Low level = slice level]

4 Press the right soft button to confirm the value.

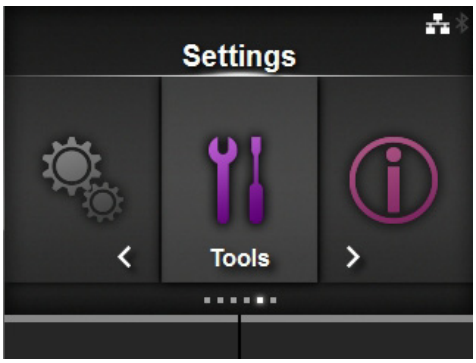
Note

If you set the **Slice Level** to 0.0 (V), the printer sets the slice level automatically.

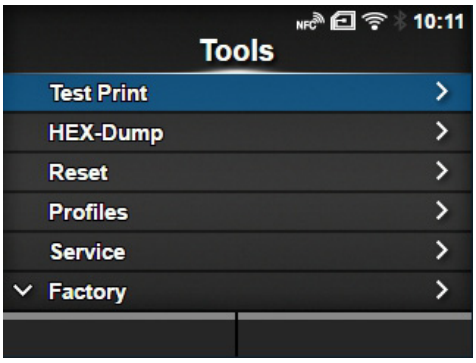
4.4 Test Print Check

After adjustment or parts replacement, perform a test print to make sure that the printer is in optimum condition.
You can use the test print to check the print head alignment, print head balance, media tracking and ribbon wrinkling.

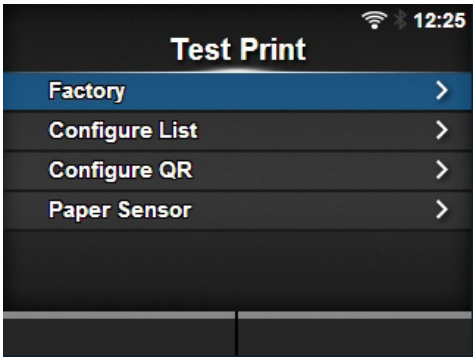
1. Press the ⏻ power button on the operator panel for more than one second to power on the printer.
2. When the printer is in online mode, press the ⏯ button on the operator panel to change to offline mode.
3. Press the ↵ button to show the **Settings** menu.
4. Press the ◄/► buttons to select **Tools** and then press the ↵ button.



5. Press the ▲/▼ buttons to select **Test Print** and then press the ↵ button.



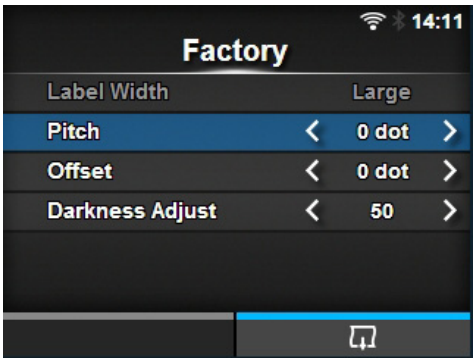
6 Press the ▲/▼ buttons to select the types of test print and then press the ↵ button.



The options are as follows.

- **Factory**: Perform the factory test print.
- **Configuration List**: Print the configuration information of the printer.
- **Configure QR**: Print the configuration information with a QR code.
- **Paper Sensor**: Print the detection result of the media sensor level.

7 Press the ▲/▼ buttons to select the item you want to set. Then press the ◄/► buttons to change the value.



You can set the following items.

- **Label Length** (not available for Factory test print)
- **Pitch**
- **Offset**
- **Darkness Adjust**

Refer to **Chapter 4 Operation and Configuration** of the CL4NX/CL6NX operator manual for more details.

8 Press the right soft button to start the test print.

Press the right soft button again to pause the print.

To stop the test print, first pause the print and then press the ↩ button.

4.5 Adjusting the Print Darkness

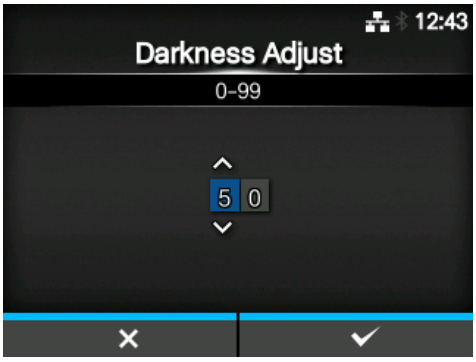
1 Press the ⏻ power button on the operator panel for more than one second to power on the printer.

2 When the printer is in online mode, press the ⏯ button on the operator panel to change to offline mode.

3 Press the ↵ button to show the **Settings** menu.

4 Select **Shortcut** > **Adjustments** > **Darkness Adjust** or **Printing** > **Advanced** > **Adjustments** > **Darkness Adjust** using the ▲/▼ buttons and then press the ↵ button.

The Darkness Adjust screen shows.



5 Press the ▲/▼ buttons to change the **Darkness Adjust** value.

The setting range is from 0 to 99.
0 is the lightest and 99 is the darkest.

6 Press the right soft button to save the setting value.

7 Perform the factory test print.

Refer to **Section 4.4 Test Print Check** for details.

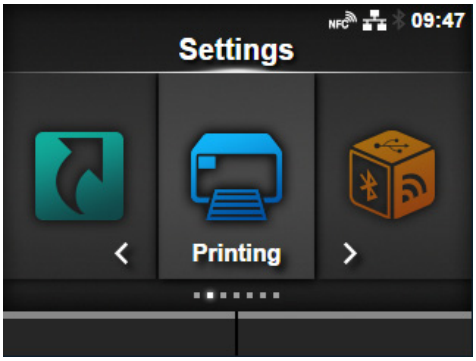
8 Check to make sure that there are no breaks in the print image or blurring of the bar code.

9 If you cannot obtain a proper printing result, clean the print head and platen roller.

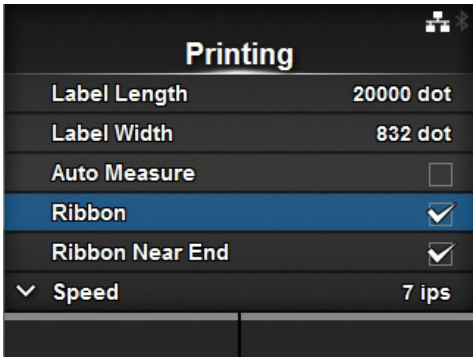
If the problem persists, replace the print head and platen roller. Refer to **Section 5.2 Replacing the Print Head** and **Section 5.3 Replacing the Platen Roller** for details.

4.6 Checking the Ribbon End Function

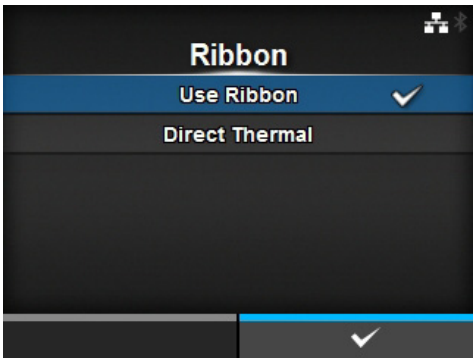
1. Press the ⏻ power button on the operator panel for more than one second to power on the printer.
2. When the printer is in online mode, press the ⏯ button on the operator panel to change to offline mode.
3. Press the ↵ button to show the **Settings** menu.
4. Press the ◀/▶ buttons to select **Printing** and then press the ↵ button.



5. Press the ▲/▼ buttons to select **Ribbon** and then press the ↵ button.



6. Press the ▲/▼ buttons to select **Use Ribbon**.
7. Press the right soft button or ↵ button to save the setting.



8 Press the ⏯ button to enter offline mode.

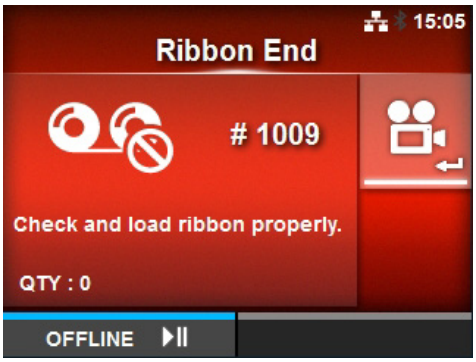
9 Remove the ribbon if you have loaded in the printer.

10 In offline mode, press the right soft button to feed the media.

Make sure that the printer shows a **Ribbon End** error message, and along with the buzzer sounds.

11 If no error occurs, check the connection of the ribbon sensor connector.

If there is no problem, replace the sensor. Refer to **Section 5.13 Replacing the Ribbon Sensor** for details.



4.7 Checking the Head Open Error

1 Press the ⏻ power button on the operator panel for more than one second to power on the printer.

2 Open the **top cover**.

⚠ CAUTION

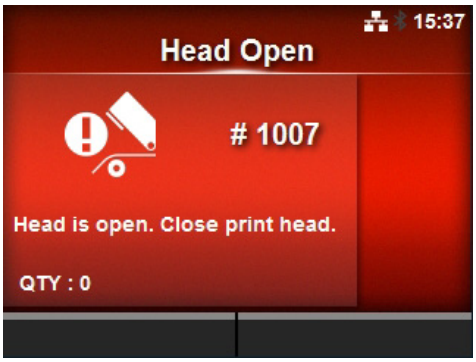
Open the top cover fully to prevent accidental drop of the cover.

3 When the printer is in online mode, push the **head lock lever** towards the rear to unlock the print head.

Make sure that the printer shows a **Head Open** error message, and along with the buzzer sounds.

4 If no error occurs, check the connection of the head open sensor connector.

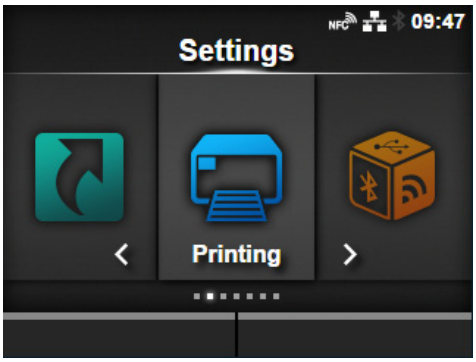
If there is no problem, replace the sensor. Refer to **Section 5.12 Replacing the Head Open Sensor** for details.



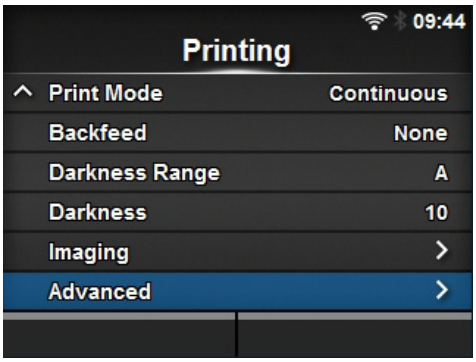
4.8 Checking the Label Near End Function

The label near end function is only applicable to printers with label near end sensor installed.

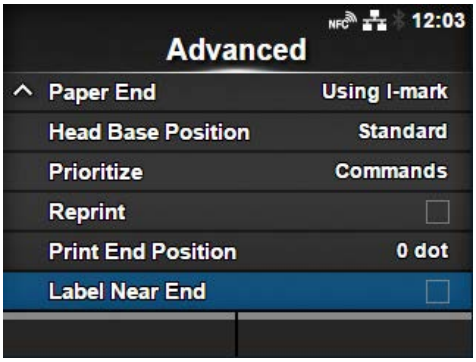
1. Press the ⏻ power button on the operator panel for more than one second to power on the printer.
2. When the printer is in online mode, press the ⏯ button on the operator panel to change to offline mode.
3. Press the ↵ button to show the **Settings** menu.
4. Press the ◀/▶ buttons to select **Printing** and then press the ↵ button.



5. Press the ▲/▼ buttons to select **Advanced** and then press the ↵ button.

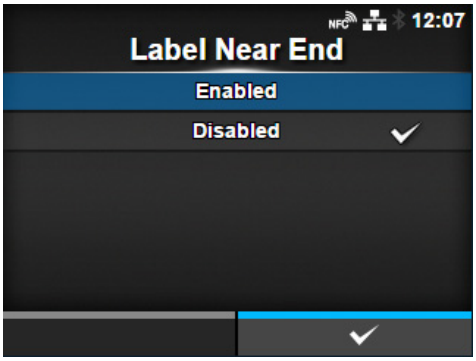


6. Press the ▲/▼ buttons to select **Label Near End** and then press the ↵ button.



7 Press the ▲/▼ buttons to select **Enabled**.

8 Press the right soft button or ↵ button to save the setting.



9 Press the ⏯ button to enter offline mode.

10 Load a full media roll to the media holder.

11 In offline mode, press the right soft button to feed the media.

12 Check if the **label near end** warning icon is shown on the top of the screen.

If the printer does not show the **label near end** warning icon on the screen, proceed to step 13.

If the **label near end** warning icon is shown, check the connection of the label near end sensor connector.
If there is no problem, replace the sensor. Refer to **Section 5.14 Replacing the Label Near End Sensor** for details.

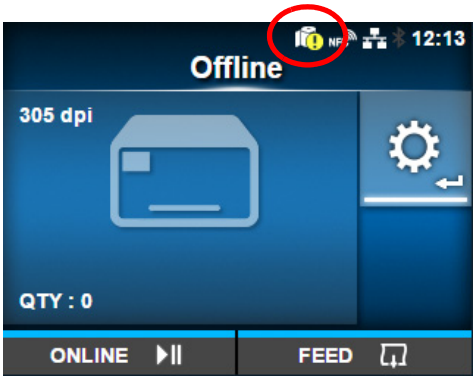
13 Next, remove the media from the media holder.

14 In offline mode, press the right soft button to feed the media.

Make sure that the printer shows a **label near end** icon on the top of the screen.

15 If no warning occurs, check the connection of the label near end sensor connector.

If there is no problem, replace the sensor. Refer to **Section 5.14 Replacing the Label Near End Sensor** for details.

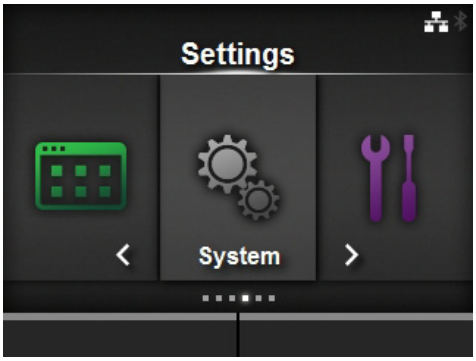


Note

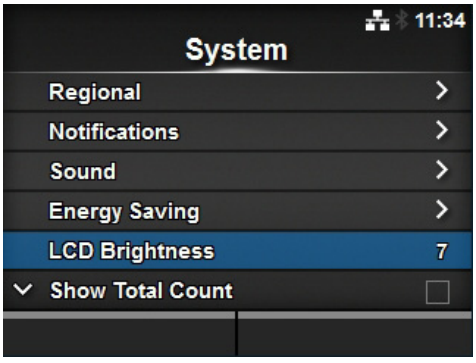
- This feature has been supported on printers since February 2016 production (serial number 6Bxxxxxx or later).
- When the label near end function is enabled on the printer that does not have the label near end sensor installed, the label near end warning icon will be shown on the screen.
  Go to **Printing** > **Advanced** > **Label Near End** menu screen to set the label near end function to **Disabled**.

4.9 Adjusting the LCD Brightness

1. Press the ⏻ power button on the operator panel for more than one second to power on the printer.
2. When the printer is in online mode, press the ⏯ button on the operator panel to change to offline mode.
3. Press the ↵ button to show the **Settings** menu.
4. Press the ◀/▶ buttons to select **System** and then press the ↵ button.



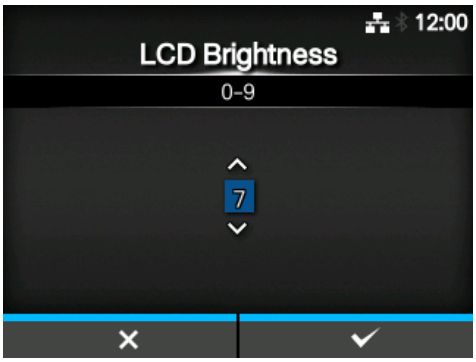
5. Press the ▲/▼ buttons to select **LCD Brightness** and then press the ↵ button.



6. Press the ▲/▼ buttons to change the value.

   The setting range is from 0 to 9.
   0 is the darkest and 9 is the brightest.

7. Press the right soft button or ↵ button to save the setting.



4.10 Adjusting the Head Pressure Balance

Print head balance refers to the equalization of pressure between the print head and the platen roller. If the print head balance is out of adjustment, the printed image will be darker on one side of the media than the other and the media will be prone to travel in the direction of greater pressure.

4.10.1 Adjusting the Head Pressure Balance with Adjustment Screw

Required tool:

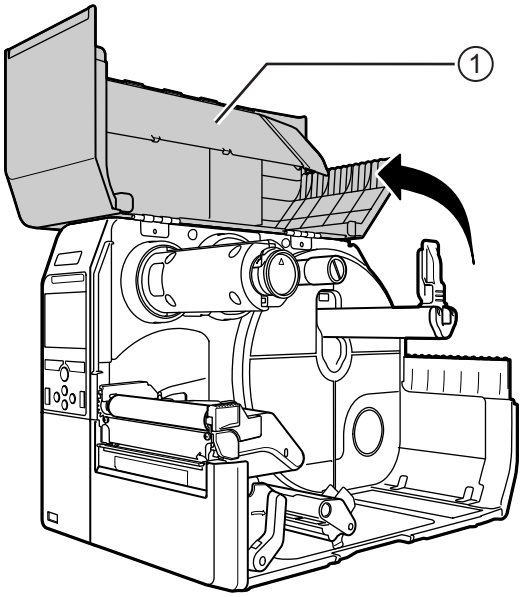
- Slotted screwdriver

The adjustment procedure for the head pressure balance is as follows:

1 Open the **top cover** ①.

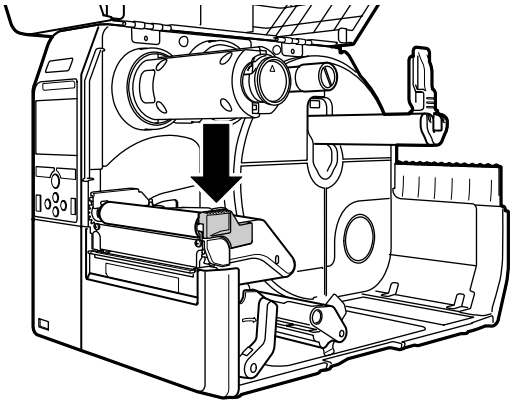
⚠ CAUTION

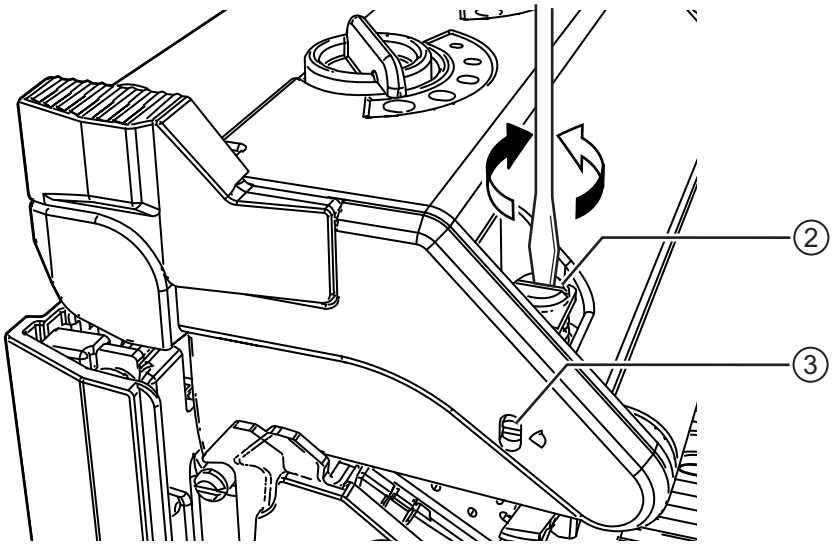
Open the top cover fully to prevent accidental drop of the cover.



2 Make sure that the **print head** is locked.

If not, press the **print head** down until the **head lock lever** is locked.





3 Find the **head pressure balance adjustment screw** ② on the top of the **print head assembly** as shown above.

4 Turn the **head pressure balance adjustment screw** ② with a slotted screwdriver.

- Turn the **adjustment screw** clockwise to increase the pressure on the right side (when you see from the front of the printer). The **indicator** ③ on the side of the print head assembly moves downward.
- Turn the **adjustment screw** counterclockwise to increase the pressure on the left side (when you see from the front of the printer). The **indicator** ③ on the side of the print head assembly moves upward.

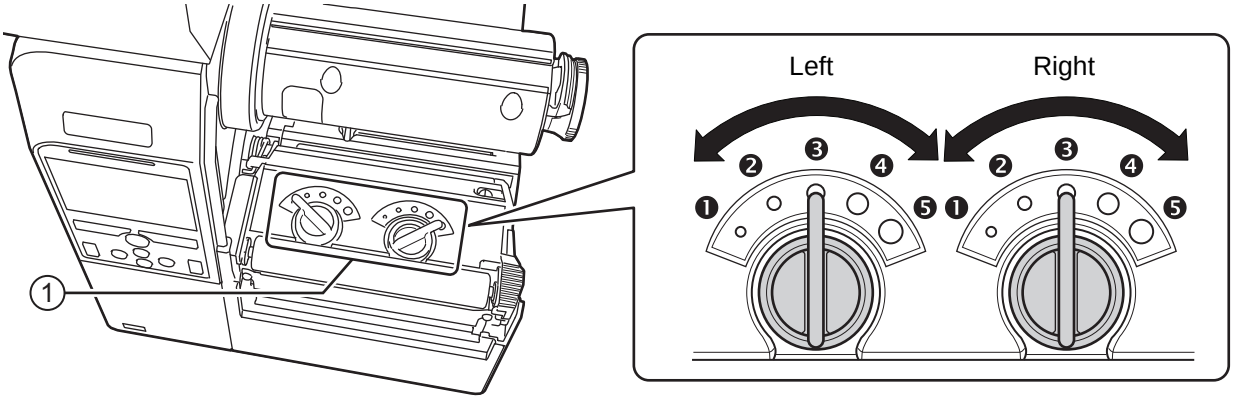
5 Use media with broad width to perform the factory test print.

Refer to **Section 4.4 Test Print Check** for details.

6 Check to make sure that the tone of the left and right side of the print image is the same.

7 If the tone of the left and right side of the print image is not same, repeat the procedure from steps 4 through 6.

4.10.2 Adjusting the Head Pressure Balance with Adjustment Dials



Criteria of the head pressure balance adjustment

- Set the head pressure according to the media thickness, including the liner.
- Set the pressure balance according to the media width.

Head pressure setting

The adjustment procedure for the head pressure balance is as follows:

1 Open the **top cover** of the printer.

2 Find the **adjustment dials** ① on the top of the **print head assembly** as shown.

3 Turn the **adjustment dials** ① to match the media thickness.

Media Thickness (mm)	0.060 - 0.200	0.200 - 0.268
Adjustment Dials	❸ (Left and Right, CL4NX only) ❸ or ❹ (Left and Right, CL6NX only)	❹ or ❺ (Left and Right)
Reference	Thin paper/normal label, etc.	Thick paper/tag, etc.

4 Be sure to perform the pressure balance setting as explained below, after step 3.

Note

- The factory default setting is Left ❸ and Right ❸.
  For CL6NX dispenser model, the factory default setting is Left ❹ and Right ❹.
- The thickness of the media includes the liner.

Pressure balance setting

The adjustment procedure for the pressure balance is as follows:

1 Open the **top cover** of the printer.

2 Find the **adjustment dials** ① on the top of the **print head assembly** as shown.

3 Turn the **adjustment dials** ① according to the media width and set the pressure balance.

For CL4NX:

Media Width (mm)	25 - 54	54 - 83	83 - 131
Adjustment Dials	Left ❸ Right ❶	Left ❸ Right ❷	Left ❸ Right ❸

*First use the adjustment dial setting for the head pressure and then adjust according to the media width. Above table shows an example when the head pressure is Left ❸.

For CL6NX:

Media Width (mm)	50 - 120	120 - 140	140 - 160	160 - 180
Adjustment Dials	Left ❺ Right ❶	Left ❸ or ❹ Right ❶	Left ❸ or ❹ Right ❷	Left ❸ or ❹ Right ❸ or ❹

*First use the adjustment dial setting for the head pressure and then adjust according to the media width.

Note

- The factory default setting is Left ❸ and Right ❸.
  For CL6NX dispenser model, the factory default setting is Left ❹ and Right ❹.
- If the media is shifted to the right after adjusting the dial, turn the head pressure balance adjustment screw to counterclockwise. (If media is shifted left, turn to clockwise.) Refer to **Section 4.10.1 Adjusting the Head Pressure Balance with Adjustment Screw** for details.

4.11 Adjusting the Head Alignment

When the print head is out of alignment with the platen roller, the print image becomes blurred.

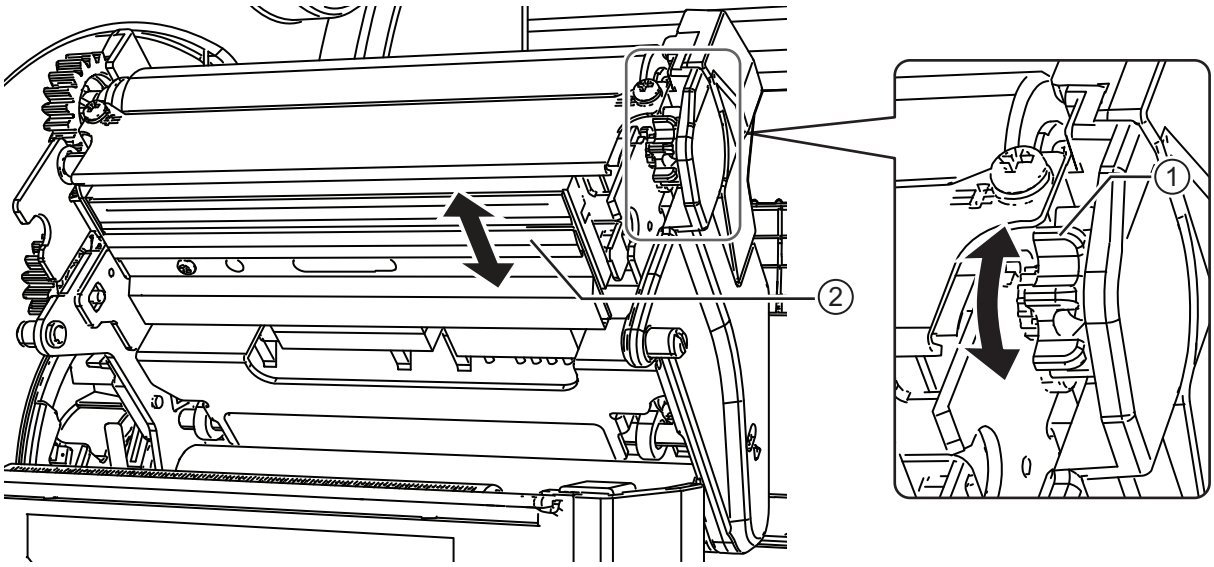
The adjustment procedure for the head alignment is as follows:

1 Open the **top cover** of the printer.

⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.

2 Push the **head lock lever** towards the rear to unlock the **print head**.



3 Turn the **head alignment dial** ① upward or downward as shown.

- Turn the **head alignment dial** upward to move the **print head** ② to the front.
- Turn the **head alignment dial** downward to move the **print head** ② to the back.

4 Perform the factory test print.

Refer to **Section 4.4 Test Print Check** for details.

5 Check to make sure that the print image is clearer.

6 If the print image is blurred, repeat the procedure from steps 3 through 5.

4.12 Adjusting the Timing Belt Tension

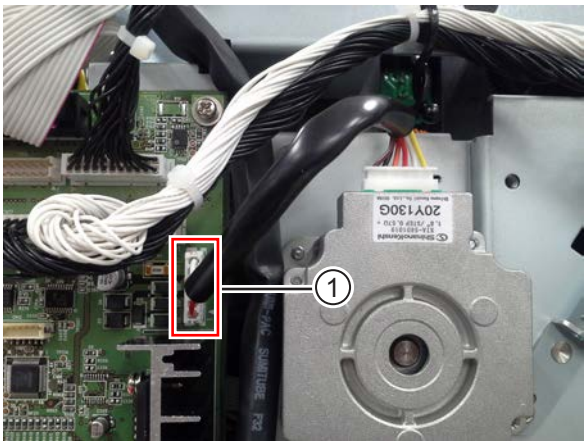
Required tool:
- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover** from the printer.

Refer to **Section 5.1.1 Remove the Left Housing Cover** for details.

3 Disconnect the **motor connector** ① from the **main (CONT) PCB**.

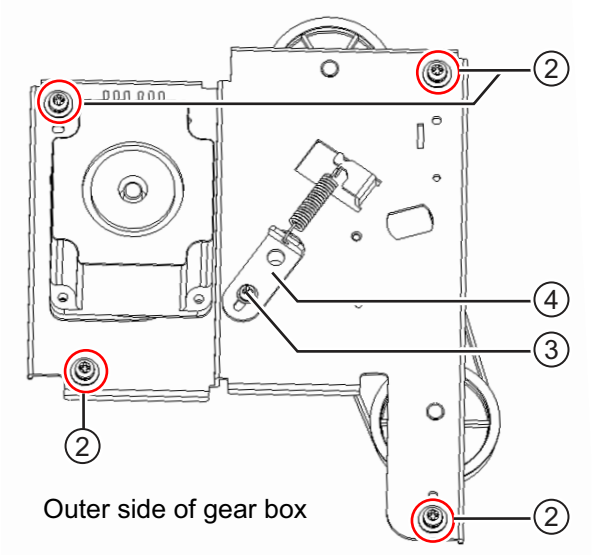


4 Remove four **screws** ② attaching the **gearbox** to the printer.

5 Loosen the **screw** ③ of the **tension bracket** ④.

Note

Do not remove the screw ③.



6 Turn over to the inner side of the **gearbox** and then check the condition of the **timing belt** ⑤.

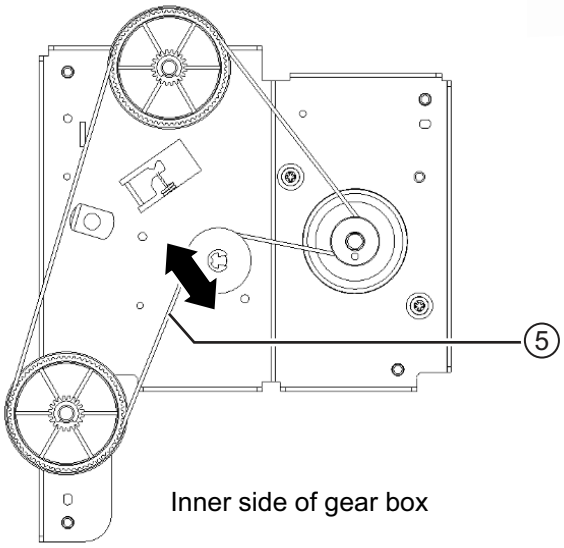
Make sure that there is tension on the **timing belt**.

7 Tighten the **screw** ③ of the **tension bracket**.

8 If the tension of the **timing belt** is not enough, replace the **timing belt**.

Refer to **Section 5.11 Replacing the Timing Belt** for details.

9 Perform the assembly with the reverse procedure.



Inner side of gear box

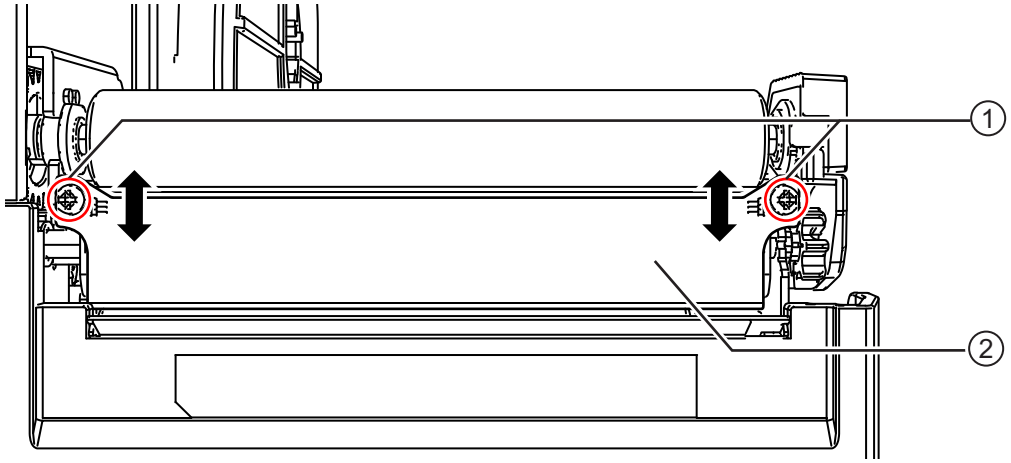
4.13 Adjusting the Ribbon Tension

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Adjust the **print head pressure balance** before you adjust the ribbon tension.

Refer to **Section 4.10 Adjusting the Head Pressure Balance** for details.



2 Loosen two **screws** ① attaching the **ribbon adjustment plate** ② to the print head assembly.

Note

Do not remove the screws ①.

3 Move the **ribbon adjustment plate** up or down to adjust.

Adjust the left side of the adjustment plate upward when wrinkle occurs on the right.
Adjust the right side of the adjustment plate upward when wrinkle occurs on the left.

⚠ CAUTION

If you adjusted the ribbon adjustment plate to fully raised, the ribbon tearing sound (scrunching noise) increases. To avoid this, lower the ribbon adjustment plate completely before you adjust.

4 Tighten two **screws** ① to set the position.

5 Perform the factory test print.

Refer to **Section 4.4 Test Print Check** for details.

6 Check to make sure that the ribbon must not wrinkle and meander.

7 If the ribbon wrinkles or meanders, repeat the procedure from steps 2 through 5.

4.14 Adjusting the Position of the Media Sensor

If you used standard media, you do not need to adjust the media sensor (I-mark sensor and Gap sensor).
*During shipment from the factory (default settings), the media sensor guide is set to the innermost position, and is to be used for the standard media.
When you use nonstandard media (for example, media with printing on the underside, or media with a special shape), the media sensor cannot sense the I-mark or Gap of the media correctly. In such a case, adjust the position of the media sensor to sense the I-mark or Gap correctly.

About the media sensor

The I-mark sensor and Gap sensor are mounted on the same PCB and move simultaneously.
The media guide is attached to these sensors, the ▯ mark shows the I-mark sensor position and the ▽ mark shows the Gap sensor position.
The adjustment ranges are as follows:
With the inner side of the printer as reference (left side of the media when looking from the printer front),

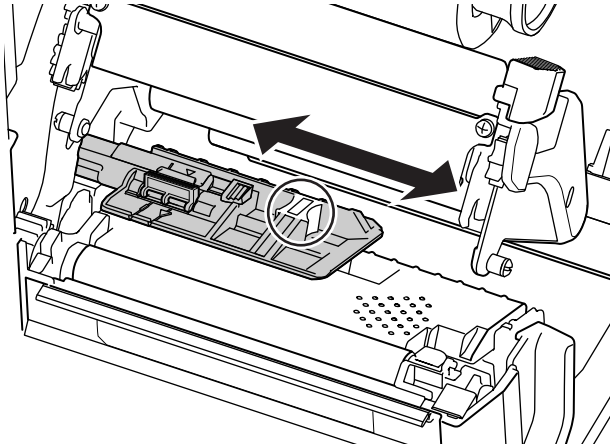
For CL4NX printer
- I-mark sensor position: 6.3 mm to 59.6 mm (0.2” to 2.3”)
- Gap sensor position: 13.3 mm to 66.6 mm (0.5” to 2.6”)

For CL6NX printer
- I-mark sensor position: 8.0 mm to 73.0 mm (0.3” to 2.9”)
- Gap sensor position: 25.0 mm to 90.0 mm (1.0” to 3.5”)

The adjustment procedure is as follows:

1 Open the **top cover** of the printer.

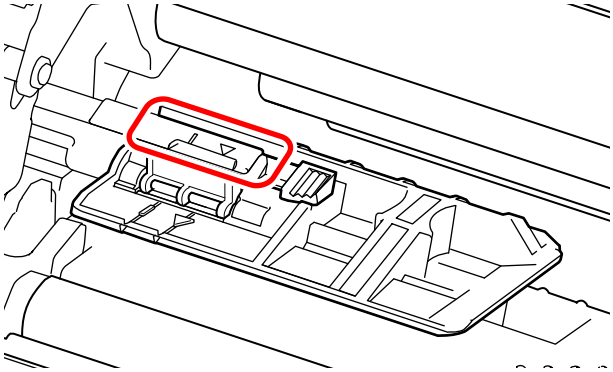
⚠ CAUTION
Open the top cover fully to prevent accidental drop of the cover.



2 Push the **head lock lever** towards the rear to unlock the **print head**.

3 Adjust the **media sensor guide** to the position where it can sense the I-mark or Gap of the media.

The ▯ mark shows the I-mark sensor position and the ▽ mark shows the Gap sensor position.



4.15 Adjusting the Timing Belt Tension of the Optional Liner Rewinder

CL4NX Printer

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

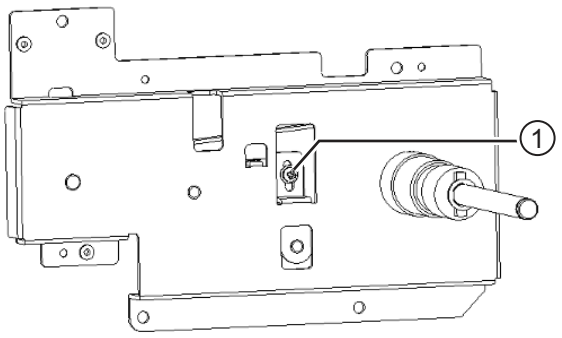
2 Remove the **gearbox** of the **liner rewinder** from the printer.

Refer to **Section 5.18 Replacing the Timing Belt for Liner Rewinder (Optional)** for details.

3 Loosen the **screw** ① of the **tension bracket** ②.

Note

Do not remove the screw.



Outer side of gear box

4 Turn over to the inner side of the **gearbox** and then check the condition of the **timing belt** ③.

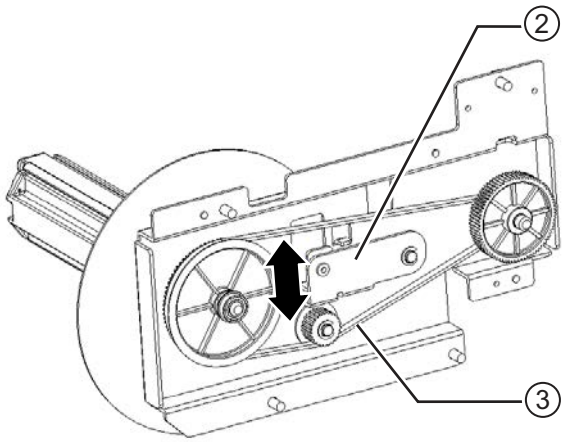
Make sure that there is tension on the **timing belt**.

5 Tighten the **screw** ① of the **tension bracket**.

6 If the tension of the **timing belt** is not enough, replace the **timing belt**.

Refer to **Section 5.18 Replacing the Timing Belt for Liner Rewinder (Optional)** for details.

7 Perform the assembly with the reverse procedure.



Inner side of gear box

CL6NX Printer

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

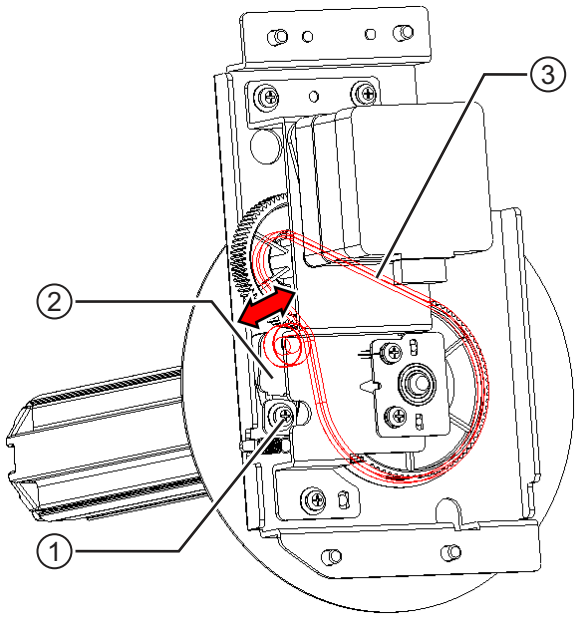
2 Remove the **gearbox** of the **liner rewinder** from the printer.

Refer to **Section 5.18 Replacing the Timing Belt for Liner Rewinder (Optional)** for details.

3 Loosen the **screw** ① of the **tension bracket** ②.

Note

Do not remove the screw.



4 Check the condition of the **timing belt** ③.

Make sure that there is tension on the **timing belt**.

5 Tighten the **screw** ① of the **tension bracket**.

6 If the tension of the **timing belt** is not enough, replace the **timing belt**.

Refer to **Section 5.18 Replacing the Timing Belt for Liner Rewinder (Optional)** for details.

7 Perform the assembly with the reverse procedure.

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5 Replacement

This chapter provides in-depth procedures on all primary component and assembly replacement, in addition to most secondary components. Be sure to observe all precautions and warning notes.

The replacement procedures described in this section are as follows.

⚠ CAUTION

POWER OFF THE PRINTER AND REMOVE THE POWER CORD BEFORE YOU START ASSEMBLY OR DISASSEMBLY.

5.1 Removing the Housing Cover

Before you remove the covers of the printer, power off the printer. Disconnect the power cord and all cables attached to the printer.

5.1.1 Remove the Left Housing Cover

Required tool:

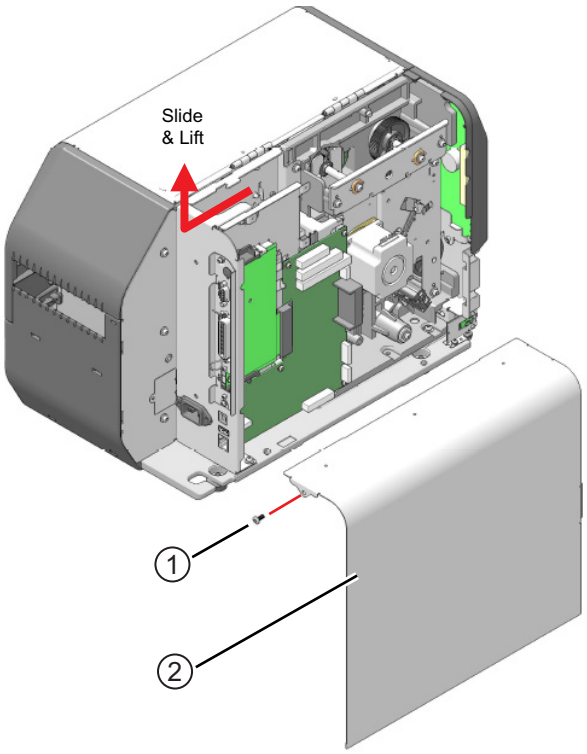
- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Loosen and remove the **screw** ①.

3 Slide and lift in the arrow direction to remove the **left housing cover** ②.

4 Perform the assembly, attach the **left housing cover** with the reverse procedure.



Note

When removing the left housing cover, make sure that the cover does not touch the PCB, causing the components of the PCB to be deformed.

5.1.2 Remove the Front Covers

Required tool:

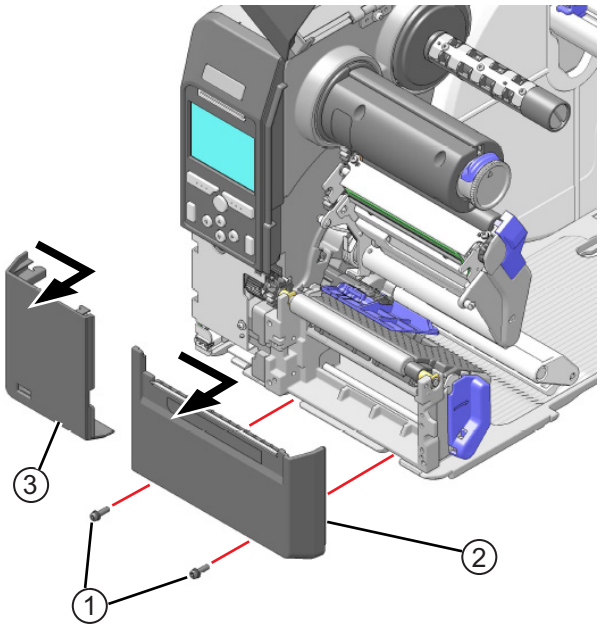
- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove two **screws** ①.

3 Slide in the arrow directions to remove the **front covers** ② and ③.

4 Perform the assembly, attach the **front covers** with the reverse procedure.



5.2 Replacing the Print Head

If the print head becomes damaged or worn, it can be easily removed and replaced without having to make critical adjustments.
Wear protective gloves to avoid contaminating the sensitive print head surface. Before replacing the print head, check the head counter values. Refer to **Information** > **Counters** > **Head** in the chapter 4 of the CL4NX/CL6NX operator manual.

⚠ WARNING

- Do not touch the power button, connect or disconnect the power cord while your hands are wet. Doing so could cause an electric shock.
- Disconnect the power cord from the AC outlet before you replace the print head.

5.2.1 Replacing the Print Head (without the Optional UHF RFID Antenna Installed)

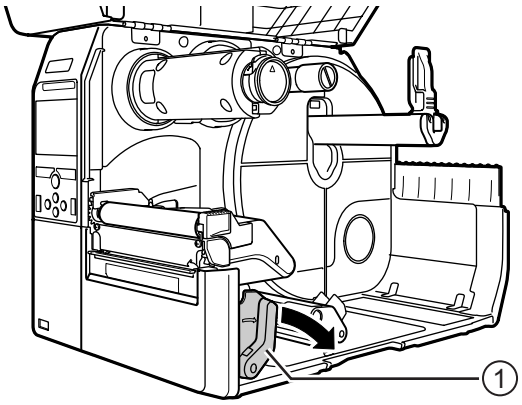
1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Open the **top cover**.

⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.

3 Push the **head lock lever** ① towards the rear to unlock the print head.

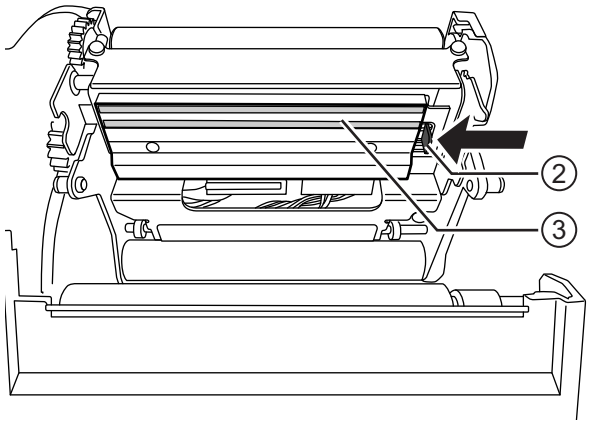


⚠ CAUTION

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

4 Remove the media and ribbon if they are already loaded.

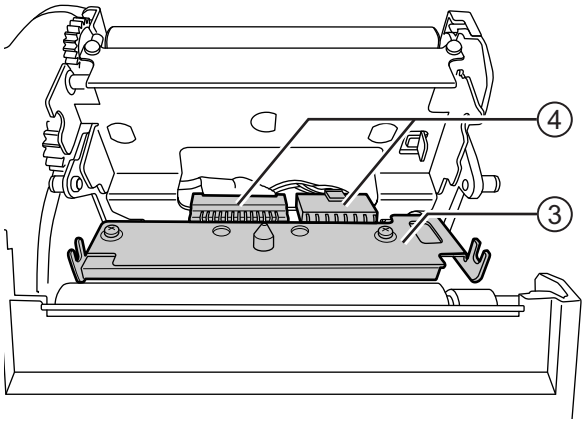
5 Press the **lever** ② to remove the **print head** ③.



6 Disconnect all the **connectors** ④ from the defective **print head** ③.

In total, there are two connectors for CL4NX and three connectors for CL6NX.

7 Connect all the **connectors** ④ to the new **print head**.



⚠ CAUTION

Handle the print head with care.
Do not contaminate or scratch the sensitive print head surface.

8 Install the new **print head**.

Install the print head so that it is locked with a click sound.

9 Load the media and ribbon back if you remove them in step 4.

After the replacement

- Clear the head counter value.
  Refer to **Section 4.2 Counter Clear Mode**
- Check the print darkness.
  Refer to **Section 4.5 Adjusting the Print Darkness**

5.2.2 Replacing the Print Head (with the Optional UHF RFID Antenna Installed - CL4NX Only)

When the printer is installed with an optional UHF RFID kit, the short antenna is installed to the print head assembly. When replacing the print head, you need to remove the short antenna first and then install the antenna back to the new print head assembly again.

Required tool:

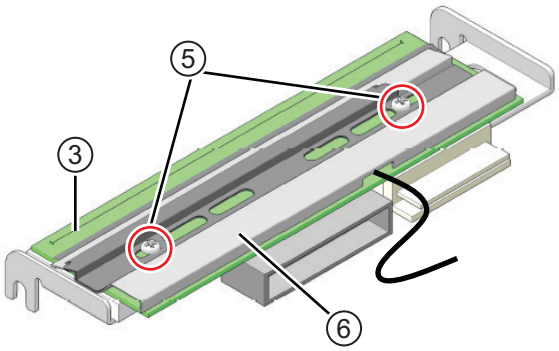
- Phillips screwdriver (JIS #2 or equivalent)

1 Refer to steps 1 through 6 of **Section 5.2.1 Replacing the Print Head (without the Optional UHF RFID Antenna Installed)** to remove the print head assembly from the printer.

⚠ CAUTION

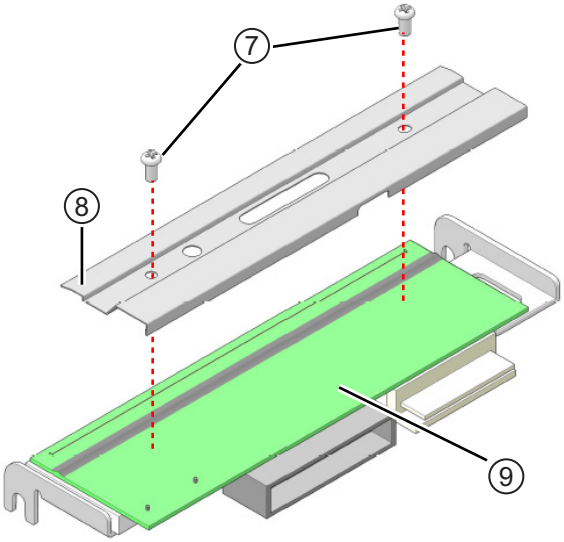
The UHF RFID antenna is installed on the print head. Be careful not to overly pull the antenna cable when replacing the print head.

2 Remove two **screws (print head)** ⑤ and the **RFID head cover** ⑥ from the defective **print head** ③.



3 Remove two **screws (print head)** ⑦ and the **head cover** ⑧ from the new **print head** ⑨.

The serial label of the new **print head** is pasted on the **head cover** ⑧. Keep the **head cover** ⑧ for future reference.

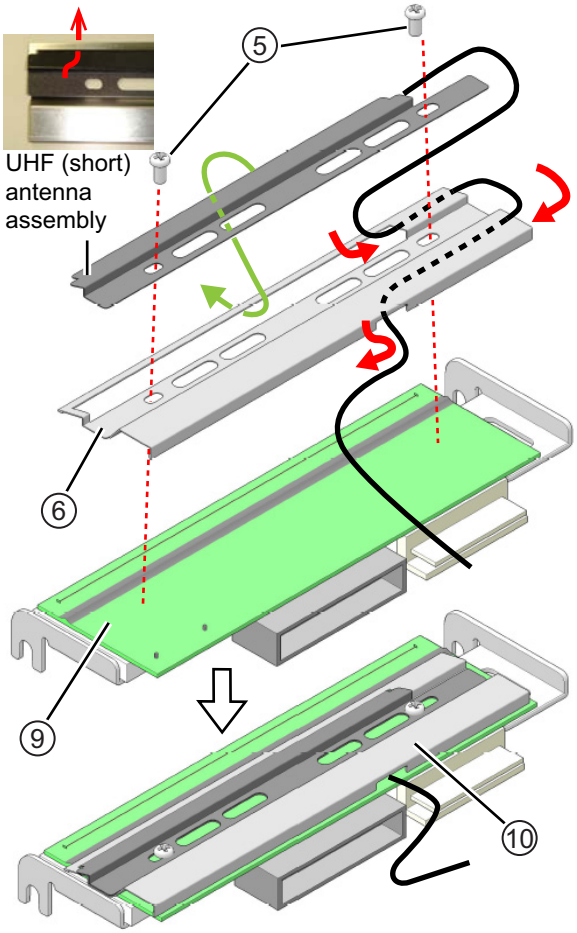


⚠ CAUTION

Handle the print head with care.
Do not contaminate or scratch the sensitive print head surface.

4 Make sure that the **UHF (short) antenna assembly** is attached onto the **RFID head cover** ⑥ as shown in the picture.

If not, insert front part of UHF (short) antenna assembly through the rectangle opening of the RFID head cover.
Route the **antenna wire** accordingly.

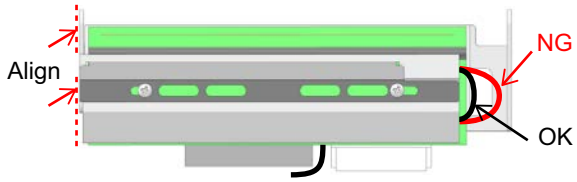


5 Attach the **RFID head cover** ⑥ to the new **print head** ⑨ using two **screws (print head)** ⑤.

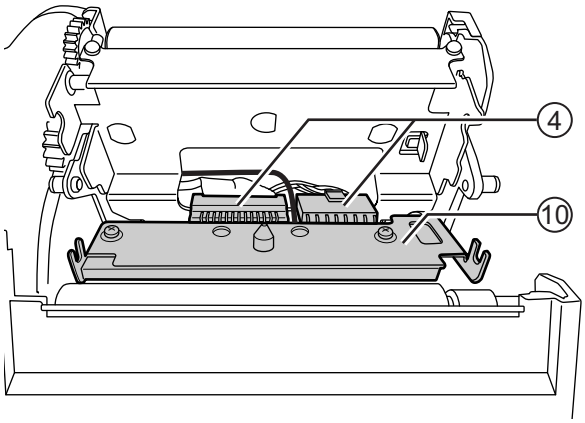
Align the edge of the **RFID head cover** ⑥ carefully to the side of the **print head** ⑨ as shown. Then fix the position using the screws.
The print head assembly is known as **RFID print head assembly** ⑩ in the later steps.

Note

Make sure that the loop of the antenna wire is as short as possible.



6 Connect the **print head cables** to two **connectors** ④ of the **RFID print head assembly** ⑩.



7 Install the **RFID print head assembly** ⑩.

Install the print head so that it is locked with a click sound.

8 Load the media and ribbon back if you remove them.

After the replacement

- Clear the head counter value.
  Refer to **Section 4.2 Counter Clear Mode**
- Check the print darkness.
  Refer to **Section 4.5 Adjusting the Print Darkness**

5.3 Replacing the Platen Roller

The printer's platen roller is considered a high-wear component due to constant treading of the print media and ribbon stock against its contact surface. This constant contact will eventually wear grooves into the rubber material and negatively affect print output.

⚠ WARNING

- Do not touch the power button, connect or disconnect the power cord while your hands are wet. Doing so could cause an electric shock.
- Disconnect the power cord from the AC outlet before you replace the platen roller.

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Open the **top cover**.

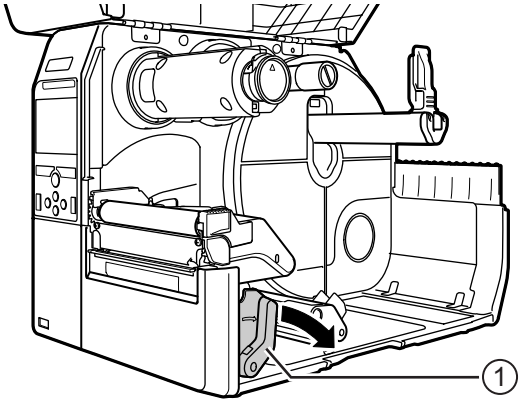
⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.

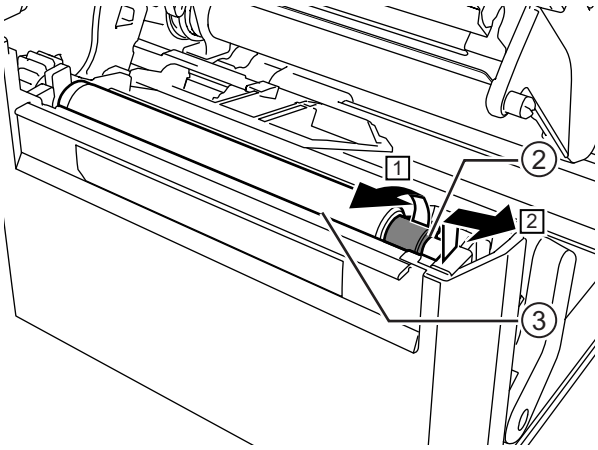
3 Push the **head lock lever** ① towards the rear to unlock the **print head**.

⚠ CAUTION

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

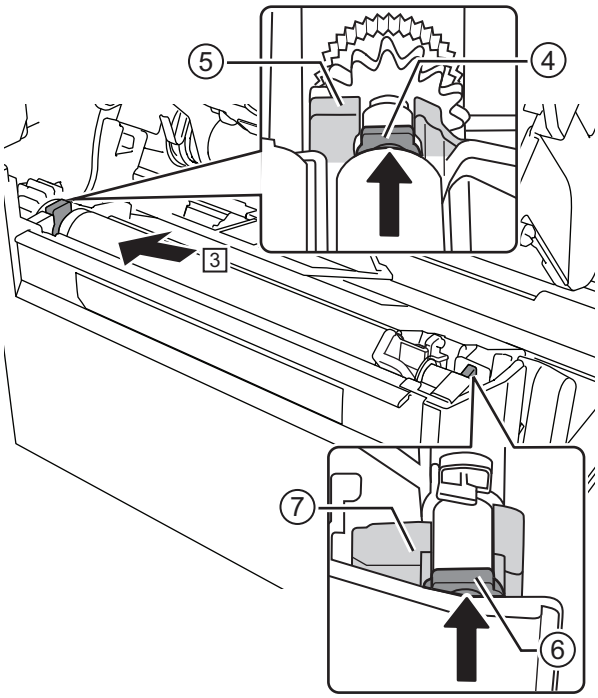


4 Lift the **lever** ② to unlock the **platen roller** ③, then pull out the **platen roller** ③.



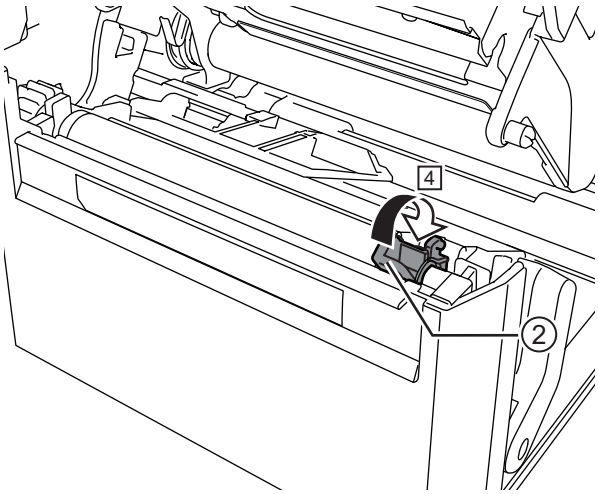
5 Install the new platen roller. Make sure that the first **tab** ④ on the driving end of the platen roller is pointing upward. Then push the platen roller in the direction 3 so that the first **tab** ④ is fixed in the **groove** ⑤ at the driving side.

6 Next, make sure that the second **tab** ⑥ on the driven end of the platen roller is pointing upward. And then push the platen roller again in the direction 3 so that the second **tab** ⑥ is fixed in the **groove** ⑦ at the driven side.



7 Turn the **lever** ② back to lock the platen roller.

8 Perform the assembly with the reverse procedure.

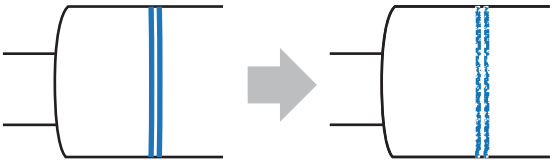


After the replacement

- Check the print darkness.
  Refer to **Section 4.5 Adjusting the Print Darkness**.

5.3.1 Guideline to Replace the Linerless Platen Roller (CL4NX Only)

The linerless platen roller has a blue striped marking on the left side. When the blue striped marking started to fade off, it indicates that you should replace the linerless platen roller.
This is only a general guideline, the condition of the platen roller wears out varies depending on the used media. In any cases, replace the worn platen roller when it affected the printing quality of the printer.



5.4 Replacing the Media Sensor

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

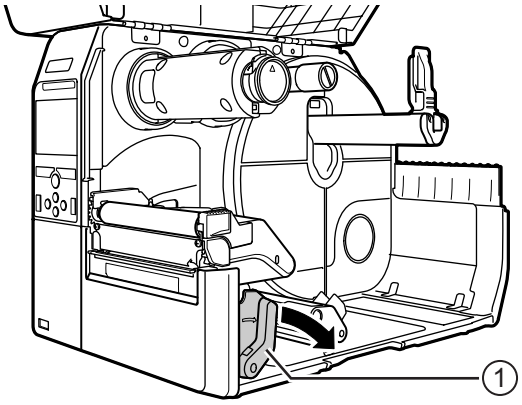
Refer to **Section 5.1.1 Remove the Left Housing Cover**.

3 Open the **top cover**.

⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.

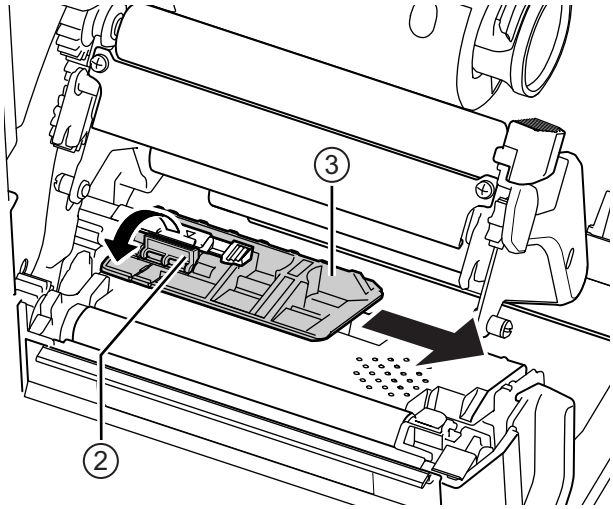
4 Push the **head lock lever** ① towards the rear to unlock the print head.



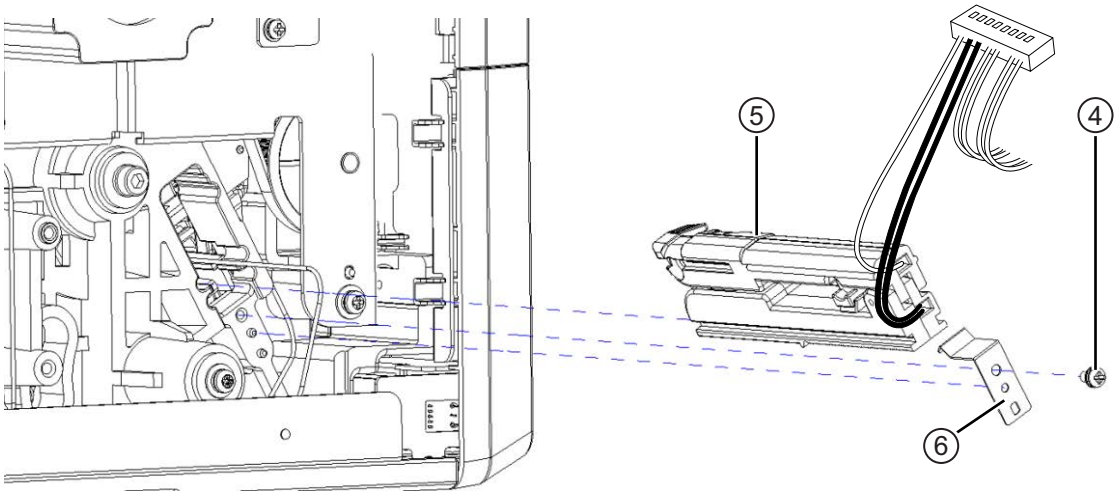
⚠ CAUTION

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

5 Tilt the **sensor guide lock** ② down and pull out the **media sensor guide** ③.



6 Remove the **screw** ④ attaching the **sensor holder assembly** ⑤ and **sensor case tension** ⑥. Replace the defective **sensor holder assembly** with a new **sensor holder assembly** ⑤.



7 Insert the new **sensor holder assembly** ⑤ by aligning the rail to fit in the protrusion of the printer center frame. Push the **sensor holder assembly** ⑤ all the way in. Attach the **sensor case tension** ⑥ using the **screw** ④.

8 Perform the assembly with the reverse procedure.

After the replacement

- Adjust the media sensor.
  Refer to **Section 4.3 Checking and Adjusting the Media Sensor**.

5.5 Replacing the Main (CONT) PCB

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

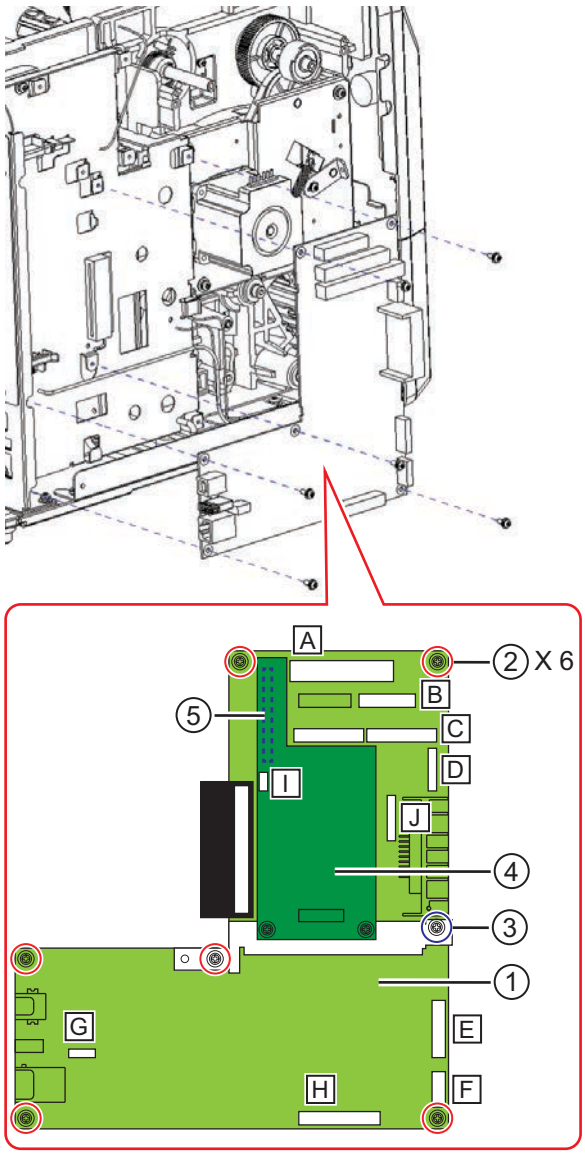
1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.
Refer to **Section 5.9 Replacing the Interface Board** to remove the interface board if applicable.

3 Disconnect all the cables from the **connectors** (as listed below) on the **main (CONT) PCB** ①.

A: **HEAD**, connects to the print head assembly.
B: **EXT** (optional), connects to the EXT PCB when installing optional RTC kit, dispenser or RFID kit.
C: **KB** (X2), connect to the operator panel KB PCB.
D: **MOTOR**, connect to the gearbox motor.
E: **SEN**, connects to various sensors.
F: **OPTION**, connects to the relay-PCB when installing optional cutter, dispenser or linerless kit.
G: **USB**, connects to the USB PCB.
H: **POW**, connects to the power supply unit.
I: **CN1** (CL6NX only), connects to the power supply unit.
J: **JITAG&NFC**, connect to the operator panel KB PCB (only when NFC antenna is installed).



4 Remove six **screws** ② attaching the **main (CONT) PCB** ① to the bracket.

For CL4NX, skip step 5 and step 6 and then continue from step 7.
Step 5 and step 6 is only applicable for CL6NX.

5 Remove a **screw** ③ attaching the **FPGA PCB assembly** ④ to the **main (CONT) PCB** ① and bracket.

6 Remove the **FPGA PCB assembly** ④ from the **FPGA connector** ⑤ on the **main (CONT) PCB** ①.

7 Replace the defective **main (CONT) PCB** ① with a new **main (CONT) PCB**.

8 Perform the assembly with the reverse procedure.

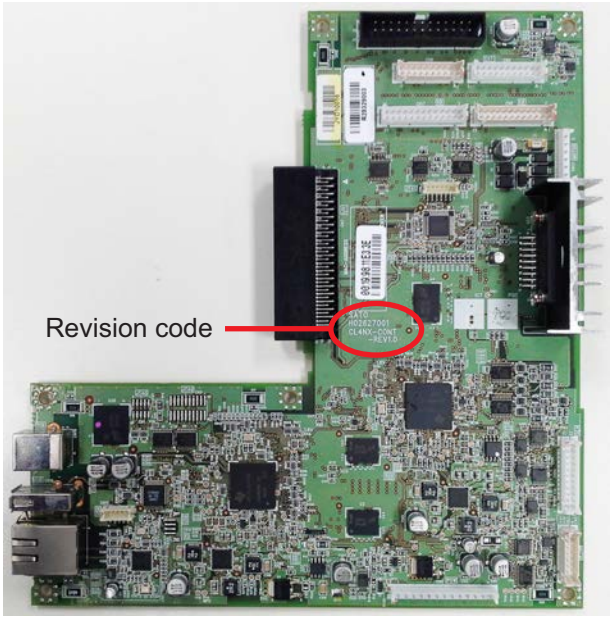
After the replacement

- Check the media sensor.
  Refer to **Section 4.3 Checking and Adjusting the Media Sensor**.
- Adjust the print darkness.
  Refer to **Section 4.5 Adjusting the Print Darkness**.
- Adjust the pitch.
  Refer to **Adjusting the Print Position** in chapter 5 of CL4NX/CL6NX operator manual.
- Adjust the offset.
  Refer to **Adjusting the Media Stop Position** in chapter 5 of CL4NX/CL6NX operator manual.

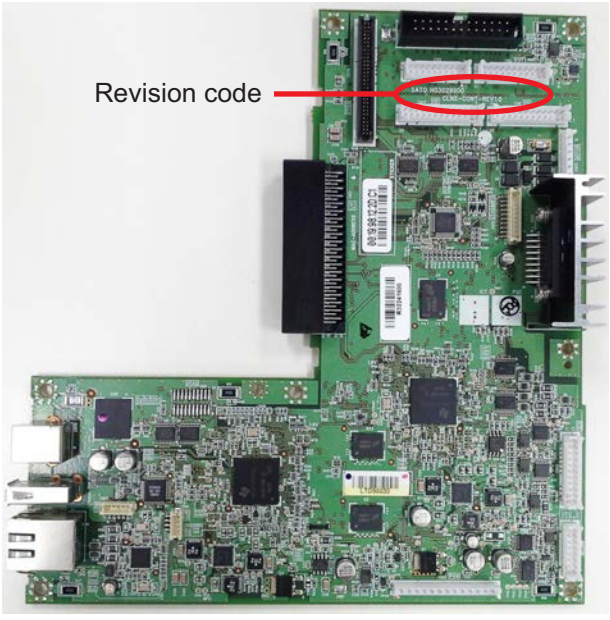
Note

The different versions of the main (CONT) PCB are as shown below.
*The function of NFC and label near end sensor is supported on main PCB from CLNX-CONT-REV1.0 or later.

The main (CONT) PCB with the revision code, CL4NX-CONT-REV1.0, is used in the CL4NX printer.



The main (CONT) PCB with the revision code, CLNX-CONT-REV1.0 or later, is commonly used in both CL4NX printer and CL6NX printer.



5.6 Replacing the KB PCB

*NFC function is supported on KB PCB from CL4NX-KB-REV1.2 or later.

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

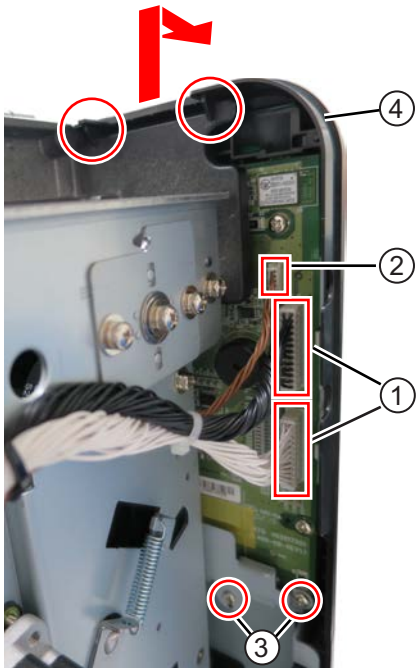
2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.

3 On the back of the **operator panel**, disconnect two **connectors** ①. Disconnect the **connector** ② if the NFC antenna is installed.

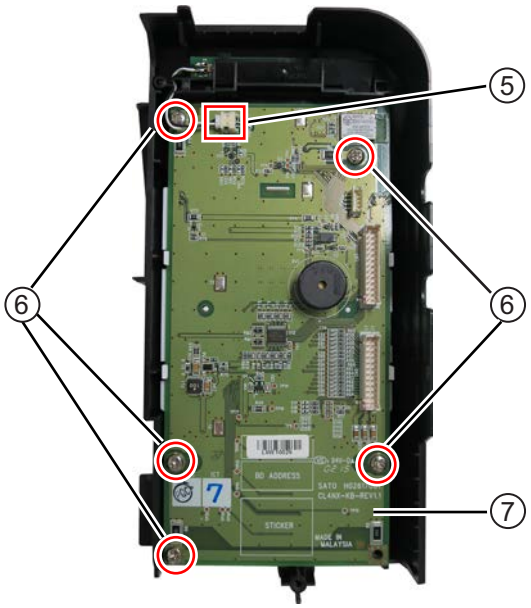
4 Remove two **screws** ③ and then slide upward to remove the **operator panel** ④.

5 Disconnect the **connector** ⑤ if the NFC antenna is installed.



6 Remove five **screws** ⑥ and replace the **KB PCB** ⑦.

7 Perform the assembly with the reverse procedure.



After the replacement

- Adjust the LCD contrast.
  Refer to **Section 4.9 Adjusting the LCD Brightness**.

5.7 Replacing the NFC Antenna

This replacement procedure is only applicable to printer with NFC antenna installed.
*NFC function is supported on KB PCB from CL4NX-KB-REV1.2 or later.

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

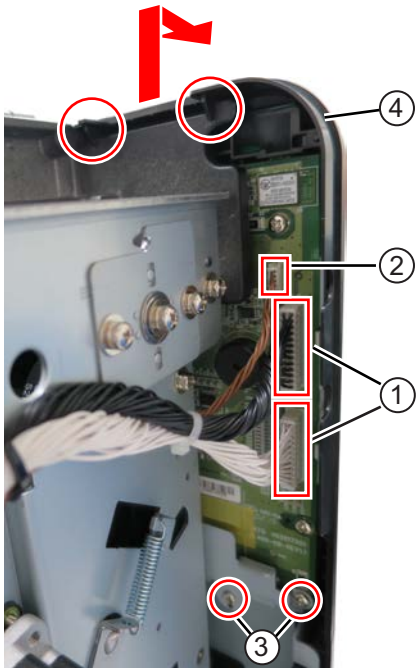
1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.

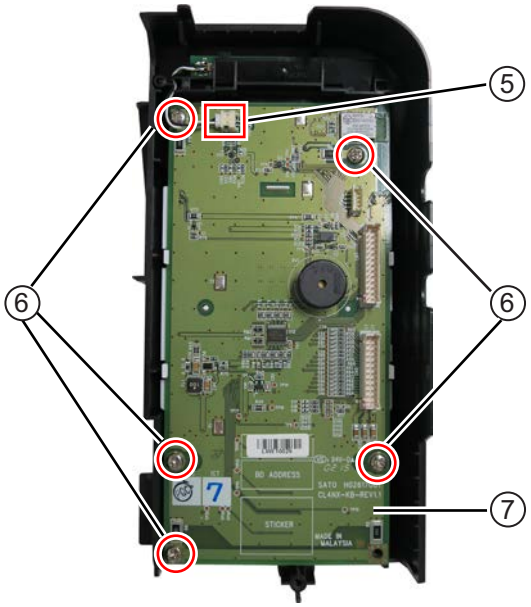
3 On the back of the **operator panel**, disconnect two **connectors** ① and the **connector** ②.

4 Remove two **screws** ③ and then slide upward to remove the **operator panel** ④.

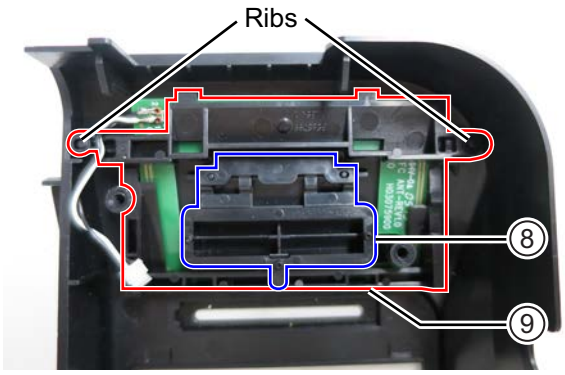


5 Disconnect the **connector** ⑤.

6 Remove five **screws** ⑥ and remove the **KB PCB** ⑦.



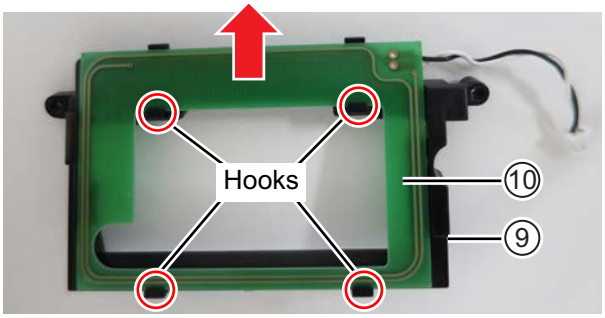
7 Remove the **power button** ⑧ and then remove the **NFC antenna holder** ⑨.



8 Remove the defective **NFC antenna PCB** ⑩ and replace with the new **NFC antenna PCB**.

9 Perform the assembly with the reverse procedure.

When placing the NFC antenna PBC on the holder, ensure the NFC antenna PCB sits on the hooks of the holder.
Place the NFC holder on the ribs of the operator panel.



5.8 Replacing the Power Supply Unit

CL4NX

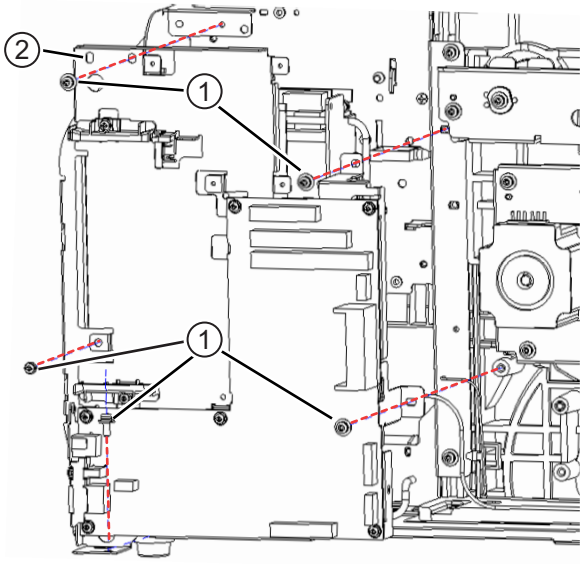
Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.
Refer to **Section 5.9 Replacing the Interface Board** to remove the interface board if applicable.



3 Disconnect all the cables from the **connectors** on the **main (CONT) PCB**.

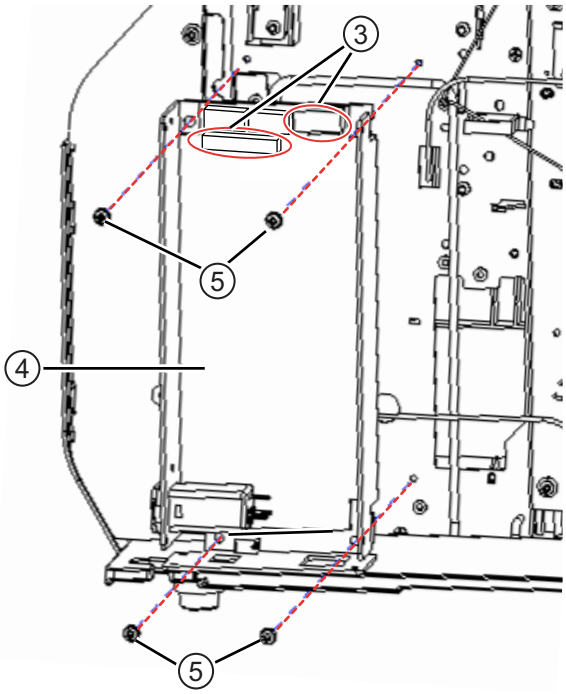
Refer to the step 3 of **Section 5.5 Replacing the Main (CONT) PCB** for details.

4 Remove five **screws** ① and then remove the **main (CONT) PCB assembly** (with bracket) ②.

5 Disconnect the cables from two **connectors** ③ on the **power supply unit** ④.

6 Remove four **screws** ⑤ and then replace the **power supply unit** ④.

7 Perform the assembly with the reverse procedure.



After the replacement

- Power on the printer, check that the printer operates correctly.

CL6NX

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.
Refer to **Section 5.9 Replacing the Interface Board** to remove the interface board if applicable.

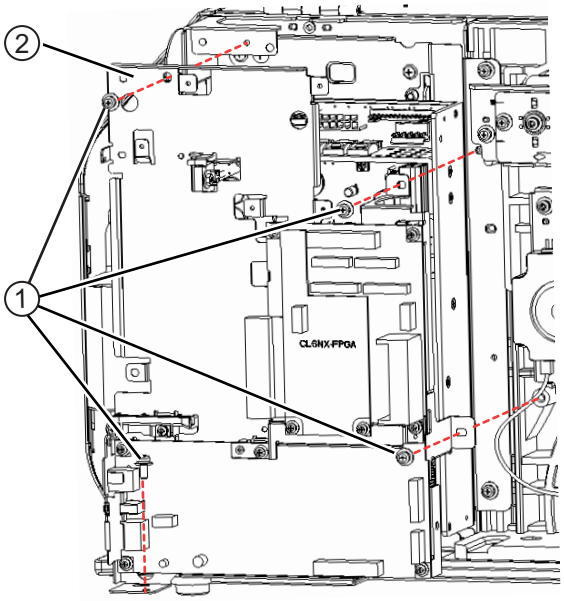
3 Remove the **rewind core unit** if it is installed to the dispenser model.

Refer to **Section 5.17 Replacing the Torque Limiter for Liner Rewinder (Optional)** to remove the rewind core unit.

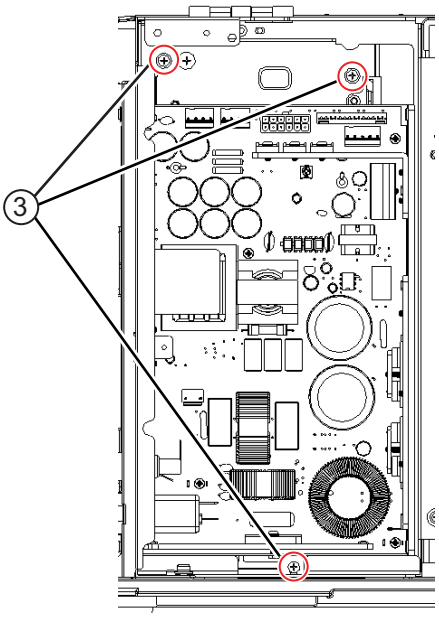
4 Disconnect all the cables from the **connectors** on the **main (CONT) PCB**.

Refer to the step 3 of **Section 5.5 Replacing the Main (CONT) PCB** for details.

5 Remove four **screws** ① and then remove the **main (CONT) PCB assembly** (with bracket) ②.

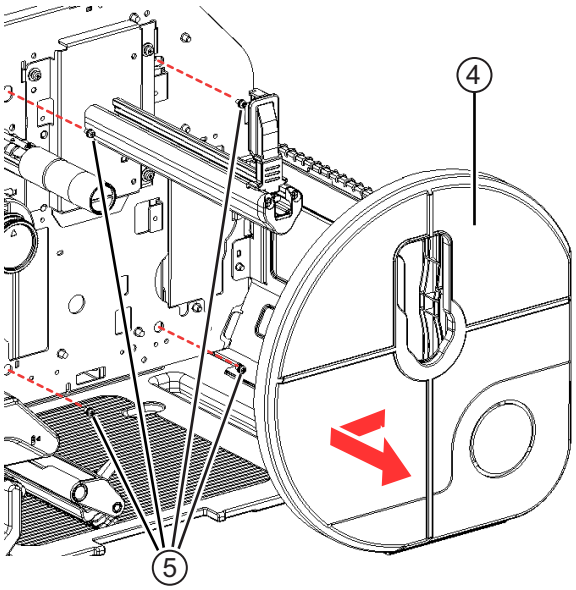


6 Remove three **screws** ③ attaching the **media holder plate** ④.



7 Slide in the arrow direction to remove the **media holder plate** ④.

8 Remove four **screws** ⑤ attaching the **power supply unit** ⑥ to the printer center frame.

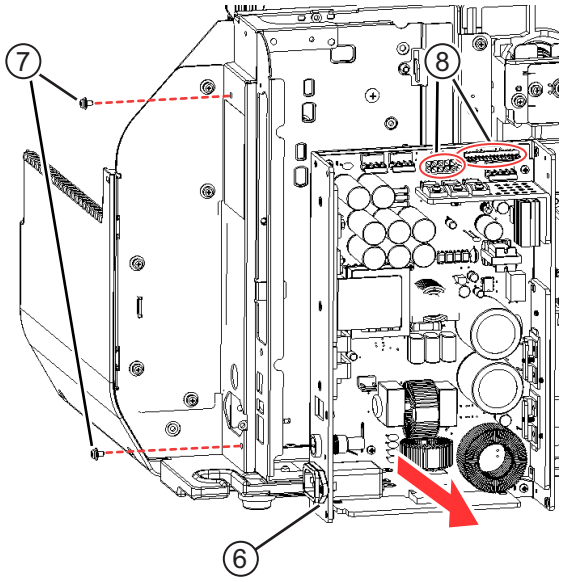


9 Remove two **screws** ⑦ attaching the **power supply unit** ⑥ to the printer rear.

10 Disconnect the cables from two **connectors** ⑧ on the **power supply unit** ⑥.

11 Remove the defective **power supply unit** ⑥ and replace with the new **power supply unit** ⑥.

12 Perform the assembly with the reverse procedure.



After the replacement

- Power on the printer, check that the printer operates correctly.

5.9 Replacing the Interface Board

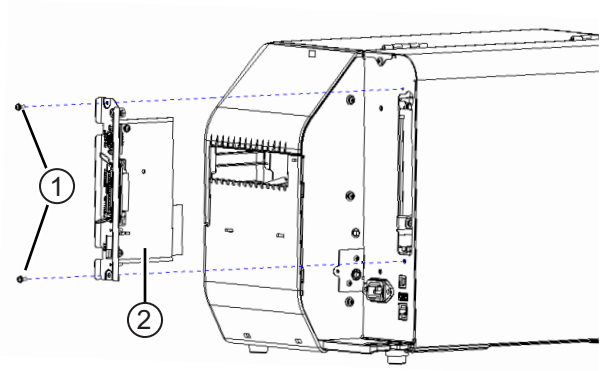
Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

Remove the interface cable if applicable.

2 Remove two **screws** ①, then replace the **interface board** ②.



Note

Make sure that the interface board is aligned and inserted into the slot. So as not to scrape the board against the top metal catches inflicting damage.

3 Tighten two **screws** ①.

5.10 Replacing the FPGA PCB (CL6NX Only)

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.

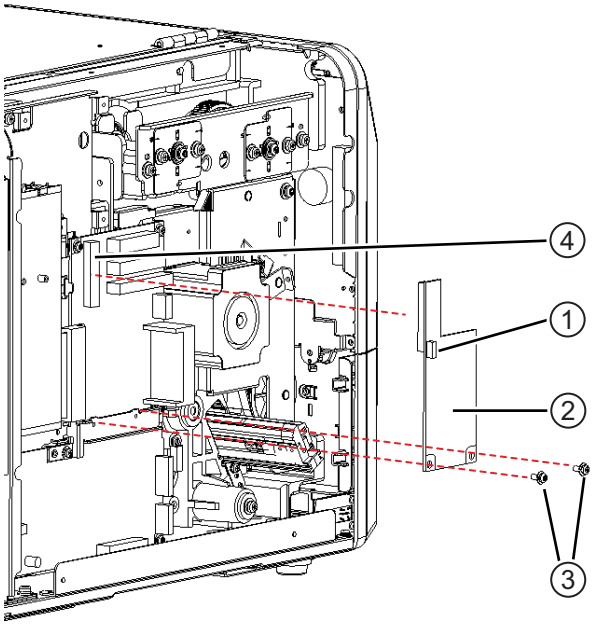
3 Disconnect the **CN1 connector** ① on the **FPGA PCB** ②.

4 Remove two **screws** ③ attaching the **FPGA PCB** ② to the bracket.

5 Remove the **FPGA PCB** ② from the **FPGA connector** ④ on the **main (CONT) PCB**.

6 Replace the defective **FPGA PCB** ② with a new **FPGA PCB** ②.

7 Perform the assembly with the reverse procedure.



5.11 Replacing the Timing Belt

Required tool:

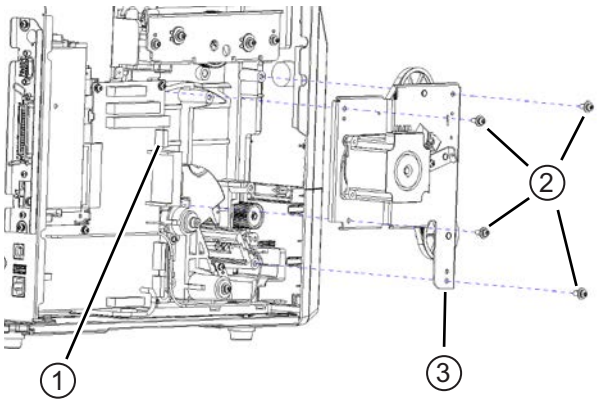
- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

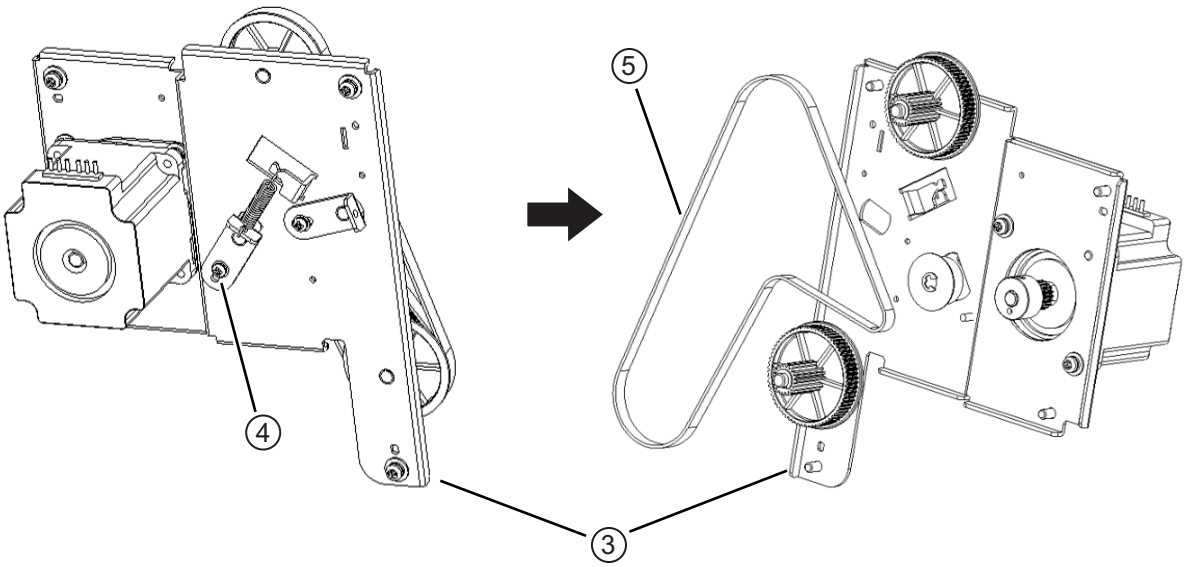
2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.

3 Disconnect the **motor cable** from the **connector** ①, remove four **screws** ② and then remove the **gearbox** ③.



4 On the **gearbox** ③, loosen the **screw** ④ and replace the **timing belt** ⑤.



After the replacement

- Adjust the tension of the timing belt.
  Refer to **Section 4.12 Adjusting the Timing Belt Tension**.

5.12 Replacing the Head Open Sensor

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

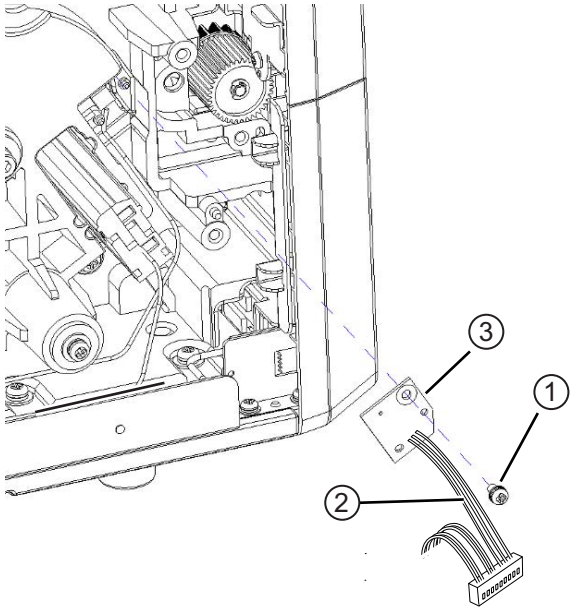
Refer to **Section 5.1.1 Remove the Left Housing Cover**.

3 Remove the **gearbox.**

Refer to **Section 5.11 Replacing the Timing Belt**.

4 Remove the **screw** ①, remove the **cable** ② and replace the **sensor PCB** ③.

5 Perform the assembly with the reverse procedure.



After the replacement

- Check the head open error message.
  Refer to **Section 4.7 Checking the Head Open Error**.

5.13 Replacing the Ribbon Sensor

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

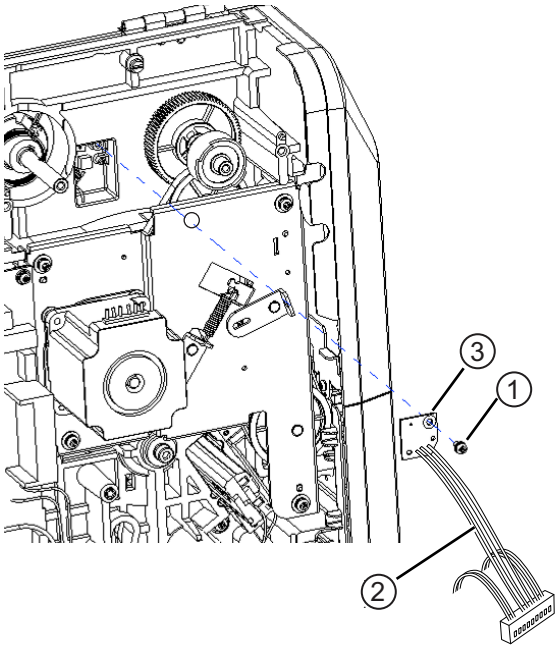
Refer to **Section 5.1.1 Remove the Left Housing Cover**.

3 Remove the **ribbon frame.**

Refer to **Section 5.15 Replacing the Torque Limiter for Ribbon Rewind Spindle**.

4 Remove the **screw** ①, remove the **cable** ② and replace the **ribbon sensor PCB** ③.

5 Perform the assembly with the reverse procedure.



After the replacement

- Check the ribbon end error message.
  Refer to **Section 4.6 Checking the Ribbon End Function**.

5.14 Replacing the Label Near End Sensor

This replacement procedure is only applicable to printer with label near end sensor installed.
*The function of label near end sensor is supported on main PCB from CLNX-CONT-REV1.0 or later.

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.

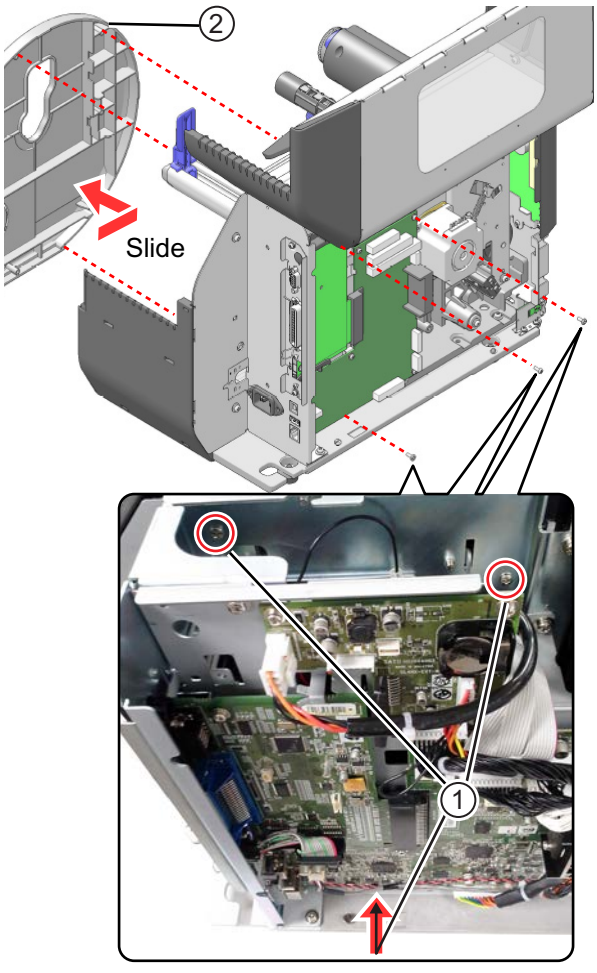
3 Remove the **rewind core unit** if the optional dispenser unit is installed.

Refer to **Section 5.17 Replacing the Torque Limiter for Liner Rewinder (Optional)**.

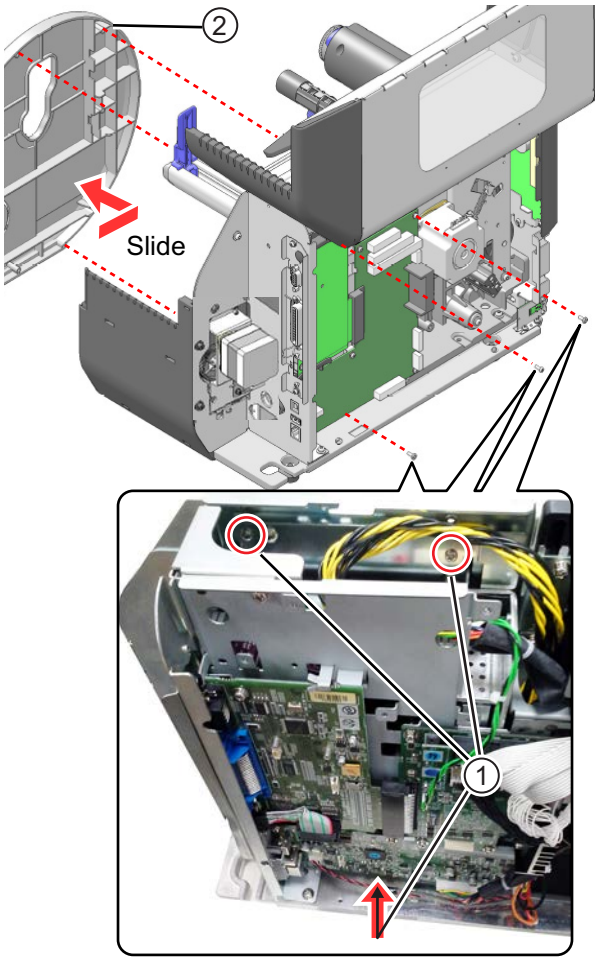
4 Remove three **screws** ① attaching the **media holder plate** ②.

5 Slide in the arrow direction to remove the **media holder plate** ②.

CL4NX

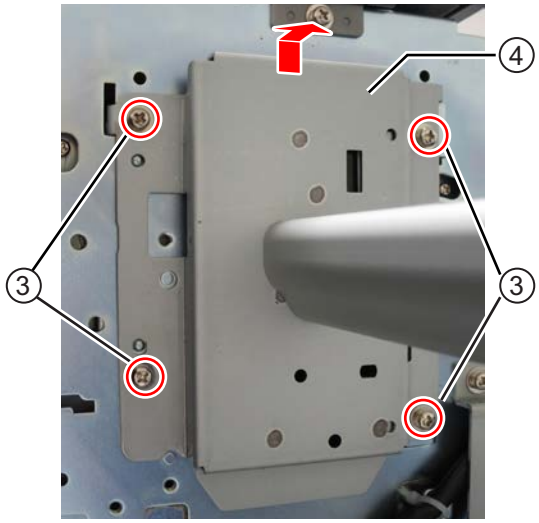


CL6NX



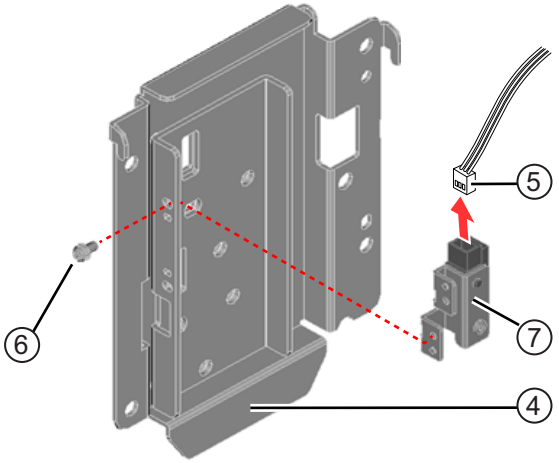
6 Remove four **screws** ③.

7 Lift up the **media holder bracket** ④ to remove from the center frame.



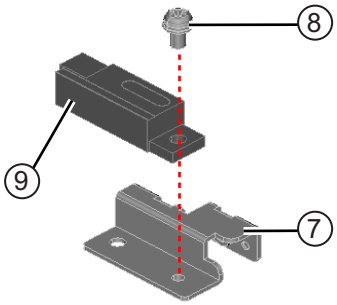
8 Disconnect the **sensor cable** ⑤ from the **connector**.

9 Remove the **screw** ⑥ and remove the **label sensor bracket** ⑦.



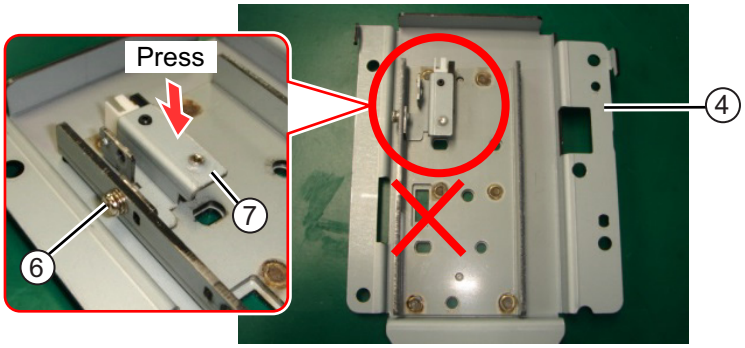
10 Remove the **screw** ⑧ and replace the **label sensor** ⑨.

11 Perform the assembly with the reverse procedure.



Notes on installing the label sensor bracket

Install the label sensor bracket on the circled position as shown.



After the replacement

- Check the label near end warning icon.
  Refer to **Section 4.8 Checking the Label Near End Function**.

5.15 Replacing the Torque Limiter for Ribbon Rewind Spindle

Required tool:

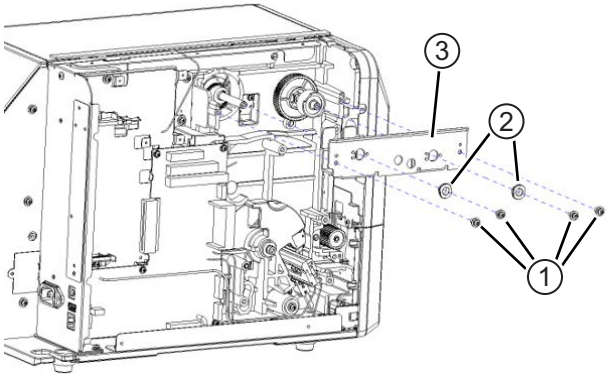
- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.

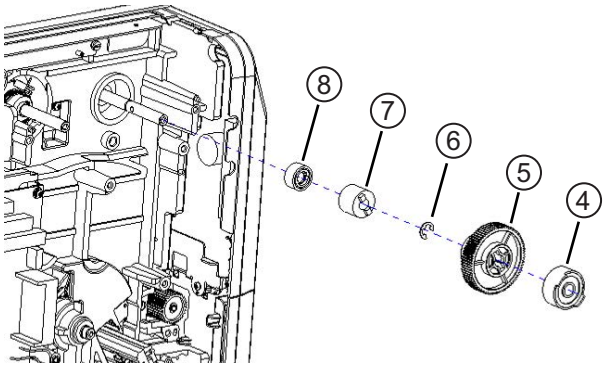
3 Remove four **screws** ①, remove two **bearings** ② and then remove the **ribbon frame** ③.



4 Remove **one way torque limiter** ④, **gear** ⑤, **E-ring** ⑥, **torque limiter** ⑦ and one way **clutch** ⑧.

5 Replace the **torque limiter** ⑦.

6 Perform the assembly with the reverse procedure.



After the replacement

- Adjust the tension of the timing belt.
  Refer to **Section 4.13 Adjusting the Ribbon Tension**.

5.16 Replacing the Torque Limiter for Ribbon Supply Spindle

Required tool:

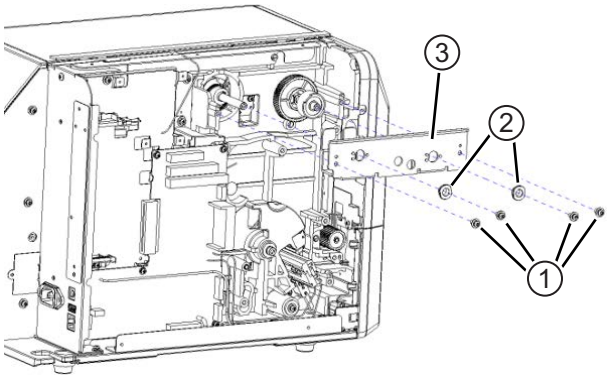
- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

Refer to **Section 5.1.1 Remove the Left Housing Cover**.

3 Remove four **screws** ①, remove two **bearings** ② and then remove the **ribbon frame** ③.

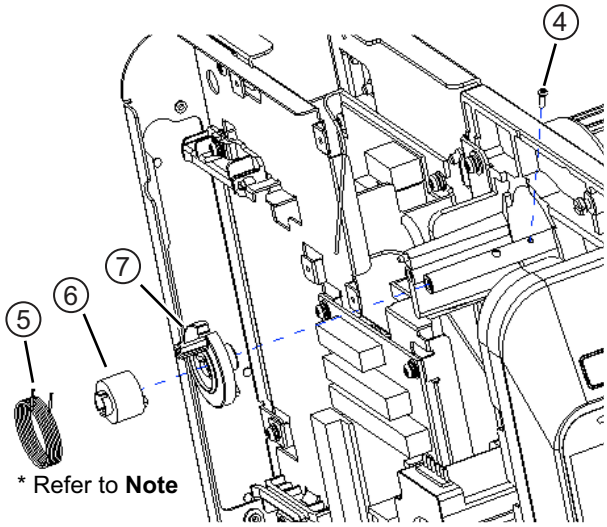


4 Remove the **screw** ④, **BF spring** ⑤, **torque limiter** ⑥ and **BF stopper** ⑦.

5 Replace the **torque limiter** ⑥.

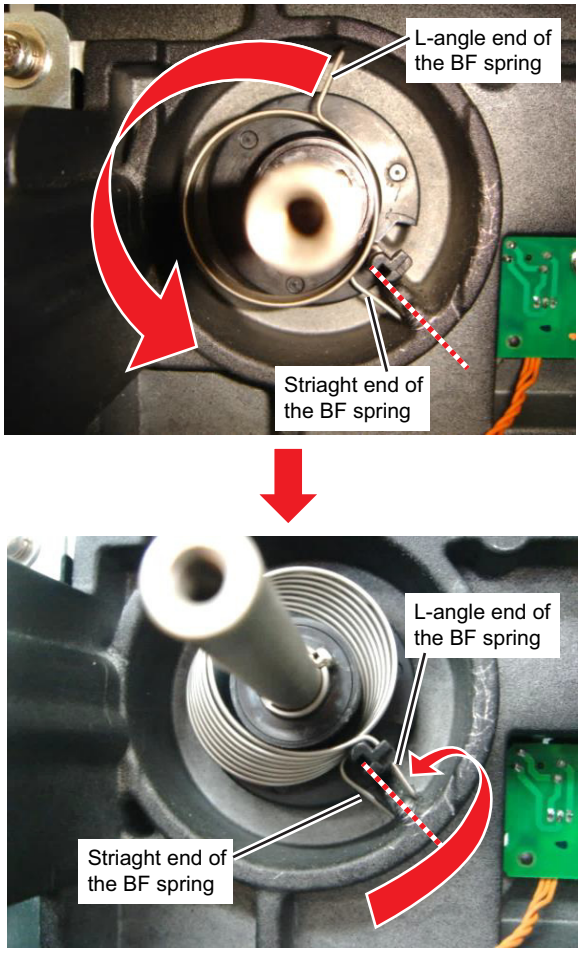
6 Perform the assembly with the reverse procedure.

Refer to the **Notes on installing the BF spring**.



Notes on installing the BF spring

1. Place the straight end of the BF spring onto the left side of the RED dotted line as shown.
2. Turn the other end of the BF spring (L-angle) counterclockwise, approximately 3 quarters rotation, to the RED dotted line. Cross over the straight end position and then hook to the projection of the frame and BF stopper.



5.17 Replacing the Torque Limiter for Liner Rewinder (Optional)

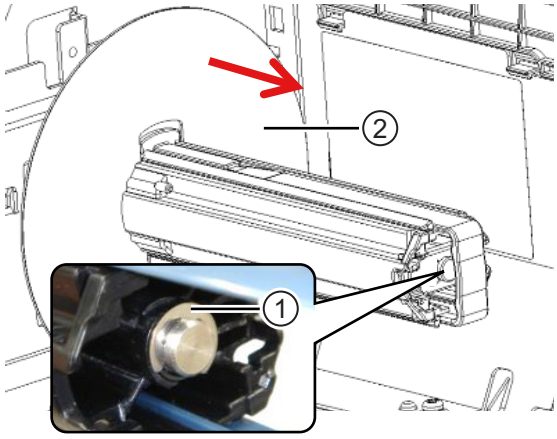
1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Open the **top cover**.

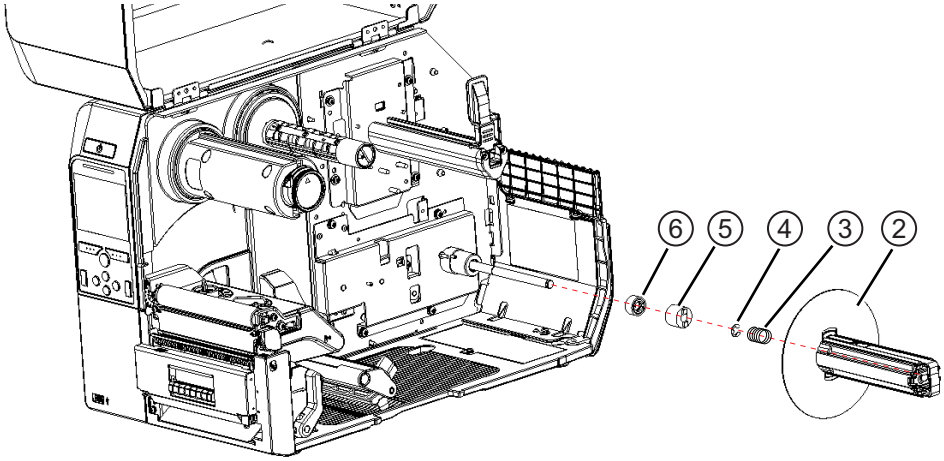
⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.

3 Remove the **E-ring** ① and then remove the **rewind core unit** ②.



4 Remove the **spring** ③, **E-ring** ④, **torque limiter** ⑤ and **one way clutch** ⑥.



5 Replace the **torque limiter** ⑤.

6 Perform the assembly with the reverse procedure.

Rotate the torque limiter while applying forward pressure to ensure proper nesting onto the one way clutch.

5.18 Replacing the Timing Belt for Liner Rewinder (Optional)

CL4NX

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

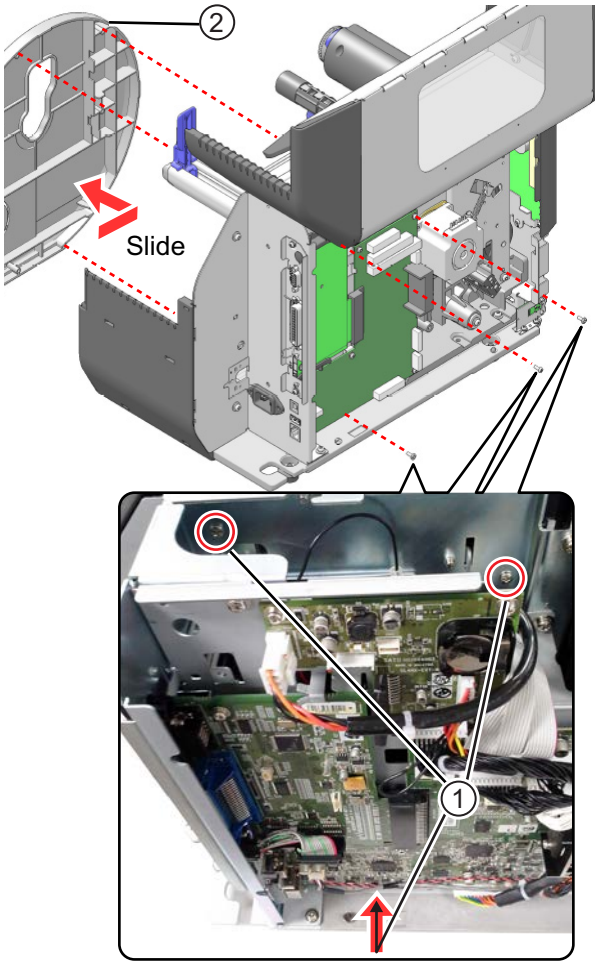
Refer to **Section 5.1.1 Remove the Left Housing Cover**.

3 Remove the **rewind core unit.**

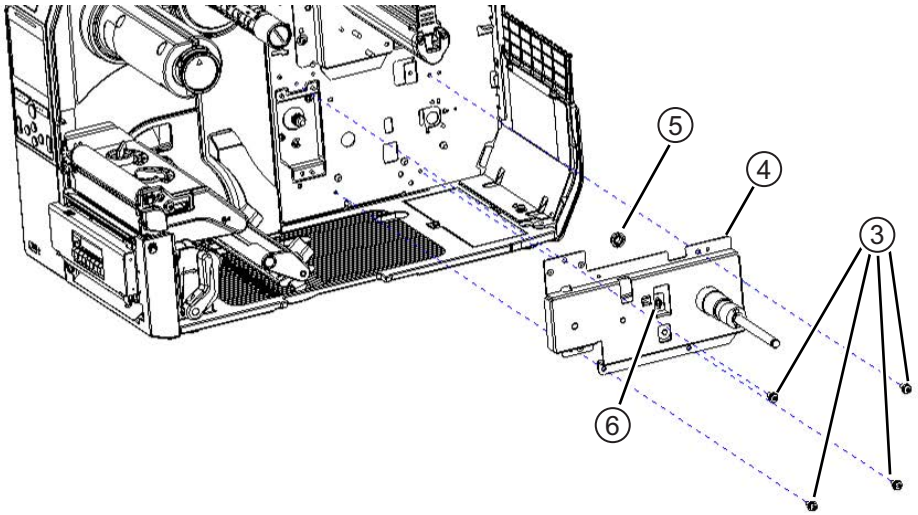
Refer to **Section 5.17 Replacing the Torque Limiter for Liner Rewinder (Optional)**.

4 Remove three **screws** ① attaching the **media holder plate** ②.

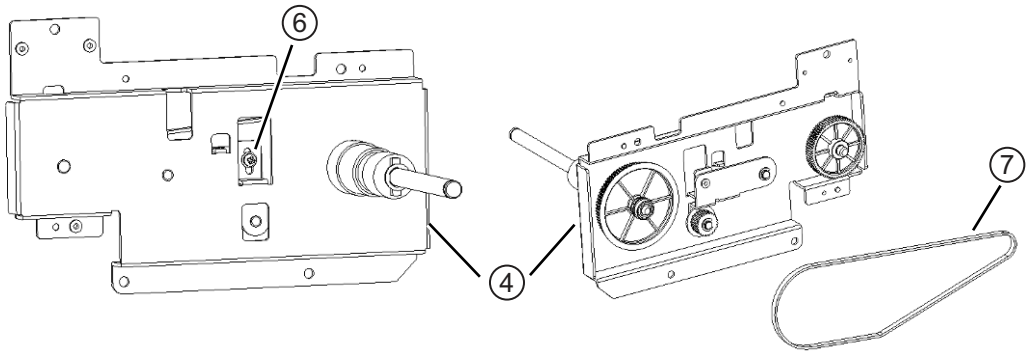
5 Slide in the arrow direction to remove the **media holder plate** ②.



6 Remove four **screws** ③, **gearbox** ④ of the **liner rewinder** and **bearing** ⑤.



7 Loosen the **screw** ⑥ on the **gearbox** ④ and replace the **timing belt** ⑦.



8 Perform the assembly with the reverse procedure.

After the replacement

- Adjust the tension of the timing belt.
  Refer to **Section 4.15 Adjusting the Timing Belt Tension of the Optional Liner Rewinder**.
- Check that the liner rewind operation is correct.

CL6NX

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Remove the **left housing cover**.

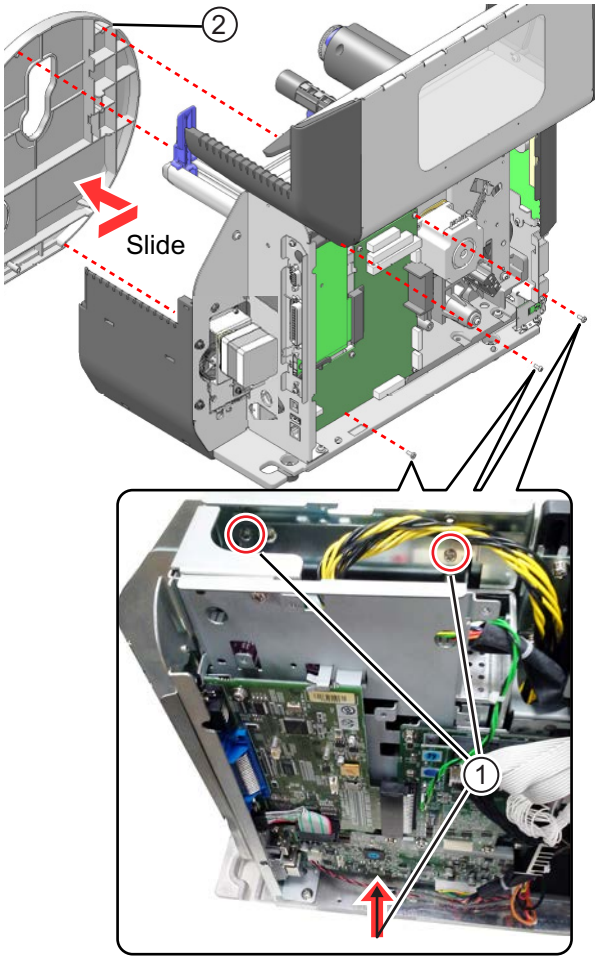
Refer to **Section 5.1.1 Remove the Left Housing Cover**.

3 Remove the **rewind core unit.**

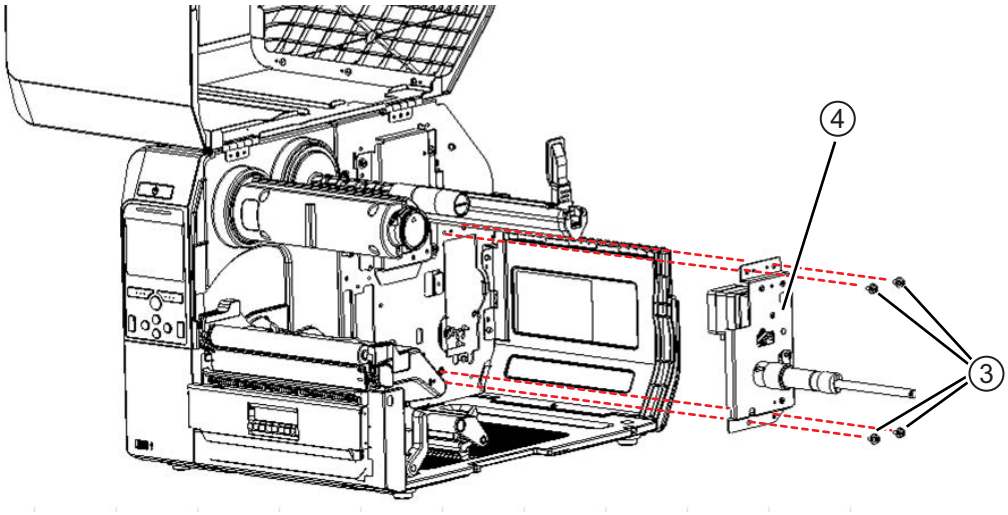
Refer to **Section 5.17 Replacing the Torque Limiter for Liner Rewinder (Optional)**.

4 Remove three **screws** ① attaching the **media holder plate** ②.

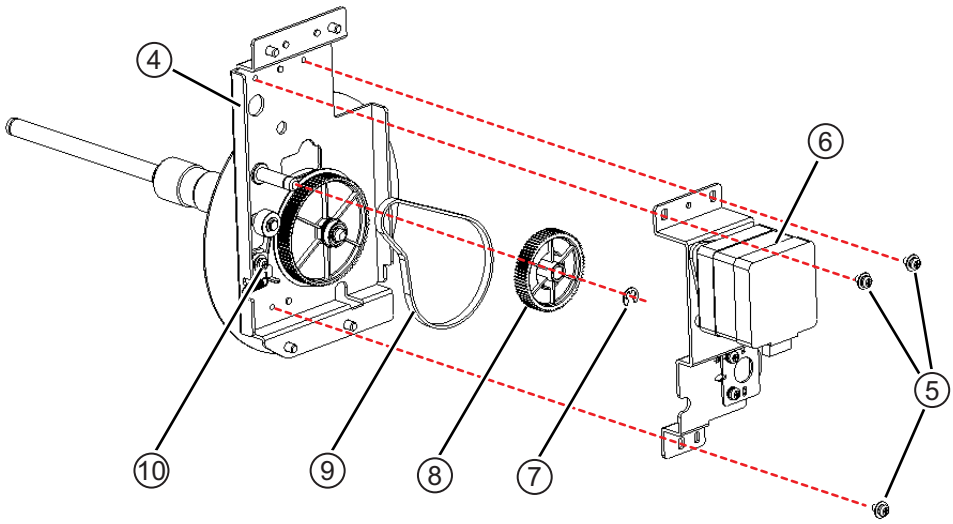
5 Slide in the arrow direction to remove the **media holder plate** ②.



6 Remove four **screws** ③ and remove the **gearbox** ④ of the **liner rewinder**.



7 Remove three **screws** ⑤ and remove the **rewind drive unit** ⑥.



8 Remove the **E-ring** ⑦, **gear pulley** ⑧ and replace the **timing belt** ⑨.

Loosen the **screw** ⑩ in case the tension of the timing belt is tight.

9 Perform the assembly with the reverse procedure.

After the replacement

- Adjust the tension of the timing belt.
  Refer to **Section 4.15 Adjusting the Timing Belt Tension of the Optional Liner Rewinder**.
- Check that the liner rewind operation is correct.

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6 Installation of Options

This chapter describes how to install the following options.

- **6.1 Installation of the Optional RTC (Real Time Clock) Kit**
  With the RTC kit, you can set the calendar for time and date data labeling.
- **6.2 Installation of the Optional Wireless LAN Kit**
  With the wireless LAN kit, you can easily communicate with Wi-Fi compliant networks without wired connections.
- **6.3 Installation of the Optional Cutter**
  With the cutter unit, you can cut each media while/after printing the specified number of media continuously.
- **6.4 Installation of the Optional Dispenser**
  With the dispenser unit, you can peel the liner from the printed label.
- **6.5 Installation of the Optional Linerless Kit (CL4NX Only)**
  With the linerless kit, you can cut each linerless label while/after printing the specified number of media continuously.
- **6.6 Installation of the Optional RFID Kit (CL4NX Only)**
  With the RFID kit, you can print RFID tags/labels that enable identification using radio frequency.

6.1 Installation of the Optional RTC (Real Time Clock) Kit

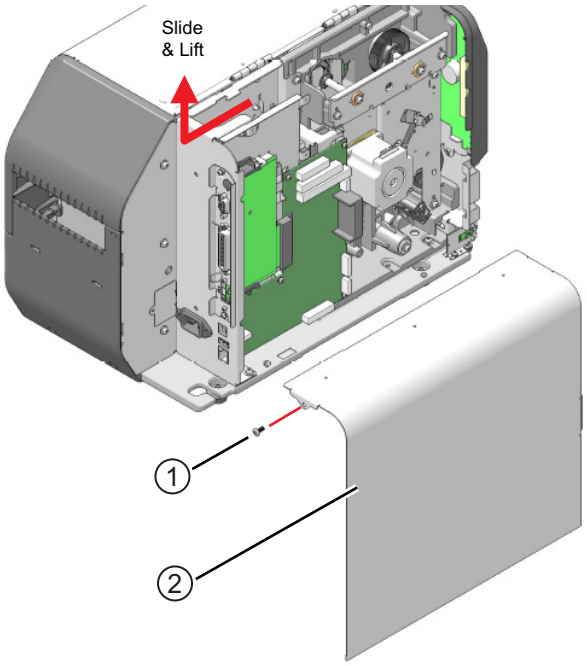
⚠ CAUTION

Before the installation, be sure to power off the printer and disconnect the power cord.

Required tool:

- Phillips screwdriver (JIS #2 or equivalent)

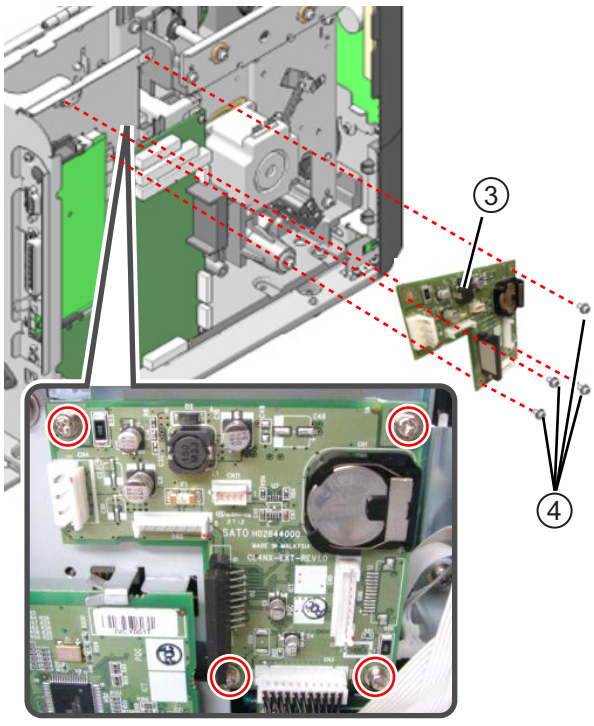
1 Remove the **screw** ①, slide and lift to remove the **left housing cover** ②.



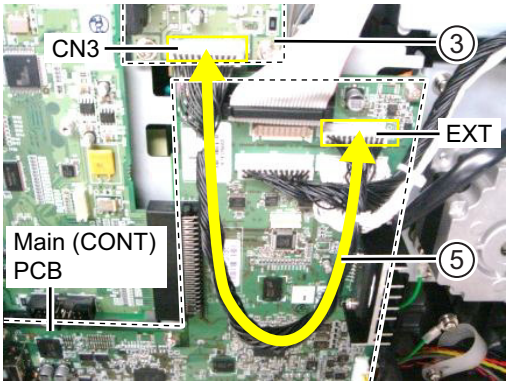
Note

When removing the left housing cover, make sure that the cover does not touch the PCB, causing the components of the PCB to be deformed.

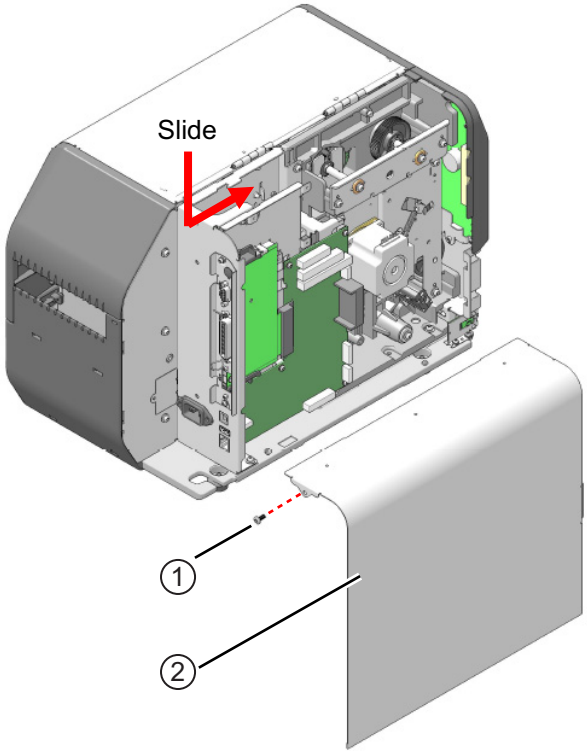
2 Attach the **EXT PCB** ③ and tighten four **screws** ④.



3 Connect the **EXT signal cable** ⑤ to the **CN3 connector** on the **EXT PCB** ③. And then the other end to the **EXT connector** on the **main (CONT) PCB**.



4 Attach the **left housing cover** ② and tighten the **screw** ①.



Checking after the Installation

1 Power on the printer and confirm that the time (hh:mm) is showed on the right top corner of the LCD screen.

6.2 Installation of the Optional Wireless LAN Kit

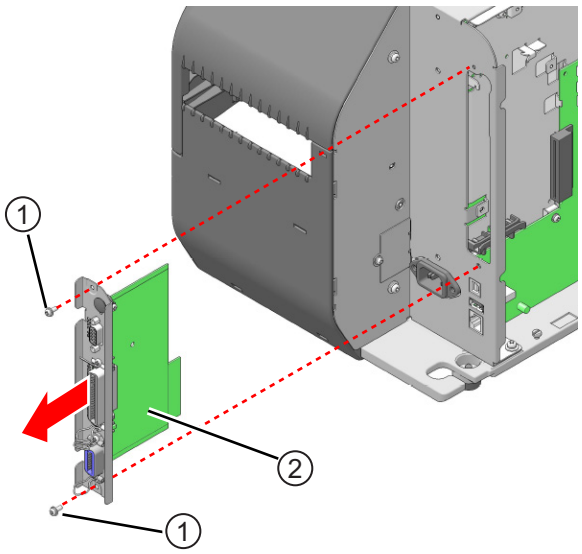
6.2.1 Installation of the Optional Wireless LAN onto the Interface Combo Board

Required tools:

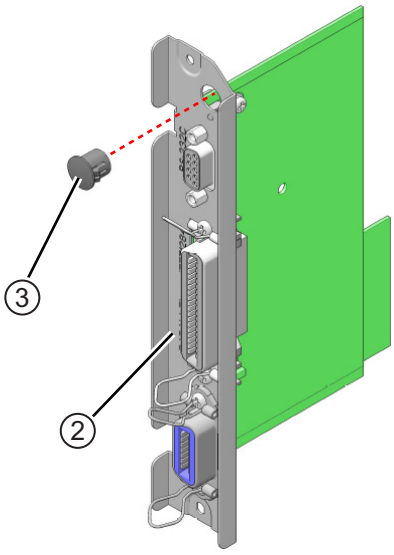
- Phillips screwdriver (JIS #1 and #2, or equivalent)
- Wrench (size: #10)

1 Make sure that the printer is in power off mode, and disconnect the power cord from the AC outlet. Then, disconnect all the interface cables, if any.

2 On the rear of the printer, remove two **screws** ① and pull out the **interface combo board** ②.

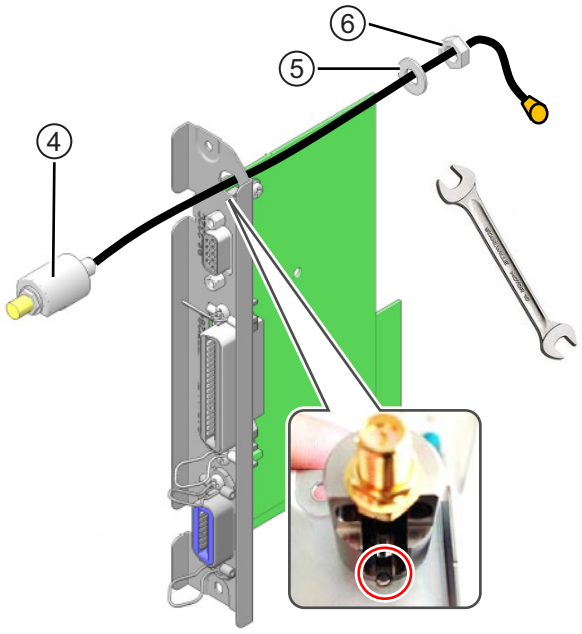


3 Remove the **antenna hole cover** ③ from the **interface combo board** ②.

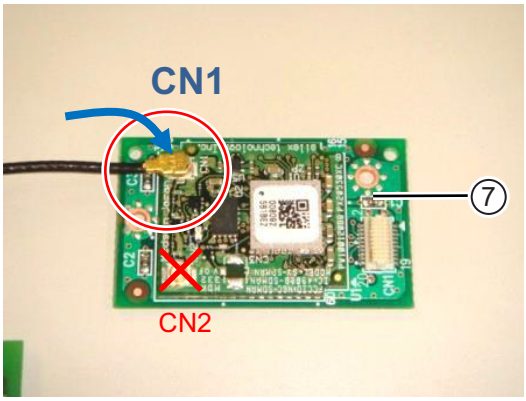


4 Insert the wire of the **antenna sub** ④ through the antenna hole, a **washer** ⑤ and a **hexagon nut** ⑥.

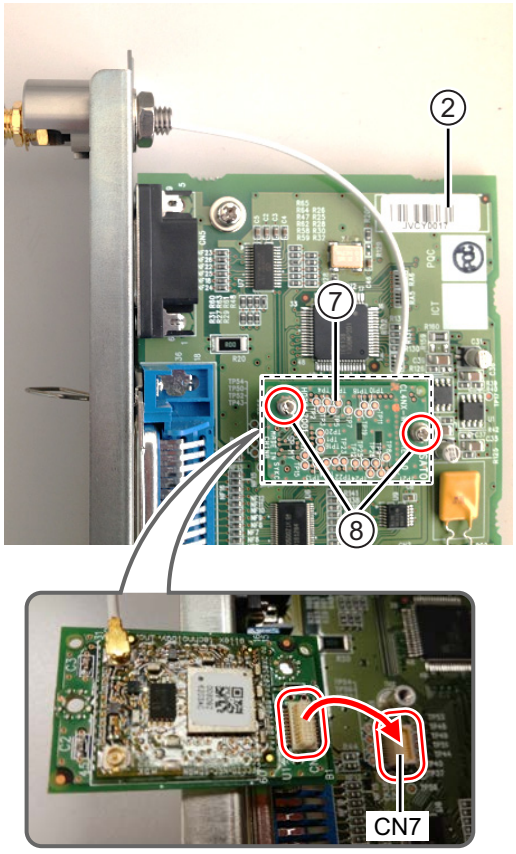
Set the **antenna sub** ④ to match the convex on the bracket, fix the **antenna sub** ④ by the **hexagon nut** ⑥ using a wrench.



5 Connect the wire of the **antenna sub** ④ to the **CN1** connector on the **WLAN PCB** ⑦.

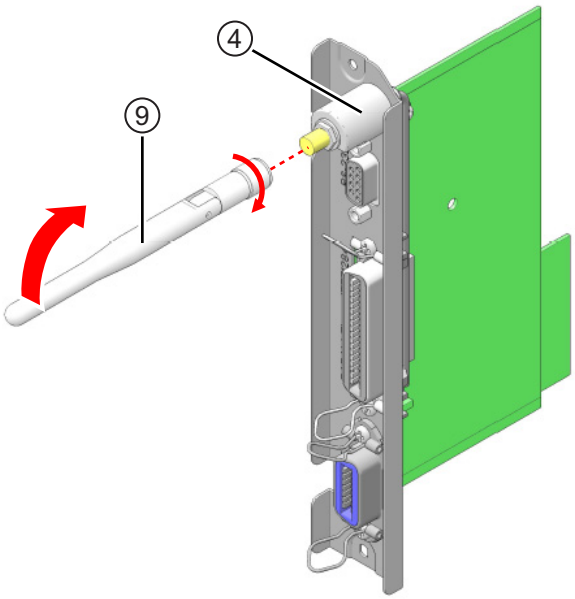


6 Connect the **WLAN PCB** ⑦ to the **CN7 connector** on the **interface combo board** ② and tighten two **screws** ⑧.

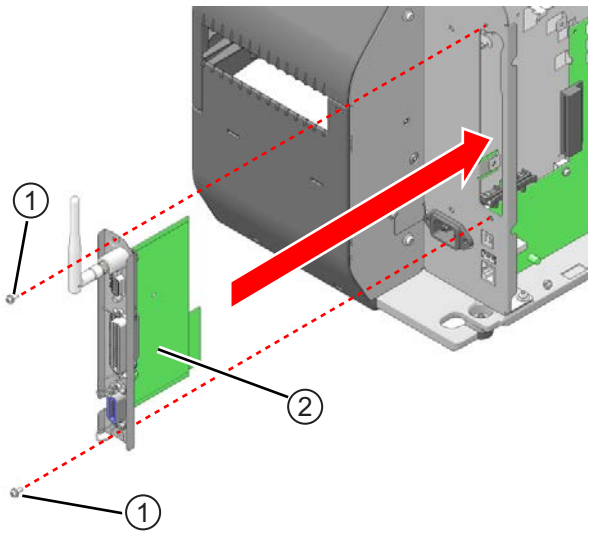


7 Connect and tighten the **antenna** ⑨ to the **antenna sub** ④.

Tilt the **antenna** ⑨ to upright position.

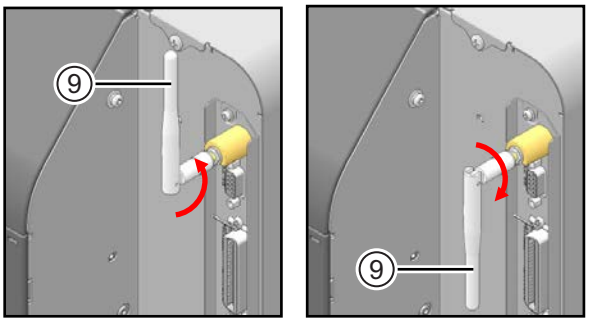


8 Attach the **interface combo board** ② with the wireless LAN installed, to the printer and tighten two **screws** ①.

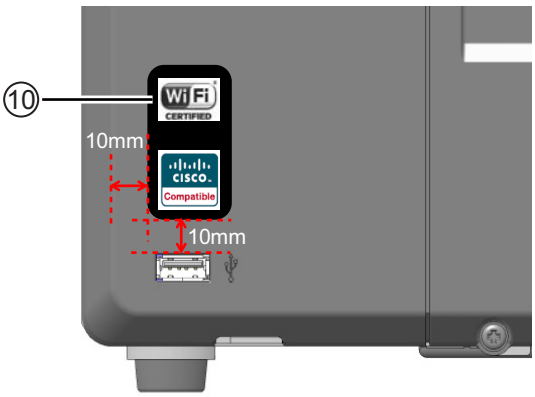


Note

- Make sure that the interface board is aligned and inserted into the slot. So as not to scrape the board against the top metal catches inflicting damage.
- When using the wireless LAN, adjust the **antenna** ⑨ facing upward.
  When transporting the printer, make sure that the **antenna** ⑨ is facing downward.



9 Paste the **WIFI/CCX Sticker** ⑩ on the front left bottom corner of the printer as shown.



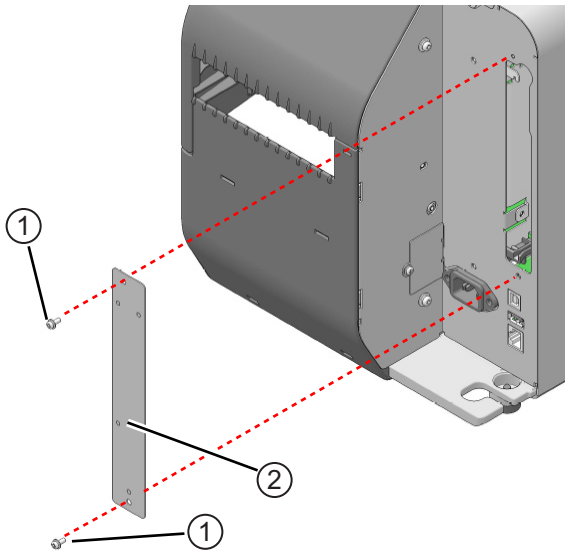
6.2.2 Installation of the Optional Wireless LAN Interface Board

Required tools:

- Phillips screwdriver (JIS #2 or equivalent)

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

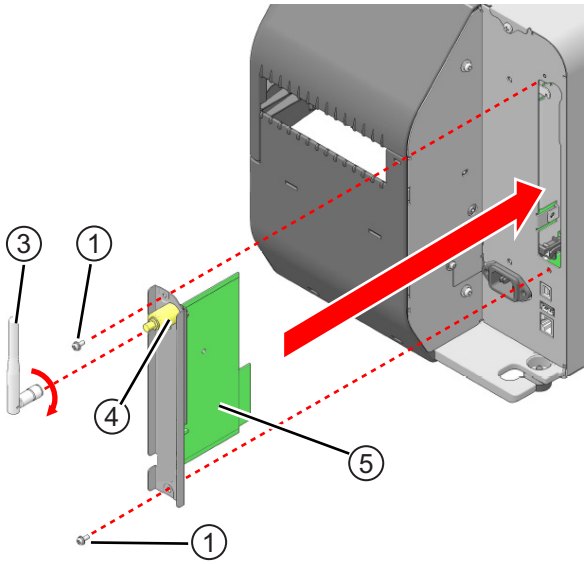
2 On the rear of the printer, remove two **screws** ① and remove the **interface cover** ②.



3 Connect and tighten the **antenna** ③ to the **antenna sub** ④ of the **WLAN board assembly** ⑤.

Tilt the **antenna** ③ to upright position.

4 Attach the **WLAN board assembly** ⑤ to the printer and tighten two **screws** ①.

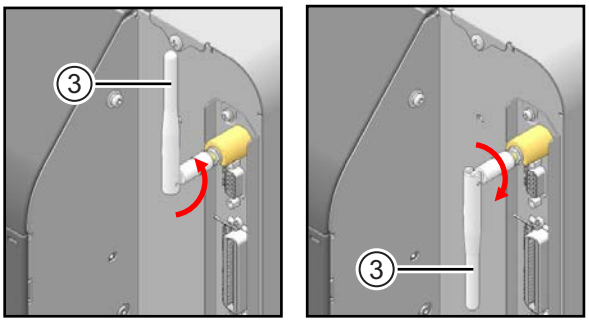


Note

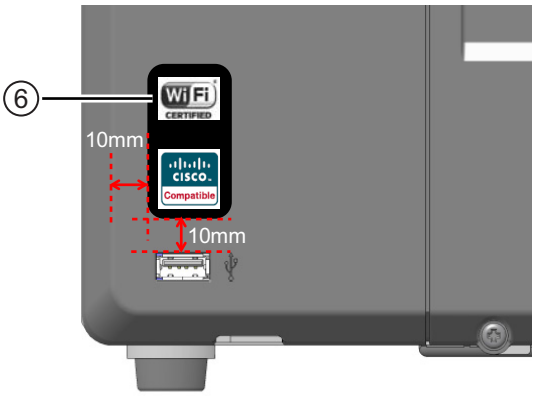
Make sure that the WLAN board assembly is aligned and inserted into the slot. So as not to scrape the board against the top metal catches inflicting damage.

Note

When using the wireless LAN, adjust the **antenna** ③ facing upward.
When transporting the printer, make sure that the **antenna** ③ is facing downward.



5 Paste the **WIFI/CCX Sticker** ⑥ on the front left bottom corner of the printer as shown.



6.3 Installation of the Optional Cutter

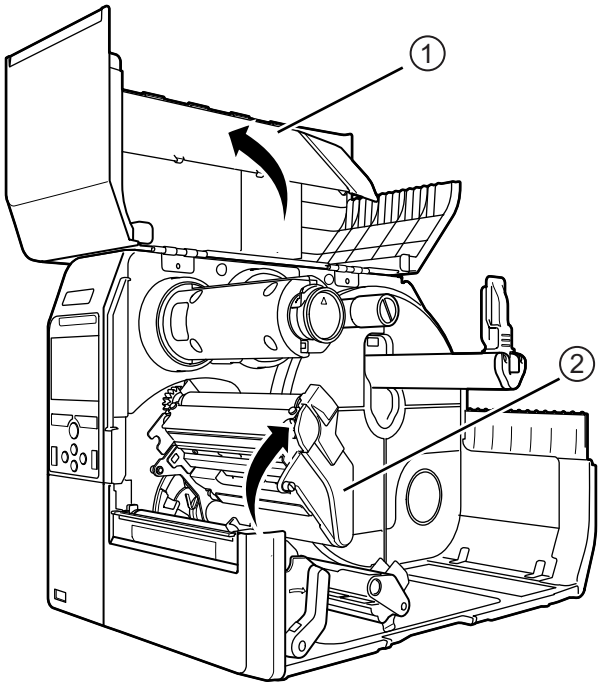
⚠ CAUTION

- Before the installation, be sure to power off the printer and disconnect the power cord.
- Be careful not to touch the cutter blade.

Required tools:

- Phillips screwdriver (JIS #2 or equivalent)

1 Open the **top cover** ① and print head ②.

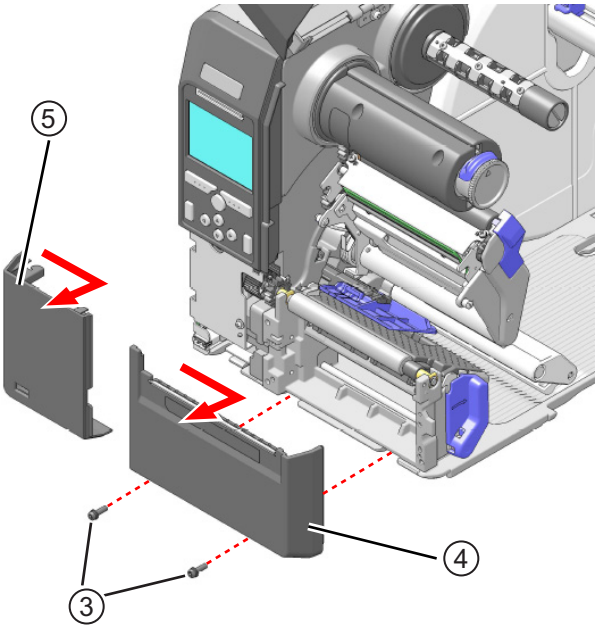


⚠ CAUTION

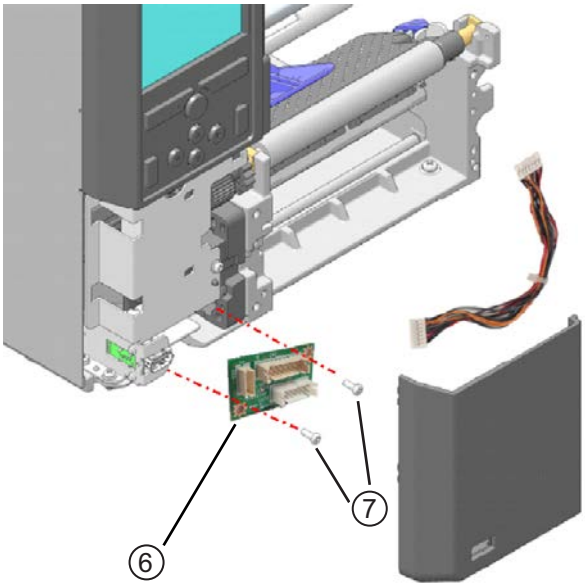
Open the top cover fully to prevent accidental drop of the cover.

2 Remove two **screws** ③ and the **front covers** ④ and ⑤.

Slide in the arrow direction to remove the front covers.

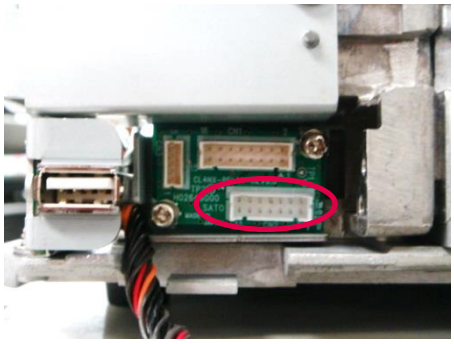


3 Install the **relay-PCB** ⑥ to the printer and tighten two **screws** ⑦.

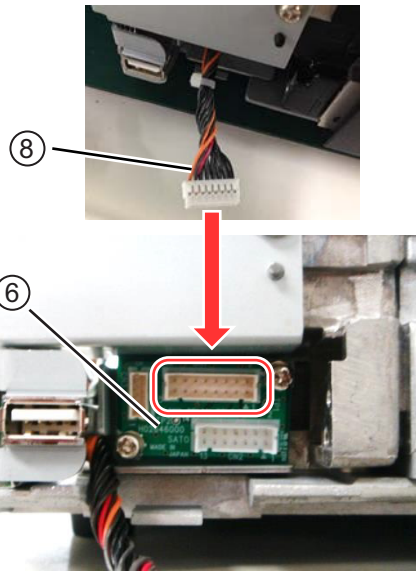


⚠ CAUTION

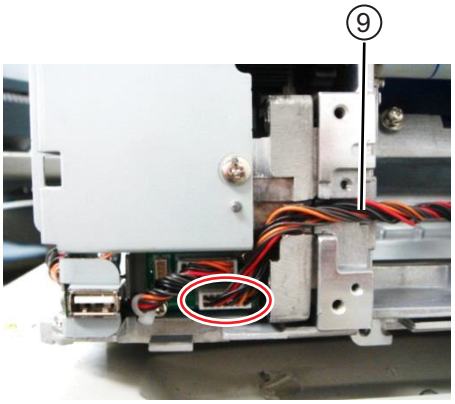
To avoid electrical damage, make sure that the orientation of the relay-PCB is placed with the highlighted connector at the bottom as shown.



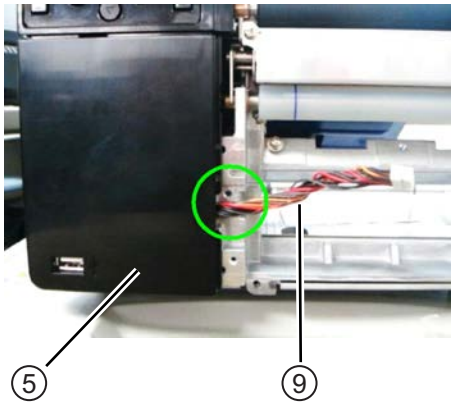
4 Connect the **option cable** ⑧ of the printer to the **relay-PCB** ⑥.



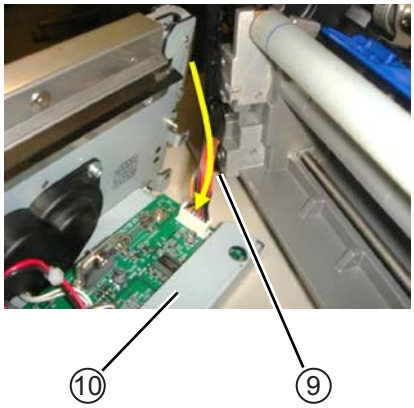
5 Connect the **cutter cable** ⑨ to the **relay-PCB** ⑥.



6 Attach the **front cover** ⑤ while placing the **cutter cable** ⑨ onto the slot.

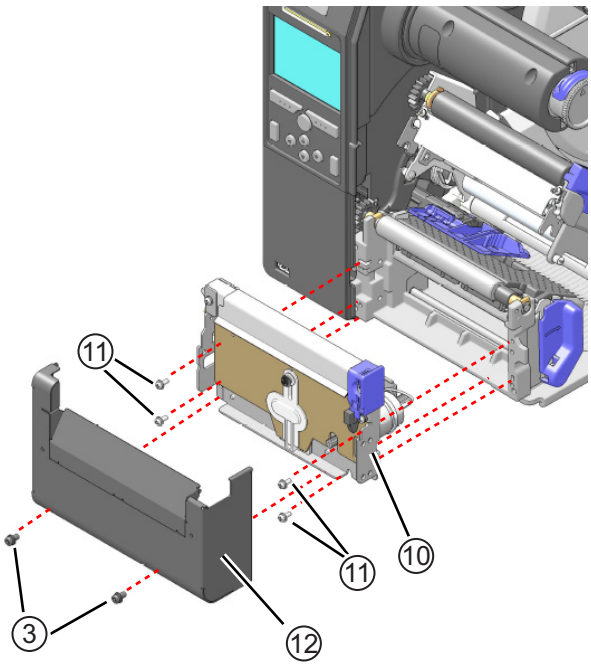


7 Connect the **cutter cable** ⑨ to the PCB on the **cutter unit** ⑩.



8 Attach the **cutter unit** ⑩ to the printer and tighten four **screws** ⑪.

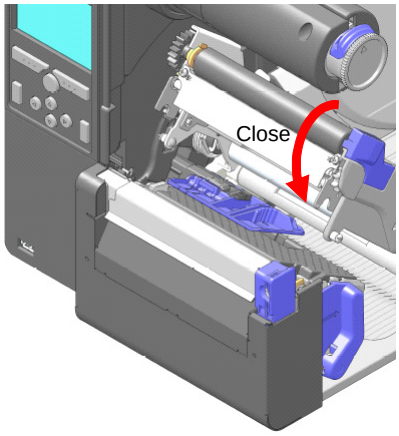
9 Attach the **front cover** ⑫ of the cutter and tighten two **screws** ③.



Checking and Adjustment after the Installation

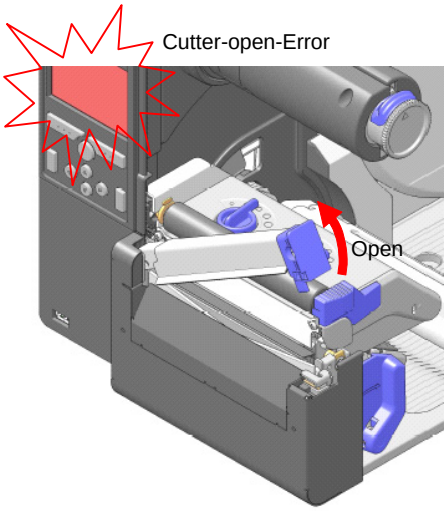
Error message checking

1 After you load the media and ribbon, close the print head then power on the printer.



2 Pull the tab to open the **cutter-open lever** and check that the **Cutter open** error message shows on the LCD.

3 Close and lock the **cutter-open lever**.



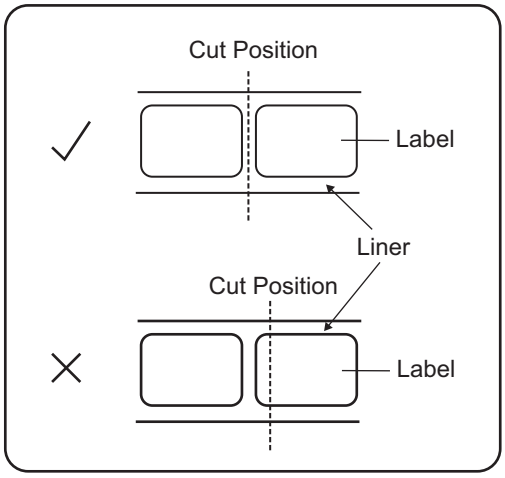
Cut position adjustment

1 In offline mode, press the right soft button (FEED).

The printer feeds and cuts one label.

2 Check that the cut position is correct.

Make sure that the cutter cuts on the label gap. If not, adjust the offset value.
Refer to the **Printing** > **Advanced** > **Adjustments** > **Offset** menu in the chapter 5 of CL4NX/CL6NX operator manual to adjust the media stop position if necessary.



Note

If the **Auto-mode** in **Printing** is disabled, make sure that you have selected **Cutter**, **Linerless** or **Cut & Print** in **Printing** > **Print Mode**.

6.4 Installation of the Optional Dispenser

CL4NX

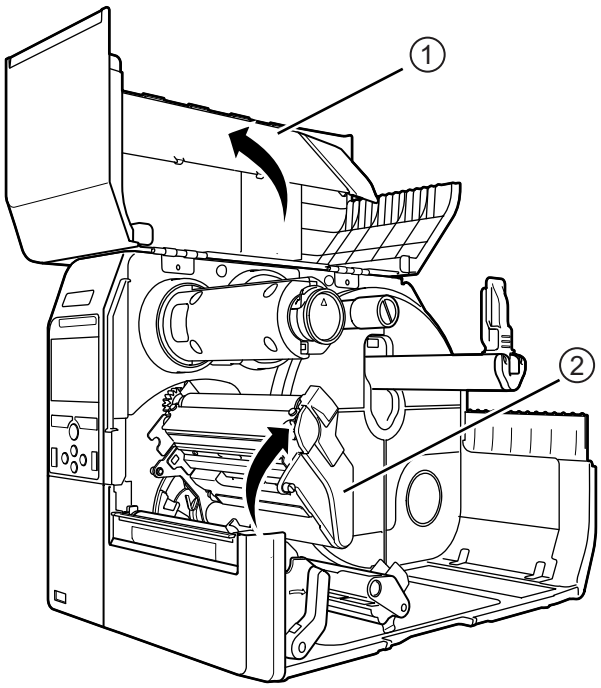
⚠ CAUTION

Before the installation, be sure to power off the printer and disconnect the power cord.

Required tools:

- Phillips screwdriver (JIS #2 or equivalent)
- Nipper
- Pliers

1 Open the **top cover** ① and print head ②.

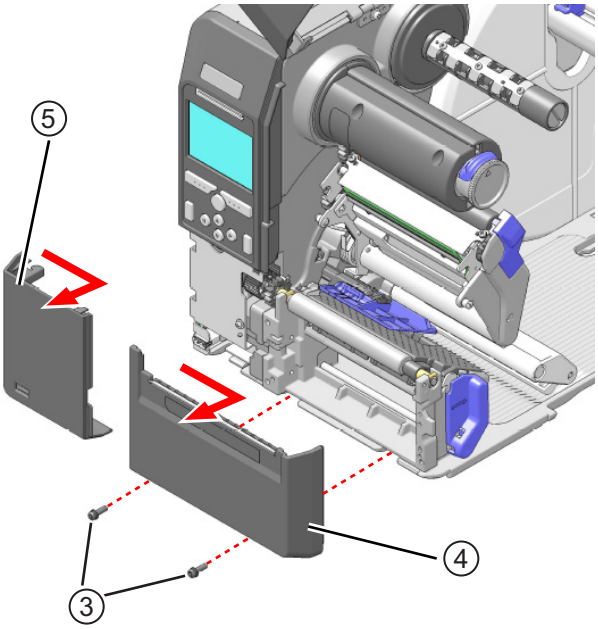


⚠ CAUTION

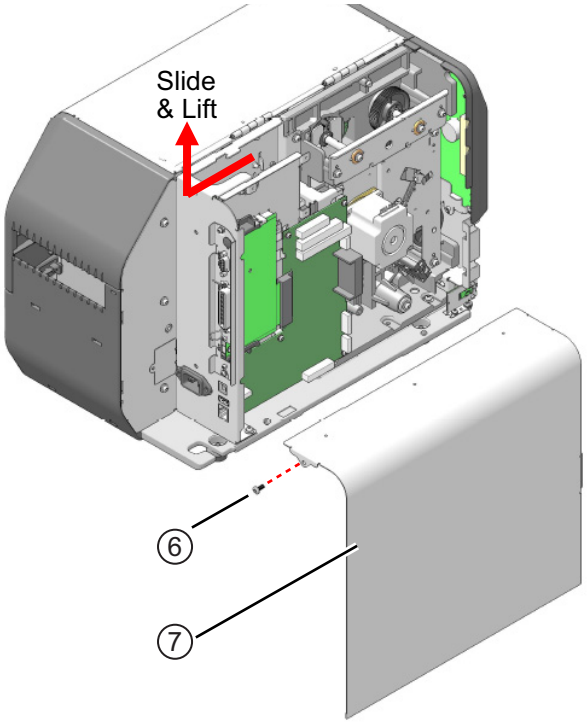
Open the top cover fully to prevent accidental drop of the cover.

2 Remove two **screws** ③ and the **front covers** ④ and ⑤.

Slide in the arrow direction to remove the front covers.



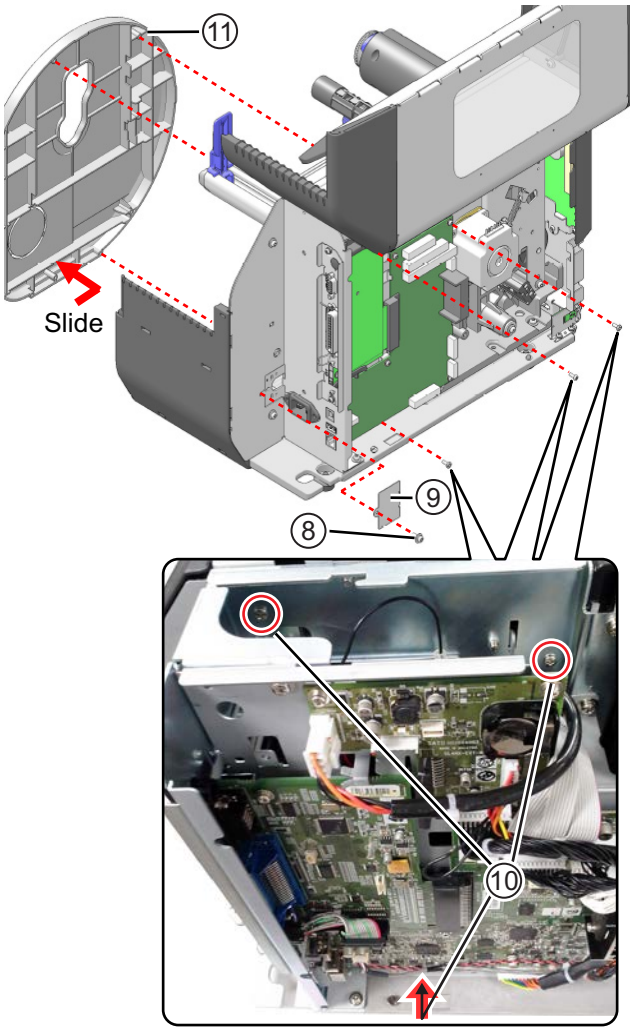
3 Remove the **screw** ⑥, slide and lift to remove the **left housing cover** ⑦.



Note

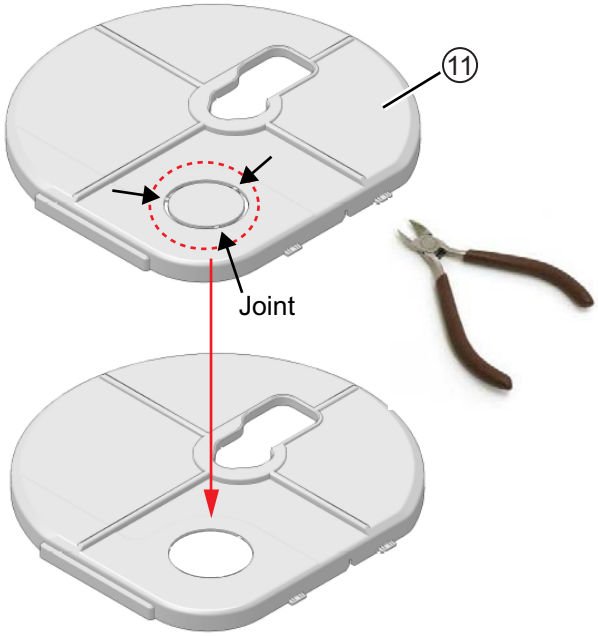
When removing the left housing cover, make sure that the cover does not touch the PCB, causing the components of the PCB to be deformed.

4 Remove the **screws** ⑧ to remove the **cover** ⑨, then remove three **screws** ⑩ to remove the **media holder plate** ⑪.

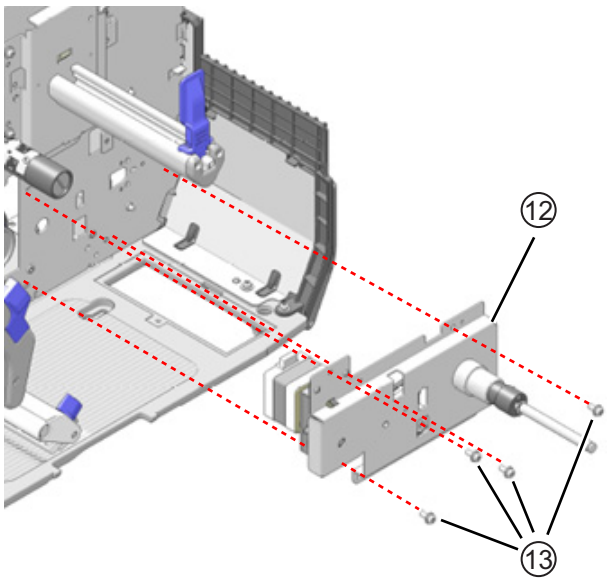


5 Cut three joints using a nipper to remove the portion in the circle of the **media holder plate** ⑪.

Make sure that there is no burr remains on the cut surface.

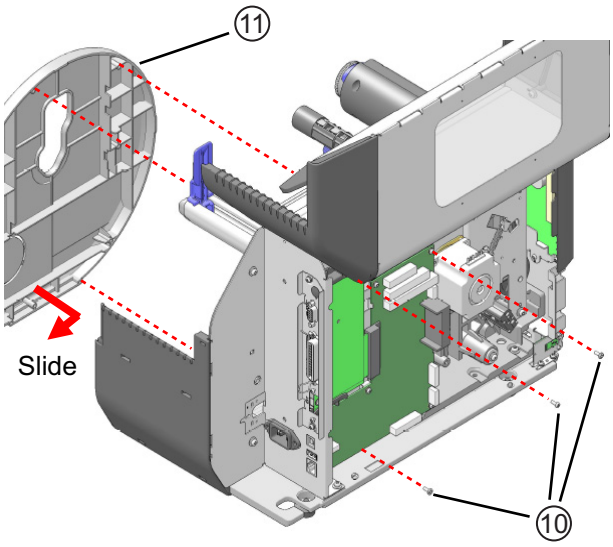


6 Attach the **gearbox** ⑫ of the **liner rewinder** and tighten four **screws** ⑬.



7 Slide to attach the **media holder plate** ⑪ back and tighten three **screws** ⑩.

Refer to step 4 for the positions of three **screws** ⑩.

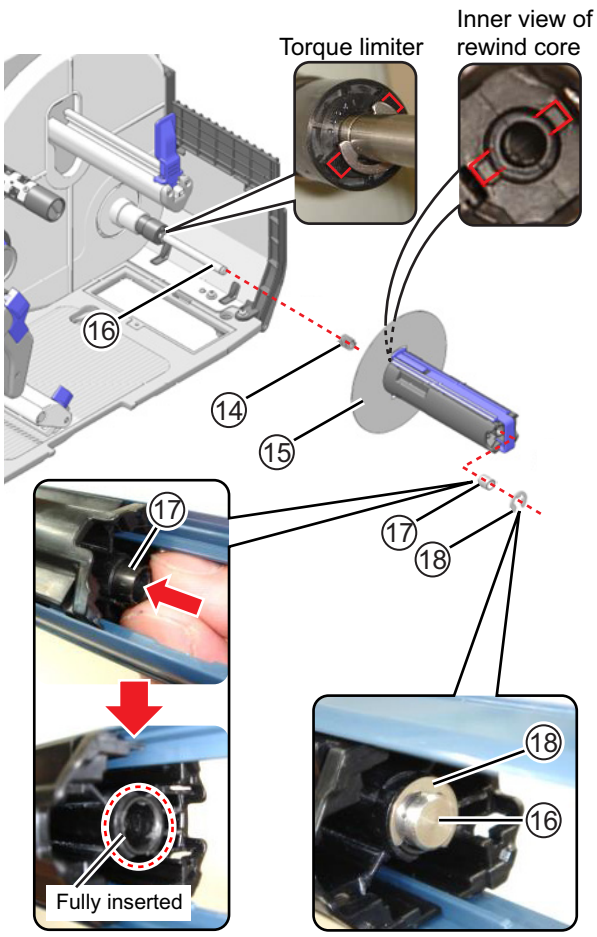


8 Place the **spring** ⑭ and **rewind core unit** ⑮ through the **rewind shaft** ⑯.

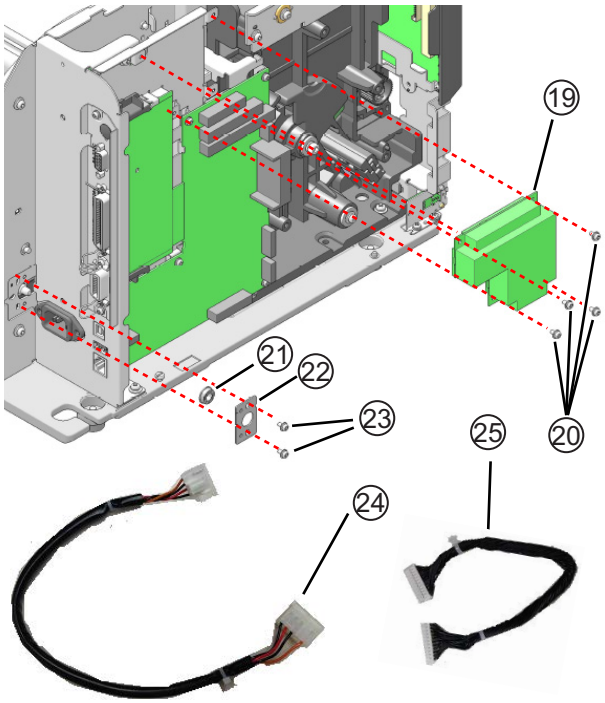
Rotate the **rewind core unit** ⑮ such that the groove on the inner core nested on the protruding tab of the **torque limiter**.
Properly nested **rewind core unit** allows the **E-ring** ⑱ to lock on the **rewind shaft** ⑯.

9 Insert the **oiles bearing** ⑰ to the center hole of the **rewind core unit** ⑮.

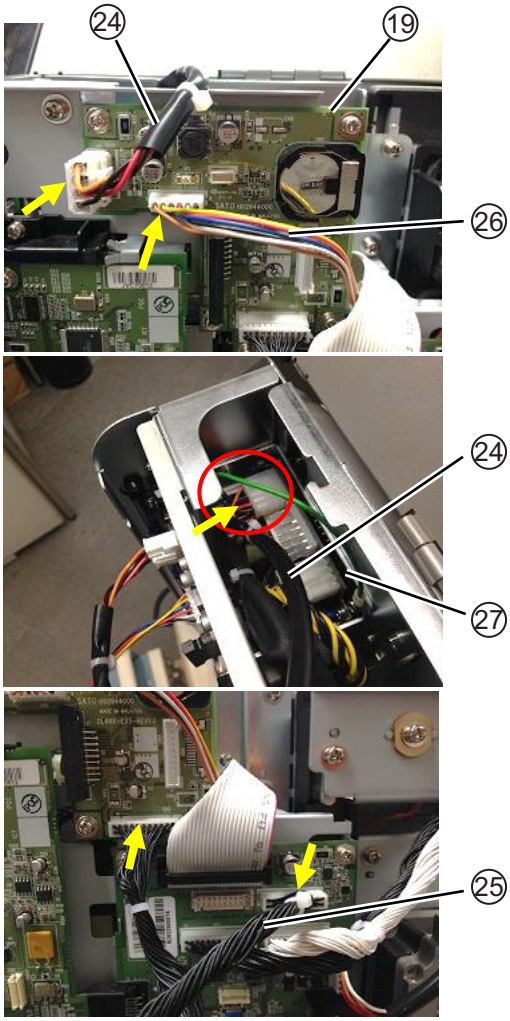
10 Using a pliers, attach the **E-ring** ⑱ to the groove of the **rewind shaft** ⑯.



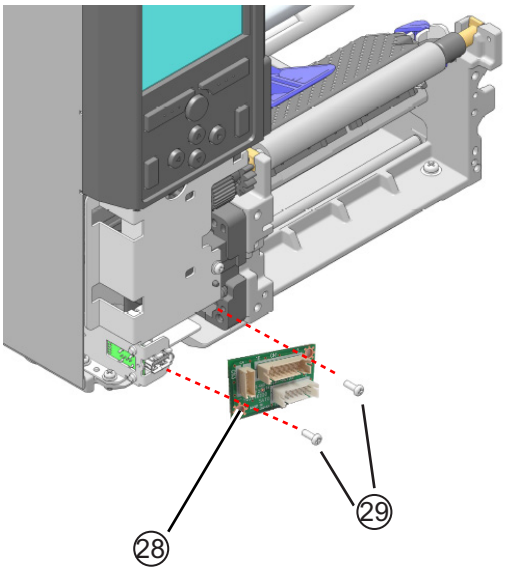
11 Attach the **EXT PCB** ⑲ and tighten four **screws** ⑳. Attach the **ball bearing** ㉑, **adjust plate** ㉒ and tighten two **screws** ㉓.



12 Connect the **DIS power cable** ㉔ to the **EXT PCB** ⑲ and **power supply unit** ㉗.
Connect the **DIS motor cable** ㉖ from the **rewinder unit** ⑫ to **EXT PCB** ⑲.
And then connect the **DIS signal cable** ㉕ to the **EXT PCB** ⑲ and **main (CONT) PCB**.

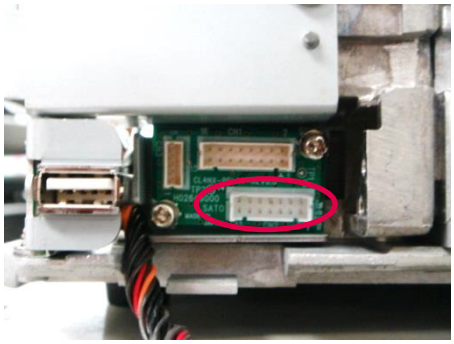


13 Install the **relay-PCB** ㉘ to the printer and tighten two **screws** ㉙



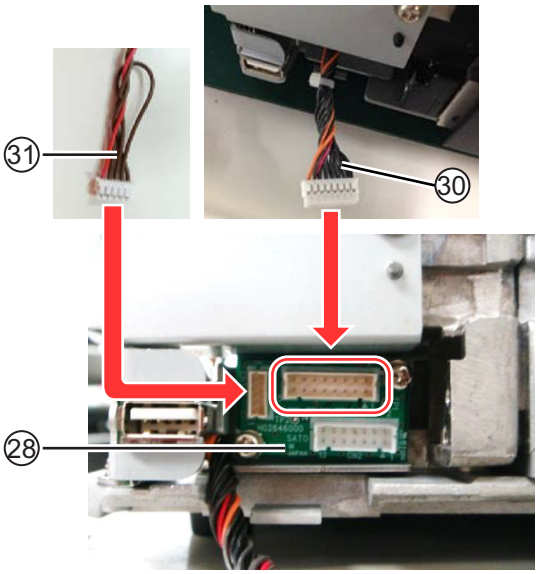
⚠ CAUTION

To avoid electrical damage, make sure that the orientation of the relay-PCB is placed with the highlighted connector at the bottom as shown.



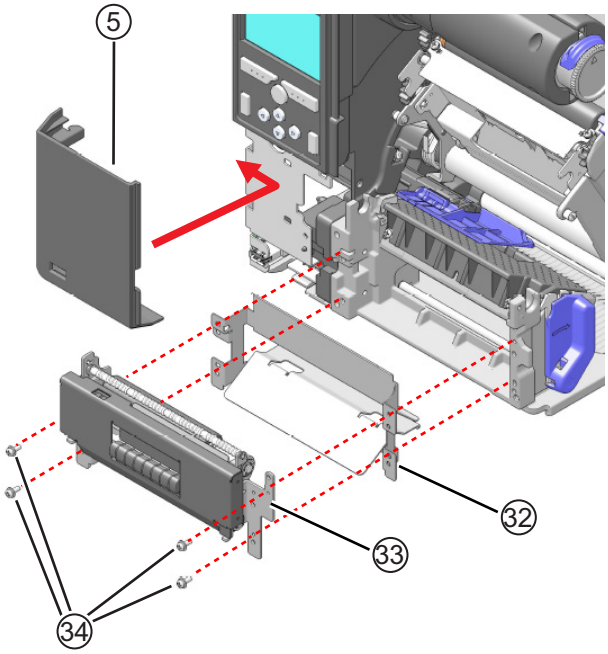
14 Connect the **option cable** ㉚ of the printer to the **relay-PCB** ㉘.

15 Connect the **dispenser cable** ㉛ of the dispenser unit to the **relay-PCB** ㉘.



16 Attach the **front cover** ⑤ to the printer.

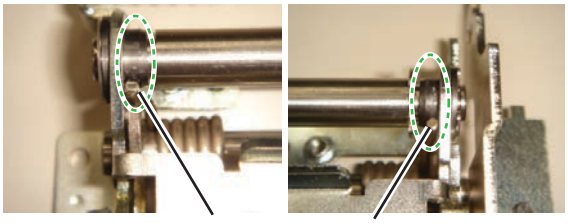
17 Attach the **dispenser bracket** ㉜ to the **dispenser unit** ㉝. Tighten four **screws** ㉞ to attach the unit.



Note

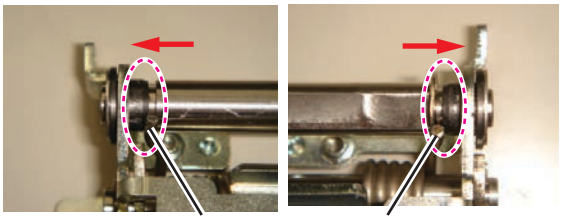
Before attaching the **dispenser unit**, make sure that the **NIP springs** are in the correct position.
If the **NIP spring** is in the wrong position, push the **NIP spring** in the arrow direction using a long nose pliers.

✓ Correct position



The end of the spring is positioned on the bearing.

✗ Wrong position

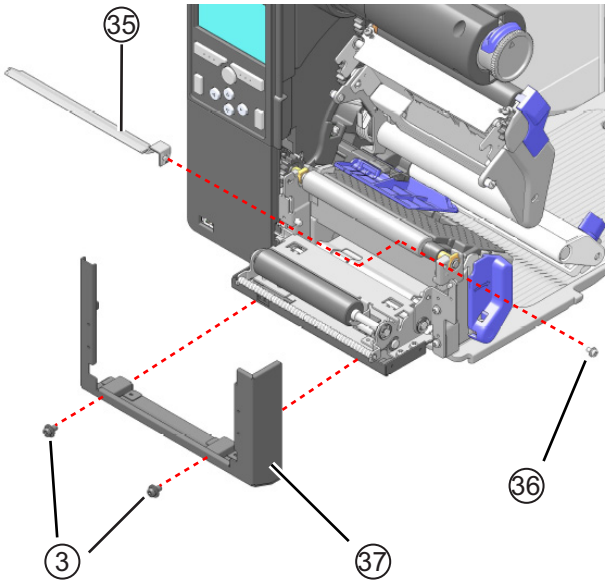


The end of the spring is positioned on the groove.

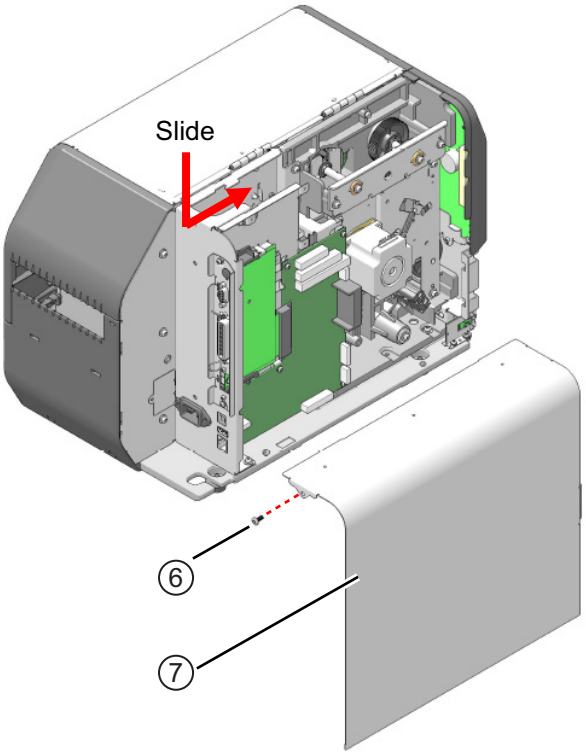
18 Open the dispenser unit, attach the **dispenser bar** ㉟ and tighten the **screw** ㊱.

19 Then attach the **front cover** ㊲ of the dispenser and tighten two **screws** ③.

20 Close the **dispenser unit**.



21 Attach the **left housing cover** ⑦ and tighten the **screw** ⑥.



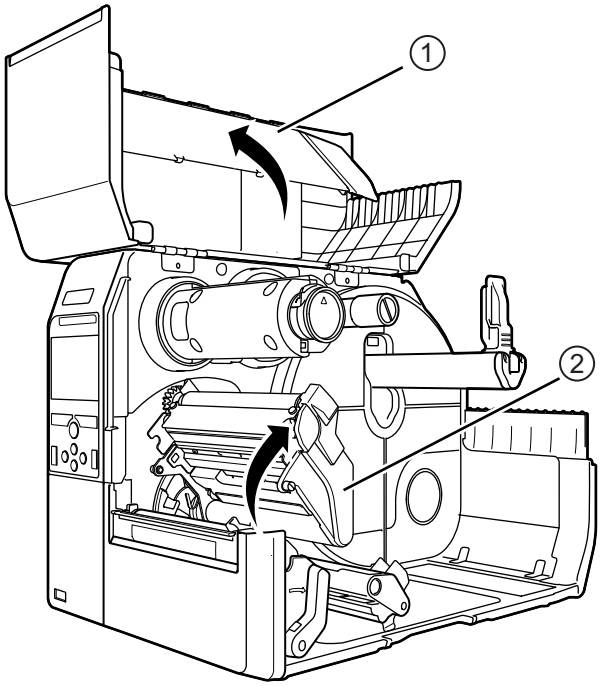
CL6NX

⚠ CAUTION

Before the installation, be sure to power off the printer and disconnect the power cord.

Required tools:

- Phillips screwdriver (JIS #2 or equivalent)
- Nipper
- Pliers



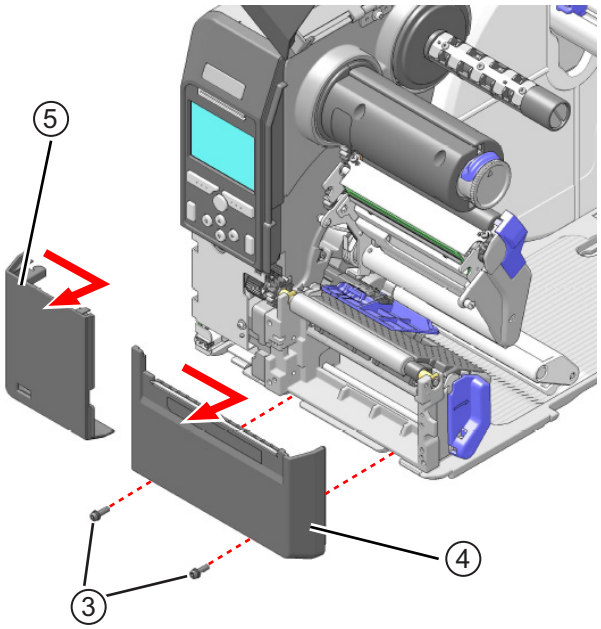
1 Open the **top cover** ① and print head ②.

⚠ CAUTION

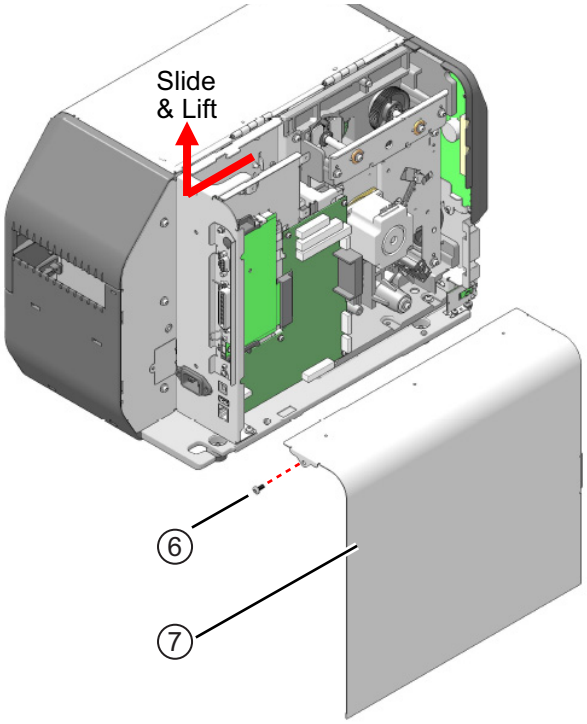
Open the top cover fully to prevent accidental drop of the cover.

2 Remove two **screws** ③ and the **front covers** ④ and ⑤.

Slide in the arrow direction to remove the front covers.



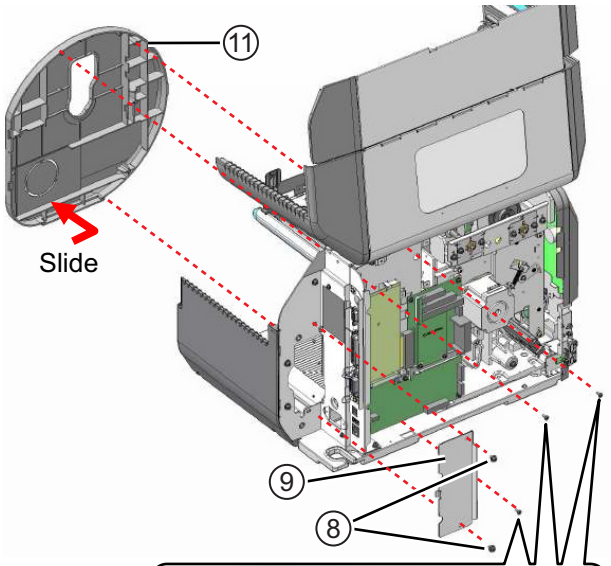
3 Remove the **screw** ⑥, slide and lift to remove the **left housing cover** ⑦.

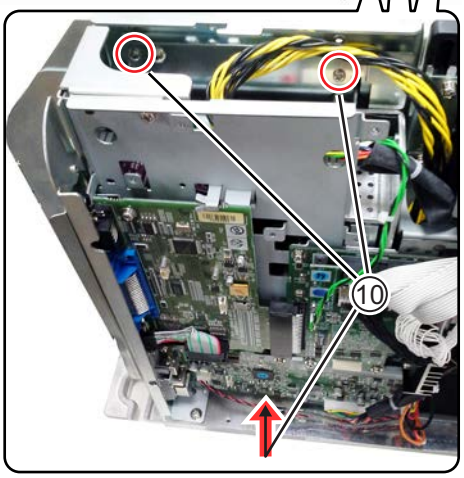


Note

When removing the left housing cover, make sure that the cover does not touch the PCB, causing the components of the PCB to be deformed.

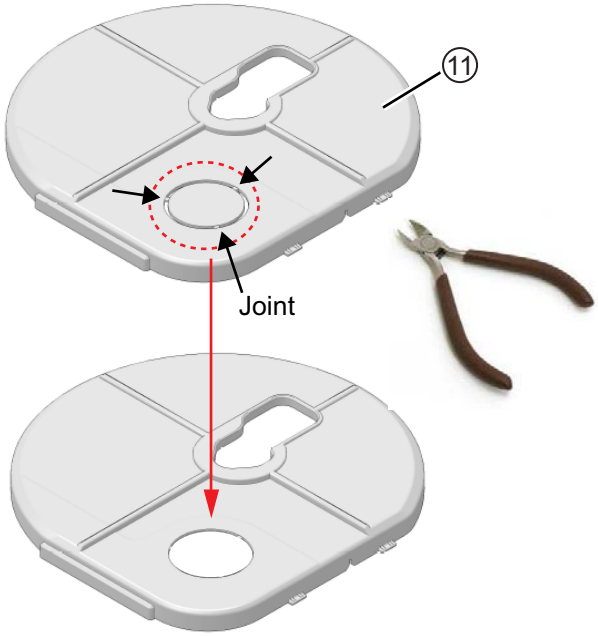
4 Remove two **screws** ⑧ to remove the **cover** ⑨, then remove three **screws** ⑩ to remove the **media holder plate** ⑪.



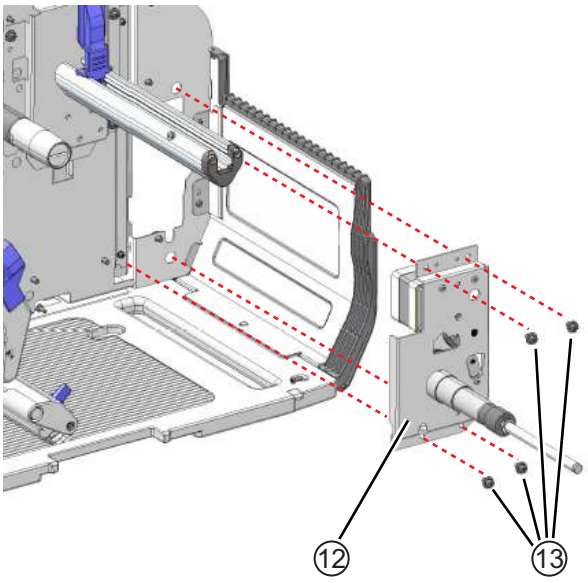


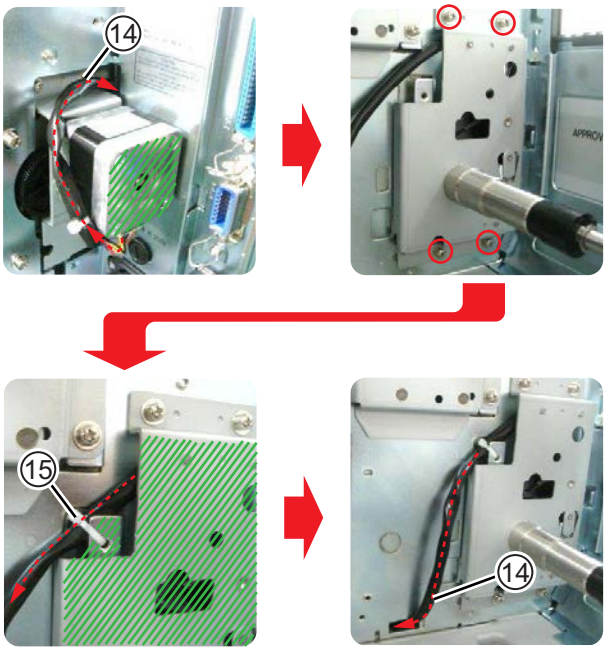
5 Cut three joints using a nipper to remove the portion in the circle of the **media holder plate** ⑪.

Make sure that there is no burr remains on the cut surface.



6 Attach the **gearbox** ⑫ of the **liner rewinder** and tighten four **screws** ⑬.

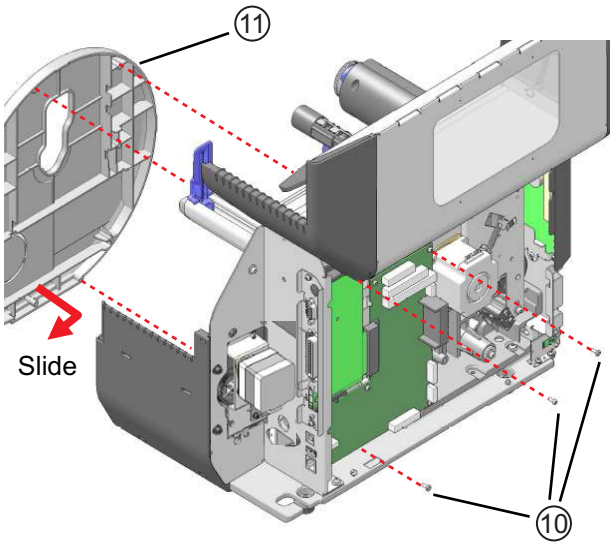




- First, route the **motor cable** ⑭ around the motor as shown. Do not overlap on the shaded area of the motor.
- Attach the **gearbox** ⑫ using four **screws** ⑬. Make sure that the **motor cable** is not pinched.
- Then, tie the **motor cable** ⑭ using a **cable tie** ⑮ as shown. Do not overlap the **motor cable** ⑭ on the shaded area.
- Lastly, insert the **motor cable** ⑭ into the **slot** at the bottom of the printer center frame.

7 Slide to attach the **media holder plate** ⑪ back and tighten three **screws** ⑩.

Refer to step 4 for the positions of three **screws** ⑩.

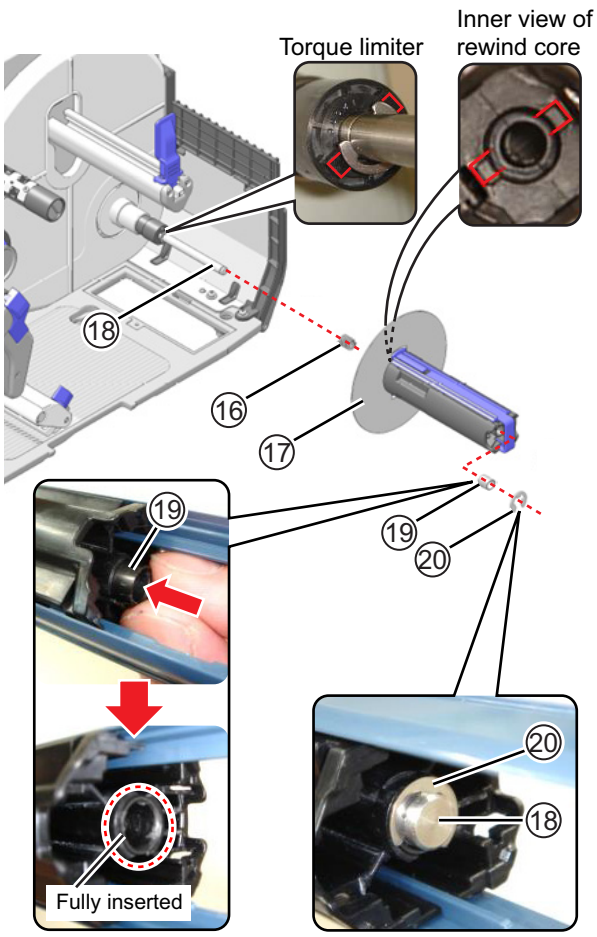


8 Place the **spring** ⑯ and **rewind core unit** ⑰ through the **rewind shaft** ⑱.

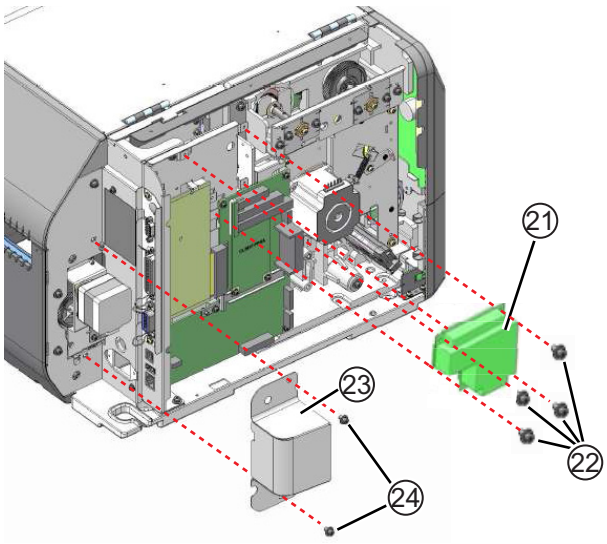
Rotate the **rewind core unit** ⑰ such that the groove on the inner core nested on the protruding tab of the **torque limiter**.
Properly nested **rewind core unit** allows the **E-ring** ⑳ to lock on the **rewind shaft** ⑱.

9 Insert the **oiles bearing** ⑲ to the center hole of the **rewind core unit** ⑰.

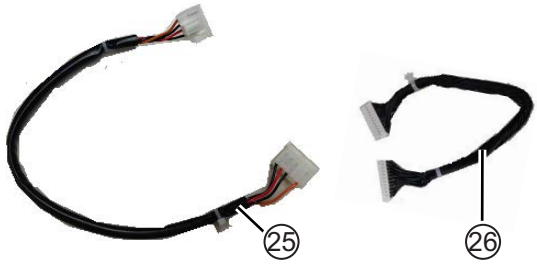
10 Using a pliers, attach the **E-ring** ⑳ to the groove of the **rewind shaft** ⑱.

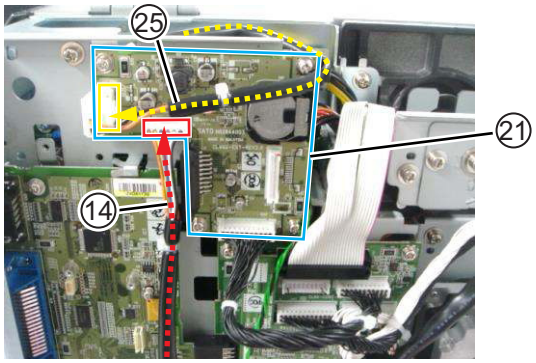


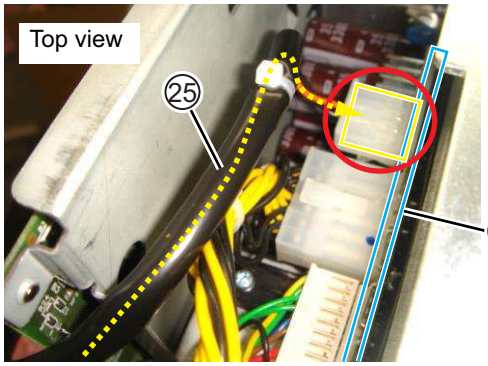
11 Attach the **EXT PCB** ㉑ and tighten four **screws** ㉒. Attach the **motor cover** ㉓ and tighten two **screws** ㉔.

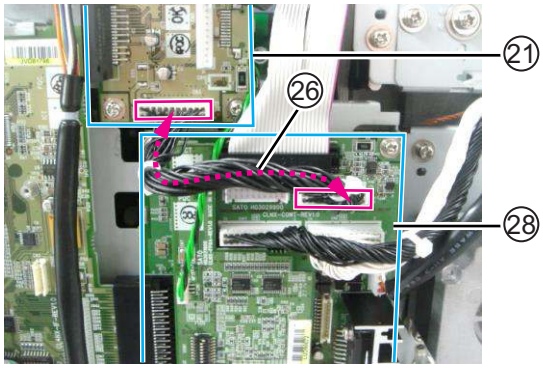


12 Connect the **DIS power cable** ㉕ to the **EXT PCB** ㉑ and **power supply unit** ㉗.
Connect the **motor cable** ⑭ from the **gearbox** ⑫ to **EXT PCB** ㉑.
And then connect the **DIS signal cable** ㉖ to the **EXT PCB** ㉑ and **main (CONT) PCB** ㉘.

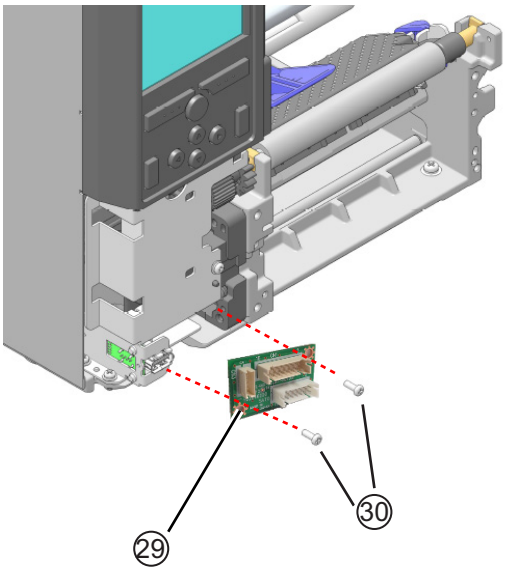






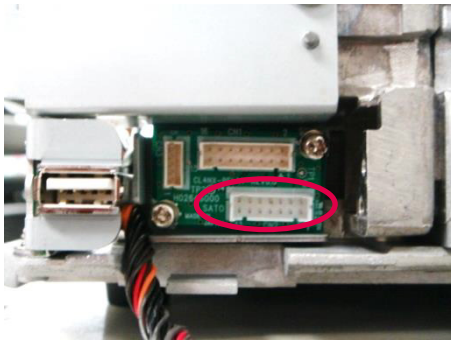


13 Install the **relay-PCB** ㉙ to the printer and tighten two **screws** ㉚.



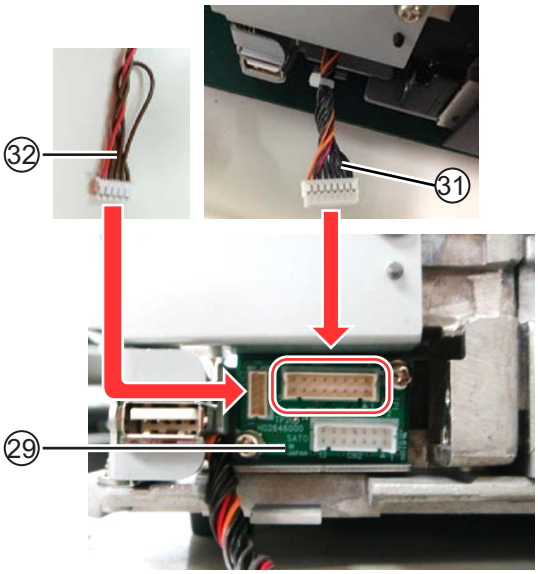
⚠ CAUTION

To avoid electrical damage, make sure that the orientation of the relay-PCB is placed with the highlighted connector at the bottom as shown.



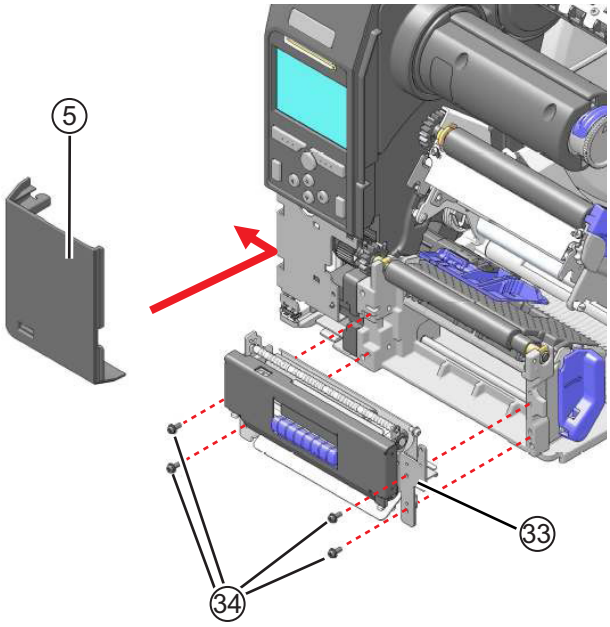
14 Connect the **option cable** ㉛ of the printer to the **relay-PCB** ㉙.

15 Connect the **dispenser cable** ㉜ of the dispenser unit to the **relay-PCB** ㉙.



16 Attach the **front cover** ⑤ to the printer.

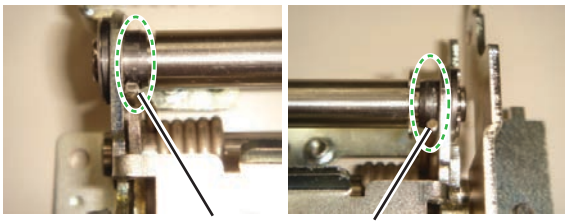
17 Attach the **dispenser unit** ㉝ and tighten four **screws** ㉞.



Note

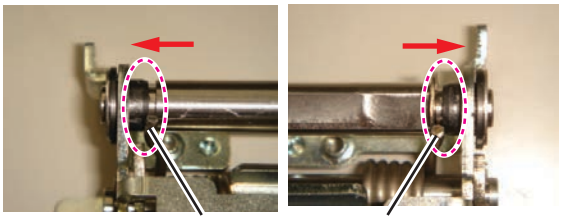
Before attaching the **dispenser unit**, make sure that the **NIP springs** are in the correct position.
If the **NIP spring** is in the wrong position, push the **NIP spring** in the arrow direction using a long nose pliers.

✓ Correct position



The end of the spring is positioned on the bearing.

✗ Wrong position



The end of the spring is positioned on the groove.

18 Open the **dispenser unit**, attach the **dispenser bar** ㉟ and tighten the **screw** ㊱.

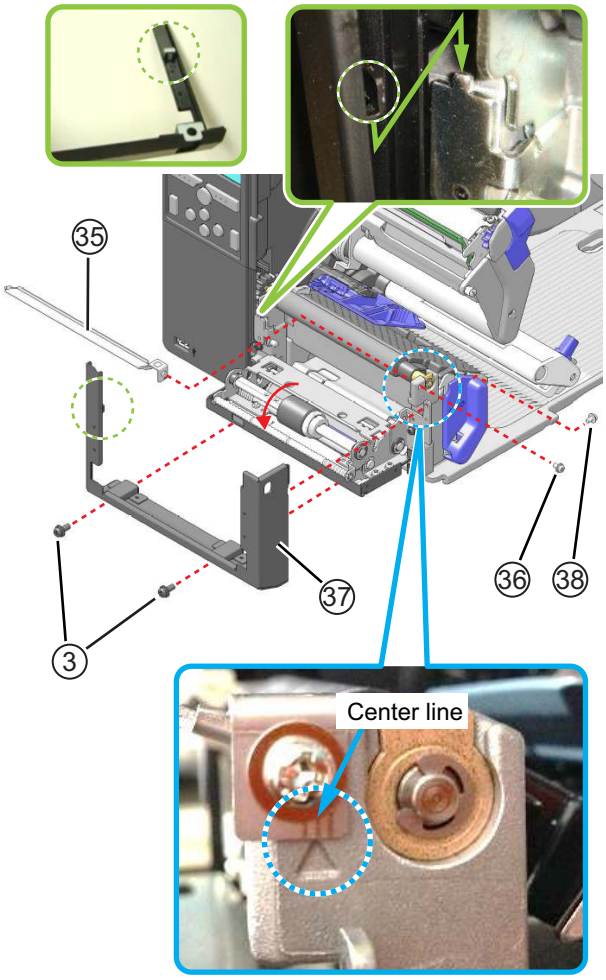
Align the center line on the **dispenser bar** ㉟ to the ▲ mark on the engine frame, and then tighten the **screw** ㊱.

19 Then attach the **front cover** ㊲ of the **dispenser** and tighten two **screws** ③.

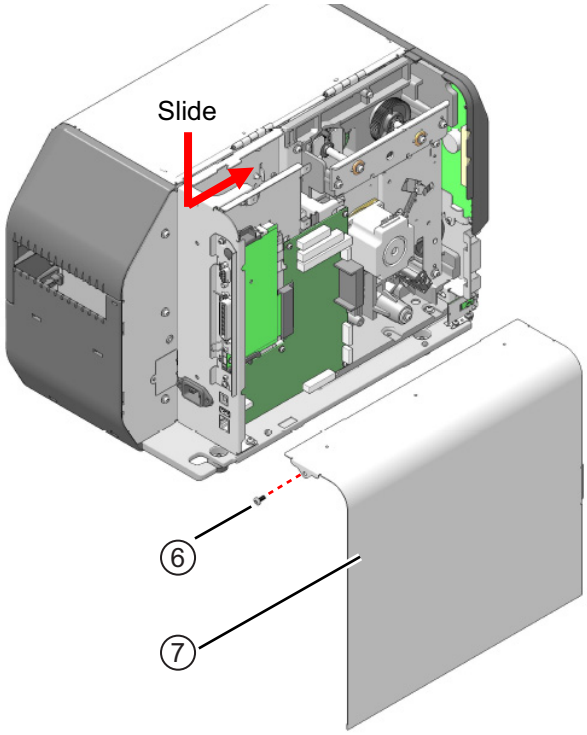
Attach the back of the front cover to the protruded tab as shown.

20 Tighten a **screw** ㊳ from the rear side of the **dispenser unit**.

21 Close the **dispenser unit**.



22 Attach the **left housing cover** ⑦ and tighten the **screw** ⑥.



Checking and Adjustment after the Installation

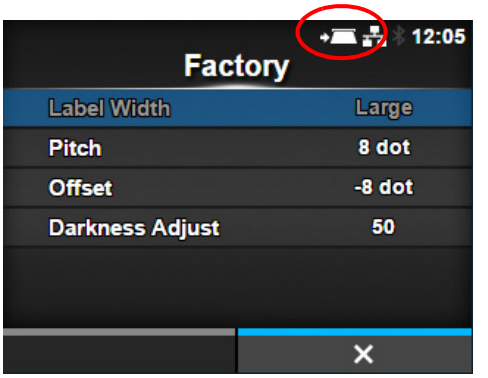
Test print checking

1 After you load the media and ribbon, close the **print head** and **top cover**. Then power on the printer.

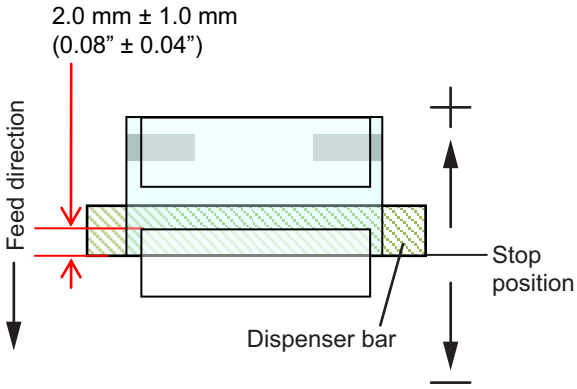
If you have installed the liner rewinder, confirm that the time (hh:mm) is showed on the right top corner of the LCD screen.

2 Perform a test print (refer to **Tools** > **Test Print** > **Factory** in Chapter 4 Operation and Configuration of the CL4NX/CL6NX operator manual) to check the following items:

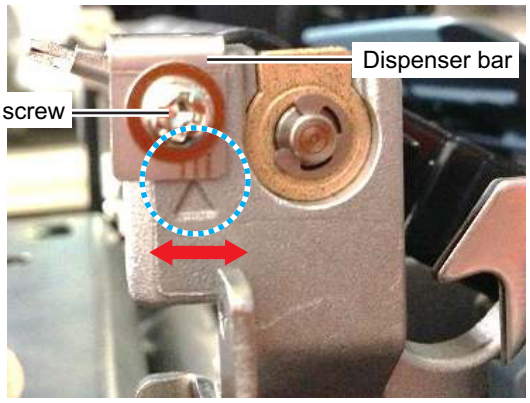
- Check the dispense operation to make sure that there is no slack on the liner.
- Check to make sure that the dispenser sensor can sense the label.
  Before the label is removed from the dispenser bar, the “waiting for media removal” status icon is shown. When the label is removed, the printer continues to print the next test print and then stops for label removal.



- Check that the media stop position is correct.
  The regular position is to let the label stay about 2.0 mm (0.08") on the liner. If not, adjust the offset value.
  Refer to the **Printing** > **Advanced** > **Adjustments** > **Offset** menu in the chapter 5 of CL4NX/CL6NX operator manual to adjust the media stop position if necessary.
- Check that the liner is rewound correctly (liner rewinder model).



- Check that the media is not meandering.
  If the feeding path of the label or liner is slanted, adjust the slope angle of the dispenser bar.
  Loosen the screw and then adjust the dispenser bar. Tighten the screw to fix the new position.



Note

If the **Auto-mode** in **Printing** is disabled, make sure that you have selected **Dispenser** in **Printing** > **Print Mode**.

6.5 Installation of the Optional Linerless Kit (CL4NX Only)

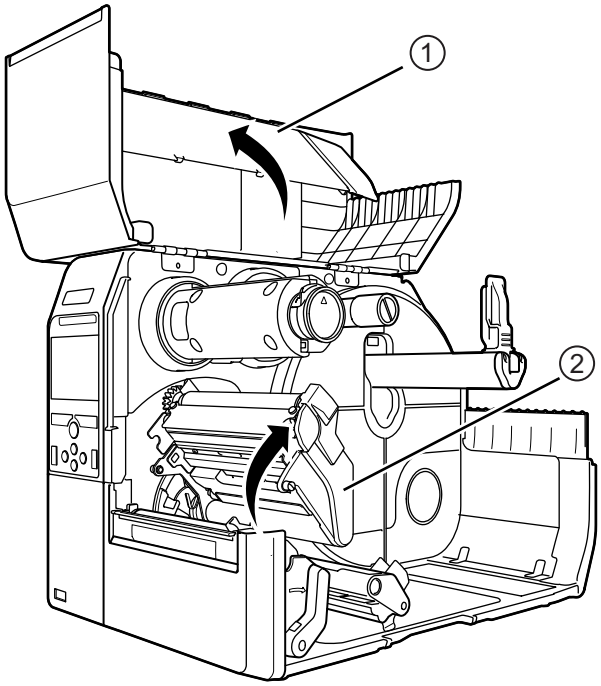
⚠ CAUTION

- Before the installation, be sure to power off the printer and disconnect the power cord.
- Be careful not to touch the cutter blade.

Required tools:

- Phillips screwdriver (JIS #2 or equivalent)

1 Open the **top cover** ① and print head ②.

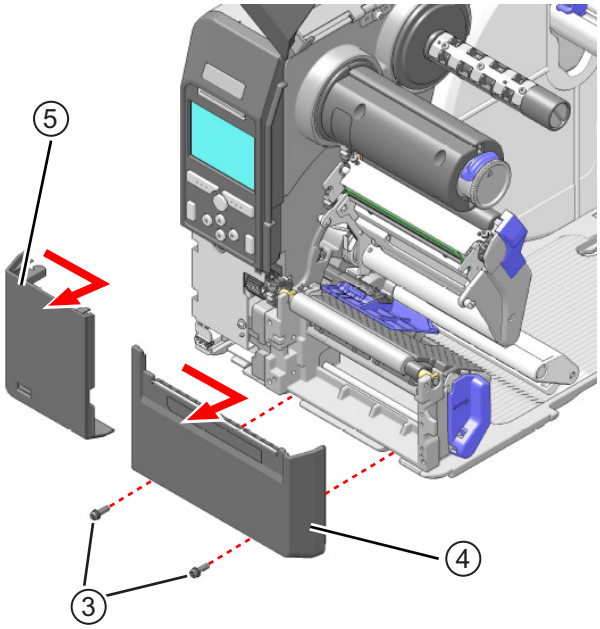


⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.

2 Remove two **screws** ③ and the **front covers** ④ and ⑤.

Slide in the arrow direction to remove the front covers.

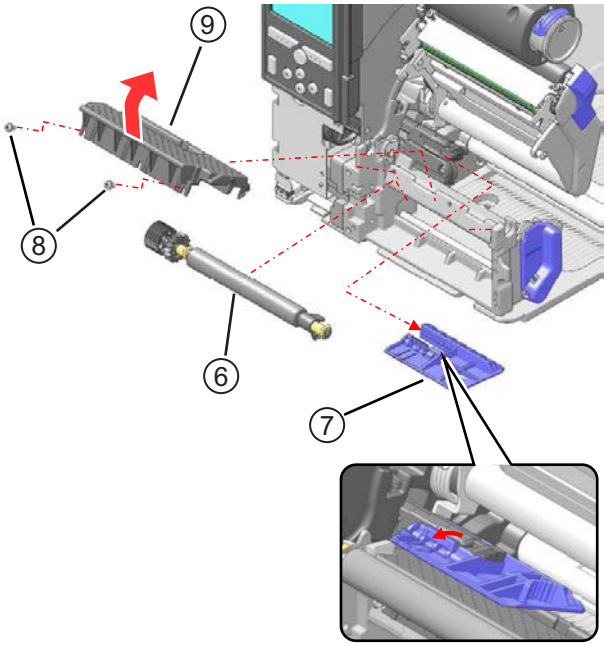


3 Remove the **platen roller assembly** ⑥.

4 Tilt the sensor guide lock in the direction as shown and then remove the **media sensor guide** ⑦ from the **sensor holder**.

5 Remove two **screws** ⑧ and **media guard** ⑨.

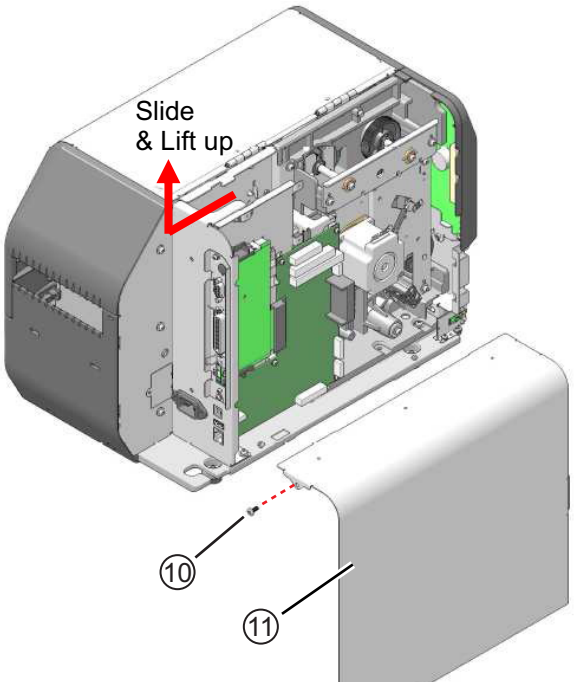
Make sure that the **sensor holder** is pushed to the innermost position before you remove the **media guard**. Lift the front of the **media guard** to remove it.



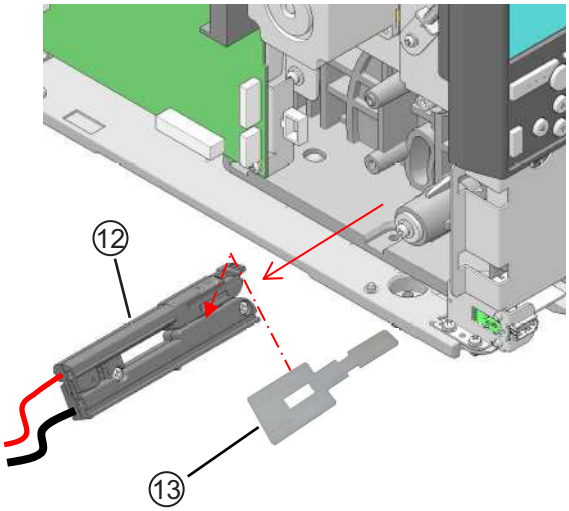
6 Remove the **screw** ⑩, slide and lift to remove the **left housing cover** ⑪.

Note

When removing the left housing cover, make sure that the cover does not touch the PCB, causing the components of the PCB to be deformed.



7 Pull out the **sensor holder assembly** ⑫ from the printer.

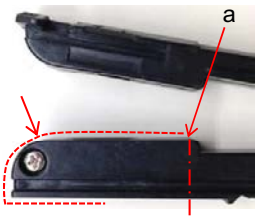


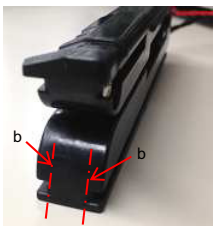
Note

Be careful not to break the wires.

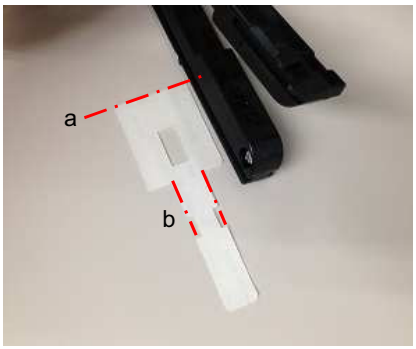
8 Follow steps 9 and 10 to paste the **pure sheet (sensor)** ⑬ onto the **sensor holder assembly** ⑫.

9 Clean the areas **a** and **b** on the **sensor holder assembly** where the sheet is to be pasted.

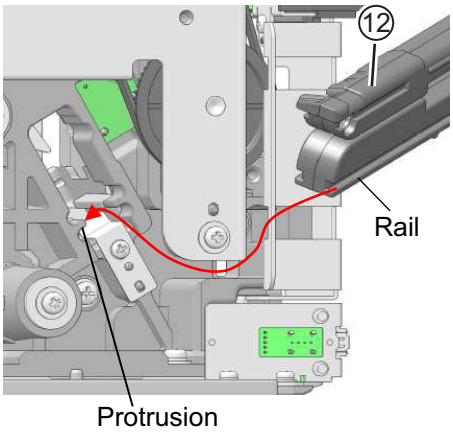




10 Align **a** and **b** to the areas on **sensor holder assembly** and paste the sheet as shown in the arrow direction.



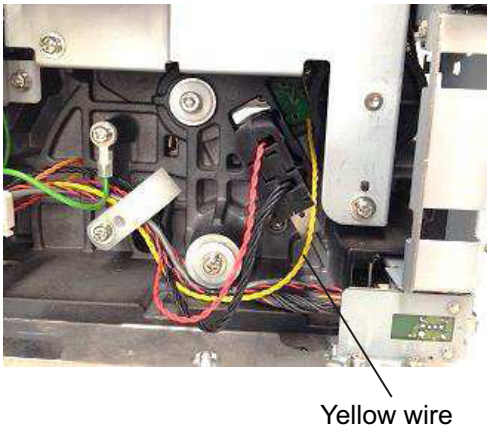
11 Insert the **sensor holder assembly** ⑫ by aligning the rail to fit in the protrusion as shown.



Note

- Do not close the print head when inserting the sensor holder assembly.
- Make sure that the movement of the sensor holder assembly is smooth.

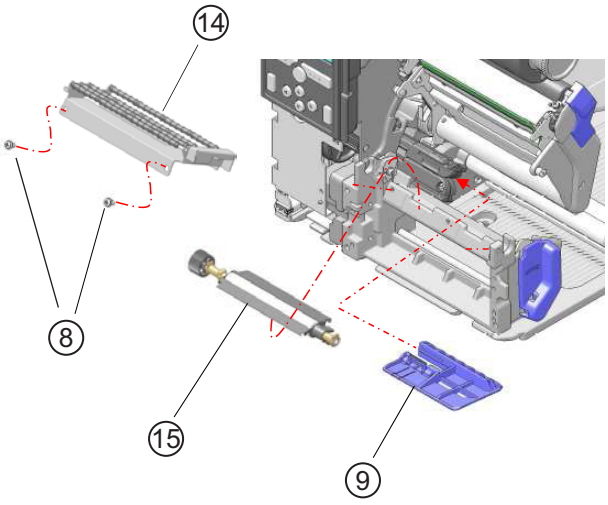
12 Arrange the wire route so that the yellow wire is under the **sensor holder assembly**.



13 Attach the **media frame (linerless)** ⑭ by tightening the **screws** ⑧ while pressing down the media frame,

14 Attach the **linerless platen roller** ⑮.

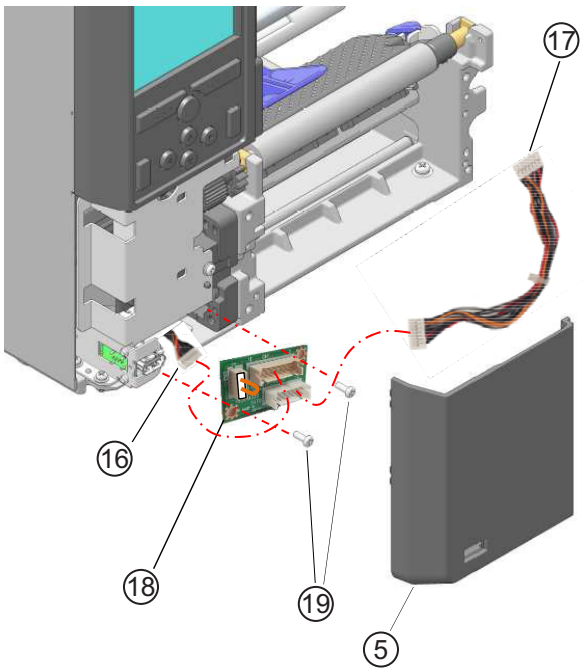
15 Attach the **media sensor guide** ⑨ and tilt the sensor guide lock back to the locked position.



Note

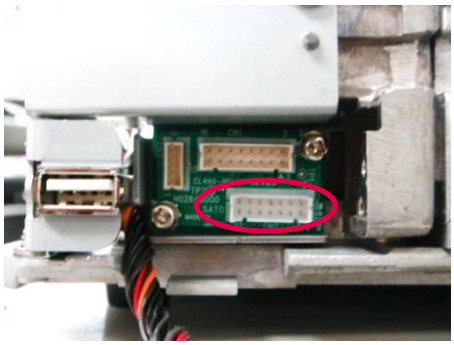
- Make sure that the movement of the sensor holder assembly is smooth.
- Set the media sensor guide to the innermost side.

16 Connect the **option cable** ⑯ and **cutter cable** ⑰ to the **linerless relay PCB** ⑱. Tighten two **screws** ⑲ to attach the **linerless relay PCB**.

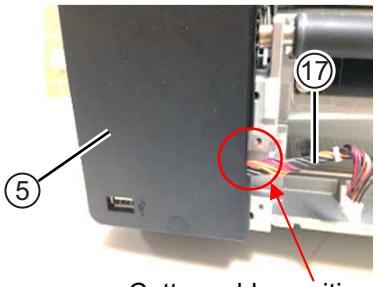


⚠ CAUTION

To avoid electrical damage, make sure that the orientation of the relay-PCB is placed with the highlighted connector at the bottom as shown.

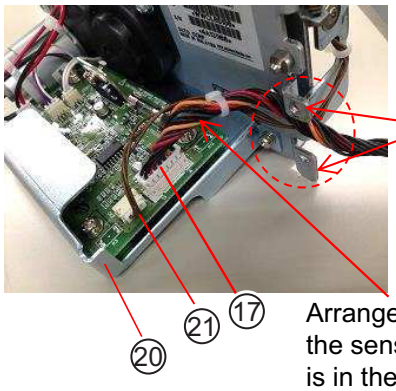


17 Attach the **front cover** ⑤ while placing the **cutter cable** ⑰ onto the slot.



Cutter cable position

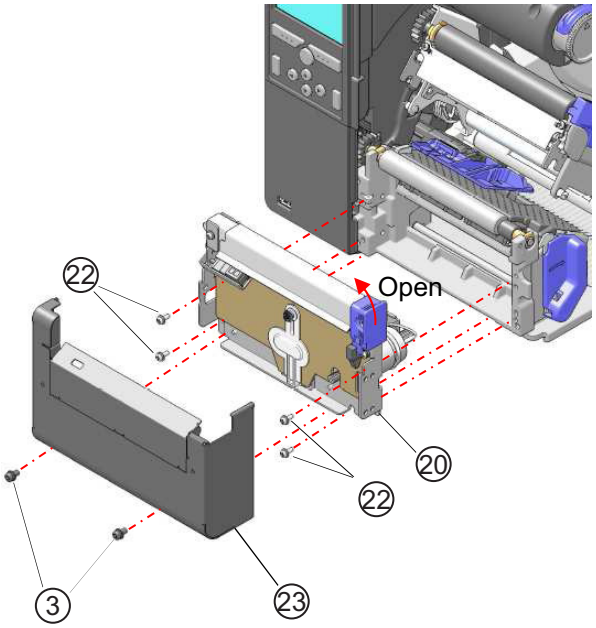
18 Connect the **cutter cable** ⑰ to the PCB on the **linerless cutter unit** ⑳.



19 Attach the **linerless cutter unit** ⑳ to the printer and tighten four **screws** ㉒.

Note

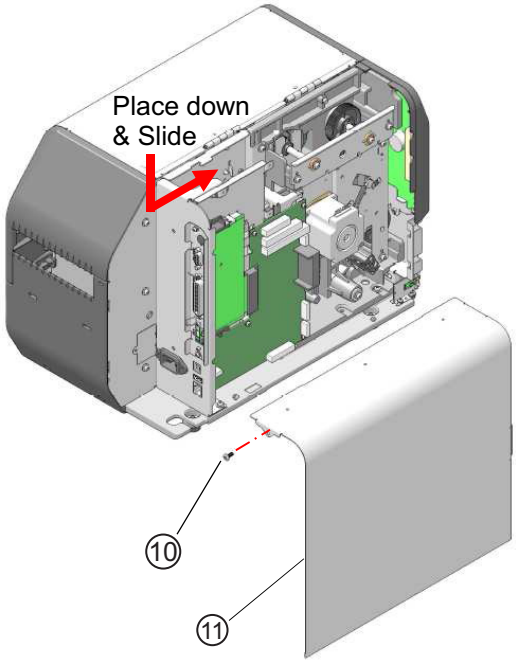
Be careful not to pinch the cables.



20 Pull the tab to open the **cutter-open lever**, attach the **front cover** ㉓ of the cutter and tighten two **screws** ③.

21 Close and lock the **cutter-open lever**.

22 Attach the **left housing cover** ⑪ and tighten the **screw** ⑩.



Checking and Adjustment after the Installation

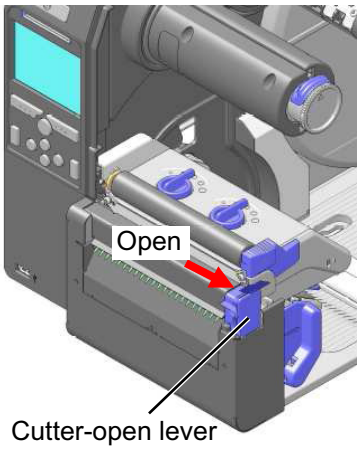
Preparation:

- Load direct thermal media to the printer for checking the print position. (Linerless media is not required)
- Check that the firmware version is 1.3.0.r7 or later. (Refer to **Information** > **Build Version** in Chapter 4 Operation and Configuration of the CL4NX/CL6NX operator manual)

Error message checking

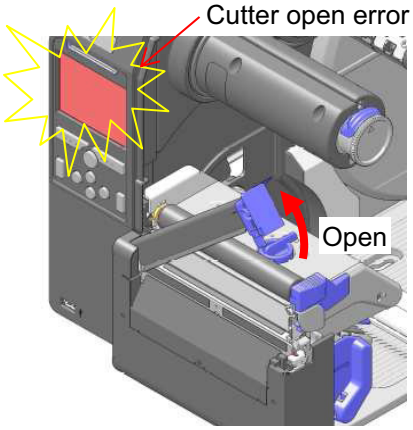
1 After you load the media and ribbon, close the **print head** and **top cover**. Then power on the printer.

2 Pull the tab to open the **cutter-open lever**.



3 Check that the **Cutter open** error message shows on the LCD.

4 Close and lock the **cutter-open lever**.

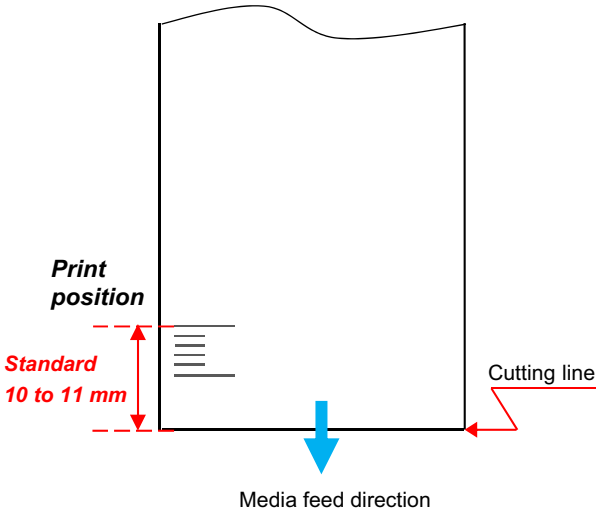


Test print checking

1 After you load the media and ribbon, close the **print head** and **top cover**. Then power on the printer.

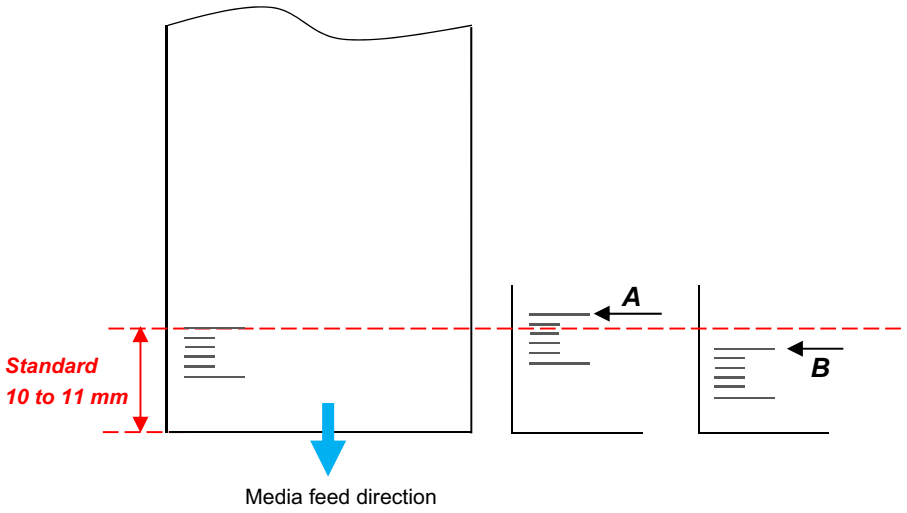
2 Perform a factory test print (refer to **Tools** > **Test Print** > **Factory** in Chapter 4 Operation and Configuration of the CL4NX/CL6NX operator manual) to check the print position:

The standard print position is 10 to 11 mm from the cutting line.
If the print position is not within the standard range, perform the **Print position adjustment** on the next page.



Print position adjustment

1. After you load the media and ribbon, close the **print head** and **top cover**. Then power on the printer.
2. Adjust the pitch in the **Factory** menu. (refer to **Tools** > **Test Print** > **Factory** in Chapter 4 Operation and Configuration of the CL4NX/CL6NX operator manual)
3. Perform a factory test print to check the print position.



4. If the print position is in the case of A, reduce the pitch. If the print position is in the case of B, then increase the pitch.
5. After adjusting the pitch, perform a factory test print again.
6. Check the cutting position. If necessary, perform steps 2 through 5 until the cutting position is correct.

6.6 Installation of the Optional RFID Kit (CL4NX Only)

6.6.1 Installation of the Optional UHF RFID Kit

⚠ CAUTION

Before the installation, be sure to power off the printer and disconnect the power cord.
Wear gloves when you handle the print head, to prevent damage to the print head.

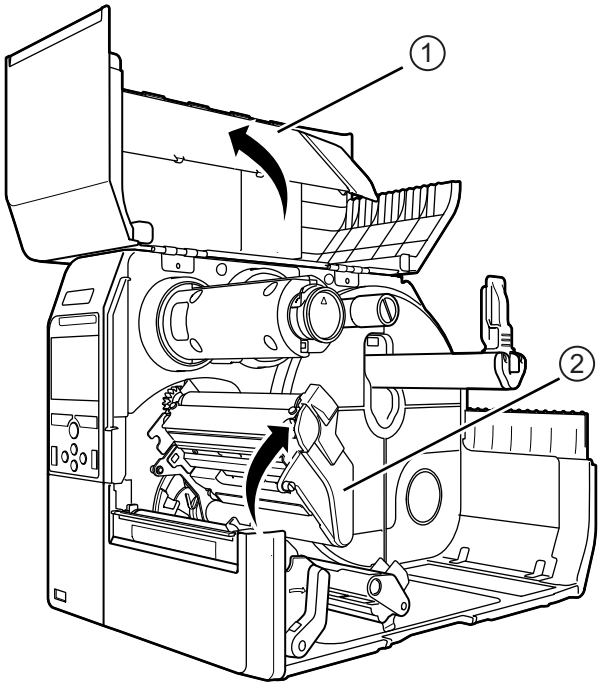
Required tools:

- Phillips screwdriver (JIS #1 and #2, or equivalent)

1 Open the **top cover** ① and print head ②.

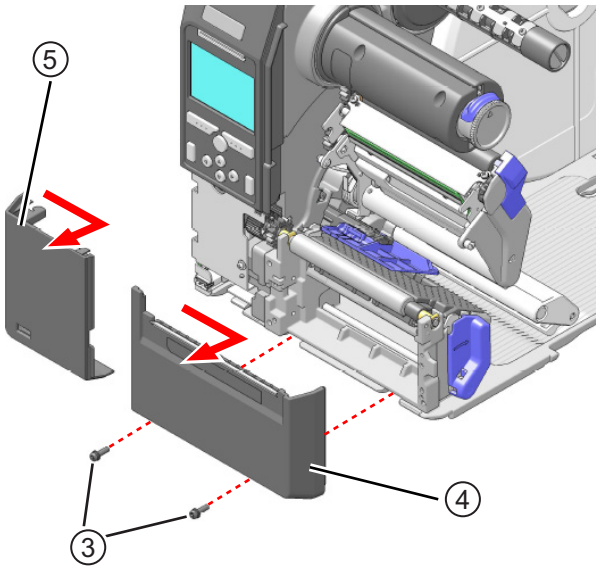
⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.



2 Remove two screws ③ and the **front covers** ④ and ⑤.

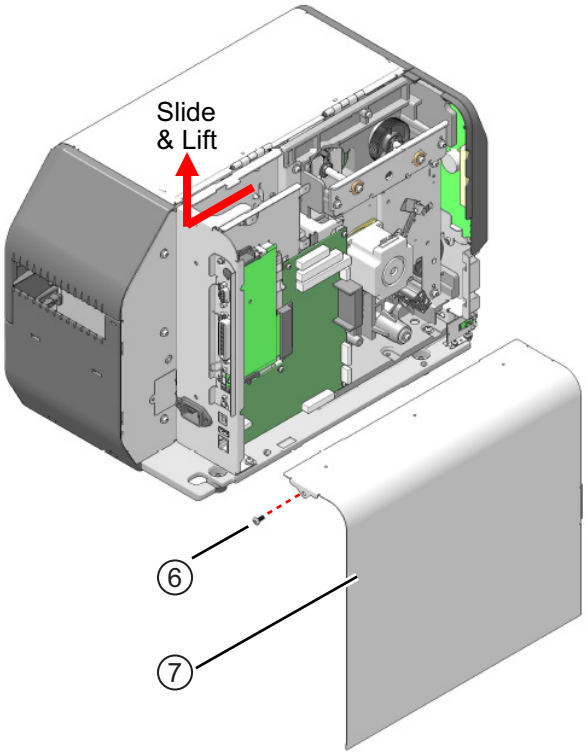
Slide in the arrow direction to remove the front covers.



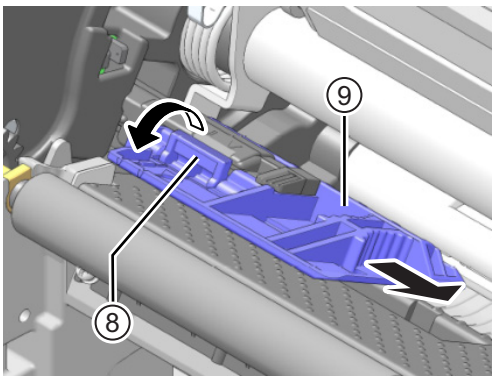
3 Remove the **screw** ⑥, slide and lift to remove the **left housing cover** ⑦.

Note

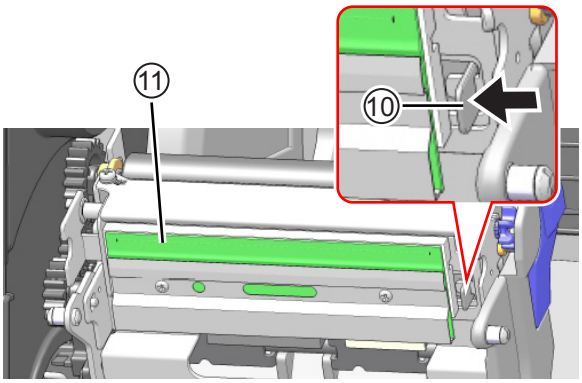
When removing the left housing cover, make sure that the cover does not touch the PCB, causing the components of the PCB to be deformed.



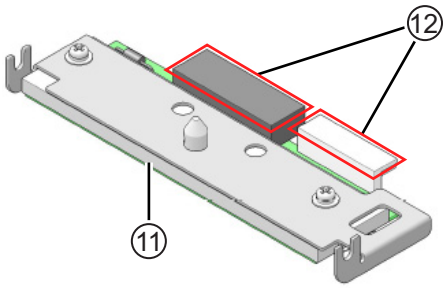
4 Tilt the **sensor guide lock** ⑧ down and pull out the **media sensor guide** ⑨.



5 Press the **lever** ⑩ to remove the **print head** ⑪.



6 Disconnect two **connectors** ⑫ from the **print head** ⑪.

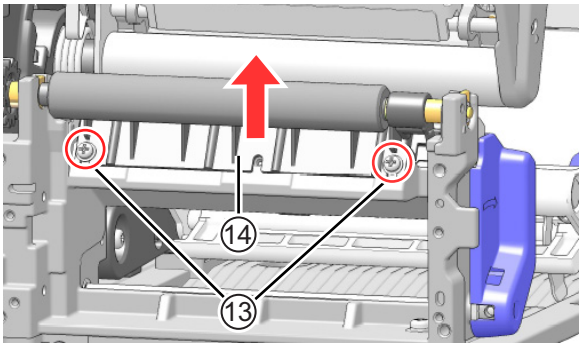


CAUTION

Handle the print head with care.
Do not contaminate or scratch the sensitive print head surface.

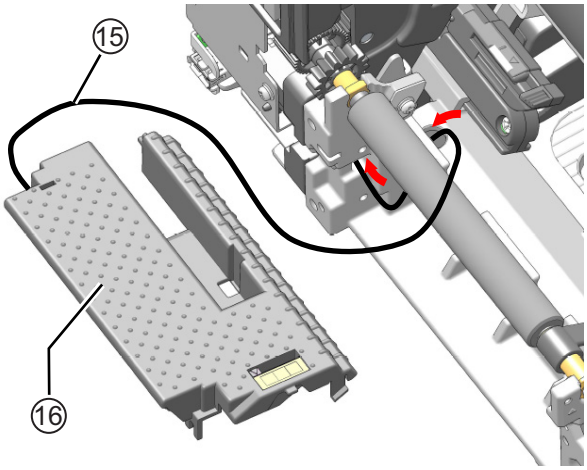
7 Remove two **screws** ⑬ and the **media guard** ⑭.

Make sure that the **sensor holder** is pushed to the innermost position before you remove the **media guard**. Lift the front of the **media guard** to remove it.

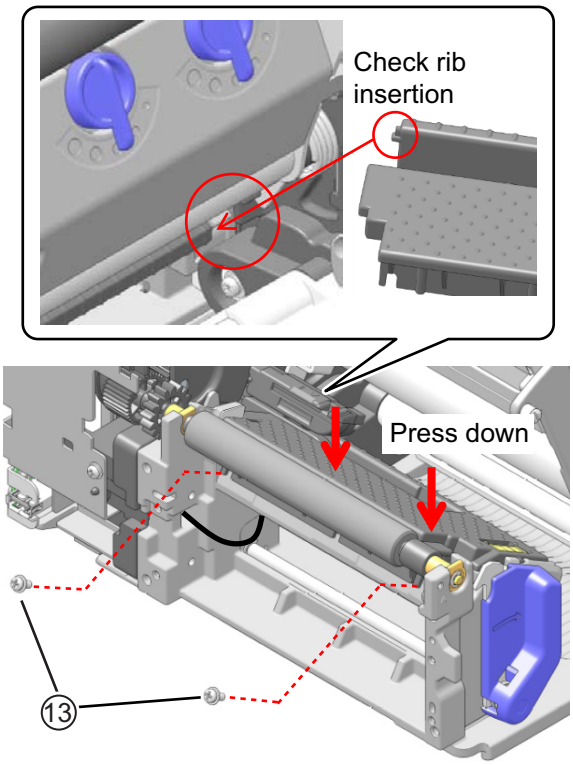


8 Pass the **antenna wire** ⑮ of the **media guard (RFID)** ⑯ through the hole of the frame as shown.

Pull out the **antenna wire** from the PCB side.



9 Place and press the **media guard (RFID)** ⑯ down onto the engine frame.

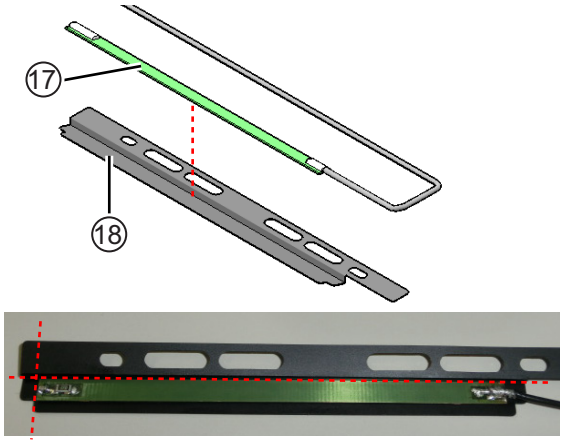


10 Attach the **media guard (RFID)** ⑯ using two **screws** ⑬ removed in step 7.

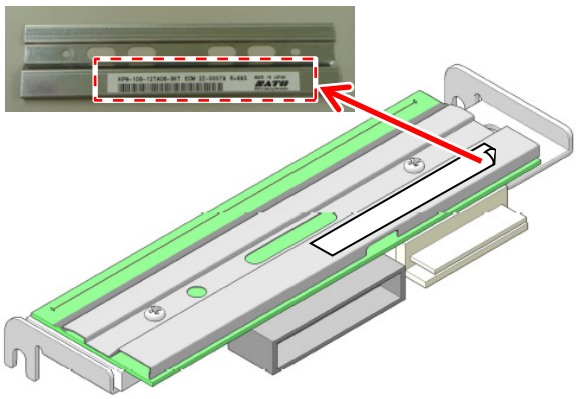
11 Return the **media sensor guide** ⑨ to its original position and tilt the **sensor guide lock** ⑧ up to the locked position.

12 Attach the **UHF (short) antenna** ⑰ to the **RFID print head cover sheet** ⑱ using the double-sided adhesive tape.

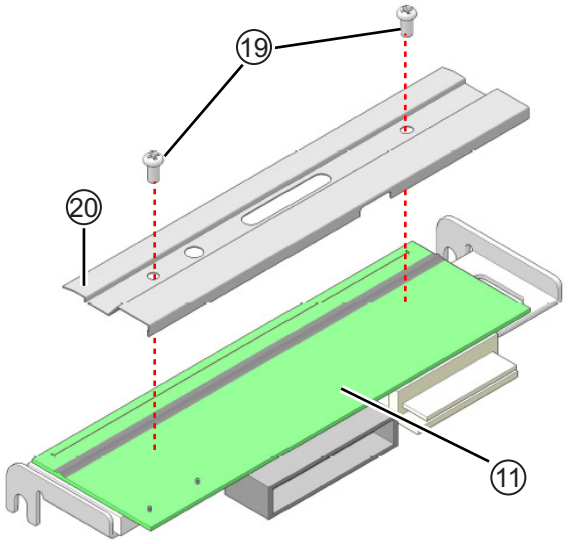
Align the **UHF (short) antenna** to the **RFID print head cover sheet** as shown.



13 Peel off the serial label of the print head and keep it for future reference.



14 Remove two **screws (print head)** ⑲ and the **head cover** ⑳ from the **print head** ⑪.

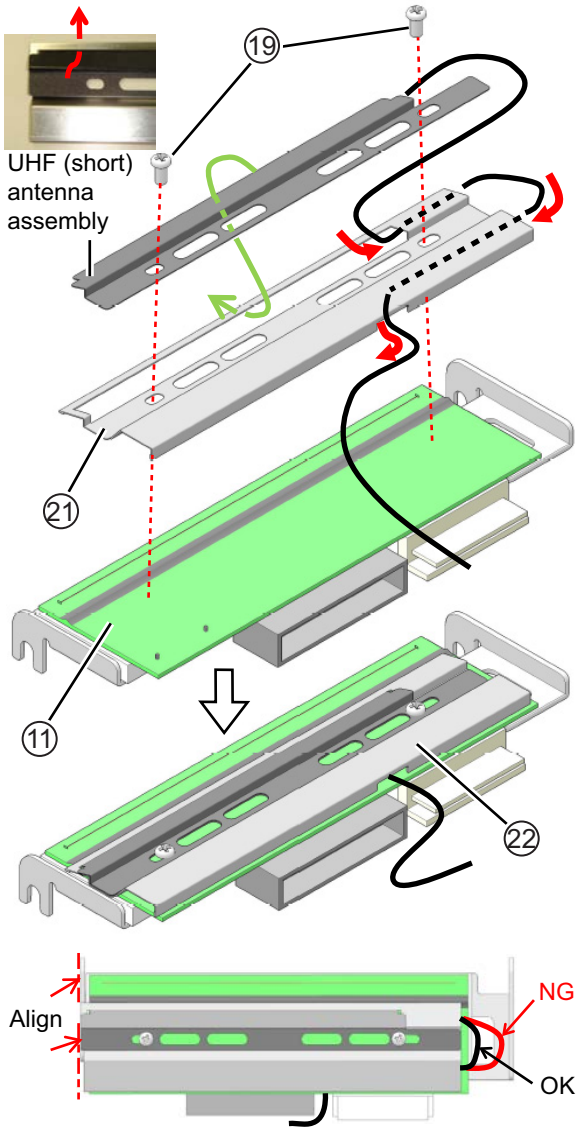


15 Attach the **UHF (short) antenna assembly** onto the **RFID head cover** ㉑ as shown in the picture.

Insert front part of UHF (short) antenna assembly through the rectangle opening of the RFID head cover.
Route the **antenna wire** accordingly.

16 Attach the **RFID head cover** ㉑ using two **screws (print head)** ⑲ removed in step 13.

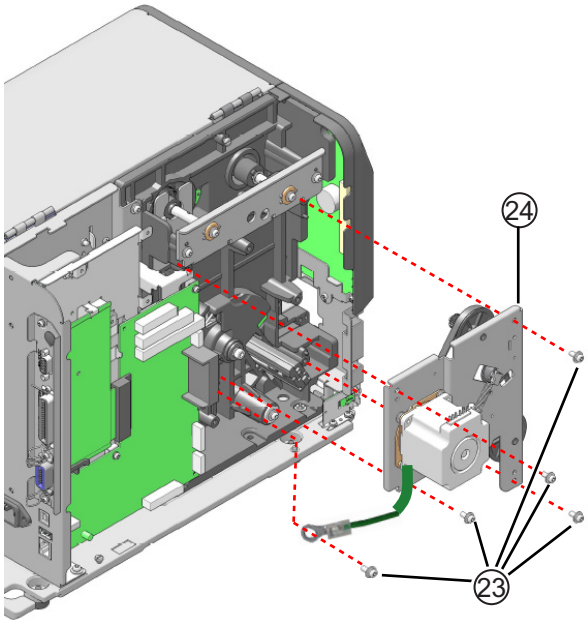
Align the edge of the **RFID head cover** ㉑ carefully to the side of the **print head** ⑪ as shown. Then fix the position using the screws.
The print head assembly is known as **RFID print head assembly** ㉒ in the later steps.



Note

Make sure that the loop of the antenna wire is as short as possible.

17 Remove five **screws** ㉓ attaching the **gearbox assembly** ㉔.



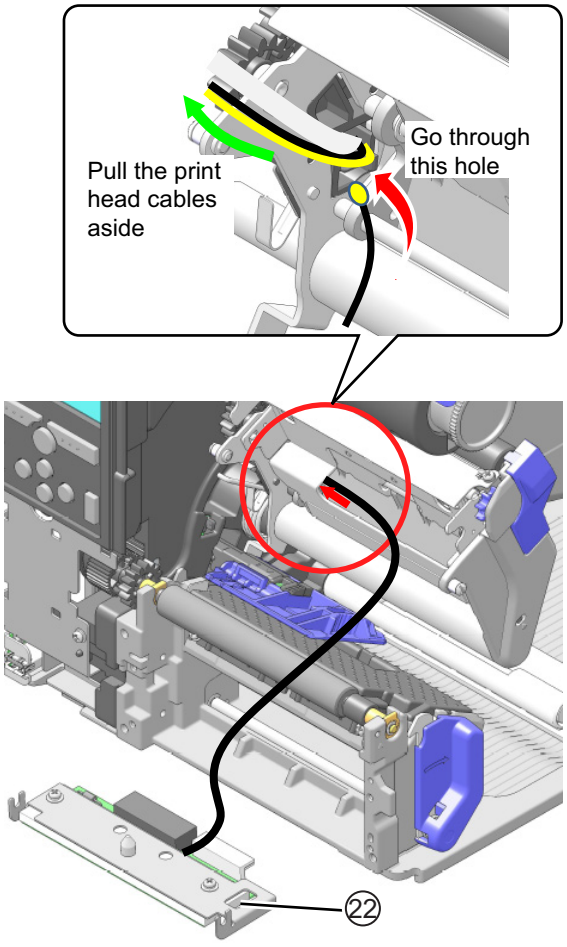
18 Pass the **antenna wire** of the **RFID print head assembly** ㉒ through the hole of the printer frame, and behind the print head cables.

Pull out the **antenna wire** from the PCB side.

19 Connect the **print head cables** to two **connectors** ⑫ of the **RFID print head assembly** ㉒.

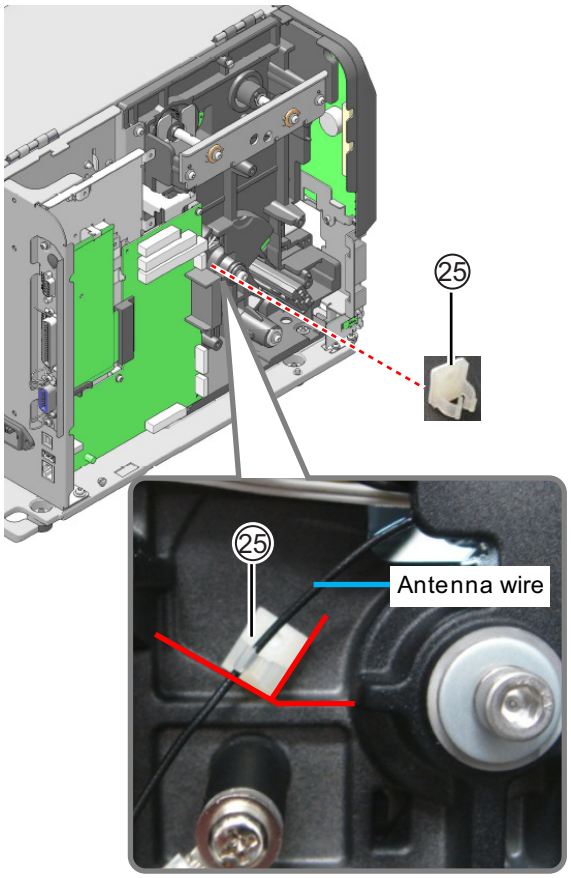
20 Install the **RFID print head assembly** ㉒.

Install the print head so that it is locked with a click sound.



21 Paste a **mini clamp** ㉕ on the center frame.

Pass the **antenna wire** from the print head assembly through the mini clamp.



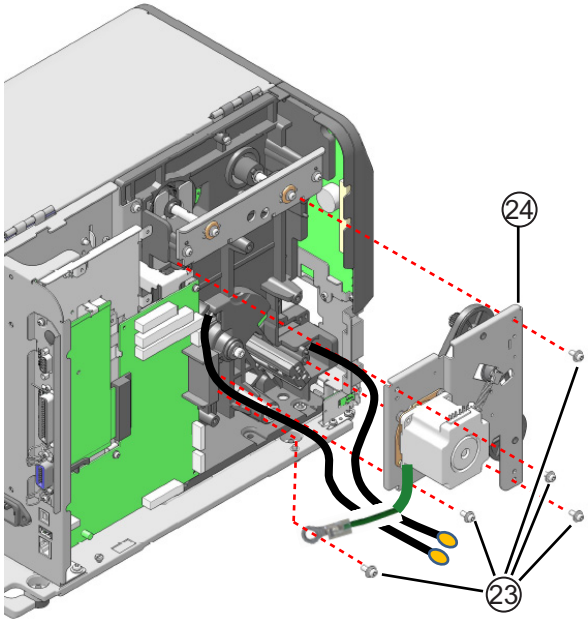
22 Attach the **gearbox assembly** ㉔ using five **screws** ㉓ removed in step 16.

Arrange two **antenna wires** under the **gearbox assembly**.

Note

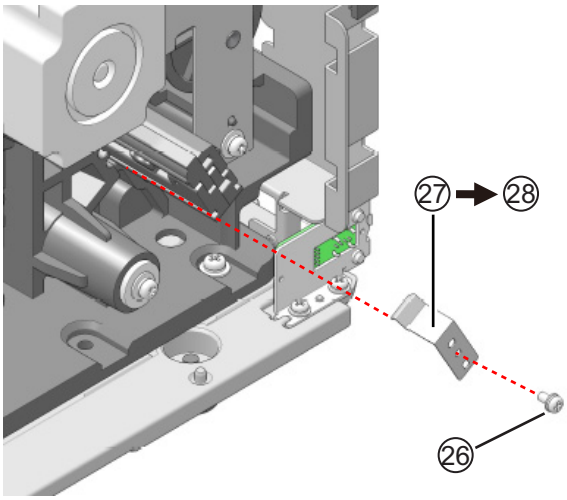
When attaching the gearbox assembly, takes note on the following tips.

- Make sure that the wires are not pinched.
- Make sure that the gear pulley is inserted properly.



23 Remove the **screw** ㉖ attaching the **sensor case tension** ㉗.

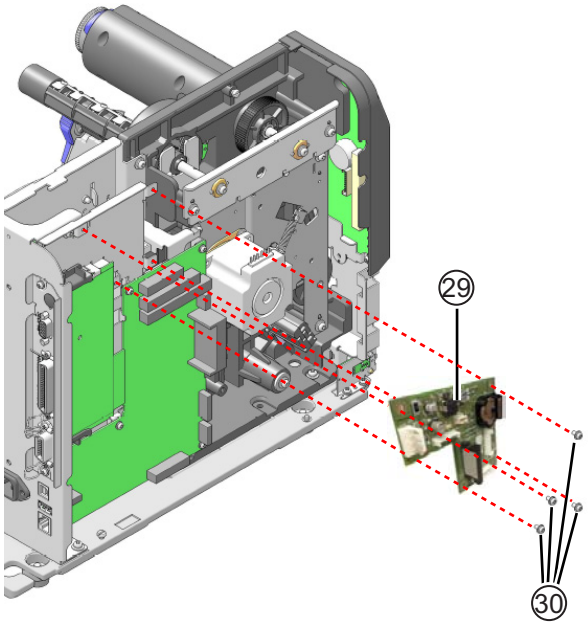
24 Replace the **sensor case tension** ㉗ with the **RFID sensor case tension** ㉘ and attach it using the **screw** ㉖.



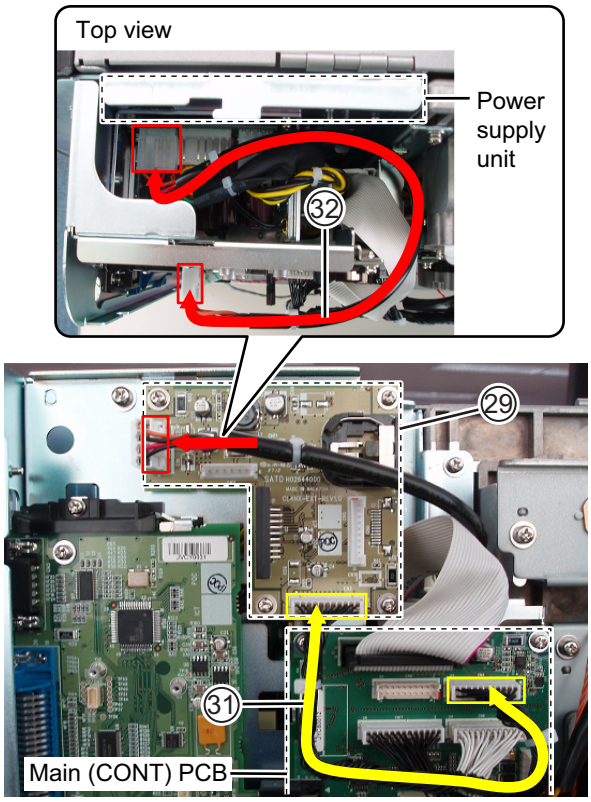
Note

- Do not mix up the **sensor case tension** ㉗ and the **RFID sensor case tension** ㉘. The **RFID sensor case tension** is shorter.
- After installed the **RFID sensor case tension**, you are able to push the **media sensor guide** further in. This allows the Gap sensor to detect the notch of the media.
  In this case, select **Using Gap** on **Paper End** screen (**Printing** > **Advanced** > **Paper End**). Otherwise, the printer will detect “Paper End” error even though the media is actually loaded when the **media sensor guide** is pushed in all the way.
- **RFID sensor case tension** is also available as an individual part.

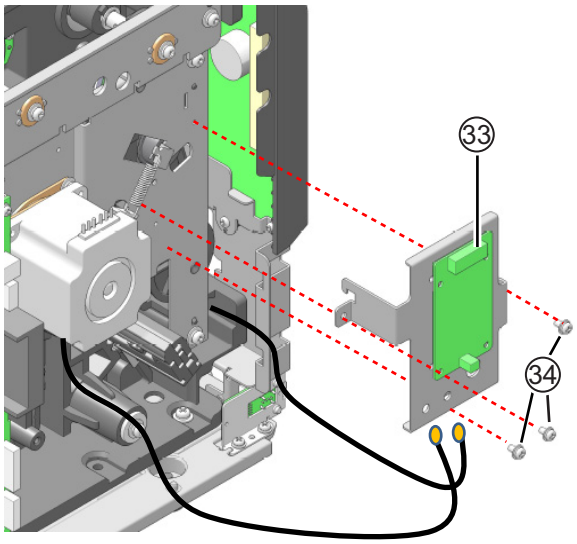
25 Attach the **EXT PCB** ㉙; and tighten four **screws** ㉚.



26 Connect the **EXT signal cable** ㉛ from the **EXT PCB** ㉙ to the **main (CONT) PCB**. And then connect the **EXT power cable** ㉜ from the **EXT PCB** ㉙ to the **power supply unit**.



27 Attach the **RFID PCB assembly** ㉝ to the **gearbox assembly** using three **screws** ㉞.



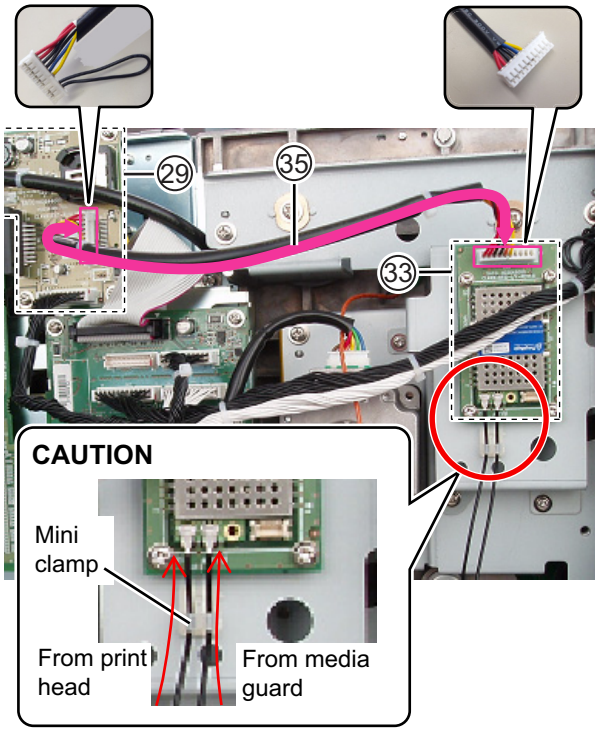
28 Connect the **RFID signal cable** ㉟ from the **RFID PCB assembly** ㉝ to the **EXT PCB** ㉙.

Connect the connector with a looped wire to the **EXT PCB** as shown.

29 Connect two **antenna wires** to the **RFID PCB assembly** ㉝.

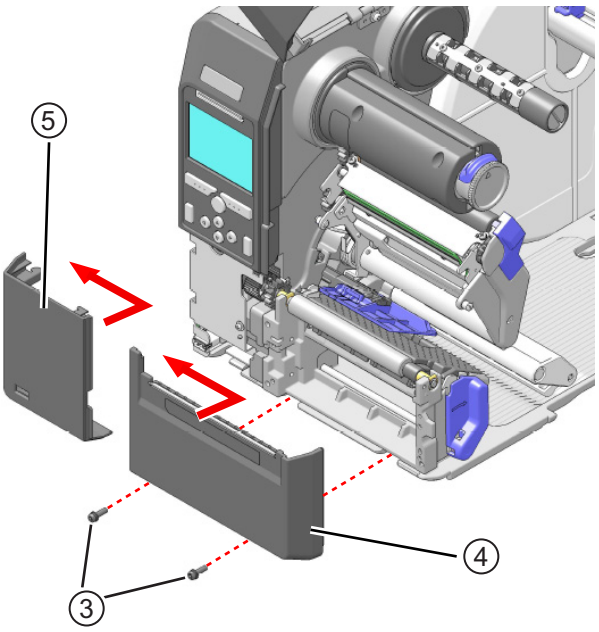
Take note on the position of the **antenna wires** as shown. Connect the **antenna wire** from the **print head** to the left connector. Connect the **antenna wire** from the **media guard** to the right connector.

30 After connection, fix the **antenna wires** using the **mini clamp** as shown.

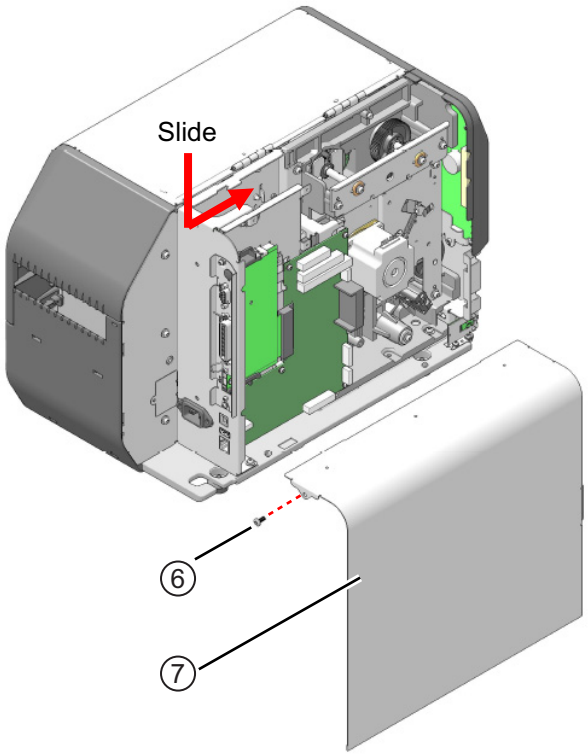


31 Attach the **front covers** ⑤ and ④ to the printer using two **screws** ③.

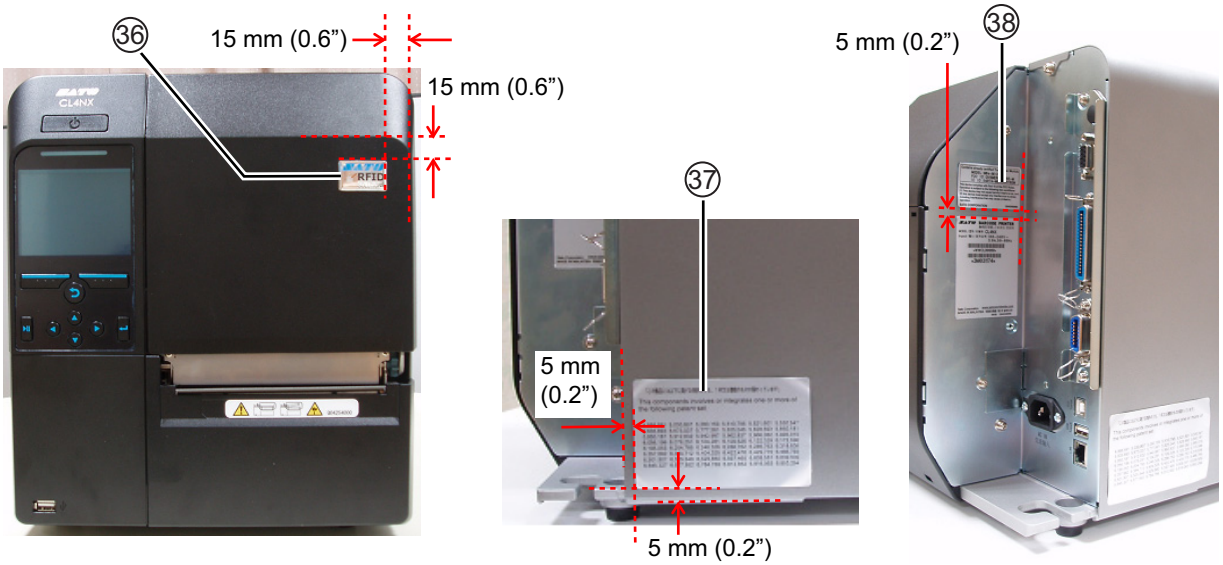
Slide in the arrow direction to attach the front covers.



32 Attach the **left housing cover** ⑦ and tighten the **screw** ⑥.



33 Paste three stickers to the position as shown.



- Paste the **SATO RFID solutions sticker** ㊱ on the front of the printer as shown above.
- Paste the **patent label** ㊲ on the left housing cover as shown above.
- Paste the **FCC sticker** ㊳ beside the connector panel as shown above.

6.6.2 Installation of the Optional HF RFID Kit

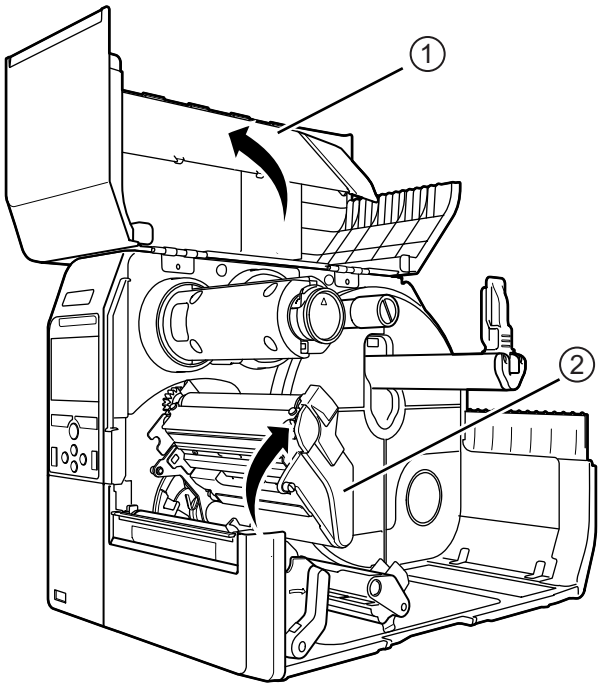
⚠ CAUTION

Before the installation, be sure to power off the printer and disconnect the power cord.
Wear gloves when you handle the print head, to prevent damage to the print head.

Required tools:

- Phillips screwdriver (JIS #1 and #2, or equivalent)

1 Open the **top cover** ① and print head ②.

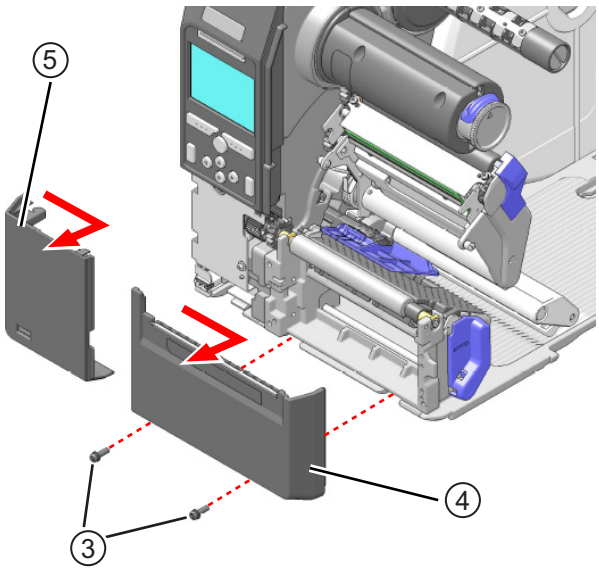


⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.

2 Remove two screws ③ and the **front covers** ④ and ⑤.

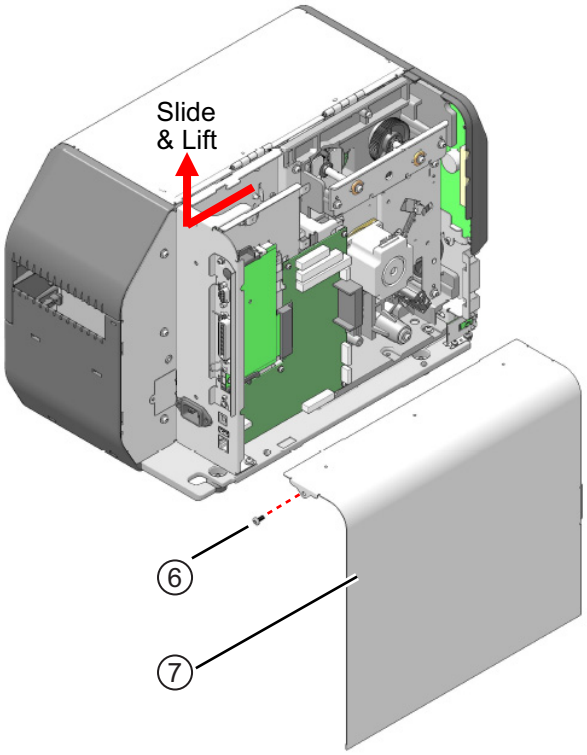
Slide in the arrow direction to remove the front covers.



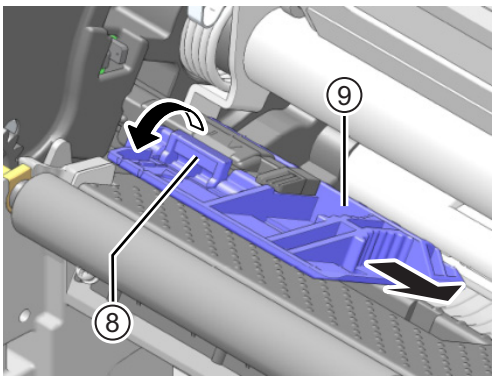
3 Remove the **screw** ⑥, slide and lift to remove the **left housing cover** ⑦.

Note

When removing the left housing cover, make sure that the cover does not touch the PCB, causing the components of the PCB to be deformed.

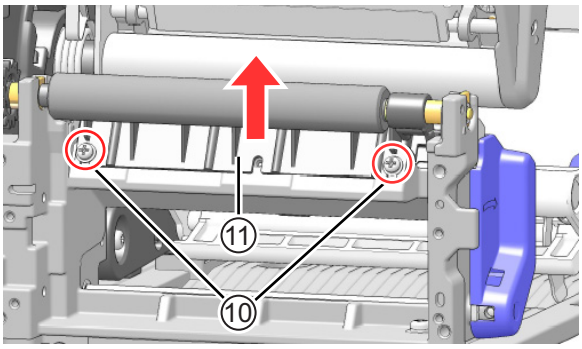


4 Tilt the **sensor guide lock** ⑧ down and pull out the **media sensor guide** ⑨.



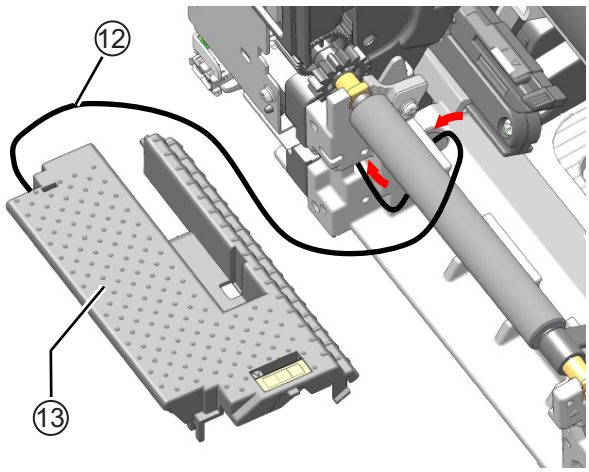
5 Remove two **screws** ⑩ and the **media guard** ⑪.

Make sure that the **sensor holder** is pushed to the innermost position before you remove the **media guard**. Lift the front of the **media guard** to remove it.



6 Pass the **antenna wire** ⑫ of the **media guard (RFID)** ⑬ through the hole of the frame as shown.

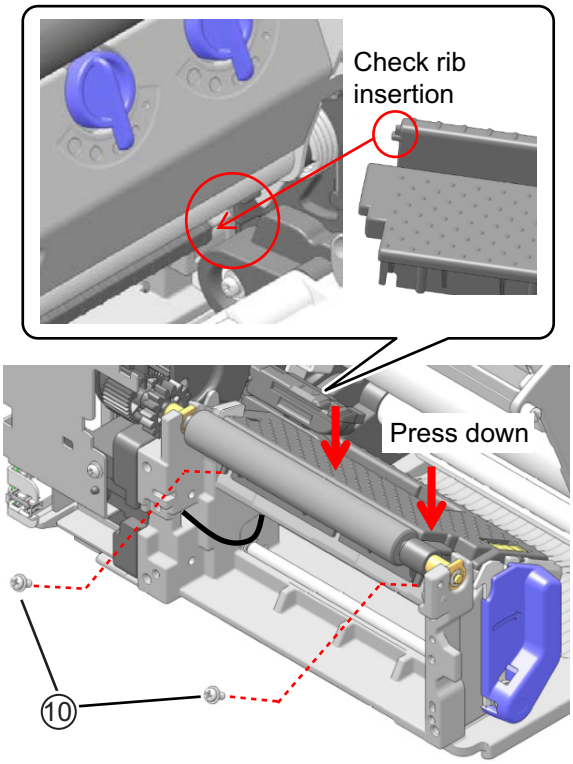
Pull out the **antenna wire** from the PCB side.



7 Place and press the **media guard (RFID)** ⑬ down onto the engine frame.

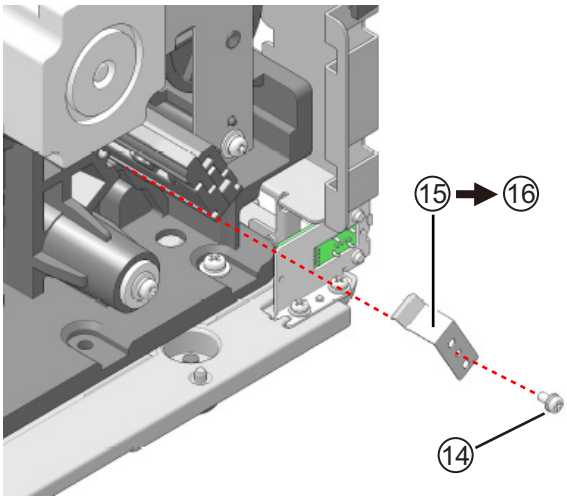
8 Attach the **media guard (RFID)** ⑬ using two **screws** ⑩ removed in step 5.

9 Return the **media sensor guide** ⑨ to its original position and tilt the **sensor guide lock** ⑧ up to the locked position.



10 Remove the **screw** ⑭ attaching the **sensor case tension** ⑮.

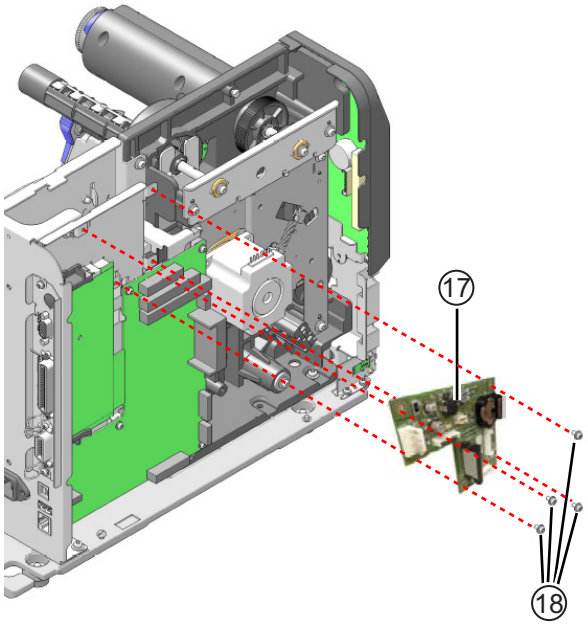
11 Replace the **sensor case tension** ⑮ with the **RFID sensor case tension** ⑯ and attach it using the **screw** ⑭.



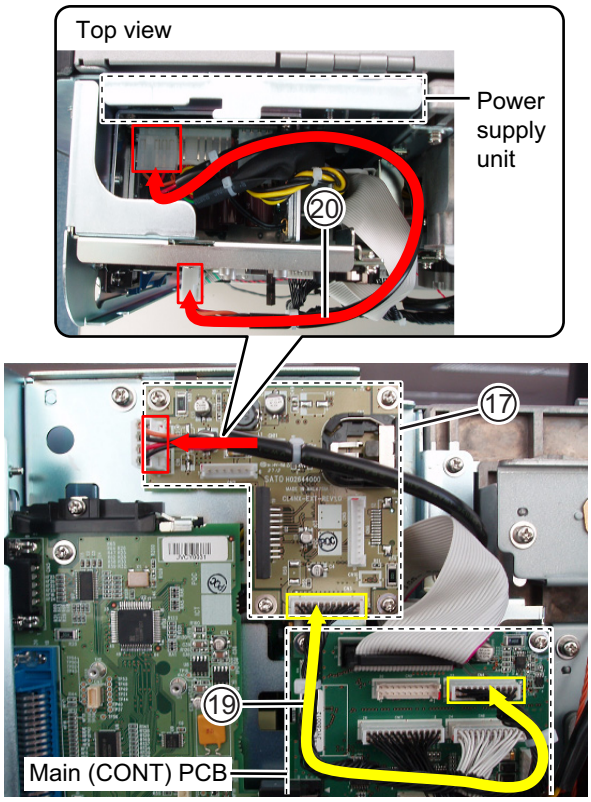
Note

- Do not mix up the **sensor case tension** ⑮ and the **RFID sensor case tension** ⑯. The **RFID sensor case tension** is shorter.
- After installed the **RFID sensor case tension**, you are able to push the **media sensor guide** further in. This allows the Gap sensor to detect the notch of the media.
  In this case, select **Using Gap** on **Paper End** screen (**Printing** > **Advanced** > **Paper End**). Otherwise, the printer will detect “Paper End” error even though the media is actually loaded when the **media sensor guide** is pushed in all the way.
- **RFID sensor case tension** is also available as an individual part.

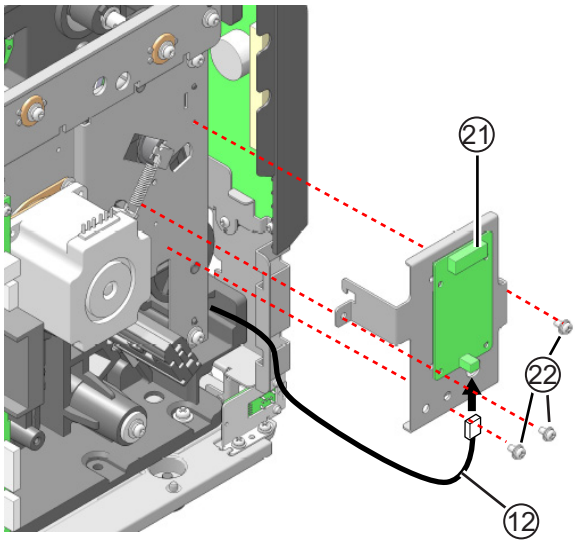
12 Attach the **EXT PCB** ⑰; and tighten four **screws** ⑱.



13 Connect the **EXT signal cable** ⑲ from the **EXT PCB** ⑰ to the **main (CONT) PCB**. And then connect the **EXT power cable** ⑳ from the **EXT PCB** ⑰ to the **power supply unit**.



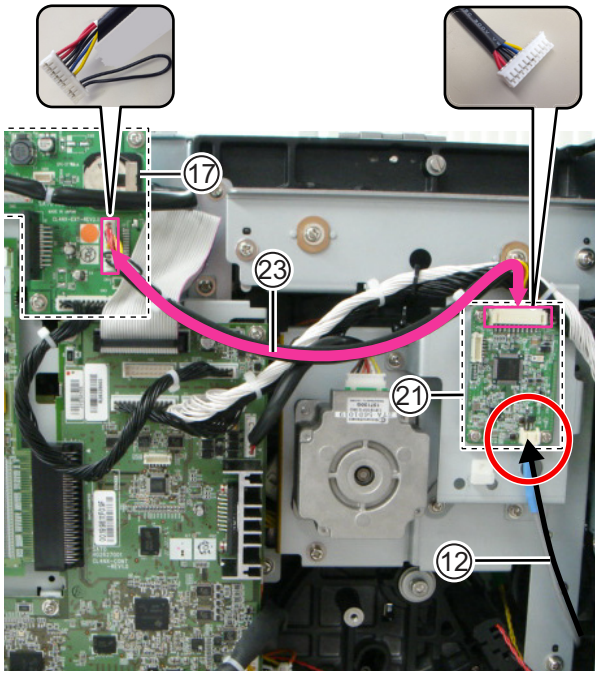
14 Attach the **RFID PCB assembly** ㉑ to the **gearbox assembly** using three **screws** ㉒.



15 Connect the **RFID signal cable** ㉓ from the **RFID PCB assembly** ㉑ to the **EXT PCB** ⑰.

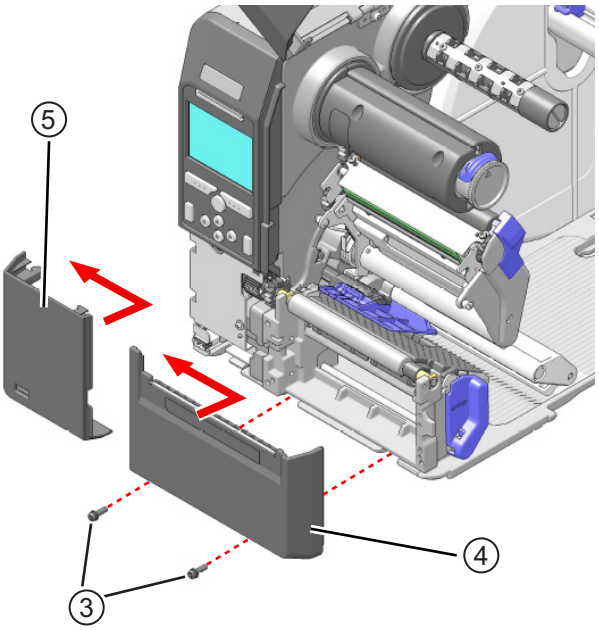
Connect the connector with a looped wire to the **EXT PCB** ⑰ as shown.

16 Connect the **antenna wire** ⑫ to the **RFID PCB assembly** ㉑.

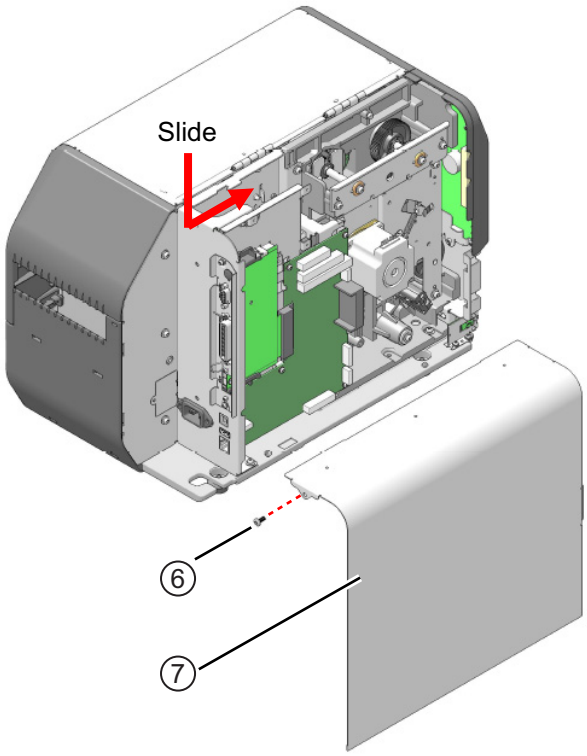


17 Attach the **front covers** ⑤ and ④ to the printer using two **screws** ③.

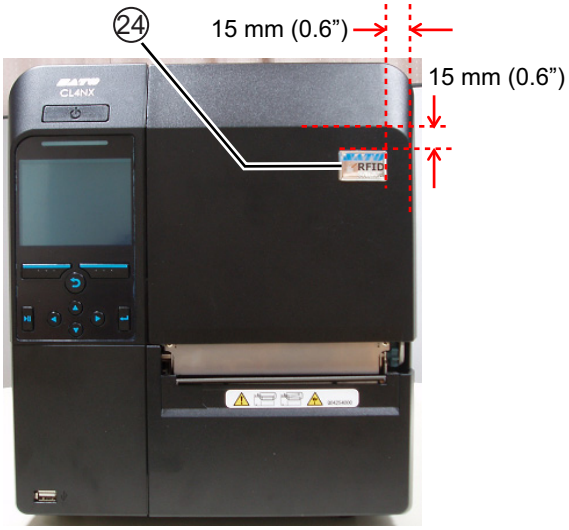
Slide in the arrow direction to attach the front covers.



18 Attach the **left housing cover** ⑦ and tighten the **screw** ⑥.



19 Paste the **SATO RFID solutions sticker** ㉔ on the front of the printer as shown.



About RFID Module Auto Detection

The printer has a built in function to enable the RFID mode automatically when the printer is power on after you have installed the RFID kit. Or, disable the RFID mode automatically when the printer is power on after removing the RFID kit.

⚠ CAUTION

Be sure to power off the printer and disconnect the power cord, before installing or removing the RFID kit.

After installing the RFID kit

When the printer is power on, the printer shall enable the RFID function so that **RFID** will be shown in the **Interface** menu of the **Settings** mode.

When the buzzer sounds six times during power on (from power on until the Online screen is shown), it means the printer detected the RFID module, but the communication between them fails. In this case, check the wiring.
In this condition, if the printer received commands related to RFID write/read or <IP5>, the printer cannot operate and keeps showing RFID System Error until the printer is power off.

After removing the RFID kit

When the printer is power on, the printer shall disable the RFID function so that **RFID** will not show in the **Interface** menu of the **Settings** mode.

If the printer receives commands related to RFID write/read or <IP5>, command error or NAK response will occur.

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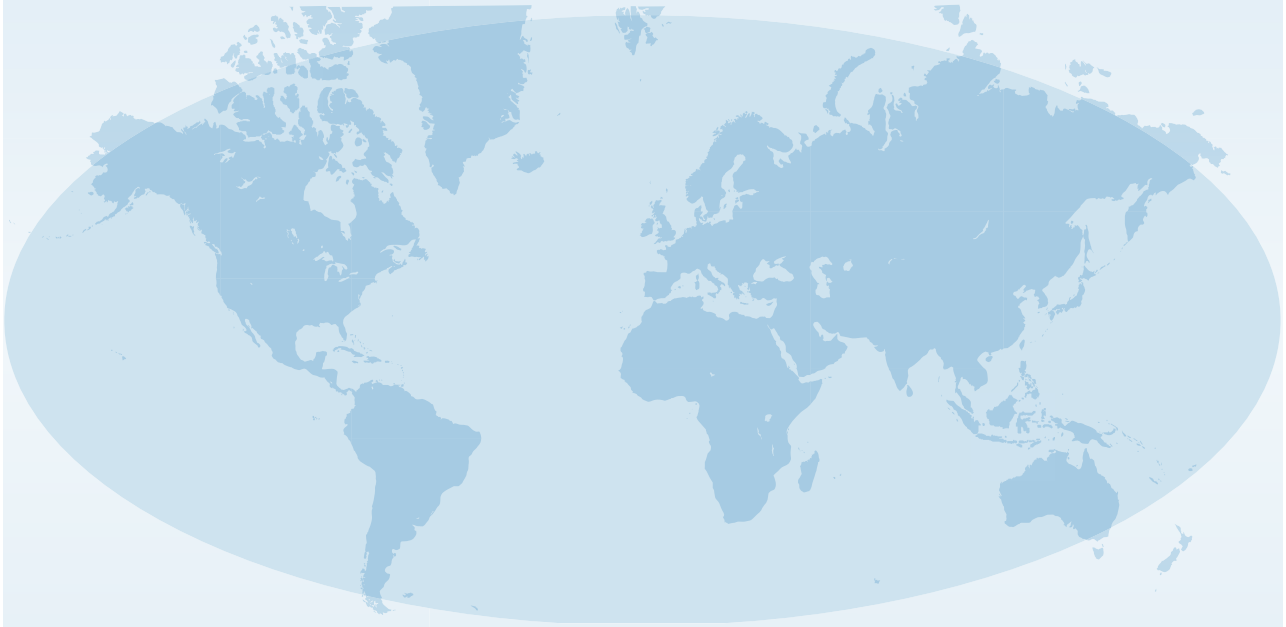

Extensive contact information for worldwide SATO operations can be found on the Internet at **www.satoworldwide.com**

SATO