RFID Module

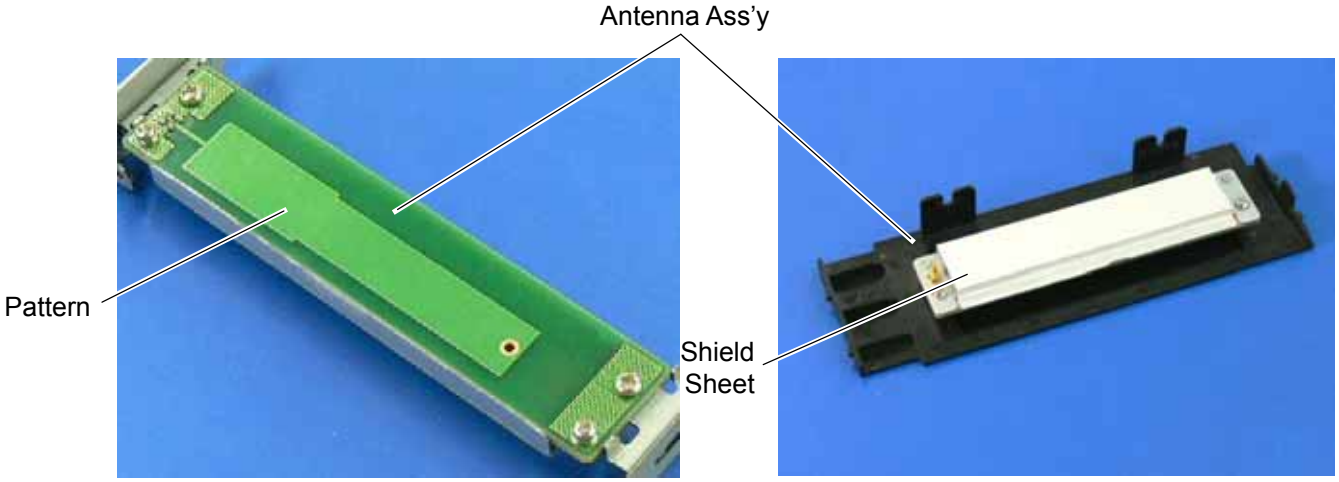
B-SX704-RFID-U2-US-R Installation Manual

Thank you for purchasing TOSHIBA TEC UHF RFID kit, B-SX704-RFID-U2-US-R.
The B-SX704-RFID-U2-US-R is exclusively for the B-SX4T and B-SX5T series.
This RFID kit complies with EPCglobal Class1 Generation2 (Gen2) and radio laws of all applicable countries.
As this product is a wireless communication device, please be sure to read the following precautions carefully.

WARNING!

1. *Do not use a printer embedded with this product near medical equipment. Radio wave emitted from this product may affect the operation of medical equipment, such as an implanted cardiac pacemaker and implantable cardioverter-defibrillator.*
   If a use of this product should be likely to have affected medical equipment, immediately turn off the product and contact your TOSHIBA TEC sales agent.
   Keep a printer embedded with this product at least 23cm away from a person with an implanted cardiac pacemaker or implantable cardioverter-defibrillator.
2. *Do not export a printer embedded with this product to the countries or areas where a use of this product is not allowed, without permission. Doing so is against the law, and you may be punished.*
   When exporting this product, check the laws and regulations of a destination country and take necessary procedures.
3. *Follow all manual instructions. Failure to do so could create safety hazards such as fire or electrocution.*
   - *Manual instructions must be followed when installing option kits or adding cables to avoid system failures and to insure proper performance and operation.*
   - *Failure to follow manual instructions or any unauthorized modifications, substitution or change to this product will void the limited product warranty.*
4. *Turn the power OFF and disconnect the power cord before installing the RFID module.*
5. *Be careful not to pinch your fingers or hands with the covers.*
6. *The print head and stepping motor becomes very hot immediately after printing. Do not touch the print head, stepping motor and around it right after printing, or you may get burned.*
7. *When opening the top cover, it must be fully opened. Failure to do this may cause the top cover to close under its own weight, resulting in an injury.*

CAUTION!
Be careful not to damage the pattern of the Antenna Ass'y or peel off the Shield Sheet. Damaged pattern or removed Shield Sheet may affect the ability to read or write RFID tags.



1. APPLICABLE MODEL

(1) This optional device is intended for the following models:

B-SX4T-GS20-QM-R and B-SX5T-TS22-QM-R, RFID ready printer.

An RFID Ready printer can be identified by the model name sticker on the front of the printer.

Be careful not to install this product in the B-SX4T-GS10-QQ/QQ-US and B-SX5T-TS10-QQ/QQ-US RFID Ready printers.

(2) To use this device, printer firmware V4.5 or greater is required. Upgrade the firmware to V4.5 or greater, if necessary. For the downloading procedure, refer to the B-SX4T/SX5T Series Maintenance Manual.

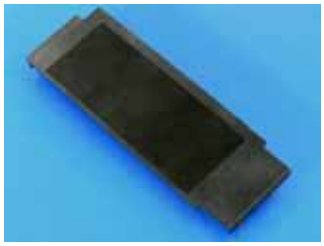
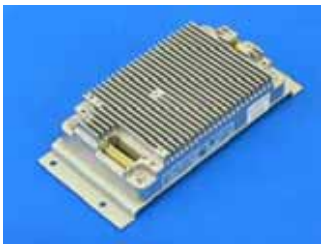
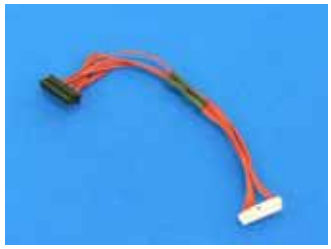
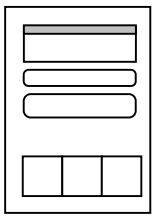
Note that a RAM clear needs to be performed after downloading, so print out the maintenance counter and parameter settings prior to downloading. After performing a RAM clear, restore the printer parameter settings to the former states.

(3) The countries where the use of this device is allowed are as follows:

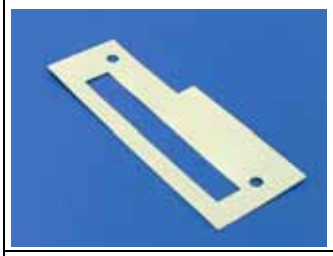
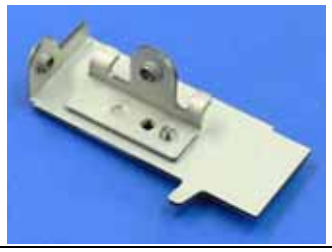
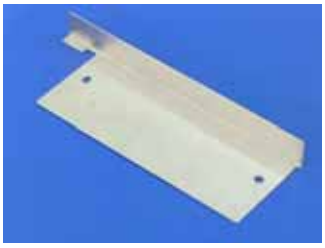
Model Name	Frequency Band	Applicable Countries
B-SX704-RFID–U2-US-R	UHF 902.75 to 927.5MHz	U.S.A., Canada

2. PACKING LIST

All the following parts are supplied with the kit. Make sure you have all items shown below.
If any part is missing, please contact your TOSHIBA TEC sales agent.

• Antenna Ass'y (1 pc.) 	•RFID R/W Module (1 pc.) 	• Antenna Frame 	• Ribbon Guide (1 pc.) 
• Bush (1 pc.) 	• Cable Clamp (1 pc.) 	•Interface Cable (1 pc.) 	• Double Sems Screw SMW-3x6 (5 pcs.) 
• Antenna Cable (1 pc.) 	• FCC ID Sticker (1 pc.) Contains FCC ID: BJIOH0006	• Installation Manual (1 copy) 	

The following parts are required when short-pitch tags (20 mm) are used. Keep them safe when not in use.

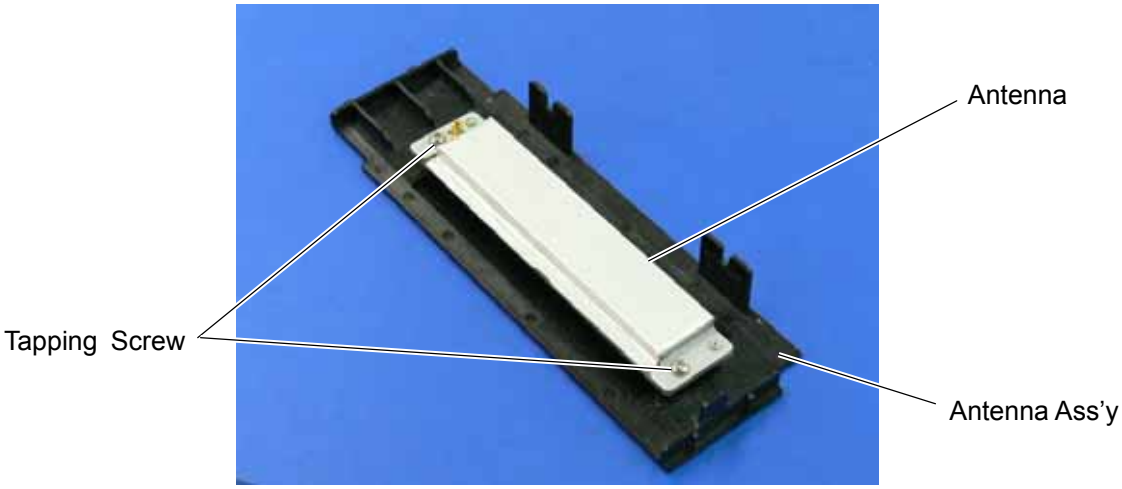
• Shield Sheet (1 pc.) 	• Antenna Plate L (1 pc.) 	• Antenna Plate R (1 pc.) 	• Pan Head Screw P-3x6 (4 pcs.) 
• Shield Plate (1 pc.) 			

3. INSTALLATION PROCEDURE

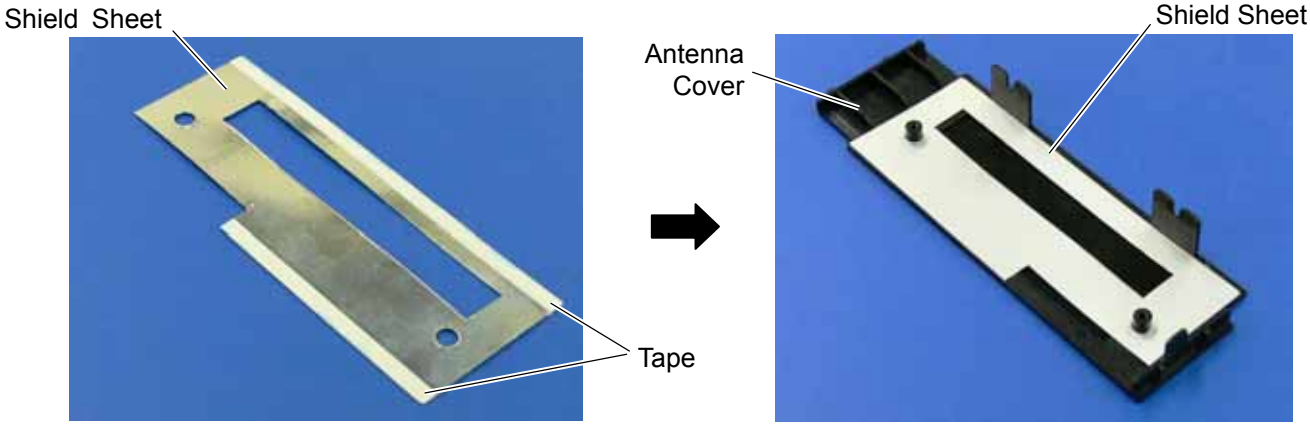
3.1 Preparation for Use of Short-Pitch RFID Tags (20mm)

When short-pitch tags (20 mm) are to be used, the Antenna Ass'y and the Antenna Frame need to be converted before installing an RFID module in the printer, for proper read/write operation. When short-pitch tags are not used, skip this section and go to Section 3.2.

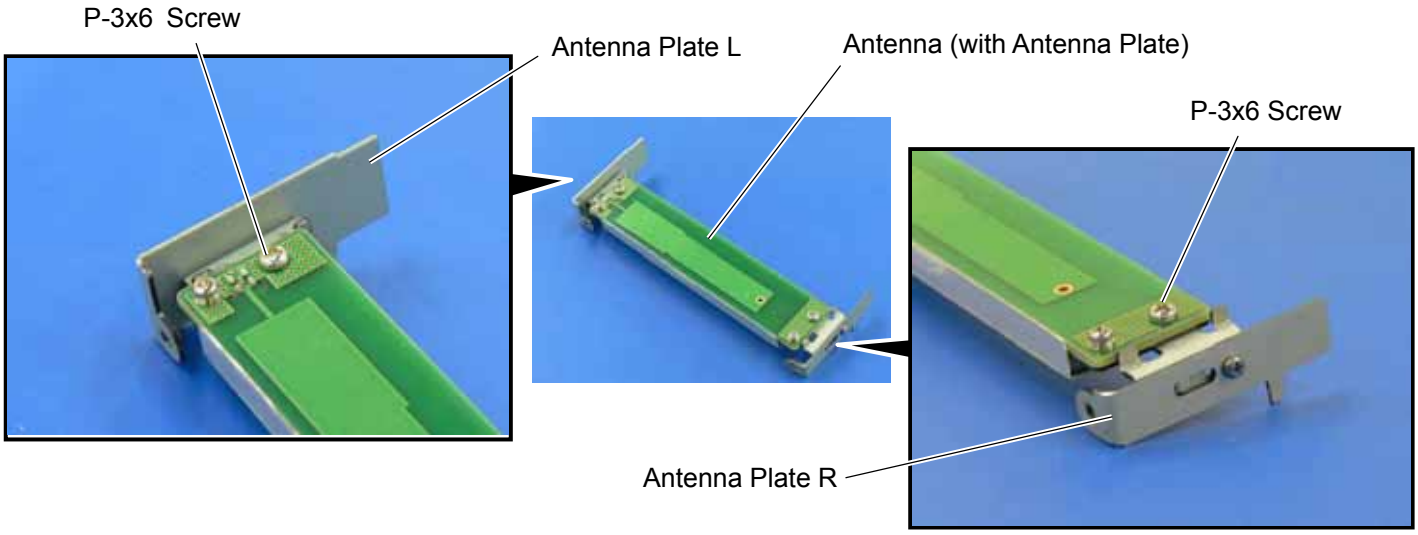
1. Remove the two Tapping Screws to detach the Antenna from the Antenna Ass'y.



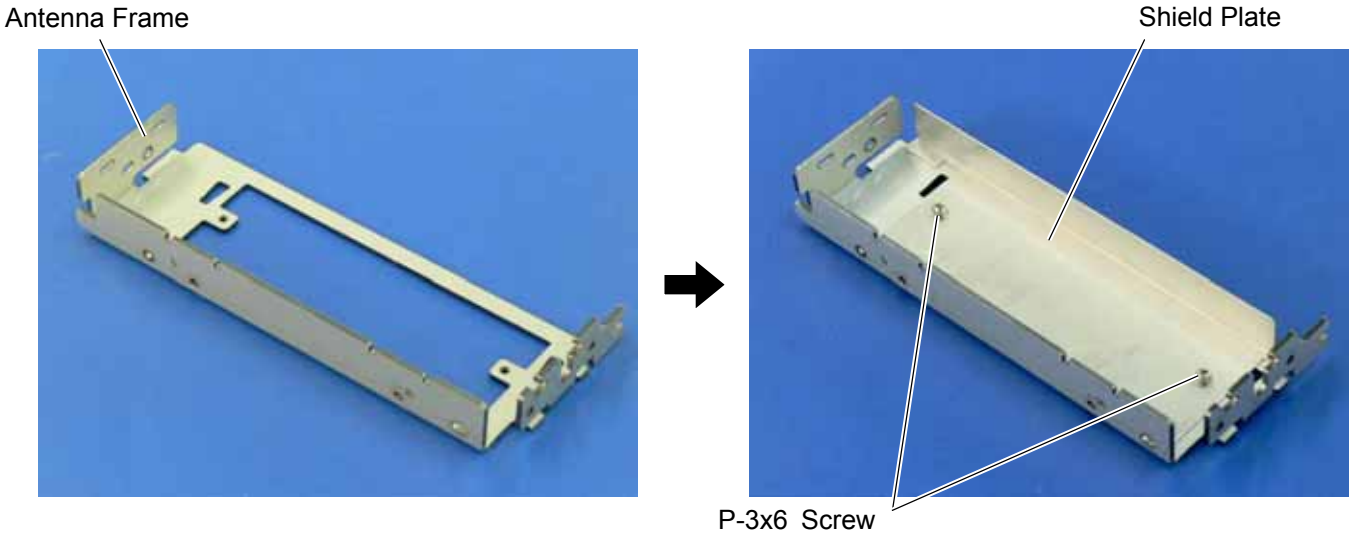
2. Remove the backing tapes from the reverse side of the Shield Sheet and attach it to the Antenna Cover, as shown below.



3. Attach the Antenna Plate L and Antenna Plate R to the Antenna with the P-3x6 screws.



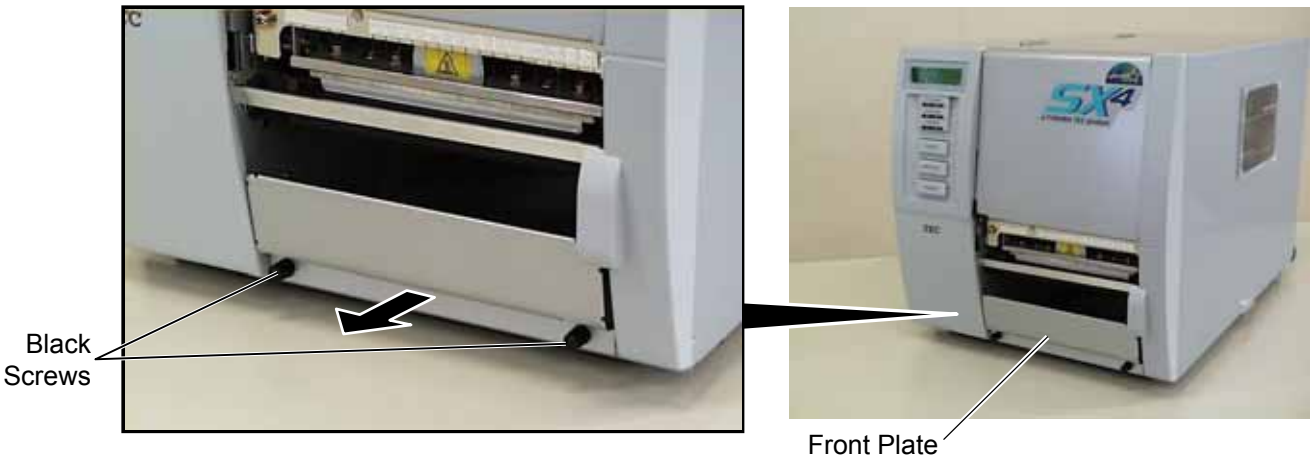
4. Attach the Shield Plate to the Antenna Frame. Secure the Shield Plate to the Antenna Frame with the P-3x6 screws.



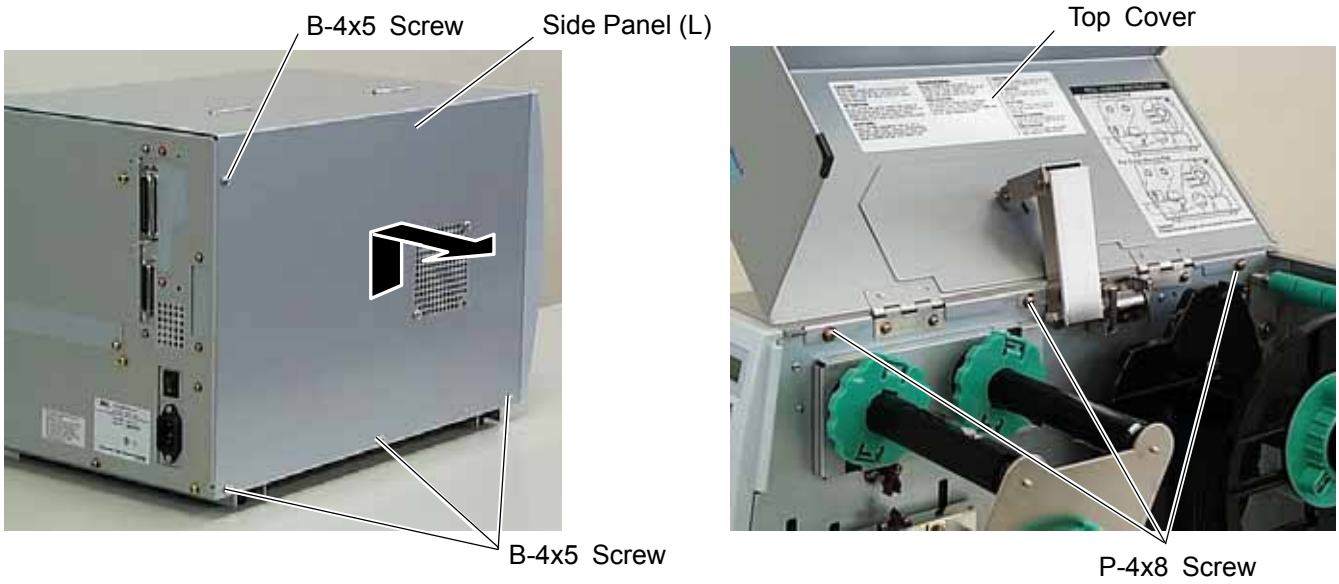
5. Refer to Section 3.2 and install an RFID module in the printer.

3.2 Preparing for the RFID Module Installation

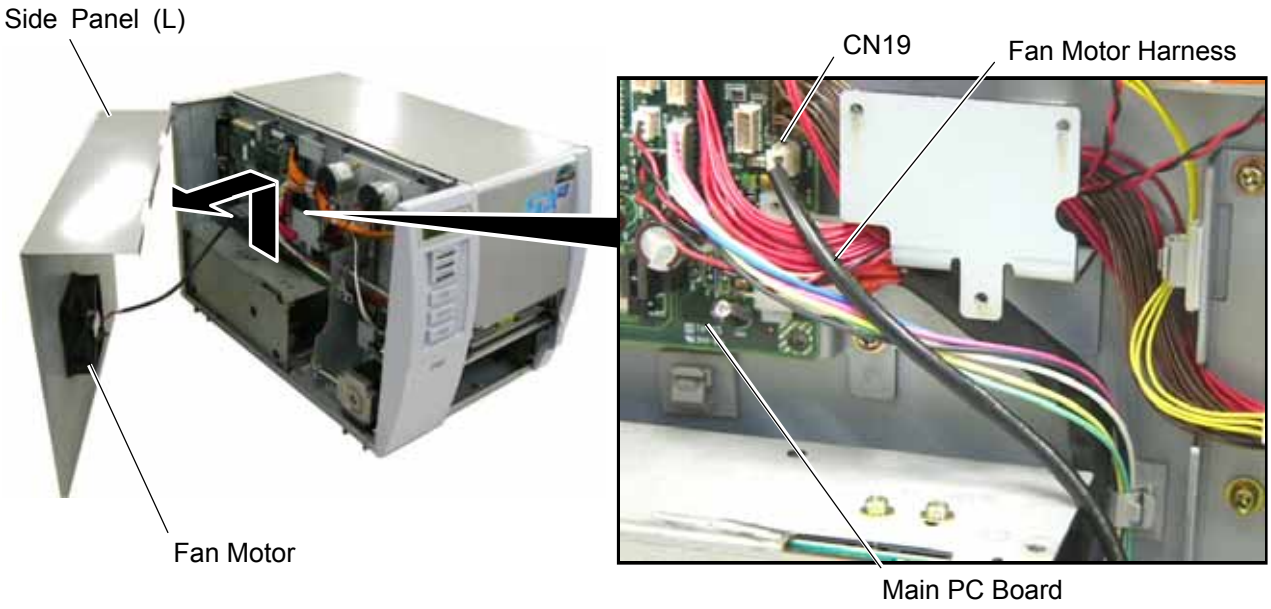
1. Turn the power off and disconnect the Power Cord.
2. Remove the two Black Screws to detach the Front Plate.



3. Remove the four B-4x5 screws from the Side Panel (L).
4. Open the Top Cover and remove the three P-4x8 screws that secure the Side Panel (L).

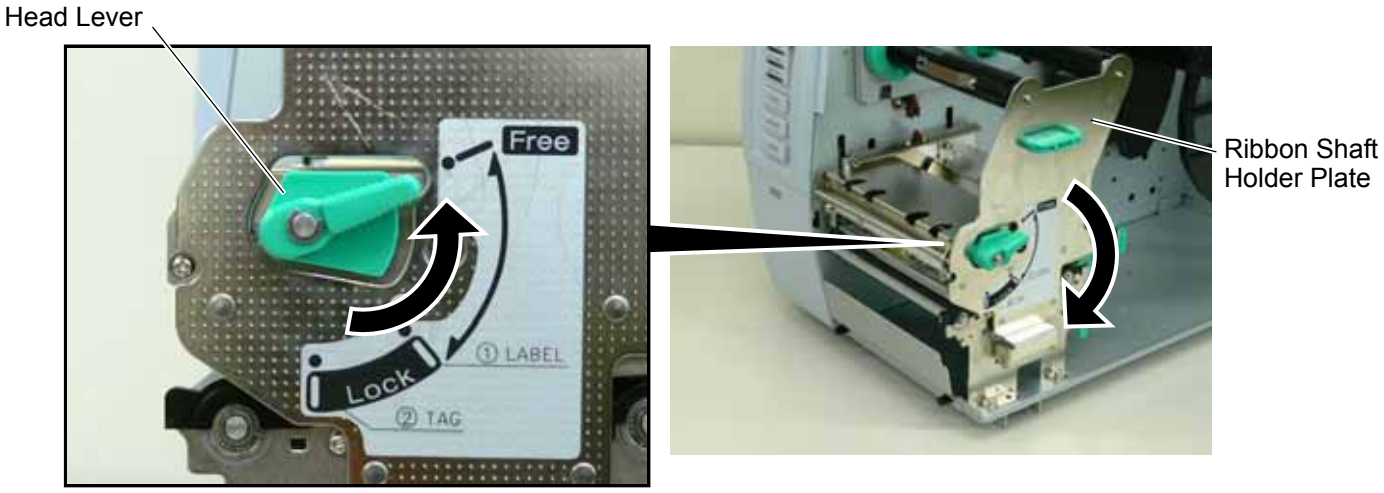


5. Lift the Side Panel (L) and put it aside.
6. Disconnect the Fan Motor Harness from CN19 on the Main PC Board, and then remove the Side Panel (L).

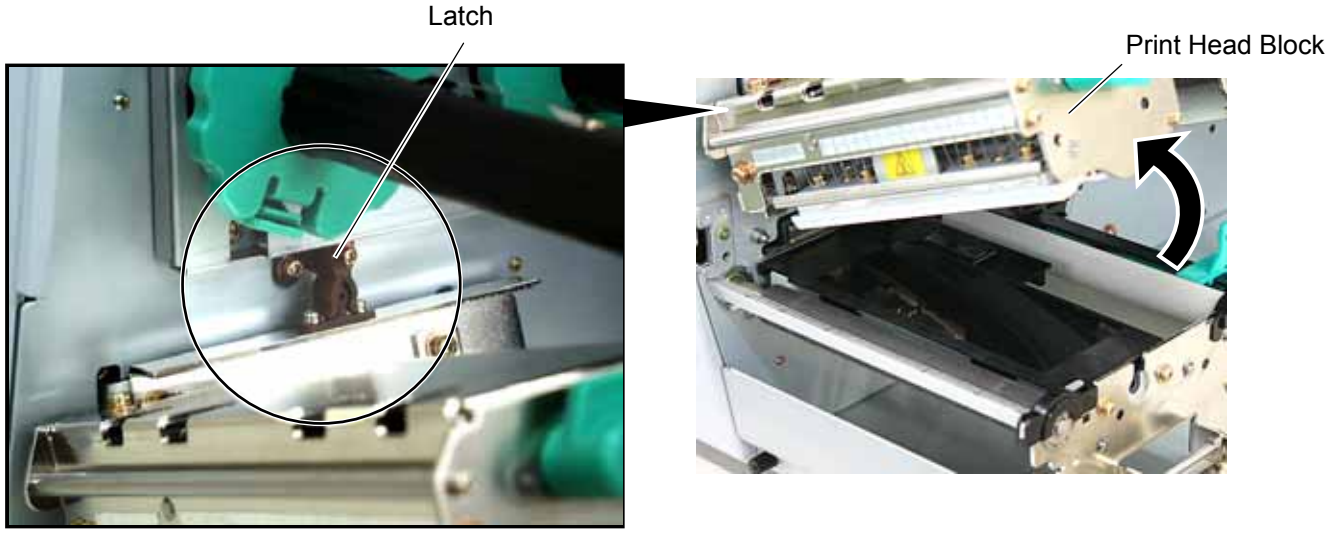


7. Fully open the Top Cover.

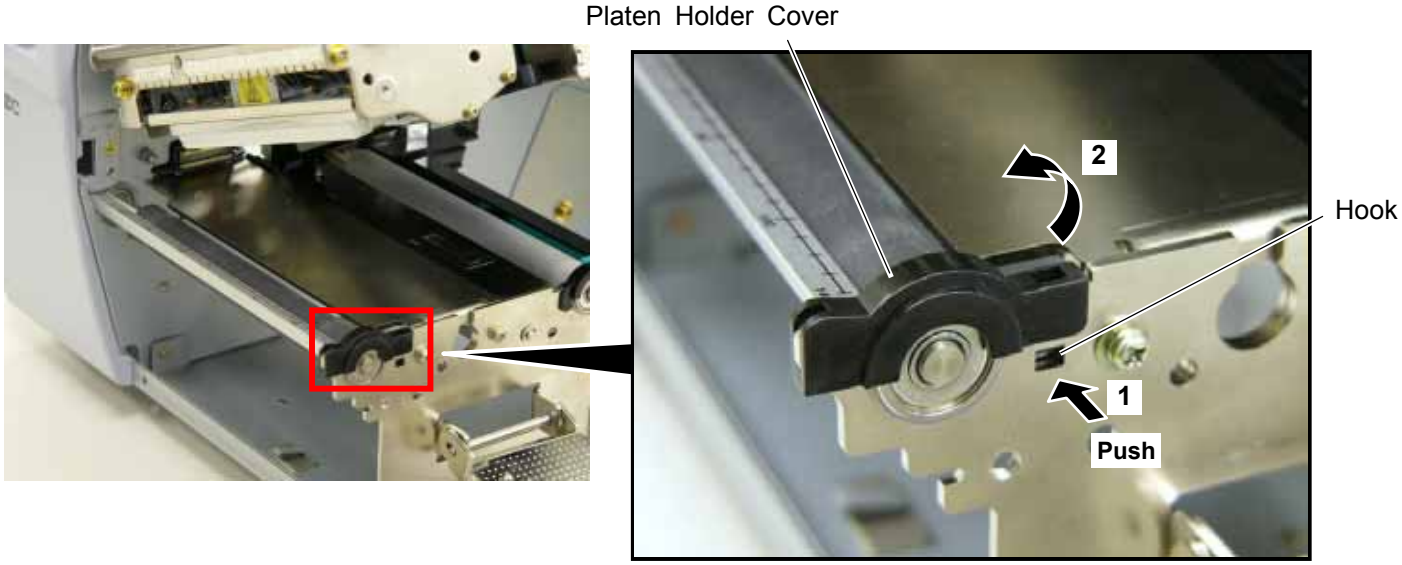
8. Turn the Head Lever to **Free** position and open the Ribbon Shaft Holder Plate.



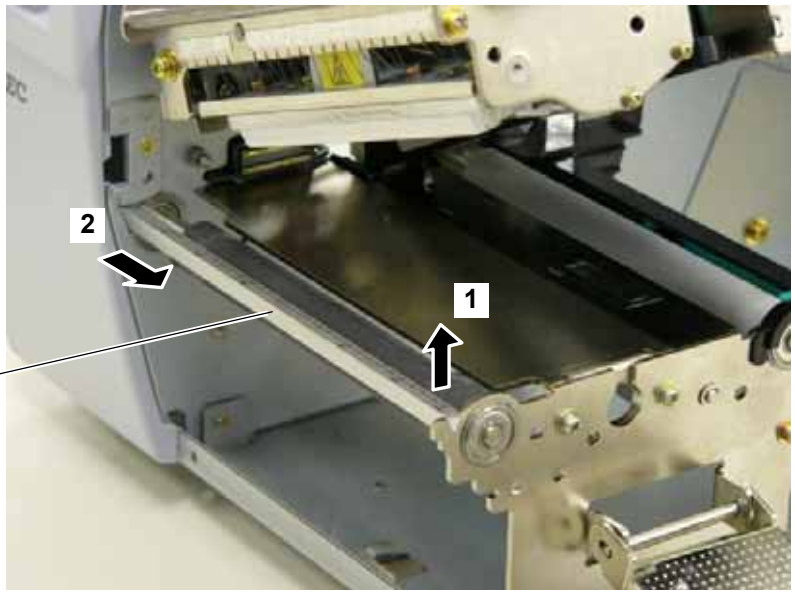
9. Open the Print Head Block and lock it with the Latch.



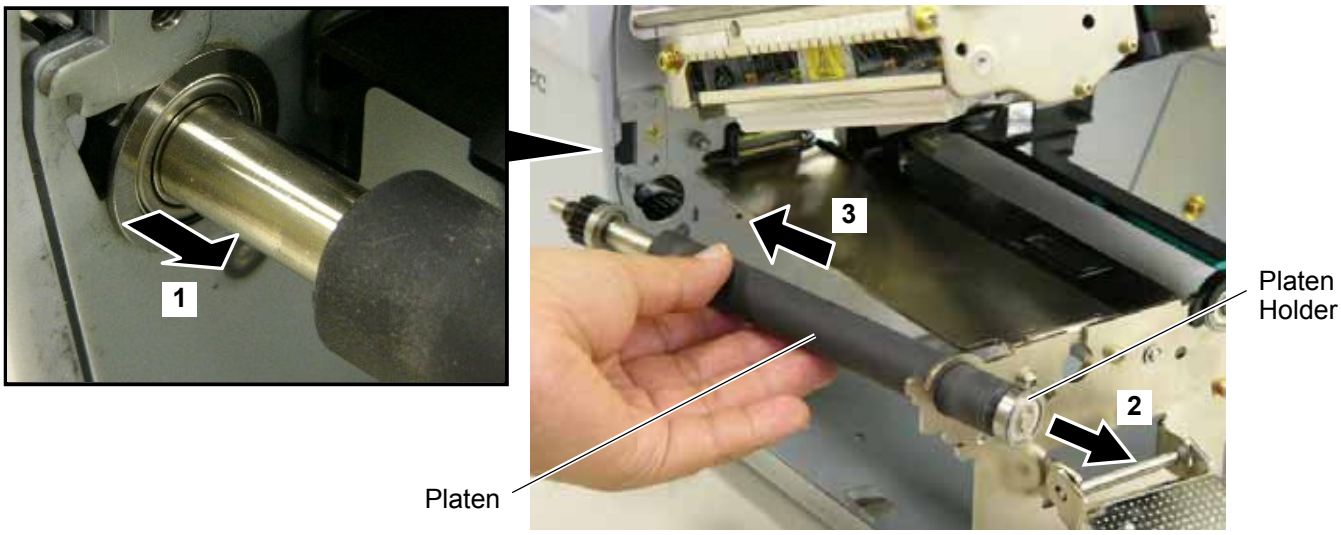
10. Push the Hook through the rectangle hole with a jeweler's screw driver or something, and remove the Platen Holder Cover in the direction indicated by the arrow.



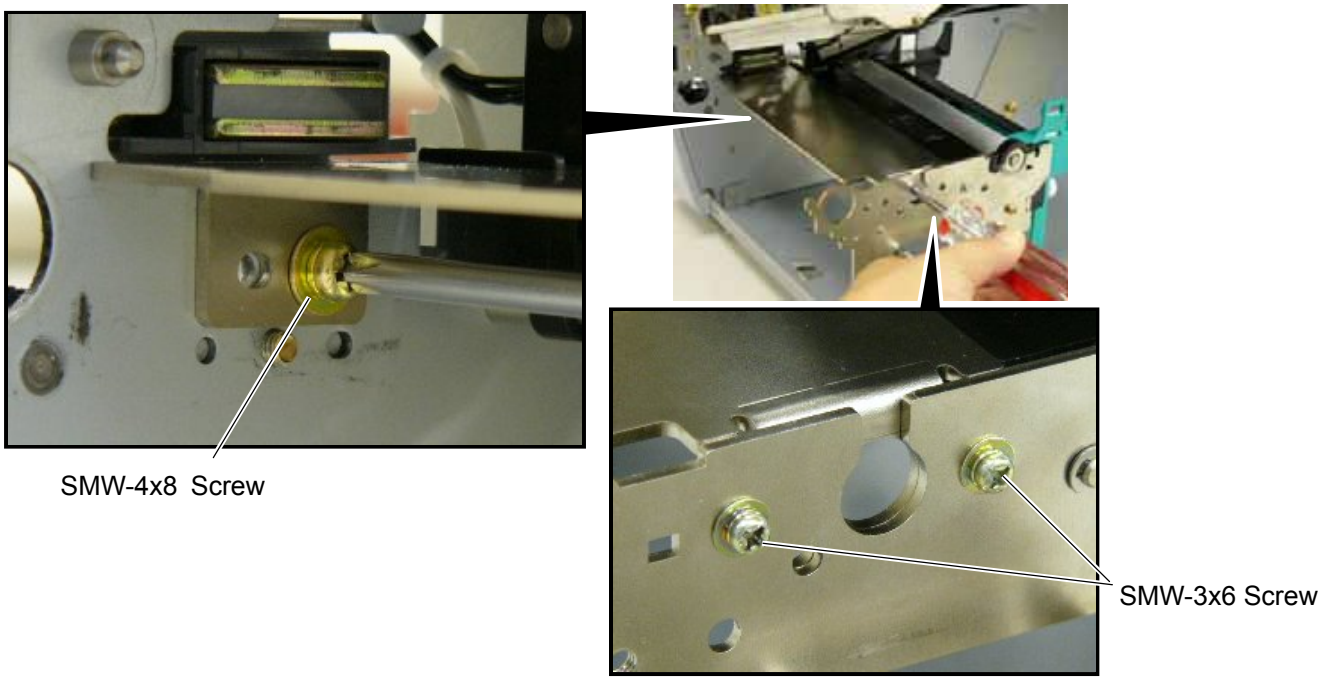
11. Lift the right side of the Strip Plate, and then pull and remove it.



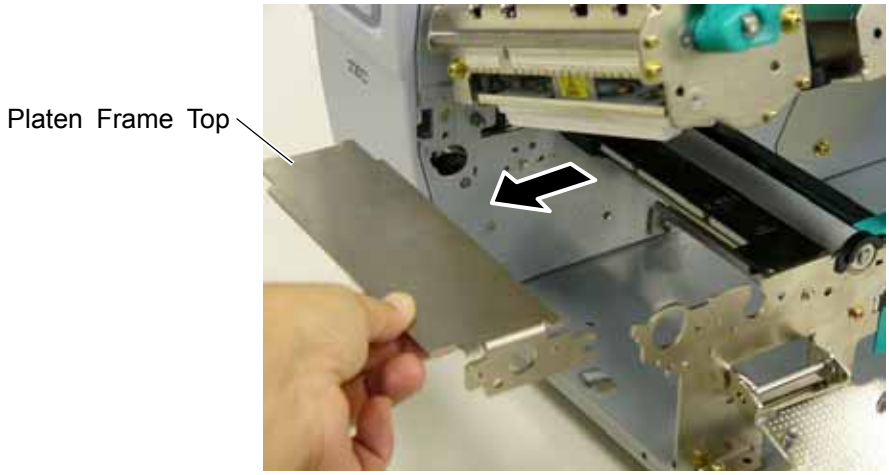
12. Remove the Platen and the Platen Holder in the direction of the arrows 1 to 3 as shown below.



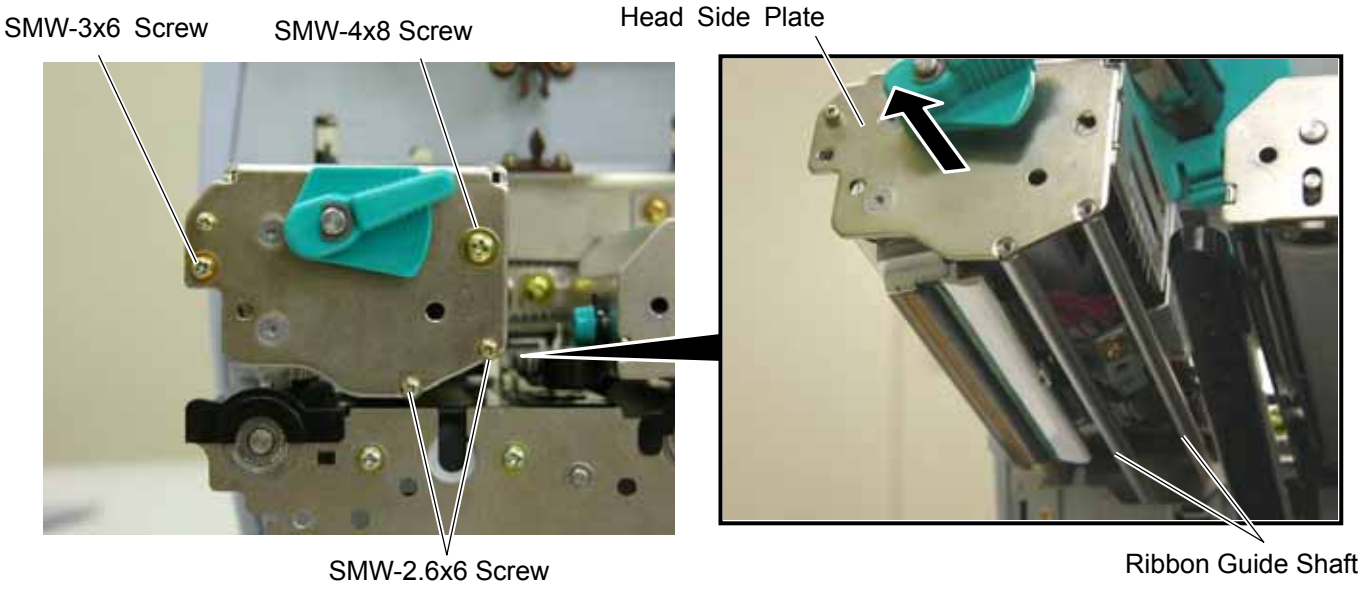
13. Remove the following three screws.



14. Remove the Platen Frame Top from the printer.

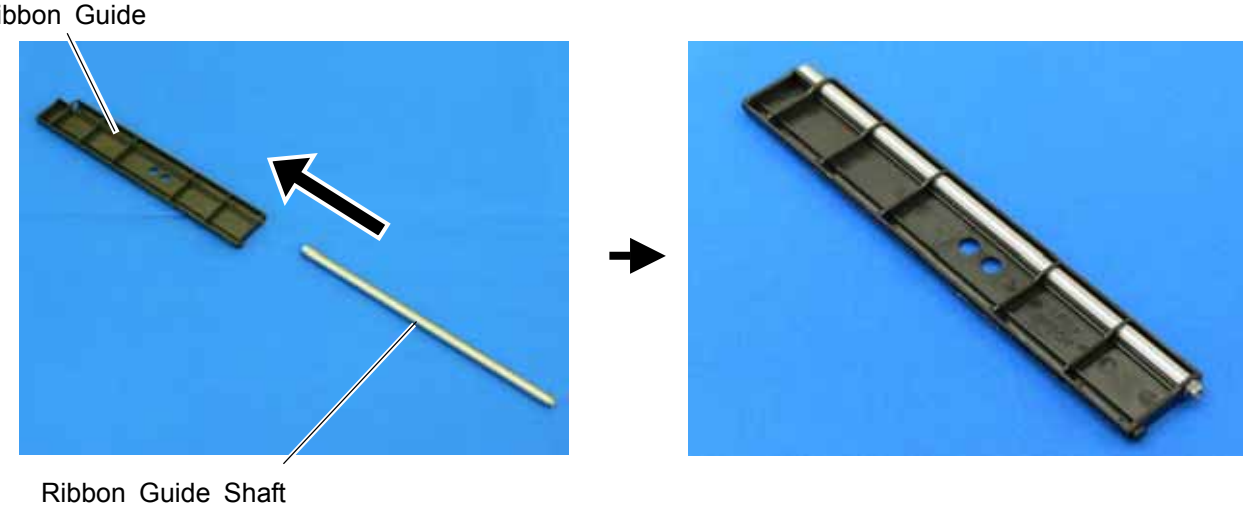


15 Remove the four screws from the side of the Print Head Block, slightly pull the Head Side Plate, and remove the two Ribbon Guide Shafts.

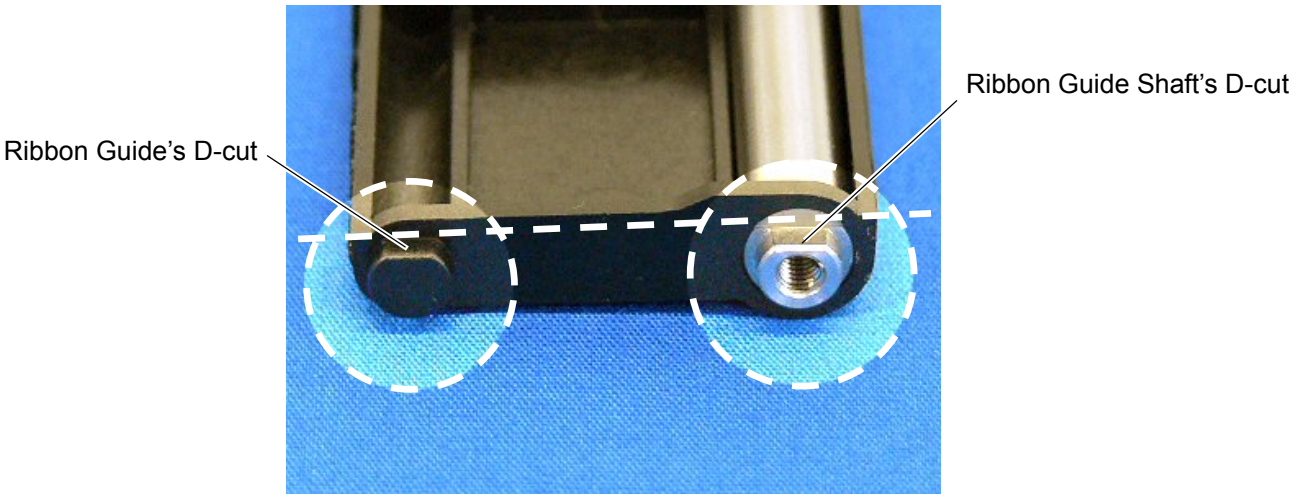


NOTE: *One of the removed Ribbon Guide Shafts and SMW-2.6x6 Screws are re-used when attaching the Ribbon Guide. Keep the unused ones for future use*

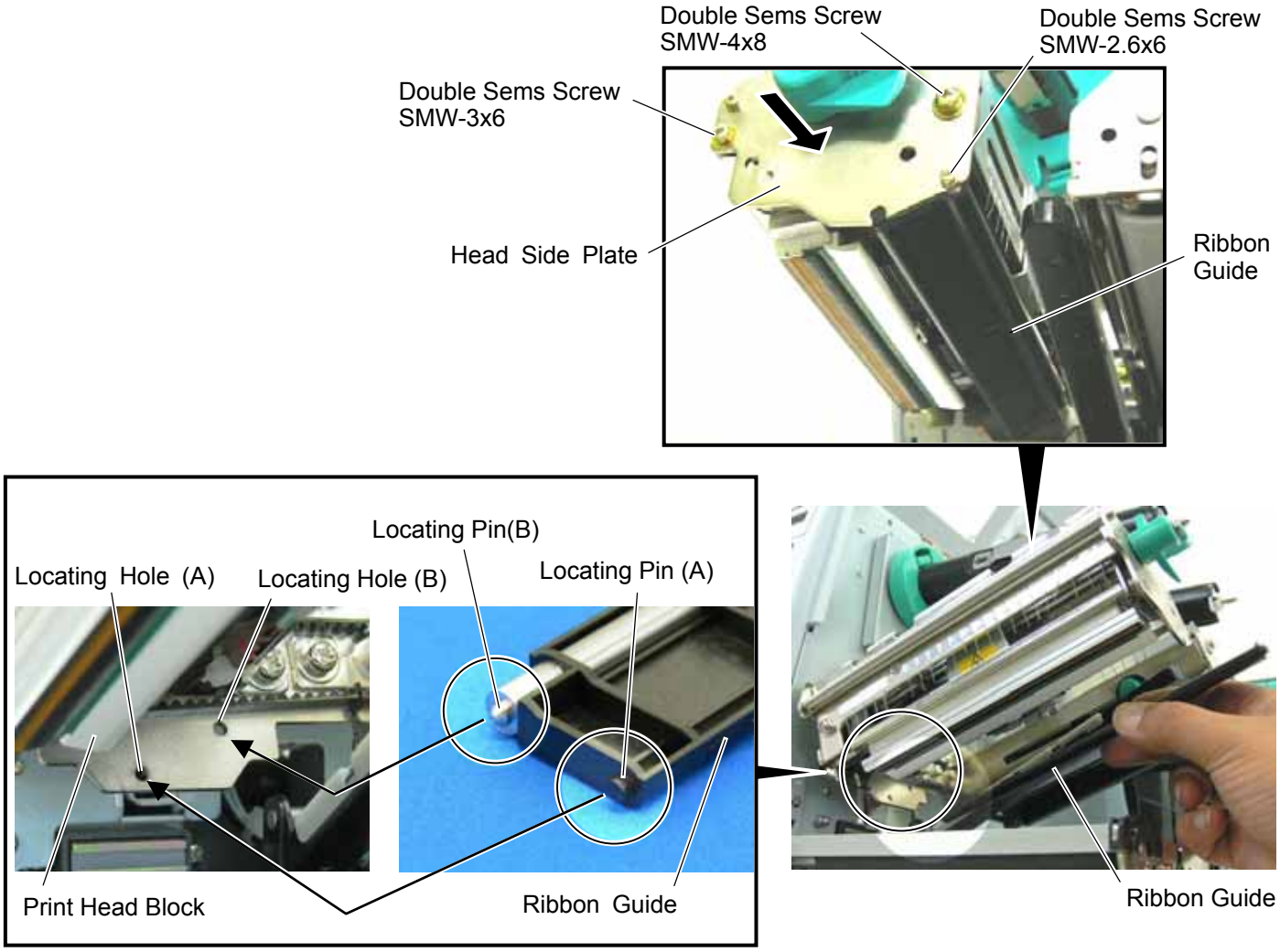
16. Insert one of the Ribbon Guide Shafts removed in Step 15 into the Ribbon Guide.



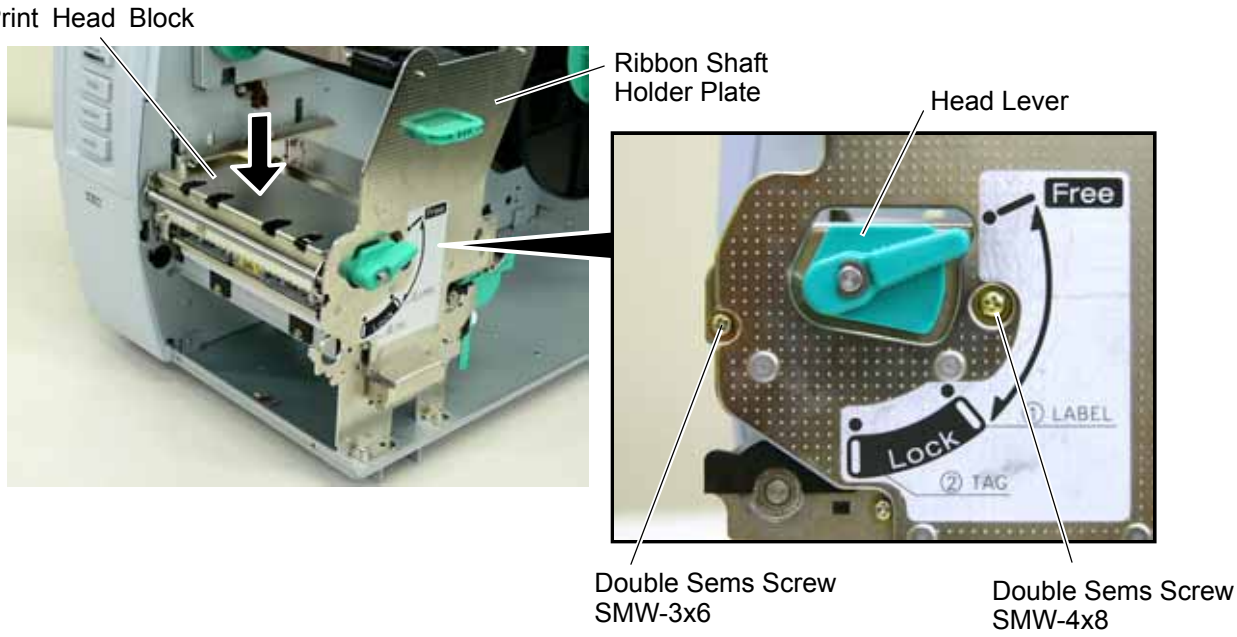
17. Rotate the Ribbon Guide Shaft so that its D-cut is in the same orientation with the Ribbon Guide's D-cut. Without doing this, the Ribbon Guide cannot be fit in the Print Head Block.



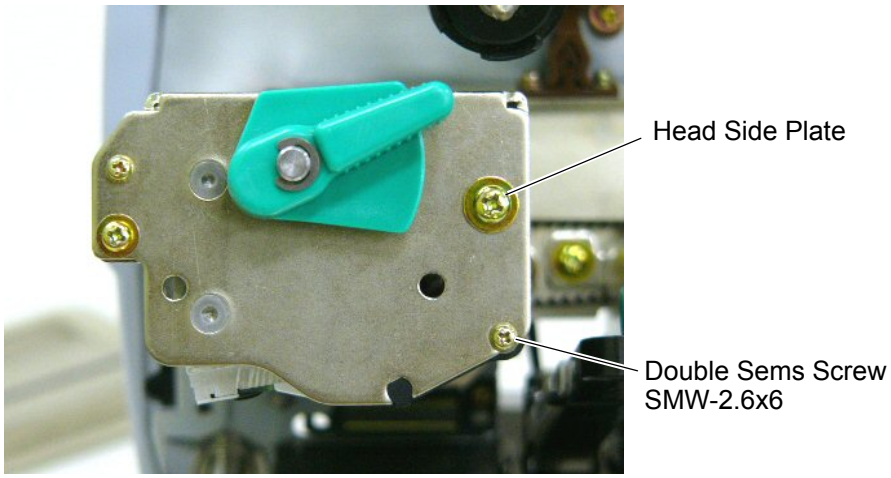
18. Fit the Ribbon Guide including the Ribbon Guide Shaft in the Print Head Block, and secure it to the Head Side Plate with the SMW-2.6x6 screw. Temporarily secure the Head Side Plate to the Print Head Block with the SMW-3x6 Screw and the SMW-4x8 Screw. Be sure to fit the locating pins provided on the other side of the Ribbon Guide into the locating holes of the Print Head Block.



19. Close the Ribbon Shaft Holder Plate, and tighten the two screws, which were temporarily tightened in Step 18, while holding down the Print Head Block.



20. Open the Ribbon Shaft Holder Plate again, and tighten the SMW-2.6x6 screw to secure the Head Side Plate.



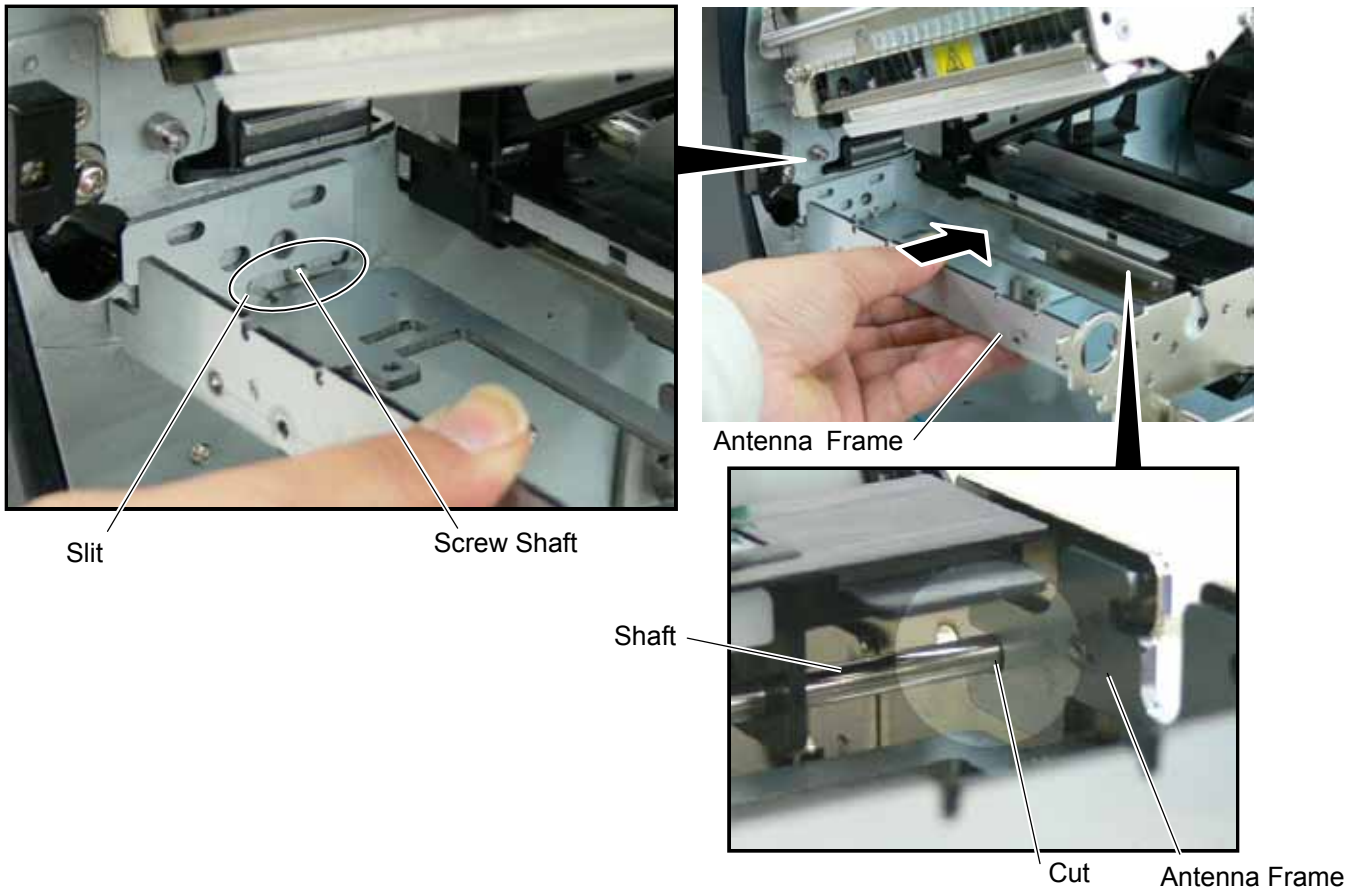
3.3 Attaching the Antenna Frame and the Antenna Ass'y

This section describes the procedure for attaching the Antenna Frame and the Antenna Ass'y.

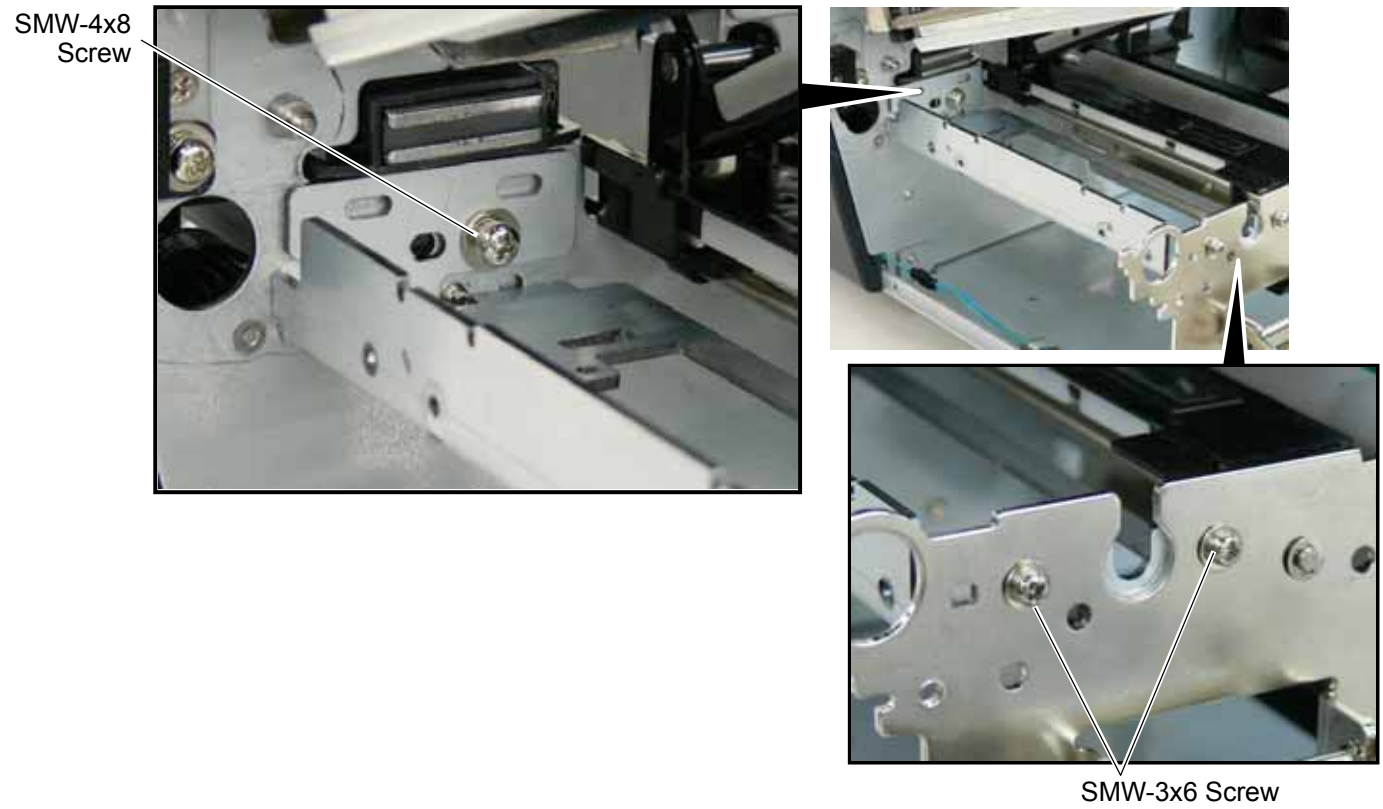
When short-pitch tags (20 mm) are used, the procedure is different from the following. Skip Section 3.3.1 and go to Section 3.3.2.

3.3.1 When using RFID tags other than short-pitch type:

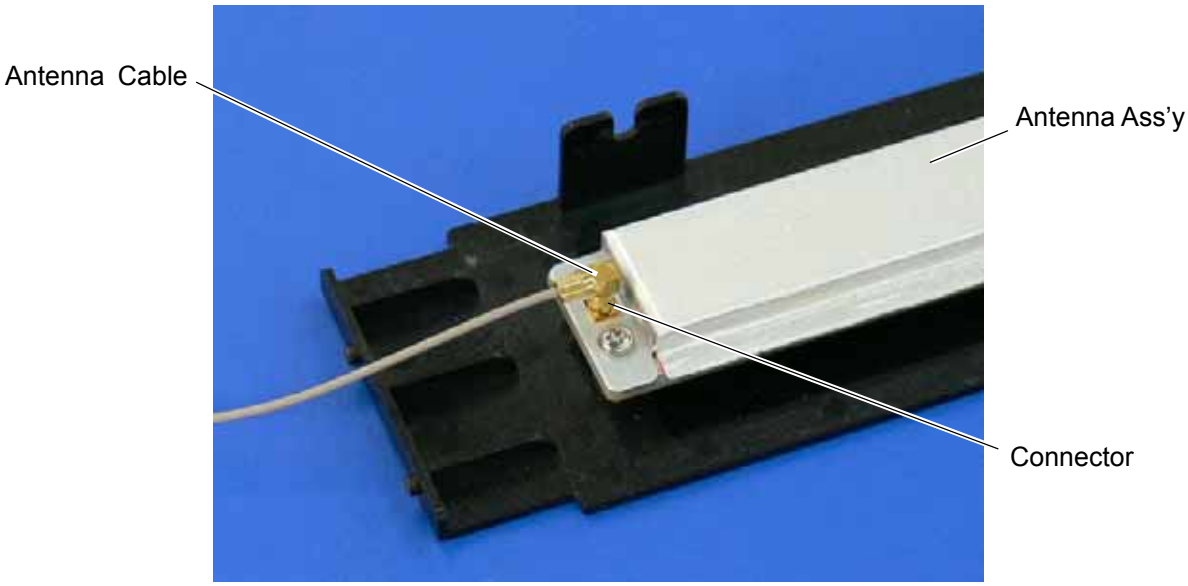
1. Raise the Print Head Block, and slide the Antenna Frame into the printer as shown below. Make the protruding screw shaft of the printer pass through the slit of the Antenna Frame. Also, make the Shaft of the printer fit in the Cut of the right side of Antenna Frame



2. Secure the Antenna Frame with the three screws removed in Step 13 of Section 3.2.

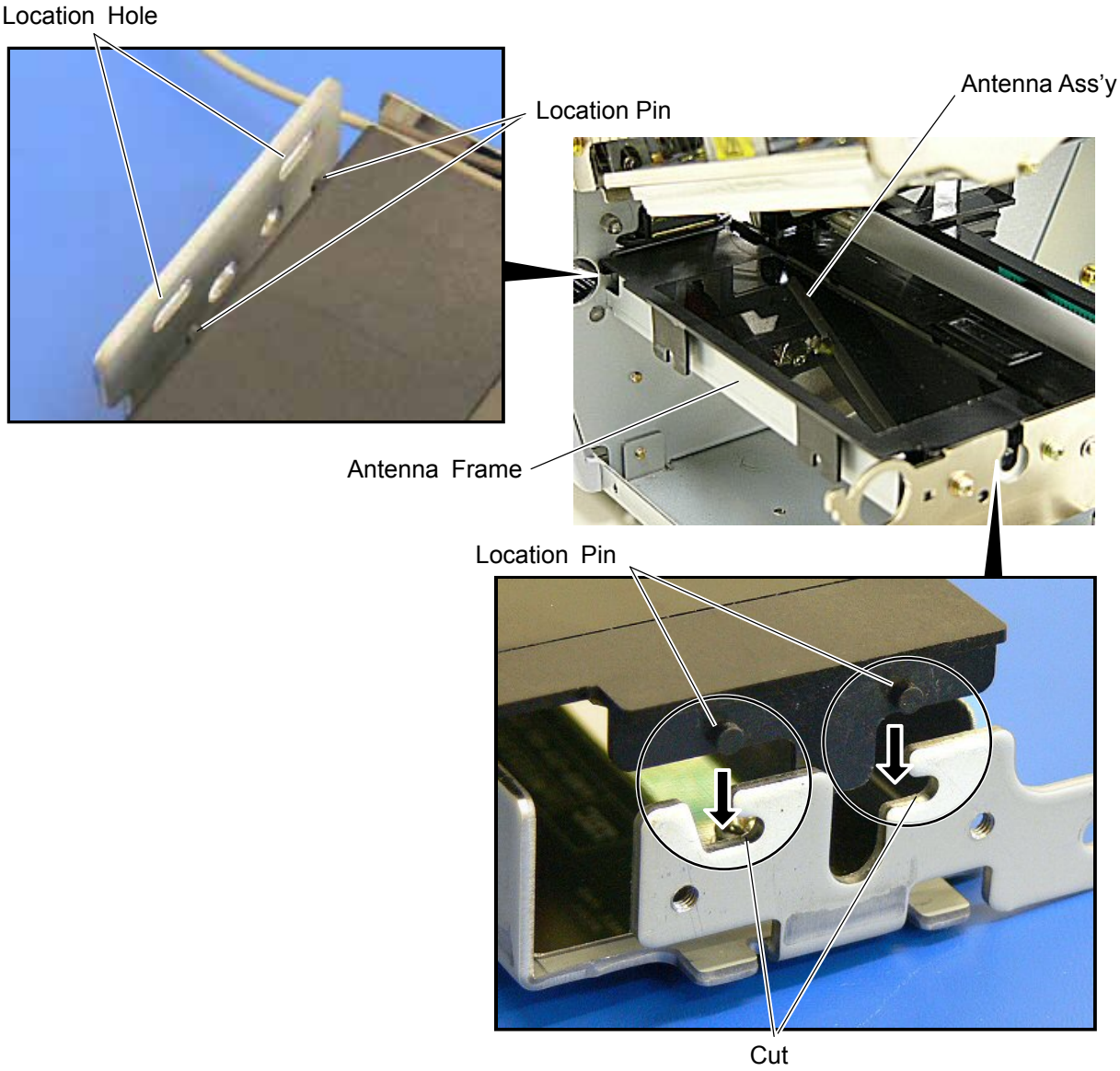


3. Connect the Antenna Cable to the Antenna Ass'y until it clicks.

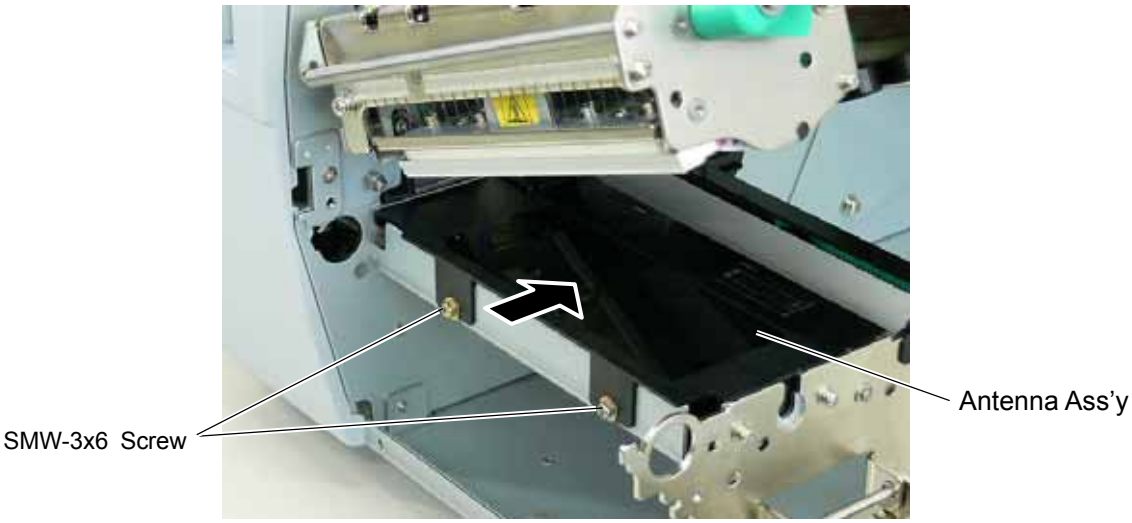


4. Pass the Antenna Cable between the Sensor Block and the Antenna Frame, as shown below.

5. Fit the Antenna Ass'y in the Antenna Frame.
   Be sure to fit the locating pins of the Antenna Cover into the oval holes and the cuts in the Antenna Frame.



6. Push the Antenna Ass'y in the arrow-indicating direction, and secure it with the two SMW-3x6 screws.

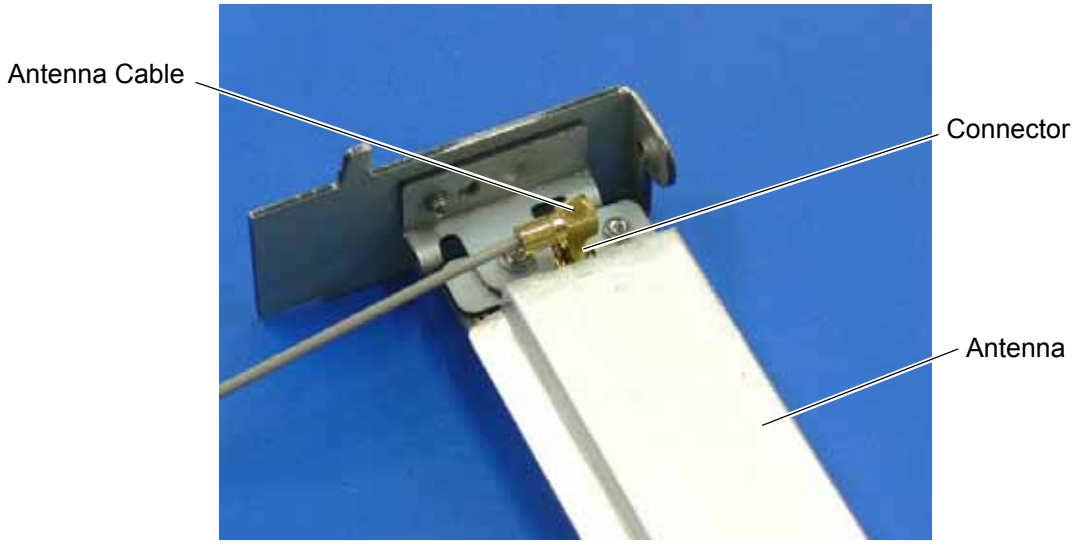


7. Go to Section 3.4 and attach the RFID Module.

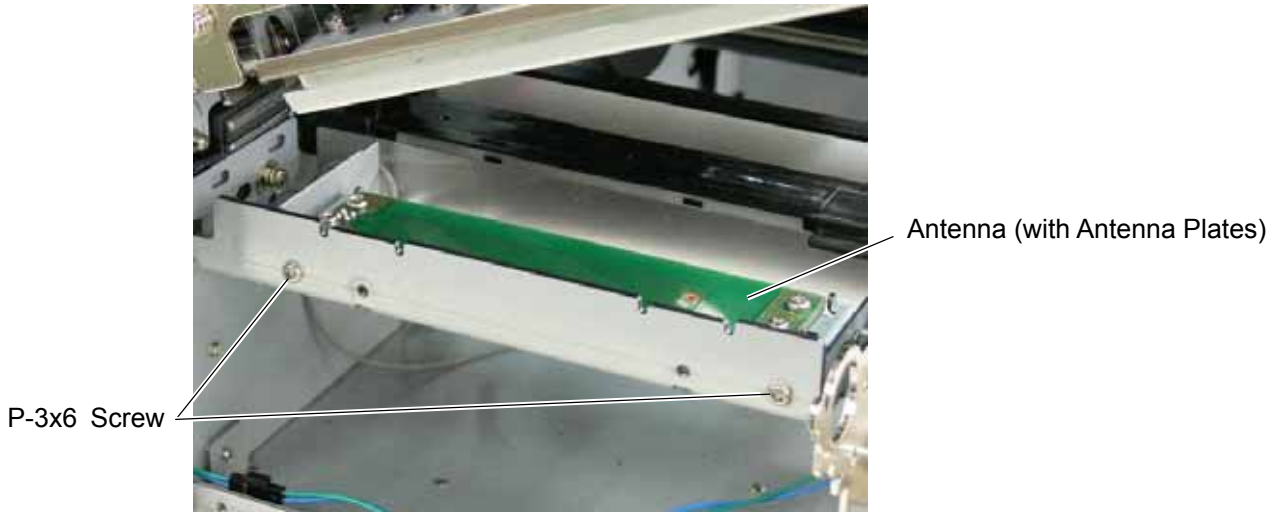
3.3.2 When using short-pitch tags (20 mm)

1. Attach the Antenna Frame to which the Shield Plate was attached in Section 3.1, to the printer in the same way as described in Step 1 of Section 3.3.1.

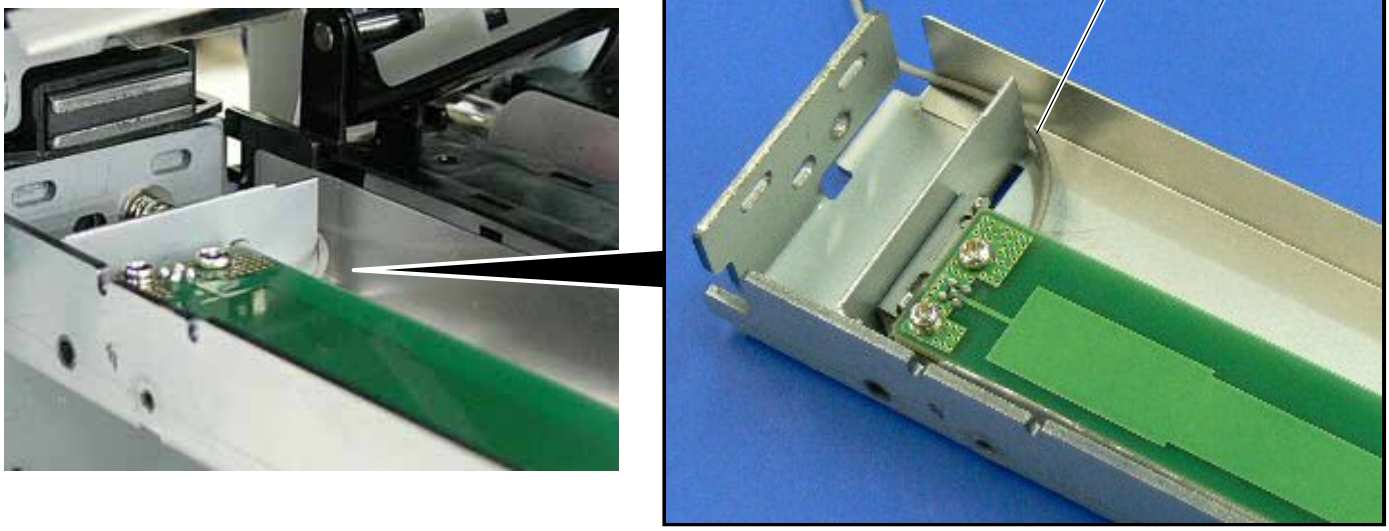
2. Connect the Antenna Cable to the Antenna, to which the Antenna Plates were attached in Section 3.1, until it clicks.



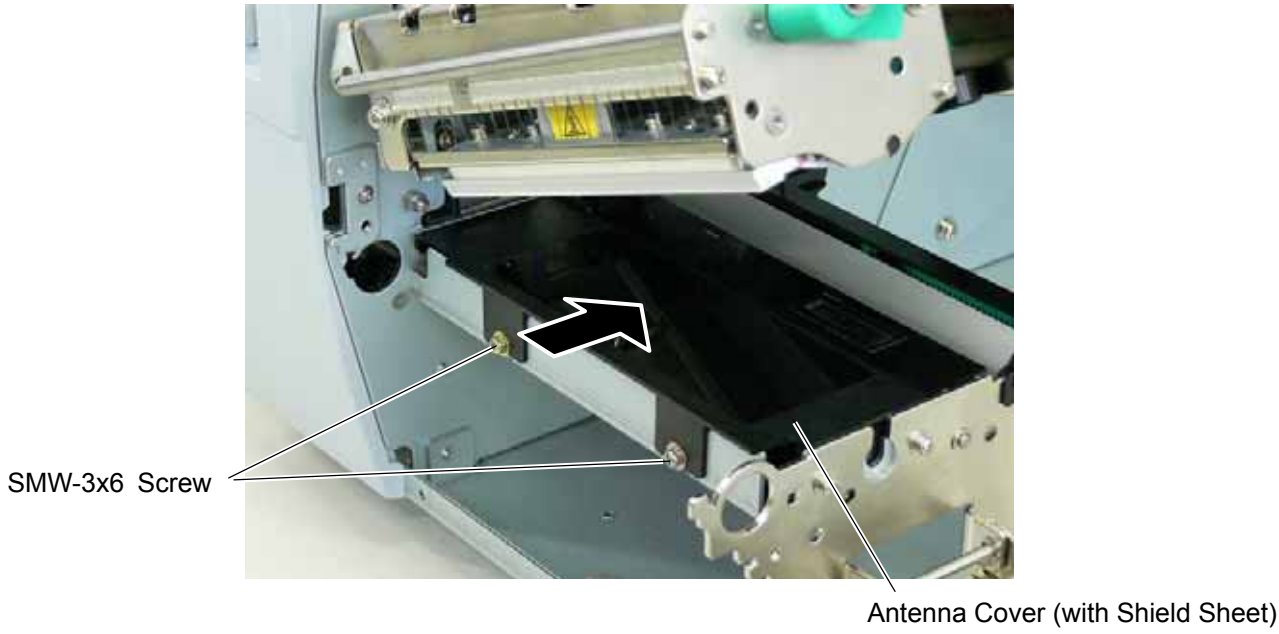
3. Secure the Antenna to the Antenna Frame with the P-3x6 screws.



4. Place the Antenna Cable in the Antenna Frame, as shown below.



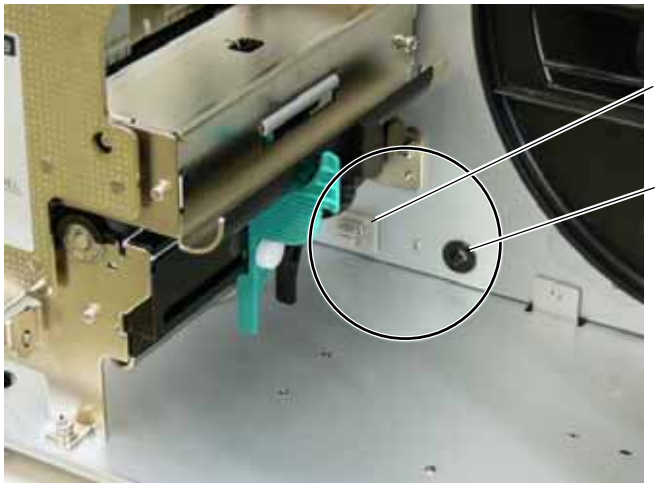
5. Refer to Steps 5 and 6 in Section 3.3.1 and attach the Antenna Cover, to which the Shield Sheet was attached in Section 3.1, to the Antenna Frame with the SMW-3x6 screws.



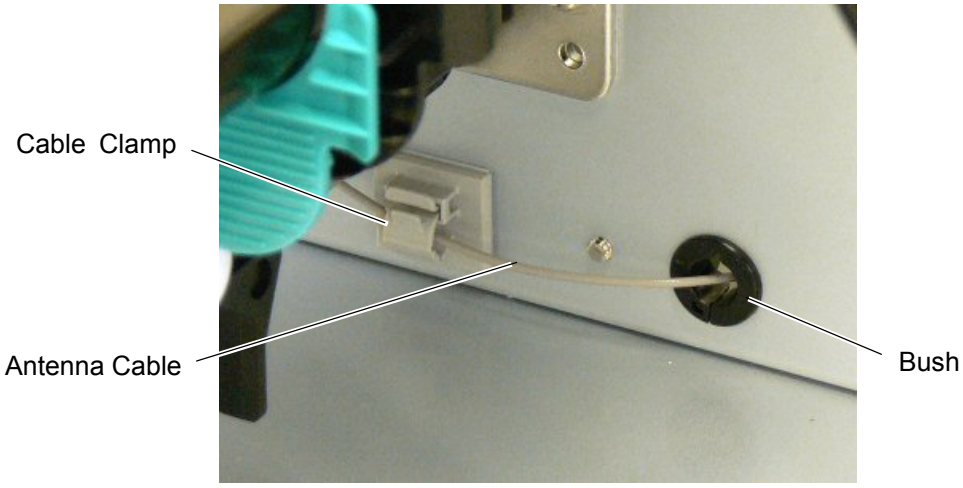
6. Go to Section 3.4 and attach the RFID Module.

3.4 Attaching the RFID Module

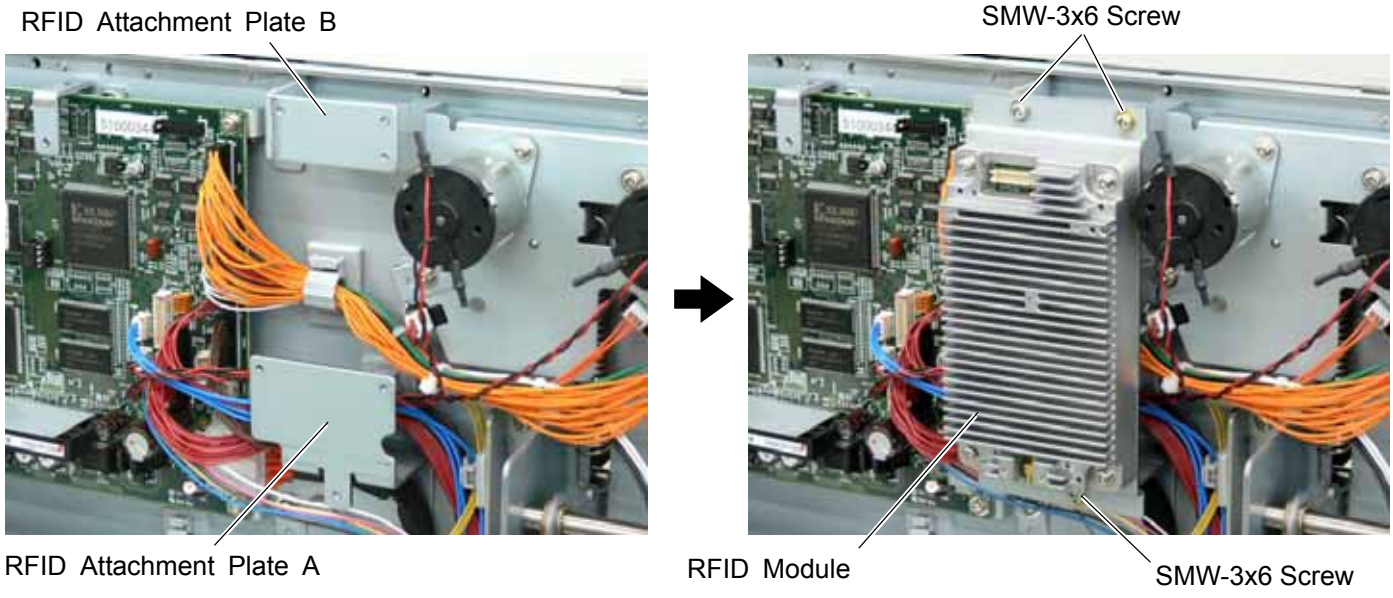
1. Attach the Cable Clamp to and fit the Bush into the positions shown in the picture below.



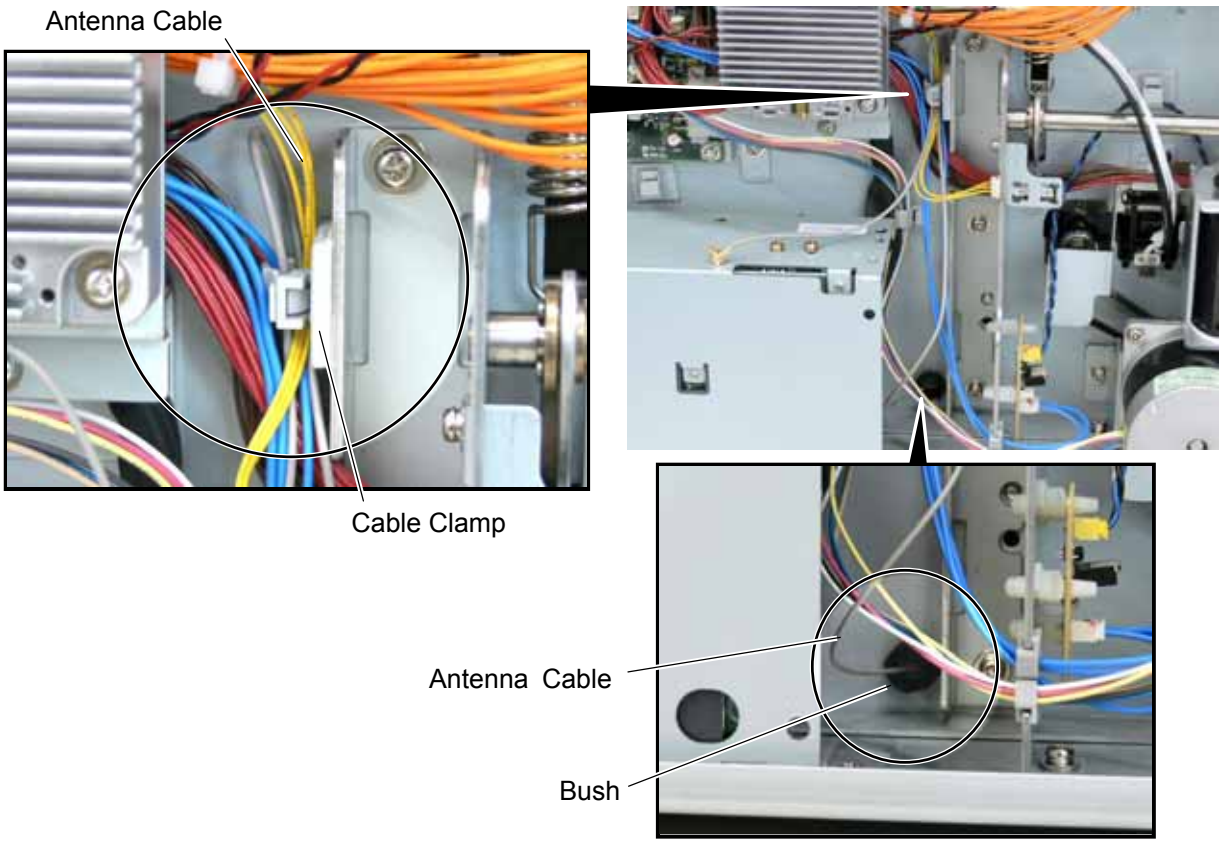
2. Pass the Antenna Cable through the Bush, and fasten the cable with the Cable Clamp.



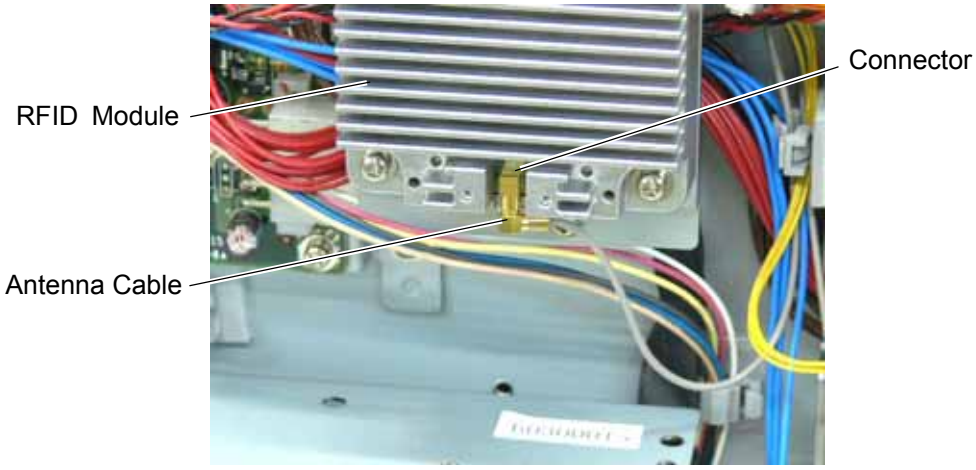
3. Attach the RFID Module to the RFID Attachment Plate A and the RFID Attachment Plate B with the three SMW-3x6 screws.



4. Fold the Antenna Cable and fasten it with the Cable Clamp together with the other cables to prevent the Antenna Cable from being caught in the Side Panel (L) or Fan Motor.



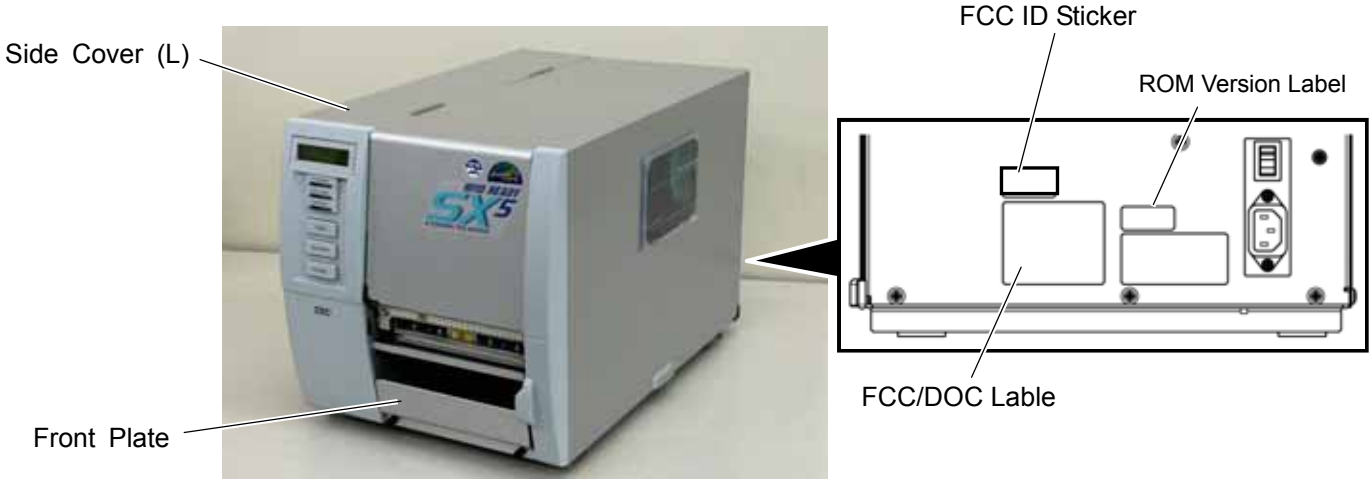
5. Connect the Antenna Cable to the RFID Module until it clicks.



6. Connect the RFID Module to CN14 on the Main PC Board with the Interface Cable.

7. Re-install the Platen, Platen Holder, Strip Plate, and Platen Holder Cover in the reverse order of removal.

8. Re-install the Front Plate and Side Cover (L) in the reverse order of removal. Do not forget to connect the Fan Motor Cable to CN19 on the Main PC Board. Be careful not to catch any cables in the Side Cover (L). And attach the FCC ID sticker to the backside of the printer as shown below.



9. Installing the RFID kit in the printer is now completed. Then, go to Section 4 and configure the RFID module settings.

4 RFID Module Settings

After installing the RFID Module on the printer, configure the RFID module settings using the system mode on the printer.

Turn on the printer while holding down the **[FEED]** and **[PAUSE]** keys at the same time.

↓

<1>DIAG. V4.5

When “<1>DIAG. V4.5“ appears on the LCD, press the **[RESTART]** key.

[RESTART]

↓

<10>RFID

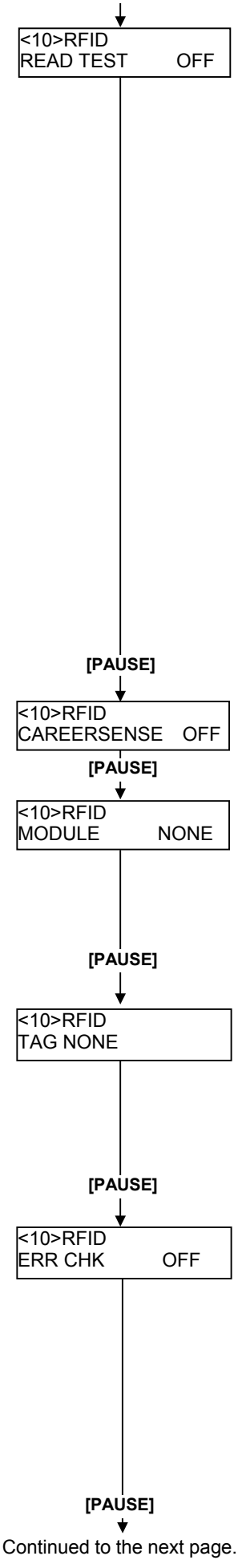
RFID setting menu ”<10>RFID” is displayed.
Press the **[PAUSE]** key.

[PAUSE]

↓

Continued to the next page.

Continued from the previous page.



Read test menu is displayed. Choose whether to perform a read test or not with the **[RESTART]** or **[FEED]** key.

[RESTART] READ TEST OFF

[FEED] READ TEST ON

OFF: A read test is not performed. (Initially, choose "OFF".)

ON: A read test is performed.
The printer enters the read test mode, and a read test is performed each time the **[PAUSE]** key is pressed. When the data of a tag can be read, it is displayed on the LCD.

- Read data is displayed in hex. value, up to 14 bytes on 2 lines.

  Example)
  ```
  1234567890123456
  65432109      (0E)
  ```

  When the RFID tag contains 14 bytes or more data, the first 14 digits are displayed. When data volume is less than 14 bytes, the vacant digits will be filled with spaces.
  The right most hex. value on the lower line, enclosed with parentheses, indictes an AGC value of a read tag. When more than one tag is read at one time, especially when short-pitch tags are used, pressing the **[FEED]** or **[RESTART]** key shows the other tags' data. Among them, a tag with the highest AGC value is considered to be positioned just above the antenna.
- If the tag cannot be read, "RFID TIMEOUT" or "RFID READ ERROR" is displayed.
- If the type of the tag to be read and one selected by the RFID tag type selection do not match, an RFID tag read error will result.
  Make sure the RFID tag type has been selected before the read test is started.

After choosing an option, press the **[PAUSE]** key.

Carrier sense setting menu is displayed. This menu is not available to the B-SX704-RFID-U2-US-R. Press the **[PAUSE]** key to skip this menu.

Module type setting menu is displayed. Choose "U2" with the **[FEED]** or **[RESTART]** key.

[RESTART] / **[FEED]**

U1: Not available.
H1: Not available.
NONE: No RFID Module is installed.
U3: Not available.
U2: B-SX704-RFID-U2-US-R
H2: Not available.

Press the **[PAUSE]** key.

RFID tag type setting menu is displayed.
Choose "EPC C1 Gen2: 24" with the **[FEED]** or **[RESTART]** key.

[RESTART] / **[FEED]**

NONE: When a tag type is not selected.
EPC C1 Gen2: 24

Press the **[PAUSE]** key.

RFID error tag detection menu is displayed. Choose whether to perform an error tag detection or not with the **[FEED]** or **[RESTART]** key.

[RESTART] / **[FEED]**

OFF: An error tag detection is not performed. (Usually, choose OFF.)
ON: An error tag detection is performed.

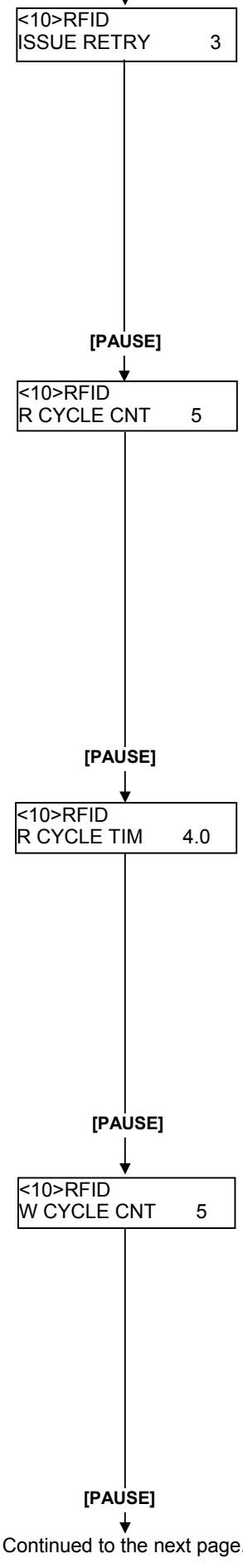
ON: A tag is read before writing data on it, and data is written on the tag only when the header data is "A5A5".

OFF: Though a tag is read before writing data on it, data write is always performed whatever data has been set as the header data.

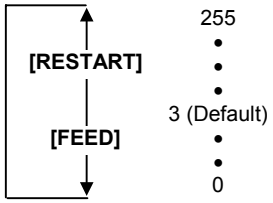
Press the **[PAUSE]** key.

Continued to the next page.

Continued from the previous page.

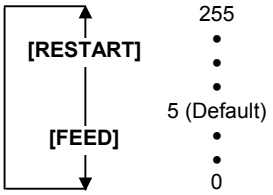


Max. number of issue retries setting menu is displayed.
Set a maximum number of retries to issue an RFID tag.
When issuing an RFID tag failed, the printer prints the error pattern, and retries to issue the tag for up to specified number of times. If the printer does not succeed even after having retried for the max. times, the printer stops, resulting in an error.
Choose the max. number of retries with the **[FEED]** or **[RESTART]** key.



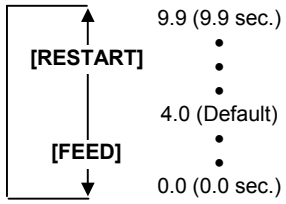
Press the **[PAUSE]** key.

Max. number of read retries setting menu is displayed.
Set a maximum number of retries to read an RFID tag.
The printer retries to read the data in an RFID tag for up to specified number of times. If the timeout period expired before the max. number retries have been done, the printer stops the retries at the time.
Whenever the printer writes data onto an RFID tag, the tag is read first. The max. number of retries set by this parameter becomes also effective in this pre-read.
Choose the max. number of retries with the **[FEED]** or **[RESTART]** key.



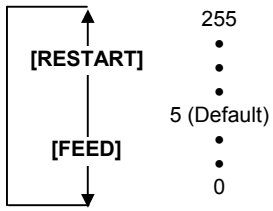
Press the **[PAUSE]** key.

Read retry timeout setting menu is displayed.
Set the timeout period during which RFID tag read retries are allowed, with the **[FEED]** or **[RESTART]** key. If the printer has retried for the max. number of times within the RFID read retry timeout, the printer stops the retries at the time.
Whenever the printer writes data onto an RFID tag, the tag is read first. The read retry timeout set by this parameter becomes also effective in this pre-read.



Press the **[PAUSE]** key.

Max. number of write retries setting menu is displayed.
Set a maximum number of retries to write data onto an RFID tag.
The printer retries to write data onto an RFID tag for up to specified number of times. If the timeout period expired before the max. number of retries have been done, the printer stops the retries at the time.
Set the max. number of times with the **[FEED]** or **[RESTART]** key.



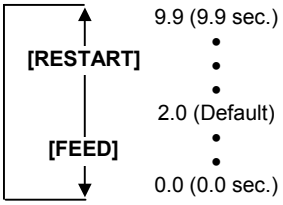
Press the **[PAUSE]** key.

Continued to the next page.

Continued from the previous page.

<10>RFID
W CYCLE TIM 2.0

Write retry timeout setting menu is displayed.
Set the timeout period during which RFID tag write retries are allowed, with the **[FEED]** or **[RESTART]** key.
If the printer has retried for the max. number of times within the RFID write retry timeout, the printer stops the retries at the time.

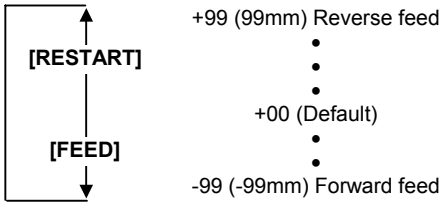


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
ADJ RETRY +00

RFID adjustment for retry menu is displayed.
If writing data on a tag failed, the printer feeds the RFID tag forward or backward for specified length in order to retry writing data. When "0" is set for this parameter, this function and a retry are not performed.
Only the value of –3mm or less or +3mm or more becomes effective.
Set a value to move the RFID tag position with the **[FEED]** or **[RESTAT]** key.

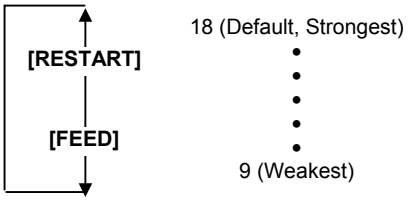


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
POWER LEVEL 18

Radio output power level setting menu is displayed.
When the value is "9", the power is the weakest, and when "18", the power is the strongest. The factory default setting is "18". The optimum value differs depending on the tag types. Usually, it is not necessary to change this value but changing the value may be able to increase the number of successful read/write times.
Set the power level with the **[FEED]** or **[RESTART]** key.

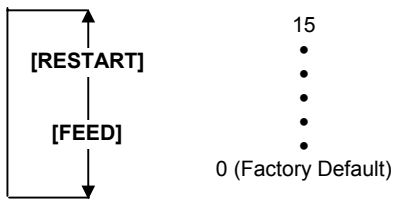


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
AGC THRESHOLD 0

AGC threshold setting menu is displayed.
When the obtained gain of an RFID tag is lower than the AGC threshold, the tag is considered as an error tag even if a data write succeeds.
When the AGC threshold is set to "0", all tags are writable.
When set to "8", for example, only tags with the AGC threshold level of 9 or greater are writable.
The optimum value is different depending on the tag types. The factory default is 0.
Set an AGC threshold with the **[FEED]** or **[RESTART]** key.



[PAUSE]

Press the **[PAUSE]** key.

Continued to the next page.

Continued from the previous page

<10>RFID
RF CHANNEL AUTO

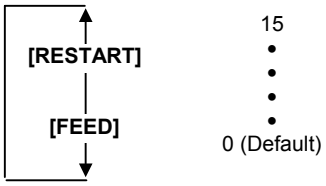
RFID channel setting menu is not available to the B-SX704-RFID-U2-US-R.

[PAUSE]

Press the **[PAUSE]** key to skip this menu.

<10>RFID
Q VALUE 0

Q value setting menu is displayed.
In the case multiple RFID tags are read at the same time, this menu is useful to pinpoint a target tag.
Set the Q value to “1” or greater (2 is recommended.) with the **[FEED]** or **[RESTART]** key. Q value “0” causes the tags to interfere with each other and disables proper data write.
When a Q value is set, set an AGC threshold for data write and an AGC threshold lower limit for retry, also. Setting all these values enable writing data to a tag placed just above the antenna. (For details, refer to Section 6. AGC Threshold Setting.)
The factory default is 0.

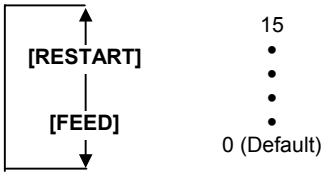


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
WT AGC 0

AGC threshold for data write setting menu is displayed.
When the Q value is set to 1 or greater, the AGC threshold for data write becomes effective.
When the obtained gain of an RFID tag is lower than the AGC thresholdfor data write, data write is not performed. In other words, setting an AGC threshold for data write enables writing data only to a tag placed just above the antenna.
The optimum value differs depending on the tag type.
(For details, refer to Section 6. AGC Threshold Setting.)
Set an AGC threshold for data write with the **[FEED]** or **[RESTART]** key, if necessary.

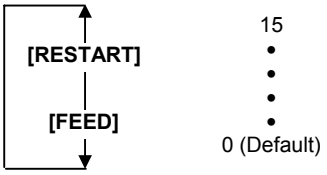


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
WT MIN AGC 0

AGC threshold lower limit for retry setting menu is displayed.
When the Q value is set to 1 or greater, the AGC threshold lower limit for retry becomes effective.
When there are tags of which AGC values fall within the range between the AGC threshold for data write and the lower limit, the printer retries data write for a tag with the highest AGC value among those tags. When printer retries data write, that value is then used as an AGC threshold.
The optimum value differs depending on the tag type.
(For details, refer to Section 6. AGC Threshold Setting.)
Set the lower limit for retry with the **[FEED]** or **[RESTART]** key, if necessary.



[PAUSE]

Press the **[PAUSE]** key.

<10>RFID

The LCD message returns to ”<10>RFID”.
Now, the RFID module settings are completed. If data write to RFID tags cannot be properly performed, refer to Section 5.

5 AGC THRESHOLD SETTING

The B-SX704-RFID-U2-US-R chooses a tag to write data on according to a radio intensity of RFID tags (AGC value).
An AGC threshold value has been set to 0 (00h) as factory default, but it may be necessary to change this value according to the tag type to be used.
When the factory default threshold value is not proper for the tag type used, follow the procedure below to configure the following settings.
As the changes are stored in the internal memory, they are retained after the printer power is turned off and on again. When the tag type is changed or data write cannot be operated properly, perform the setting again.

Step 1. Load an RFID tag embedded media in the printer.

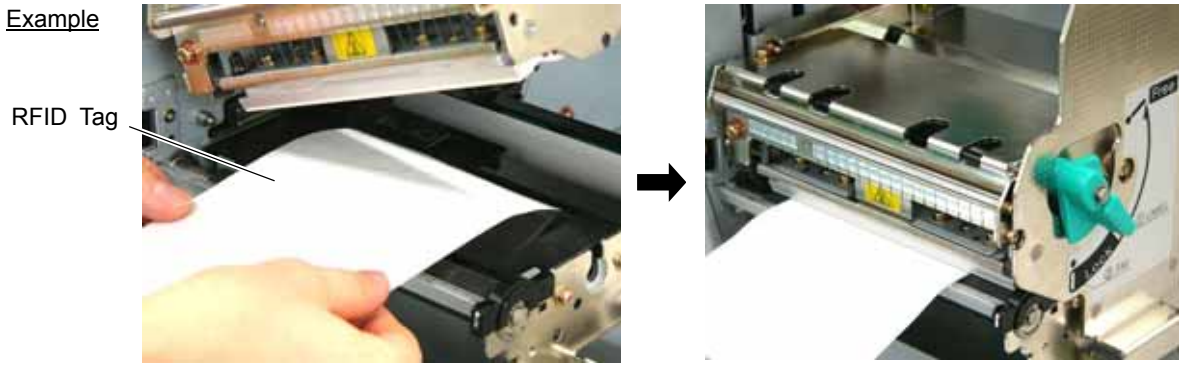
Step 2. Follow the procedure below to measure the radio intensity of the tags.

1) Place the media so that an RFID tag (IC chip) is positioned above the Antenna, and close the Top Cover.

***Note**: If an RFID tag is not positioned above the Antenna while the Print Head is at a print start position, use @003 command to adjust the media position so that an RFID tag is positioned above the Antenna. For detail of the command, refer to the External Equipment Interface Specification (Printer Command Manual).*

2) Start the printer in the system mode and perform a read test to measure the AGC value.
To measure the AGC value, place only one RFID tag on the Antenna.

Example



Turn the printer on while holding down the **[FEED]** and **[PAUSE]** keys at the same time.

↓

<1>DIAG. V4.5

When "<1>DIAG. V4.5" is displayed, press the **[RESTART]** key.

[RESTART]

↓

<10>RFID

When "<10>RFID" is displayed, press the **[PAUSE]** key until the Q value setting menu is displayed.

[PAUSE]

↓

<10>RFID
Q VALUE 2

Choose "2" with the **[FEED]** or **[RESTART]** key.

[PAUSE]

Press the **[PAUSE]** key and turn off the printer.

↓

<10>RFID
WT AGC 0

↓

Turn the power off.

↓

Turn the printer on while holding down the **[FEED]** and **[PAUSE]** keys at the same time.

↓

<1>DIAG. V4.5

When "<1>DIAG. V4.5" is displayed, press the **[RESTART]** key.

[RESTART]

↓

<10>RFID

When "<10>RFID" is displayed, press the **[PAUSE]** key.

[PAUSE]

↓

<10>RFID
READ TEST OFF

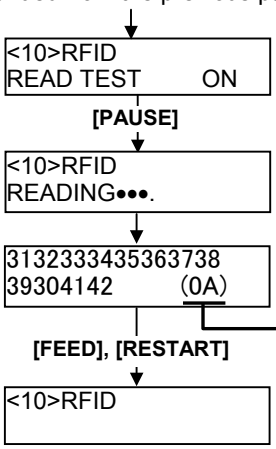
Read test menu is displayed.
Press the **[FEED]** or **[RESTAT]** key to choose "READ TEST ON".

[FEED] or [RESTAT]

↓

Continued to the next page.

Continued from the previous page



Press the **[PAUSE]** key to implement a read test.

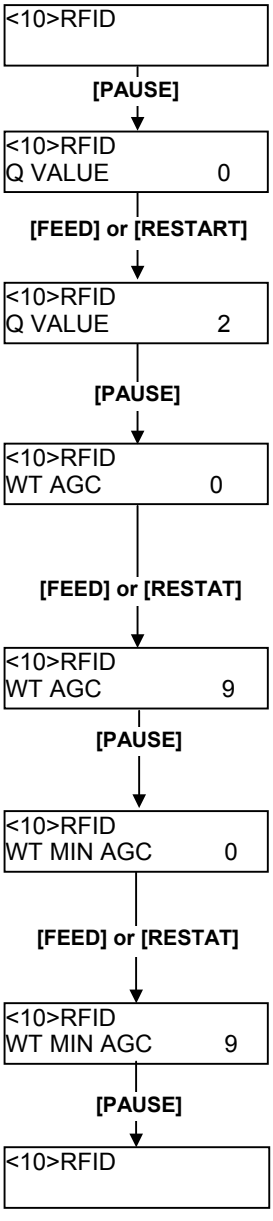
Read data is displayed.

Data in parentheses ( ) is the AGC value expressed in hex. code. Write down this value.

Press the **[FEED]** and **[RESTART]** keys to return to the RFID Setting Menu (”<10>RFID”).

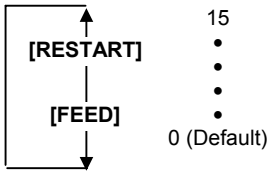
3) Set an AGC threshold of data write.
Set a value which is lower than the AGC value obtained by a read test by 1 or 2, taking variation of RFID tags in performance into consideration.

Example



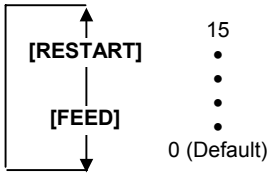
When ”<10>RFID” is displayed, press the **[PAUSE]** key until the Q value setting menu is displayed.

Choose “2” with the **[FEED]** or **[RESTART]** key.
When “2” is already chosen, go to the AGC threshold for data write setting menu.



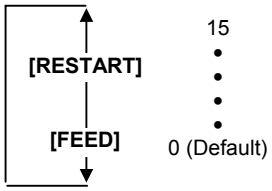
Press the **[PAUSE]** key.

AGC threshold for data write setting menu is displayed.
Choose a threshold value (decimal number) with the **[FEED]** or [**RESTART]** key.
When the measured AGC is 10 (0A), for example, choose “9” (a value lower than the measured AGC by 1 or 2).



Press the **[PAUSE]** key.

AGC threshold lower limit for retry setting menu is displayed.
Choose a lower limit (decimal number) with the **[FEED]** or **[RESTART]** key.
Usually, choose the same value with the AGC threshold for data write (WT AGC).



Press the **[PAUSE]** key.

RFID Setting Menu (”<10>RFID”) is displayed.
An AGC threshold setting is completed.

7FM03205000
PRINTED IN JAPAN
EO2-38058

FCC and IC label information:

This device complies with Part 15 of the FCC Rules and RSS 210 Industry Canada Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: Users are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

In order to ensure compliance with the Commission’s RF Exposure guidelines, the user MUST maintain a separation of 20 cm (8 inches) from the unit antenna when it is transmitting. Under no circumstances is it permitted for this device to be collocated or used in conjunction with any othe r transmitter, and any installer if not the end-user is instructed to provide the end-user with this information.