TEC Thermal Printer

B-SX4T/SX5T SERIES

Maintenance Manual

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WARNING!
Follow all manual instructions. Failure to do so could create safety hazards such as fire or electrocution.

NOTES:

1. *Manual instructions must be followed when installing option kits or adding cables to avoid system failures and to insure proper performance and operation.*
2. *Failure to follow manual instructions or any unauthorized modification, substitution or change to this product will void the limited product warranty.*

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This manual is intended for both B-SX4T series and B-SX5T series. Please note that the illustrations and pictures provided are of the B-SX4T series.
The SP40II has been developed from the B-SX4T-GS10-QP, and the differences between two are the color of the front cover and the operation panel ass'y, the model name label, and the CD-ROM. The other specifications including the firmware are common.

CAUTION!

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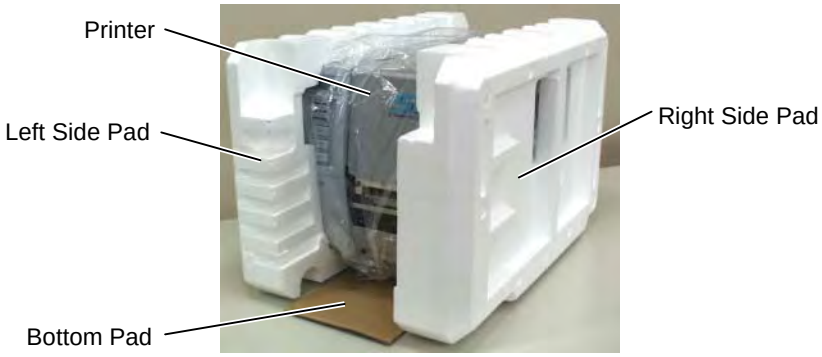
1. UNPACKING

***NOTE**: The pictures provided in this manual are of the B-SX4T series with the serial number of 3T311410 or earlier. Please note that they are partly different from the B-SX4T series with the serial number of 3T311411 or later and B-SX5T series with the serial number of 3Wxxxxxx or later.*

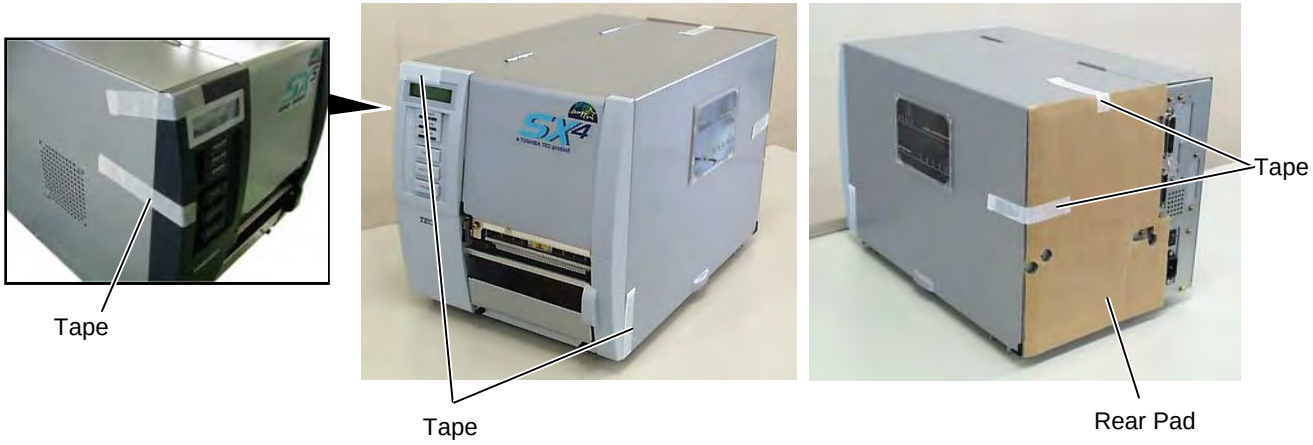
1.1 PROCEDURE

1) Open the carton.
2) Unpack the accessories and the front pad from the carton.

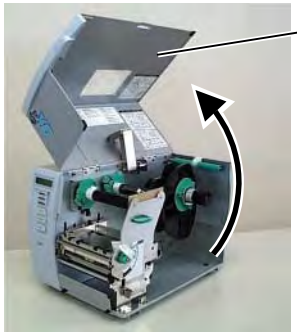
3) Unpack the pads and the printer from the carton.

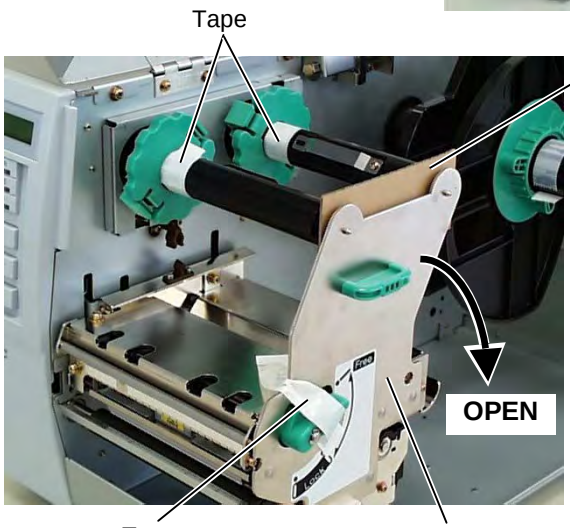


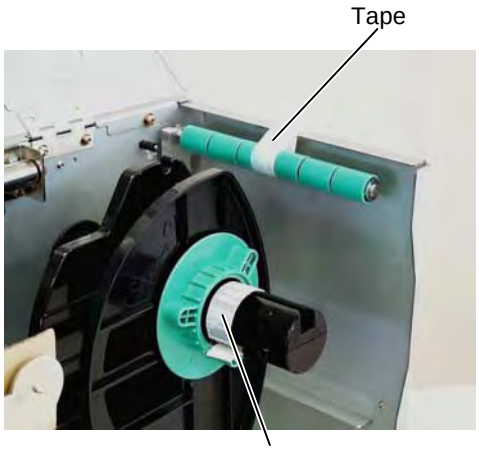
4) Remove the four pieces of tape and the rear pad from the printer.



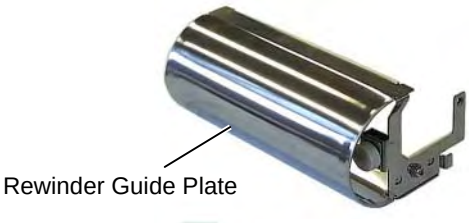
5) Open the top cover and remove the five pieces of tape. And then, open the ribbon shaft holder plate to remove the ribbon shaft pad from the printer.

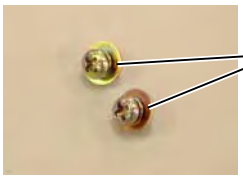


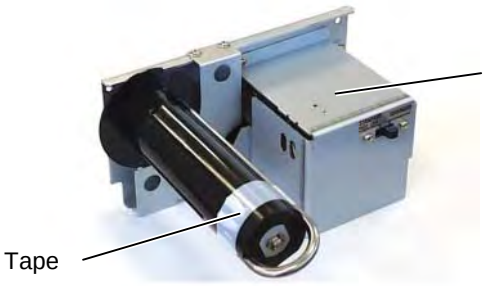




6) In case of the B-SX5T series, take out the rewinder guide plate and two SMW-3x8 screws from the printer inside. Also, remove the tape from the rewinder unit in the printer.



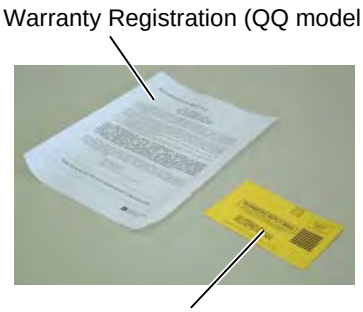


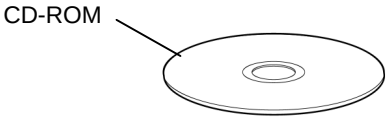


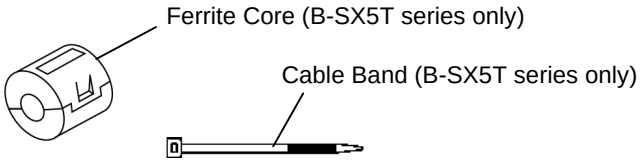
***NOTE**: For the installation procedure of the rewinder guide plate, refer to Section 4.3.*

1.2 CHECKS

1) Check for damage or scratches on the printer.
2) Confirm that none of the accessories are missing. The parts below are provided as accessories.



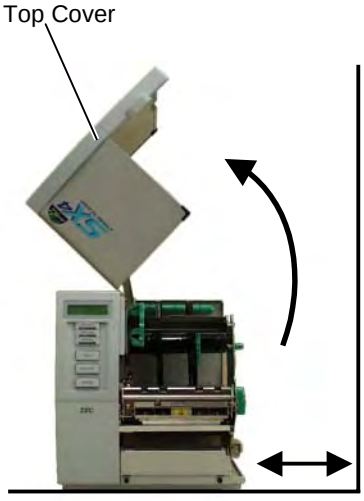




NOTES: *1. Keep the carton and pads for later transport.*
2. The ferrite core and cable band are not enclosed with the B-SX5T series with the serial number of 3Wxxxxxx or later.

2. PRINTER INSTALLATION

1) Place the printer on the level surface.
2) Keep the slit free or the printer will be overheated. Also keep enough space for replacing and maintenance works while the top cover is opened.



3. NOTE FOR OPTIONAL EQUIPMENT INSTALLATION /MAJOR UNIT REPLACEMENT/MAINTENANCE

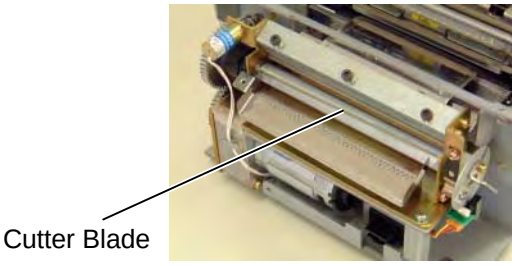
WARNING!

1. *Turn the power off and disconnect the power cord before replacing the main parts.*

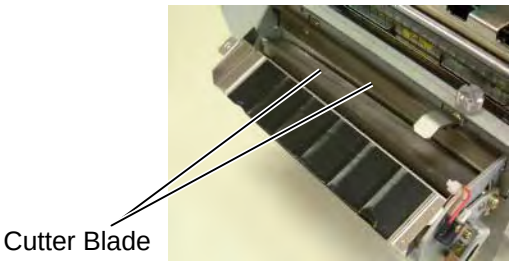
2. *Never perform disassembling, assembling, and cleaning just after printing. Doing so may cause you to be injured by the print head and the inner parts of the printer being hot.*

3. *When cleaning the cutter, be careful not to be injured by the cutter blade.*

B-8204-QM



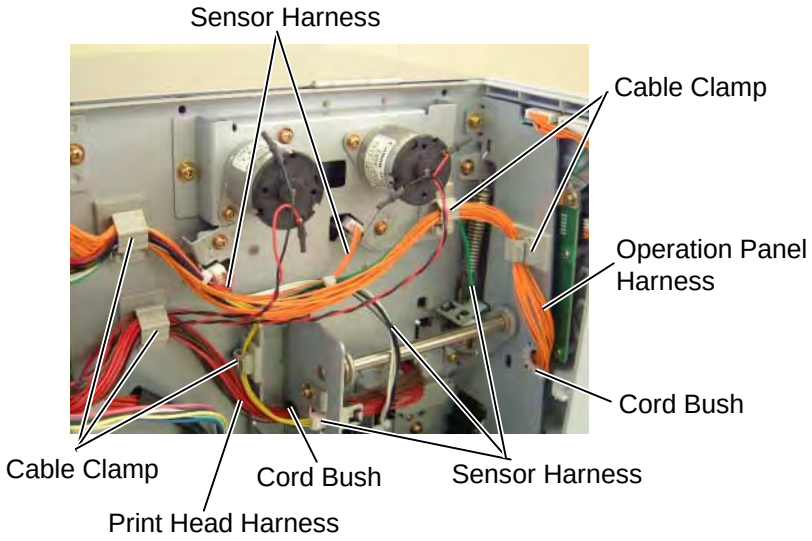
B-4205-QM

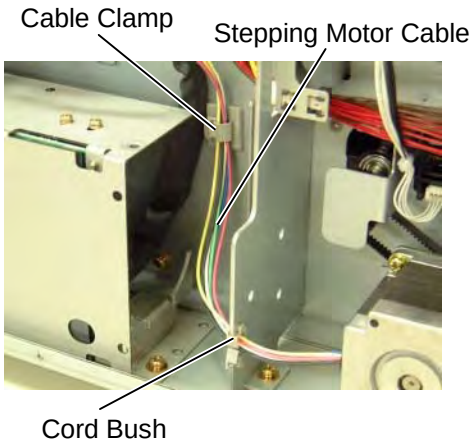


4. *Be careful not to pinch your fingers or hands with the covers.*

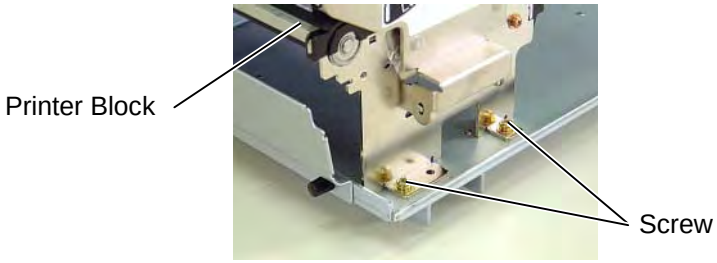
CAUTION!

1. *Fix the harnesses and the cord bushes with the cable clamp. Failure to do this may cause the covers to catch them.*

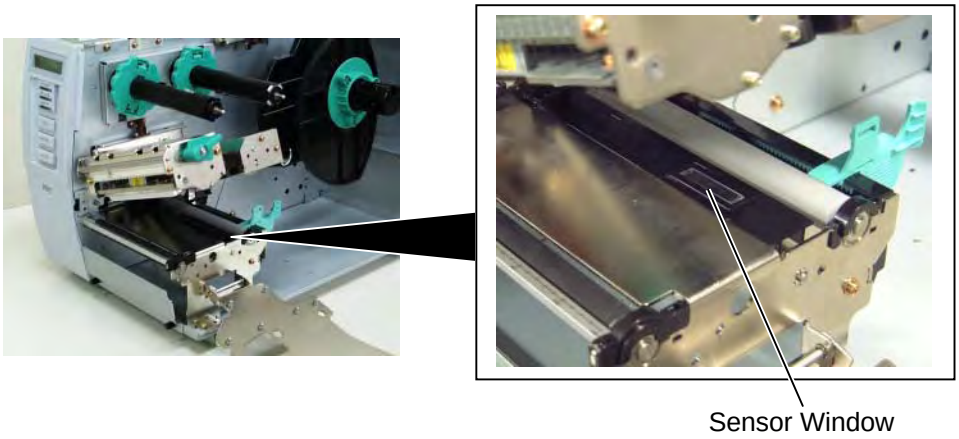




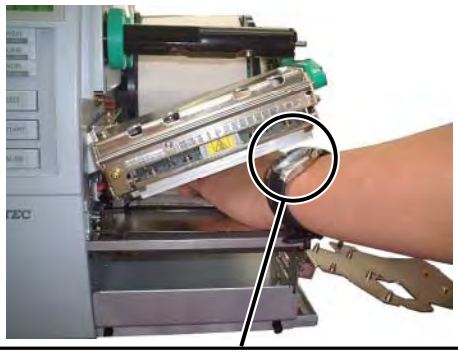
2. *Do not remove the screws below. Doing so will require the printer block position adjustment with the jig.*



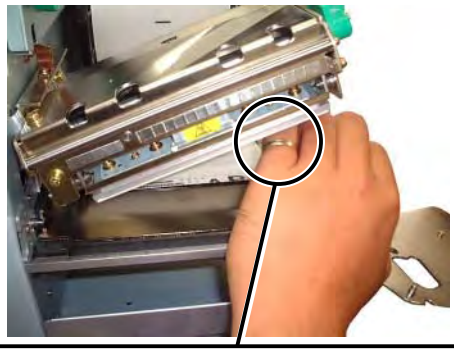
3. *Be careful not to damage the sensor window. If so, the sensor cannot detect the feed gap or the black mark correctly, causing improper printing.*



4. *When replacing parts or performing maintenance on the printer, be careful not to damage the print head with a hard object like a watch or a ring.*



Care must be taken not to allow the metal or glass part of a watch to touch the print head edge.

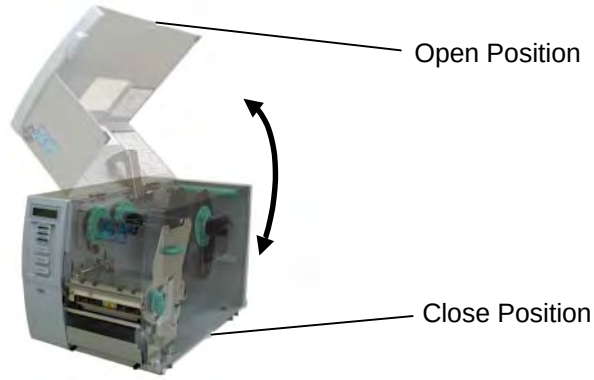


Care must be taken not to allow a metal object like a ring to touch the print head edge.

Since the print head element can be easily damaged by shock, please treat it carefully by not hitting a hard object against it.

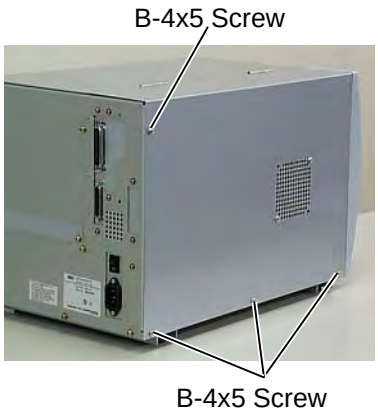
3.1 OPENING/CLOSING THE TOP COVER

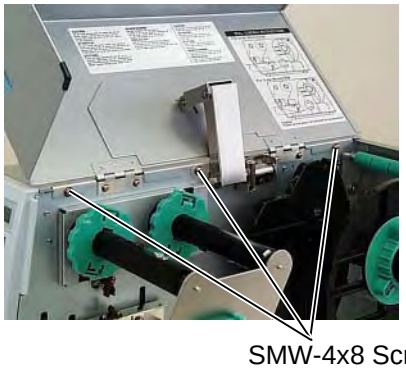
When opening the top cover, fully open the top cover to the open position.
When closing, softly close it to the close position.



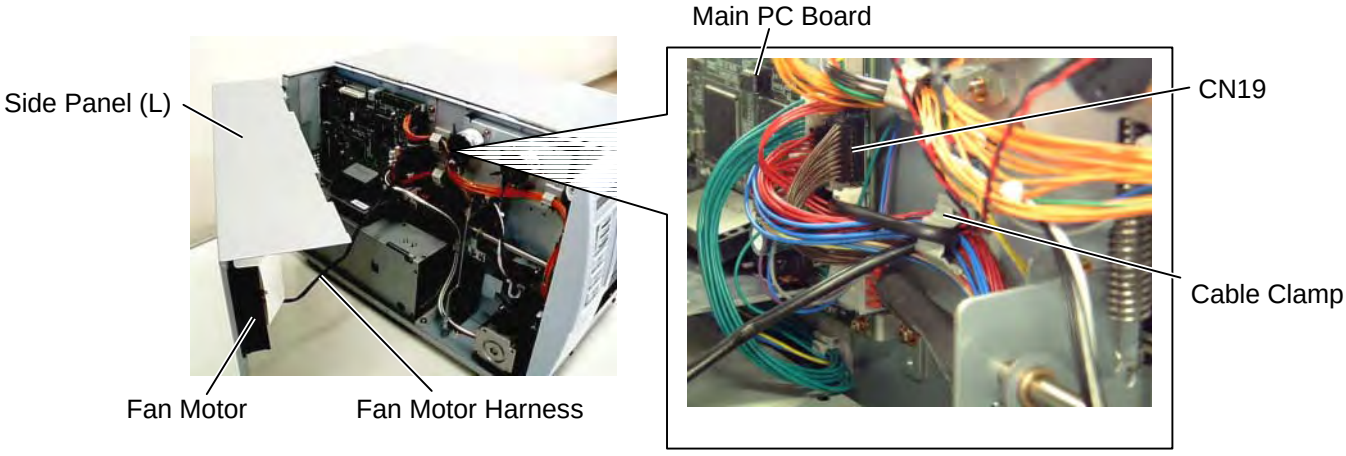
3.2 REMOVING THE SIDE PANEL (L)

1) Remove the four B-4x5 screws from the side panel (L).
2) Open the top cover and remove the three SMW-4x8 screws that secure the side panel (L).

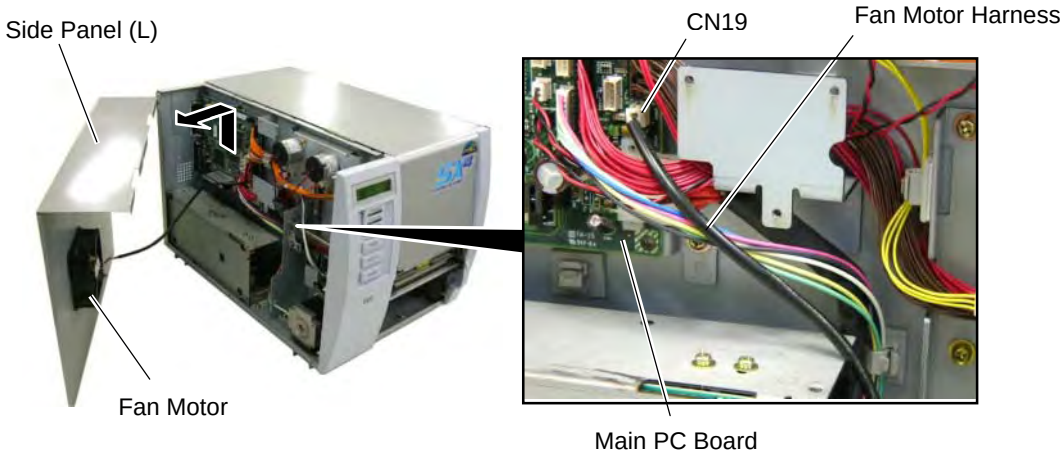




3) Close the top cover.
4) Lift the side panel (L) and put it aside.
5) In case of non RFID-ready printers, release the fan motor harness from the cable clamp, disconnect it from CN19 on the Main PC board, and then separate the side panel (L).

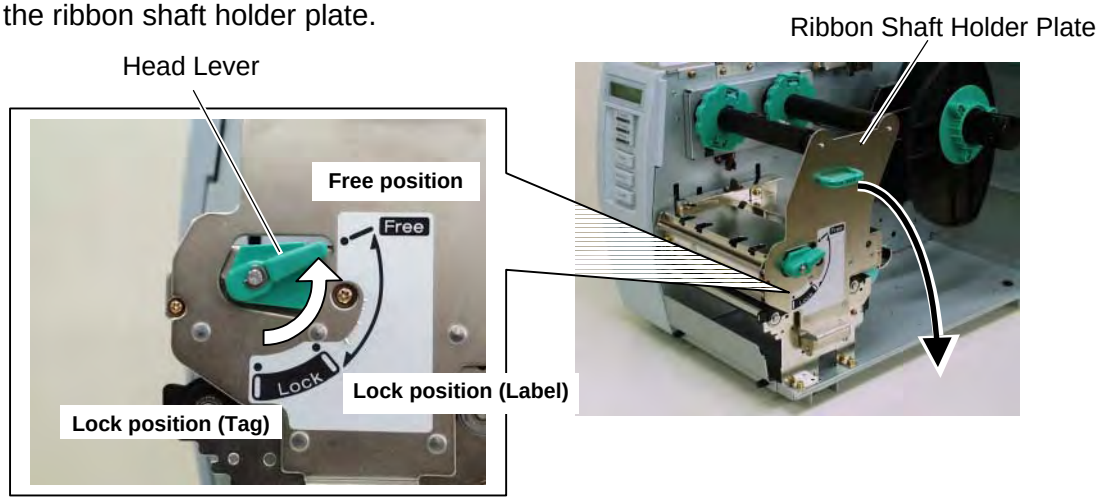


In case of RFID-ready printers, disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).

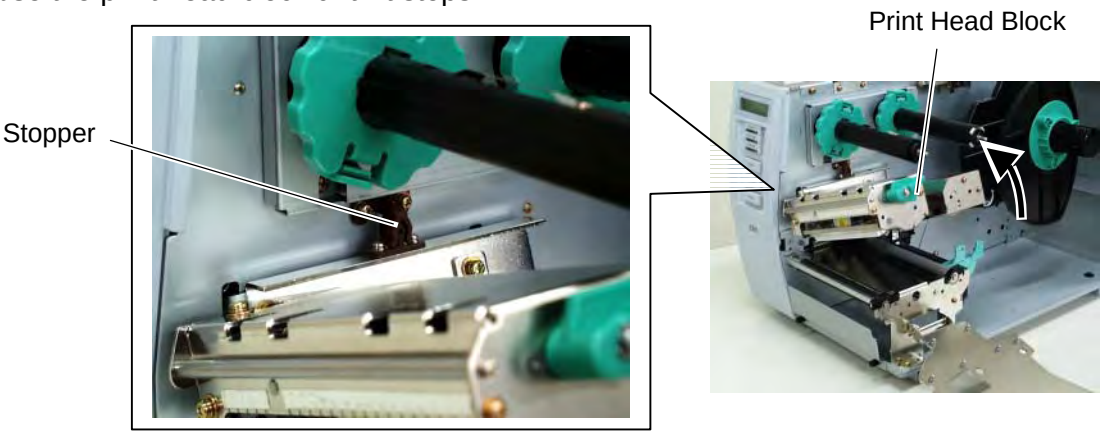


3.3 OPENING/CLOSING THE PRINTER BLOCK

1) Open the top cover.
2) Turn the head lever counterclockwise to **Free** position.
3) Open the ribbon shaft holder plate.



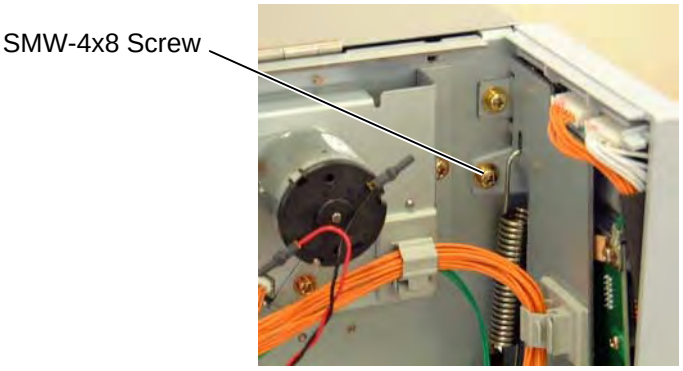
4) Raise the print head block until it stops.



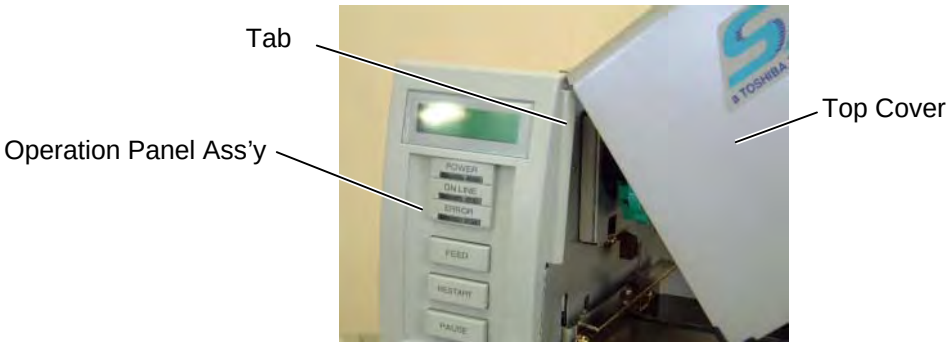
NOTE: *DO NOT excessively push down the print head block to close it. Dosing so may cause a failure of the print head block or damage to the print head.*

3.4 REMOVING THE OPERATION PANEL

1) Open the top cover. (Refer to section 3.1.)
2) Remove the side panel (L) from the printer. (Refer to section 3.2.)
3) Remove the SMW-4x8 screw that secures the operation panel ass'y.

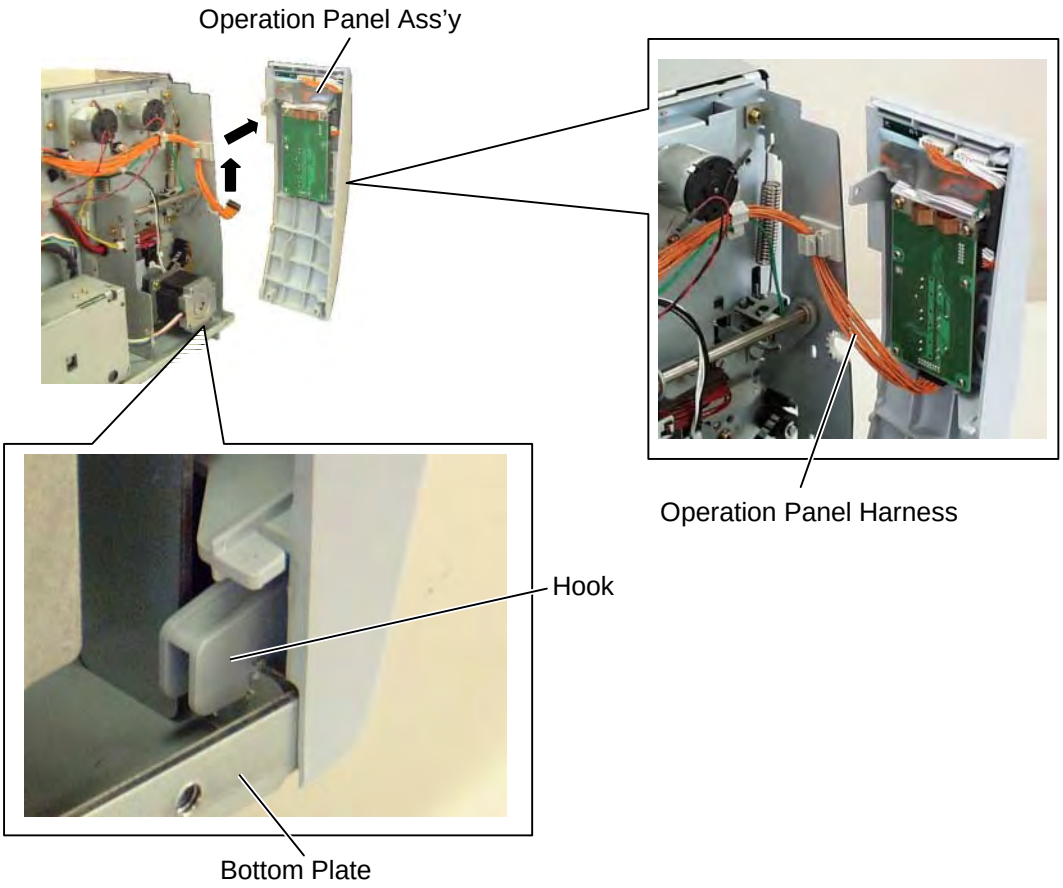


4) Fully open the top cover, otherwise the operation panel ass'y is stuck on the tab and cannot be removed from the printer.

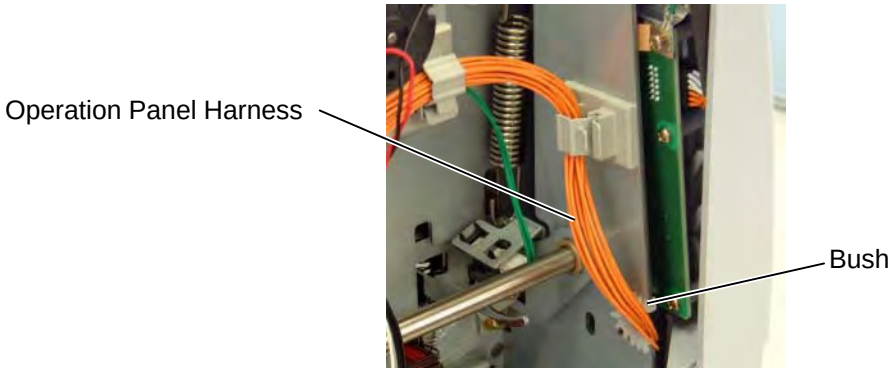


5) Lift the operation panel ass'y to release the hook, and then remove the operation panel ass'y by moving it forward.

6) Disconnect the operation panel harness from the operation panel ass'y.



7) Reassemble in the reverse order of removal. Lead the operation panel harness through the bush so that the side panel (L) does not catch it.



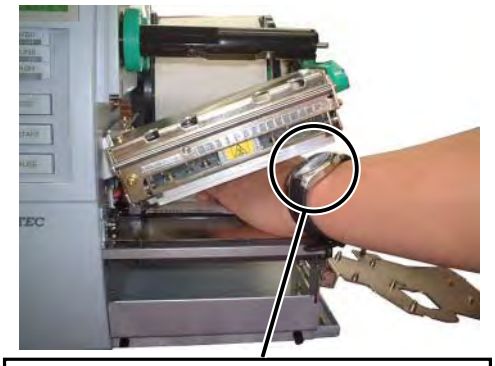
4. INSTALLATION PROCEDURE FOR OPTIONAL EQUIPMENT

WARNING!

1. *Make sure to unplug the power cord before installing the optional equipment.*
2. *Be careful not to pinch your fingers or hands with the covers.*

CAUTION!

When replacing parts or performing maintenance on the printer, be careful not to damage the print head with a hard object like a watch or a ring.



Care must be taken not to allow the metal or glass part of a watch to touch the print head edge.

Care must be taken not to allow a metal object like a ring to touch the print head edge.

Since the print head element can be easily damaged by shock, please treat it carefully by not hitting a hard object against it.

The following optional equipments are provided for this printer.

B-4205-QM:	Swing Cutter	B-9700-PCM-QM:	PCMCIA Interface Board
B-8204-QM:	Rotary Cutter	B-9700-LAN-QM:	LAN Interface Board
B-9904-H-QM:	Strip Module	B-9700-USB-QM:	USB Interface Board
B-9904-R-QM:	Ribbon Saving Module	B-7704-IO-QM:	Expansion I/O Interface Board
B-9704-RFID-U1-US/EU: RFID Module		B-9704-RFID-H1-QM: RFID Module	

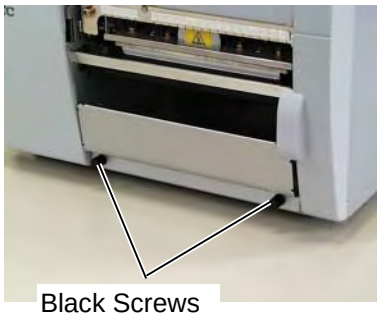
In this section, installation procedures for these optional equipments are described.

NOTES:

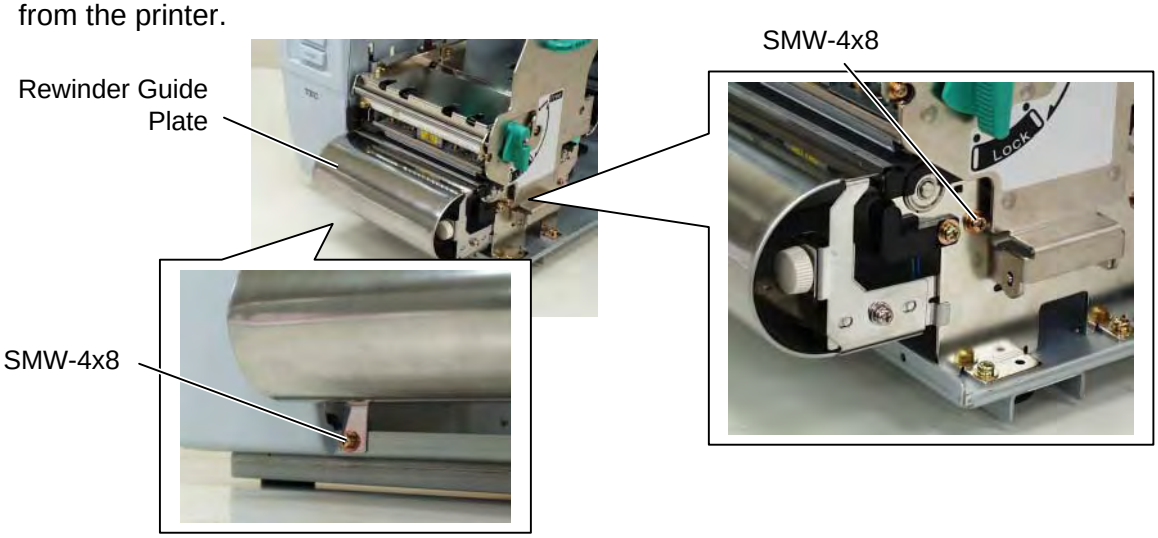
1. *The B-4205-QM, B-8204-QM, and B-9904-H-QM cannot be used together.*
2. *The B-9700-LAN-QM and the B-9700-USB-QM cannot be used together.*
3. *When using the B-9700-PCM-QM together with the B-9700-LAN-QM or the B-9700-USB-QM, attach the B-9700-PCM-QM onto the Main PC board.*
4. *The strip module, ribbon saving module, and expansion I/O interface board are standard on the B-SX5T series.*
5. *When installing the B-4205-QM swing cutter module or B-8204-QM rotary cutter module on the B-SX5T series, it is necessary to remove the strip sensor, rewinder harness, rewind full sensor harness, expansion I/O interface board, etc. Follow the procedure below.*

1) Turn the power off and disconnect the power cord.
2) When the printer is used in the batch or strip mode:
   Remove the two black screws to detach the front plate.

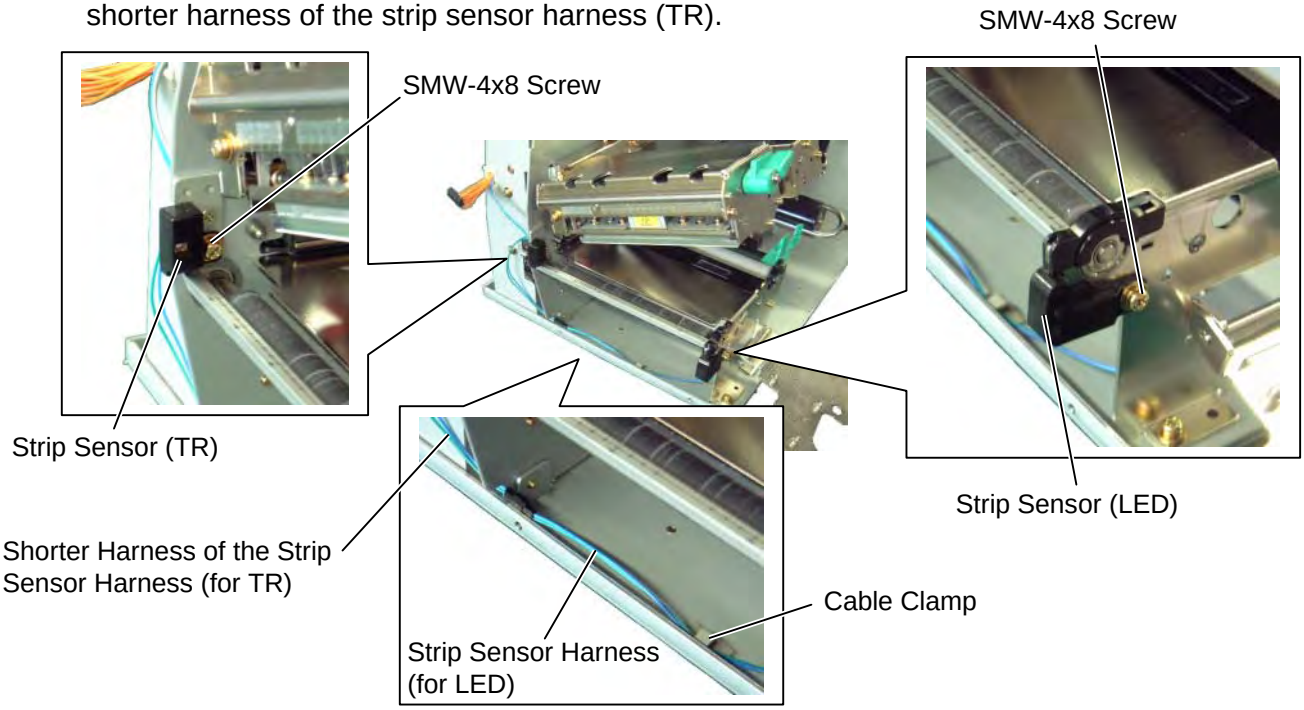
   ***NOTE**: Retain the two black screws and front plate.*



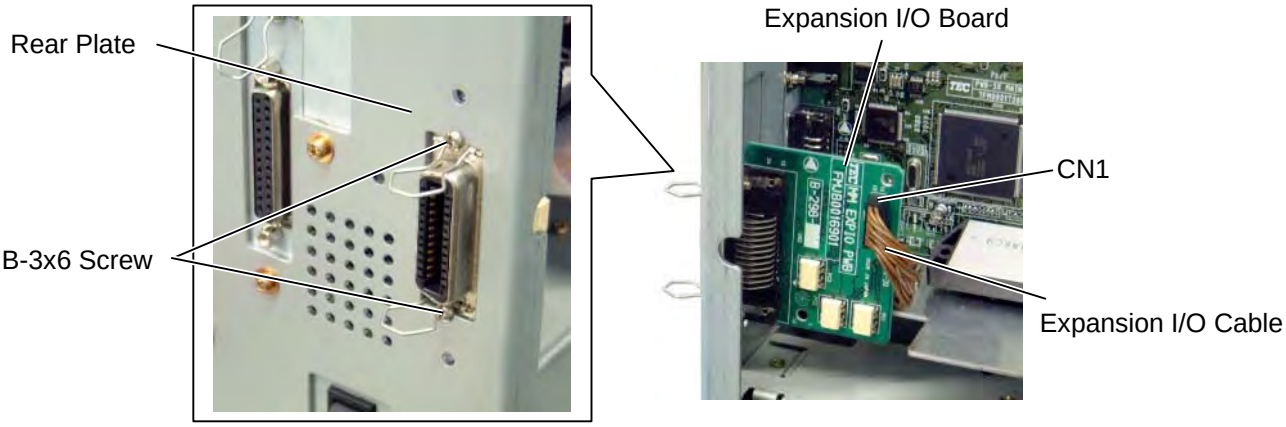
When the printer is used in the built-in rewinder mode:
Open the top cover, remove the two SMW-4x8 screws, and detach the rewinder guide plate from the printer.



3) Remove the side panel (L). (Refer to Section 3.2.)
4) Remove the operation panel ass'y. (Refer to Section 3.4.)
5) Open the print head block. (Refer to Section 3.3.)
6) Remove the two SMW-4x8 screws that secure the strip sensors (TR) and (LED).
7) Release the strip sensor (LED) harness from the cable clamp, and disconnect it from the shorter harness of the strip sensor harness (TR).

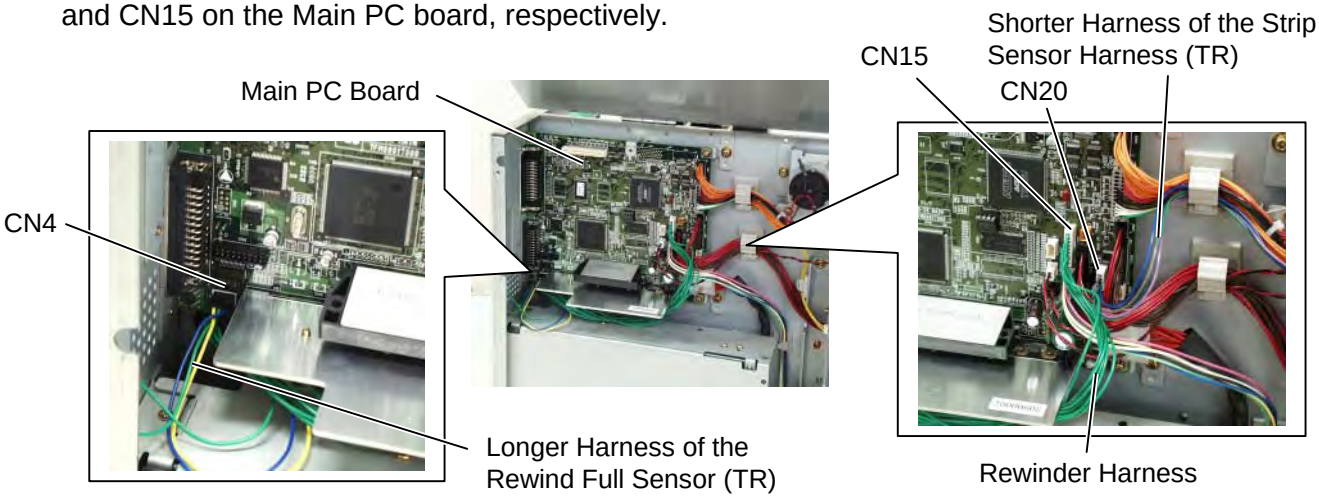


8) Remove the expansion I/O board from the printer temporarily using the following procedure:
(1) Disconnect the expansion I/O cable from CN1 on the Expansion I/O board.
(2) Remove the two B-3x6 screws to detach the expansion I/O board from the printer.

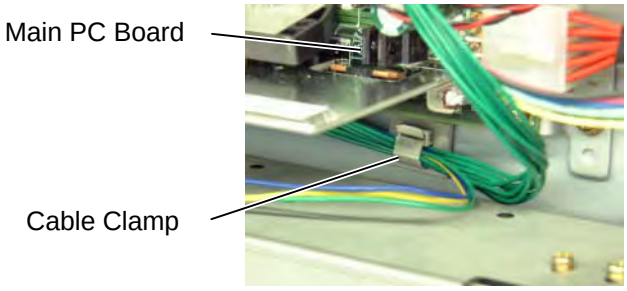


9) Disconnect the shorter harness of the strip sensor harness (TR) from CN20 on the Main PC board. Then remove the strip sensor (TR) from the printer.
***NOTE**: Retain the strip sensors (TR) and (LED), and the strip sensor harness.*

10) Disconnect the longer harness of the rewind full sensor (TR) and rewinder harness from CN4 and CN15 on the Main PC board, respectively.



***NOTE**: Secure the rewinder harness and the longer harness of the rewind full sensor (TR) to the space under the Main PC board with the cable clamp so that they are not pinched by the covers or printer's internal components.*



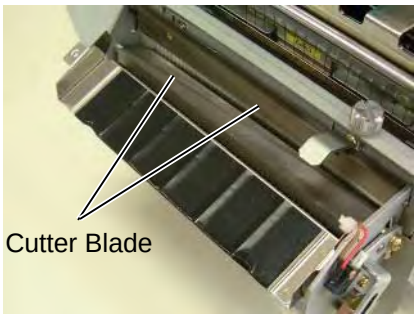
11) Reassemble the operation panel ass'y and the expansion I/O board in the reverse order of removal.

6. *When using the rotary cutter on the B-SX4T series, the print speed of 10"/sec. is not supported. Also, when using the rotary cutter, be sure to install the ribbon saving module (B-9904-R-QM). Failure to do this may cause a paper jam or ribbon error. (For the installation procedure, please refer to Section 4.9.)*

4.1 SWING CUTTER (B-4205-QM)

WARNING!

Be careful not to injure your fingers when installing the cutter unit.

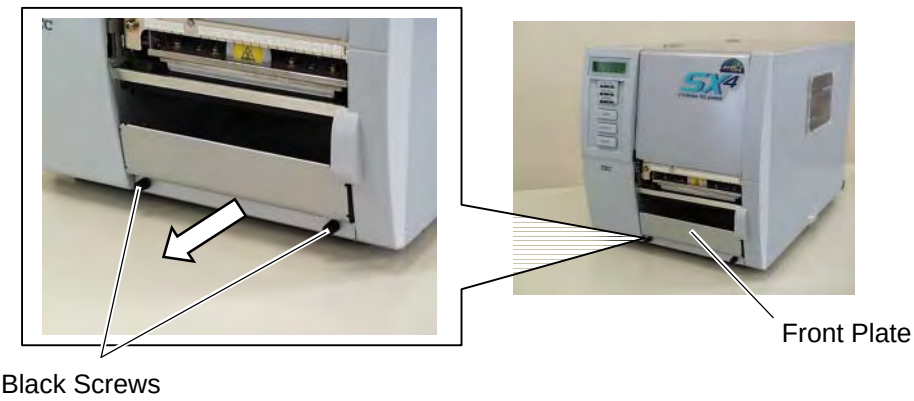


This optional device is used for cut print, which cannot be used together with either B-8204-QM or B-9904-H-QM.
When this cutter is used together with an RFID module, be sure to install the RFID module prior to the cutter.

All the following parts are supplied with the kit. Make sure you have all items shown below.

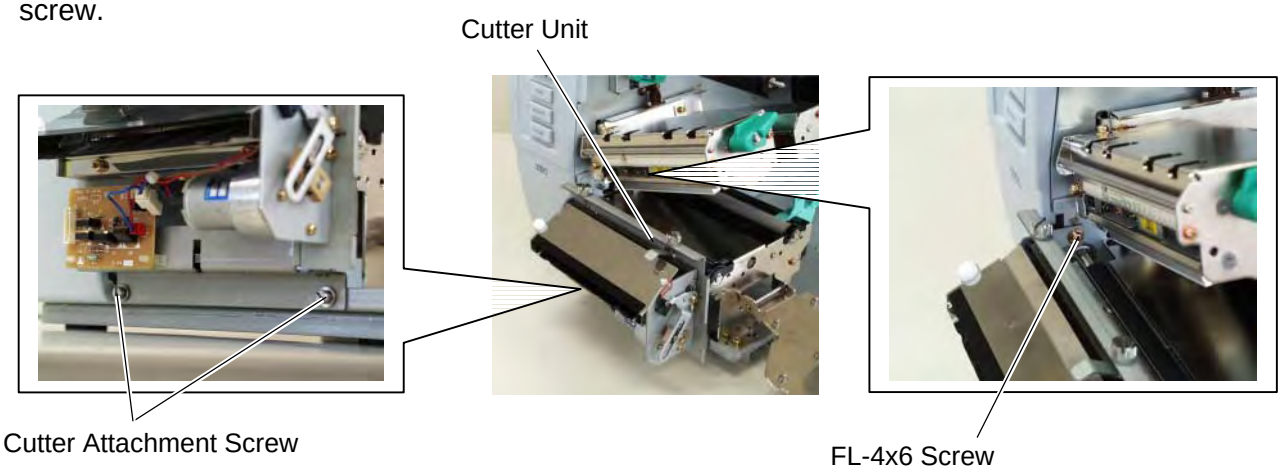
Cutter Unit (1 pc.)	Cutter Cover (1 pc.)	Cutter Harness (1 pc.)	Print Head Cleaner (1 pc.) (P/No.: FMQB0051601)
Cutter Attachment Screw (2 pcs.)	Bush (1 pc.)	• Installation manual (1 copy) • FL-4x6 Screw (1 pc.)	

1) Remove the two black screws to detach the front plate.

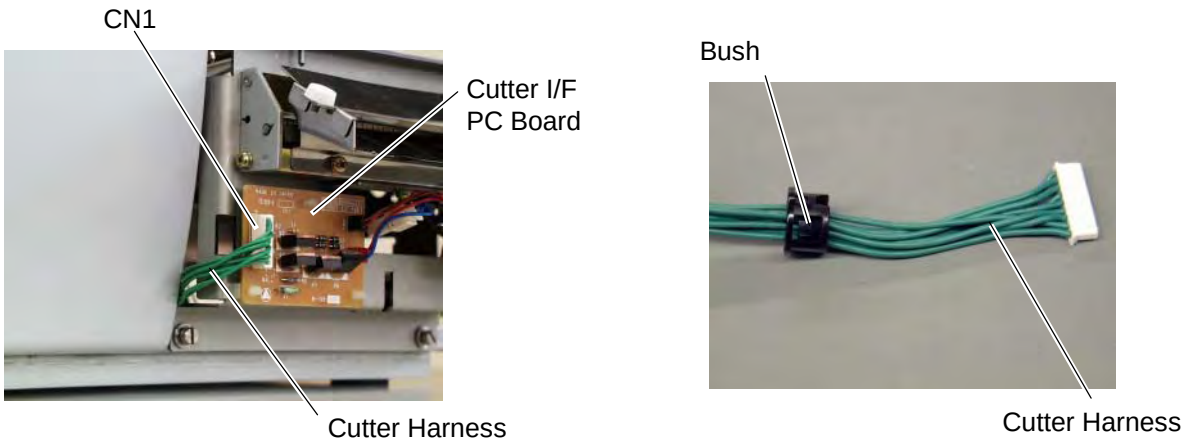


***NOTE**: Retain the two black screws and front plate.*

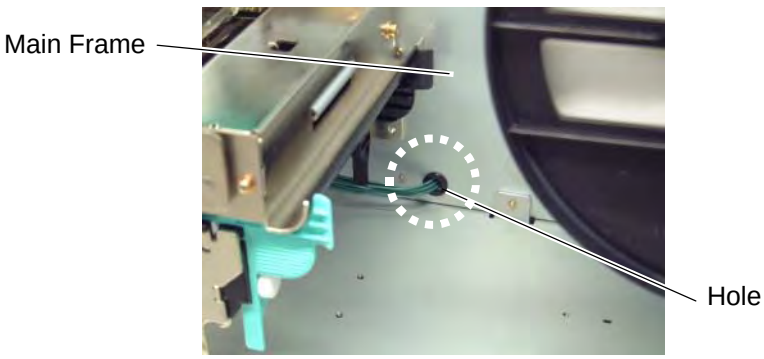
2) Open the top cover. (Refer to Section 3.1.)
3) Remove the side panel (L) from the printer. (Refer to section 3.2.)
4) Open the print head block. (Refer to Section 3.3.)
5) Attach the cutter unit to the front of the printer with the cutter attachment screws and the FL-4x6 screw.



6) Connect the cutter harness to CN1 on the cutter I/F PC board.
7) Fit the bush to the cutter harness in the orientation shown below.



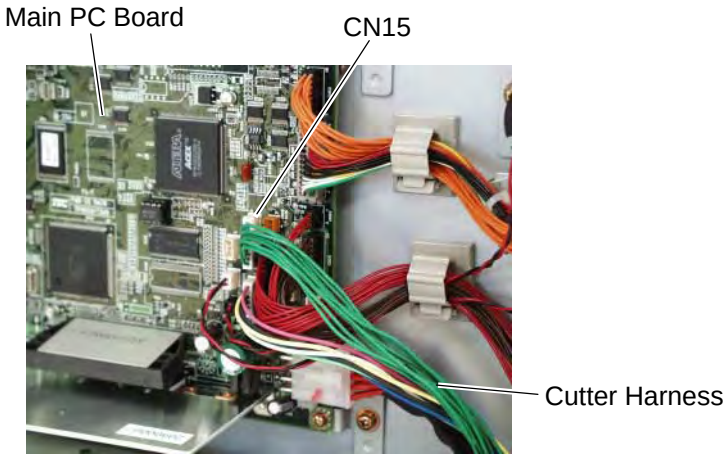
8) Insert the cutter harness into the gap between the cutter unit and the printer, and then into the hole in the main frame. Fit the bush into the hole.



9) Close the print head block and the ribbon shaft holder plate.

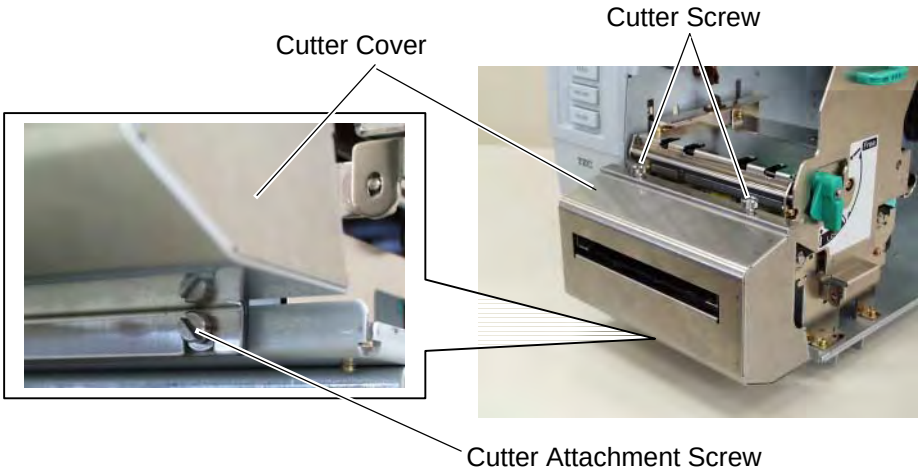
NOTE: *DO NOT excessively push down the print head block to close it. Doing so may cause a failure of the print head block or damage to the print head.*

10) Connect the cutter harness to CN15 on the Main PC Board.



11) Fit the cutter cover on the cutter attachment screws, and fix it to the cutter unit with the two cutter screws.

NOTE: *Be careful not to pinch the cutter harness by the cutter cover.*



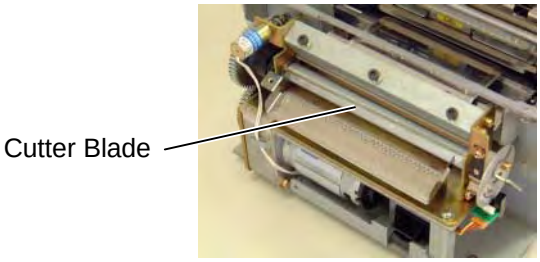
12) Reassemble the side panel (L) and close the top cover. Finally check the cutter operation.

NOTE: *For cleaning the cutter, refer to section 8.*

4.2 ROTARY CUTTER (B-8204-QM)

WARNING!

Be careful not to injure your fingers when installing the cutter unit.



This optional device is used for cut print, which cannot be used together with either B-4205-QM or B-9904-H-QM.
When this cutter is used together with an RFID module, be sure to install the RFID module prior to the cutter.

All the following parts are supplied with the kit. Make sure you have all items shown below.

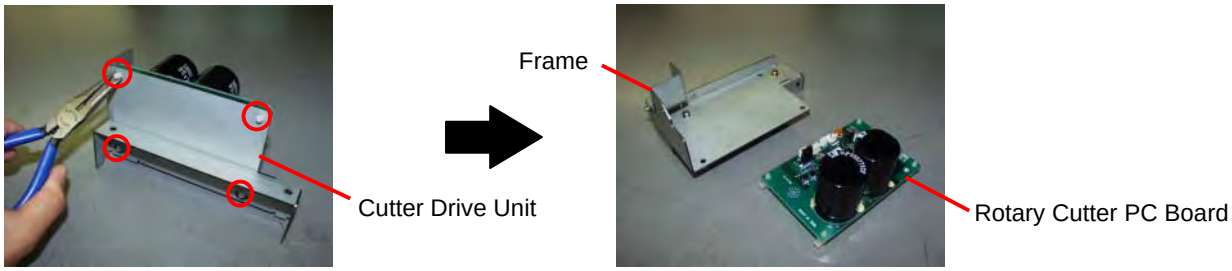
Cutter Unit (1 pc.)	Cutter Cover (1 pc.)	Cutter Drive Unit (1 pc.)	Harness Ass'y (2-pin & 9-pin) (1 pc.)
Cord Bush (1 pc.)	Print Head Cleaner (1 pc.) (P/No.: FMQB0051601)	B-SX Cutter Paper Guide C (1 pc.)	

- Installation Manual (1 copy)
- SM-4x8 Screw (6 pcs.)

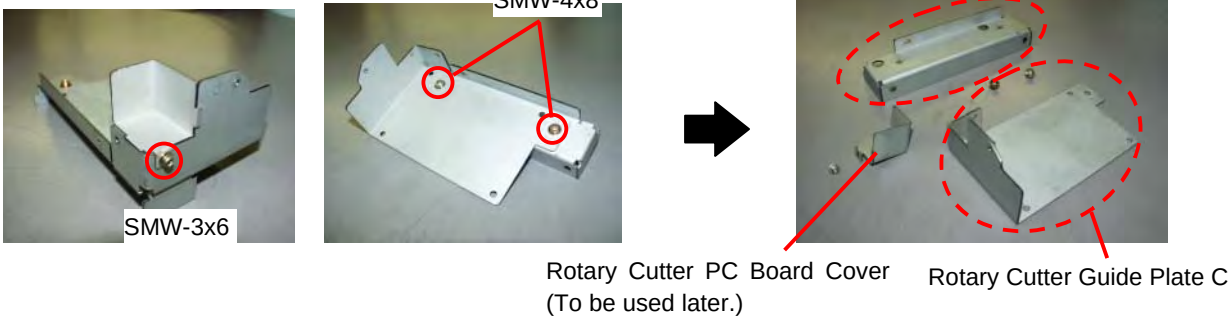
NOTES:

1. *When using the rotary cutter on the B-SX4T series, the print speed of 10"/sec. is not supported. Also, when using the rotary cutter, be sure to install the ribbon saving module (B-9904-R-QM). Failure to do this may cause a paper jam or ribbon error. (For the installation procedure, please refer to Section 4.9.)*
2. *The B-8204-QM with the serial number of 2805Dxxxxxx or earlier cannot be installed on an RFID-ready printer (2804Sxxxxxx or later) without changing some parts of the cutter drive unit. For the parts change procedure, refer to the following:*

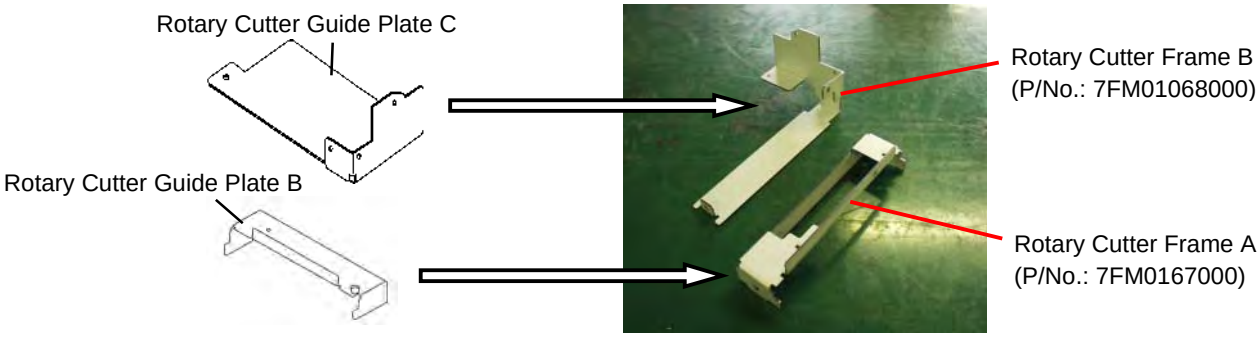
   1) Release the four Locking Supports to remove the Rotary Cutter PC Board from the frame.
   NOTE: *Locking supports are not used. Please discard them.*



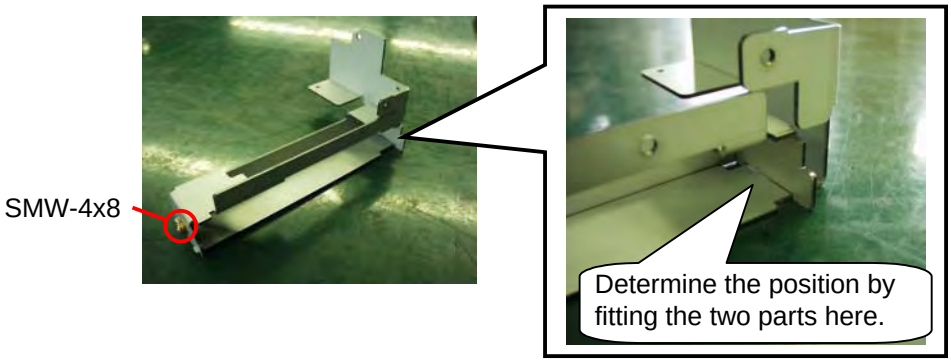
2) Disassemble the frame into 3 parts.



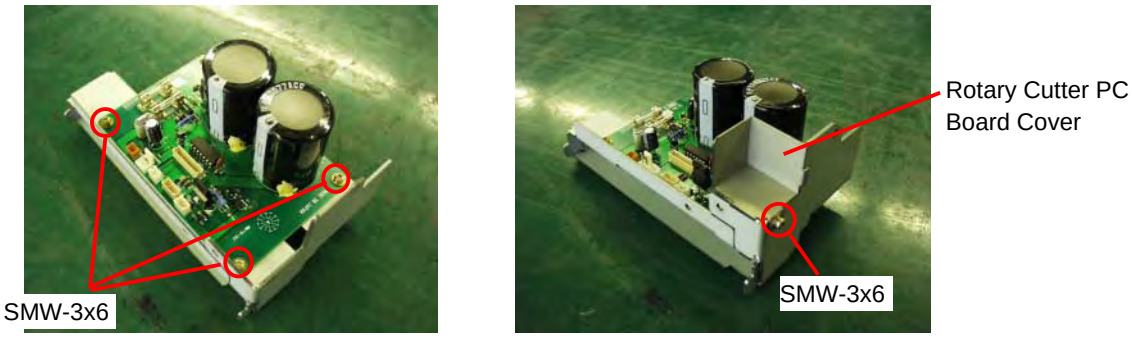
3) Replace the Rotary Cutter Guide Plate B and the Rotary Cutter Guide Plate C with the Rotary Cutter Frame A and Rotary Cutter Frame B, respectively.



4) Assemble the Rotary Cutter Frame A and Rotary Cutter Frame B with an SMW-4x8 screw removed in step 2).



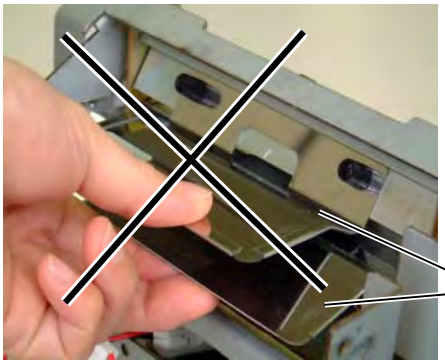
5) Confirming the orientation of the Rotary Cutter PC Board, fix it to the Rotary Cutter Frames A and B with three SMW-3x6 screws. Then, attach the Rotary Cutter PC Board Cover with an SMW-3x6 screw.



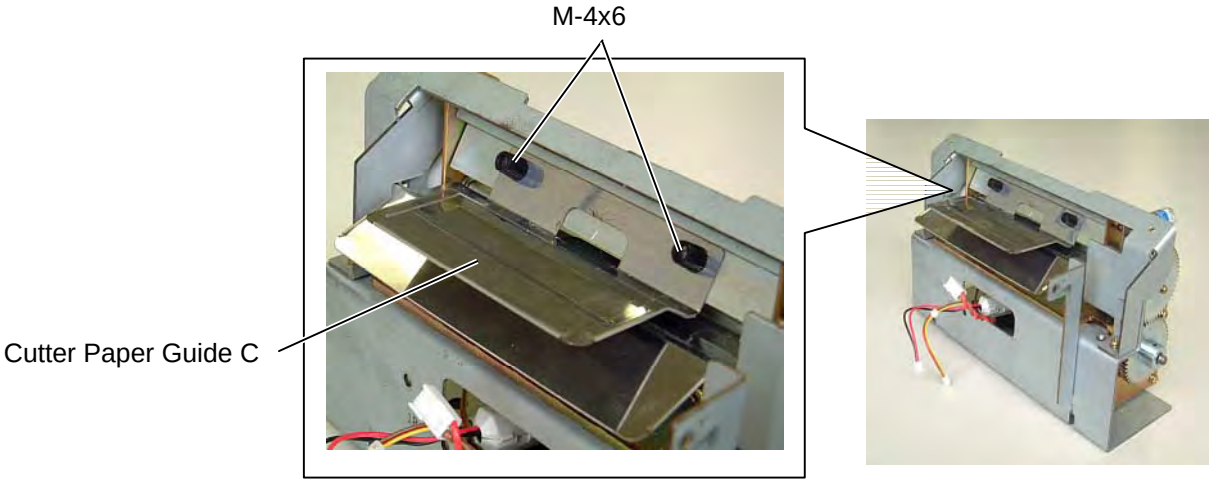
***NOTE**: When attaching the B-8204-QM cutter module, replace the original cutter paper guide C with the enclosed B-SX cutter paper guide C using the following procedure.*

CAUTION!
Do not hold the cutter paper guides when attaching the Cutter Unit to the printer. Doing so may deform the cutter paper guides, causing a paper jam.

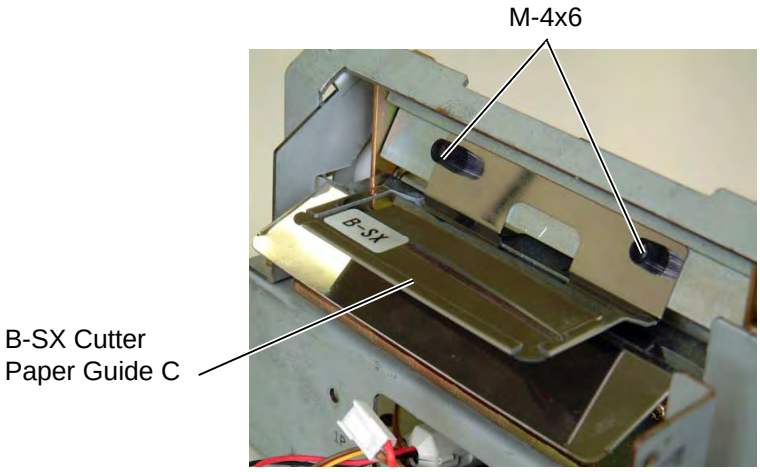
DO NOT!



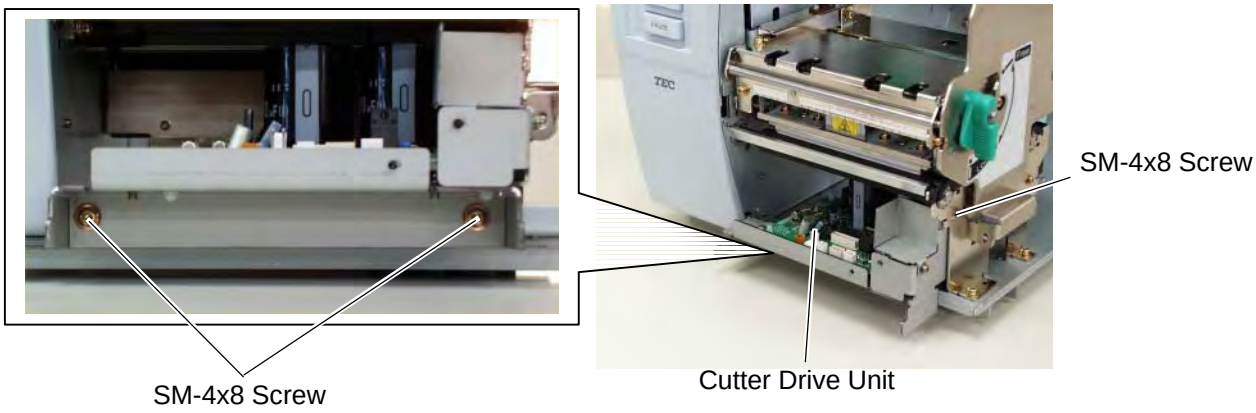
(1) Remove the two M-4x6 Set Screws from the cutter unit to detach the cutter paper guide C.



(2) Secure the B-SX cutter paper guide C with the M-4x6 set screws while pushing it upward.

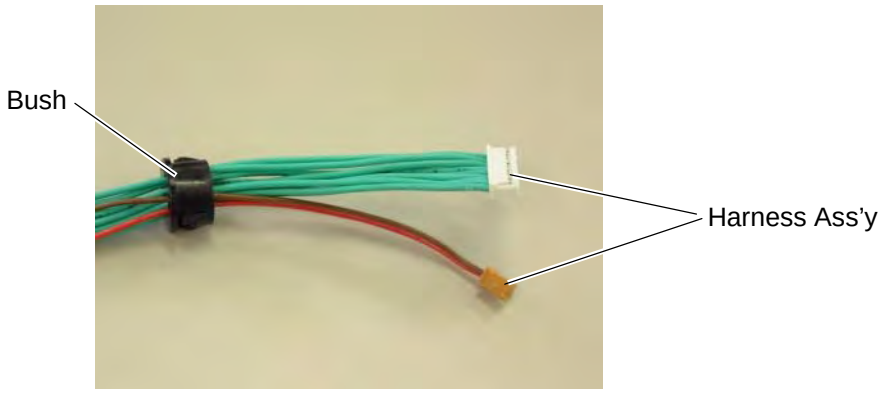


1) Remove the two black screws to detach the front plate. (Refer to section 4.1.)
2) Open the top cover. (Refer to Section 3.1.)
3) Remove the side panel (L) from the printer. (Refer to section 3.2.)
4) Fix the cutter drive unit to the printer with the three SM-4x8 screws.

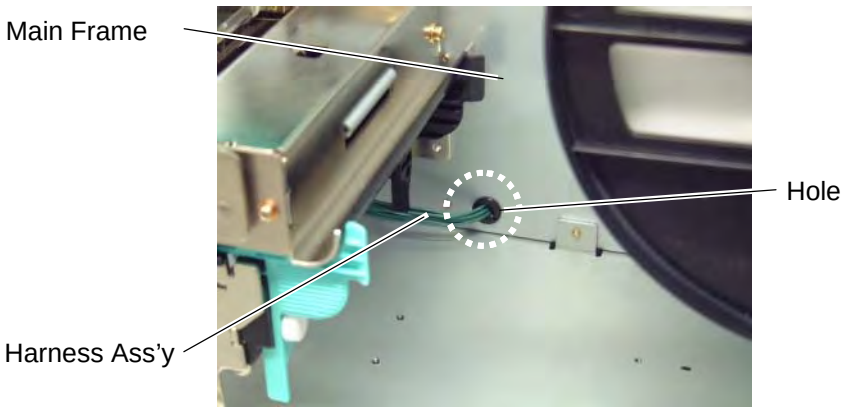


5) Connect the 9-pin connector of the harness ass'y to CN7 and 2-pin connector to CN9 on the cutter driver unit, respectively.

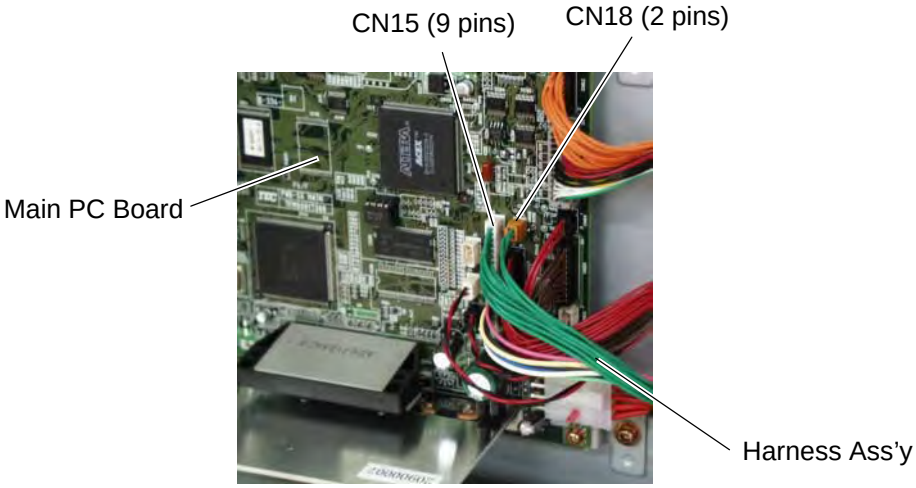
6) Fit the bush to the harness ass'y in the orientation as shown below.



7) Insert the harness ass'y into the hole in the main frame. Fit the bush into the hole.

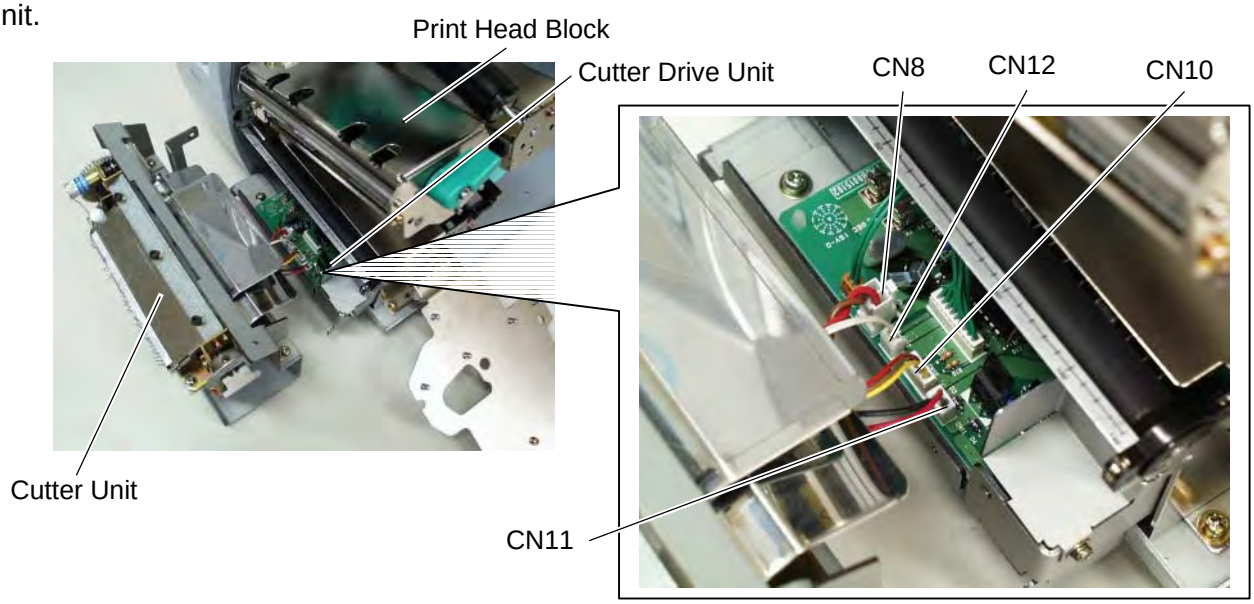


8) Connect the 9-pin connector of the harness ass'y to CN15, and 2-pin connector to CN18 on the Main PC board, respectively.

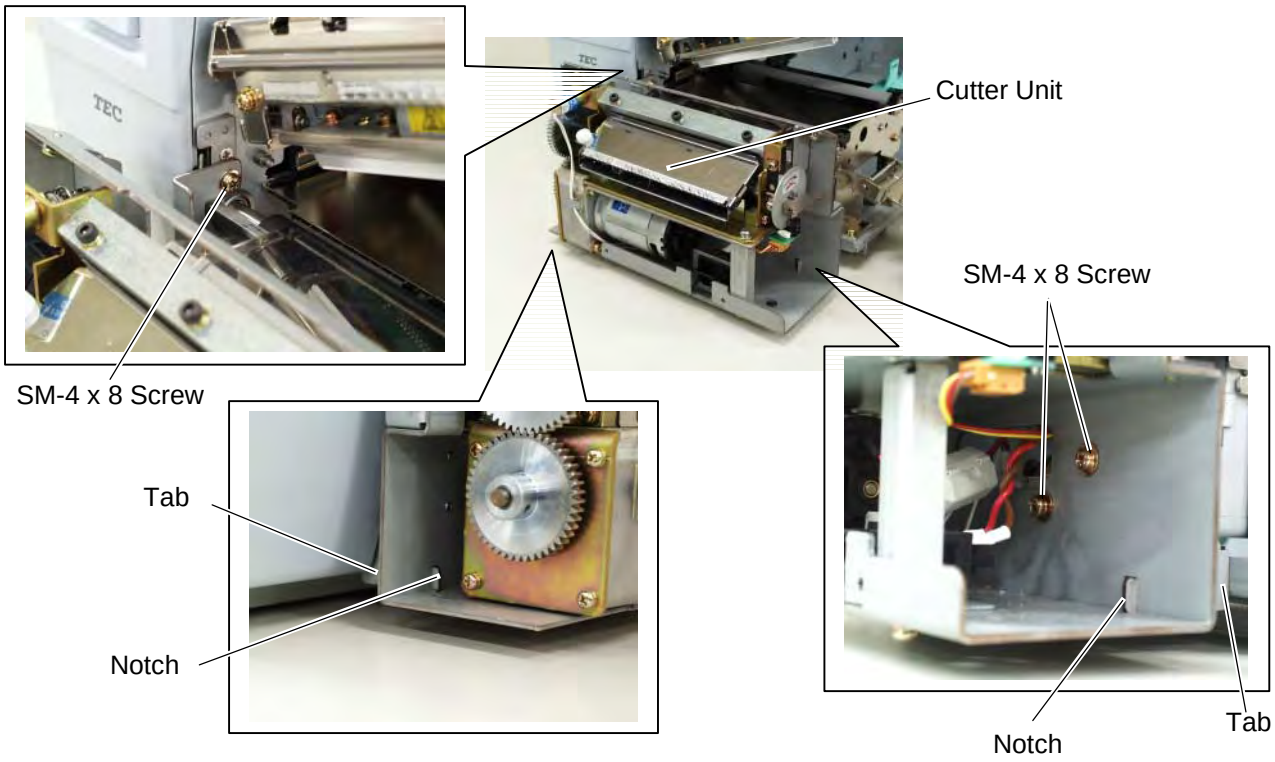


9) Open the print head block. (Refer to section 3.3.)

10) Connect the four harnesses of the cutter unit to CN8, CN10, CN11 and CN12 on the cutter drive unit.

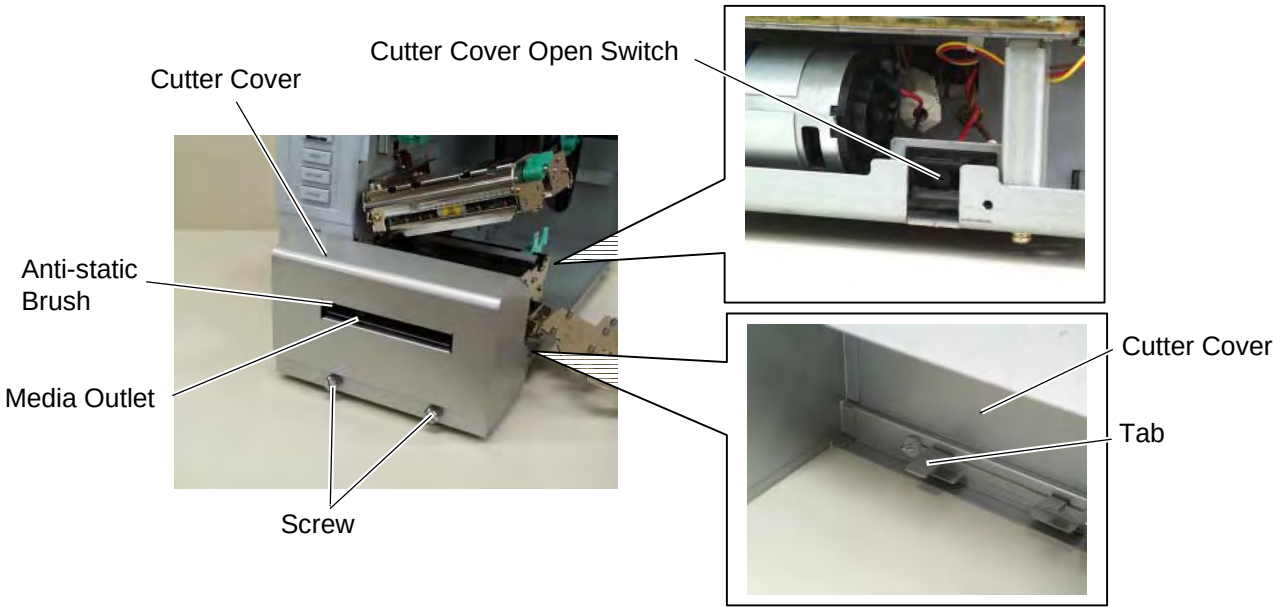


11) Fit the two tabs of the cutter drive unit into the notches, and then fix the cutter unit with the three SM-4x8 screws.



12) Attach the cutter cover to the cutter unit with the two screws so that the tab of the cutter cover turns on the cutter cover open switch.

NOTES: *1. Be careful not to pinch the cutter harness by the cutter cover.*
2. Make sure that the anti-static brush is protruding from the media outlet.



13) Close the print head block and ribbon shaft holder plate.

NOTE: *DO NOT excessively push down the print head block to close it. Doing so may cause a failure of the print head block or damage to the print head.*

14) Reassemble the side panel (L) and close the top cover. Finally check the cutter operation.

4.3 STRIP MODULE (B-9904-H-QM)

This optional device is used for strip print, which cannot be used together with either B-4205-QM or B-8204-QM.
When using a strip module together with an RFID module, be sure to install the RFID module prior to the strip module.

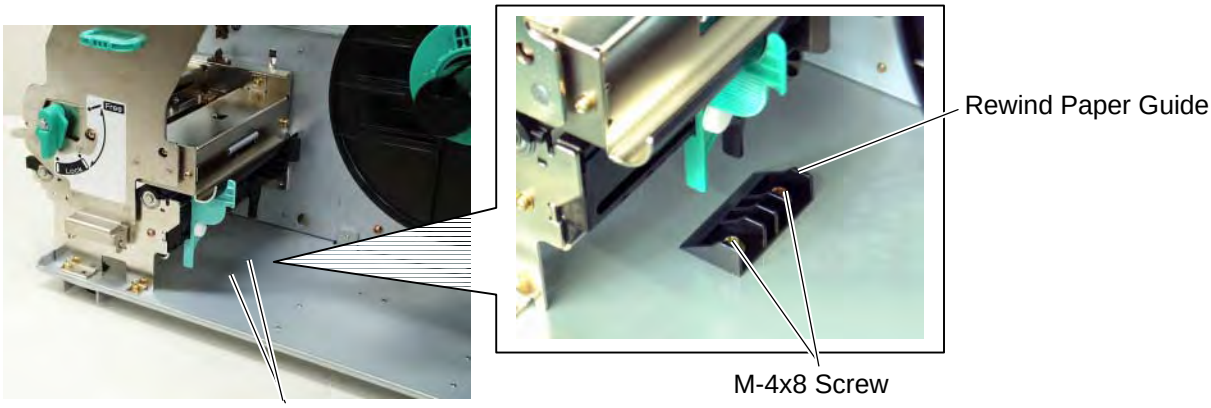
***NOTE**: The strip module is standard on the B-SX5T series.*

All the following parts are supplied with the kit. Make sure you have all items shown below.

Rewinder Ass'y (1 pc.)	Rewinder Guide Plate (1 pc.)	Bush (1 pc.)
Strip Sensor (TR) (1 pc.)	Strip Sensor (LED) (1 pc.)	Rewind Paper Guide (1 pc.)

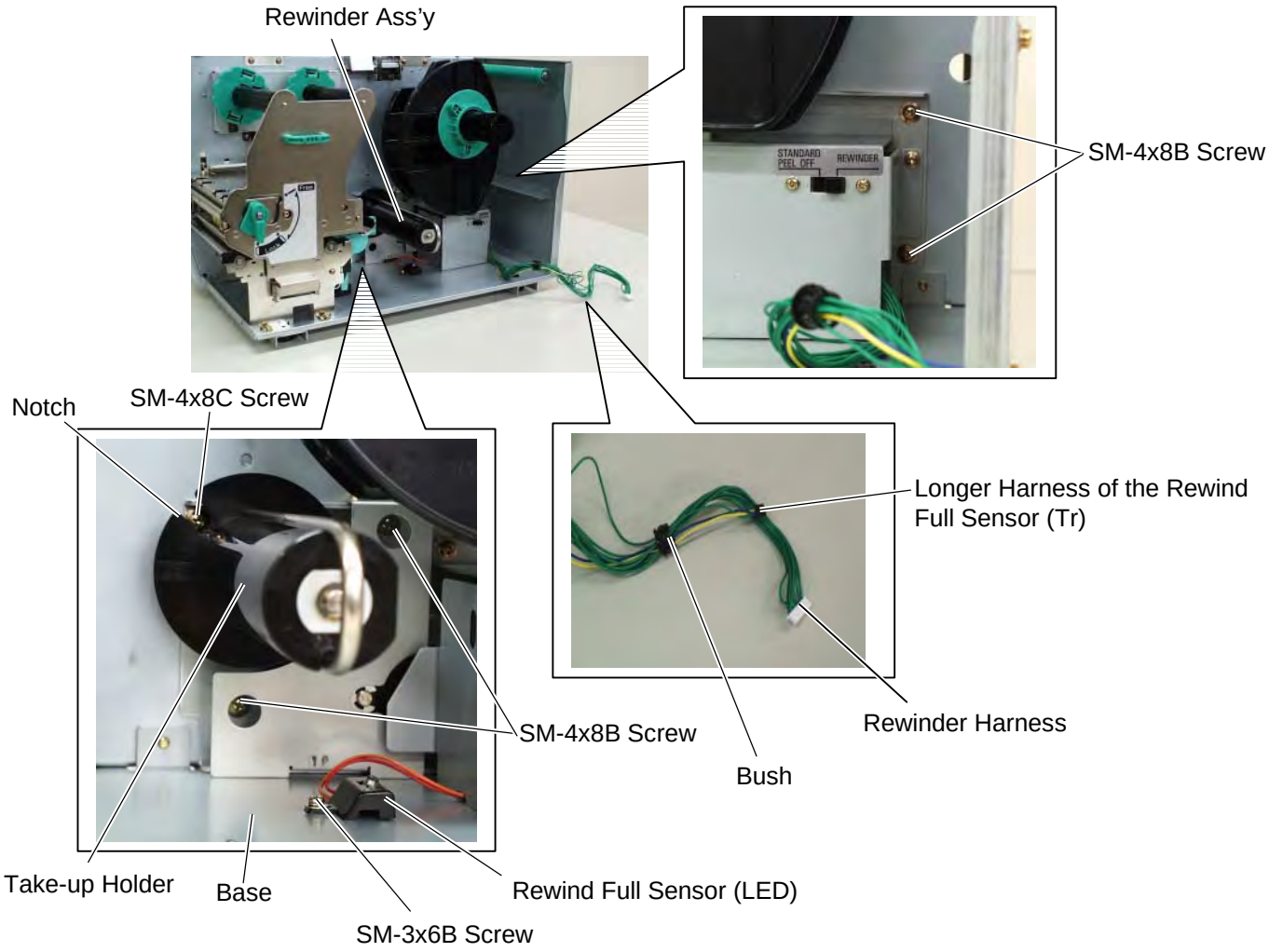
- Installation Manual (1 copy)
- SM-4x8B Screw (10 pcs.)
- SM-3x6B Screw (1 pc.)
- SM-4x8C Screw (1 pc.)

1) Remove the two black screws to detach the front plate. (Refer to section 4.1.)
2) Open the top cover. (Refer to Section 3.1.)
3) Remove the side panel (L) from the printer. (Refer to section 3.2.)
4) Remove the operation panel ass'y from the printer. (Refer to section 3.4.)
5) Attach the rewind paper guide to the base with the two M-4x8 screws.

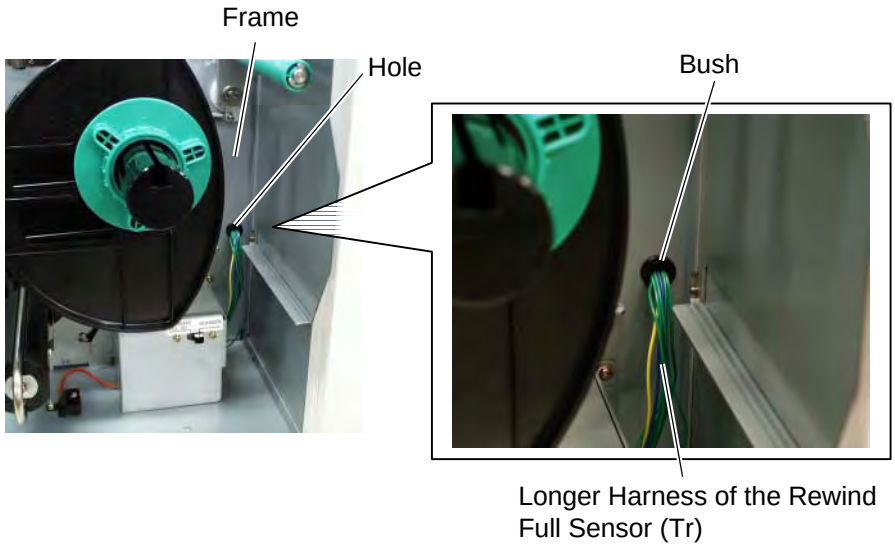


6) Align the notch of the take-up holder with the screw hole of the rewinder ass'y, and attach them to the printer with the four SM-4x8B screws and the SM-4x8C screw.
7) Attach the rewind full sensor (LED) to the base with the SM-3x6B screw.

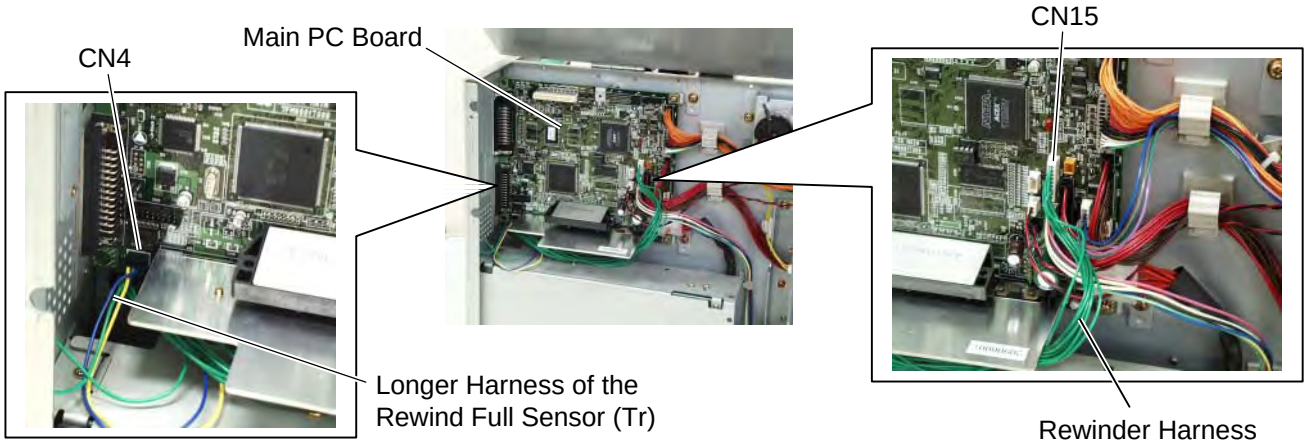
8) Fit the bush to the longer harness of the rewind full sensor (Tr) and the rewinder harness in the orientation shown below.



9) Insert the longer harness of the rewind full sensor (Tr) into the hole in the printer frame. Fit the bush into the hole.



10) Connect the longer harness of the rewind full sensor (Tr) and the rewinder harness to CN4 and CN15 on the Main PC board, respectively.



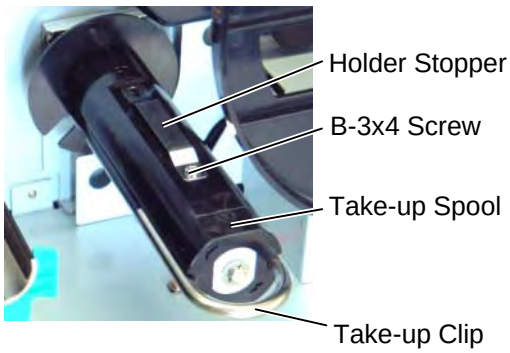
NOTES:

1. *You should change the selection switch setting depending on the issue mode. Improper setting may affect the print quality.*

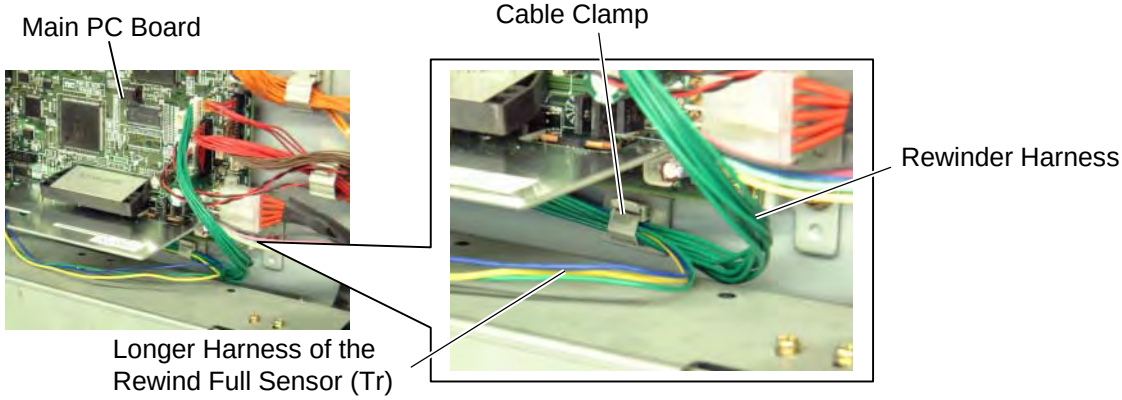
   STANDARD/PEEL OFF (STRIP): Batch or strip mode
   REWINDER: Built-in rewinder mode

   For the cut mode, the selection switch can be set to either position.

2. *The backing paper can be wound directly onto the Take-up Spool or a paper core.*
   When using the Take-up Spool, detach the Holder Stopper by removing the B-3x4 screw. Otherwise, it may be difficult to pull out the wound backing paper roll.
   When using a paper core, put the core on the Take-up Spool with the Holder Stopper on it, and Attach the top edge of the backing paper to the core with adhesive tape. The Take-up Clip is not necessary.
   This winding method is applicable to the Built-in Rewinder mode.

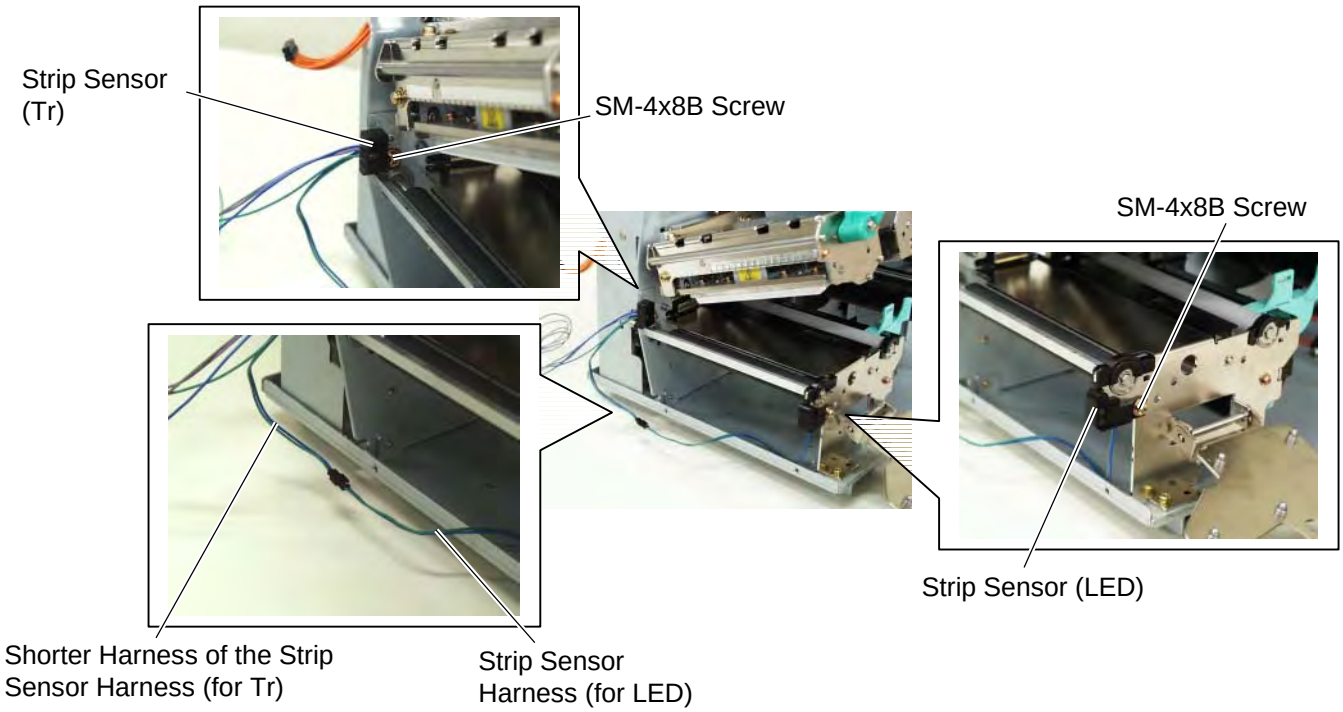


11) Open the print head block. (Refer to section 3.3.)
12) Fix the longer harness of the rewind full sensor and the rewinder harness under the Main PC board with the cable clamp.

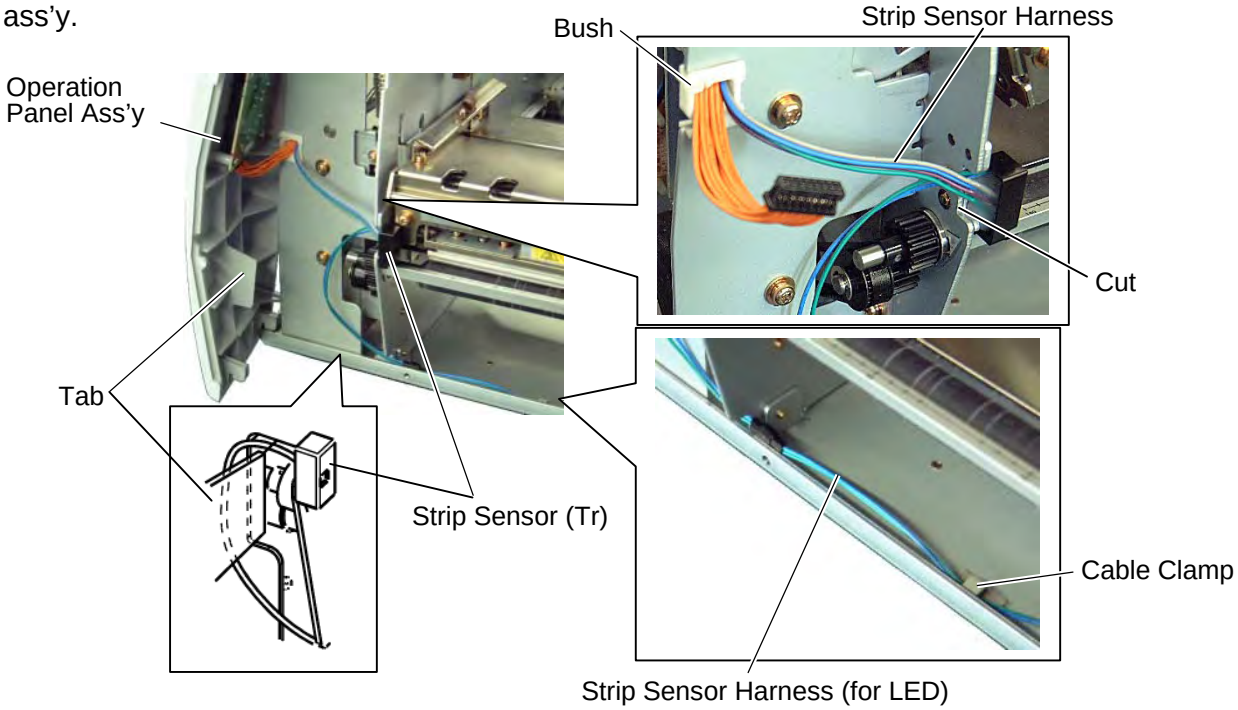


13) Secure the strip sensor (LED) and strip sensor (Tr) to the printer with the SM-4x8B screws.

14) Connect the shorter harness of the strip sensor (Tr) to the strip sensor harness (for LED).

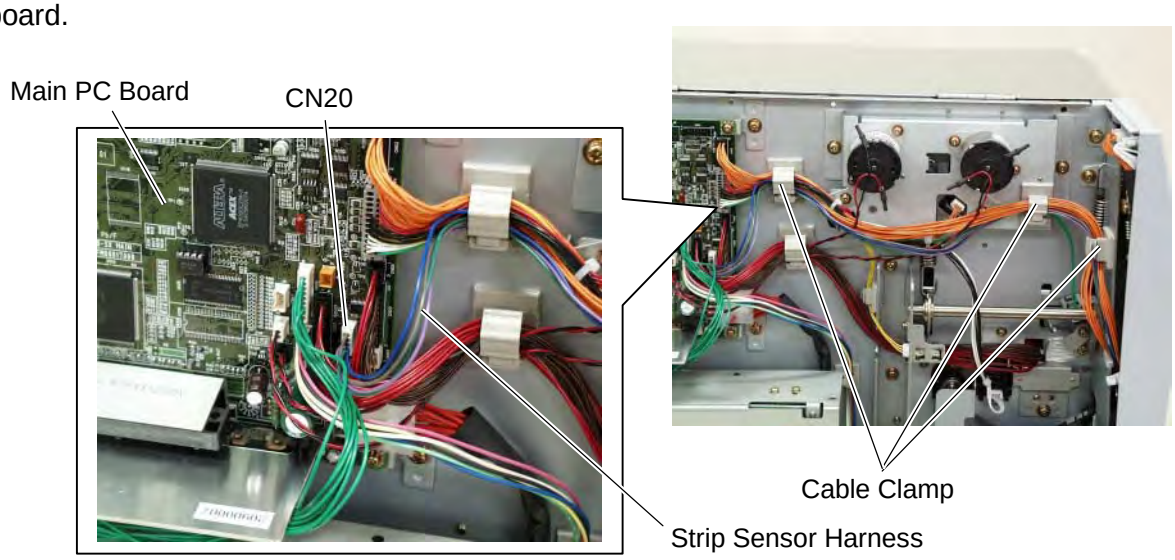


15) Fix the connected strip sensor harness (for LED) to the base with the cable clamp. While passing the other strip sensor harness through the cut and the bush, reassemble the operation panel ass'y to the printer. Then pass the strip sensor harness over the tab on the back of the operation panel ass'y.



NOTE: *Be careful not to pinch the strip sensor harnesses by the operation panel.*

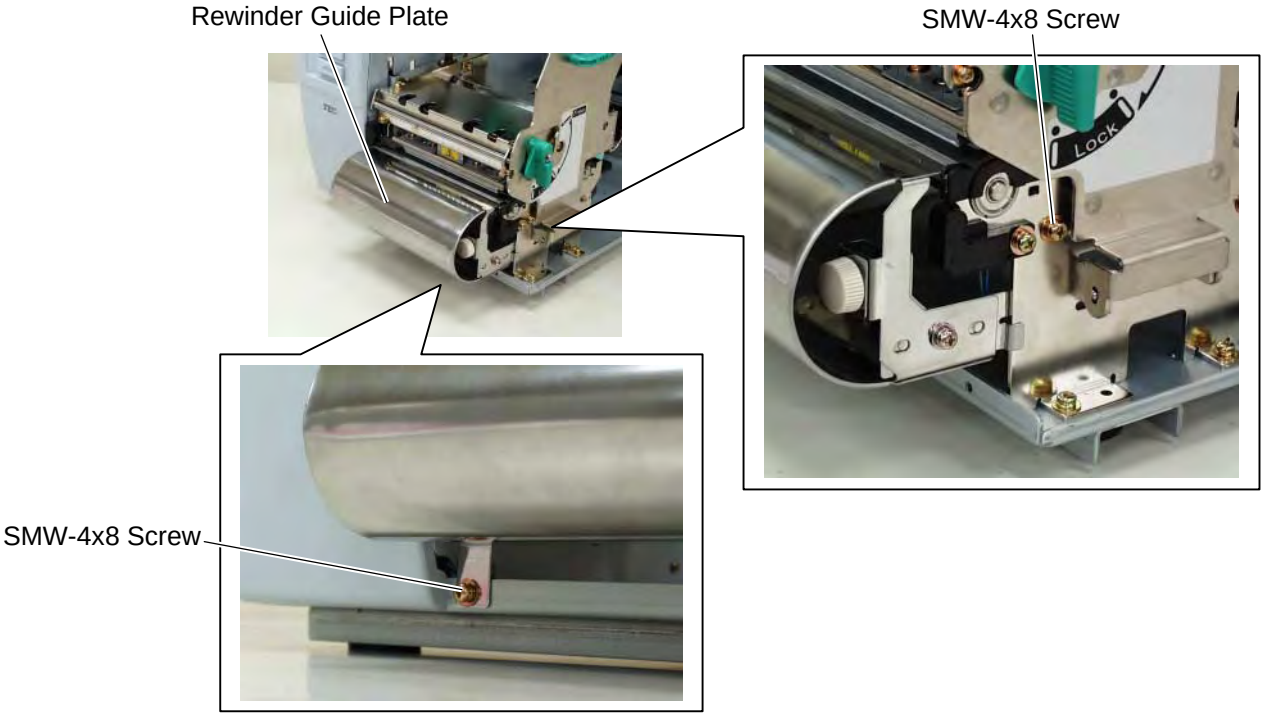
16) Fix the strip sensor harness with the three cable clamps and connect it to CN20 on the Main PC board.



17) Reassemble the side panel (L) in the reverse order of removal.
18) Close the print head block and ribbon shaft holder plate.

***NOTE**: DO NOT excessively push down the print head block to close it. Doing so may cause a failure of the print head block or damage to the print head.*

19) When using the printer in batch mode or strip mode, attach the front plate removed in step 1).
20) When using the printer in built-in rewinder mode, attach the rewinder guide plate to the front of the printer with the two SMW-4x8 screws.



21) Make a test print to check for proper strip issue.

***NOTE:** If the label skews, refer to section 8.*

4.4 RIBBON SAVING MODULE (B-9904-R/R2-QM)

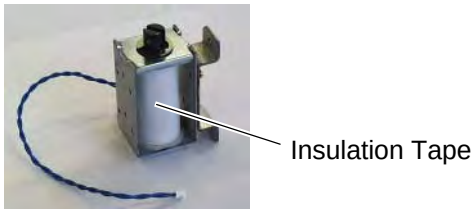
All the following parts are supplied with the kit. Make sure you have all items shown below.

***NOTE**: The ribbon saving module is standard on the B-SX5T series.*

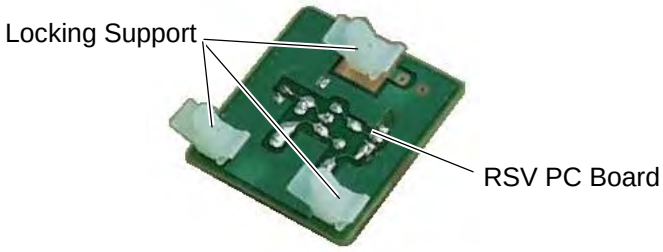
Solenoid (1 pc.) 	RSV PC Board (1 pc.) 	Solenoid Harness (1 pc.)
Cable Clamp (1 pc.) 	Locking Support (3 pcs.) 	• Installation Manual (1 copy) • SM-4x8 Screw (2 pcs.)

***NOTES**: 1. The B-9904-R2-QM Ribbon Saving Module is available only with Firmware V1.2A or greater. Please be careful that the earlier firmware version does not support it.*

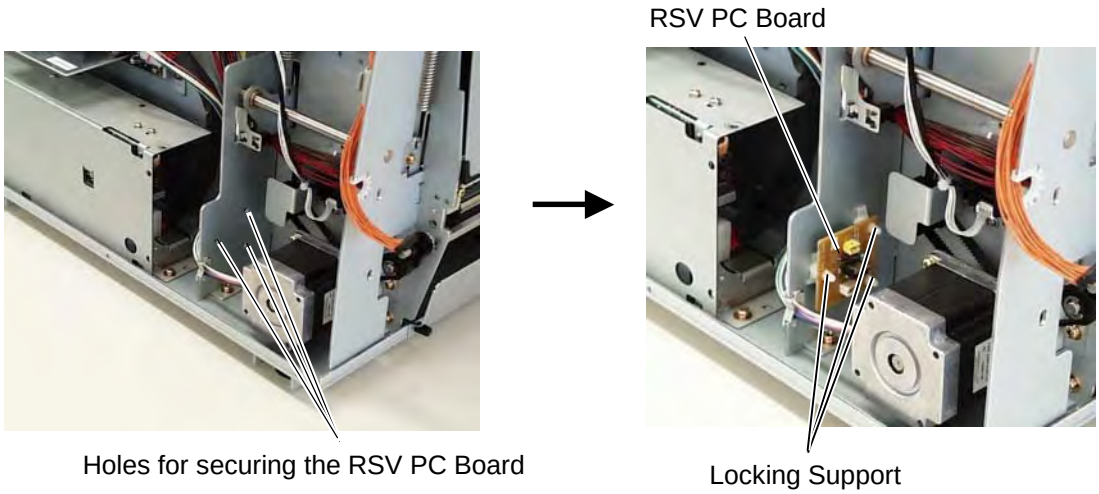
2. The insulation tape of the solenoid of the B-9904-R-QM is blue, and that of the B-9904-R2-QM is black.



1) Remove the side panel (L) from the printer. (Refer to section 3.2.)
2) Remove the operation panel ass'y from the printer. (Refer to section 3.4.)
3) Fit the three locking supports into the RSV PC board.

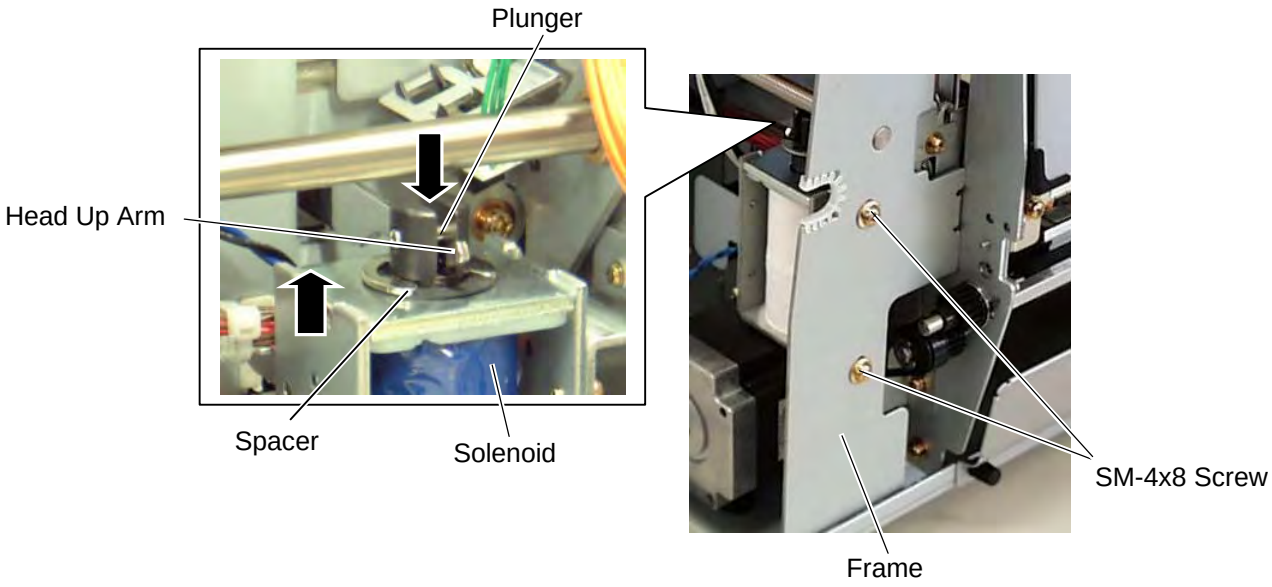


4) Secure the RSV PC board to the printer with the locking supports.

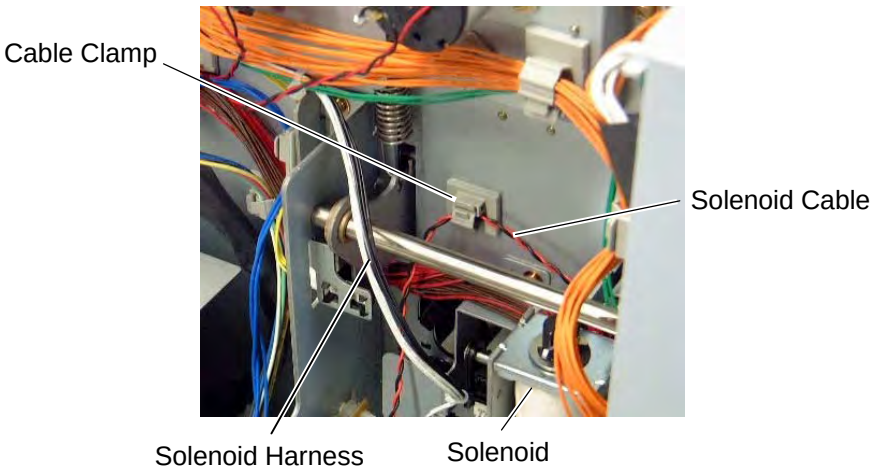


***NOTE**: Do not push the center of the RSV PC board when attaching it to the printer. Doing so may break the PC board. Hold the locking supports and push them into the holes for securing the RSV PC board.*

5) Insert folded tag paper (1.5-mm thick) between the print head and the platen, and then turn the head lever to **Lock** position. Insert the head up arm into the plunger of the solenoid. While holding down the head up arm slightly, lift the solenoid. Secure the solenoid to the frame with the two SM-4x8 screws keeping the solenoid in contact with the spacer.



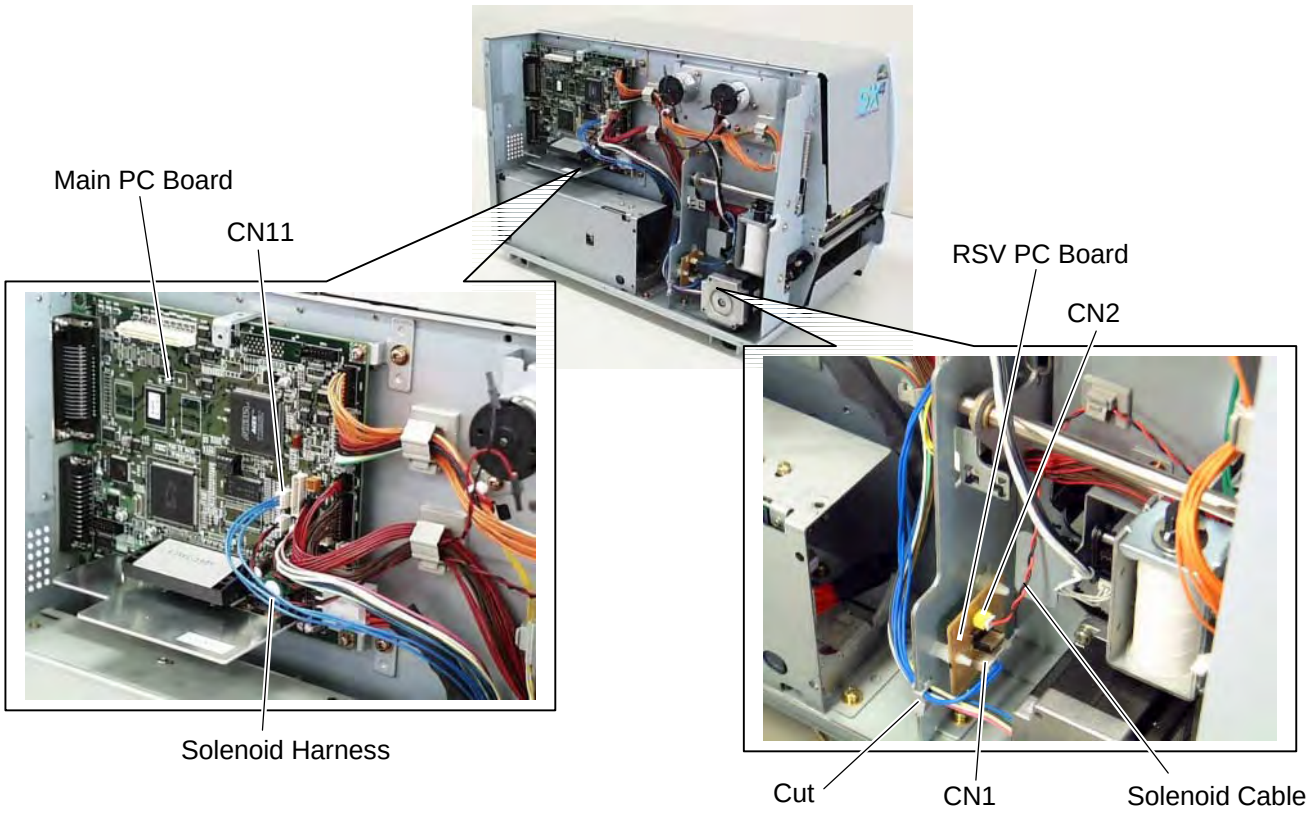
6) Attach the cable clamp to the frame of the printer. Fix the solenoid cable with this cable clamp.



***NOTE**: Be careful not to snag the solenoid harness when running it.*

7) Connect the solenoid harness to CN1 on the RSV PC board and CN11 on the Main PC board. Pass the solenoid harness through the cut.

8) Connect the solenoid cable to CN2 on the RSV PC board.



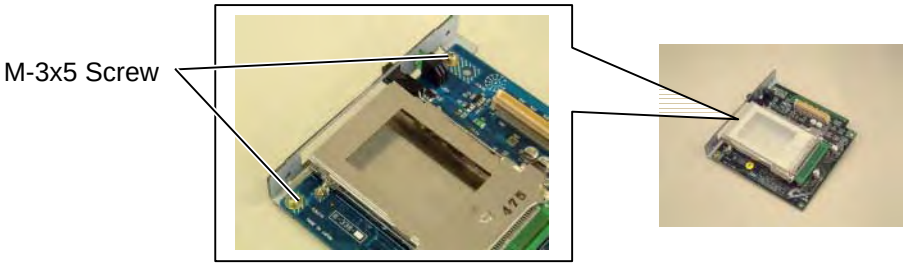
9) After attaching the solenoid, reassemble the operation panel ass'y and the side panel (L) in the reverse order of removal.

4.5 PCMCIA INTERFACE BOARD (B-9700-PCM-QM)

This optional interface board is provided with the two slots, which allows for the use of the two TYPE II PC cards. However, it is not applied to TYPE III PC cards.

CAUTION!

1. *Loosen the two M-3x5 screws of the PCMCIA interface board before installing it. Failure to do this may cause damage to the connector.*



2. *When using the LAN interface board or USB interface board together, install the PCMCIA interface board first.*

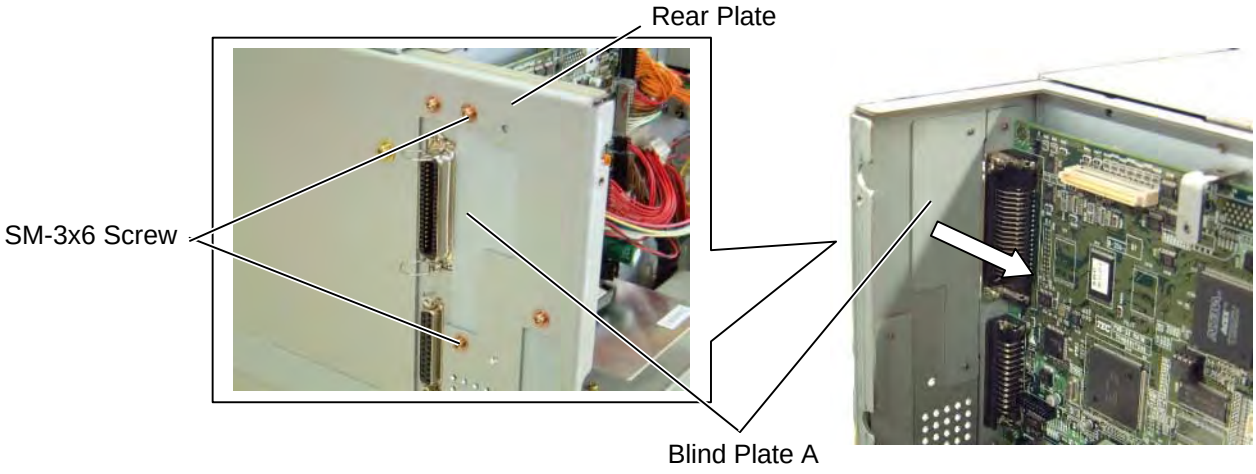
NOTE: *When both B-9700-PCM-QM and B-9700-LAN-QM are installed, inserting a LAN PC card into the slot of the B-9700-PCM-QM disables the B-9700-LAN-QM.*

All the following parts are supplied with the kit. Make sure you have all items shown below.

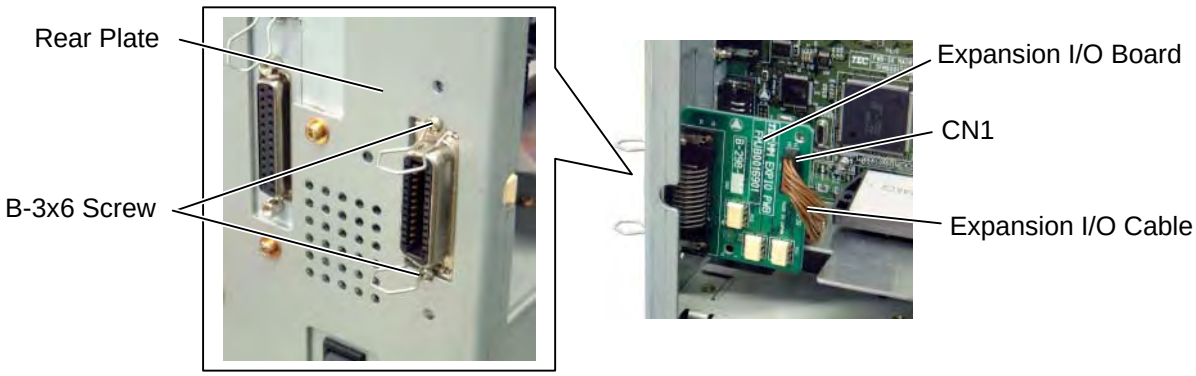
PCMCIA Interface Board (1 pc.)

- Installation Manual (1 copy)
- SM-3x6 Screw (3 pcs.)

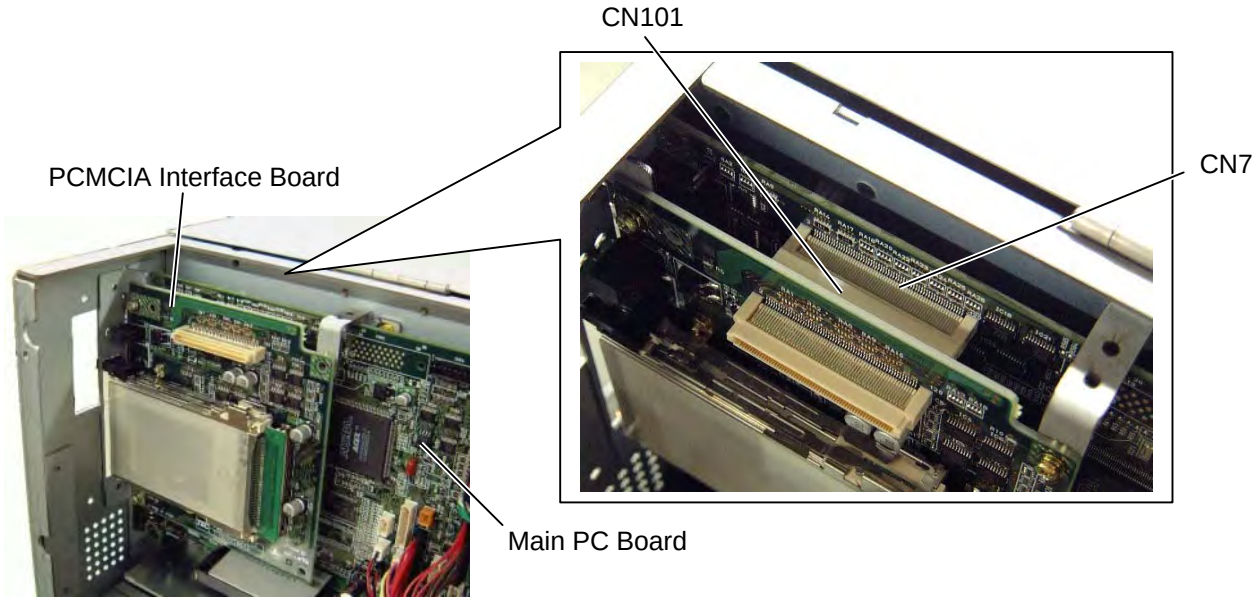
1) Remove the side panel (L) from the printer. (Refer to section 3.2.)
2) Loosen the two M-3x5 screws of the PCMCIA interface board. (Refer to Caution above.)
3) Remove the two SM-3x6 screws to detach the blind plate A from the back.



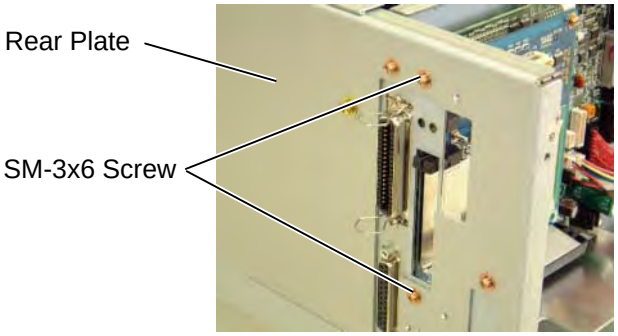
***NOTE**: In case of the B-SX5T or the B-SX4T that the optional Expansion I/O board (B-7704-IO-QM) has been installed in, remove the expansion I/O board from the printer temporarily using the following procedure.*
(1) Disconnect the Expansion I/O cable from CN1 on the Expansion I/O board.
(2) Remove the two B-3x6 screws to detach the Expansion I/O board from the printer.



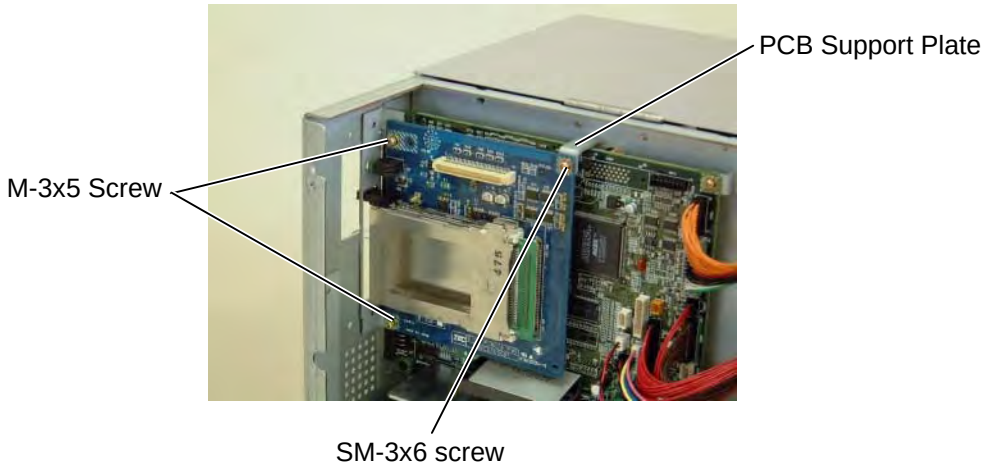
4) Firmly connect CN101 on the PCMCIA interface board directly to CN7 on the Main PC board.



5) Secure the PCMCIA interface board to the rear plate with the two SM-3x6 screws.

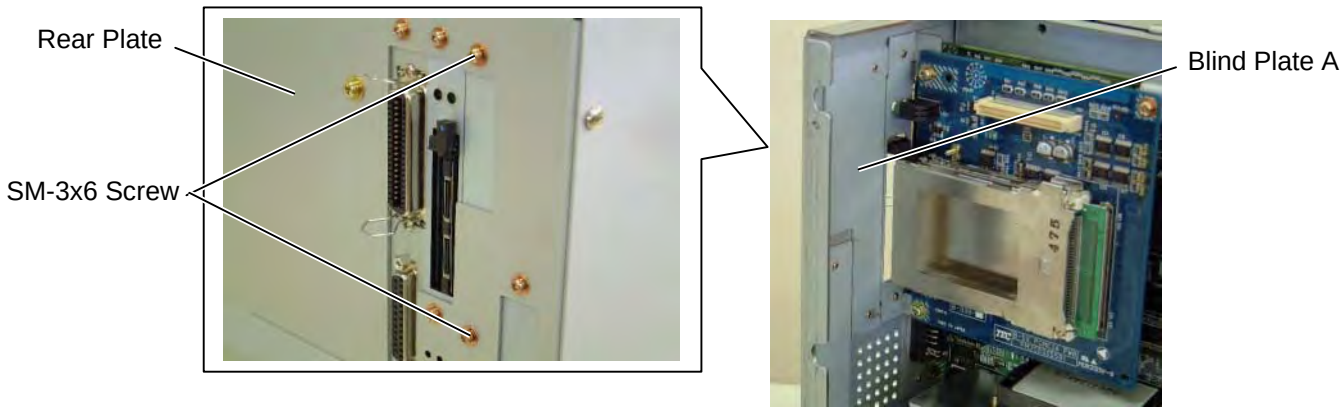


6) Secure the PCMCIA interface board to the PCB support plate with the SM-3x6 screw. Tighten the two M-3x5 screws that were loosened previously. (Refer to Caution)



7) Attach the blind plate A to the rear plate with the two SM-3x6 screws that were removed in step 6). If the LAN interface board or USB interface board is also installed, go to the next step.

***NOTE**: Keep the two SM-3x6 screws and blind plate A safe when the LAN interface board or USB interface board is installed.*



8) Reassemble the side panel (L) in the reverse order of removal. If the Expansion I/O board was removed at the beginning, reassemble it.

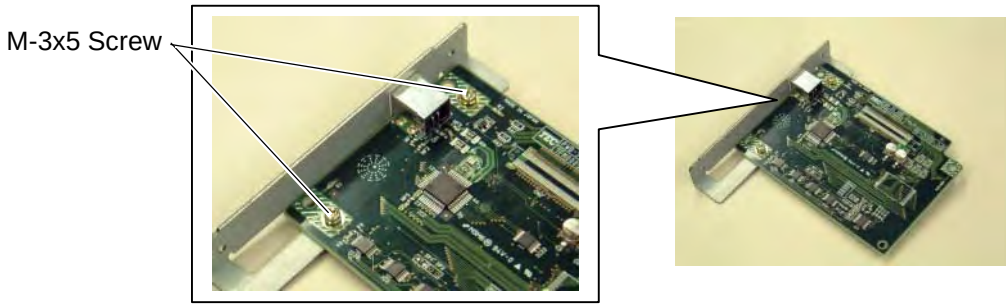
***NOTE**: For insertion, removal, and handling of the PC card, refer to the Owner's Manual.*

4.6 USB INTERFACE BOARD (B-9700-USB-QM)

This optional interface board is provided with the interface port, which allows for the installation of USB devices.

CAUTION!

1. *Loosen the two M-3x5 screws of the USB interface board before installing it. Failure to do this may cause damage to the connector.*



2. *When using the PCMCIA interface board together, first install the PCMCIA PC board, and then USB interface board.*

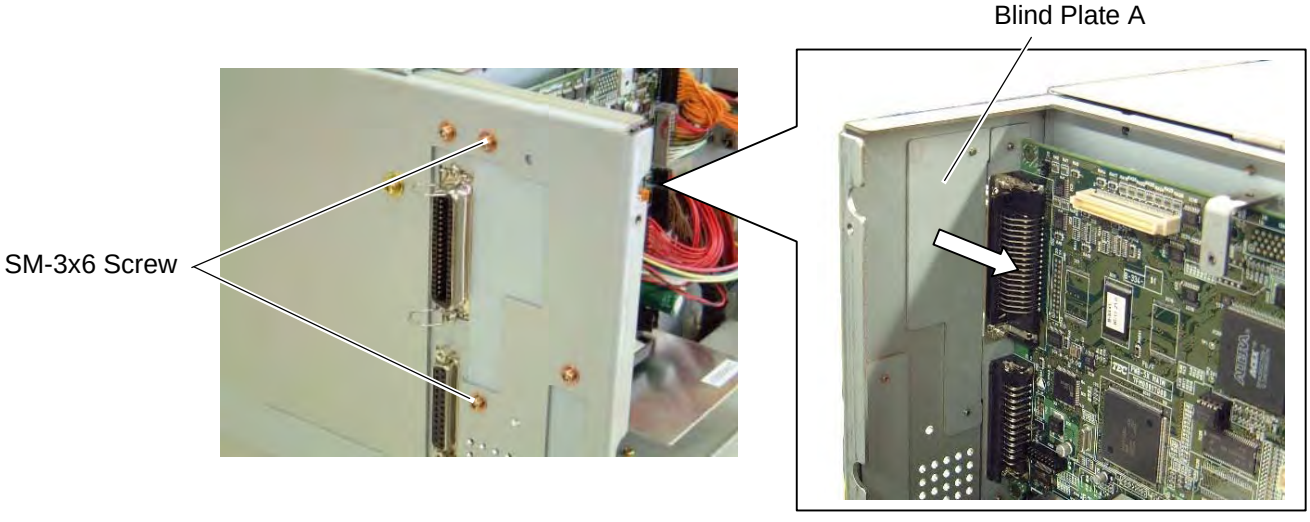
All the following parts are supplied with the kit. Make sure you have all items shown below.

USB Interface Board (1pc.)	PCB Attachment Plate (1 pc.)

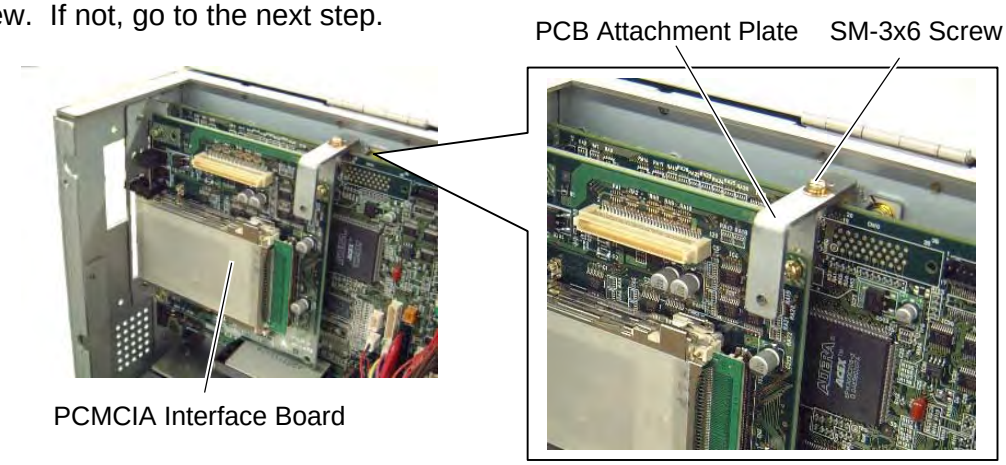
- Installation Manual (1 copy)
- SM-3x6 Screw (4 pcs.)

NOTE: *When using the PCMCIA interface board (B-9700-PCM-QM) together, the PCB attachment plate will be used.*

1) Turn the power off and disconnect the power cord.
2) Loosen the two M-3x5 screws of the USB interface board. (Refer to Caution above.)
3) Remove the side panel (L) from the printer. (Refer to section 3.2.)
4) Remove the two SM-3x6 screws to detach the blind plate A from the back.

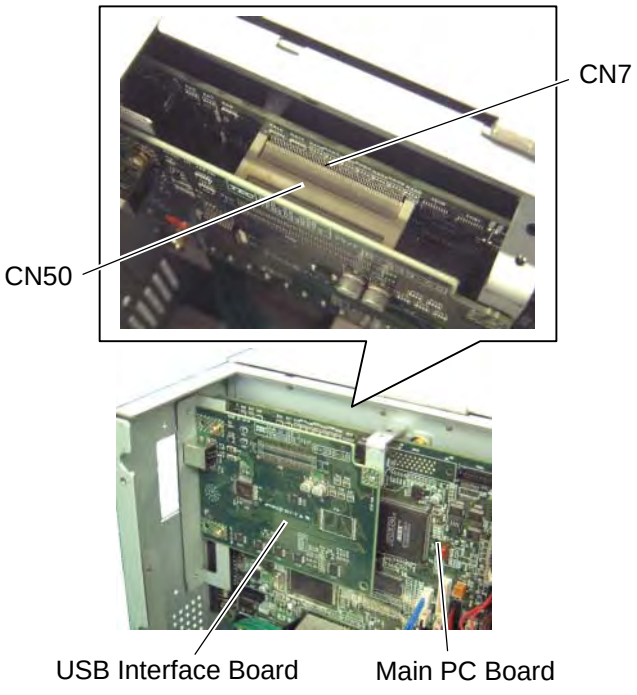


5) If the PCMCIA interface board is used together with the USB interface board, attach the PCB attachment plate to the plate to which the PCMCIA interface board is secured with the SM-3x6 screw. If not, go to the next step.

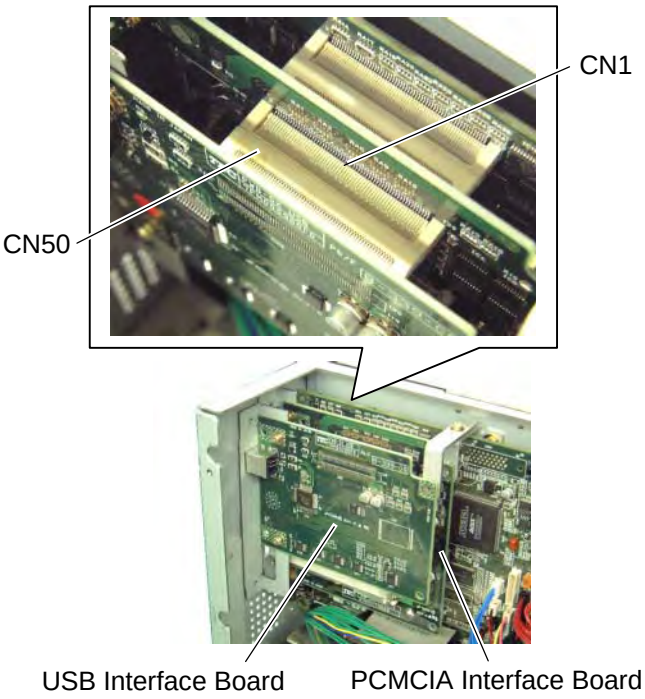


6) Firmly connect CN50 connector on the USB interface board directly to CN7 on the Main PC board or CN1 on the PCMCIA interface board.

When connecting to the Main PC Board:

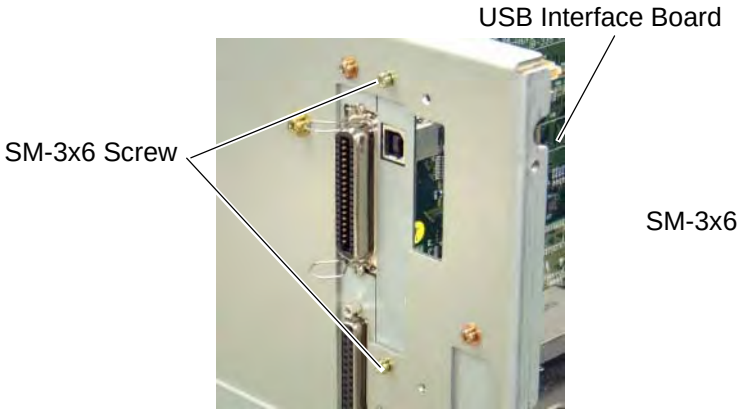


When connecting the PCMCIA Interface Board:

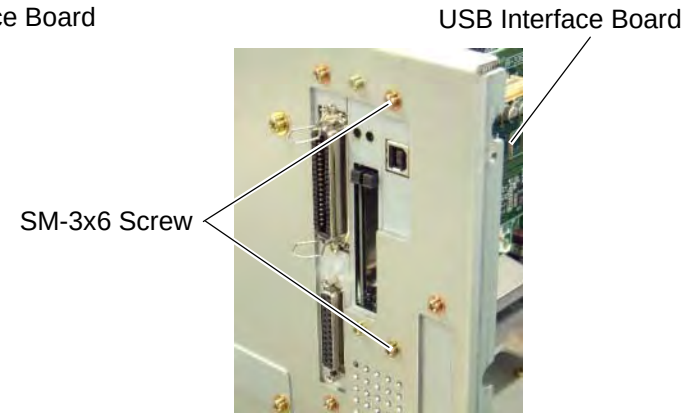


7) Secure the USB interface board to the rear plate with the two SM-3x6 screws.

When connecting to the Main PC Board:



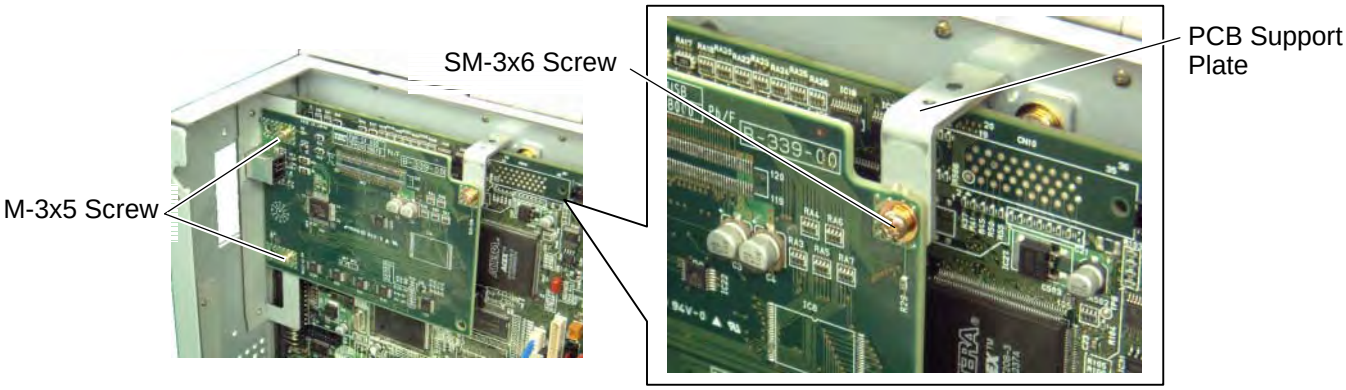
When connecting to the PCMCIA Interface Board:



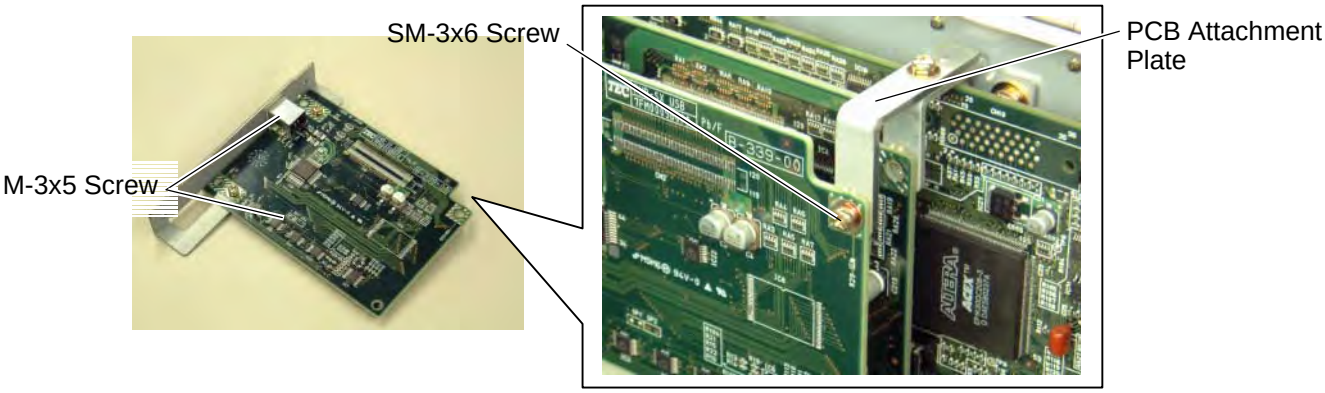
8) Tighten the two M-3x5 screws of the USB interface board that were loosened previously. (Refer to Caution)

9) Secure the USB interface board to the PCB support plate (when connecting to the Main PC board) or PCB attachment plate (when connecting to the PCMCIA interface board) with the SM-3x6 screw.

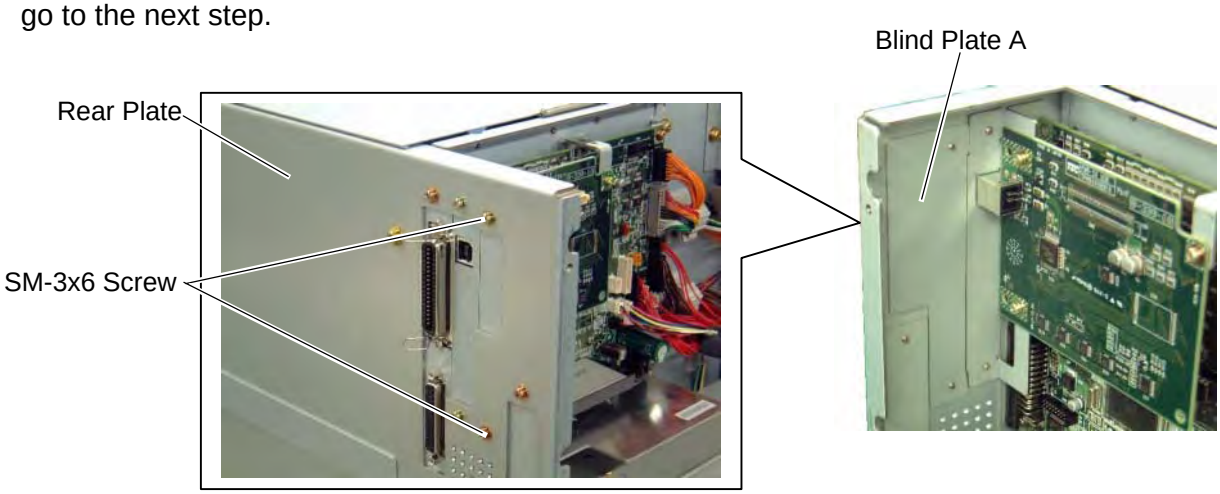
When connecting to the Main PC Board:



When connecting to the PCMCIA Interface Board:



10) Attach the blind plate A to the rear plate. If the PCMCIA interface board has been installed, go to the next step.



***NOTE**: In case that the PCMCIA interface board has been installed, retain the blind plate A.*

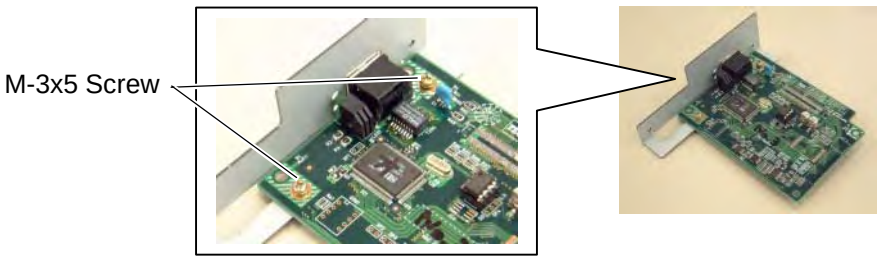
11) Reassemble the side panel (L) to the printer in the reverse order of removal.

4.7 LAN INTERFACE BOARD (B-9700-LAN-QM)

This optional interface board enables the printer to be used in a LAN network.

CAUTION!

1. *Loosen the two M-3x5 screws of the LAN interface board before installing it. Failure to do this may cause damage to the connector.*



2. *When using the PCMCIA interface board together, first install the PCMCIA PC board, and then LAN interface board.*

License Agreement
Please be sure to read the License Agreement before opening the sealed LAN Interface Board. If you do not agree with the License Agreement, please do not use this product. Your unpacking the product indicates your approval for the License Agreement.

NOTE: *When both B-9700-LAN-QM and B-9700-PCM-QM are installed, inserting a LAN PC card into the slot of the B-9700-PCM-QM disables the B-9700-LAN-QM.*

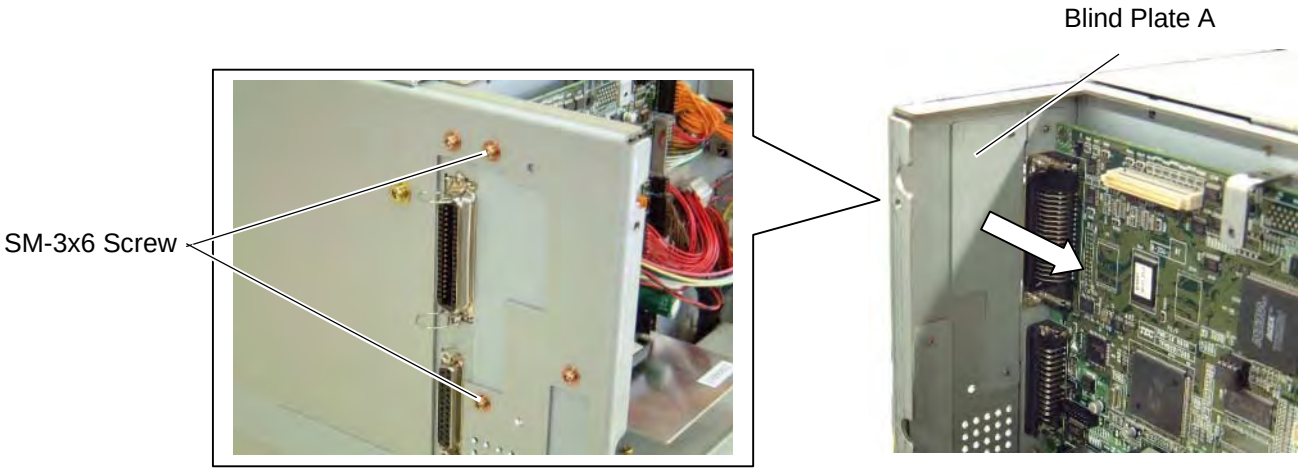
All the following parts are supplied with the kit. Make sure you have all items shown below.

LAN Interface Board (1pc.)	PCB Attachment Plate

- Installation Manual (1 copy)
- License Agreement (1 copy)
- SM-3x6 Screw (4 pcs.)

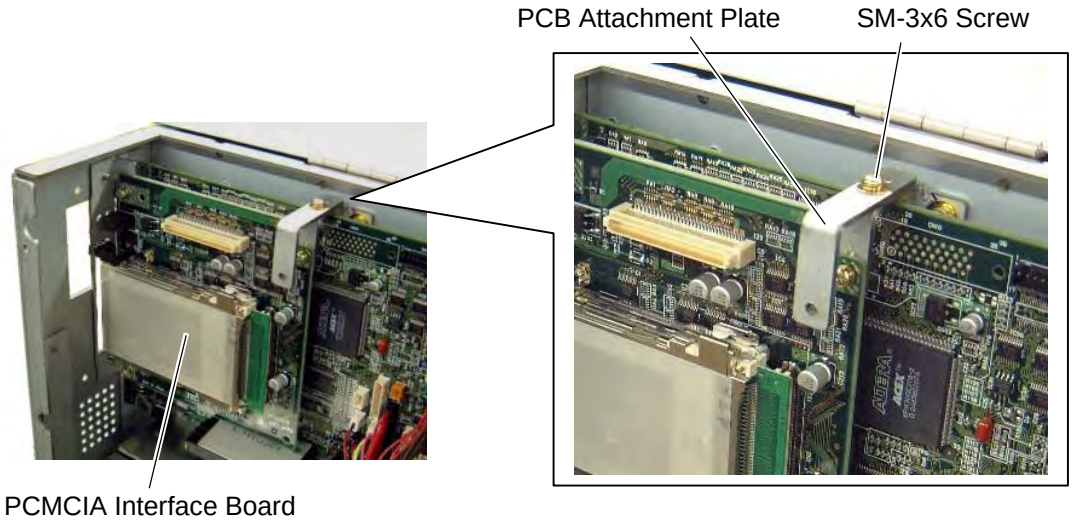
NOTE: *When using the PCMCIA interface board (B-9700-PCM-QM) together, the PCB attachment plate will be used.*

1) Loosen the two M-3x5 screws of the LAN interface board. (Refer to Caution above.)
2) Remove the side panel (L) from the printer. (Refer to section 3.2.)
3) Remove the two SM-3x6 screws to remove the blind plate A from the back.



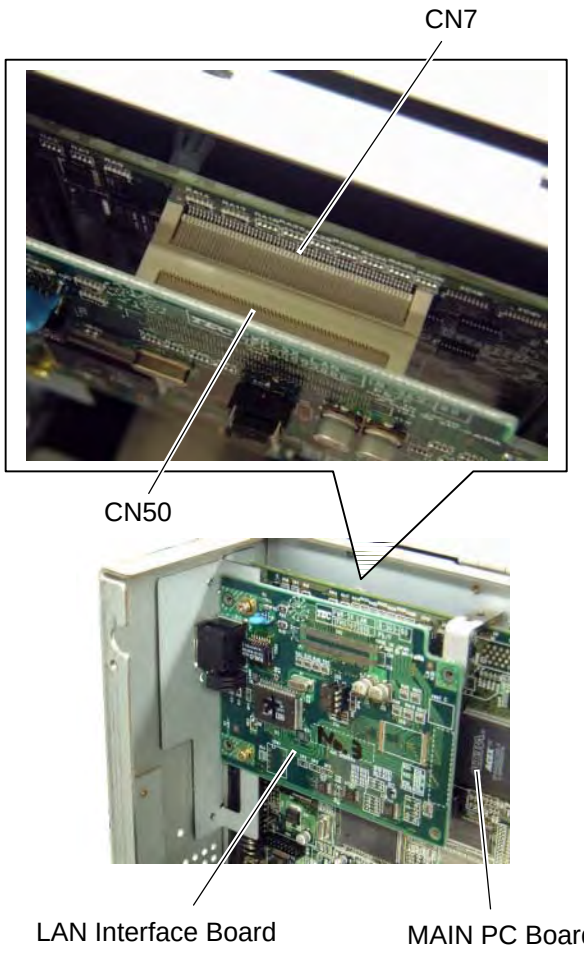
***NOTE**: Keep the blind plate A safe as this will be necessary when the machine is modified to the standard type.*

4) If the PCMCIA interface board is also installed, attach the PCB attachment plate to the plate to which the PCMCIA interface board is secured with the SM-3x6 screw. If not, go to the next step.

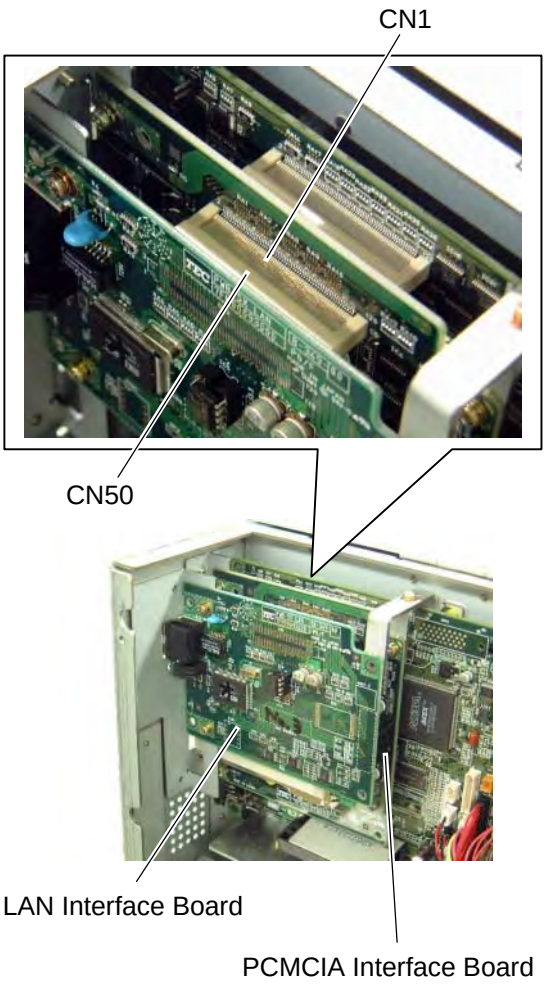


5) Firmly connect CN50 on the LAN interface board directly to CN7 on the Main PC board or CN1 on the PCMCIA interface board.

When connecting to the Main PC Board

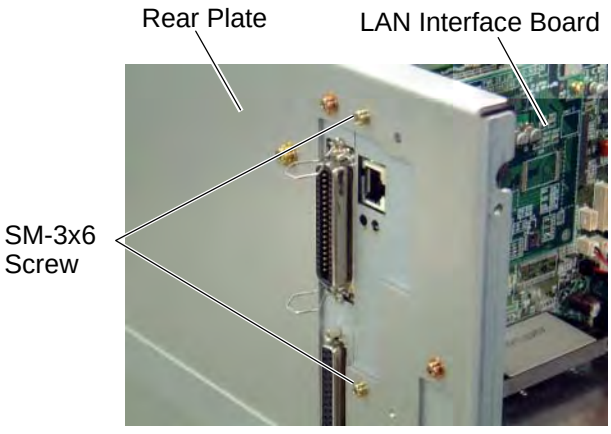


When connecting to the PCMCIA Interface Board

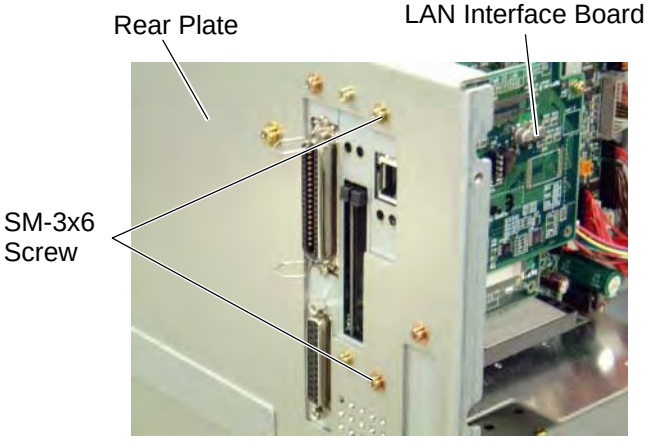


6) Secure the LAN interface board to the rear plate with the two SM-3x6 screws.

When connecting to the Main PC Board



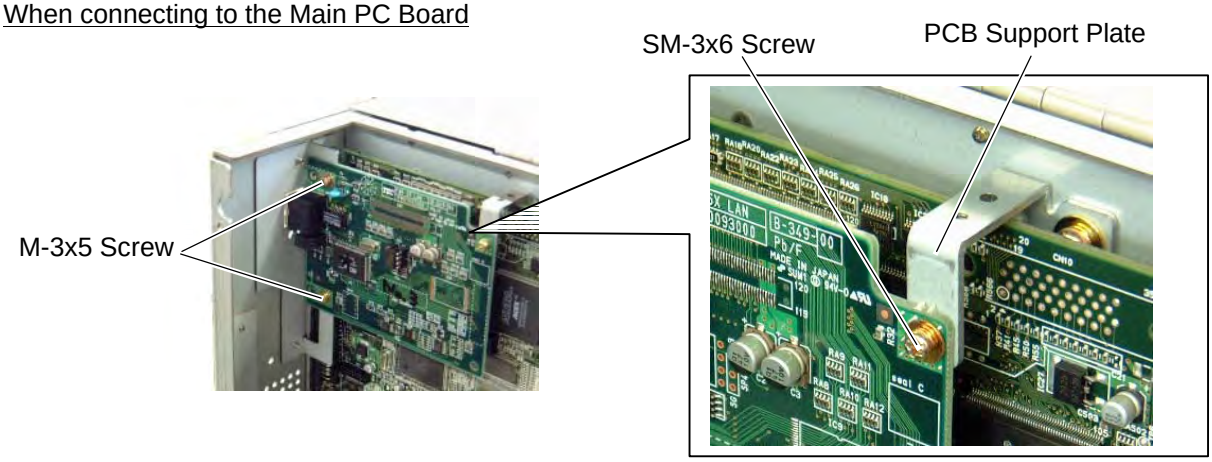
When connecting to the PCMCIA Interface Board



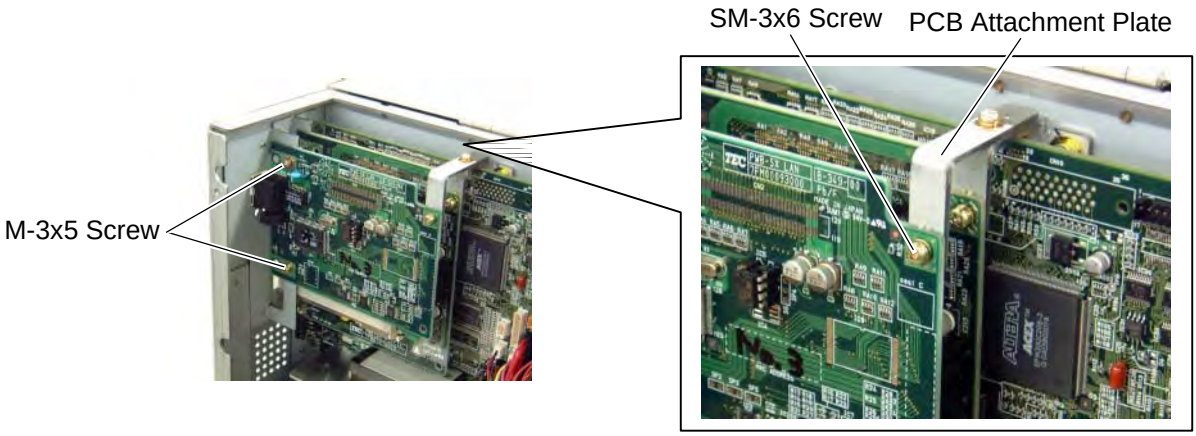
7) Tighten the two M-3x5 screws on the LAN interface board that were loosened previously. (Refer to Caution.)

8) Secure the LAN interface board to the PCB support plate (when connecting to the Main PC board) or PCB attachment plate (when connecting to the PCMCIA interface board) with the SM-3x6 screw.

When connecting to the Main PC Board



When connecting to the PCMCIA Interface Board



9) Reassemble the side panel (L) in the reverse order of removal.

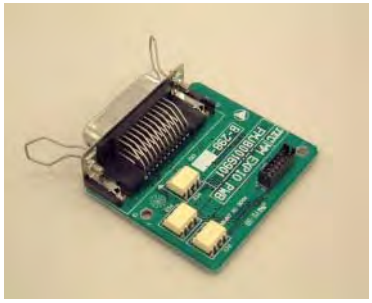
***NOTE**: Precaution for the LAN cable connection*
When connecting a LAN cable with the hooded connectors to the LAN interface board, it may not be connected depending on the shape of the hood. In this case, move aside the hood, connect the cable, and return the hood to the former position.

4.8 EXPANSION I/O INTERFACE BOARD (B-7704-IO-QM)

This optional interface board is provided with an expansion I/O interface.

***NOTE**: The expansion I/O interface board is standard on the B-SX5T series.*

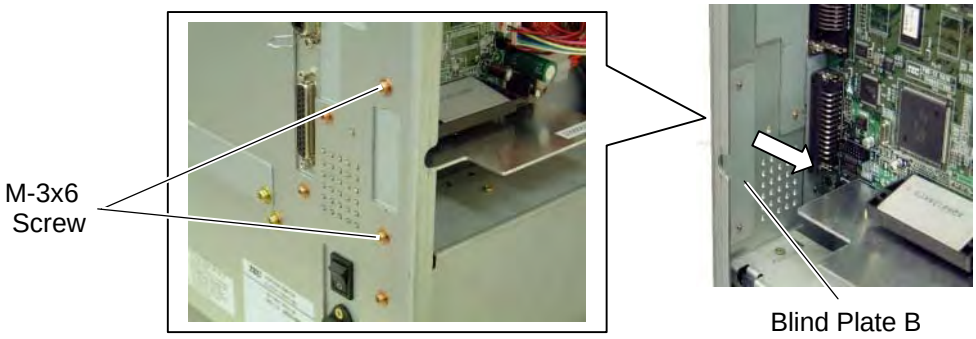
All the following parts are supplied with the kit. Make sure you have all items shown below.

Expansion I/O Board (1 pc.)	Expansion I/O Cable (1 pc.)
	

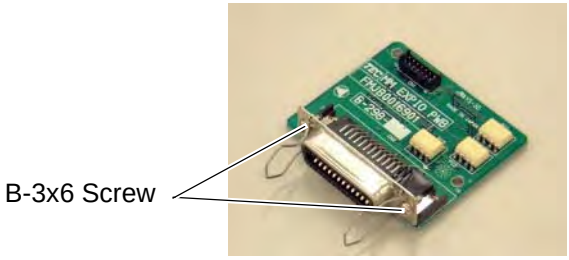
- Installation Manual (1 copy)
- Locking Support WLS-16-0 (1 pc.)

  ***NOTE**: The locking support is not used on this printer.*

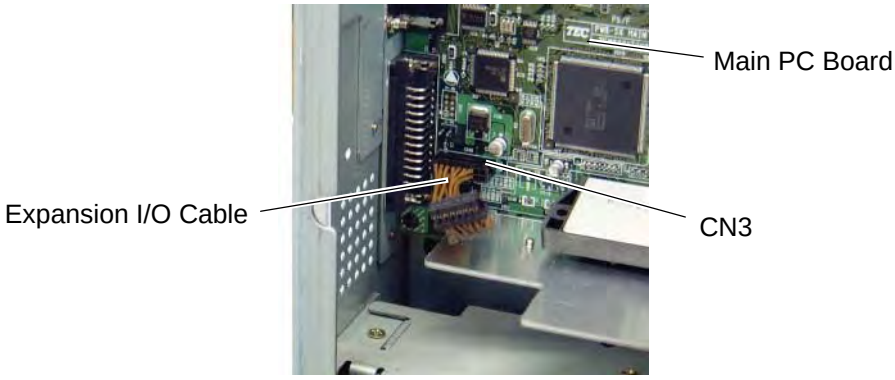
1) Turn the power off and disconnect the power cord.
2) Remove the side panel (L) from the printer. (Refer to section 3.2.)
3) Remove the two M-3x6 screws and detach the blind plate B from the back.



4) Remove the two B-3x6 screws from the expansion I/O board.

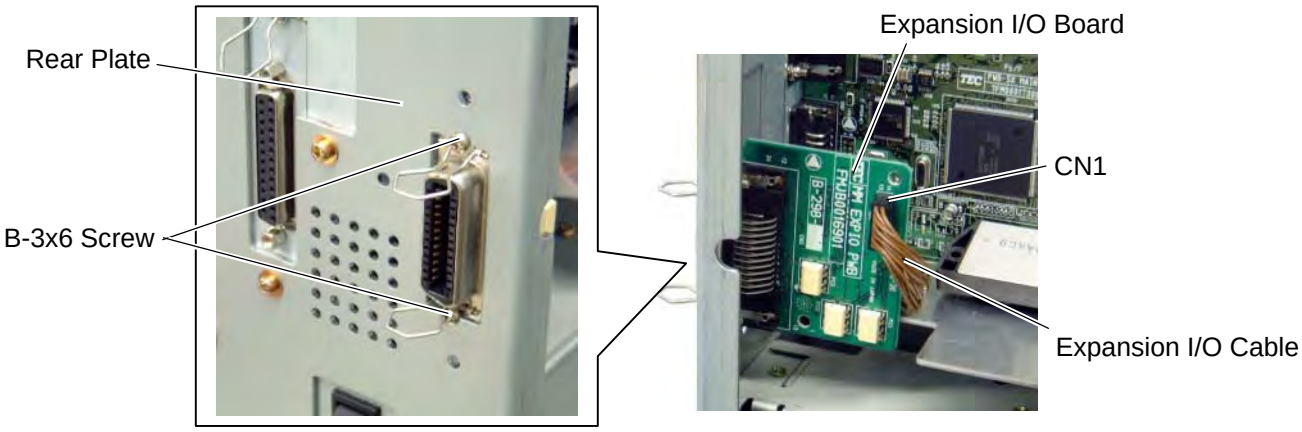


5) Connect the expansion I/O cable to CN3 on the Main PC board.



6) Secure the expansion I/O board to the rear plate with the two B-3x6 screws removed in Step 4.

7) Connect the expansion I/O cable to CN1 on the expansion I/O board.



8) Reassemble the side panel (L) in the reverse order of removal.

9) Perform a loop back check to confirm that the expansion I/O board functions properly.

4.9 RIBBON SAVING MODULE AND ROTARY CUTTER (For B-SX4T Series)

When using the rotary cutter on the B-SX4T series, the ribbon saving module needs to be installed, also. In this section, how to install the ribbon saving module and rotary cutter is described.

Ribbon Saving Module

All the following parts are supplied with the kit. Make sure you have all items shown below.

Solenoid (1 pc.) 	RSV PC Board (1 pc.) 	Solenoid Harness (1 pc.)
Cable Clamp (1 pc.) 	Locking Support (3 pcs.) 	• Installation Manual (1 copy) • SM-4x8 Screw (2 pcs.)

***NOTES**: 1. The B-9904-R2-QM Ribbon Saving Module is available only with Firmware V1.2A or greater. Please be careful that the earlier firmware version does not support it.*

2. The insulation tape of the solenoid of the B-9904-R-QM is blue, and that of the B-9904-R2-QM is black.

Rotary Cutter

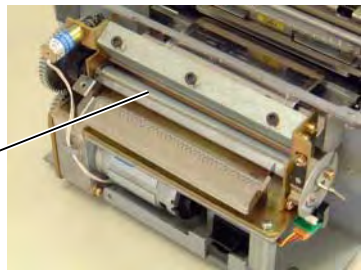
All the following parts are supplied with the kit. Make sure you have all items shown below.

Cutter Unit (1 pc.) 	Cutter Cover (1 pc.) 	Cutter Drive Unit (1 pc.) 	Harness Ass'y (2-pin & 9-pin) (1 pc.)
Cord Bush (1 pc.) 	Print Head Cleaner (1 pc.) (P/No.: FMQB0051601) 	B-SX Cutter Paper Guide C (1 pc.) 	

- Installation Manual (1 copy)
- *SM-4x8 Screw (6 pcs.)*

WARNING!

Be careful not to injure your fingers when installing the cutter unit.

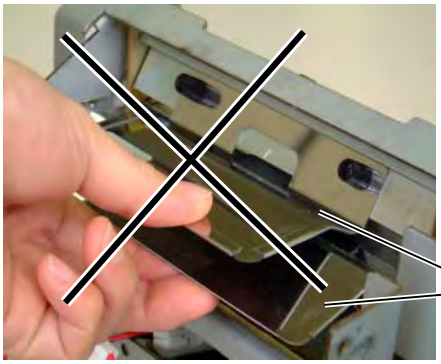


When attaching the B-8204-QM cutter module, replace the original cutter paper guide C with the enclosed B-SX cutter paper guide C using the following procedure.

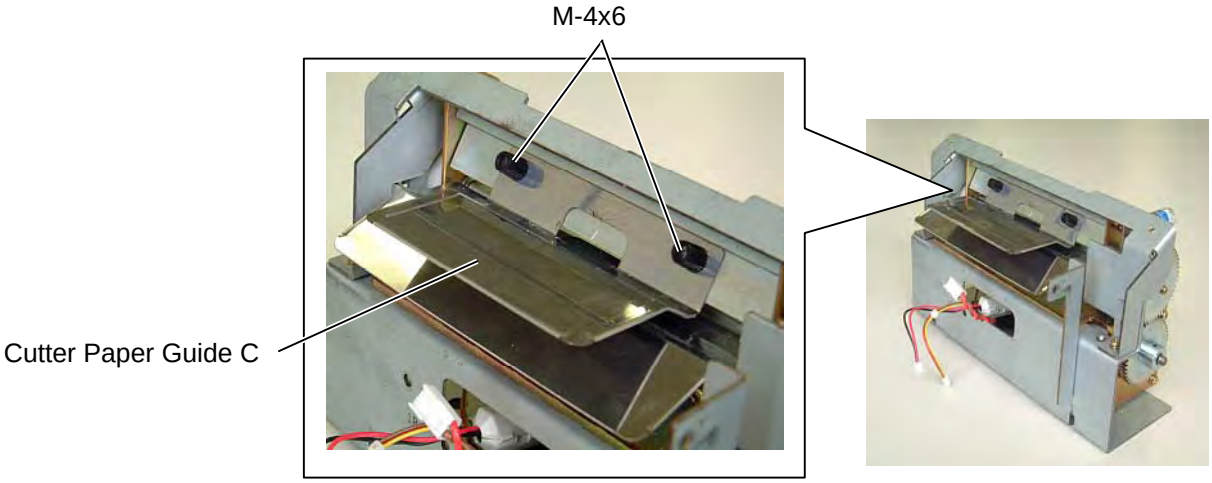
CAUTION!

Do not hold the cutter paper guides when attaching the Cutter Unit to the printer. Doing so may deform the cutter paper guides, causing a paper jam.

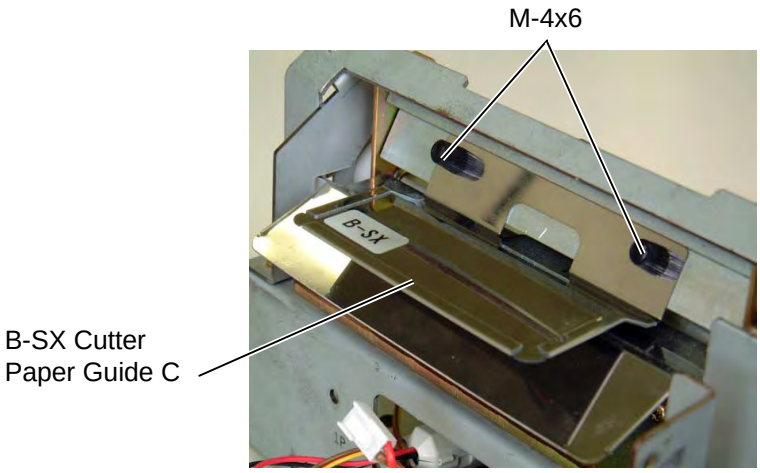
NG



(1) Remove the two M-4x6 Set Screws from the cutter unit to detach the cutter paper guide C.

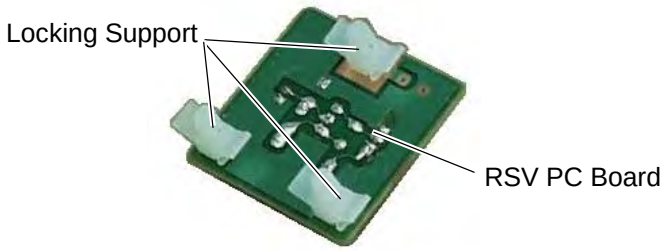


(2) Secure the B-SX cutter paper guide C with the M-4x6 set screws while pushing it upward.

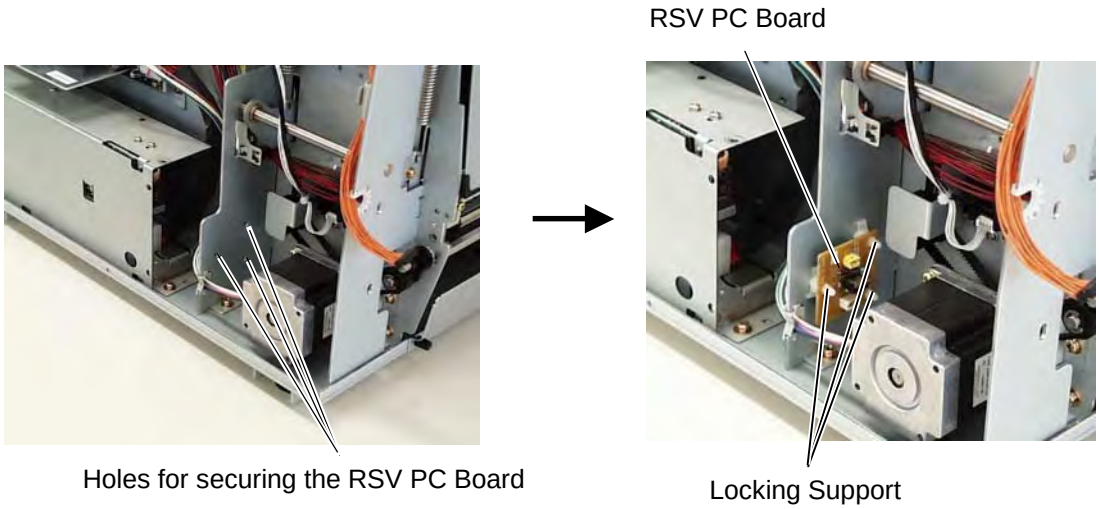


Installation Procedure

1) Remove the side panel (L) from the printer. (Refer to Section 3.2.)
2) Remove the operation panel ass'y from the printer. (Refer to section 3.4.)
3) Fit the three locking supports into the RSV PC board.

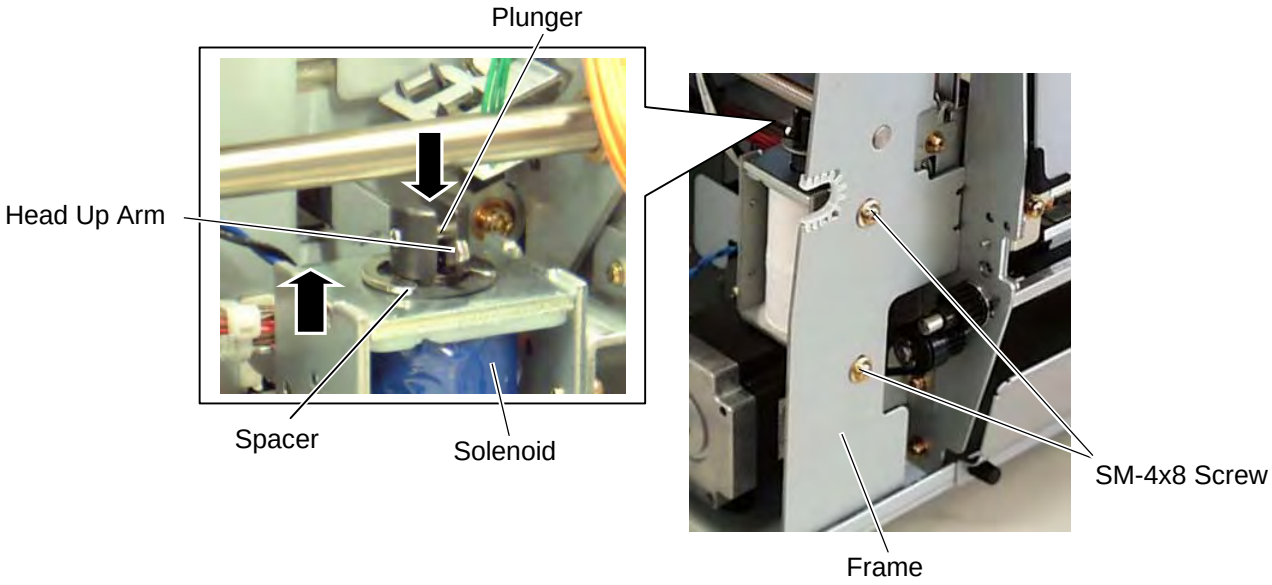


4) Secure the RSV PC board to the printer with the locking supports.

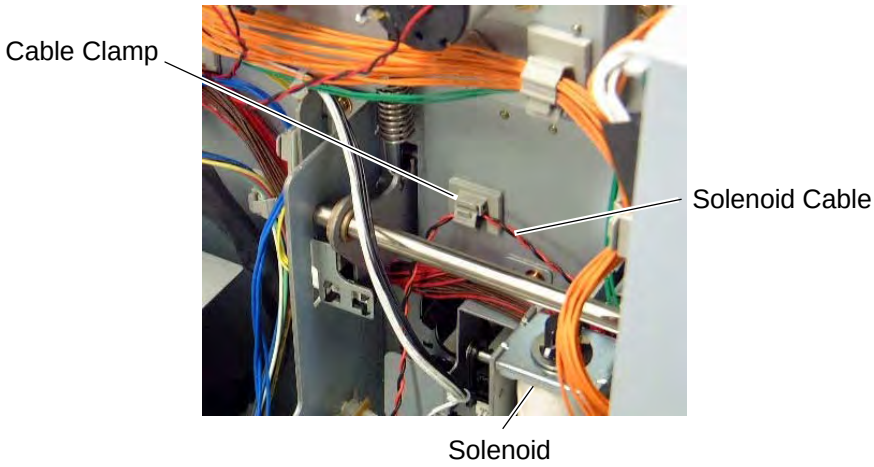


***NOTE**: Do not push the center of the RSV PC board when attaching it to the printer. Doing so may break the PC board. Hold the locking supports and push them into the holes for securing the RSV PC board.*

5) Insert folded tag paper (1.5-mm thick) between the print head and the platen, and then turn the head lever to **Lock** position. Insert the head up arm into the plunger of the solenoid. While holding down the head up arm slightly, lift the solenoid. Secure the solenoid to the frame with the two SM-4x8 screws keeping the solenoid in contact with the spacer.

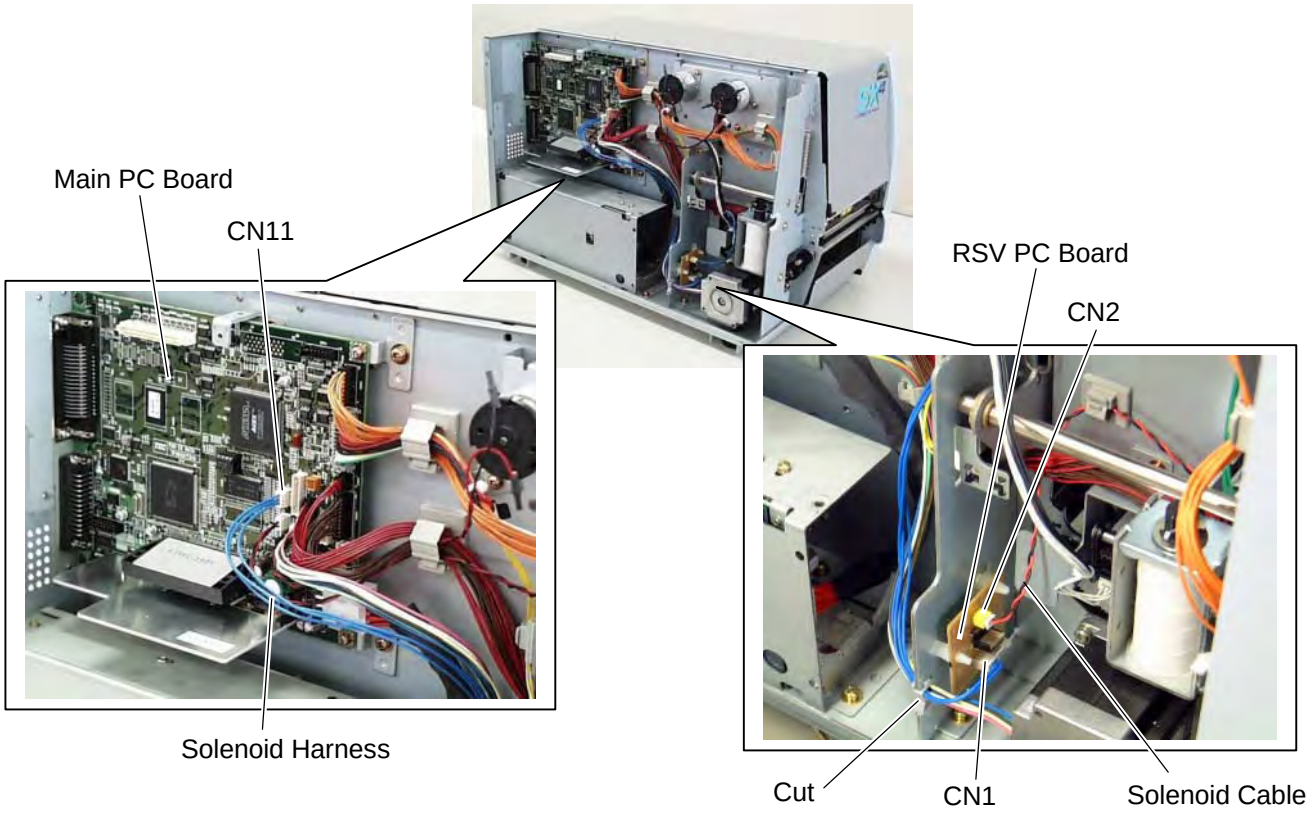


6) Attach the cable clamp to the frame of the printer. Fix the solenoid cable with this cable clamp.

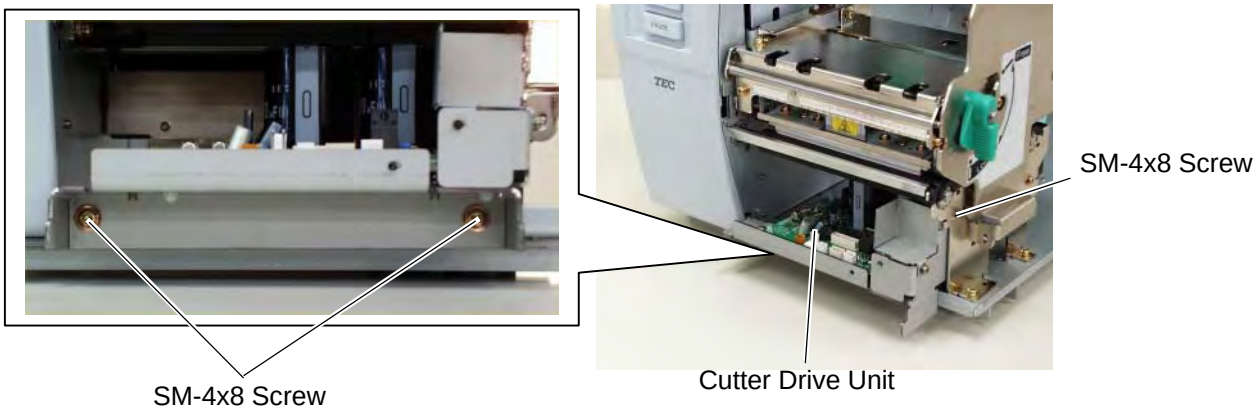


***NOTE**: Be careful not to snag the solenoid harness when running it.*

7) Connect the solenoid harness to CN1 on the RSV PC board and CN11 on the Main PC board. Pass the solenoid harness through the cut.
8) Connect the solenoid cable to CN2 on the RSV PC board.

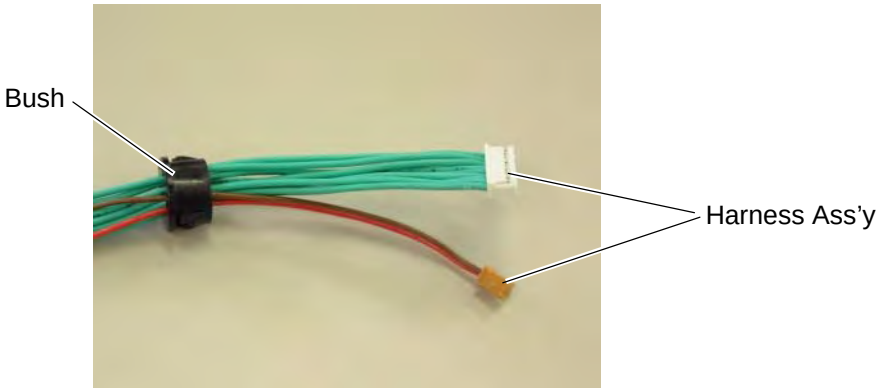


9) Attach the operation panel ass'y to the ptinter.
10) Remove the two black screws to detach the front plate. (Refer to section 4.1.)
11) Fix the cutter drive unit to the printer with the three SM-4x8 screws.

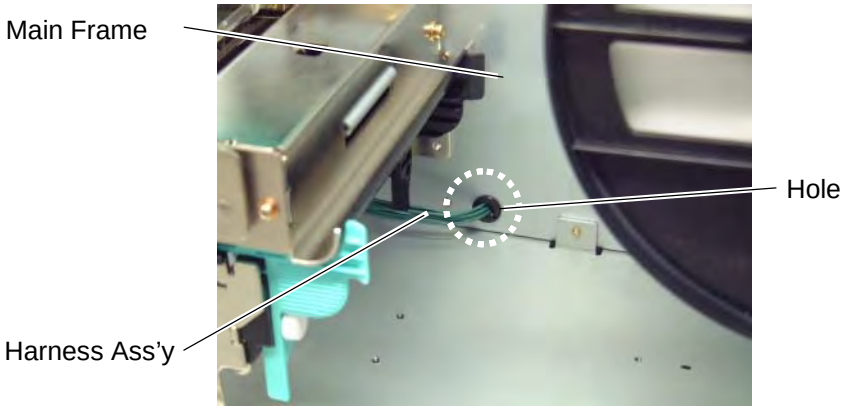


12) Connect the 9-pin connector of the harness ass'y to CN7 and 2-pin connector to CN9 on the cutter driver unit, respectively.

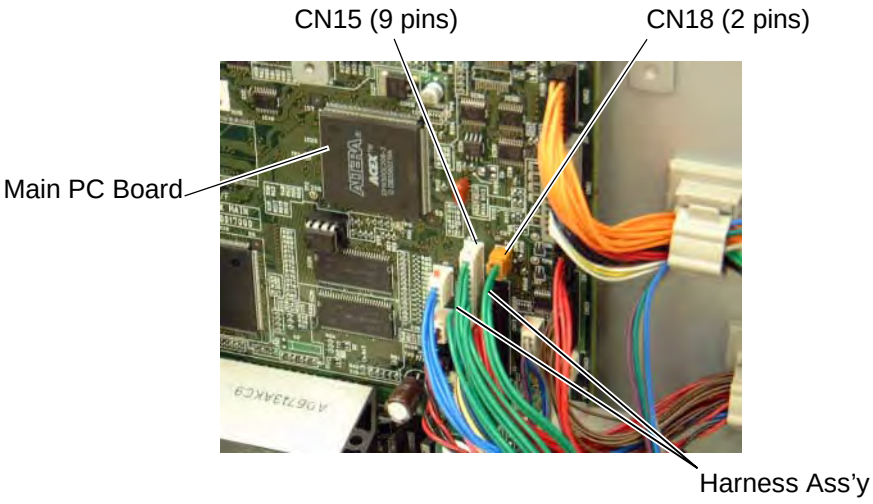
13) Fit the bush to the harness ass'y in the orientation as shown below.



14) Insert the harness ass'y into the hole in the main frame. Fit the bush into the hole.

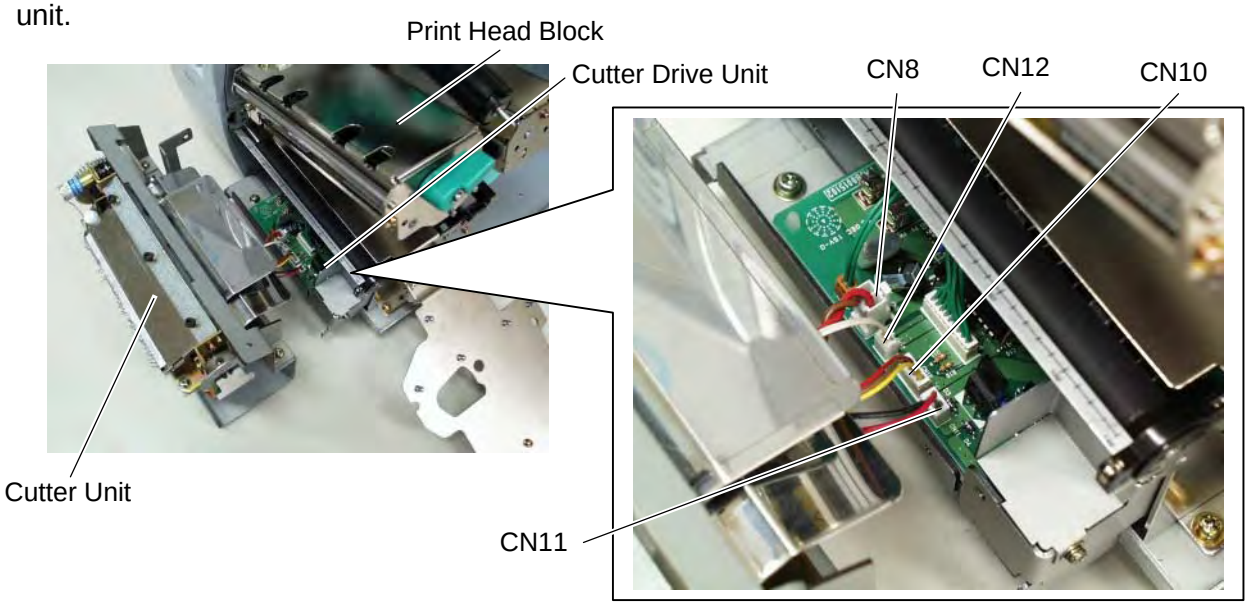


15) Connect the 9-pin connector of the harness ass'y to CN15, and 2-pin connector to CN18 on the Main PC board, respectively.

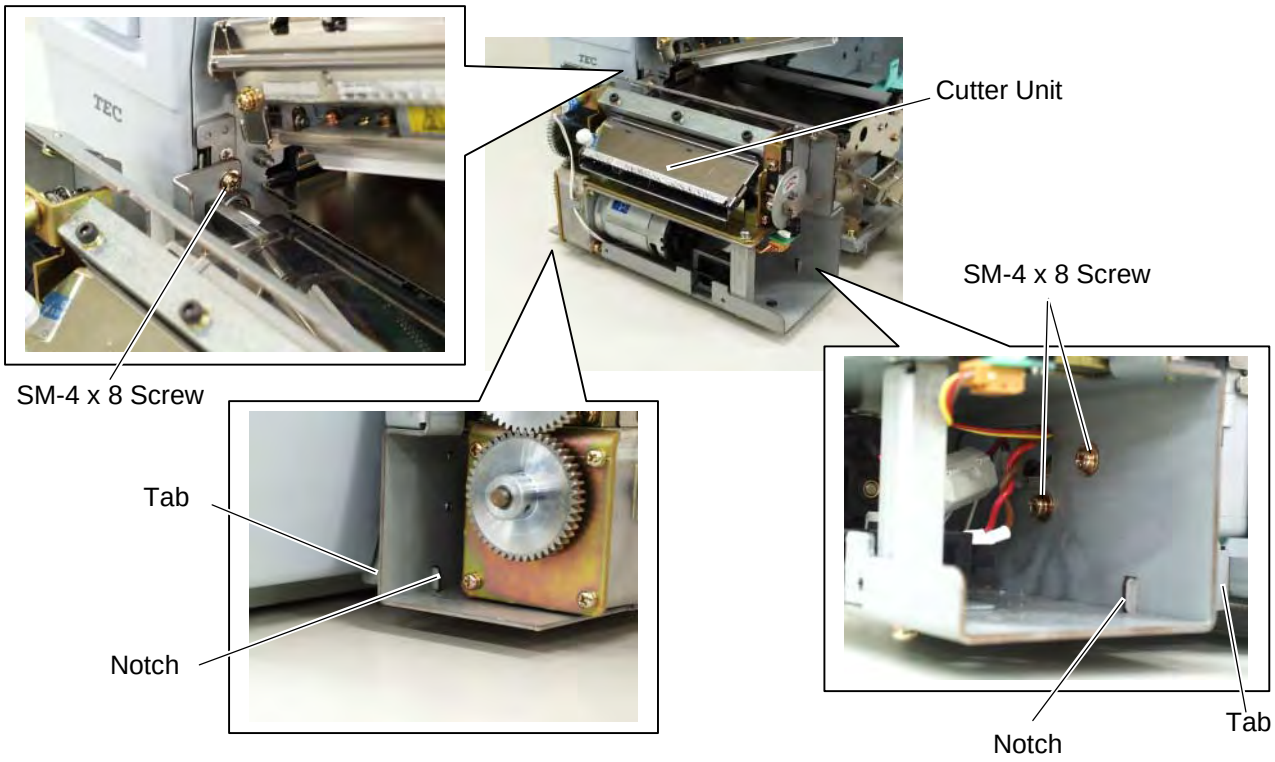


16) Open the print head block. (Refer to section 3.3.)

17) Connect the four harnesses of the cutter unit to CN8, CN10, CN11 and CN12 on the cutter drive unit.

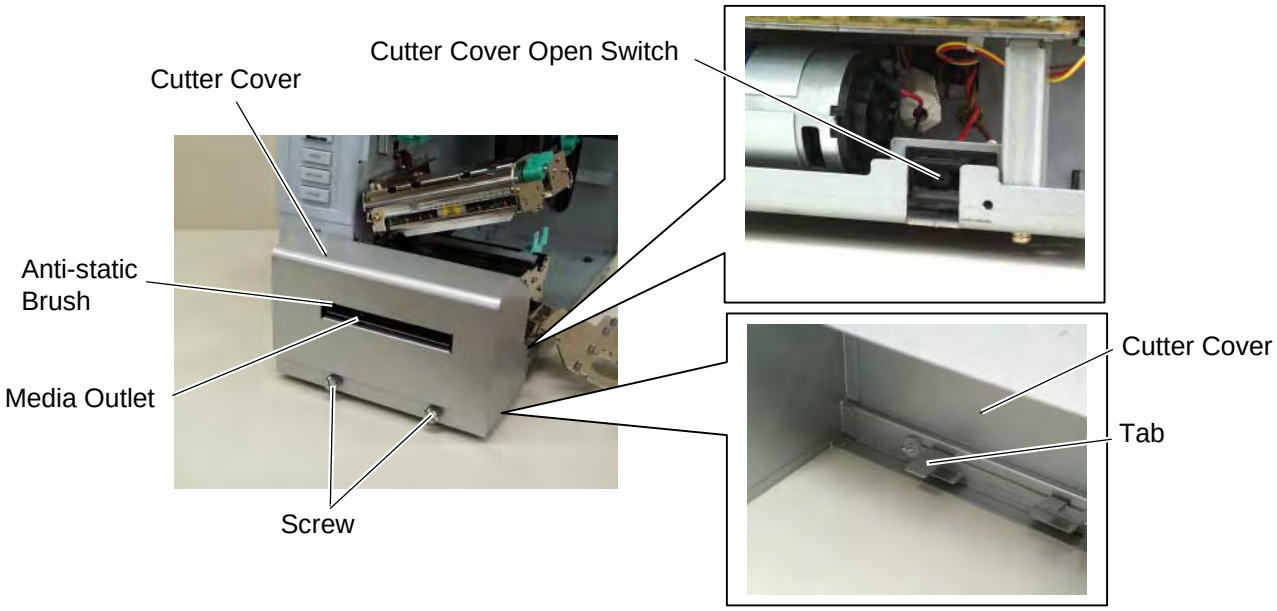


18) Fit the two tabs of the cutter drive unit into the notches, and then fix the cutter unit with the three SM-4x8 screws.



19) Attach the cutter cover to the cutter unit with the two screws so that the tab of the cutter cover turns on the cutter cover open switch.

NOTES: *1. Be careful not to pinch the cutter harness by the cutter cover.*
2. Make sure that the anti-static brush is protruding from the media outlet.



20) Close the print head block and ribbon shaft holder plate.

NOTE: *DO NOT excessively push down the print head block to close it. Doing so may cause a failure of the print head block or damage to the print head.*

21) Reassemble the side panel (L) and close the top cover. Finally check the cutter operation and ribbon saving operation.

4.10 RFID MODULE (B-9704-RFID-U1-US/EU/EU-R)

***NOTES**:*

1. *An RFID tag chip or the print head may be damaged when the print head passes over the chip. This can be prevented by using the ribbon saving module (standard feature for the B-SX5T and optional for the B-SX4T). The print head is lifted by the ribbon saving module when it passes over the chip to prevent it from touching the chip. The print head is lifted by approximately 1 mm from the platen.*
2. *When an RFID label or tag is used in cut issue mode, care must be taken not to cut an antenna of the RFID tag or an IC chip in order not to damage the cutter.*
3. *When using the RFID module together with a cutter or strip module, be sure to install the RFID module first. When the B-4205-QM swing cutter has been installed, remove the cutter unit before installing the RFID module.*
   When the B-8204-QM rotary cutter has been installed, remove the cutter unit and cutter drive unit before installing the RFID module.
   When the B-9904-H-QM strip module has been installed, remove the rewinder guide plate and strip sensors (Tr and LED) before installing the RFID module. (The strip module is standard feature of the B-SX5T series.)

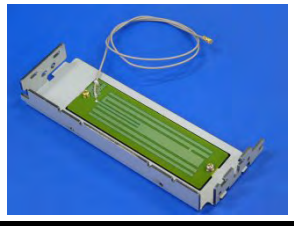
4.10.1 Applicable Model

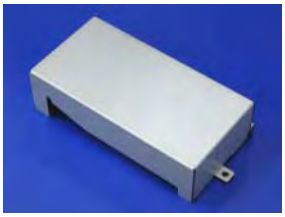
The B-9704-RFID-U1-US/EU model is intended for the following models:
B-SX4T-GS10-QQ/QQ-US/QP, RFID Ready printer (Serial No. 2604Wxxxxxx or later)
B-SX5T-TS10-QQ/QQ-US/QP, RFID Ready printer (Serial No. 2604Wxxxxxx or later)
The B-9704-RFID-H1-QM-R model is intended for the following models:
B-SX4T-GS20-QM-R, B-SX5T-TS22-QM-R
An RFID Ready printer can be identified by the model name sticker on the front of the printer.
The countries where the use of this device is allowed are as follows:

Model Name	Frequency Band	Applicable Countries
B-9704-RFID-U1-US	UHF (902 to 928MHz)	U.S.A and Canada
B-9704-RFID-U1-EU/EU-R	UHF (869.5MHz)	Austria, Belgium, Cyprus, Czech, Denmark, Estonia, Germany, Greece, Finland, France, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, the Netherlands, and U.K.

4.10.2 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below.

Parts	Quantity		Parts	Quantity	
Antenna Cover	US	1 pc.	Antenna Cover including Antenna	US	0 pc.
	EU	0 pc.		EU	1 pc.
Antenna Frame	US	0 pc.	Antenna Frame including Antenna 	US	1 pc.
	EU	1 pc.		EU	0 pc.

Parts	Quantity		Parts	Quantity	
RFID Module	US	1 pc.	Ribbon Guide	US	1 pc.
	EU	1 pc.		EU	1 pc.
Bush	US	1 pc.	Cable Clamp	US	1 pc.
	EU	1 pc.		EU	1 pc.
Interface Cable	US	1 pc.	SMW-3x6 Double Sems Screw	US	6 pc.
	EU	1 pc.		EU	6 pc.
SMW-3x6* Double Sems Screw (Small Washer Type: Spare)	US	0 pc.	PT-3x6 P-TITE Screw (Spare)	US	2 pc.
	EU	2 pc.		EU	0 pc.
RFID Module Cover 	US	1 pc.	FCC Sticker (US model)	US	1 pc.
	EU	1 pc.		EU	0 pc.
CE Sticker (EU model)	US	0 pc.			
	EU	1 pc.			

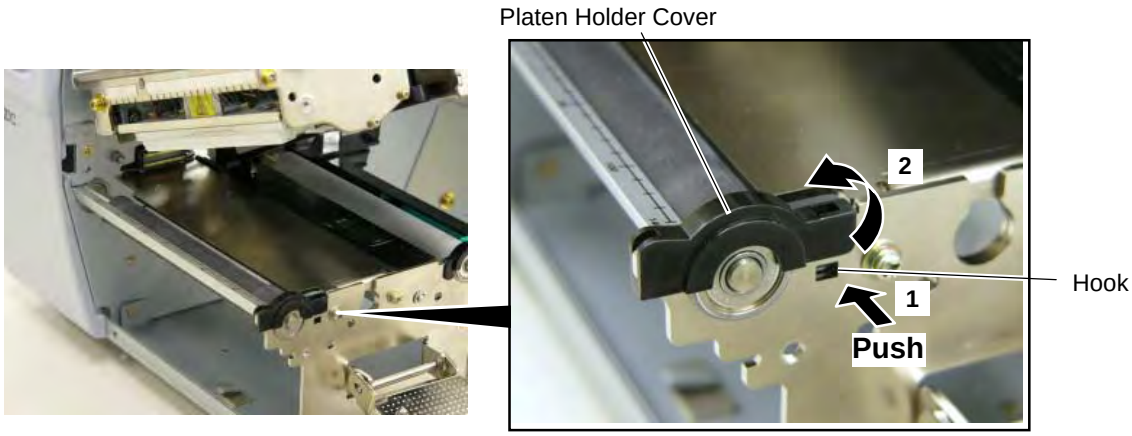
NOTE: *Double Sems Screws (SMW-3x6*) and P-TITE Screws (PT-3x6) are supplied just in case that the antenna attachment position is changed.*

4.10.3 Removing the Platen Frame Top and Attaching the Ribbon Guide

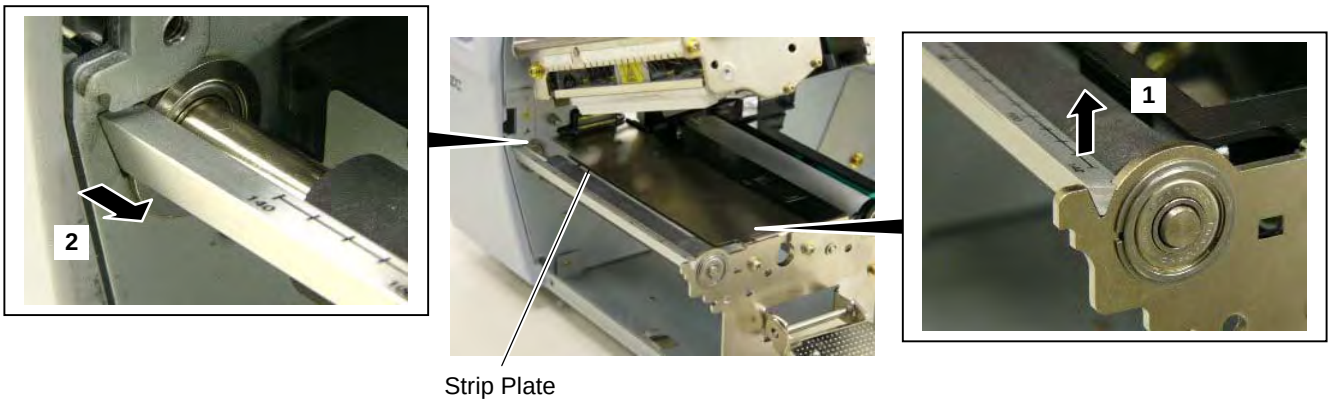
***NOTE**: When installing an RFID module, be care of the following:*

1. *When an RFID module is used together with a cutter module or strip module, install the RFID module first.*
2. *If the B-4205-QM swing cutter has been installed, remove the cutter unit before installing an RFID module.*
3. *If the B-8204-QM rotary cutter has been installed, remove the cutter unit and the cutter drive unit before installing an RFID module.*
4. *If the B-9904-H-QM strip module has been installed or in case of the B-SX5T, remove the rewinder guide plate and strip sensors before installing an RFID module.*

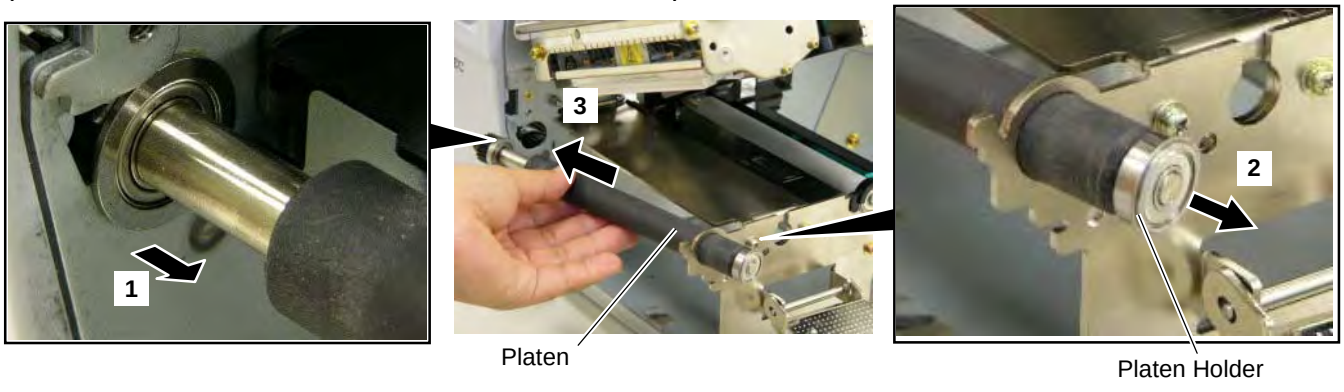
1) Remove the two black screws to detach the front plate. (Refer to section 4.1.)
2) Remove the side panel (L) from the printer. (Refer to section 3.2.)
3) Push the Hook through the rectangle hole with a jeweler's screw driver or something, and remove the Platen Holder Cover in the direction indicated by the arrow.



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

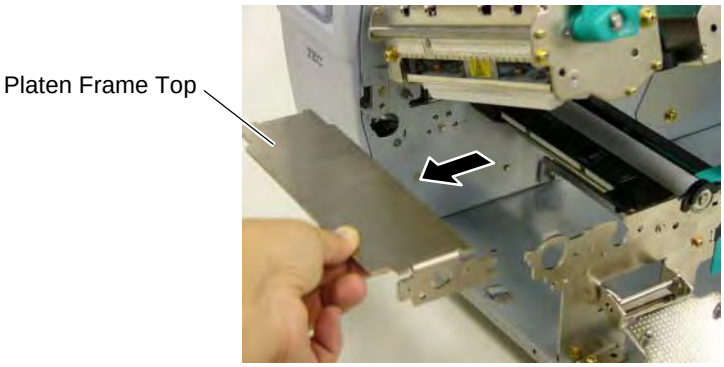


5) Remove the Platen and the Platen Holder in steps 1 to 3 as shown below.

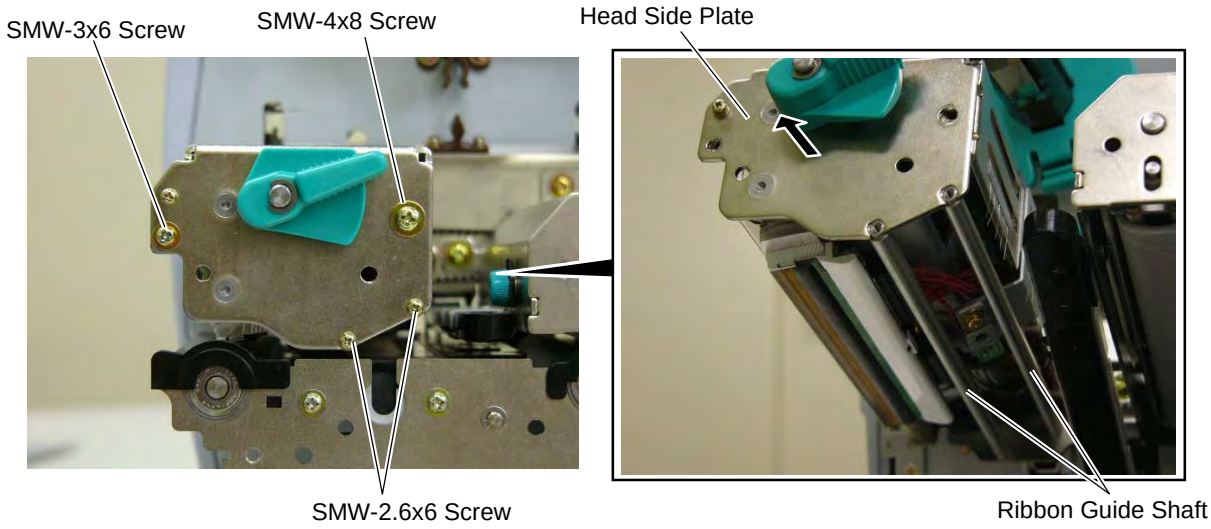


6) Remove the following three screws.

7) Remove the Platen Frame Top from the printer.



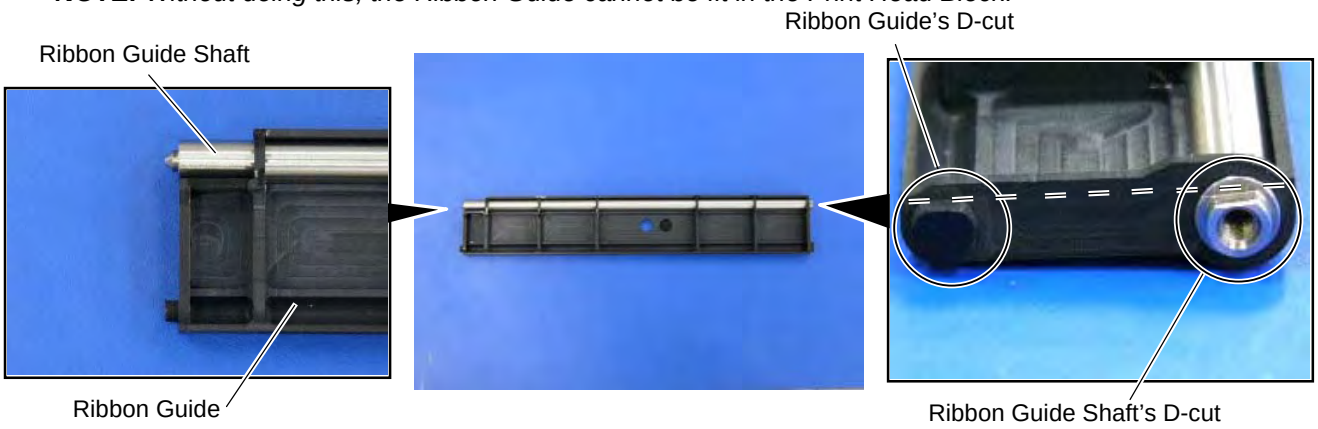
8) Remove the four screws from the side of the Print Head Block, slightly pull the Head Side Plate, and remove the two Ribbon Guide Shafts.



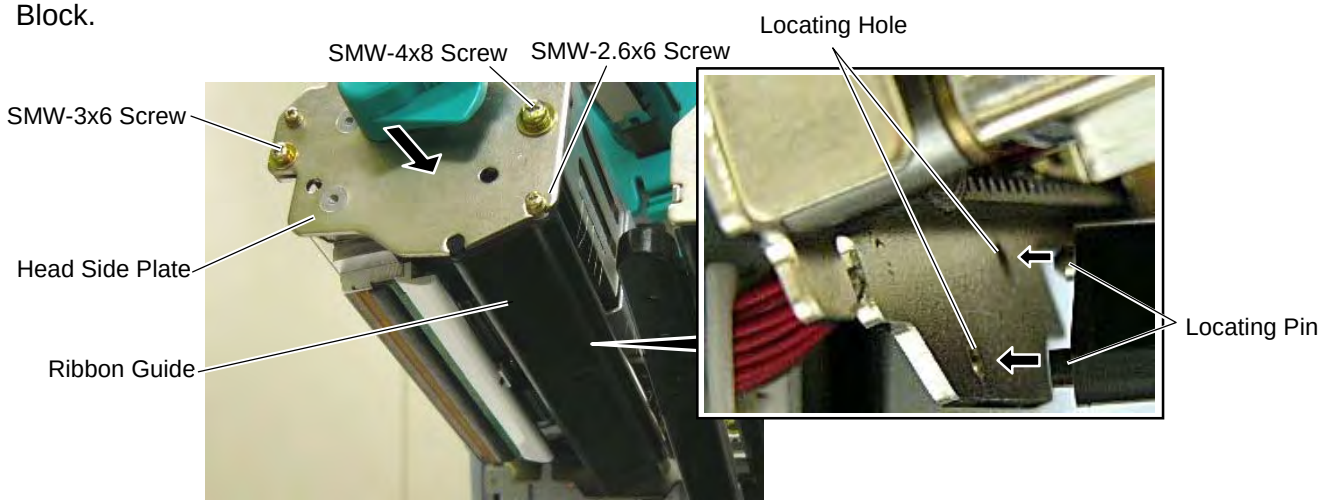
NOTE: *One of the removed Ribbon Guide Shafts and SMW-2.6x6 Screws are re-used when attaching the Ribbon Guide. Keep the unused ones for future use.*

9) Insert one of the Ribbon Guide Shafts removed in Step 12 into the Ribbon Guide. Rotate the Ribbon Guide Shaft so that its D-cut is in the same orientation with the Ribbon Guide's D-cut.

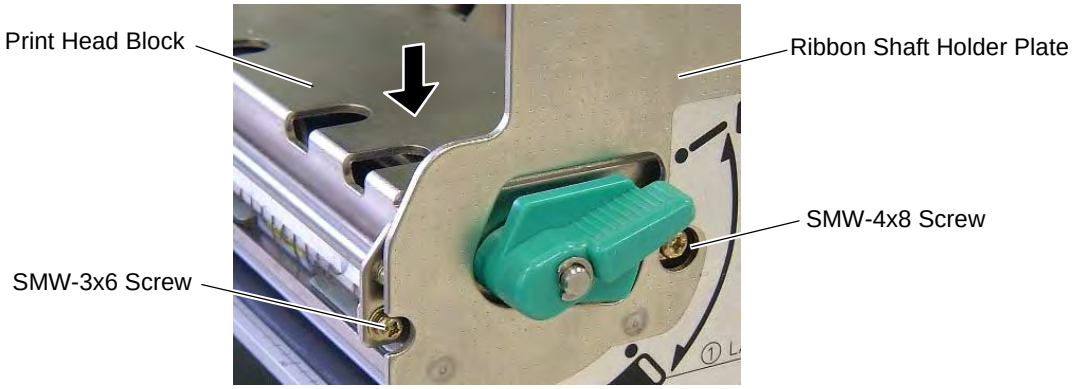
NOTE: *Without doing this, the Ribbon Guide cannot be fit in the Print Head Block.*



10) 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.



11) Close the Ribbon Shaft Holder Plate, and tighten the two screws, which were temporarily tightened in Step 14, while holding down the Print Head Block.

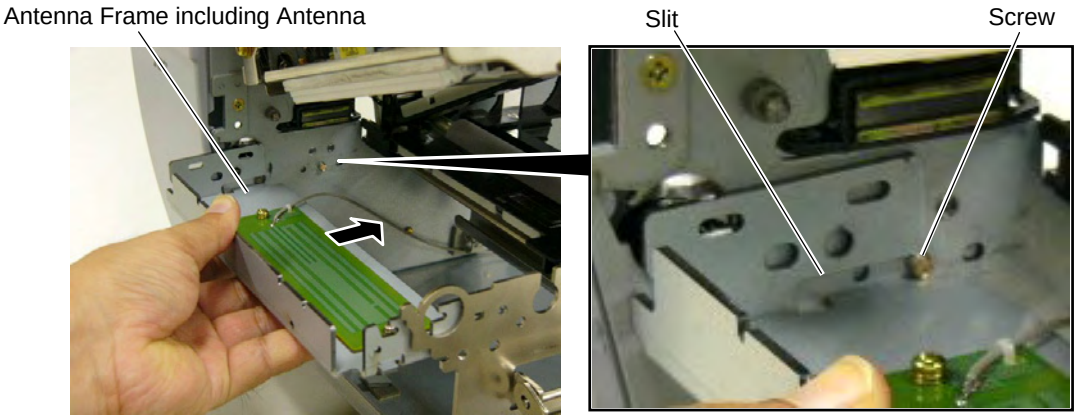


4.10.4 Attaching the Antenna

The procedure for attaching the Antenna Frame and the Antenna Cover is provided below. Be careful the procedure is partly different between the US model and the EU model.

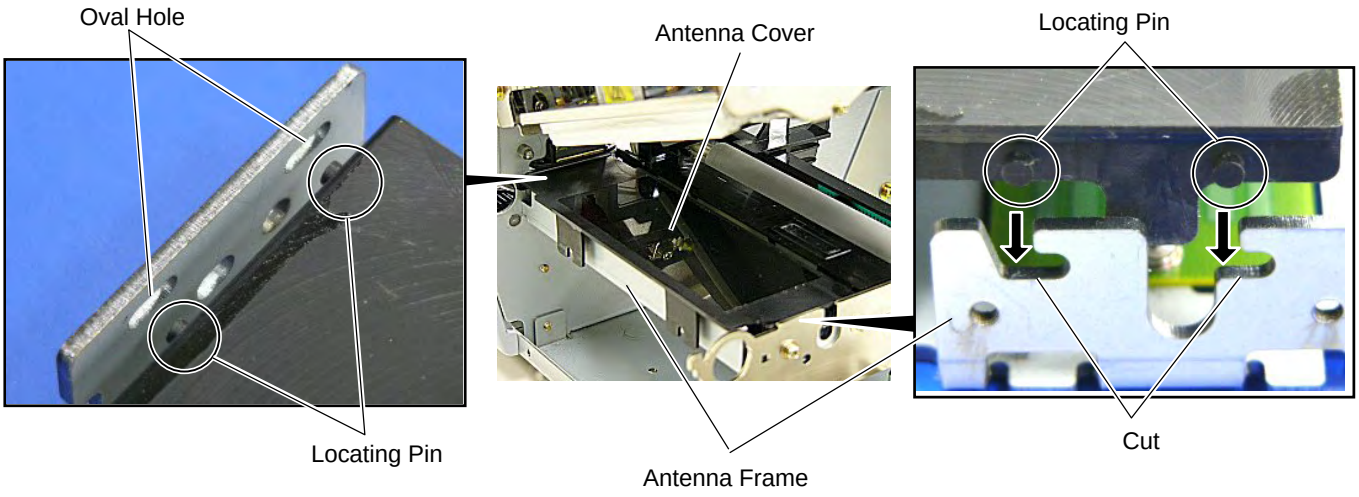
■ **US Model**

1) Raise the Print Head Block, and slide the Antenna Frame containing the Antenna into the printer as shown below. Let the protruding screw of the printer pass through the slit of the Antenna Frame.

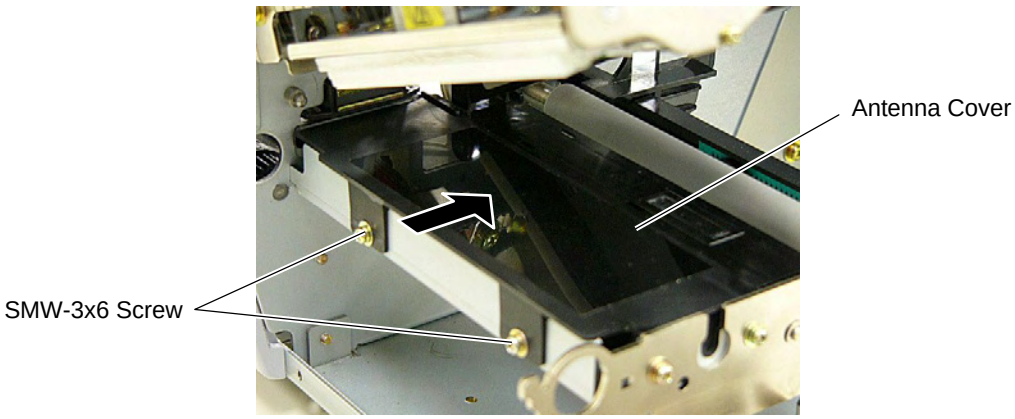


2) Secure the Antenna Frame with the three screws removed in Step 10 of Section 3.1.

3) Mount the Antenna Cover on the inside of 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.

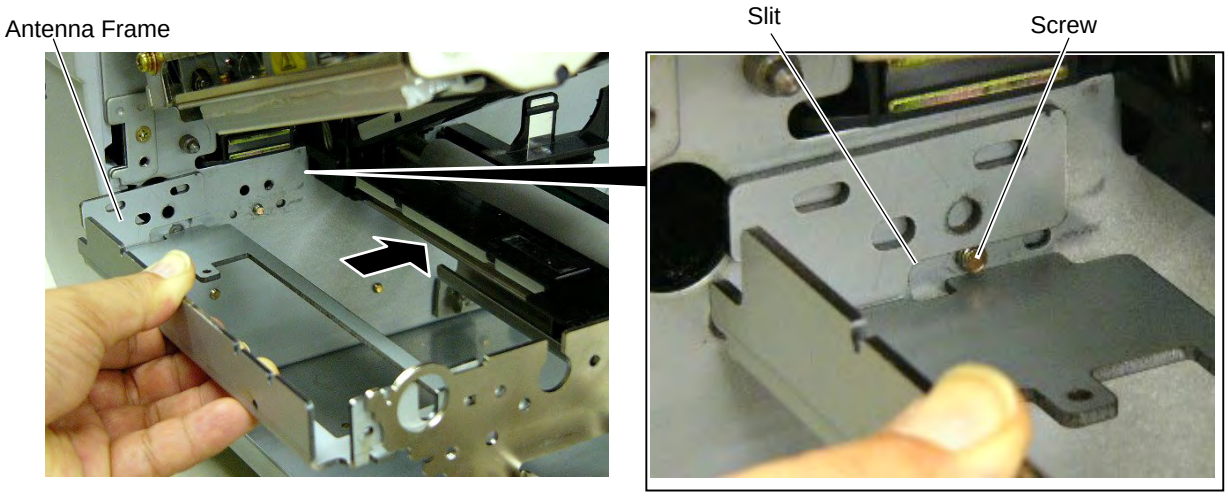


4) Push the Antenna Cover backward, and secure it with the two SMW-3x6 screws.

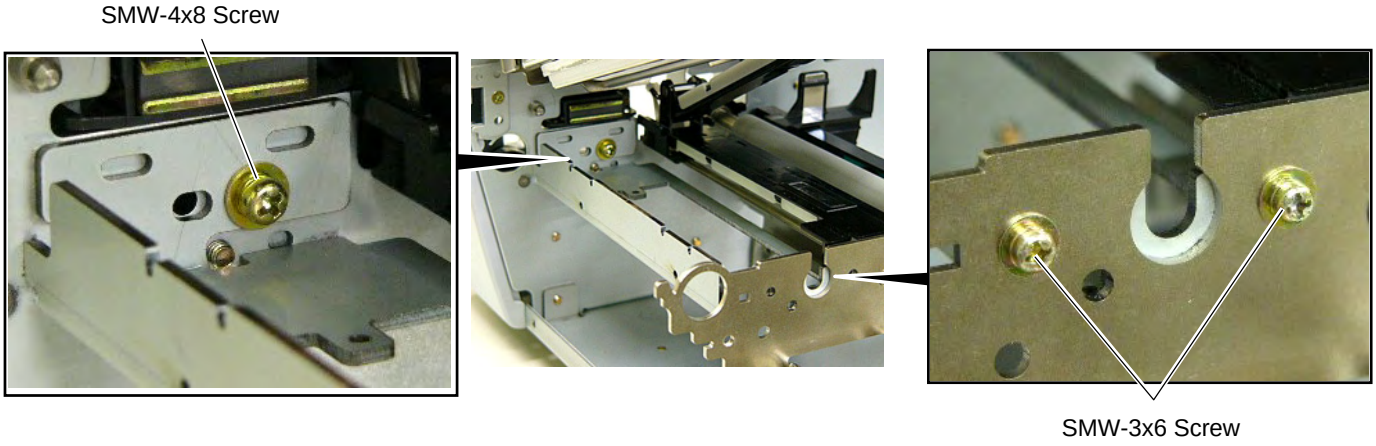


■ EU Model

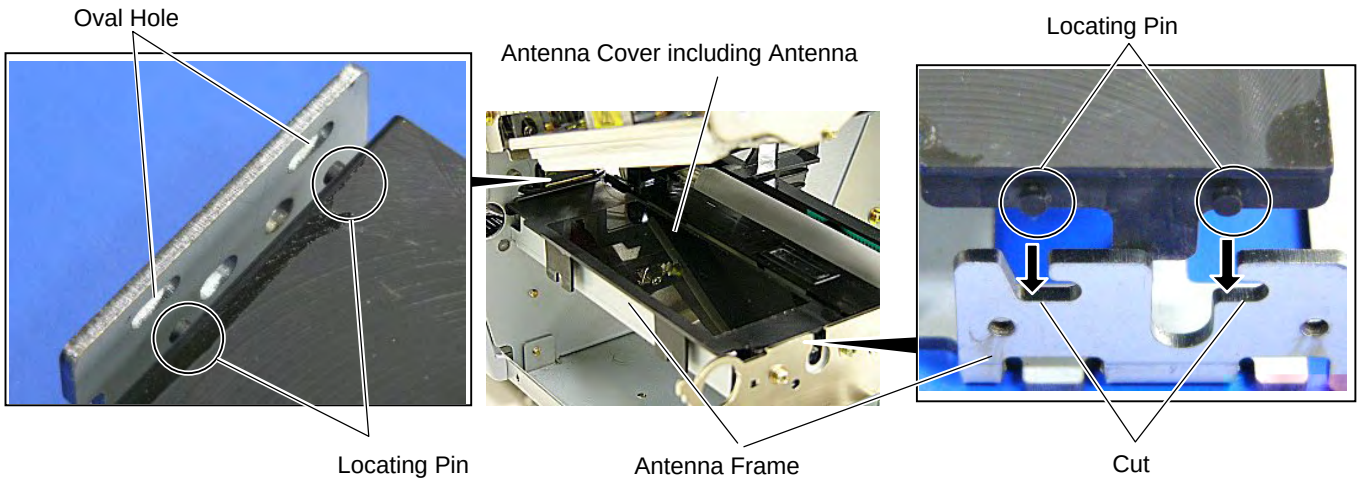
1) Raise the Print Head Block, and slide the Antenna Frame into the printer as shown below. Let the protruding screw of the printer pass through the slit of the Antenna Frame.



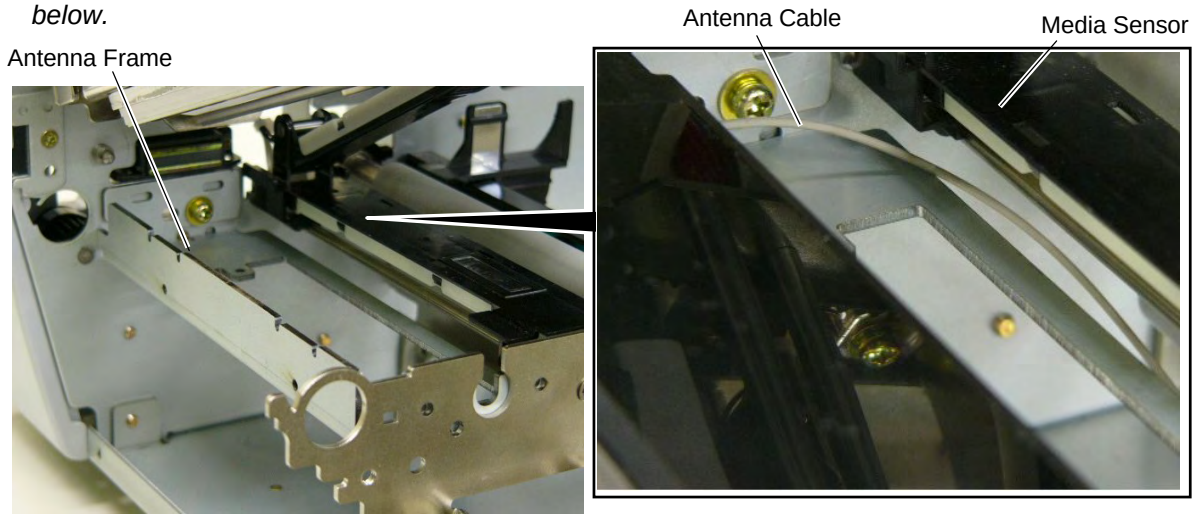
2) Secure the Antenna Frame with the three screws removed in Step 10 of Section 3.1.



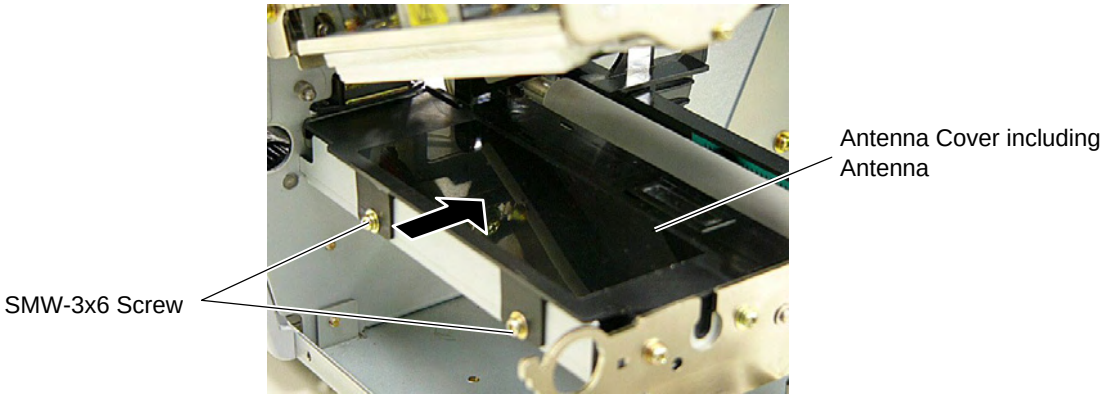
3) Mount the Antenna Cover containing the Antenna on the inside of the Antenna Frame.
Be sure to fit the locating pins of the Antenna Cover into the oval holes and the cuts in the Antenna Frame.



NOTE: *Pass the Antenna Cable between the Antenna Frame and the Media Sensor as shown in the picture below.*

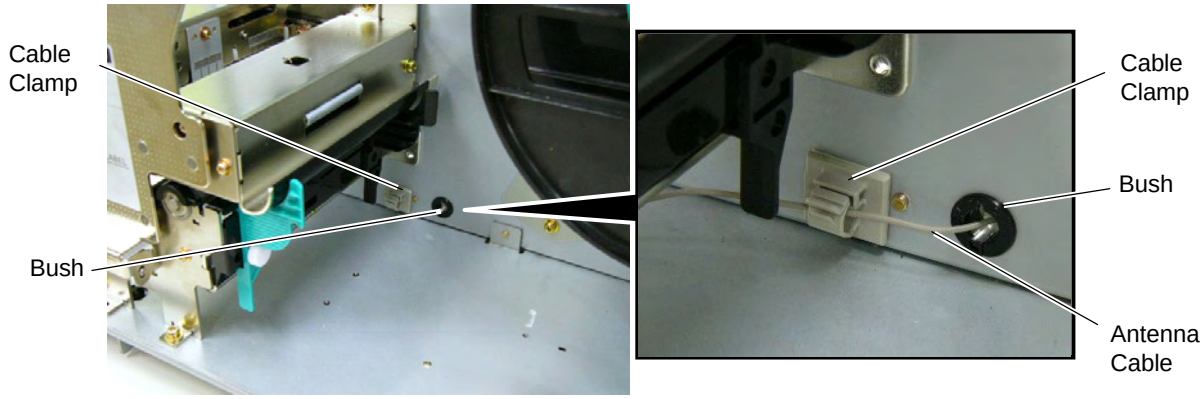


4) Push the Antenna Cover containing the Antenna backward, and secure it with the two SMW-3x6 screws.

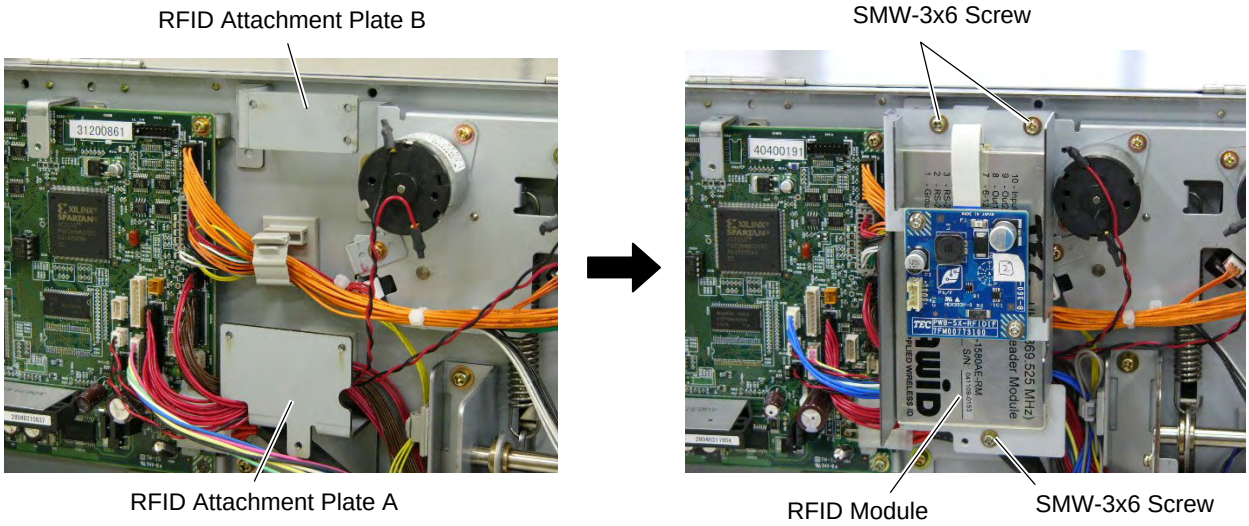


4.10.5 Attaching the RFID Module

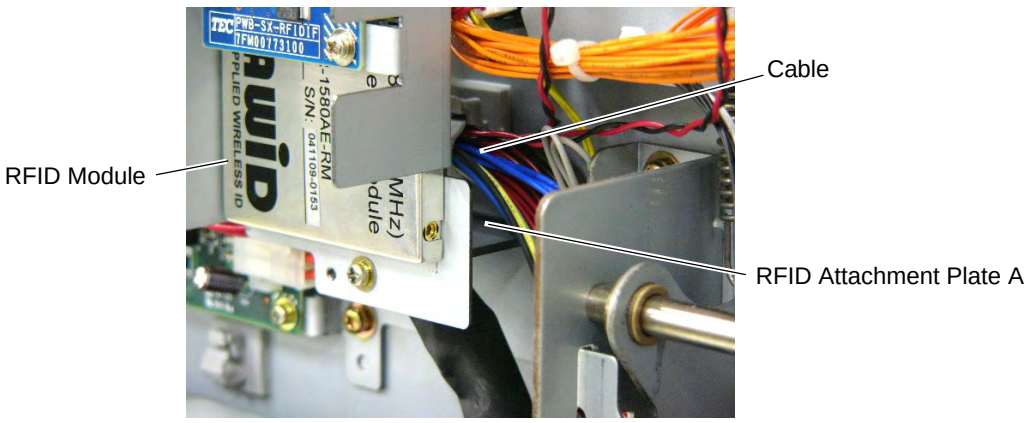
1) Attach the Cable Clamp to and fit the Bush into the positions shown in the picture below.
2) Pass the Antenna Cable through the Bush, and fix the cable with the Cable Clamp



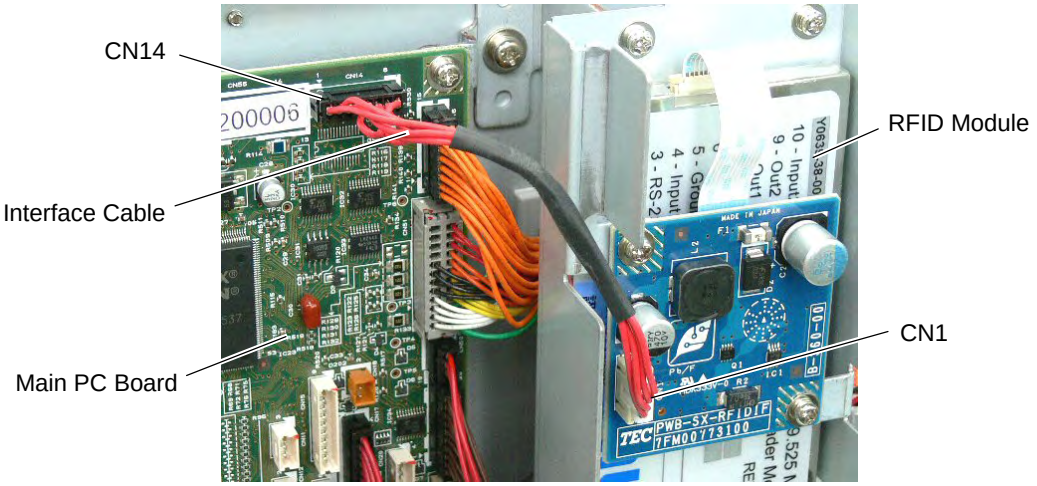
3) Attach the RFID Module to the RFID Attachment Plate A and the RFID Attachment Plate B with the three SMW-3x6 screws



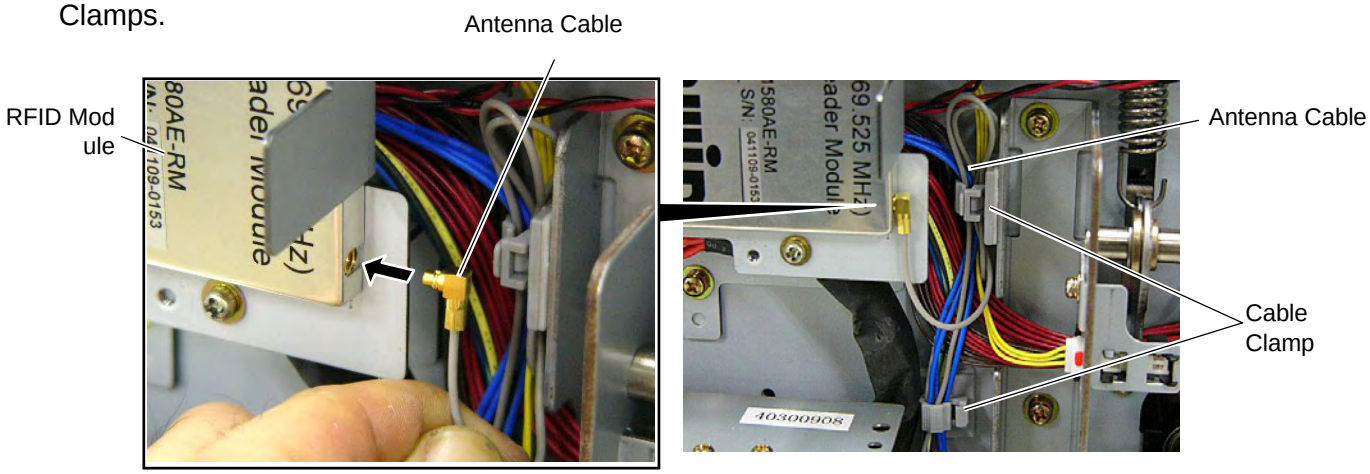
***NOTE**: Care should be taken not to catch the cables between the RFID Module and the RFID Attachment Plate A.*



4) Connect CN1 on the RFID Module to CN14 on the Main PC Board with the Interface Cable.

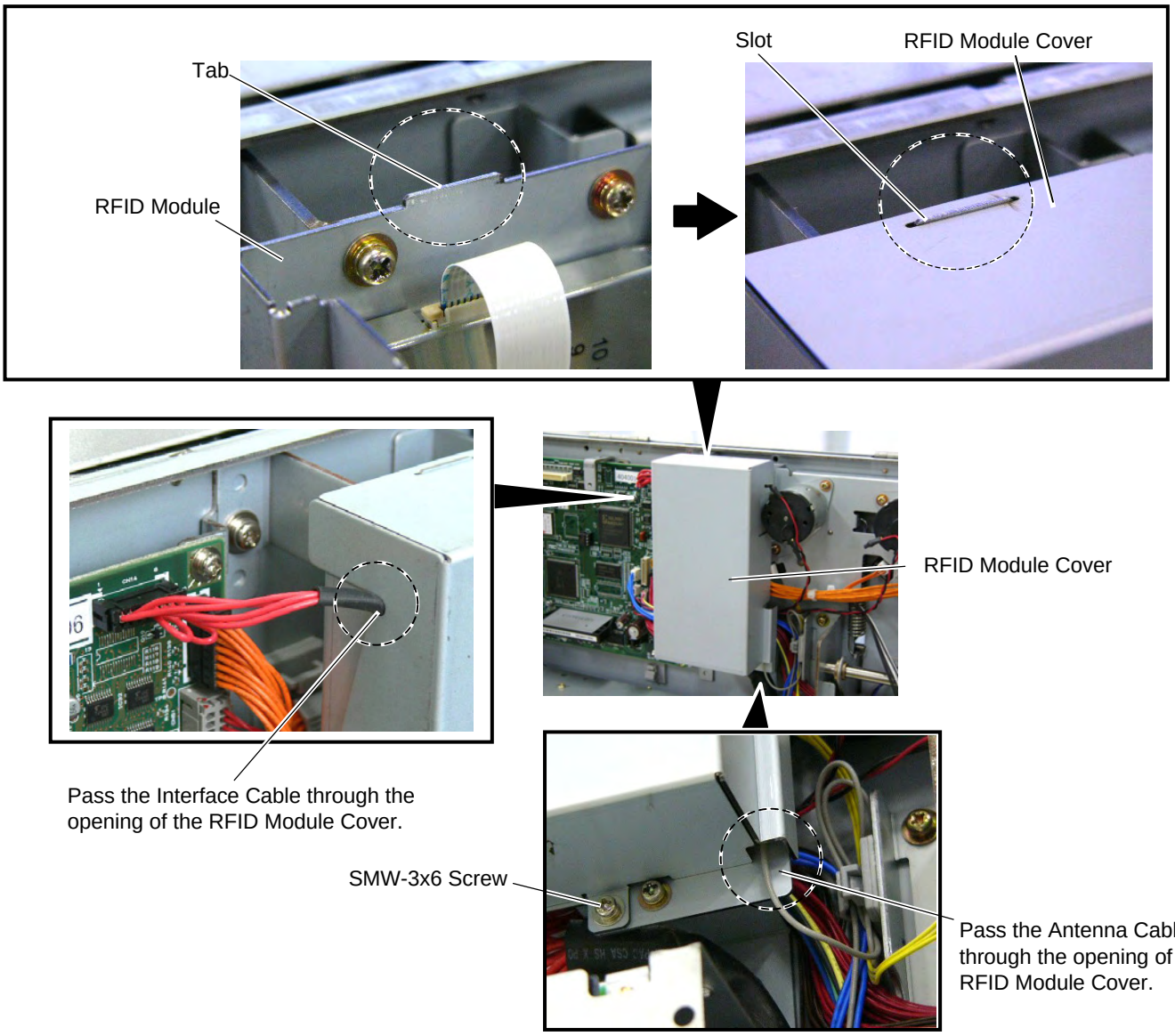


5) Connect the Antenna Cable to the RFID Module until it clicks. To prevent the Antenna Cable from being caught in the Side Panel (L) or Fan Motor, fold the cable and fix it with the two Cable Clamps.



6) Fit the tab of the RFID Module into the slot in the RFID Module Cover, and attach the RFID Module Cover to the RFID Module with the SMW-3x6 screw. Pass the Interface Cable and the Antenna Cable through the openings of the RFID Module Cover, respectively.

NOTE: *When fitting the RFID Module Cover, be careful not to pinch the Interface Cable and the Antenna Cable.*

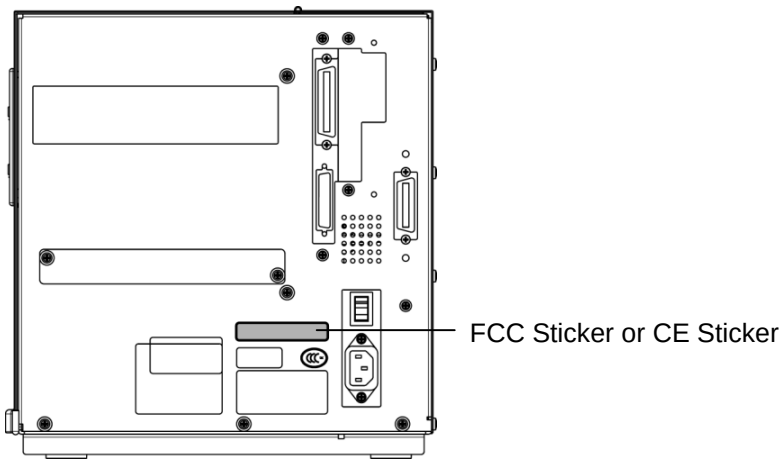


7) Attach the Side Cover (L), the Front Plate, the Platen Holder Cover, the Platen, and the Strip Plate in the reverse order of removal. Refer to Section 4 to program the RFID Module and perform an operation check.

NOTE: *When attaching the Side Cover (L), carefully lead the Fan Motor Harness so that it does not get sucked into the Fan Motor.*

8) An FCC sticker is supplied with the B-9704-RFID-U1-US model, and a CE sticker is supplied with the B-9704-RFID-U1-EU/EU-R model, respectively.
After installing the RFID module in the printer, please attach the sticker to the specified location on the printer.

Location to attach the sticker (on the back of a printer)



4.10.6 Parameter Setting and Operation Check for the RFID Module

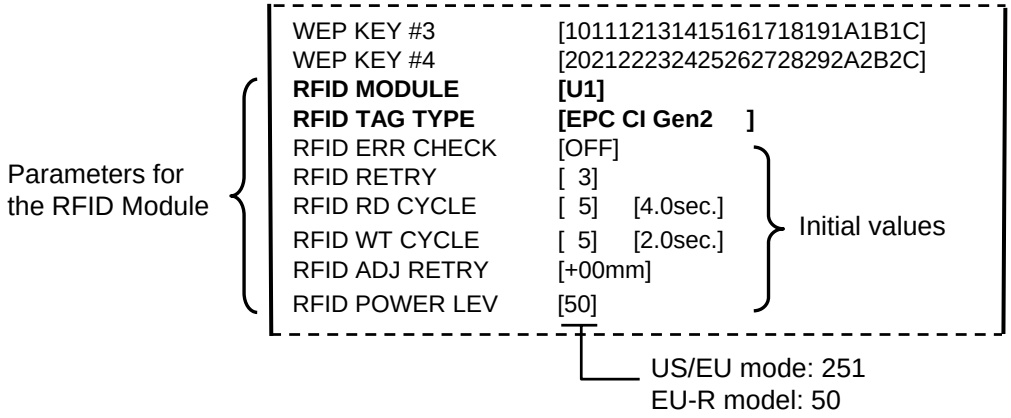
After installing the RFID Module in the printer, set the parameters for the RFID and perform an operation check by using the following procedures. For details, please refer to the Maintenance Manual.

1) Start the printer in the System Mode, and check the program version. When the program version is V3.1 or older, go to Step 2). When the program version is V4.1 or greater (US/EU model) or V4.4 or greater (EU-R model), go to Step 3).
2) When the program version is V3.1 or older, upgrade it to V3.2 or greater in the following order.
   Please obtain the latest firmware from
   http://barcode.toshibatec.co.jp/Ris/products/barcode/support/en/contents/software/index.html
   (1) Print the Maintenance Counter/Parameter Setting to keep the record of the printer's parameter settings. (Refer to Section 5.3.)
   (2) Download the firmware from the above web site, and upgrade the firmware version of the printer. (Refer to Section 7.)
   (3) Perform a Parameter Clear. (Refer to Section 5.8.)
   (4) Return the all parameter settings except for RFID Module to the former ones.
3) Change the parameter setting of the RFID Module from "NONE" to "U1". Choosing "NONE" or "H1" results in NG (No good) at the self diagnostic test even if the RFID Module is properly connected.

4) Print the Maintenance Counter/Parameter Settings and the Self-Diagnostic Test result to confirm the RFID Module status.

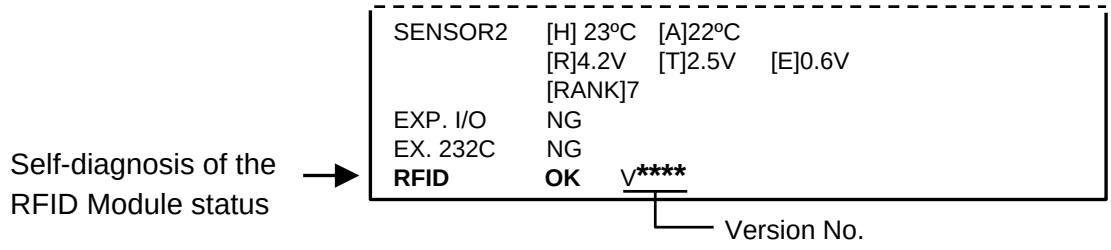
Example: Maintenance Counter/Parameter Settings Label

Make sure that [U1] is selected and other parameters for the RFID Module are printed as follows.



Example: Self-Diagnostic Test Label

Make sure that "**RFID OK"** is printed.



5) If "RFID NG" (No Good) is printed, check the cable connections and parameter settings related to the RFID Module again.
6) Try a read and write of the RFID tag by using the RFID Analyze Tool. When you do not have a PC at hand, perform a simplified read test in the system mode to confirm the data can be read. In case that the read/write accuracy needs to be enhanced, make an adjustment of the parameter setting in the System Mode. (Refer to Section 11 and Section 5.12.)

NOTE: *Available RFID tags*
EPC Class 0 (Read only)
EPC Class 1
EPC Class 1 Gen2 (Only when the RFID module supports Gen2)
ISO 18000-6B

4.11 RFID MODULE (B-9704-RFID-H1-QM/QM-R)

***NOTES**:*

1. *An RFID tag chip or the print head may be damaged when the print head passes over the chip. This can be prevented by using the ribbon saving module (standard feature for the B-SX5T and optional for the B-SX4T). The print head is lifted by the ribbon saving module when it passes over the chip to prevent it from touching the chip. The print head is lifted by approximately 1 mm from the platen.*
2. *When an RFID label or tag is used in cut issue mode, care must be taken not to cut an antenna of the RFID tag or an IC chip in order not to damage the cutter.*
3. *When using the RFID module together with a cutter or strip module, be sure to install the RFID module first. When the B-4205-QM swing cutter has been installed, remove the cutter unit before installing the RFID module. When the B-8204-QM rotary cutter has been installed, remove the cutter unit and cutter drive unit before installing the RFID module. When the B-9904-H-QM strip module has been installed, remove the rewinder guide plate and strip sensors (Tr and LED) before installing the RFID module. (The strip module is standard feature of the B-SX5T series.)*

4.11.1 Applicable Model

This optional device is intended for the following models:

The B-9704-RFID-H1-QM model is intended for the following models:

B-SX4T-GS10-QQ/QQ-US/QP, RFID Ready printer (Serial No. 2604Wxxxxxx or later)

B-SX5T-TS10-QQ/QQ-US/QP, RFID Ready printer (Serial No. 2604Wxxxxxx or later)

The B-9704-RFID-H1-QM-R model is intended for the following models:

B-SX4T-GS10-QQ/QQ-US/QP, RFID Ready printer (Serial No. 2604Wxxxxxx or later)

B-SX5T-TS10-QQ/QQ-US/QP, RFID Ready printer (Serial No. 2604Wxxxxxx or later)

B-SX4T-GS20-QM-R, B-SX5T-TS22-QM-R

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

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

Model Name	Frequency Band	Applicable Countries
B-9704-RFID-H1-QM/QM-R	HF (13.56MHz)	Austria, Belgium, Cyprus, Czech, Denmark, Estonia, Germany, Greece, Finland, France, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, the Netherlands, and U.K.

4.11.2 Packing List

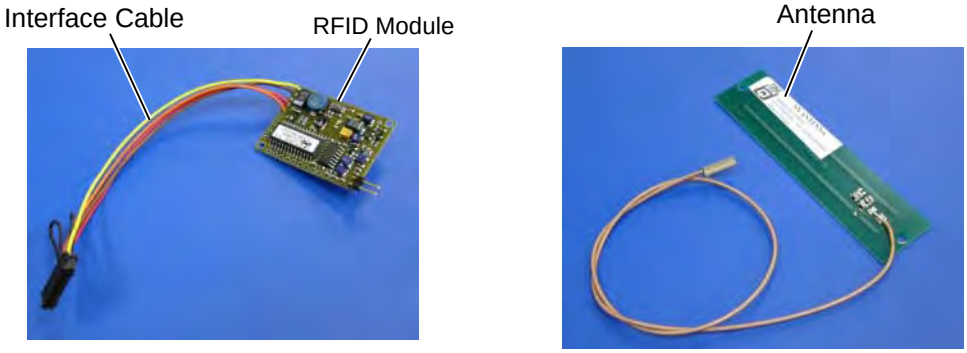
All the following parts are supplied with the kit. Make sure you have all items shown below.

Parts	Quantity	Parts	Quantity
Antenna Cover	1 pc.	Antenna Frame	1 pc.
Ribbon Guide	1 pc.	Bush	1 pc.

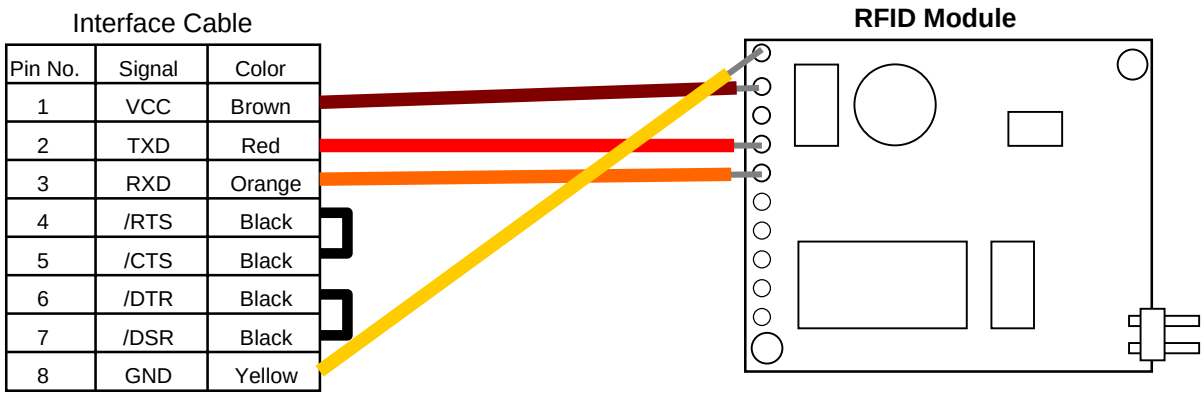
Parts	Quantity	Parts	Quantity
Cable Clamp	1 pc.	RFID Plate	1 pc.
SMW-3x6 Double Sems Screw	7 pcs.	PT-3x6 P-TITE Screw	1 pc.
Interface Cable	1 pc.	SMW-2x10 Double Sems Screw	2 pcs.
Spacer	2 pcs.	Nylon Washer	2 pcs.

NOTE:

To install the B-9704-RFID-H1-QM in the printer, TAGSYS RFID Module MEDIO™ S002 and the exclusive antenna are required separately. Before installation, solder the supplied Interface Cable to the RFID module as shown in the picture below, and attach the RFID Module and the Antenna to the RFID Plate and the Antenna Cover, respectively.

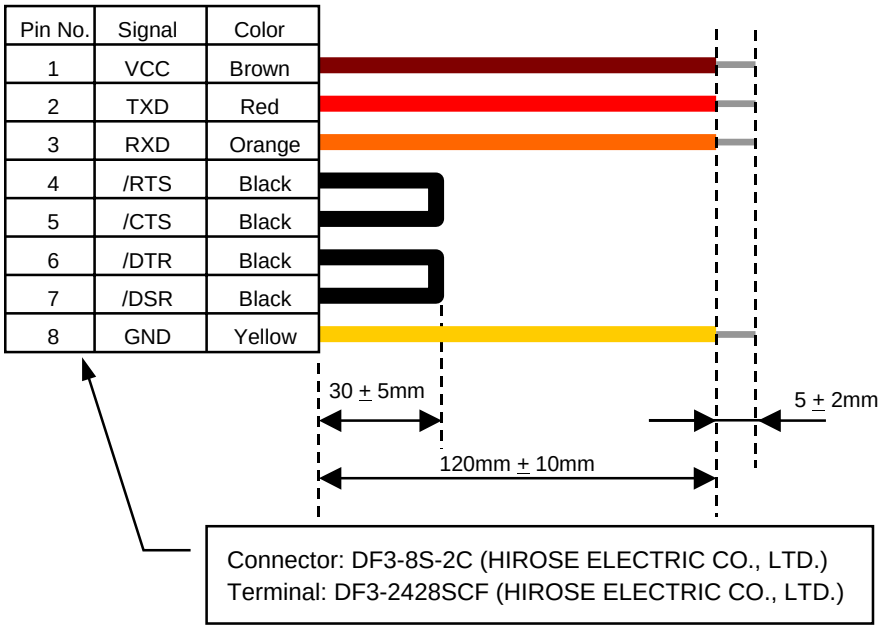


Wiring Diagram



Pin No.	Signal	Color
1	VCC	Brown
2	TXD	Red
3	RXD	Orange
4	/RTS	Black
5	/CTS	Black
6	/DTR	Black
7	/DSR	Black
8	GND	Yellow

Details of Interface Cable

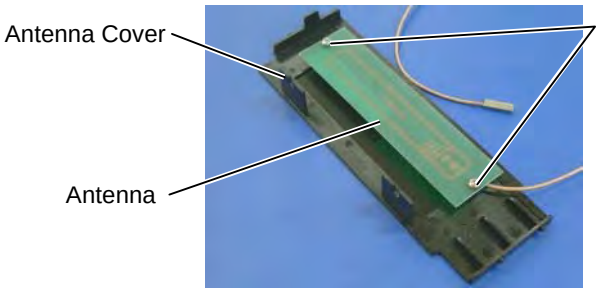


Pin No.	Signal	Color
1	VCC	Brown
2	TXD	Red
3	RXD	Orange
4	/RTS	Black
5	/CTS	Black
6	/DTR	Black
7	/DSR	Black
8	GND	Yellow

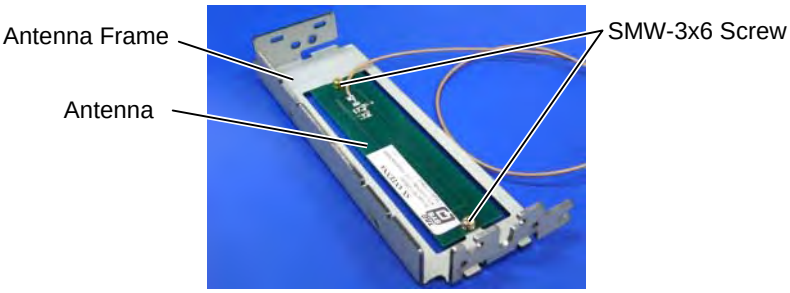
4.11.3 Attaching the Antenna to the Antenna Cover or Antenna Frame

Basically, the Antenna is attached to the Antenna Cover. However, read/write of RFID tag may become more accurate when the Antenna is attached to the Antenna Frame. When attaching the Antenna to the Antenna Cover, use the PT-3x6 Screws. And use two of the SMW-3x6 Screws when attaching it to the Antenna Frame. Place the Antenna in the orientation as shown in the pictures below. When they are installed in the printer, the pattern side of the Antenna faces up and the Antenna Cable is positioned at the printer frame side.

Antenna Cover

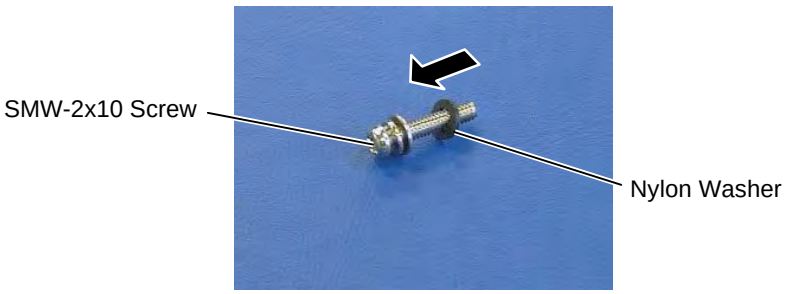


Antenna Frame

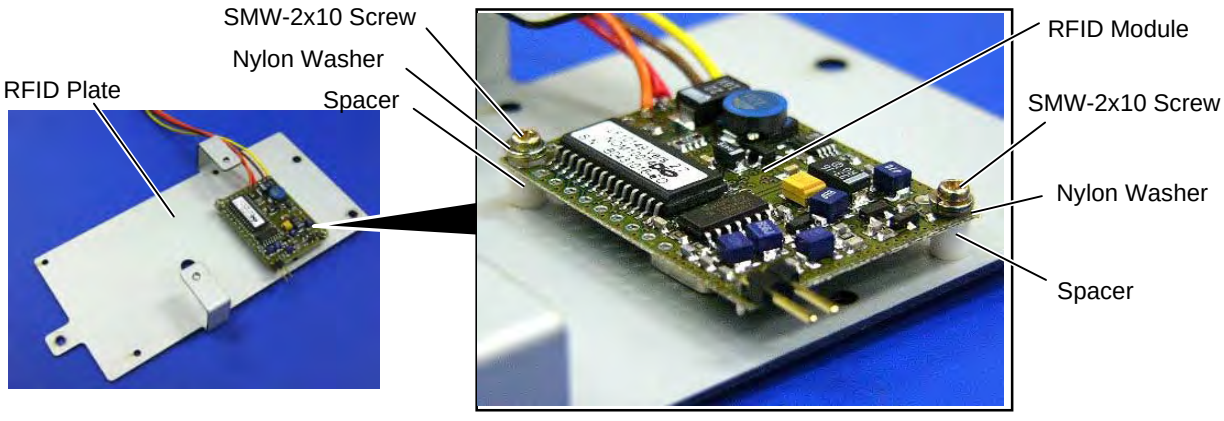


4.11.4. Attaching the RFID Module to the RFID Plate

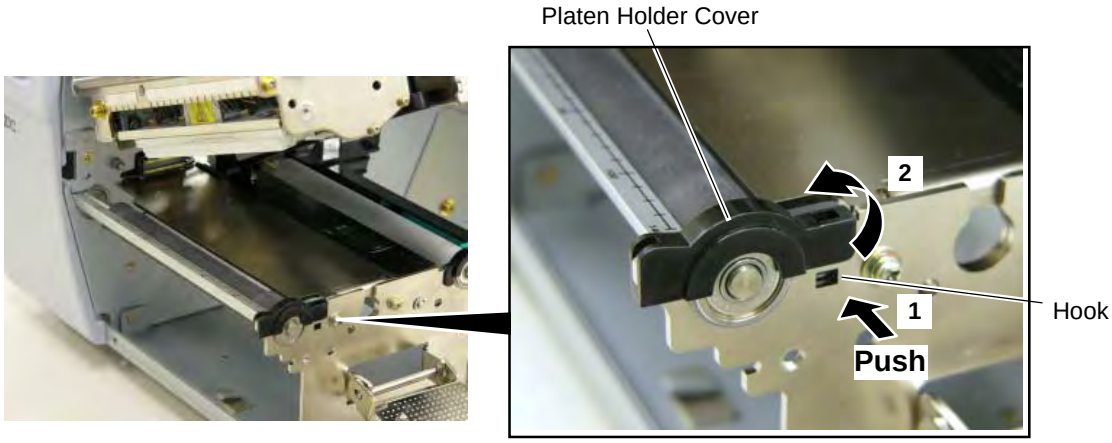
1) Put the Nylon Washer onto the SMW-2x10 Screw. Do the same to the other SMW-2x10 Screw.



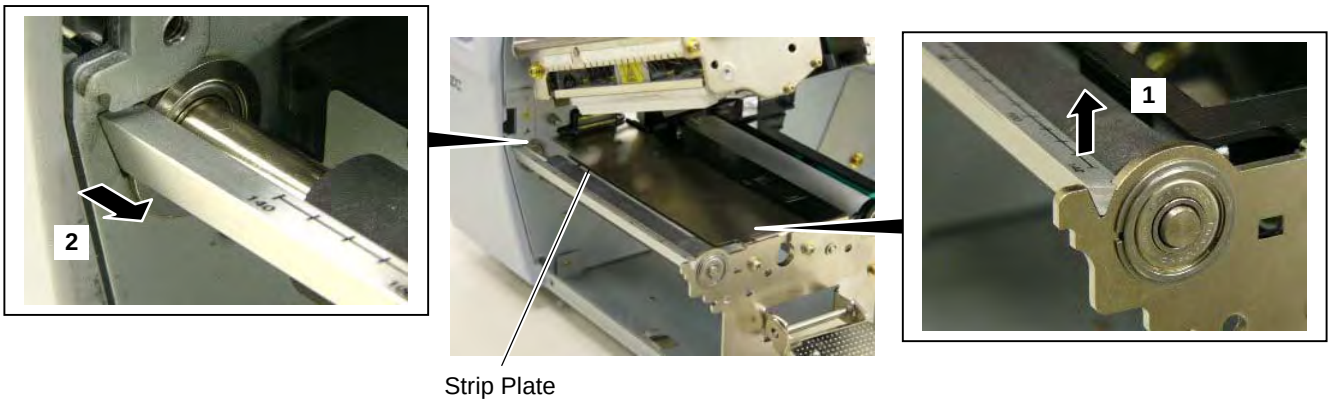
2) Place the RFID Module on the RFID Plate as shown in the picture below. Insert the Spacers under the RFID Module, and secure it to the RFID Plate with the SMW-2x10 Screws.



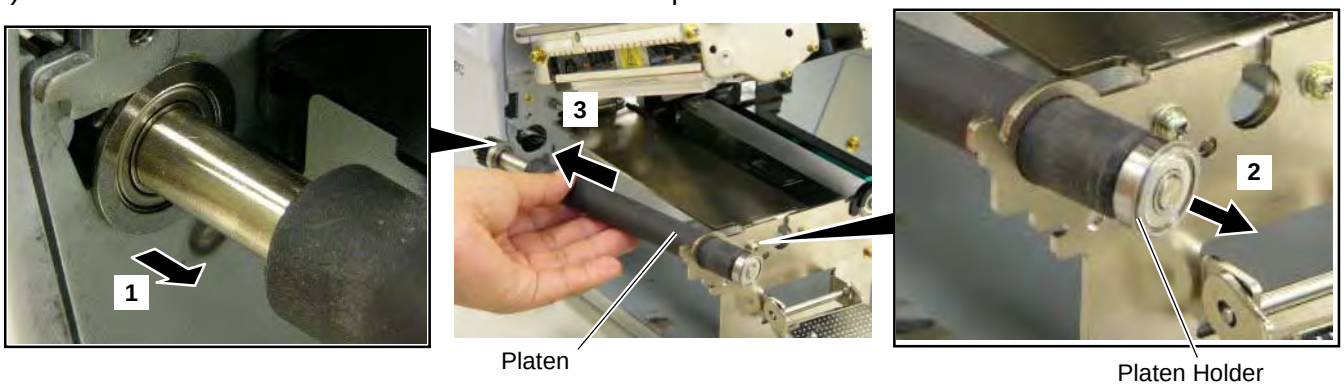
1) Remove the two black screws to detach the front plate. (Refer to section 4.1.)
2) Remove the side panel (L) from the printer. (Refer to section 3.2.)
3) Push the Hook through the rectangle hole with a jeweler's screw driver or something, and remove the Platen Holder Cover in the direction indicated by the arrow.



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

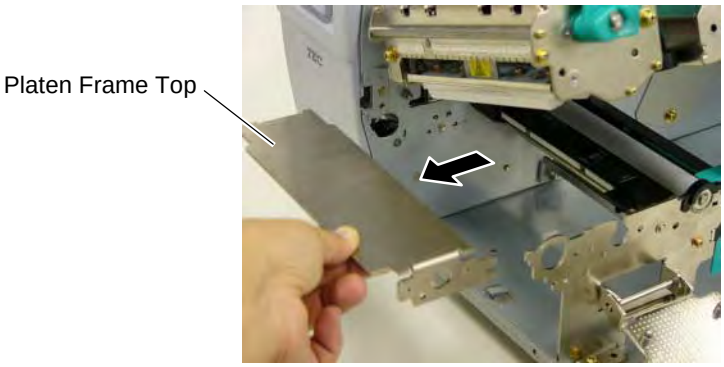


5) Remove the Platen and the Platen Holder in steps 1 to 3 as shown below.

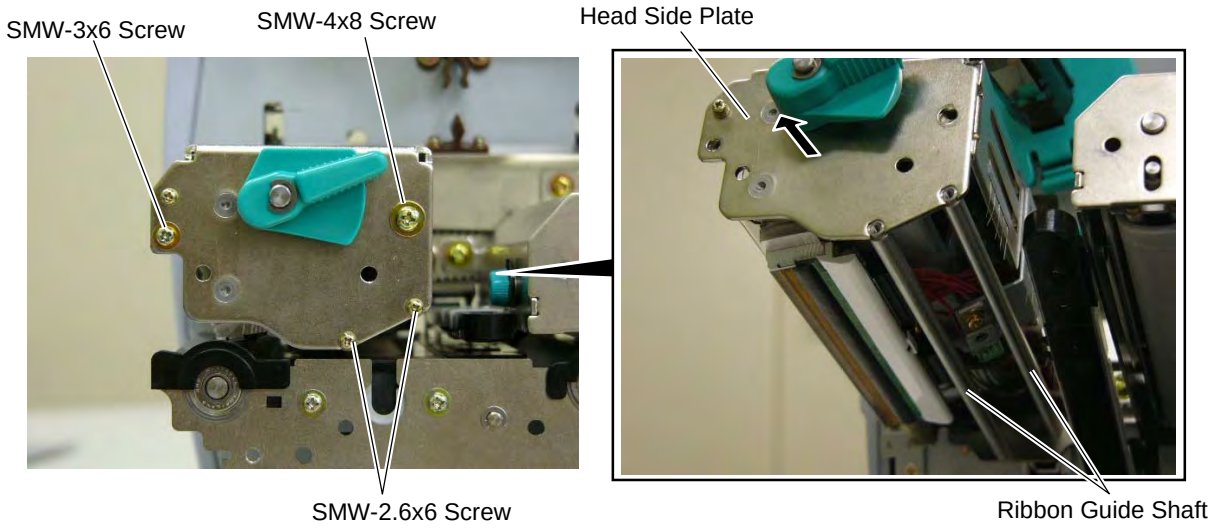


6) Remove the following three screws.

7) Remove the Platen Frame Top from the printer.

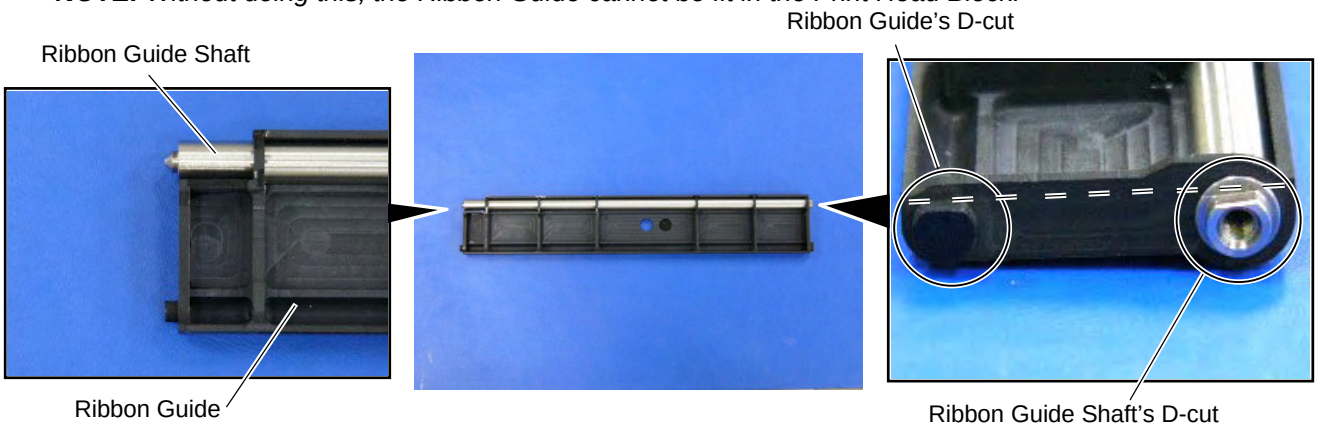


8) Remove the four screws from the side of the Print Head Block, slightly pull the Head Side Plate, and remove the two Ribbon Guide Shafts.

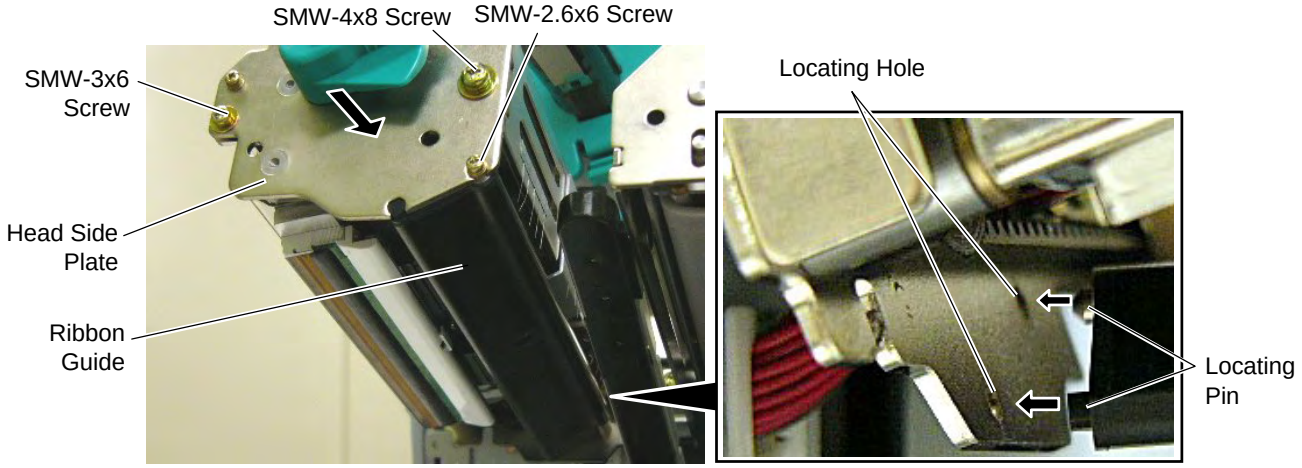


NOTE: *One of the removed Ribbon Guide Shafts and SMW-2.6x6 Screws are re-used when attaching the Ribbon Guide. Keep the unused ones for future use.*

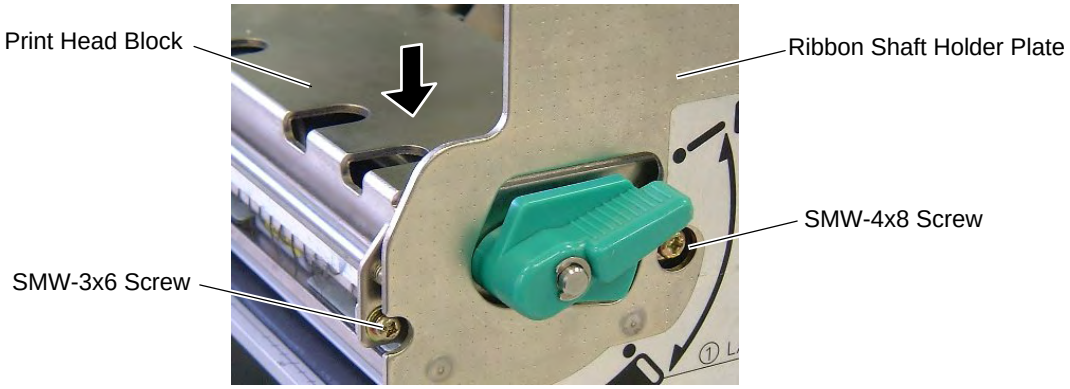
9) Insert one of the Ribbon Guide Shafts removed in Step 12 into the Ribbon Guide. Rotate the Ribbon Guide Shaft so that its D-cut is in the same orientation with the Ribbon Guide's D-cut.
NOTE: *Without doing this, the Ribbon Guide cannot be fit in the Print Head Block.*



10) 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.

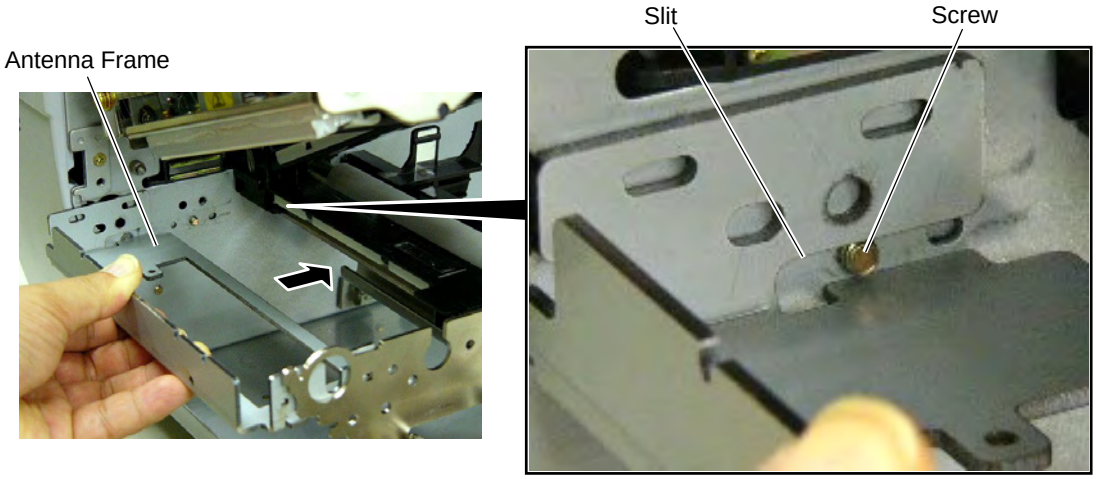


11) Close the Ribbon Shaft Holder Plate, and tighten the two screws, which were temporarily tightened in Step 14, while holding down the Print Head Block.

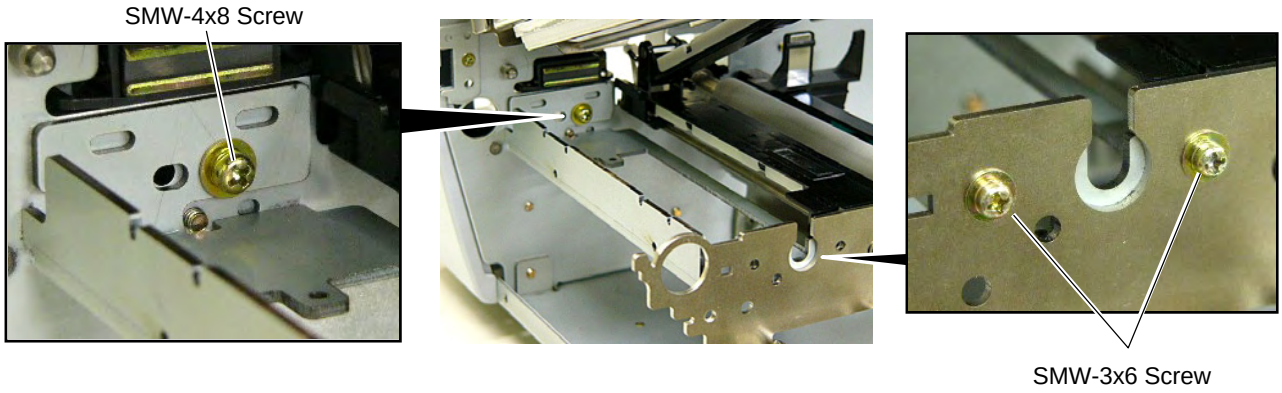


4.11.5 Attaching the RFID Module

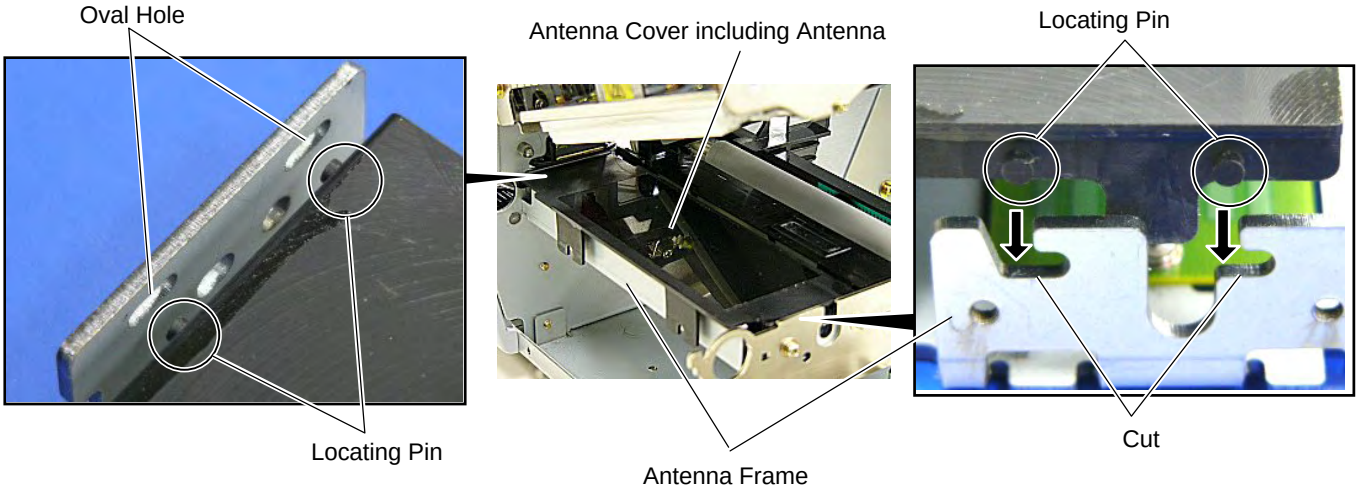
1) Raise the Print Head Block, and slide the Antenna Frame into the printer as shown below. Let the protruding screw of the printer pass through the slit of the Antenna Frame.



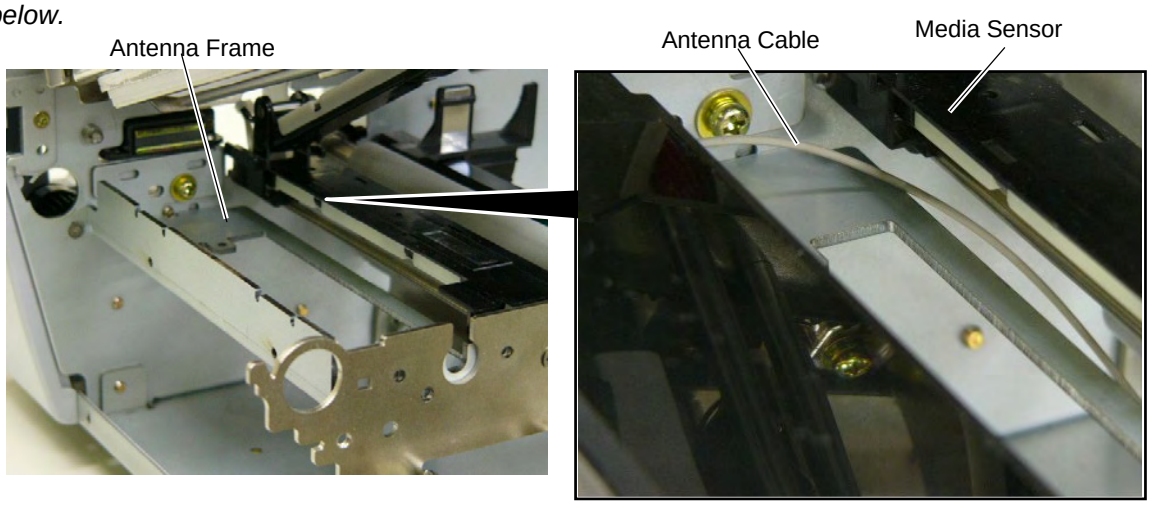
2) Secure the Antenna Frame with the three screws removed in Step 10 of Section 3.1.



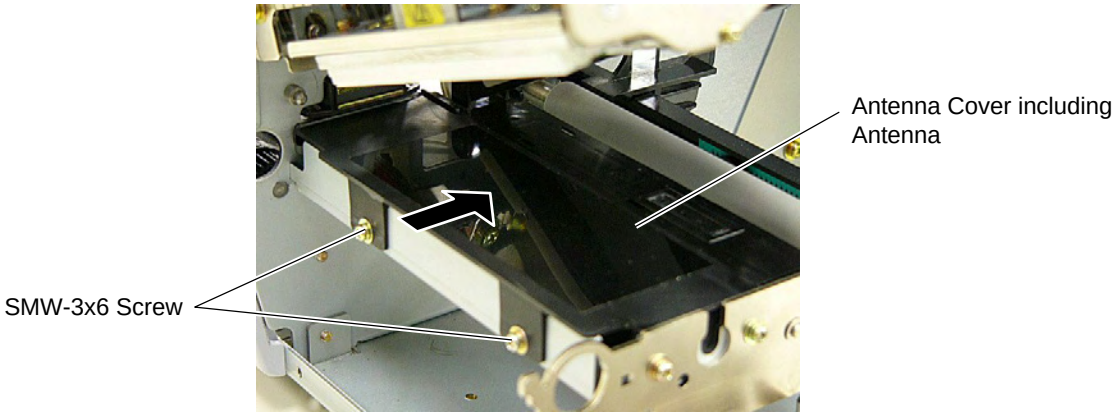
3) Mount the Antenna Cover containing the Antenna on the inside of the Antenna Frame.
Be sure to fit the locating pins of the Antenna Cover into the oval holes and the cuts in the Antenna Frame.



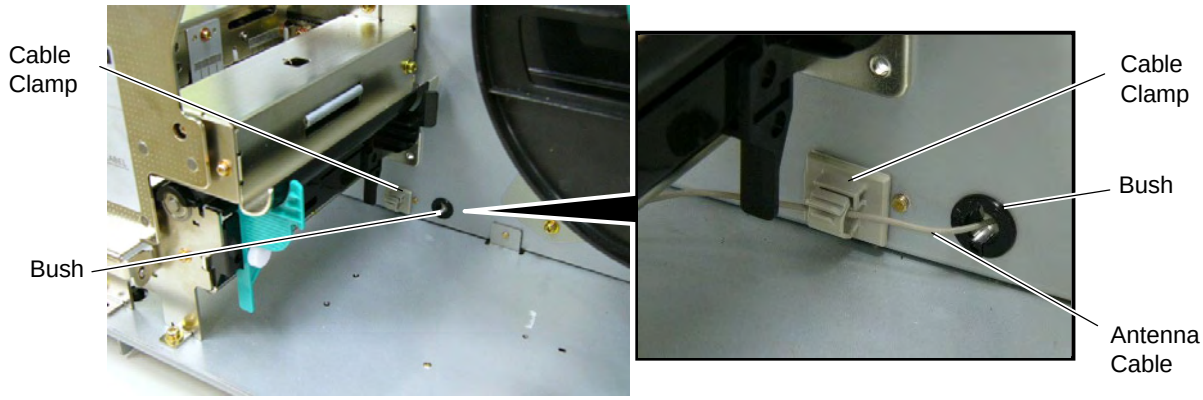
NOTE: *Pass the Antenna Cable between the Antenna Frame and the Media Sensor as shown in the picture below.*



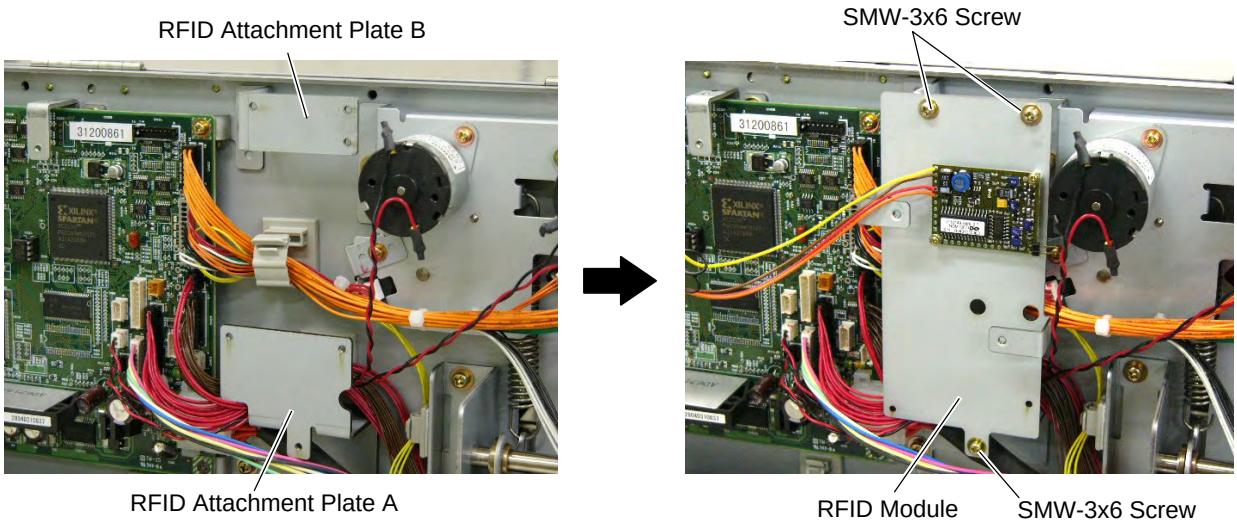
4) Push the Antenna Cover backward, and secure it with the two SMW-3x6 screws.



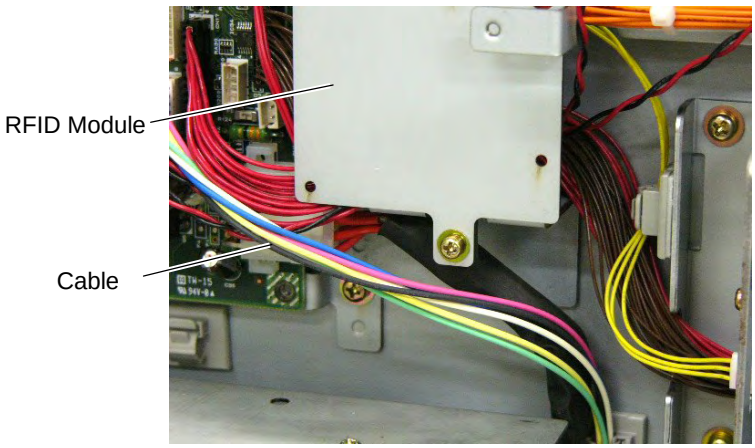
5) Attach the Cable Clamp to and fit the Bush into the positions shown in the picture below.
6) Pass the Antenna Cable through the Bush, and fix the cable with the Cable Clamp



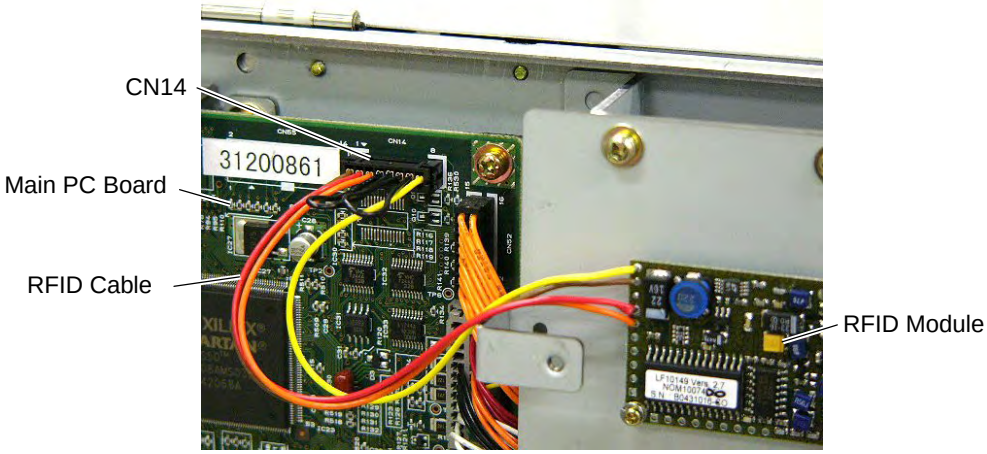
7) Attach the RFID Module to the RFID Attachment Plate A and the RFID Attachment Plate B with the three SMW-3x6 screws.



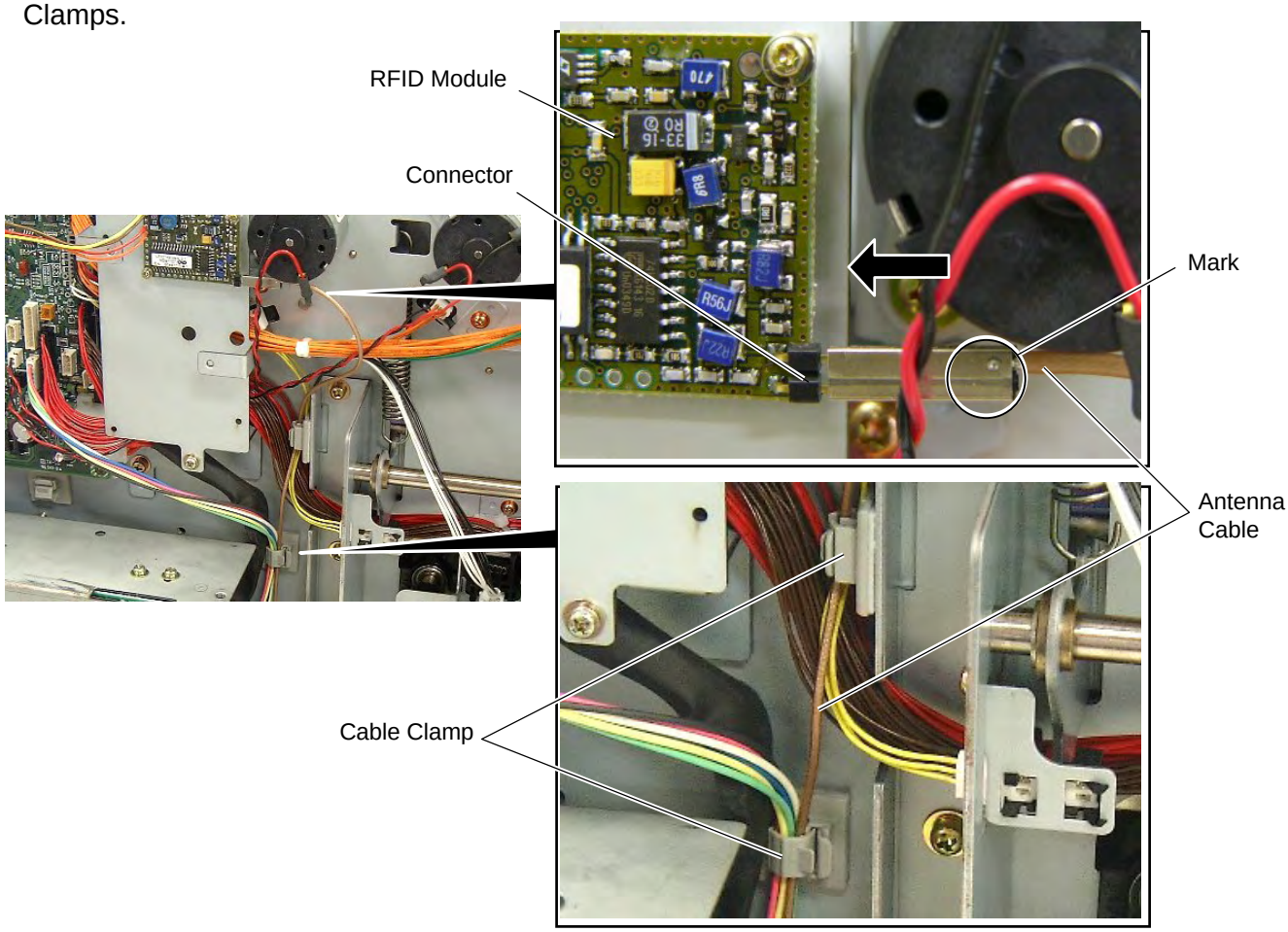
***NOTE**: Care should be taken not to catch the cables between the RFID Module and the RFID Attachment Plate A.*



8) Connect the RFID Cable of the RFID Module to CN14 on the Main PC Board.



9) Connect the Antenna Cable to the RFID Module until it clicks. To prevent the Antenna Cable from being caught in the Side Panel (L) or Fan Motor, fold the cable and fix it with the two Cable Clamps.



10) Attach the Side Cover (L), the Front Plate, the Platen Holder Cover, the Platen, and the Strip Plate in the reverse order of removal. Refer to Section 4 to program the RFID Module and perform an operation check.

NOTE: *When attaching the Side Cover (L), carefully lead the Fan Motor Harness so that it does not get sucked into the Fan Motor.*

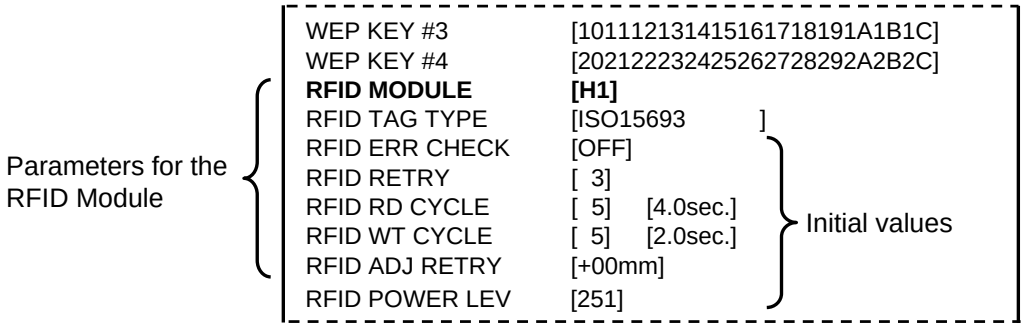
4.11.6 Parameter Setting and Operation Check for the RFID Module

After installing the RFID Module in the printer, set the parameters for the RFID and perform an operation check by using the following procedures. For details, please refer to the Maintenance Manual.

1) Start the printer in the System Mode, and check the program version. When the program version is V3.1 or older, go to Step 2). When the program version is V4.1 or greater, go to Step 3).
2) When the program version is V3.1 or older, upgrade it to V4.1 or greater in the following order. Please obtain the latest firmware from http://barcode.toshibatec.co.jp/Ris/products/barcode/support/en/contents/software/index.html
   (1) Print the Maintenance Counter/Parameter Setting to keep the record of the printer's parameter settings. (Refer to Section 5.3.)
   (2) Download the firmware from the above web site, and upgrade the firmware version of the printer. (Refer to Section 7.)
   (3) Perform a Parameter Clear. (Refer to Section 5.8.)
   (4) Return the all parameter settings except for RFID Module to the former ones.
3) Change the parameter setting of the RFID Module from "NONE" to "H1". Choosing "NONE" or "U1" results in NG (No good) at the self diagnostic test even if the RFID Module is properly connected.
4) Change the parameter setting of the RFID tag type to a proper one.
5) Print the Maintenance Counter/Parameter Settings and the Self-Diagnostic Test result to confirm the RFID Module status.

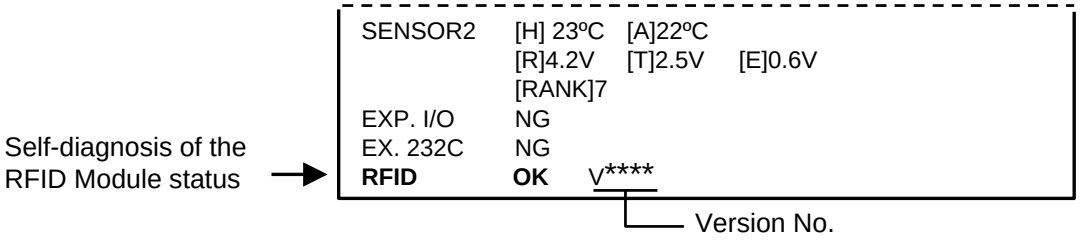
Maintenance Counter/Parameter Settings Label (Example)

Make sure that [H1] is selected and other parameters for the RFID Module are printed as follows.



Self-Diagnostic Test Label (Example)

Make sure that "**RFID OK"** is printed.



5) If "RFID NG" (No Good) is printed, check the cable connections and parameter settings related to the RFID Module again.
6) Try a read and write of the RFID tag by using the RFID Analyze Tool. When you do not have a PC at hand, perform a simplified read test in the system mode to confirm the data can be read. In case that the read/write accuracy needs to be enhanced, make an adjustment of the parameter setting in the System Mode. (Refer to Section 11 and Section 5.2.)

NOTE: *Available RFID tags*
*TAGSYS (C210, C220, C240, C320) *C320 is available only when the TAGSYS S003 module is used.)*
I-Code
Tag-It
ISO 15693

4.12 SWING CUTTER (B-4205-QM-R)

WARNING!
1. 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.* *2. Turn the power off and disconnect the power cord before installing the swing cutter module.* *3. Be careful not to injure your fingers when installing the swing cutter module.* *4. Be careful not to pinch your fingers or hands with the covers.*

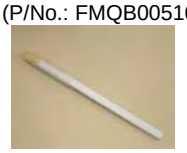
4.12.1 Applicable Model

This optional kit is the swing cutter module, which is intended for the following models:

B-SX4T-QM-R Series, B-SX5T-QM-R Series

4.12.2. Packing List

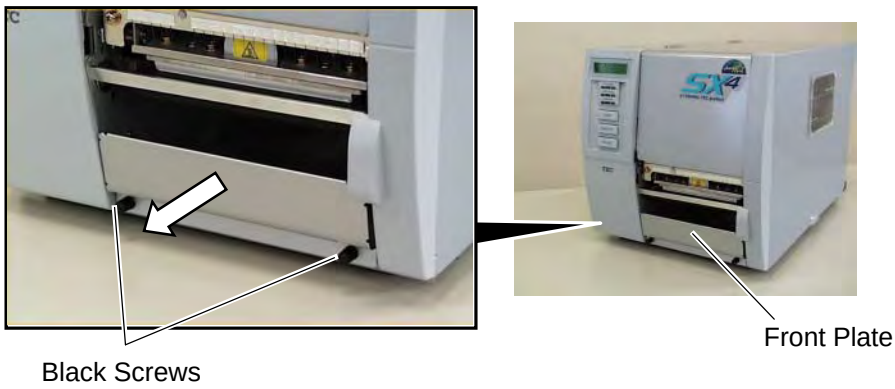
All the following parts are supplied with the kit. Make sure you have all items shown below.

Cutter Unit (1 pc.) 	Cutter Cover (1 pc.) 	Take-up/Cutter Harness (1 pc.) 	Print Head Cleaner (1 pc.) (P/No.: FMQB0051601) 
Cutter Attachment Screw (2 pcs.) 	Bush (1 pc.) (For B-SX4T/5T series) 	• Installation manual (1 copy) • FL-4x6 Screw (1 pc.)	

4.12.3 Installation Procedure

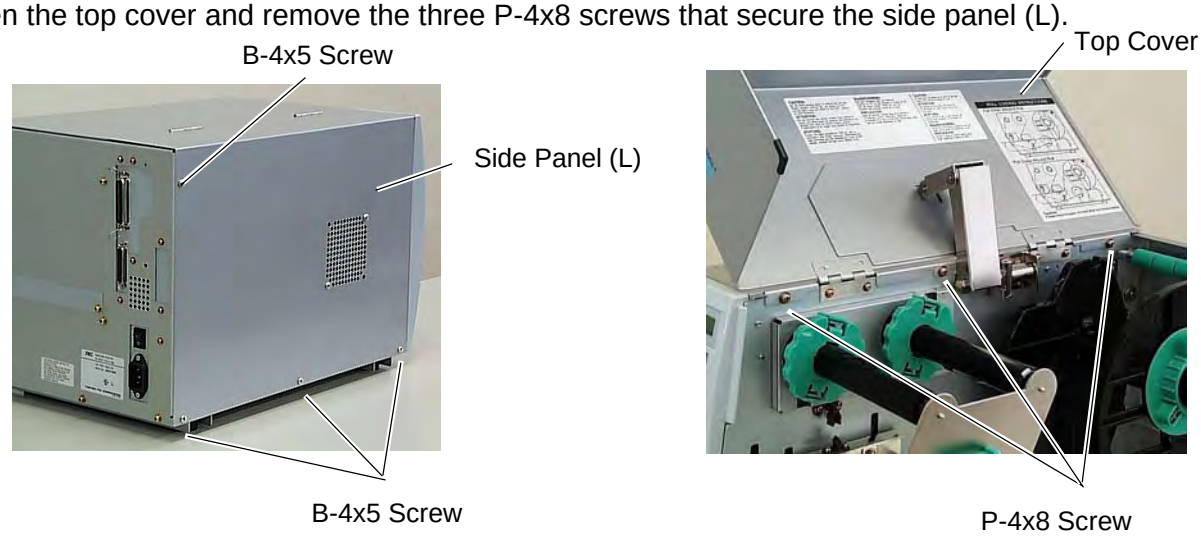
4.12.3.1 Installing the Swing Cutter Module on the B-SX4T Series

1) Turn the power off and disconnect the power cord.
2) Remove the two black screws to detach the front plate.

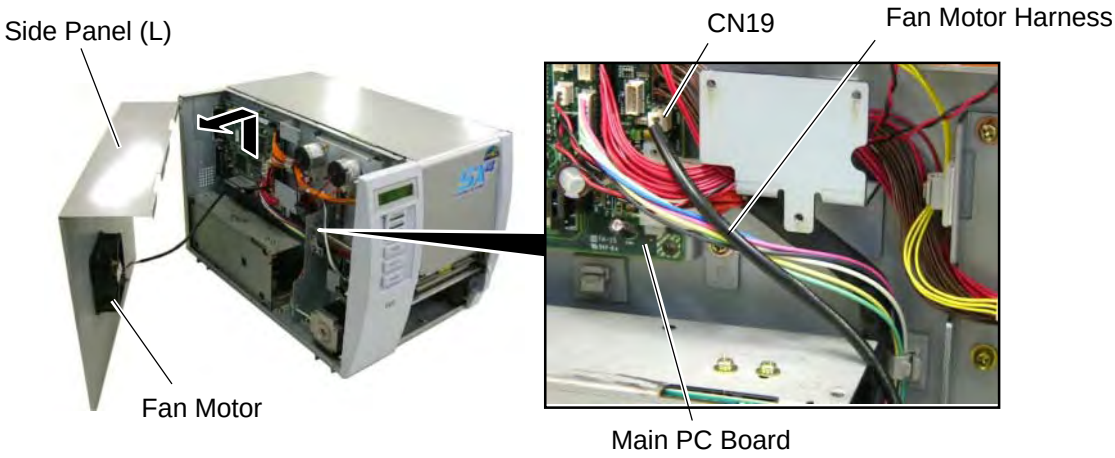


NOTE *Retain the two black screws and front plate.*

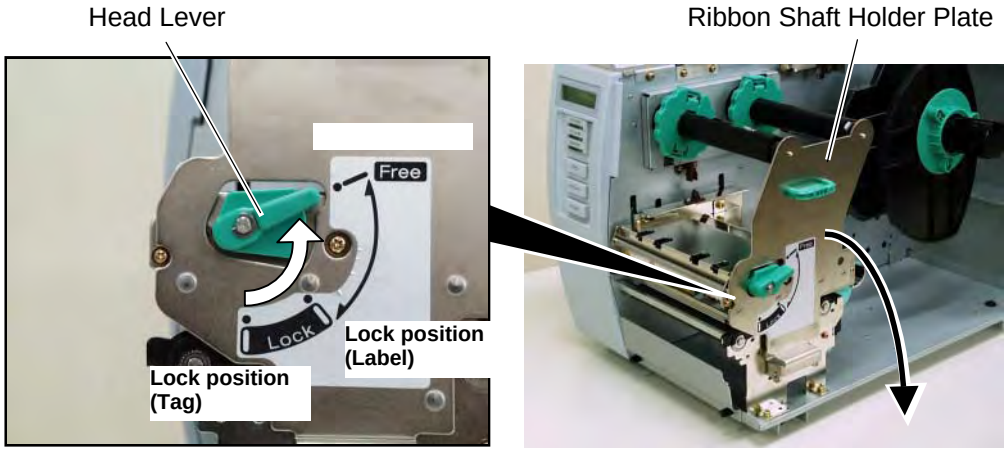
3) Remove the four B-4x5 screws from the side panel (L).
4) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).



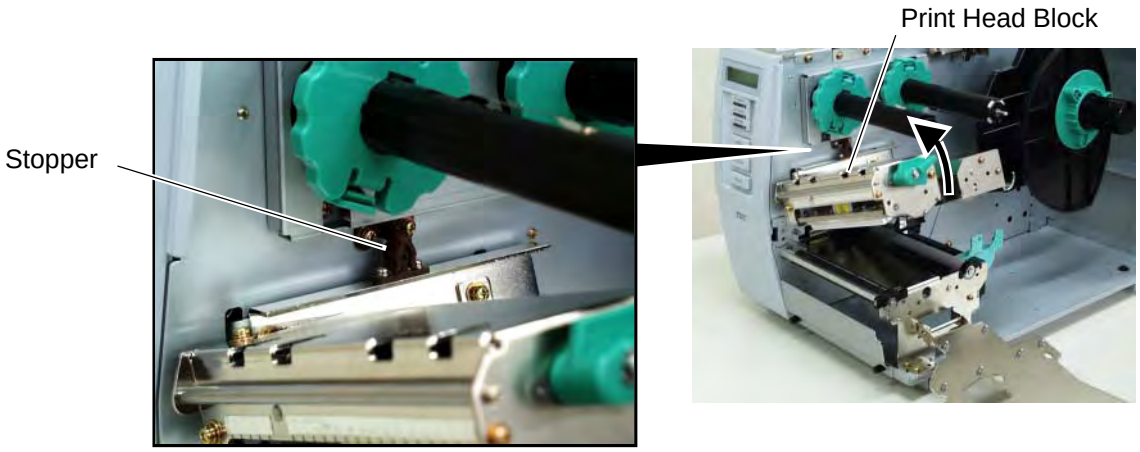
5) Lift the side panel (L) and put it aside.
6) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).



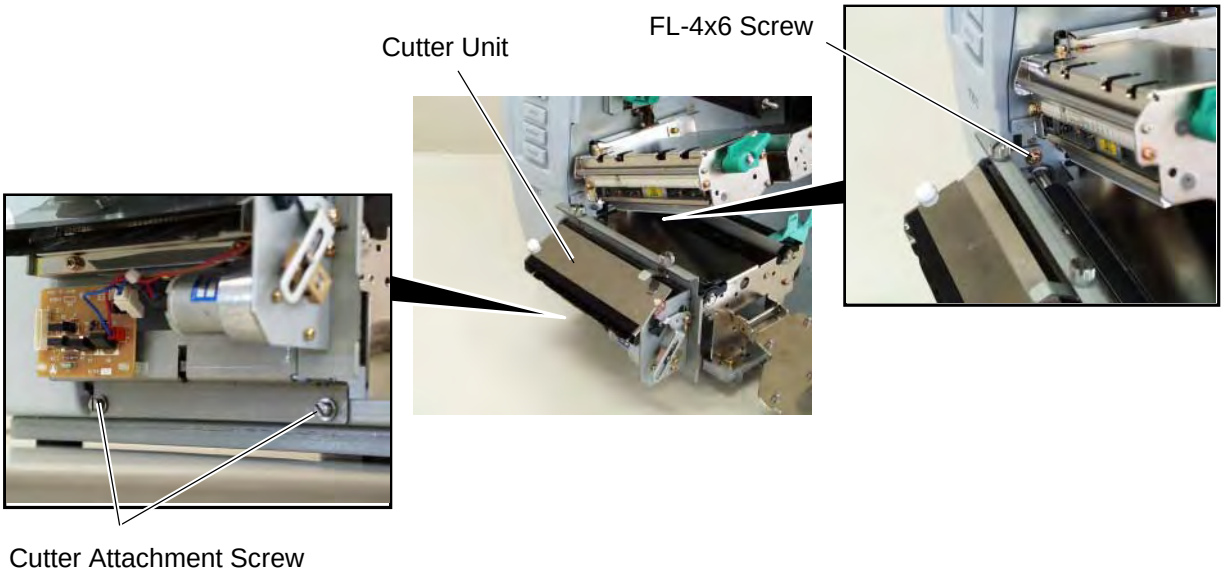
7) Turn the head lever clockwise to **Free** position.
8) Open the ribbon shaft holder plate.



9) Raise the print head block until it stops.

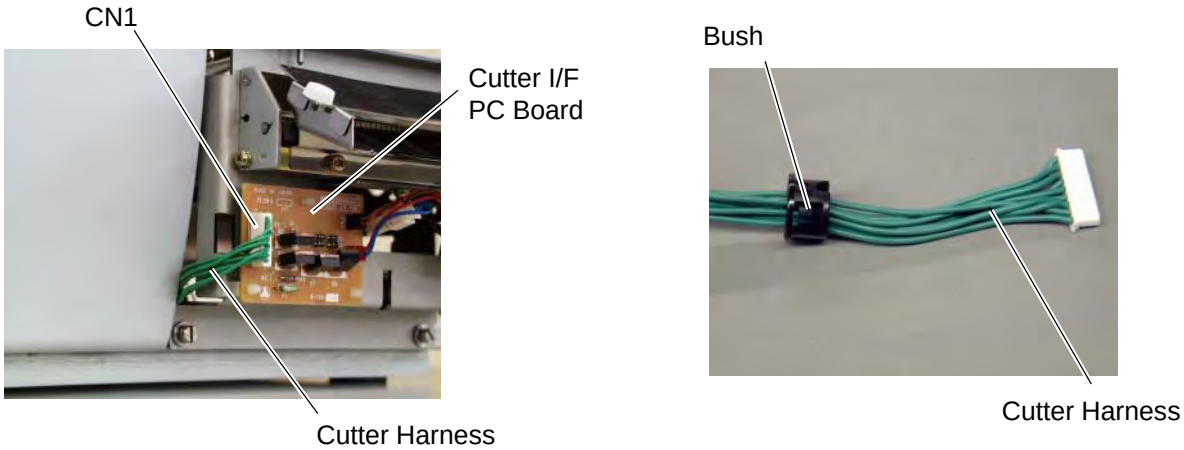


10) Attach the cutter unit to the front of the printer with the cutter attachment screws and the FL-4x6 screw.

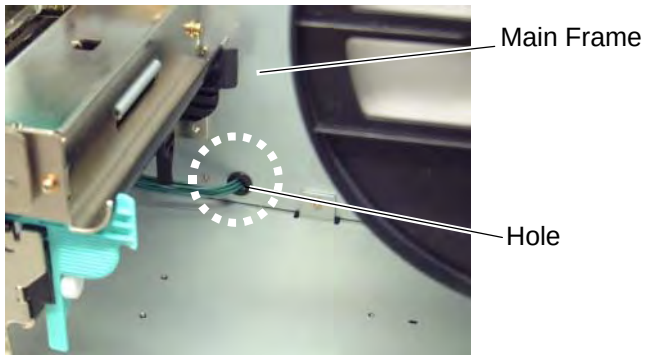


11) Connect the Cutter Harness to CN1 on the Cutter I/F PC Board.

12) Fit the bush to the cutter harness in the orientation shown below.



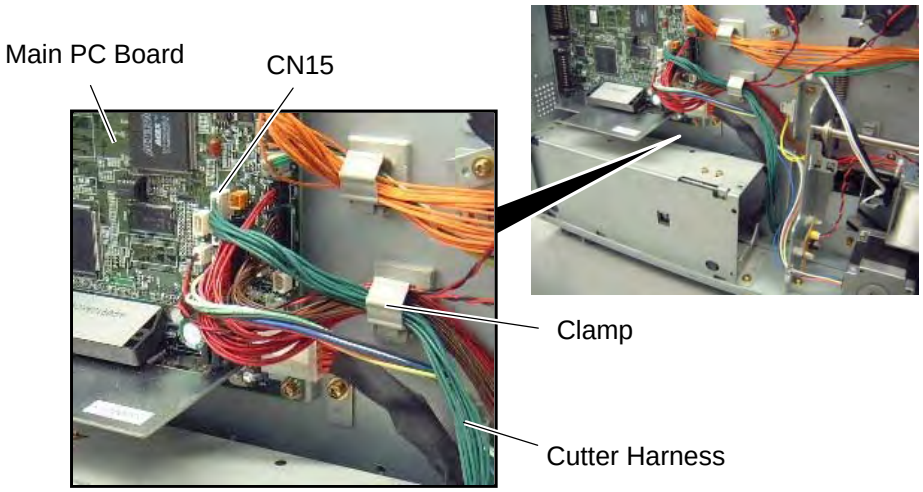
13) Insert the cutter harness into the gap between the cutter unit and the printer, and then into the hole in the main frame. Fit the bush into the hole.



14) Close the print head block and ribbon shaft holder plate.

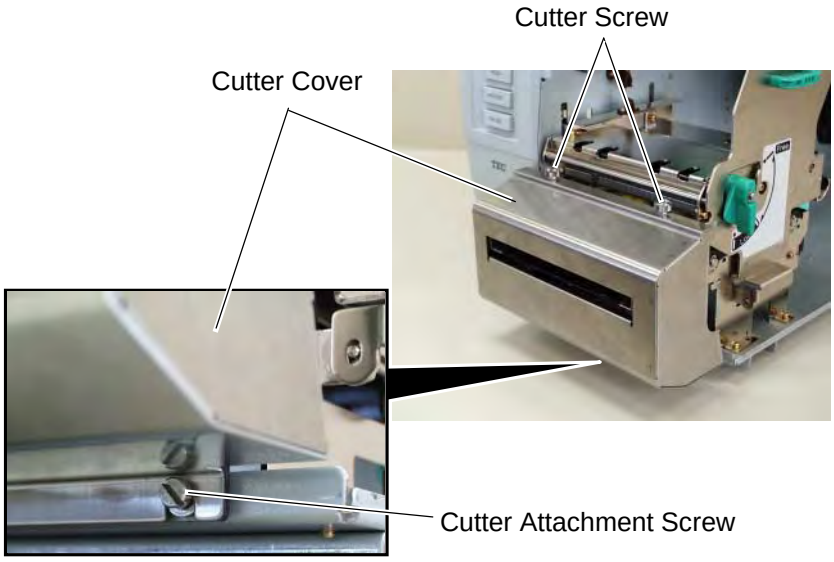
NOTE: *DO NOT excessively push down the print head block to close it. Doing so may cause a failure of the print head block or damage to the print head.*

15) Fix the cutter harness with the clamp and connect it to CN15 on the Main PC Board.



16) Fit the cutter cover on the cutter attachment screws, and fix it to the cutter unit with the two cutter screws.

NOTE: *Be careful not to pinch the cutter harness by the cutter cover.*

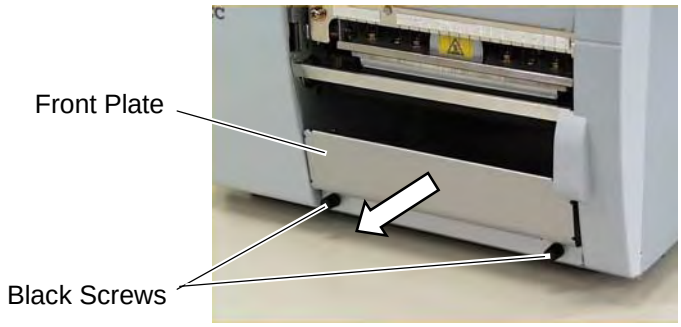


17) Reassemble the side panel (L) and close the top cover. Finally check the cutter operation.

4.12.3.2 Installing the Swing Cutter Module on the B-SX5T Series

Since the strip module is standard on the B-SX5T series, it is necessary to remove the rewinder guide plate, strip sensor, etc. before installing the cutter module.

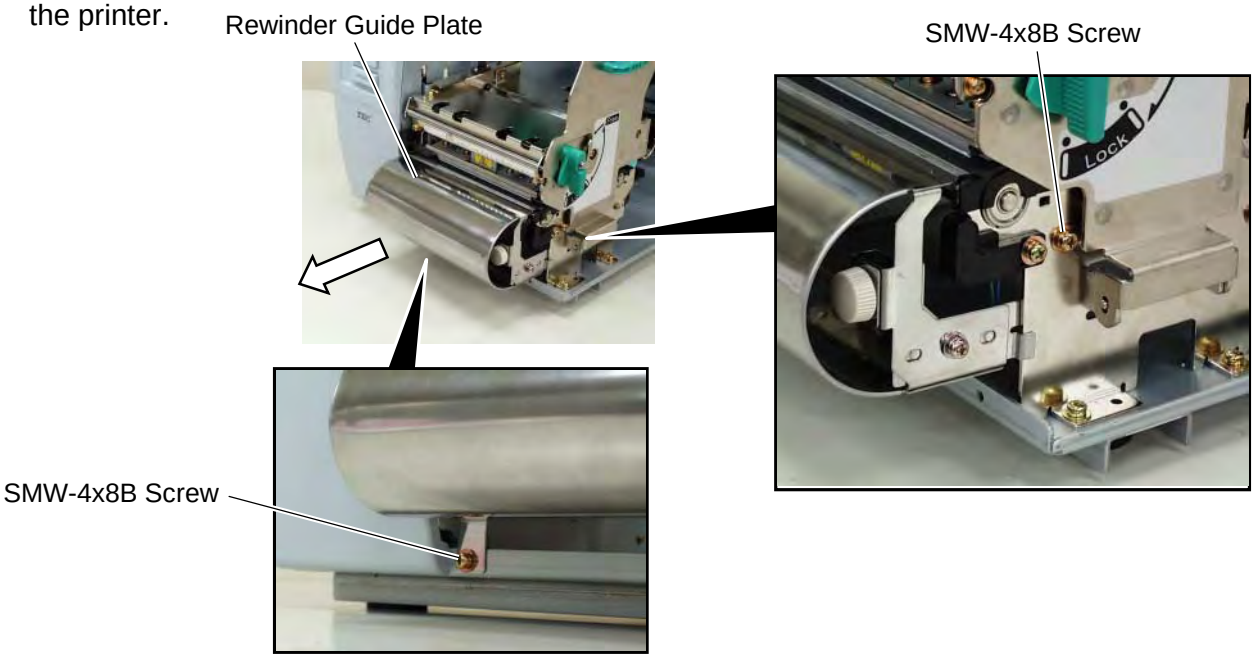
1) Turn the power off and disconnect the power cord.
2) When the printer is used in the batch or strip mode:
   Remove the two black screws to detach the front plate.



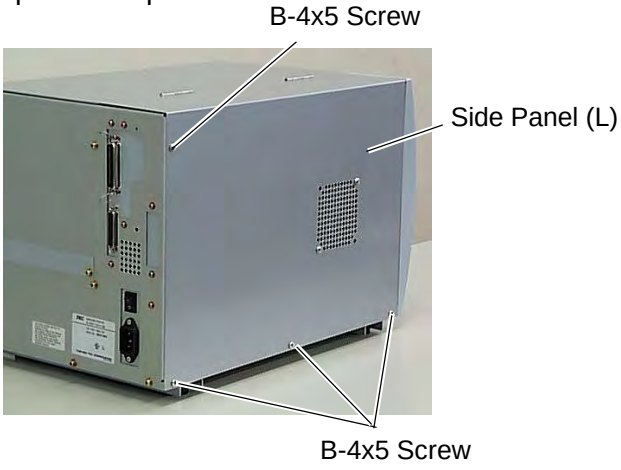
NOTE: *Retain the two black screws and front plate.*

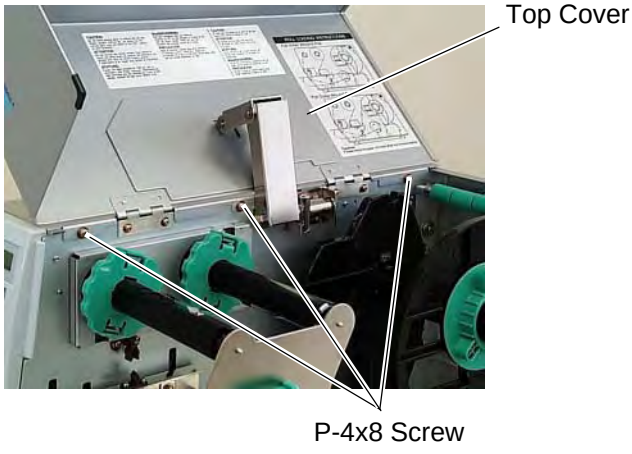
When the printer is used in the built-in rewinder mode:

Open the top cover, remove the two SMW-4x8 screws, and detach the rewinder guide plate from the printer.



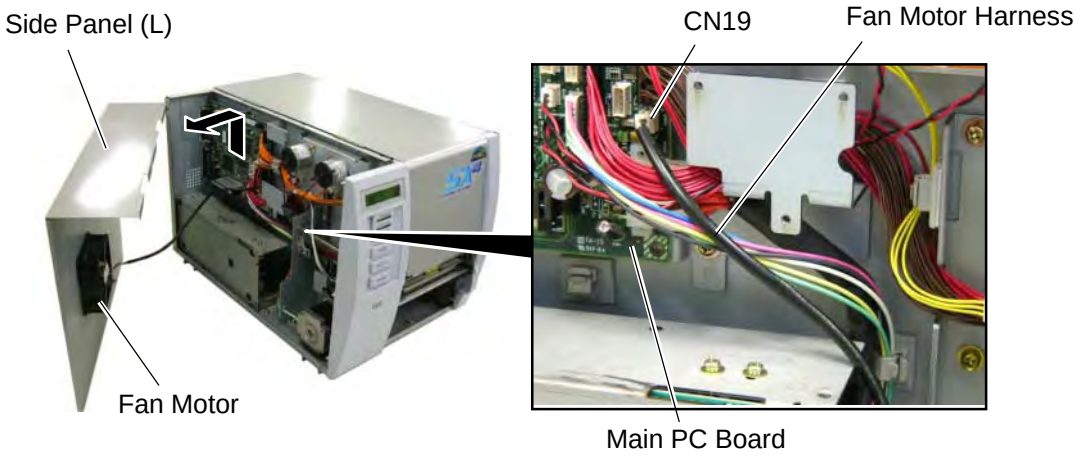
3) Remove the four B-4x5 screws from the side panel (L).
4) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).



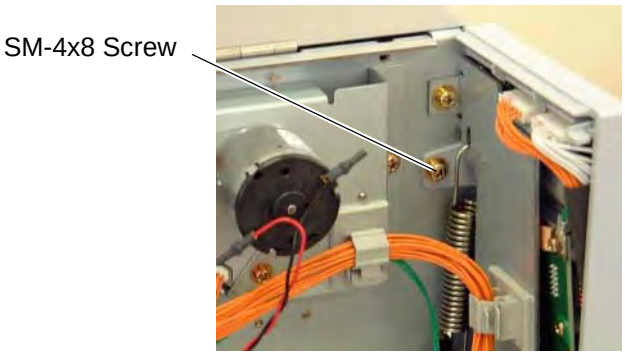


5) Lift the side panel (L) and put it aside.

6) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).



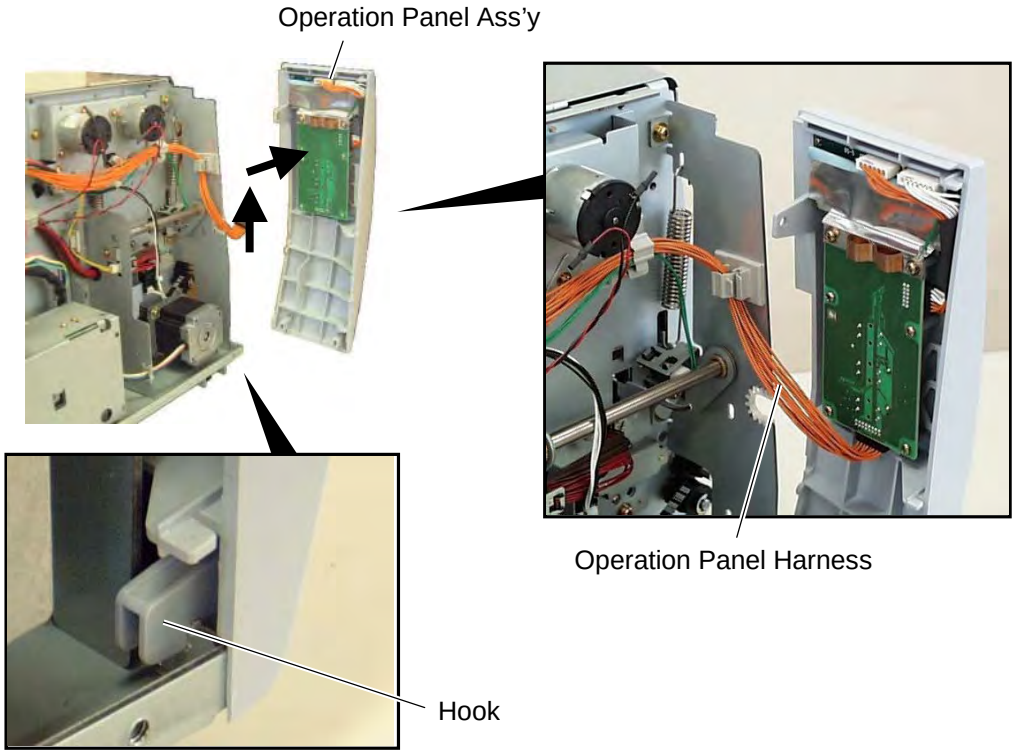
7) Remove the SM-4x8 screw that secures the operation panel ass'y.



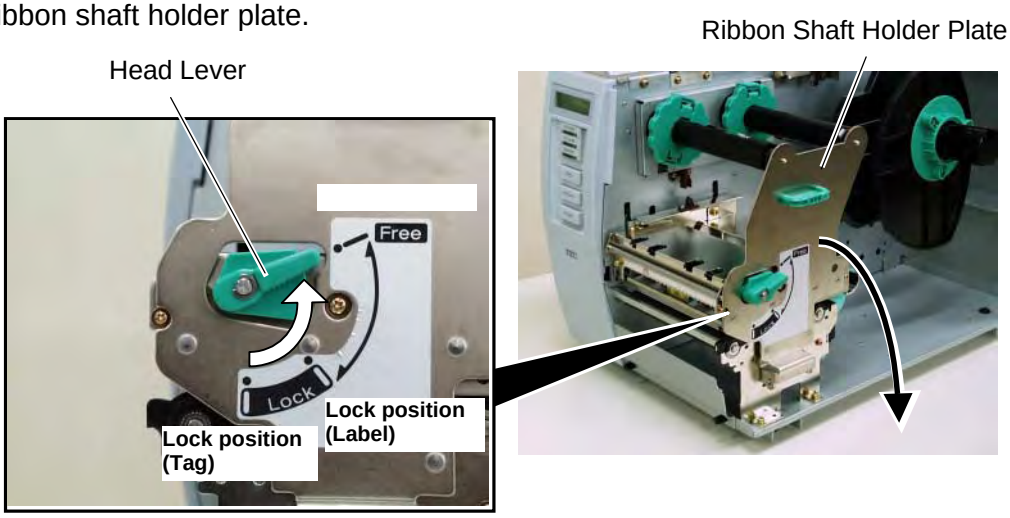
8) Half open the top cover, otherwise the operation panel ass'y cannot be removed from the printer.

9) Lift the operation panel ass'y to release the hook, and then remove the operation panel ass'y by moving it forward.

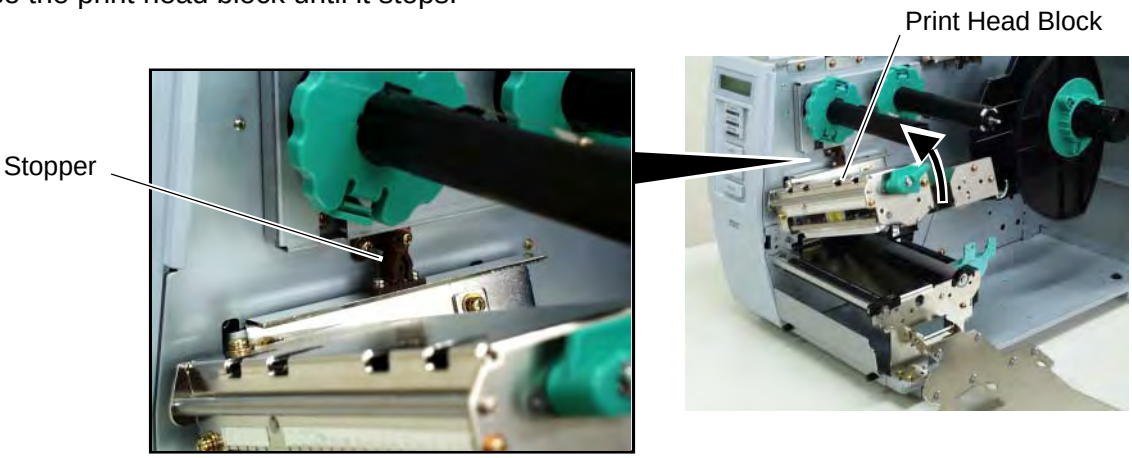
Disconnect the operation panel harness from the operation panel ass'y.



11) Turn the head lever clockwise to **Free** position.
12) Open the ribbon shaft holder plate.

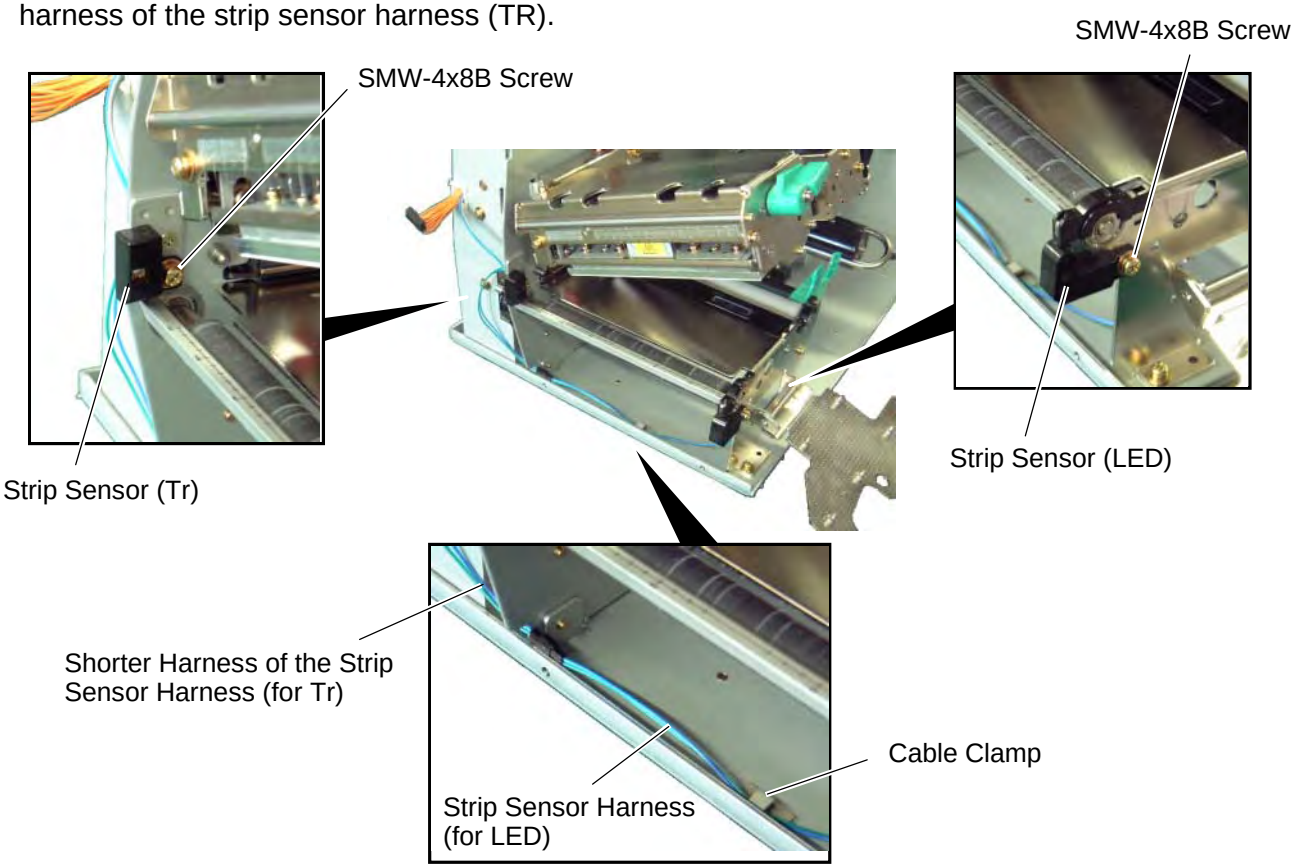


13) Raise the print head block until it stops.

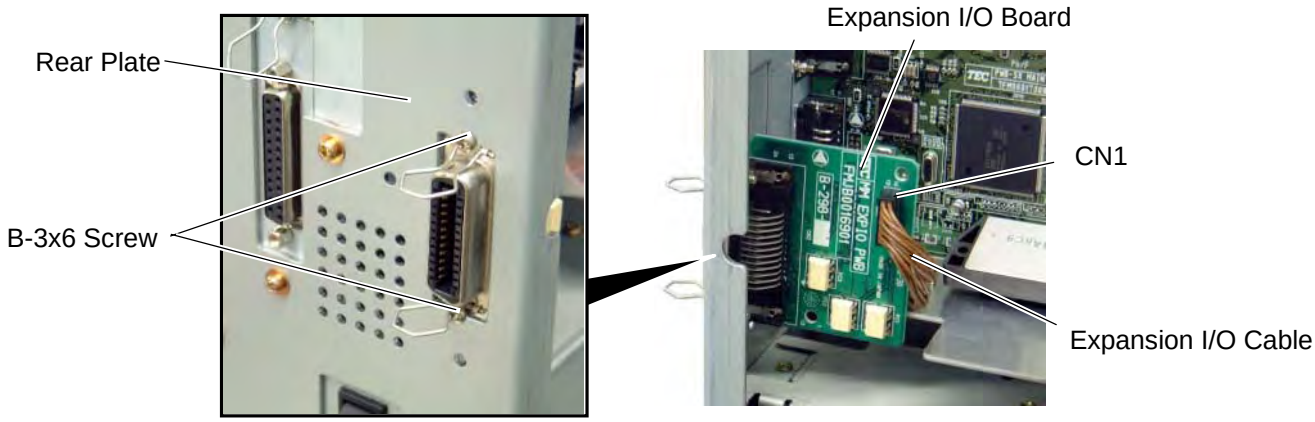


14) Remove the two SMW-4x8 screws that secure the strip sensors (TR) and (LED).

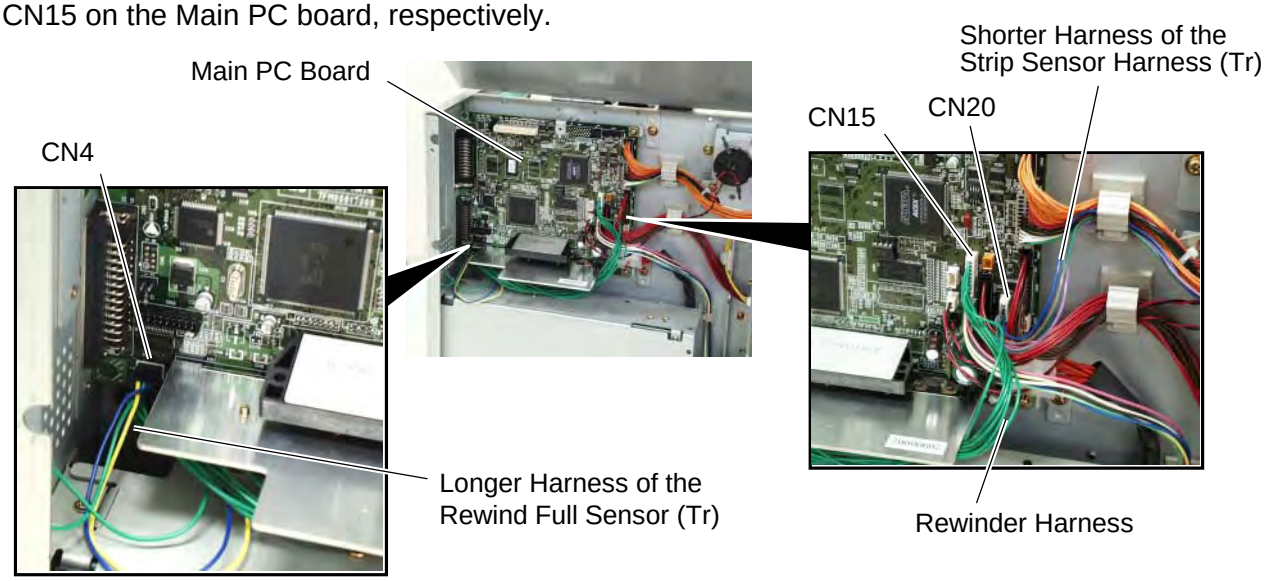
15) Release the strip sensor (LED) harness from the cable clamp, and disconnect it from the shorter harness of the strip sensor harness (TR).



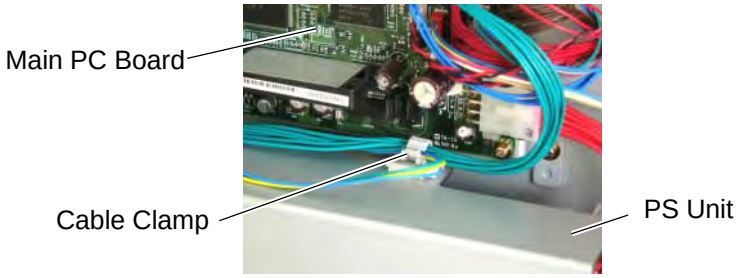
16) Remove the Expansion I/O board from the printer temporarily using the following procedure.
   (1) Disconnect the Expansion I/O cable from CN1 on the Expansion I/O board.
   (2) Remove the two B-3x6 screws to detach the Expansion I/O board from the printer.



17) Disconnect the shorter harness of the strip sensor harness (TR) from CN20 on the Main PC board. Then remove the strip sensor (TR) from the printer.
   NOTE: *Retain the strip sensors (TR) and (LED), and the strip sensor harness.*
18) Disconnect the longer harness of the rewind full sensor (TR) and rewinder harness from CN4 and CN15 on the Main PC board, respectively.

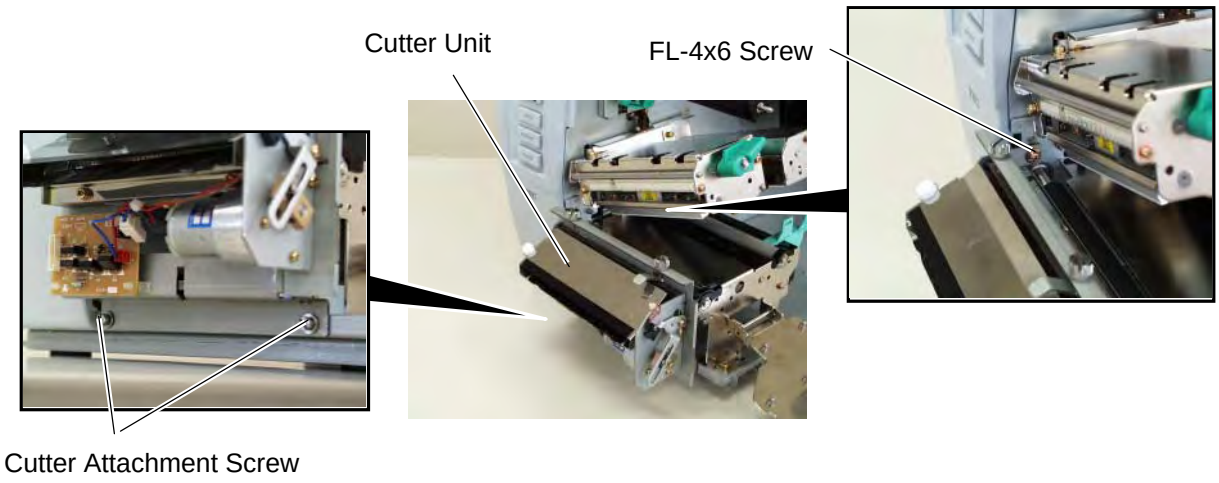


NOTE: *Secure the rewinder harness and the longer harness of the rewind full sensor (TR) to the space under the Main PC board with the cable clamp so that they are not pinched by the covers or printer's internal components.*



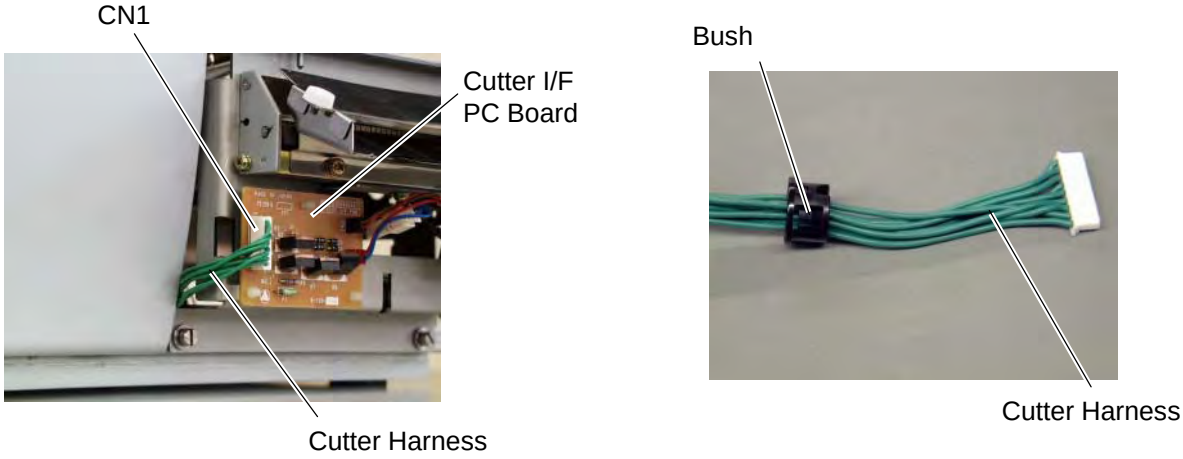
19) Reassemble the operation panel ass'y and the expansion I/O board in the reverse order of removal.

20) Attach the cutter unit to the front of the printer with the cutter attachment screws and the FL-4x6 screw.

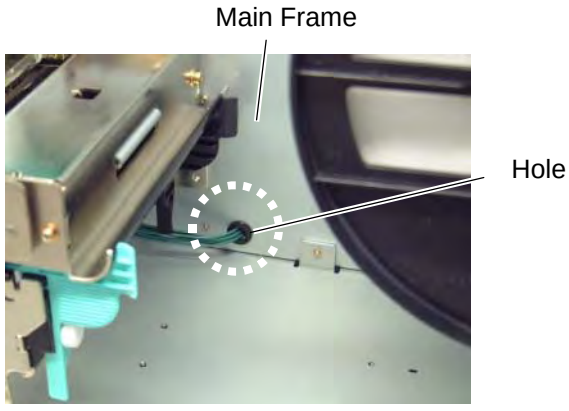


21) Connect the Cutter Harness to CN1 on the Cutter I/F PC Board.

22) Fit the bush to the cutter harness in the orientation shown below.



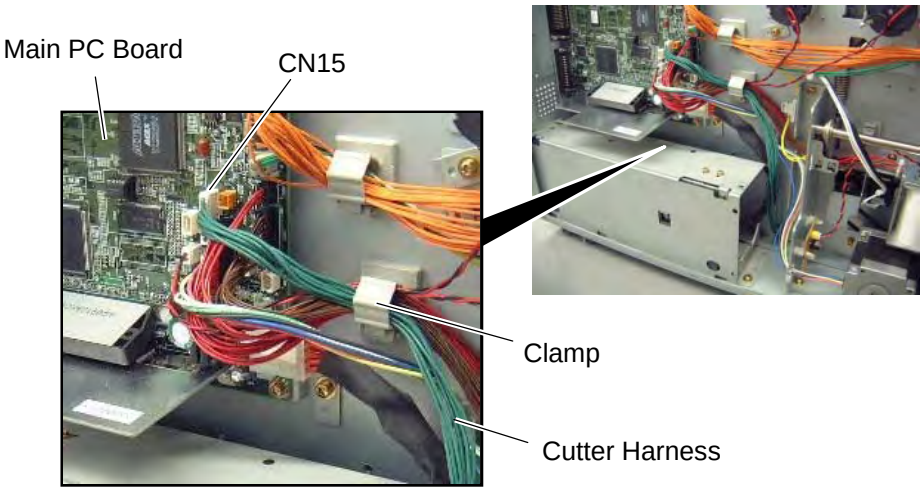
23) Insert the cutter harness into the gap between the cutter unit and the printer, and then into the hole in the main frame. Fit the bush into the hole.



24) Close the print head block and ribbon shaft holder plate.

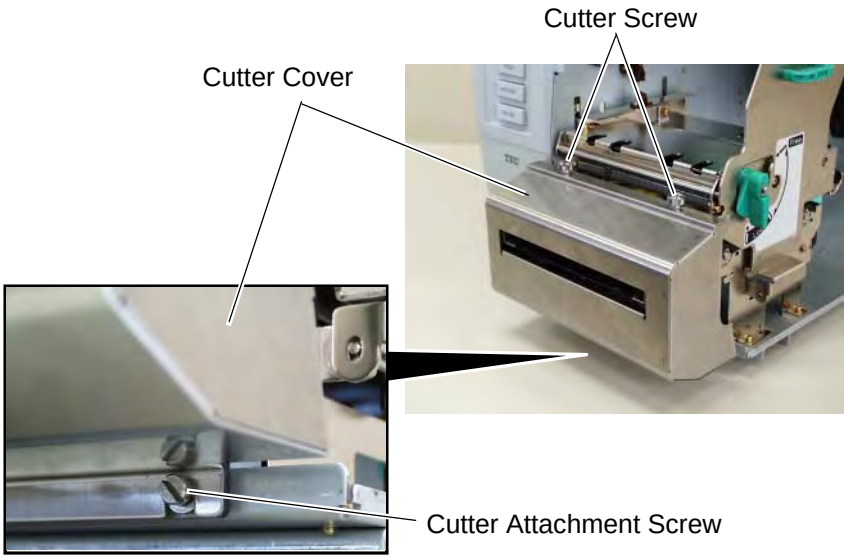
NOTE: *DO NOT excessively push down the print head block to close it. Doing so may cause a failure of the print head block or damage to the print head.*

25) Fix the cutter harness with the clamp and connect it to CN15 on the Main PC Board.



26) Fit the cutter cover on the cutter attachment screws, and fix it to the cutter unit with the two cutter screws.

NOTE: *Be careful not to pinch the cutter harness by the cutter cover.*



27) Reassemble the side panel (L) and close the top cover. Finally check the cutter operation.

4.13 ROTARY CUTTER (B-8204-QM-R)

WARNING!

1. *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.*
2. *Turn the power off and disconnect the power cord before installing the rotary cutter module.*
3. *Be careful not to injure your fingers when installing the swing cutter module.*
4. *Be careful not to pinch your fingers or hands with the covers.*

4.13.1. Applicable Model

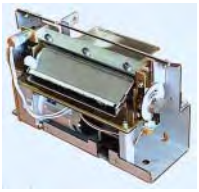
This optional kit is the rotary cutter module, which is intended for the following models:

B-SX4T-QM-R Series, B-SX5T-QM-R Series

NOTE: *When using the Rotary Cutter to the B-SX4T Series, be sure to install the Ribbon Saving Module (B-9904-R2-QM-R). Failure to do this may cause a paper jam or ribbon error.*

4.13.2. Packing List

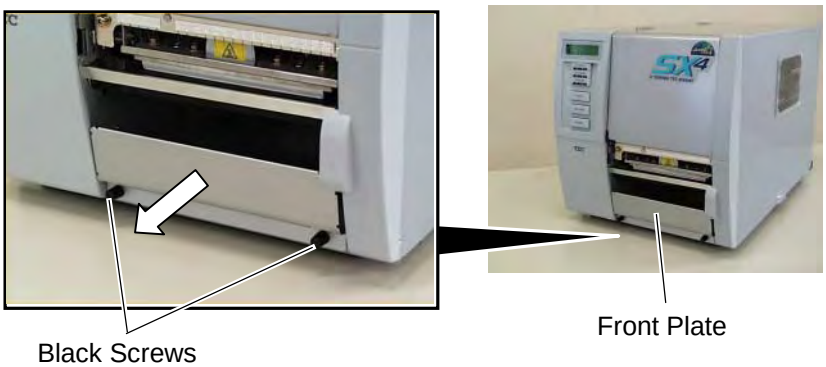
All the following parts are supplied with the kit. Make sure you have all items shown below.

Cutter Unit (1 pc.) 	**Cutter Cover (1 pc.)** 	Cutter Drive Unit (1 pc.) 	Harness Ass'y (2-pin & 9-pin) (1 pc.)
Cord Bush (1 pc.) (For B-SX4 only) 	Print Head Cleaner (1 pc.) (P/No.: FMQB0051601) 	• Installation Manual (1 copy) • SM-4x8 Screw (6 pcs.)	

4.13.3 Installation Procedure

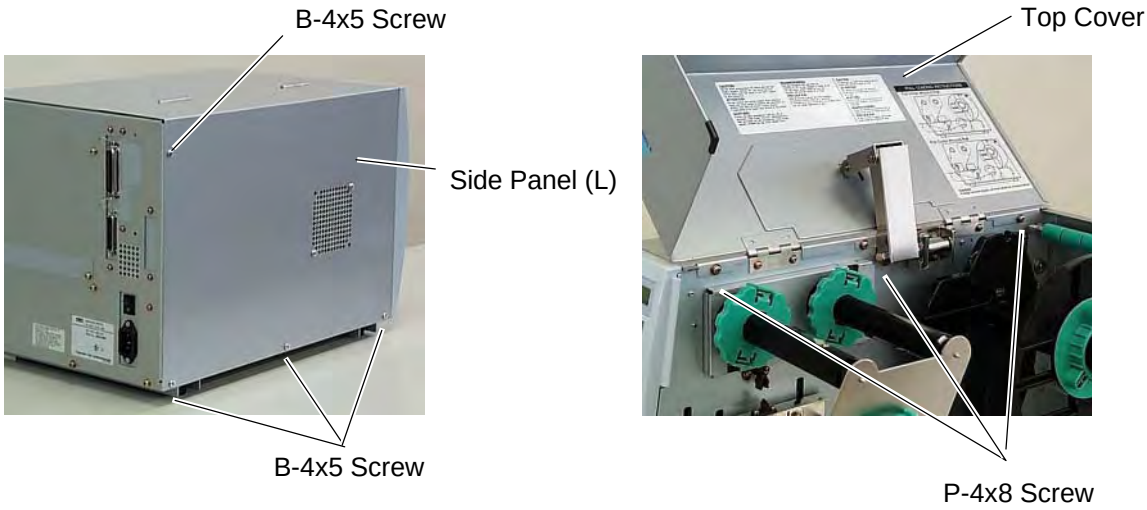
4.13.3.1 Installing the Rotary Cutter Unit on the B-SX4T Series

1) Turn the power off and disconnect the power cord.
2) Remove the two black screws to detach the front plate.

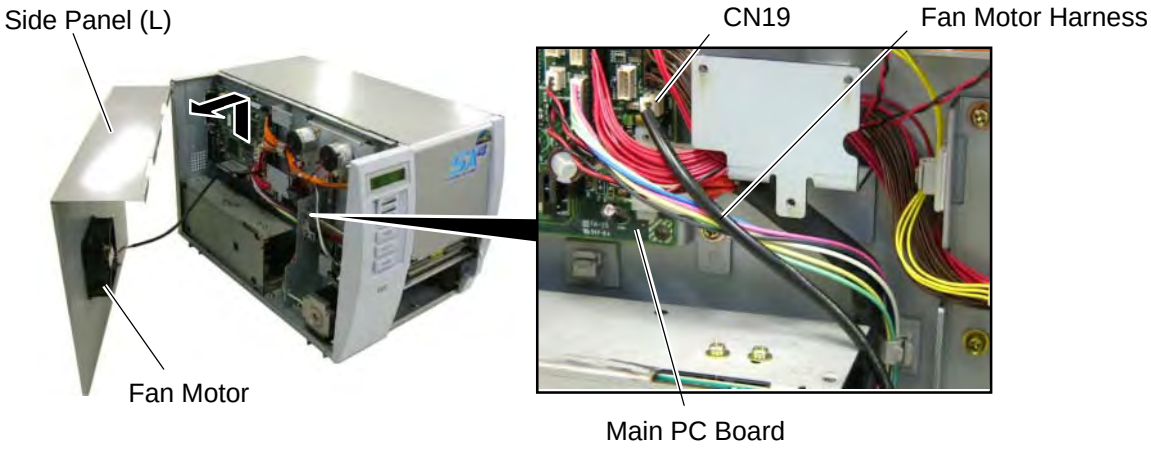


NOTE: *Retain the two black screws and front plate.*

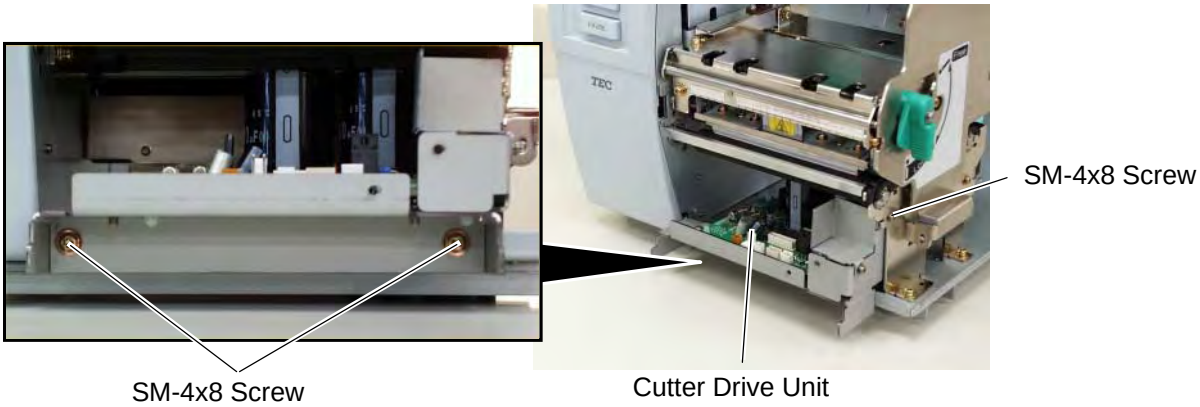
3) Remove the four B-4x5 screws from the side panel (L).
4) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).



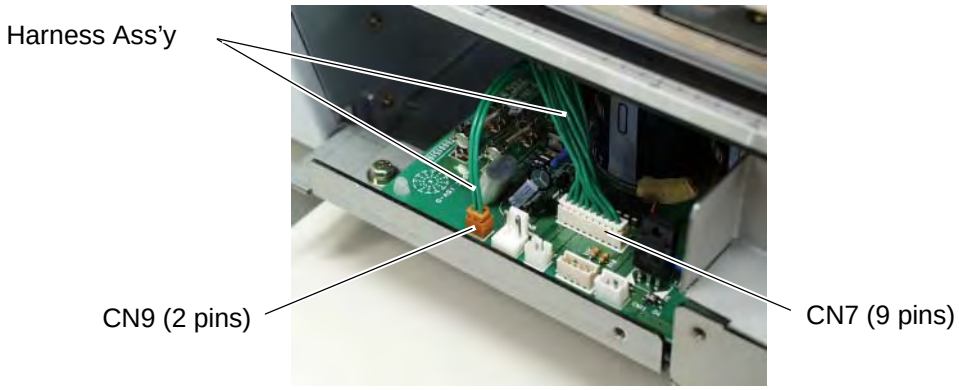
5) Lift the side panel (L) and put it aside.
6) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).



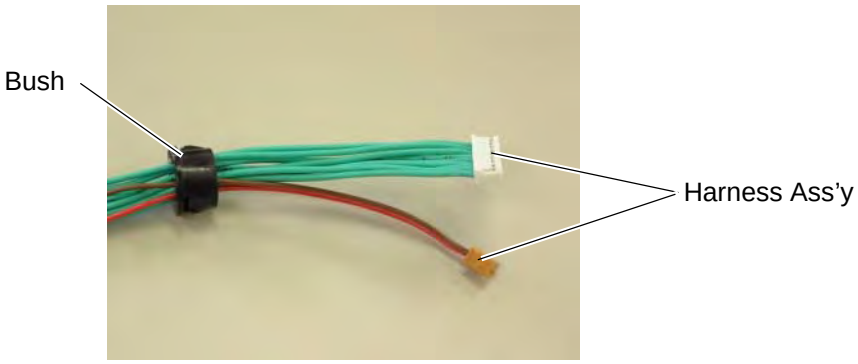
7) Fix the cutter drive unit to the printer with the three SM-4x8 screws.



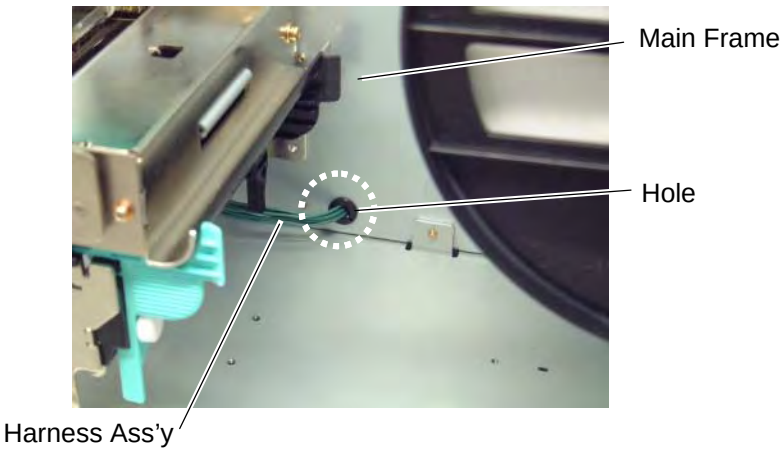
8) Connect the 9-pin connector of the harness ass'y to CN7 and 2-pin connector to CN9 on the cutter driver unit, respectively.



9) Fit the bush to the harness ass'y in the orientation as shown below.



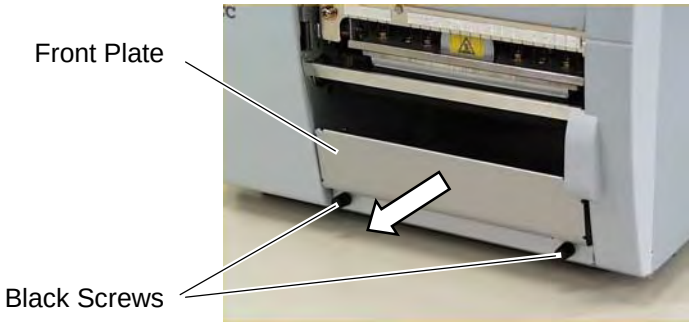
10) Insert the harness ass'y into the hole in the main frame. Fit the bush into the hole.



4.13.3.2 Installing the Rotary Cutter Unit on the B-SX5T Series

Since the strip module is standard on the B-SX5T series, it is necessary to remove the rewinder guide plate, strip sensor, etc. before installing the cutter module.

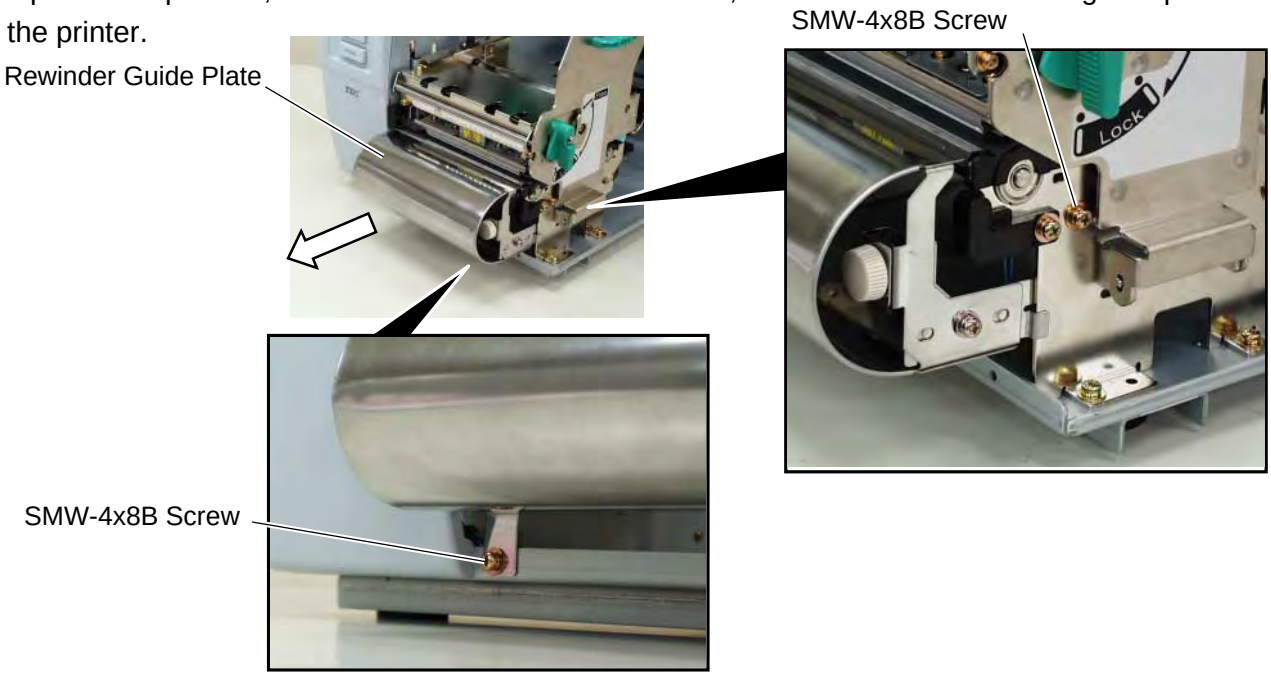
1) Turn the power off and disconnect the power cord.
2) When the printer is used in the batch or strip mode:
   Remove the two black screws to detach the front plate.



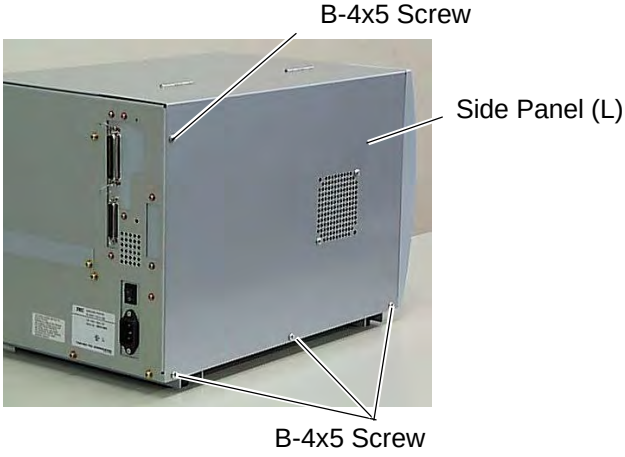
NOTE: *Retain the two black screws and front plate.*

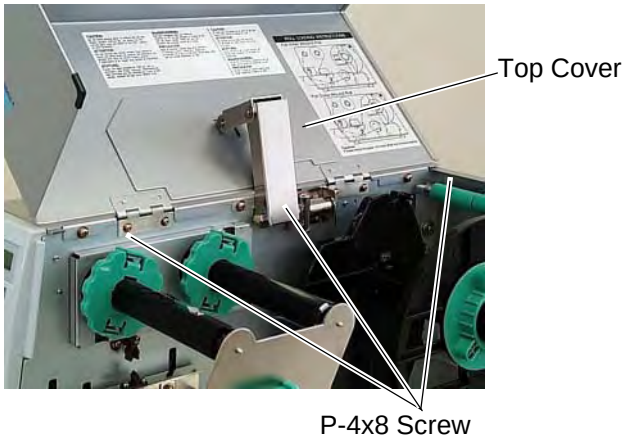
When the printer is used in the built-in rewinder mode:

Open the top cover, remove the two SMW-4x8 screws, and detach the rewinder guide plate from the printer.

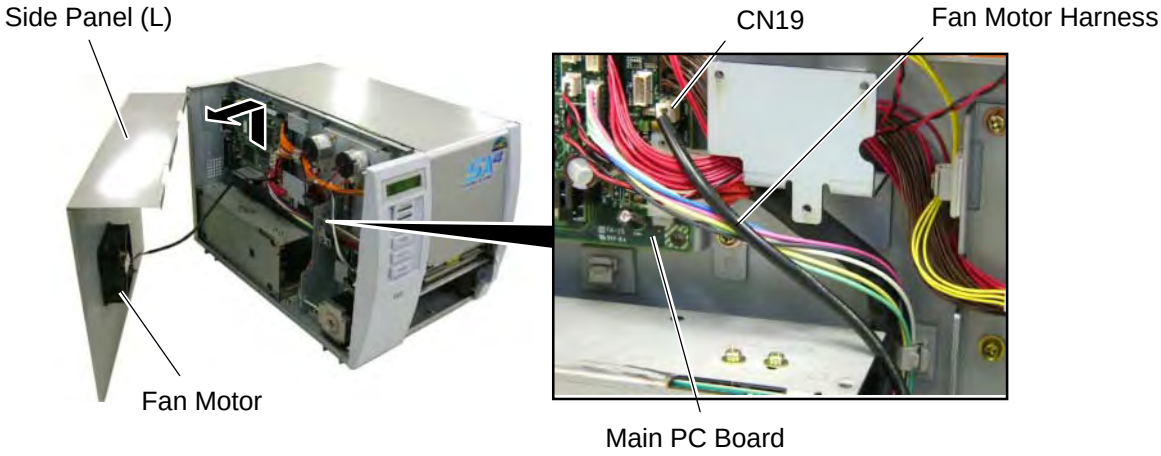


3) Remove the four B-4x5 screws from the side panel (L).
4) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).

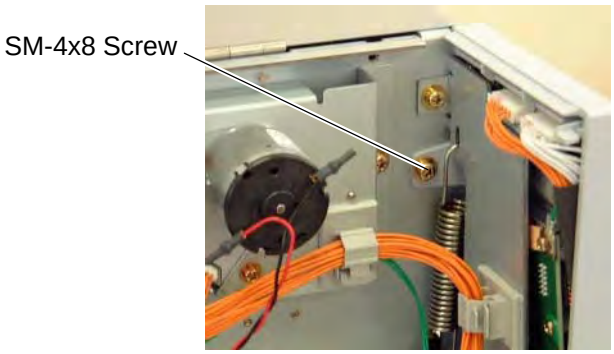




5) Lift the side panel (L) and put it aside.
6) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).



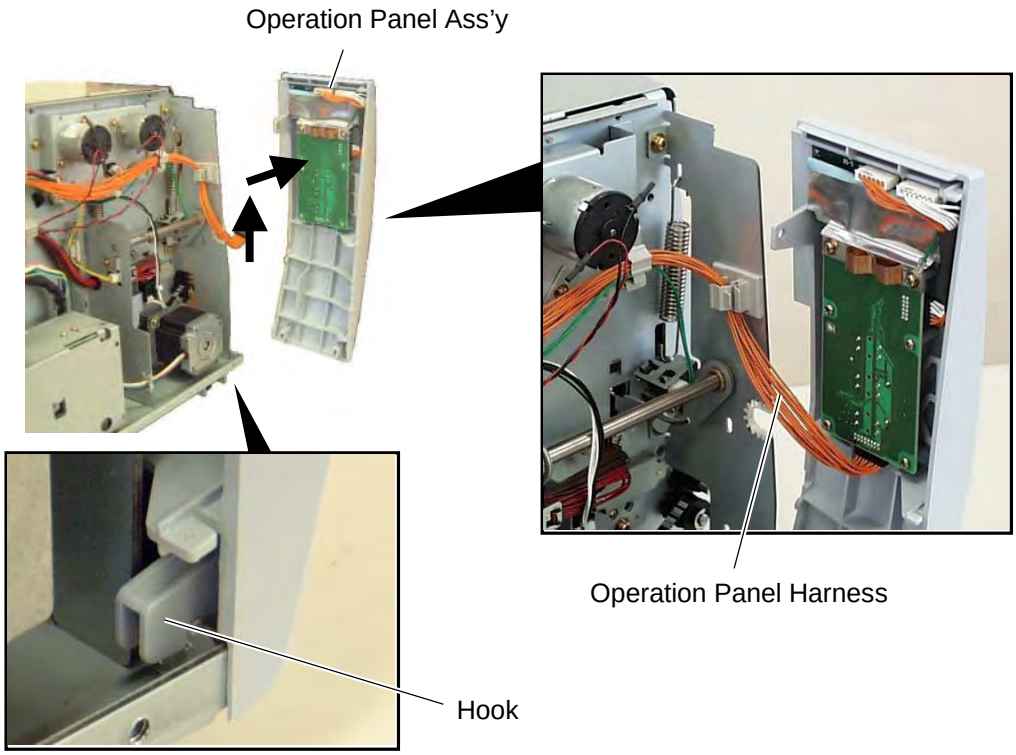
7) Remove the SM-4x8 screw that secures the operation panel ass'y.



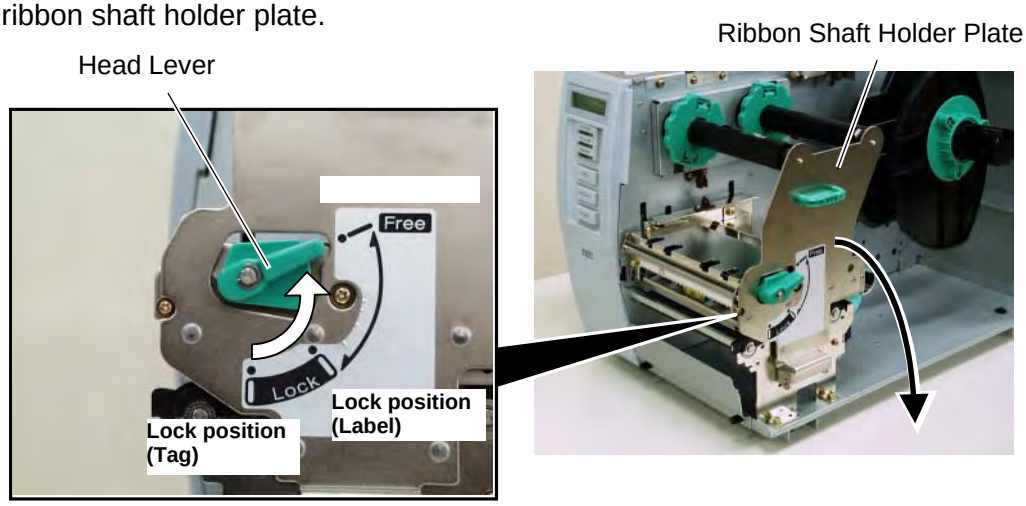
8) Half open the top cover, otherwise the operation panel ass'y cannot be removed from the printer.

9) Lift the operation panel ass'y to release the hook, and then remove the operation panel ass'y by moving it forward.

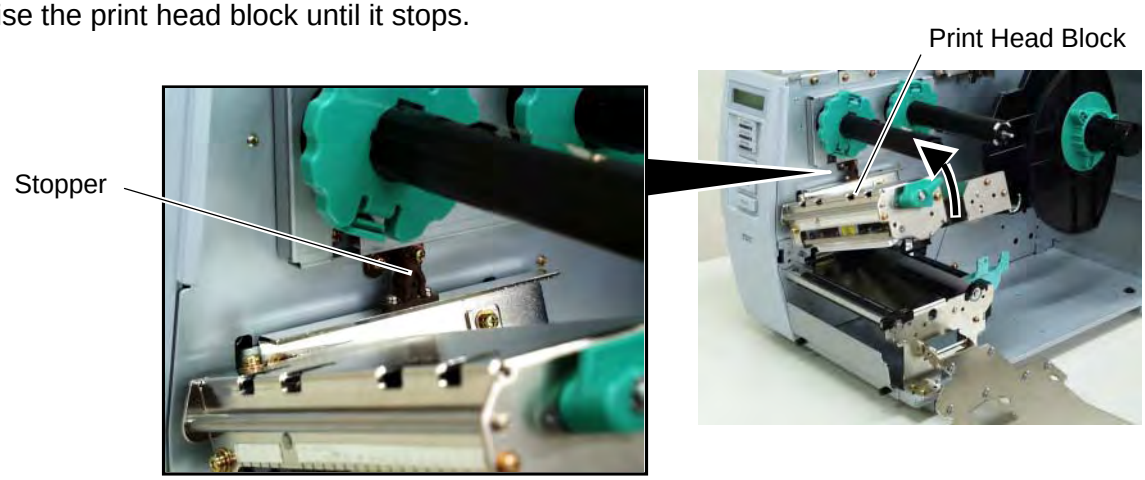
Disconnect the operation panel harness from the operation panel ass'y.



11) Turn the head lever clockwise to **Free** position.
12) Open the ribbon shaft holder plate.

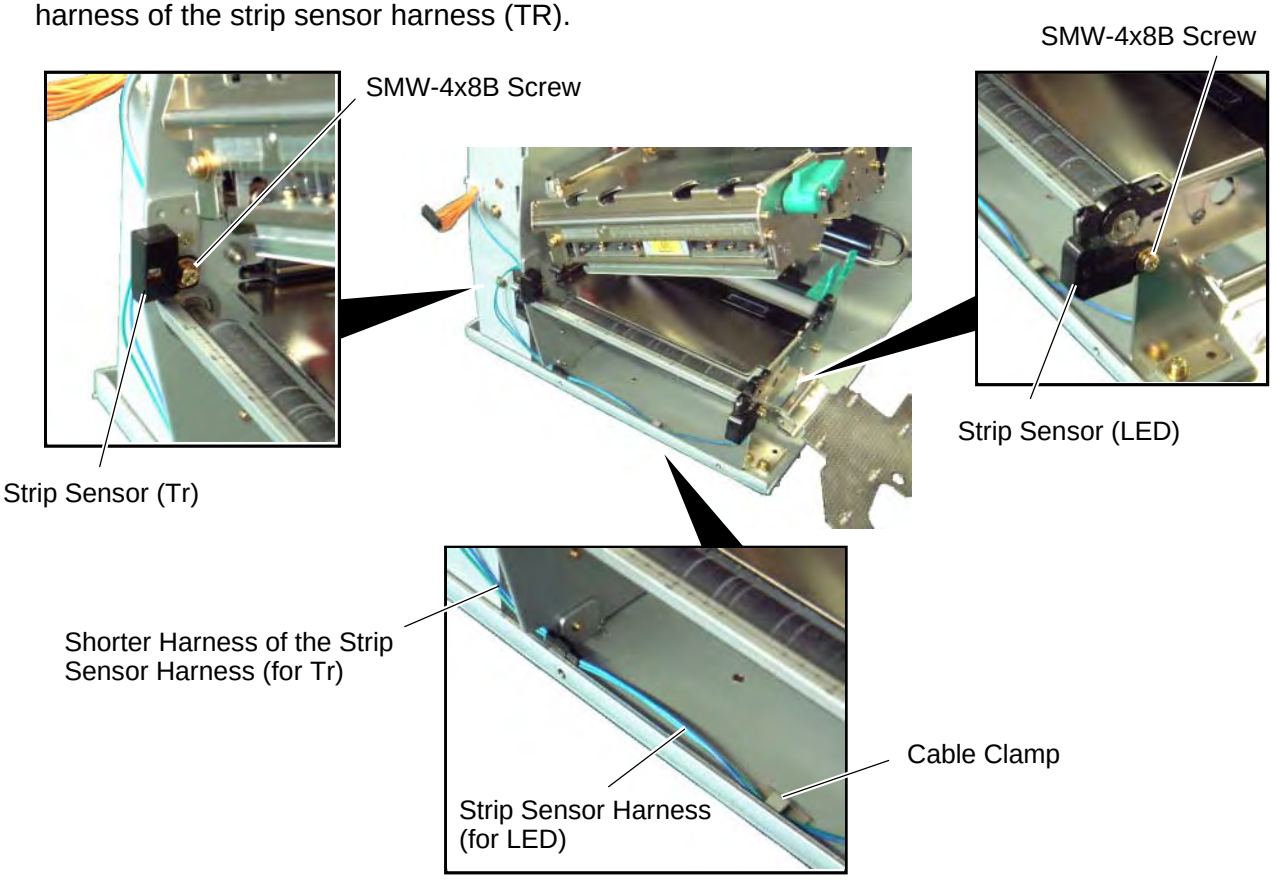


13) Raise the print head block until it stops.

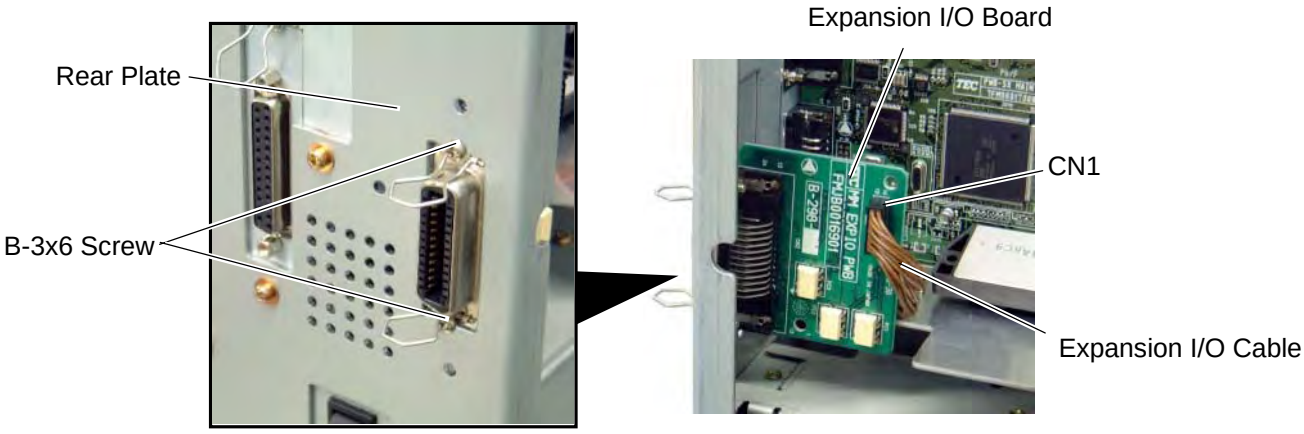


14) Remove the two SMW-4x8 screws that secure the strip sensors (TR) and (LED).

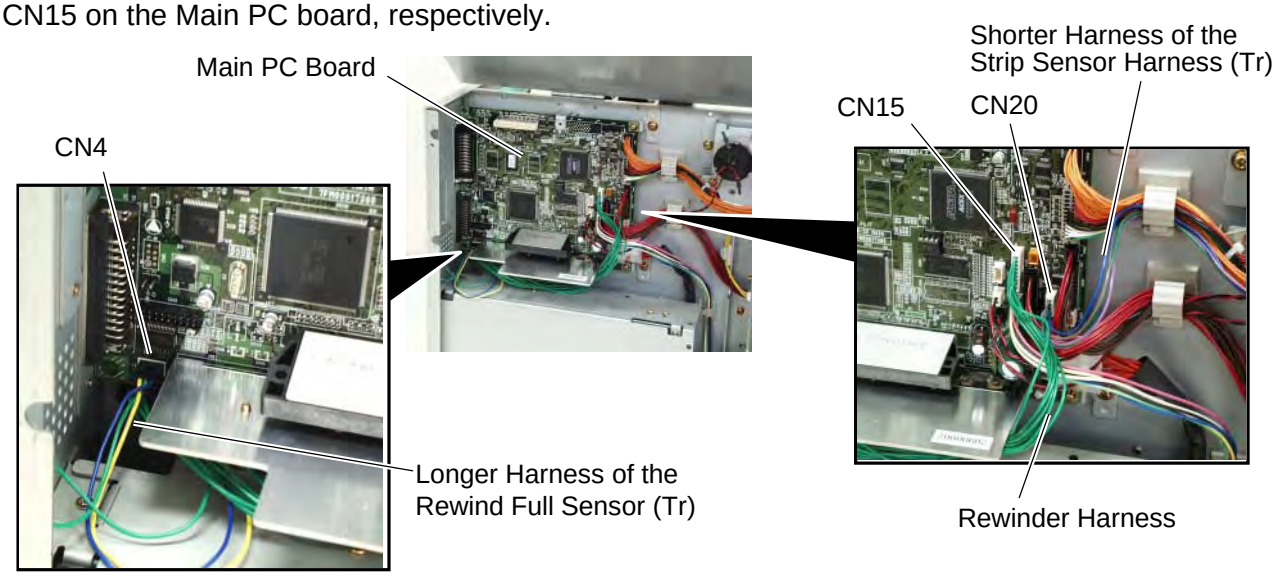
15) Release the strip sensor (LED) harness from the cable clamp, and disconnect it from the shorter harness of the strip sensor harness (TR).



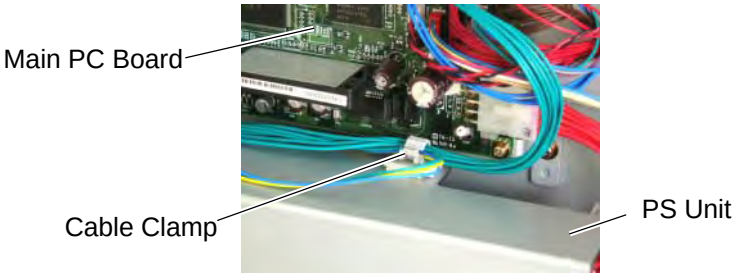
16) Remove the Expansion I/O board from the printer temporarily using the following procedure.
① Disconnect the Expansion I/O cable from CN1 on the Expansion I/O board.
② Remove the two B-3x6 screws to detach the Expansion I/O board from the printer.



17) Disconnect the shorter harness of the strip sensor harness (TR) from CN20 on the Main PC board. Then remove the strip sensor (TR) from the printer.
NOTE: *Retain the strip sensors (TR) and (LED), and the strip sensor harness.*
18) Disconnect the longer harness of the rewind full sensor (TR) and rewinder harness from CN4 and CN15 on the Main PC board, respectively.

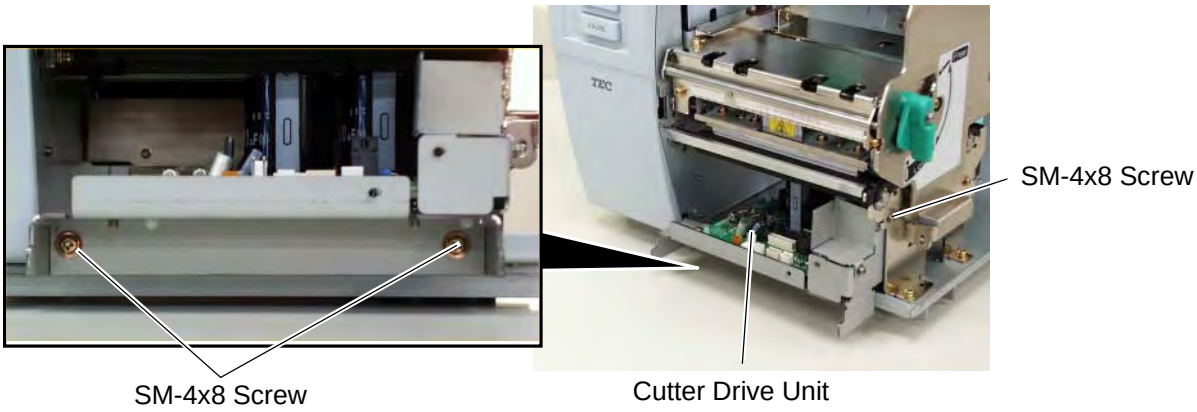


NOTE: *Secure the rewinder harness and the longer harness of the rewind full sensor (TR) to the space under the Main PC board with the cable clamp so that they are not pinched by the covers or printer's internal components.*



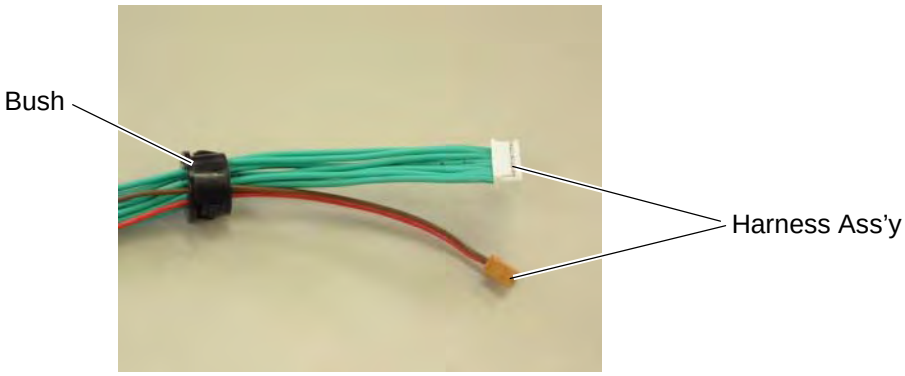
19) Reassemble the operation panel ass'y and the expansion I/O board in the reverse order of removal.

20) Fix the cutter drive unit to the printer with the three SM-4x8 screws.

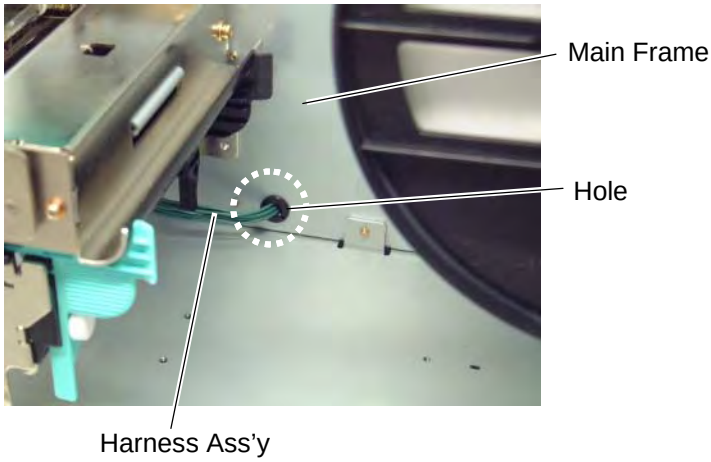


21) Connect the 9-pin connector of the harness ass'y to CN7 and 2-pin connector to CN9 on the cutter driver unit, respectively.

22) Fit the bush to the harness ass'y in the orientation as shown below.

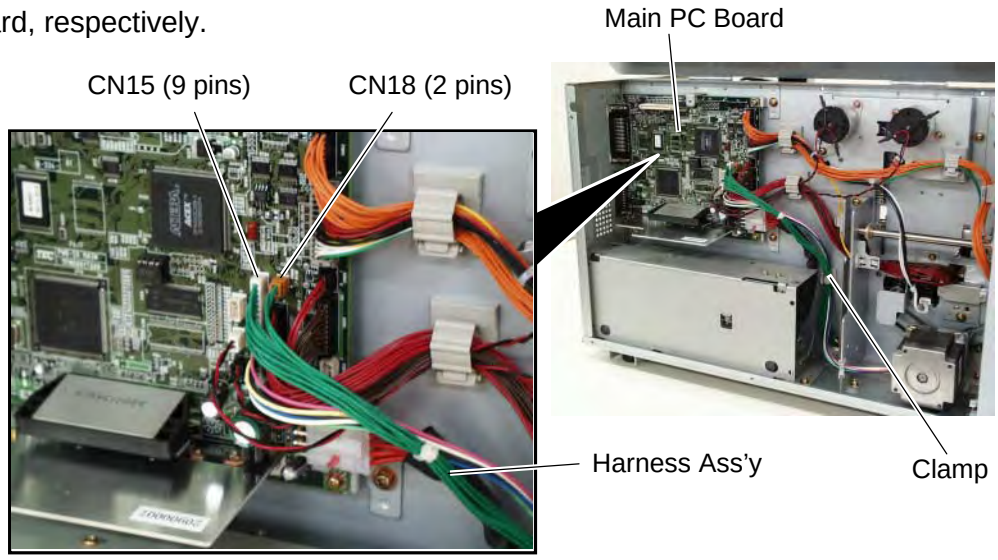


23) Insert the harness ass'y into the hole in the main frame. Fit the bush into the hole.

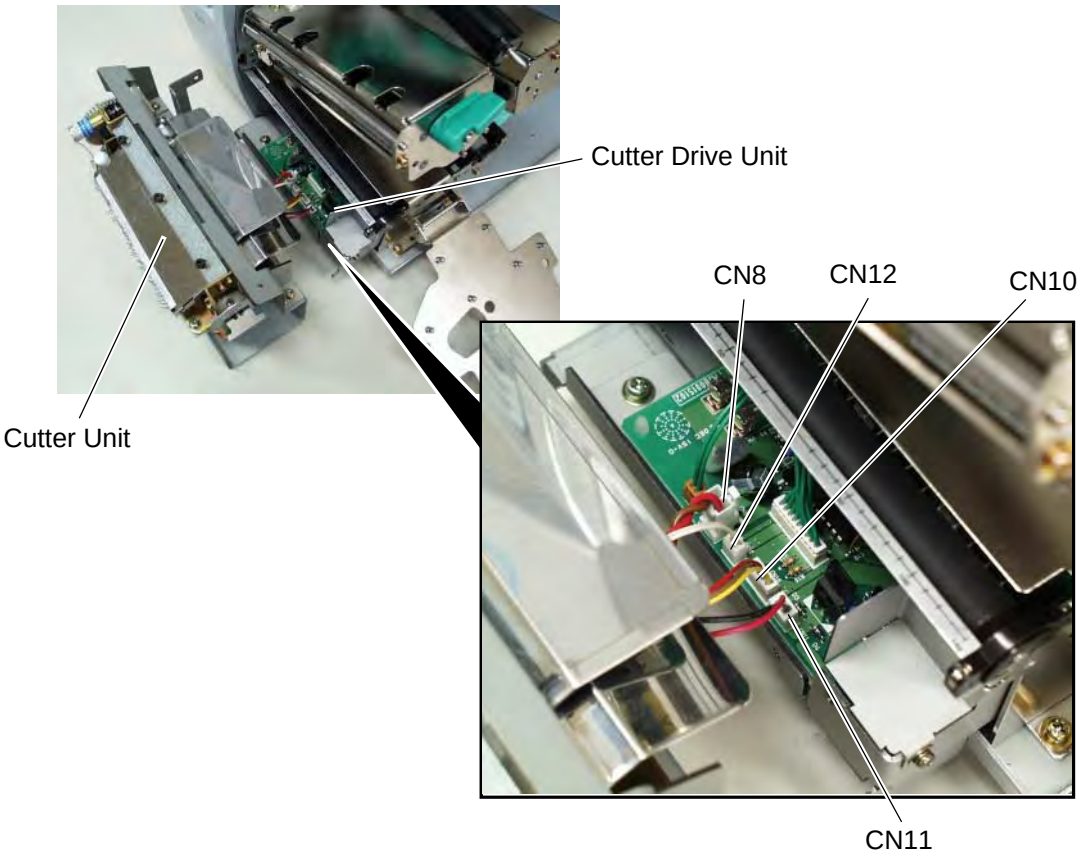


24) Fix the harness ass'y with the clamp.

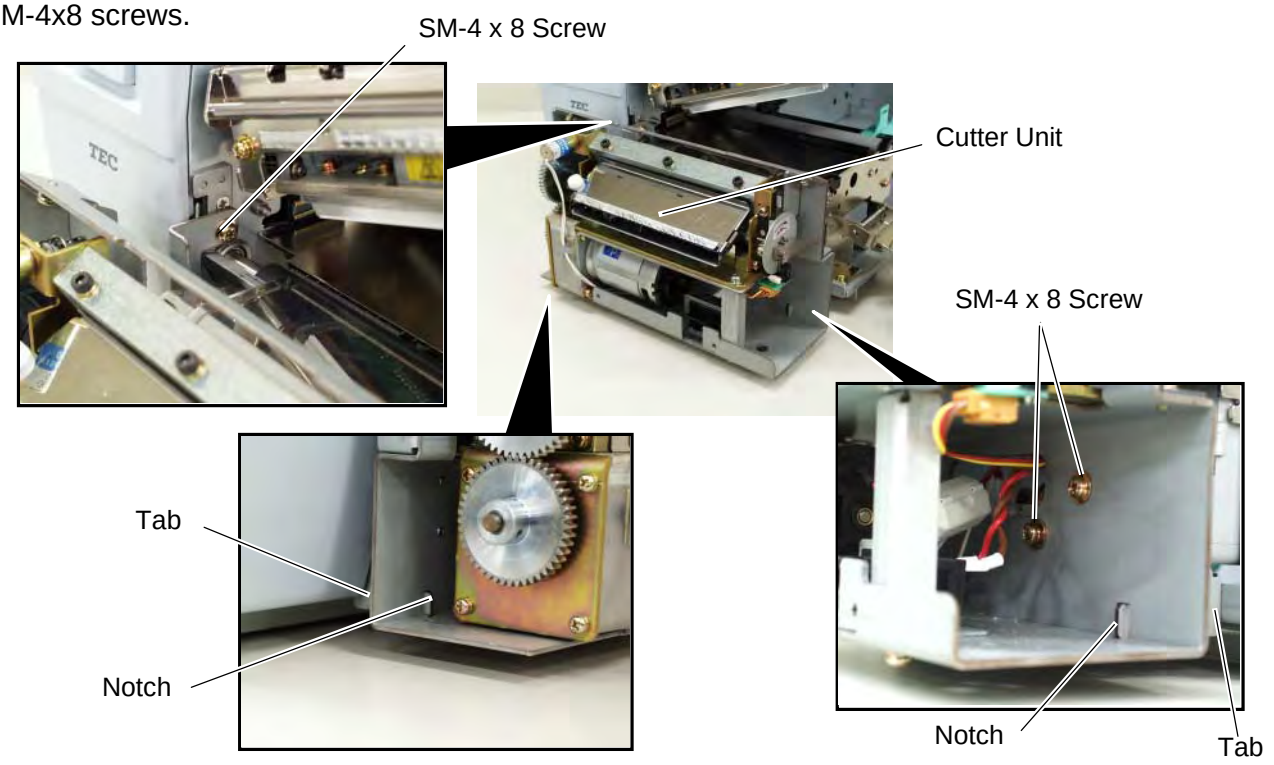
25) Connect the 9-pin connector of the harness ass'y to CN15, and 2-pin connector to CN18 on the Main PC board, respectively.



26) Connect the four harnesses of the cutter unit to CN8, CN10, CN11 and CN12 on the cutter drive unit.

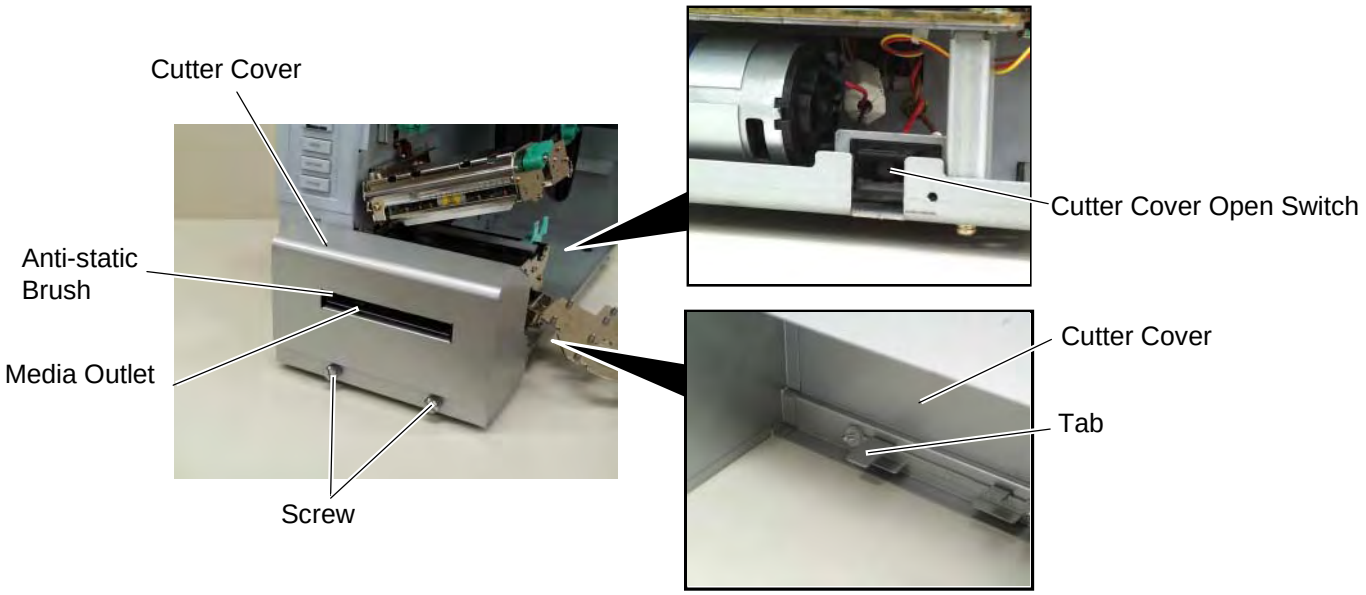


27) Fit the two tabs of the cutter drive unit into the notches, and then fix the cutter unit with the three SM-4x8 screws.



28) Attach the cutter cover to the cutter unit with the two screws so that the tab of the cutter cover turns on the cutter cover open switch.

NOTES: *1. Be careful not to pinch the cutter harness by the cutter cover.*
2. Make sure that the anti-static brush is protruding from the media outlet.



29) Close the print head block and ribbon shaft holder plate.

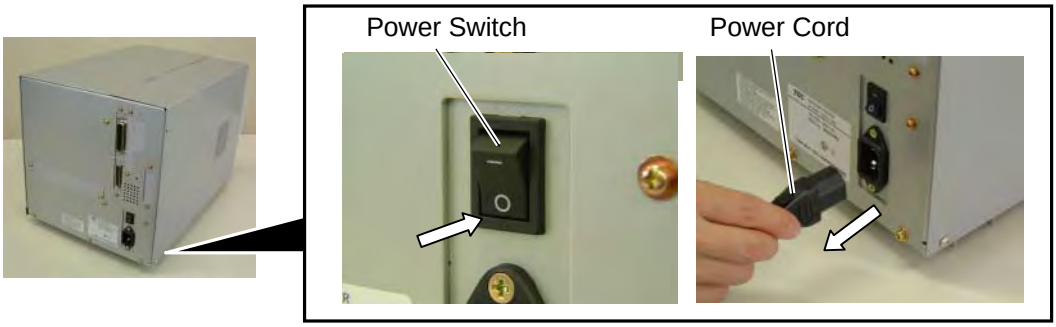
NOTE: *DO NOT excessively push down the print head block to close it. Doing so may cause a failure of the print head block or damage to the print head.*

30) Reassemble the side panel (L) and close the top cover. Finally check the cutter operation.

4.14 STRIP MODULE (B-9904-H-QM-R)

WARNING!

1. *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.*
2. *Turn the power OFF and disconnect the power cord before installing the strip module.*



3. *Be careful not to pinch your fingers or hands with the covers.*

4.14.1 Applicable Model

This optional device is the strip module, which is intended for the following models:

B-SX4T-R Series

4.14.2 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below.

Rewinder Ass'y (1 pc.)	Rewinder Guide Plate (1 pc.)	Bush (1 pc.)
Strip Sensor (TR) (1 pc.)	Strip Sensor (LED) (1 pc.)	Rewind Paper Guide (1 pc.)

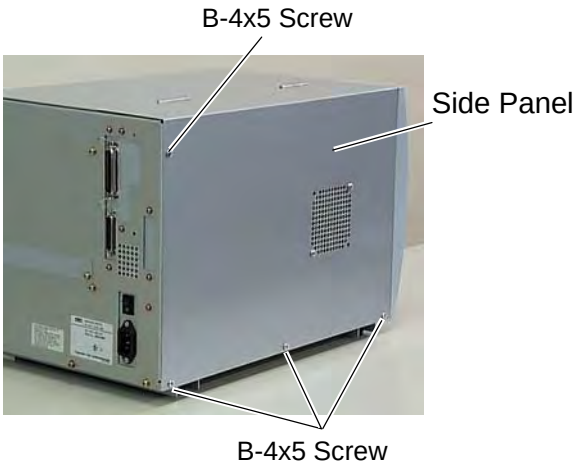
- Installation Manual (1 copy)
- SMW-4x8B Screw (10 pcs.)
- SM-3x6B Screw (1 pc.)
- SM-4x8C Screw (1 pc.)

4.14.3 Installation Procedure

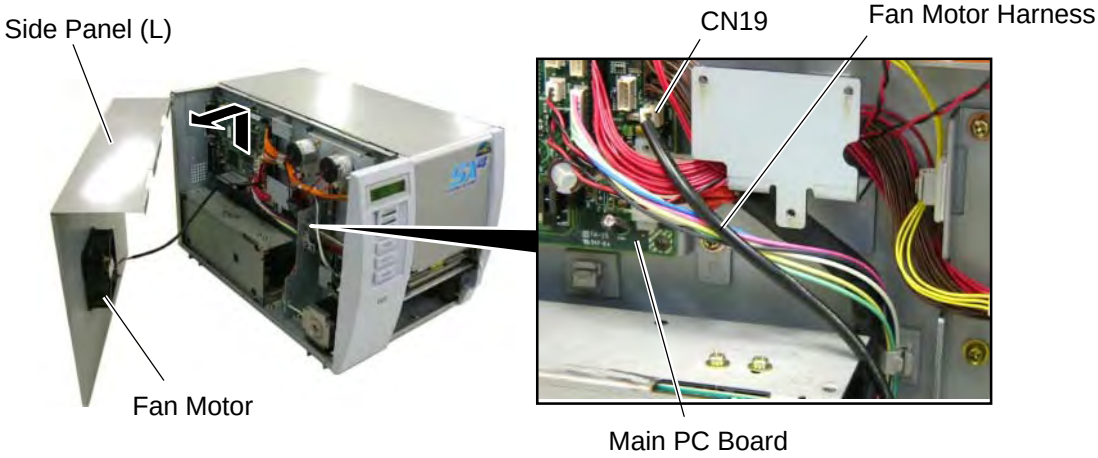
1) Turn the power off and disconnect the power cord.
2) Remove the two black screws to detach the front plate.

NOTE: *Retain the two black screws and front plate.*

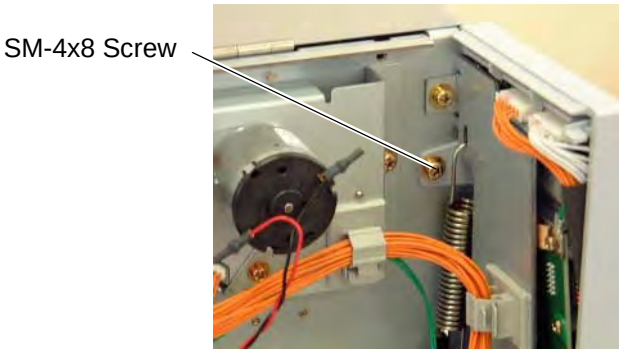
3) Remove the four B-4x5 screws from the side panel (L).
4) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).



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 separate the side panel (L).

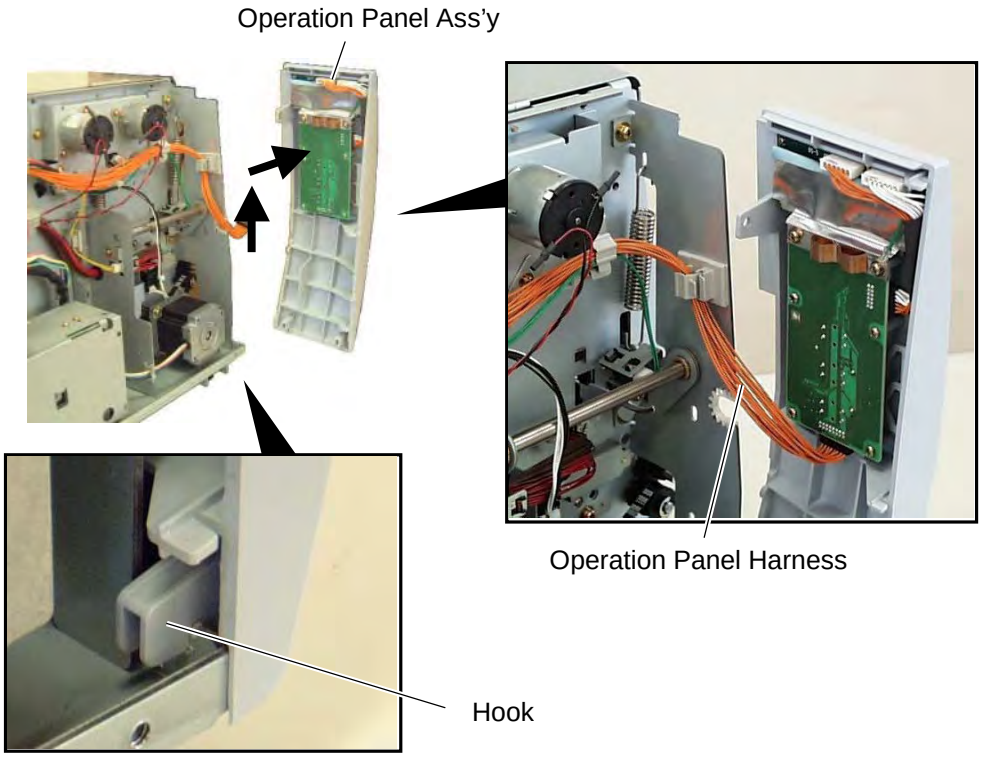


7) Remove the SM-4x8 screw that secures the operation panel ass'y.

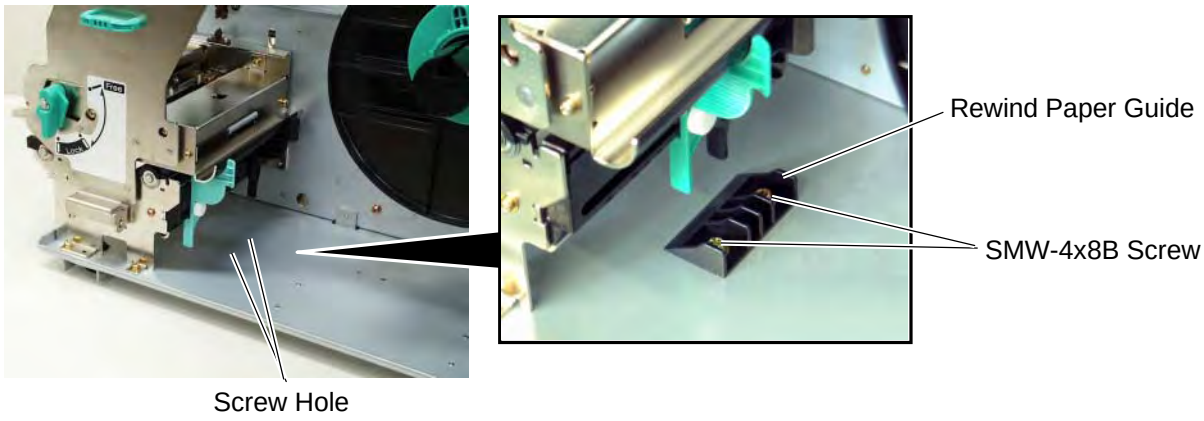


8) Half open the top cover, otherwise the operation panel ass'y cannot be removed from the printer.

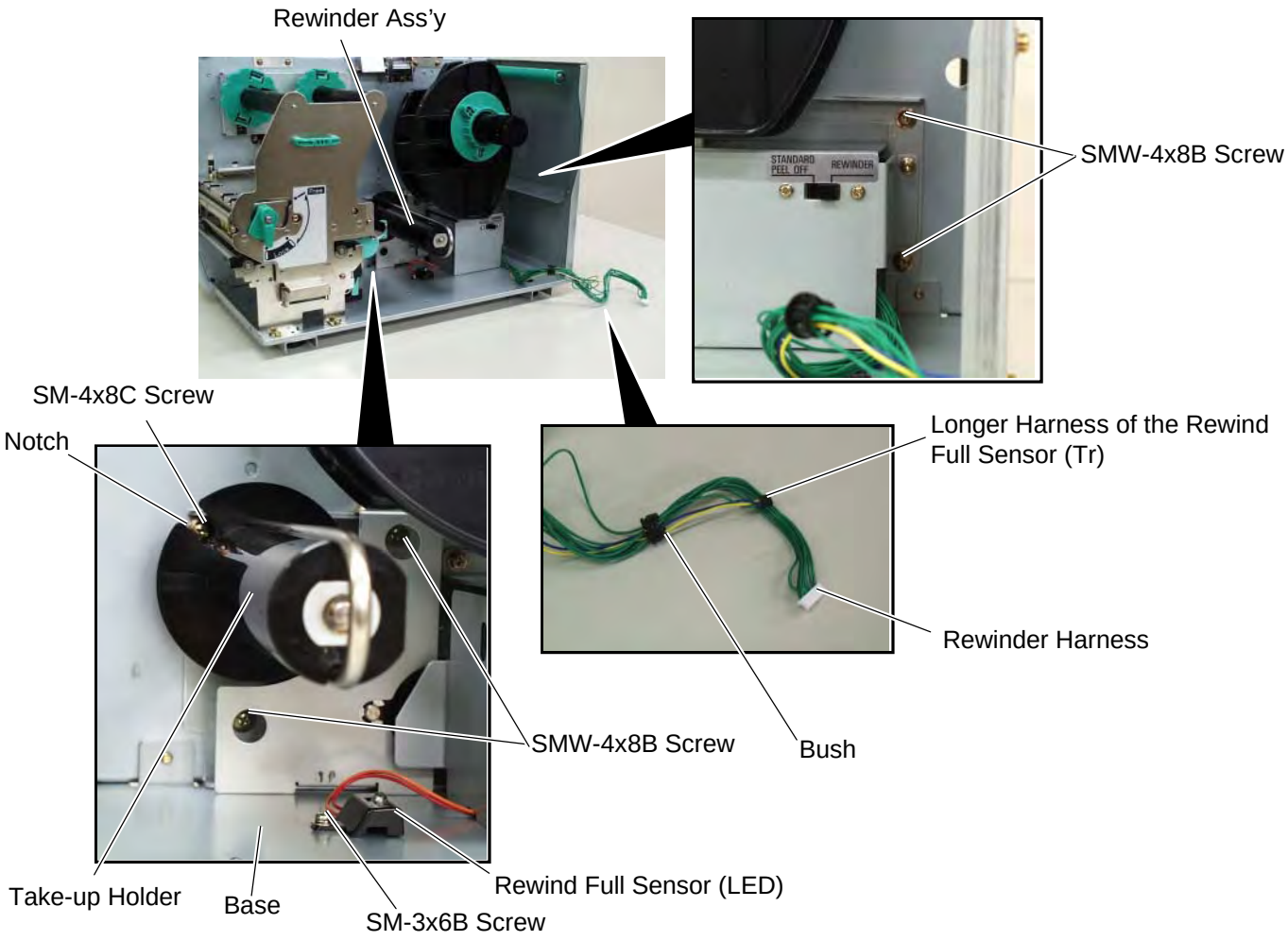
9) Lift the operation panel ass'y to release the hook, and then remove the operation panel ass'y by moving it forward.
10) Disconnect the operation panel harness from the operation panel ass'y.



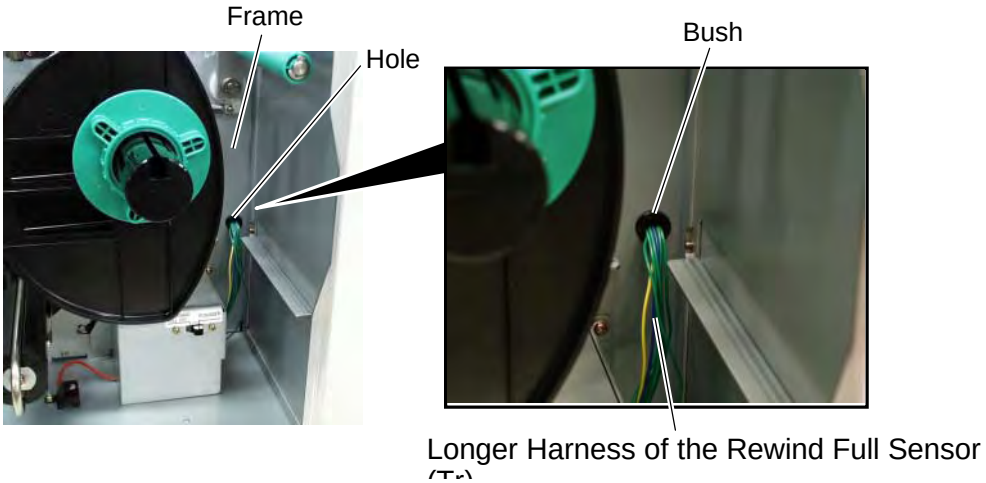
11) Attach the rewind paper guide to the base with the two SMW-4x8B screws.



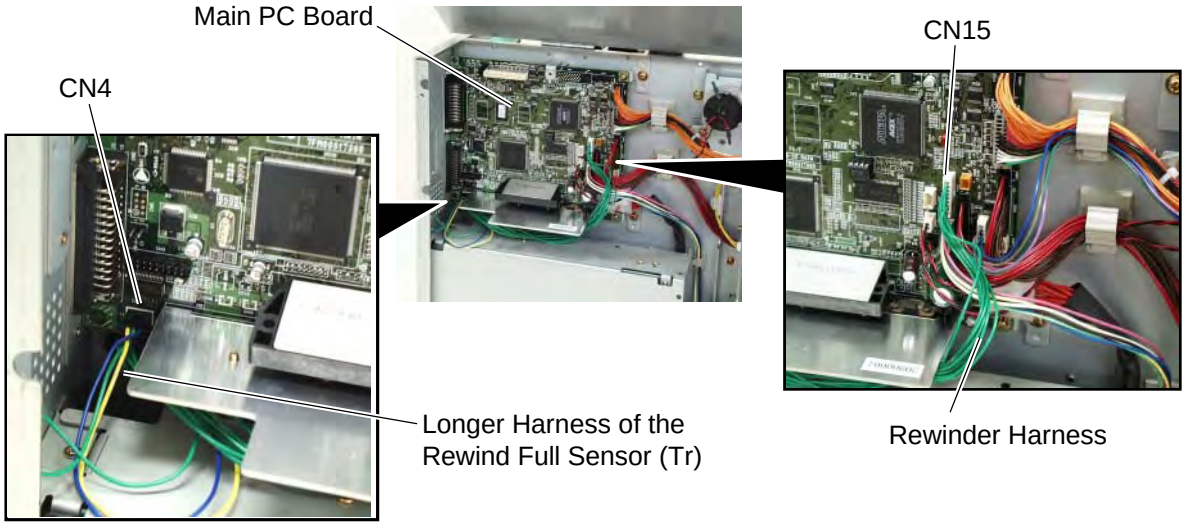
12) Align the notch of the take-up holder with the screw hole of the rewinder ass'y, and attach them to the printer with the four SM-4x8B screws and the SM-4x8C screw.
13) Attach the rewind full sensor (LED) to the base with the SM-3x6B screw.
14) Fit the bush to the longer harness of the rewind full sensor (Tr) and the rewinder harness in the orientation shown below.



Insert the longer harness of the rewind full sensor (Tr) into the hole in the printer frame. Fit the bush into the hole.

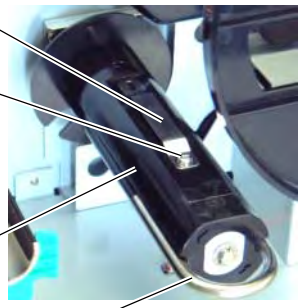


16) Connect the longer harness of the rewind full sensor (Tr)and the rewinder harness to CN4 and CN15 on the Main PC board.

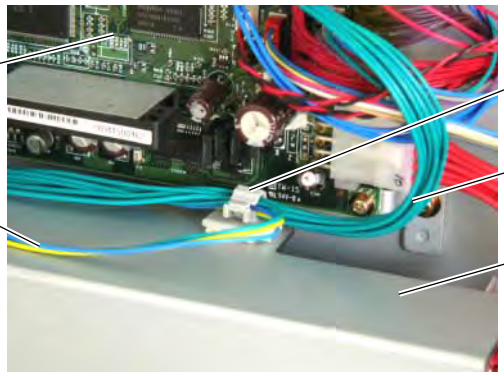


NOTES: 1. *You should change the selection switch setting depending on the issue mode. Improper setting may affect the print quality.*
STANDARD/PEEL OFF (STRIP): Batch or strip mode
REWINDER: Built-in rewinder mode
For the cut mode, the selection switch can be set to either position.

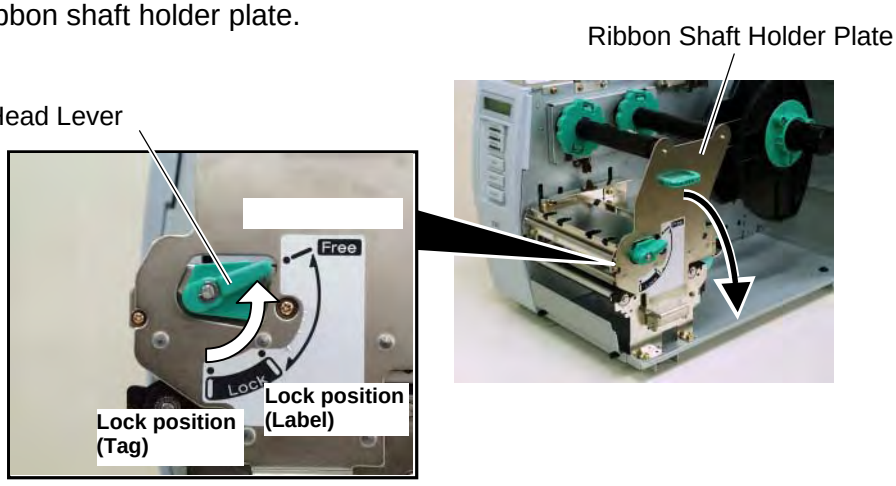
2. *The backing paper can be wound directly onto the Take-up Spool or a paper core. When using the Take-up* Spool, detach the holder stopper by removing the B-3x4 *screw. Otherwise, it may be difficult to pull out the wound backing paper roll. When using a paper core, put the core on the Take-up Spool with the Holder Stopper on it, and attach the top edge of the backing paper to the core with adhesive tape. The Take-up clip is not necessary.*
This winding method is applicable to the Built-in Rewinder mode.



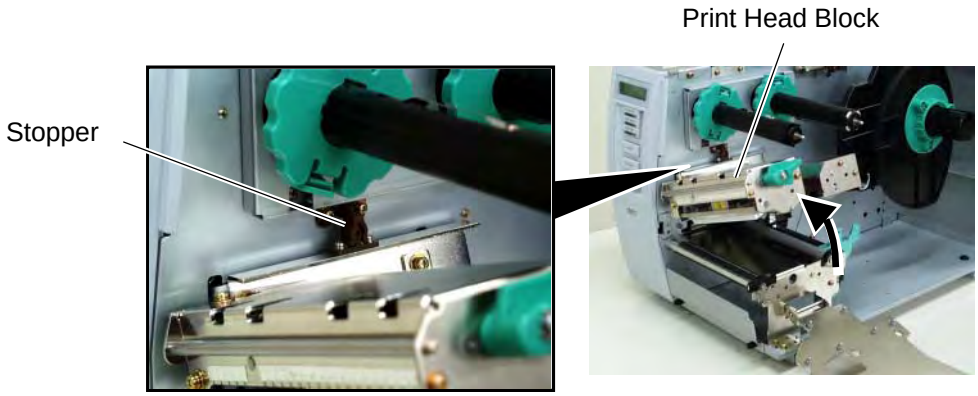
17) Fix the longer harness of the rewind full sensor and the rewinder harness under the Main PC board with the cable clamp.



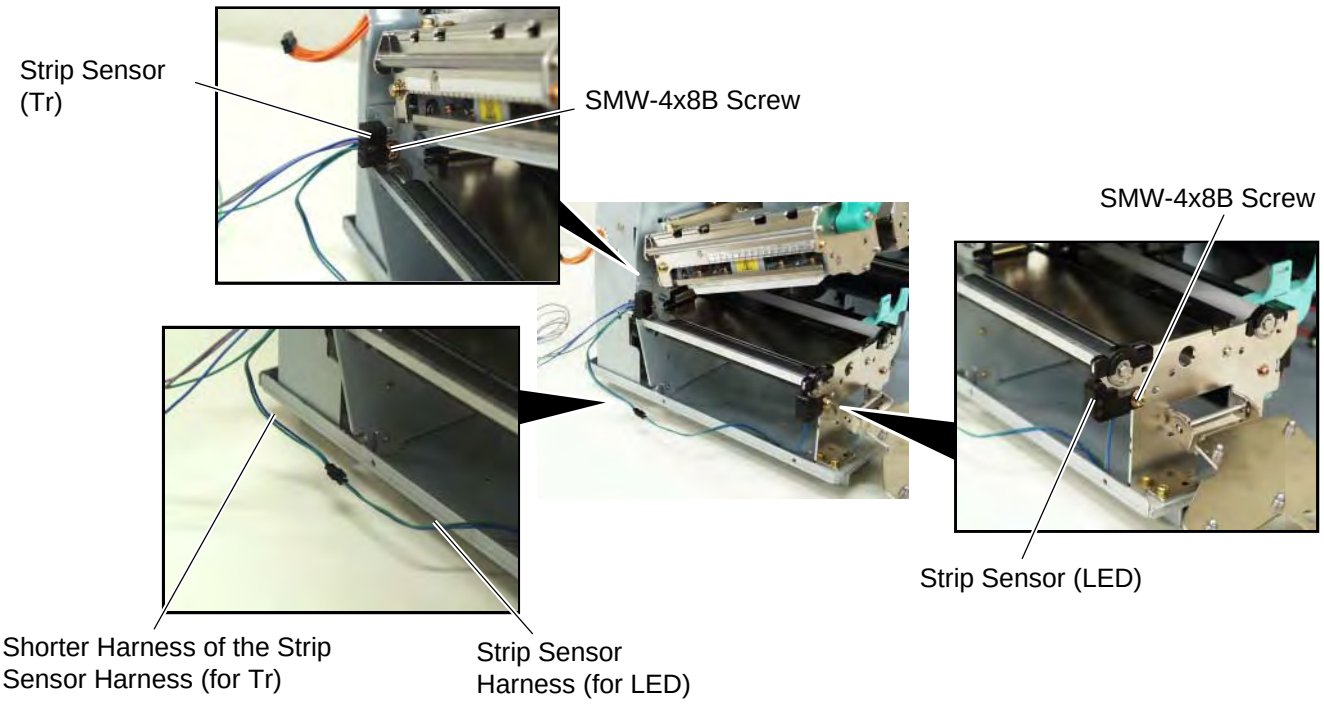
18) Turn the head lever counterclockwise to **Free** position.
19) Open the ribbon shaft holder plate.



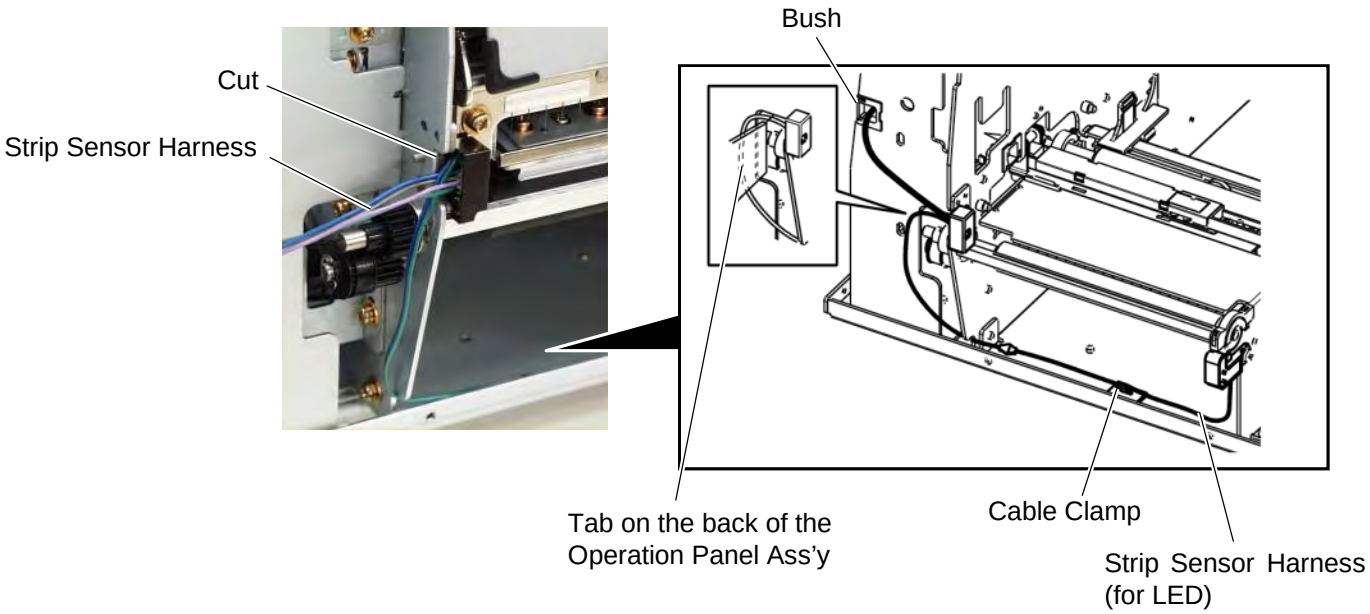
20) Raise the print head block until it stops.

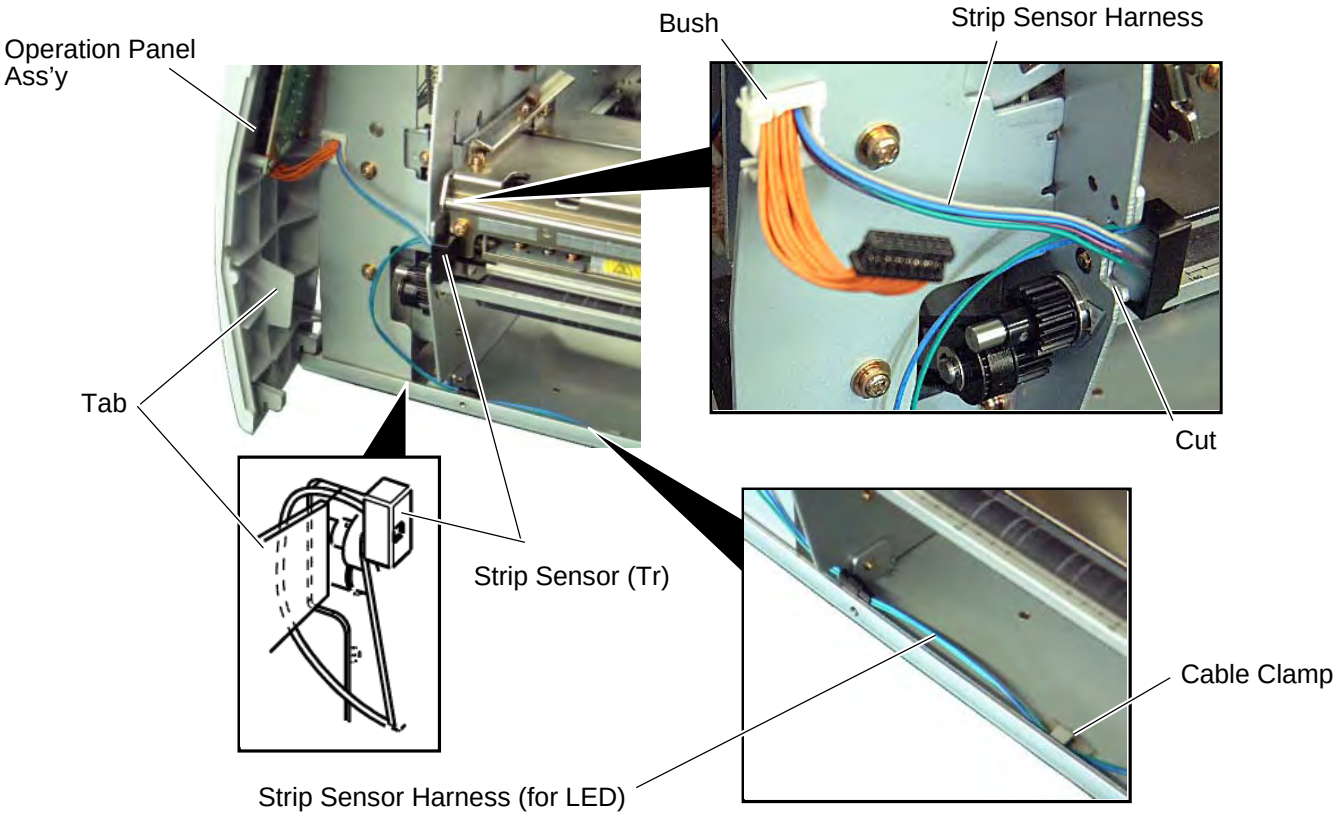


21) Secure the strip sensor (LED) and strip sensor (Tr) to the printer with the SMW-4x8B screws.
22) Connect the shorter harness of the strip sensor (Tr) to the strip sensor harness (for LED).



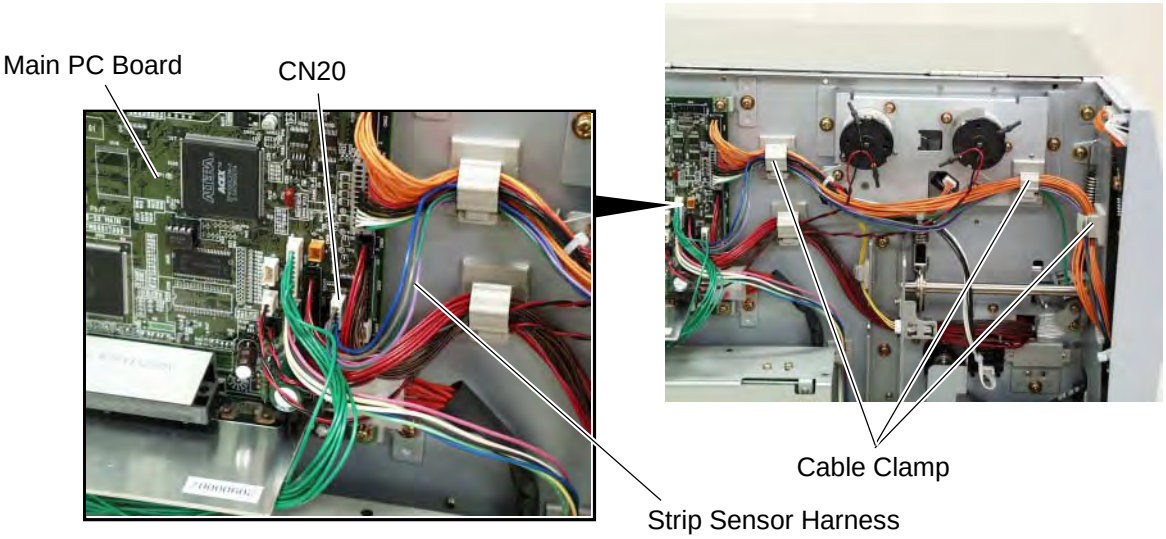
Fix the connected strip sensor harness (for LED) to the base with the cable clamp. While passing the other strip sensor harness through the cut and the bush, reassemble the operation panel ass'y to the printer. Then pass the strip sensor harness over the tab on the back of the operation panel ass'y.





***NOTE**: Be careful not to pinch the strip sensor harnesses by the operation panel.*

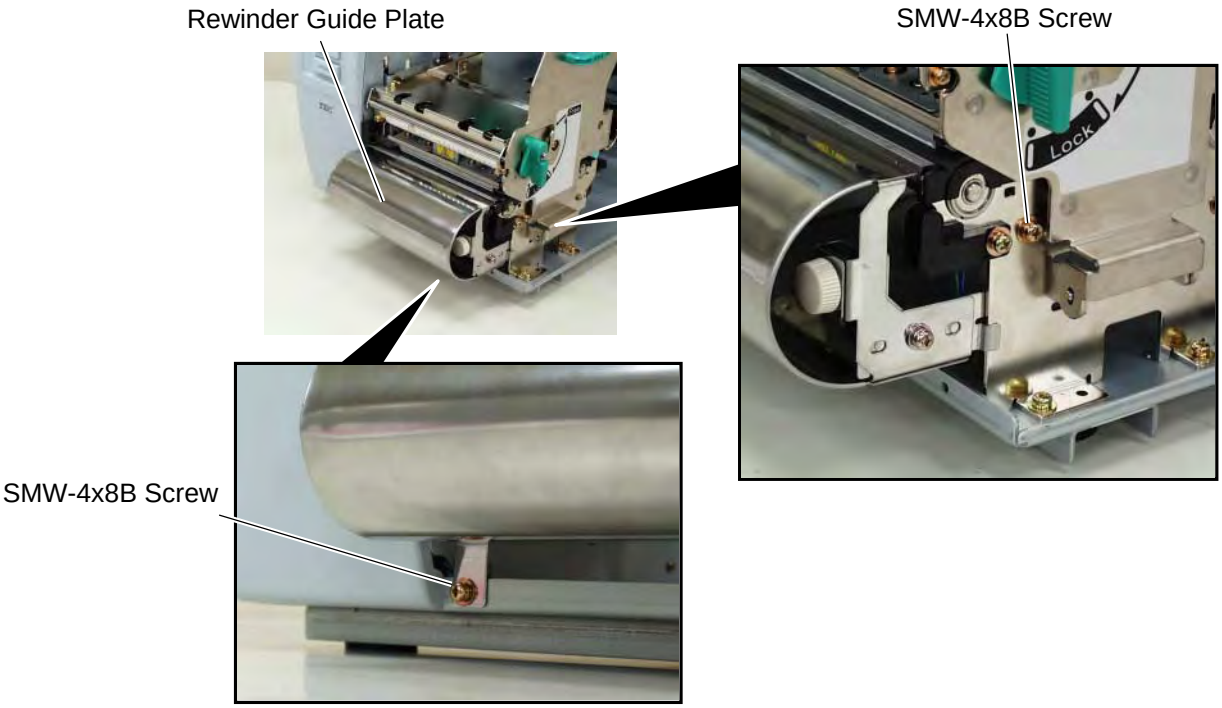
Fix the strip sensor harness with the three cable clamps and connect it to CN20 on the Main PC board.



25) Reassemble the side panel (L) in the reverse order of removal.
26) Close the print head block and ribbon shaft holder plate.

***NOTE**: DO NOT excessively push down the print head block to close it. Doing so may cause a failure of the print head block or damage to the print head.*

27) When using the printer in batch mode or strip mode, attach the front plate removed in step 2).
28) When using the printer in built-in rewinder mode, attach the rewinder guide plate to the front of the printer with the two SMW-4x8B screws.



29) Adjustment

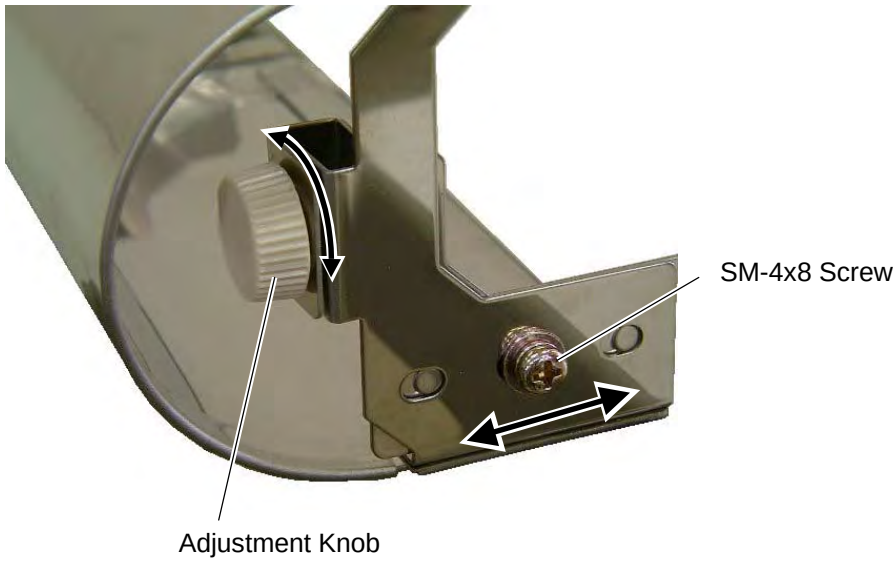
If the label skews when using the built-in rewinder unit, turn the adjustment knob of the rewinder guide plate to correct the media feed. Clockwise turn moves the rewinder guide plate forward and counterclockwise turn moves it backward.

- When labels skew to the right:

  Loosen the SM-4x8 sems screw, turn the adjustment knob clockwise, and tighten the SM-4x8 screw when the rewinder guide plate is positioned correctly.

- When labels skew to the left:

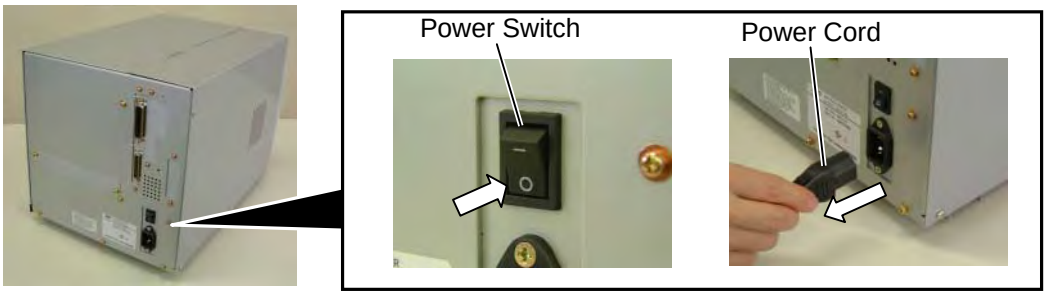
  Loosen the SM-4x8 screw, turn the adjustment knob counterclockwise, and tighten the SM-4x8 screw when the rewinder guide plate is positioned correctly.



4.15 RIBBON SAVING MODULE (B-9904-R2-QM-R)

WARNING!

1. *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.*
2. *Turn the power OFF and disconnect the power cord before installing the ribbon saving module.*



3. *Be careful not to pinch your fingers or hands with the covers.*

NOTE: *The B-9904-R2-QM Ribbon Saving Module is available only with Firmware V1.2A or later. Please be careful that the earlier firmware version does not support it.*

4.15.1 Applicable Model

This optional device is the ribbon saving module, which is intended for the following models:

B-SX4T-QM-R Series

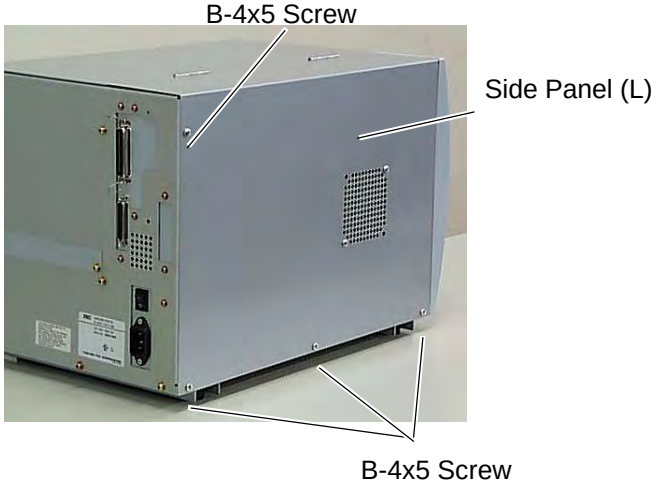
4.15.2 Packing List

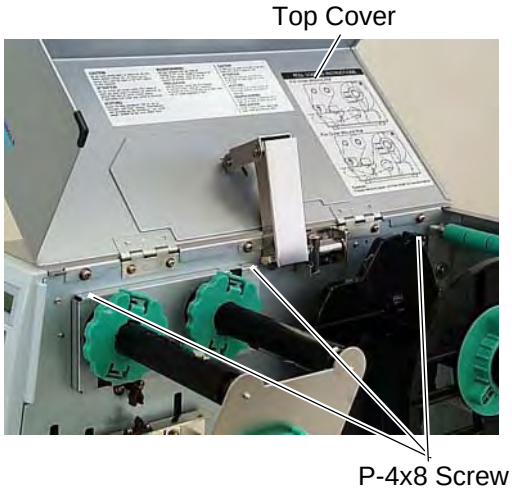
All the following parts are supplied with the kit. Make sure you have all items shown below.

Solenoid (1 pc.) 	RSV PC Board (1 pc.) 	Solenoid Harness (1 pc.)
Cable Clamp (1 pc.) 	Locking Support (3 pcs.) 	• Installation Manual (1 copy) • SM-4x8 Screw (2 pcs.)

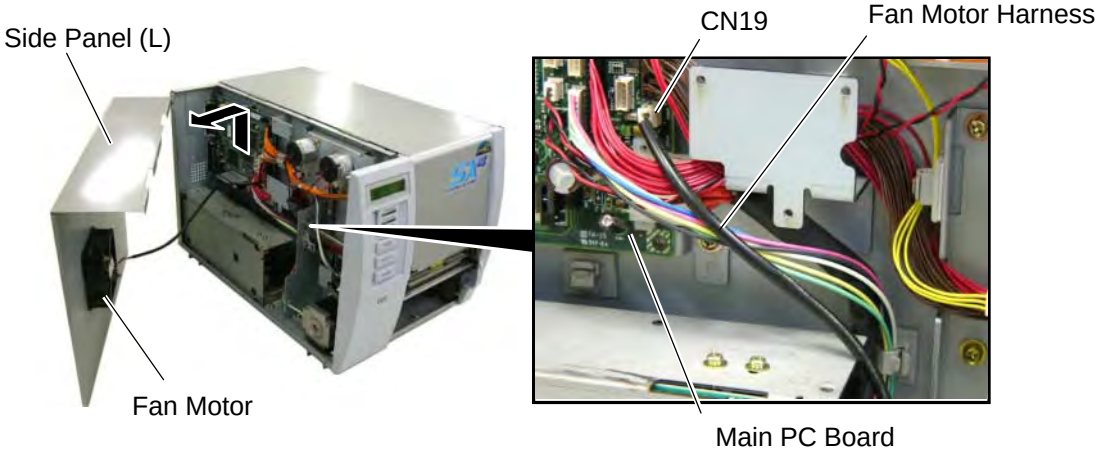
4.15.3 Installation Procedure

1) Turn the power off and disconnect the power cord.
2) Remove the four B-4x5 screws from the side panel (L).
3) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).

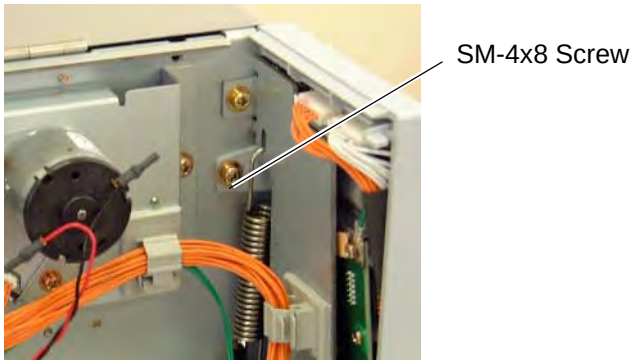




4) Lift the side panel (L) and put it aside.
5) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).

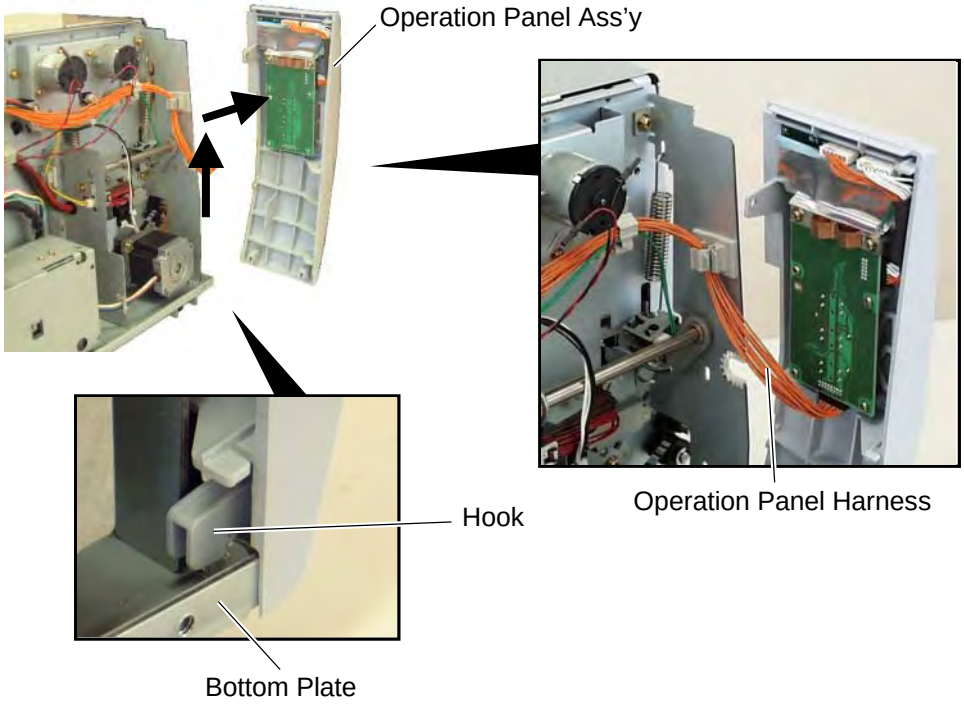


6) Remove the SM-4x8 screw that secures the operation panel ass'y.

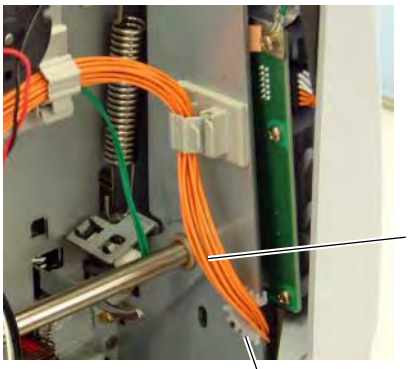


7) Half open the top cover, otherwise the operation panel ass'y cannot be removed from the printer.

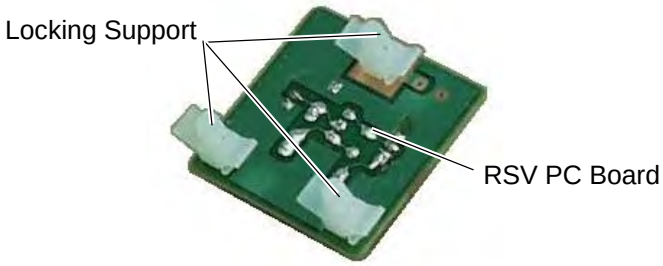
8) Lift the operation panel ass'y to release the hook, and then remove the operation panel ass'y by moving it forward.
9) Disconnect the operation panel harness from the operation panel ass'y.



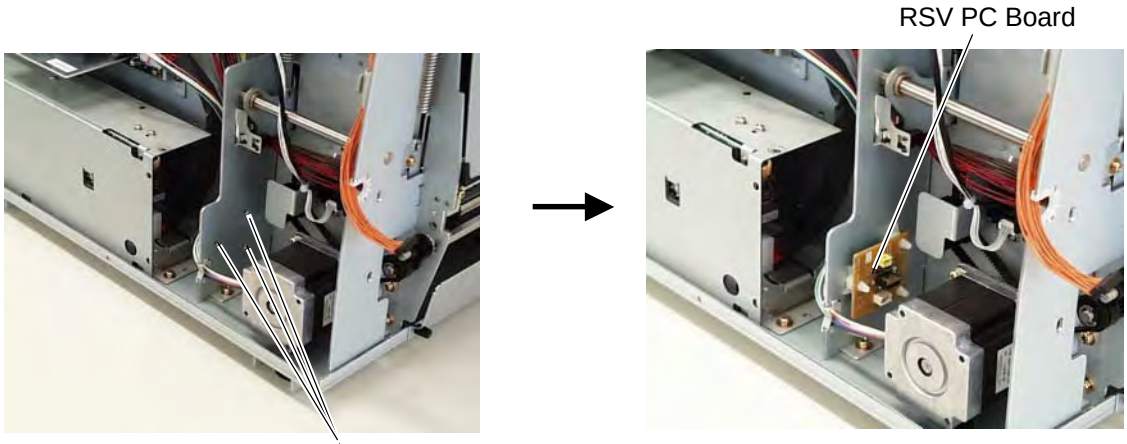
***NOTE**: Pass the operation panel harness through the cord bush so that it is not pinched by the side panel (L) when reassembled.*



10) Fit the three locking supports into the RSV PC board.

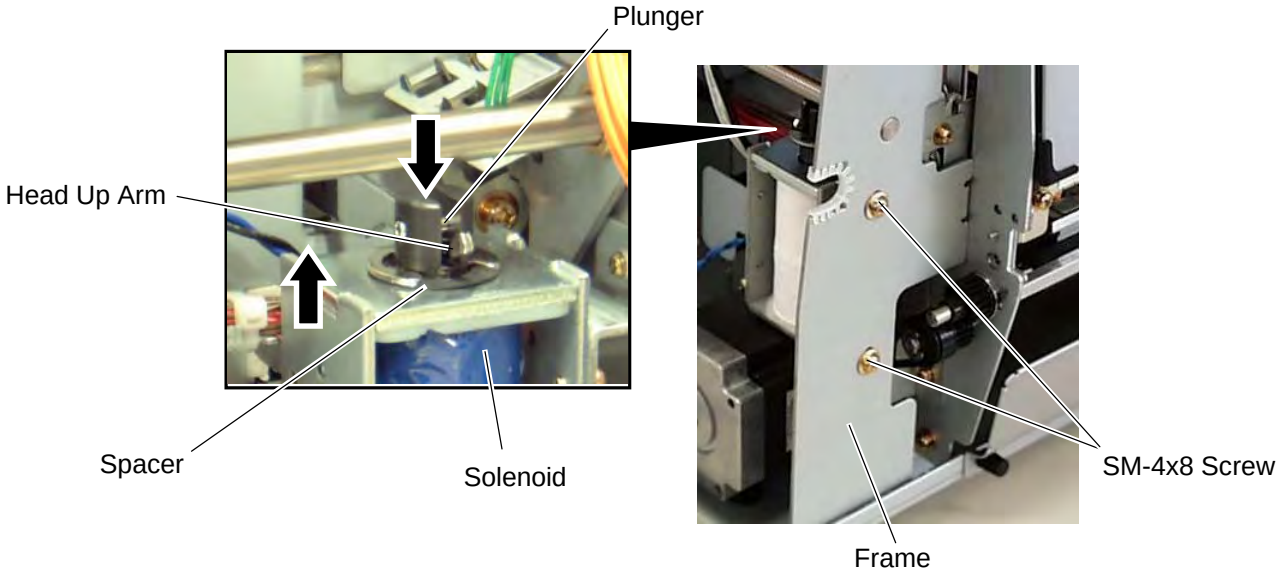


11) Secure the RSV PC board to the printer with the locking support.

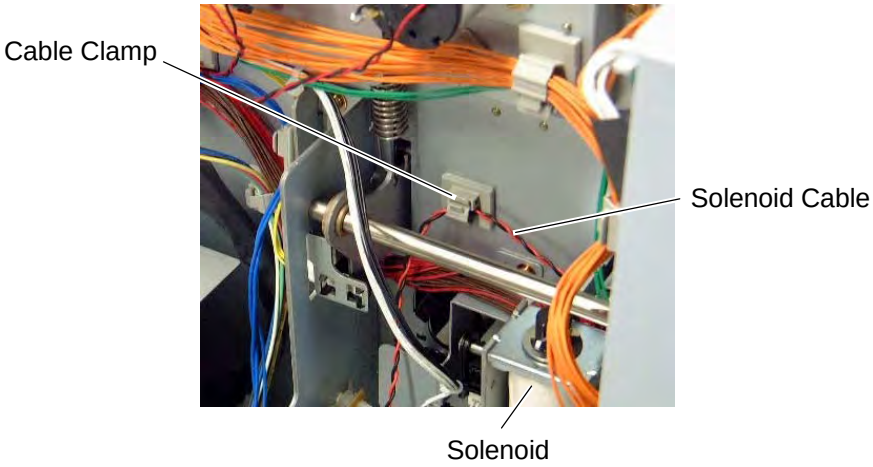


***NOTE:** Do not push the center of the RSV PC Board when attaching it to the printer. Doing so may break the PC board. Hold the locking supports and push them into the holds for securing the RSV PC Board.*

12) Insert folded tag paper (1.5-mm thick) between the print head and the platen, and then turn the head lever to **Lock** position. Insert the head up arm into the plunger of the solenoid. While holding down the head up arm slightly, lift the solenoid. Secure the solenoid to the frame with the two SM-4x8 screws keeping the solenoid in contact with the spacer.

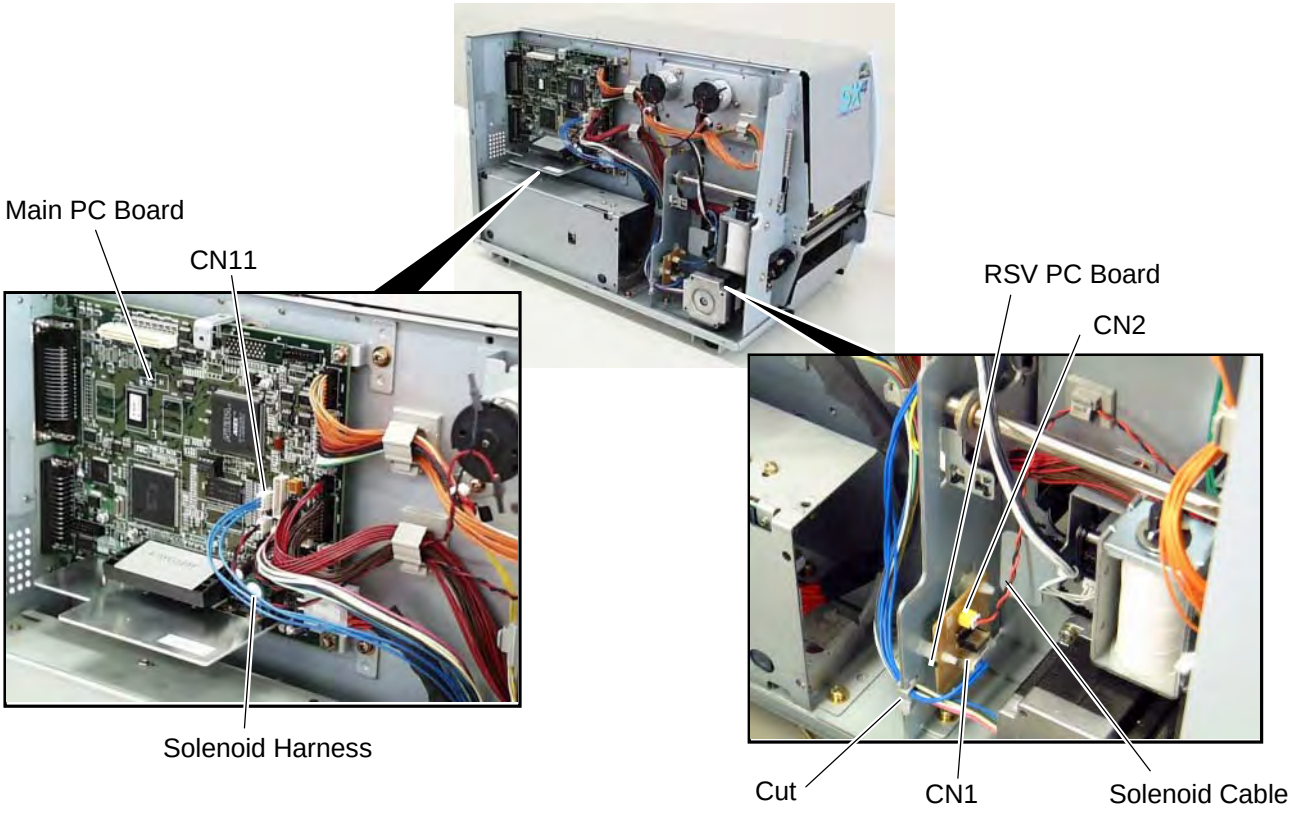


13) Attach the cable clamp to the frame of the printer. Fix the solenoid cable with this cable clamp.



NOTE: *Be careful not to snag the solenoid harness when running it.*

14) Connect the solenoid harness to CN1 on the RSV PC board and CN11 on the Main PC board. Pass the solenoid harness through the cut.
15) Connect the solenoid cable to CN2 on the RSV PC board.

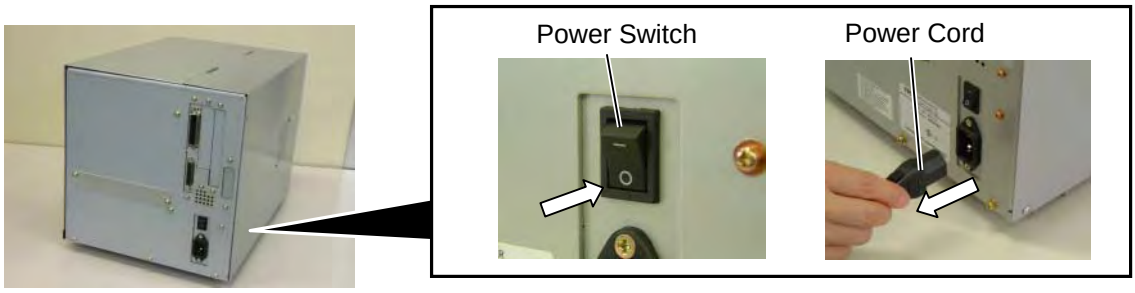


16) After attaching the solenoid, reassemble the operation panel ass'y and side panel (L) in the reverse order of removal.

4.16 PCMCIA INTERFACE BOARD (B-9700-PCM-QM-R)

WARNING!

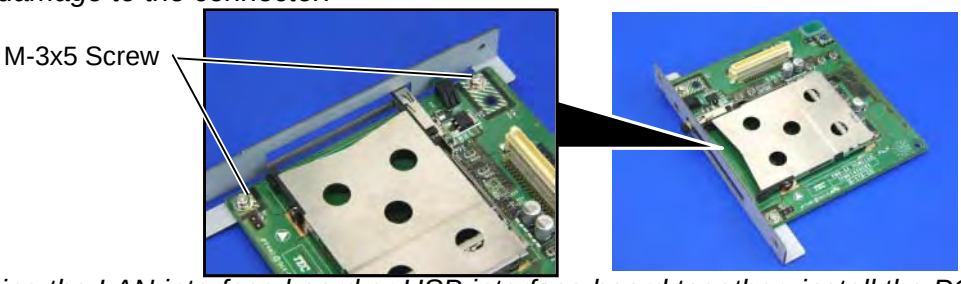
1. *Follow all manual instructions. Failure to do so could create safety hazards such as fire or electrocution.*
   - *Manual instructions must be followed when installing option kits or adding cables to avoid system failures and to insure proper performance and operation.*
   - *Failure to follow manual instructions or any unauthorized modifications, substitution or change to this product will void the limited product warranty.*
2. *Turn the power OFF and disconnect the power cord before installing the PCMCIA interface board.*



3. *Be careful not to pinch your fingers or hands with the covers.*

CAUTION!

1. *Loosen the two M-3x5 screws of the PCMCIA interface board before installing it. Failure to do this may cause damage to the connector.*



2. *When using the LAN interface board or USB interface board together, install the PCMCIA interface board first.*

NOTE: *When both B-9700-PCM-QM-R and B-9700-LAN-QM-R are installed, inserting a LAN PC card into the slot of the B-9700-PCM-QM-R disables the B-9700-LAN-QM-R.*

4.16.1 Applicable Model

This optional device is the PCMCIA interface board, which is intended for the following models:

B-SX4T-QM-R Series, B-SX5T-QM-R Series

4.16.2 Packing List

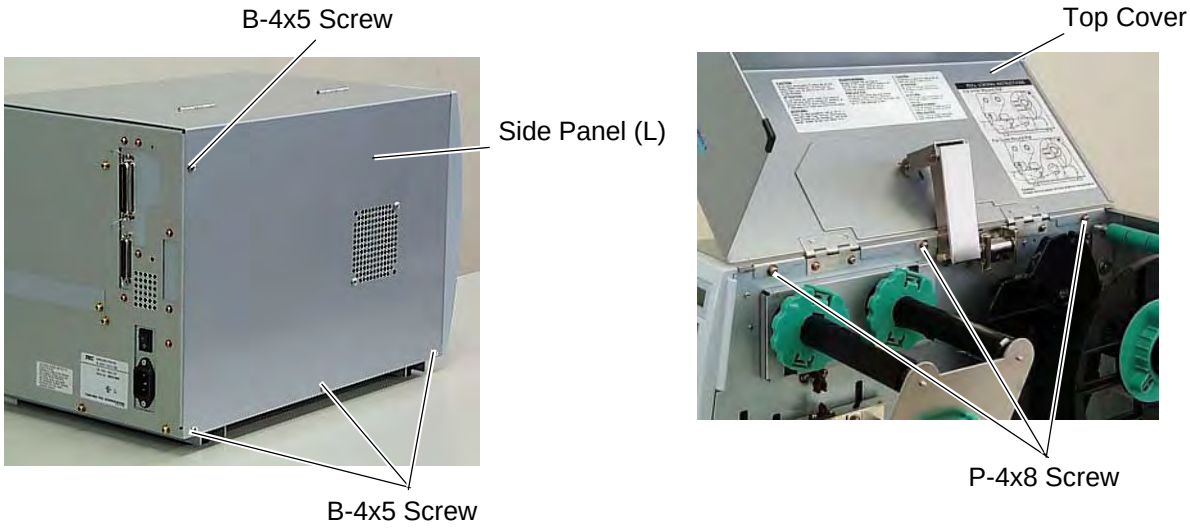
All the following parts are supplied with the kit. Make sure you have all items shown below.

PCMCIA Interface Board (1 pc.)

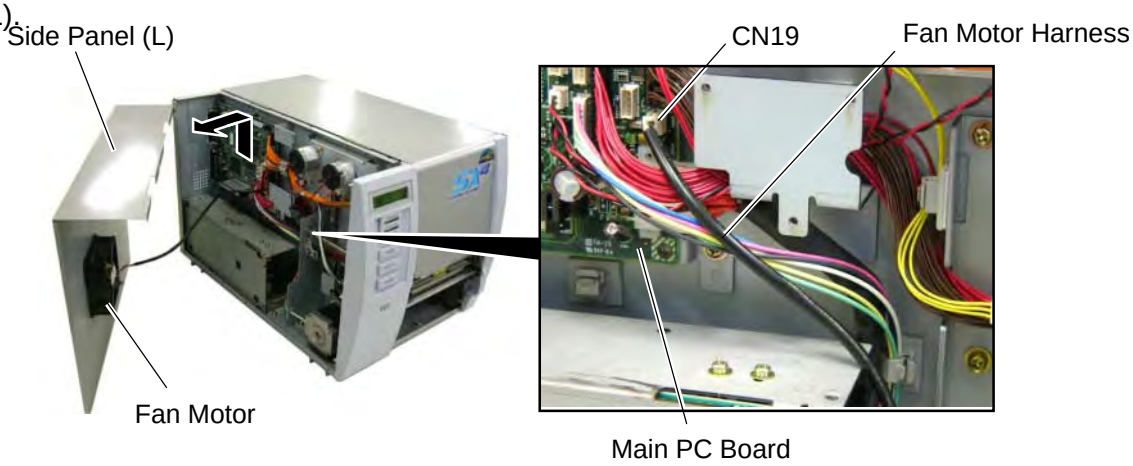
- Installation Manual (1 copy)
- SM-3x6 Screw (3 pcs.)

4.16.3 Installation Procedure

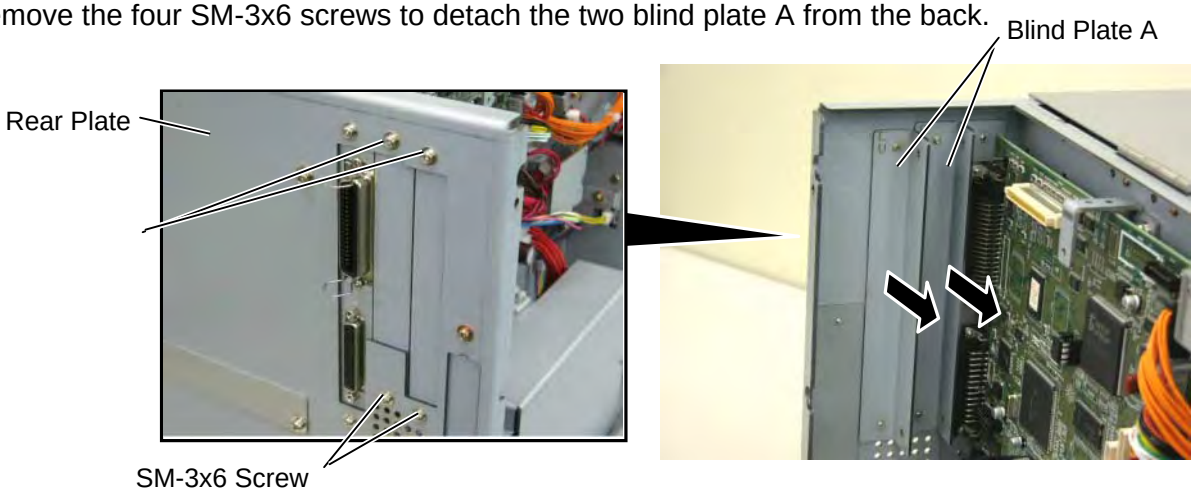
1) Turn the power off and disconnect power cord.
2) Remove the four B-4x5 screws from the side panel (L).
3) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).



4) Lift the side panel (L) and put it aside.
5) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).

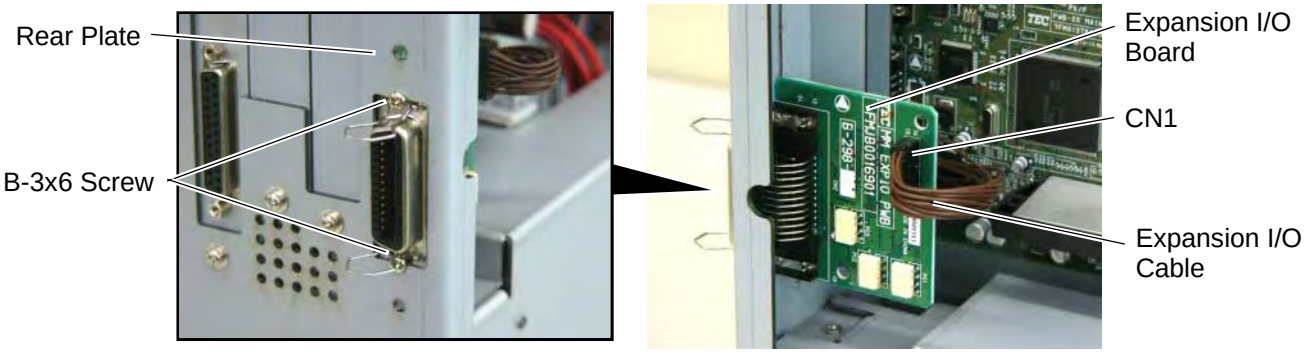


6) Remove the four SM-3x6 screws to detach the two blind plate A from the back.

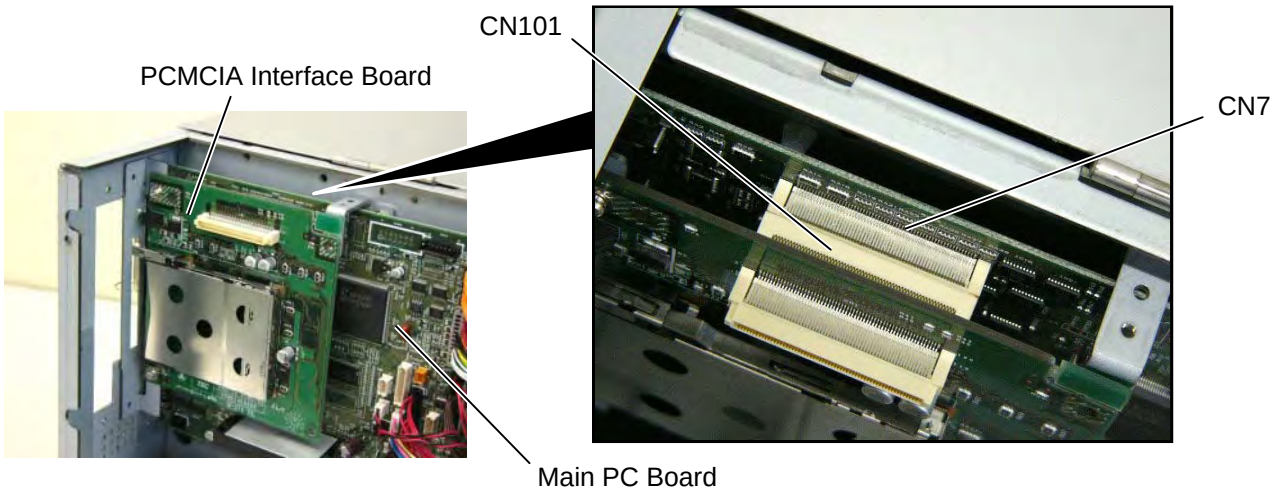


***NOTE**: When only the PCMCIA interface board is installed, one of the blind plate A and the SM-3x6 screws will be used later. (Refer to Step 11)*

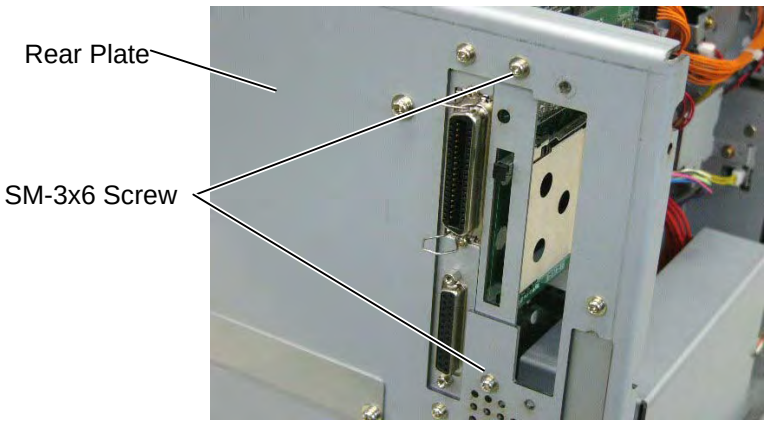
7) In case of the B-SX5T or the B-SX4T that the optional Expansion I/O board (B-7704-IO-QM-R) has been installed in, remove the Expansion I/O board from the printer temporarily using the following procedure.
   (1) Disconnect the Expansion I/O cable from CN1 on the Expansion I/O board.
   (2) Remove the two B-3x6 screws to detach the Expansion I/O board from the printer.



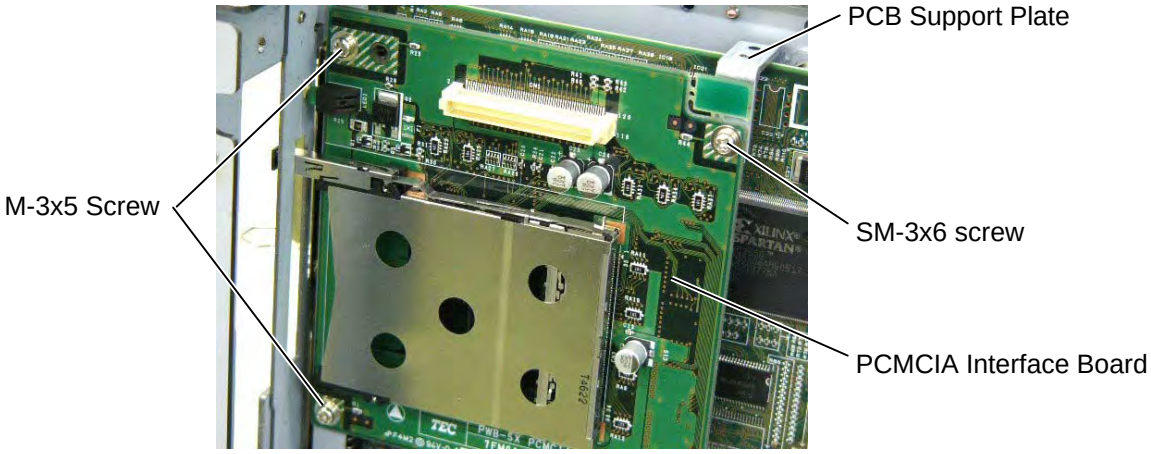
8) Firmly connect CN101 on the PCMCIA interface board directly to CN7 on the Main PC board.



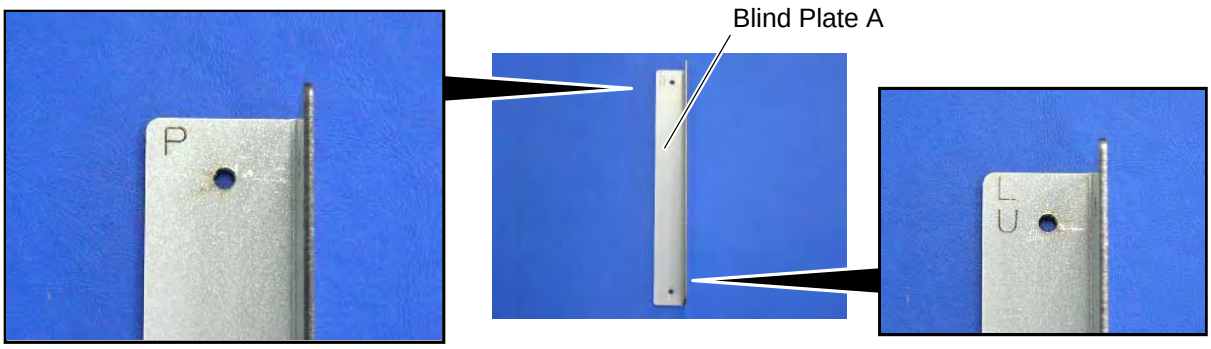
9) Secure the PCMCIA interface board to the rear plate with the two SM-3x6 screws.



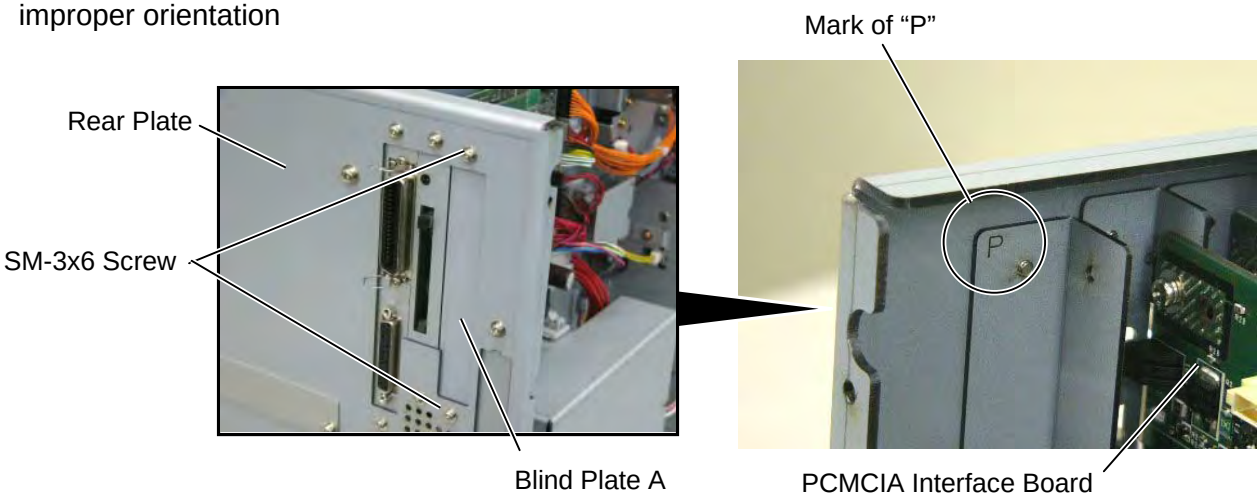
10) Secure the PCMCIA interface board to the PCB support plate with the SM-3x6 screw. Tighten the two M-3x5 screws that were loosened previously. (Refer to Caution)



11) When installing the PCMCIA interface board only, attach a blind plate A with the SM-3x6 screws to the printer back, which were removed in Step 6, to cover the unused slot.
Please note that “P” and “LU” are printed on the blind plate A, as shown below.



Attach the blind plate A with the mark of “P” positioned topside. It cannot be attached in an improper orientation

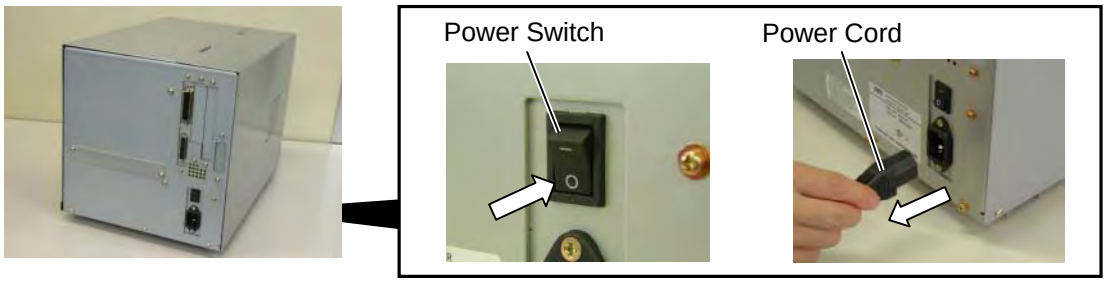


12) When the Expansion I/O board was removed in the previous step, reassemble it.
13) Attach the side panel (L) back to the printer in the reverse order of removal.

4.17 USB INTERFACE BOARD (B-9700-USB-QM-R)

WARNING!

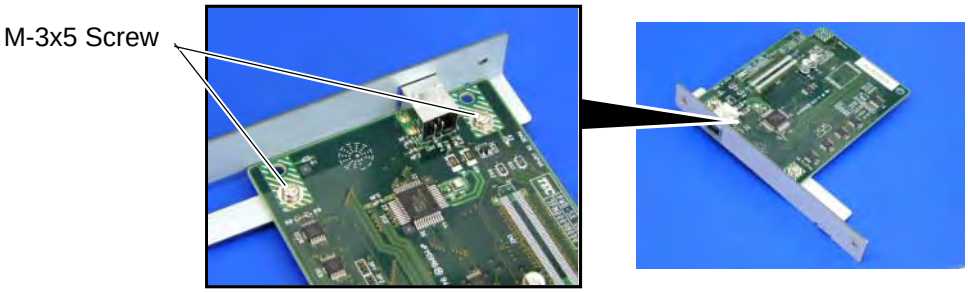
1. *Follow all manual instructions. Failure to do so could create safety hazards such as fire or electrocution.*
   - *Manual instructions must be followed when installing option kits or adding cables to avoid system failures and to insure proper performance and operation.*
   - *Failure to follow manual instructions or any unauthorized modifications, substitution or change to this product will void the limited product warranty.*
2. *Turn the power OFF and disconnect the power cord before installing the USB interface board.*



3. *Be careful not to pinch your fingers or hands with the covers.*

CAUTION!

1. *Loosen the two M-3x5 screws of the USB interface board before installing it. Failure to do this may cause damage to the connector.*



2. *When using the PCMCIA interface board together, first install the PCMCIA PC board, and then USB interface board.*

4.17.1 Applicable Model

This optional device is the USB interface board, which is intended for the following models:

B-SX4T-QM-R Series, B-SX5T-QM-R Series

4.17.2 Packing List

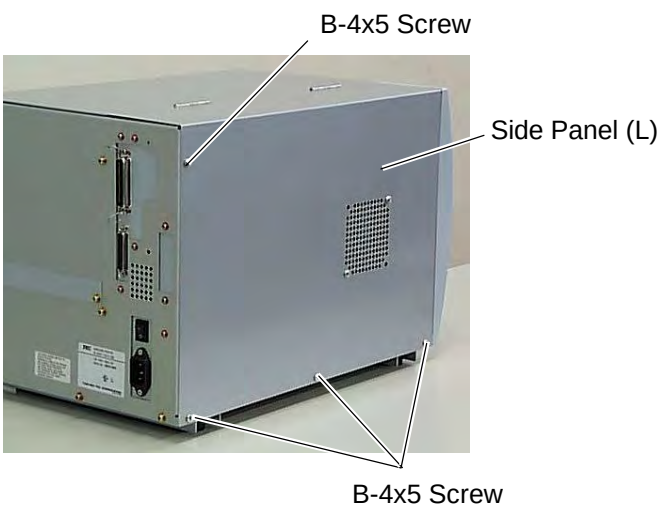
All the following parts are supplied with the kit. Make sure you have all items shown below.

USB Interface Board (1pc.)	PCB Attachment Plate (1 pc.)

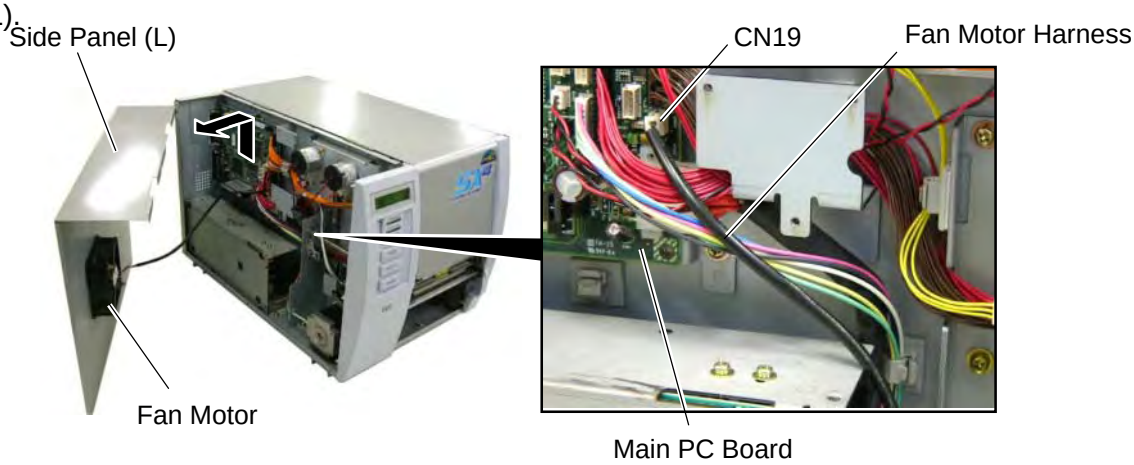
- Installation Manual (1 copy)
- SM-3x6 Screw (4 pcs.)

4.17.3 Installation Procedure

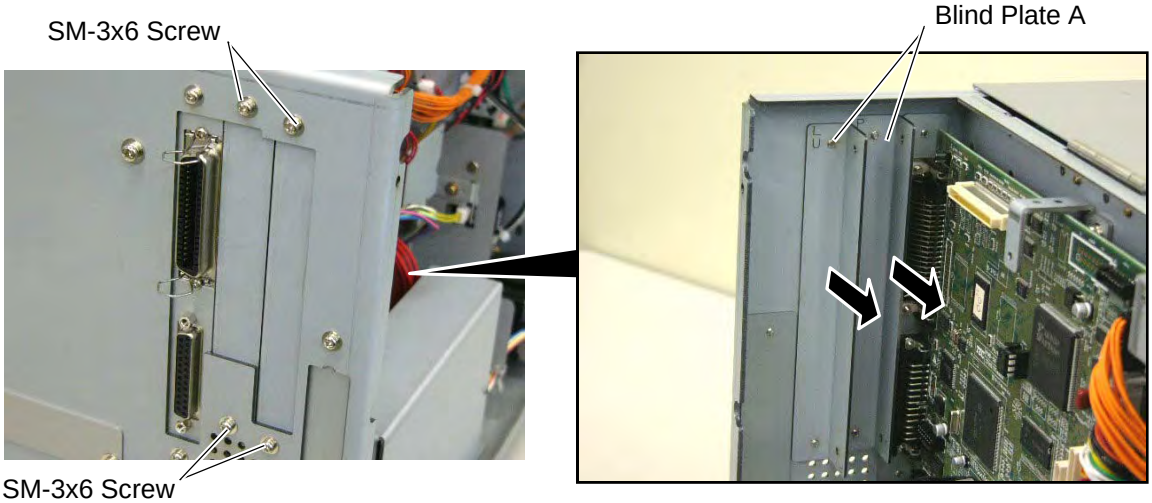
1) Turn the power off and disconnect the power cord.
2) Remove the four B-4x5 screws from the side panel (L).
3) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).



4) Lift the side panel (L) and put it aside.
5) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).

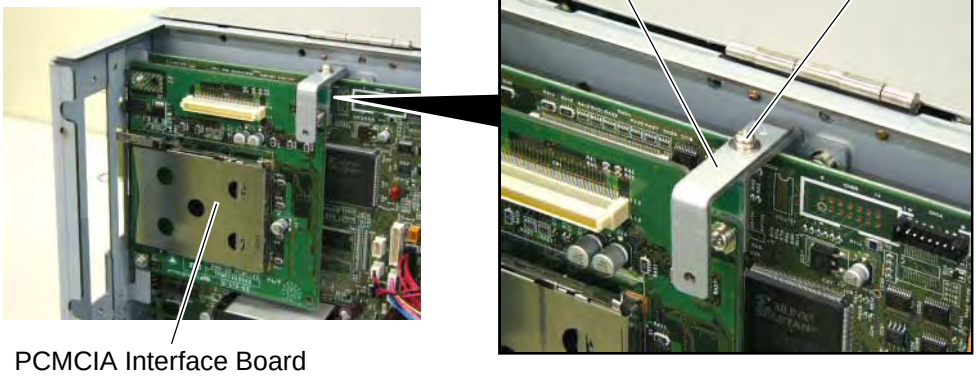


6) Remove the four SM-3x6 screws to detach the two blind plate A from the back.



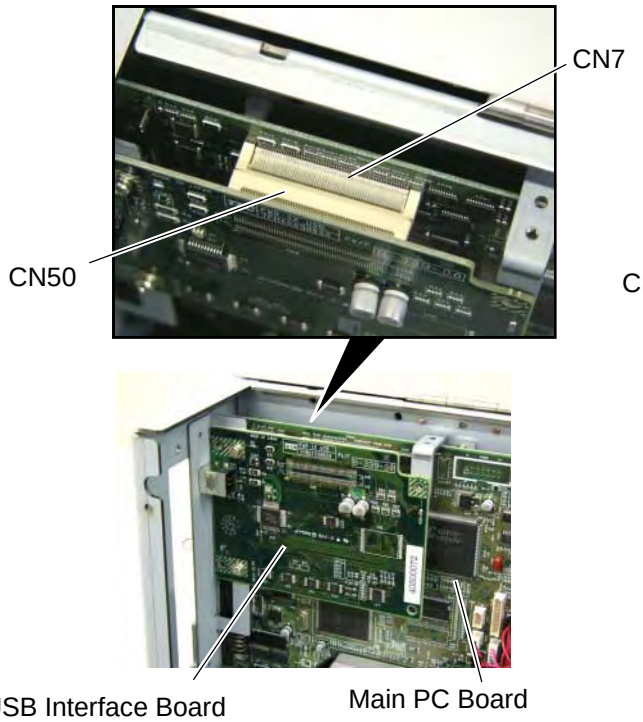
NOTE: *When only the USB interface board is installed, one of the blind plate A and the SM-3x6 screws will be used later. (Refer to Step 12)*

7) If the PCMCIA interface board is used together with the USB interface board, attach the PCB attachment plate to the plate to which the PCMCIA interface board is secured with the SM-3x6 screw. If not, go to the next step.

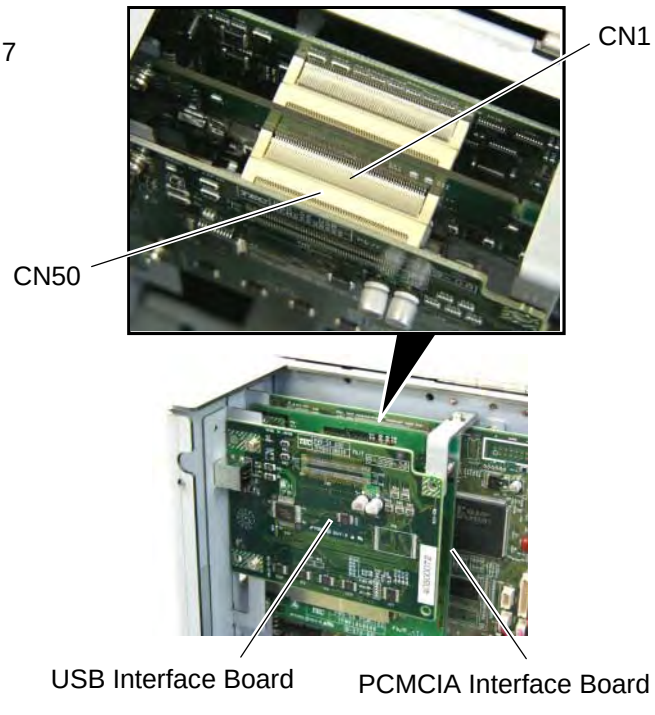


8) Firmly connect CN50 connector on the USB interface board directly to CN7 on the Main PC board or CN1 on the PCMCIA interface board.

When connecting to the Main PC Board:

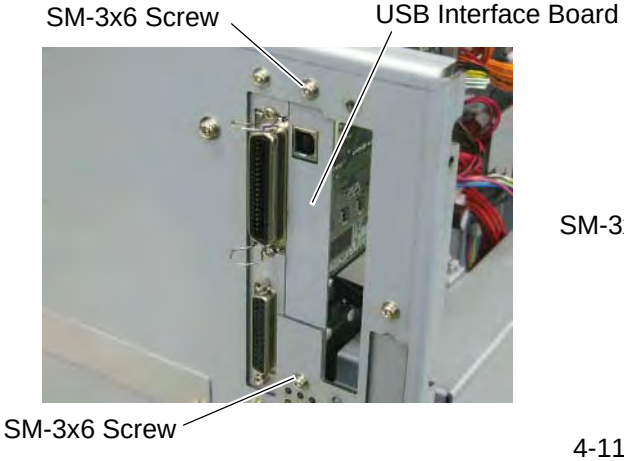


When connecting the PCMCIA Interface Board:

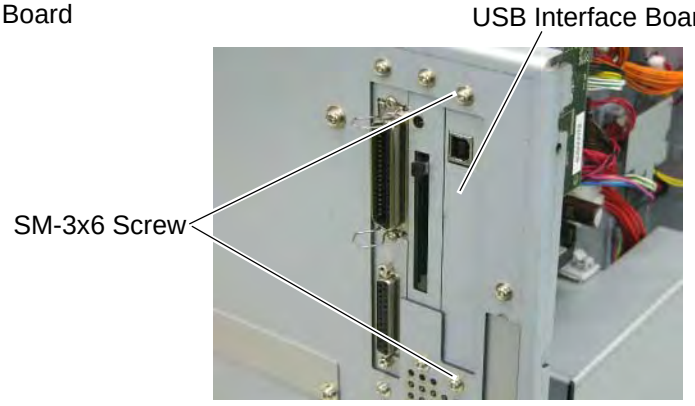


9) Secure the USB interface board to the rear plate with the two SM-3x6 screws.

When connecting to the Main PC Board:

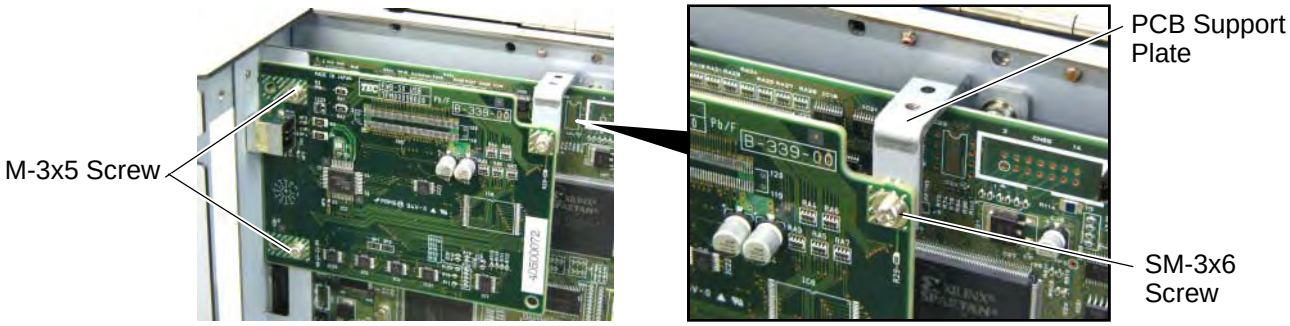


When connecting to the PCMCIA Interface Board:

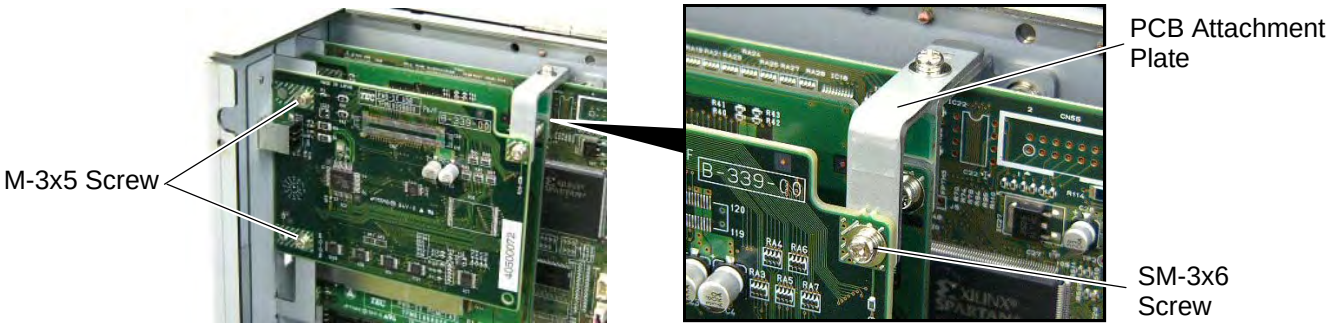


10) Tighten the two M-3x5 screws of the USB interface board that were loosened previously. (Refer to Caution)
11) Secure the USB interface board to the PCB support plate (when connecting to the Main PC board) or PCB attachment plate (when connecting to the PCMCIA interface board) with the SM-3x6 screw.

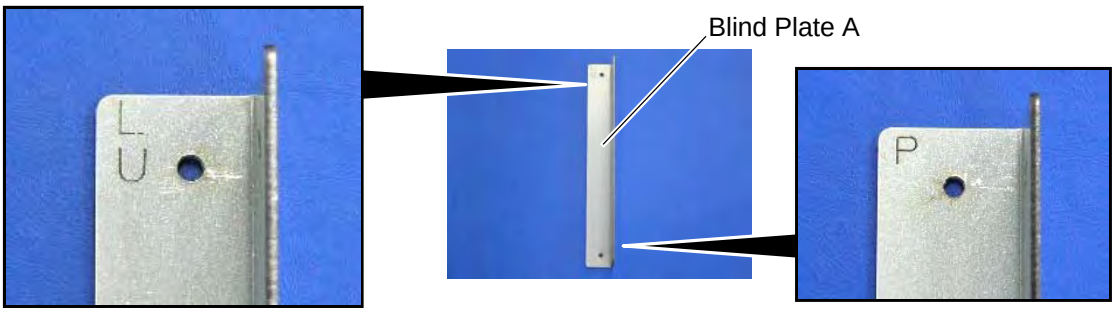
When connecting to the Main PC Board:



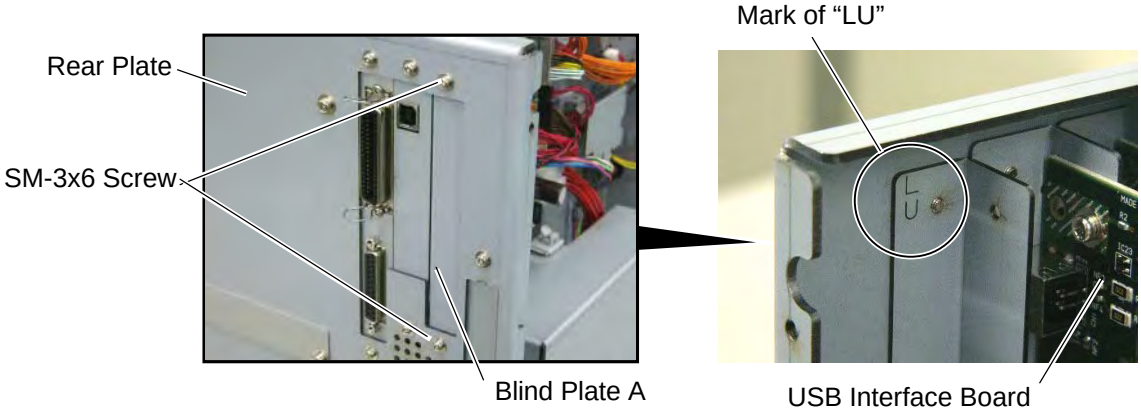
When connecting to the PCMCIA Interface Board:



12) When installing the USB interface board only, attach a blind plate A with the SM-3x6 screws to the printer back, which were removed in Step 6, to cover the unused slot.
Please note that “LU” and “P” are printed on the blind plate A, as shown below.



Attach the blind plate A with the mark of “LU” positioned topside. It cannot be attached in an improper orientation.

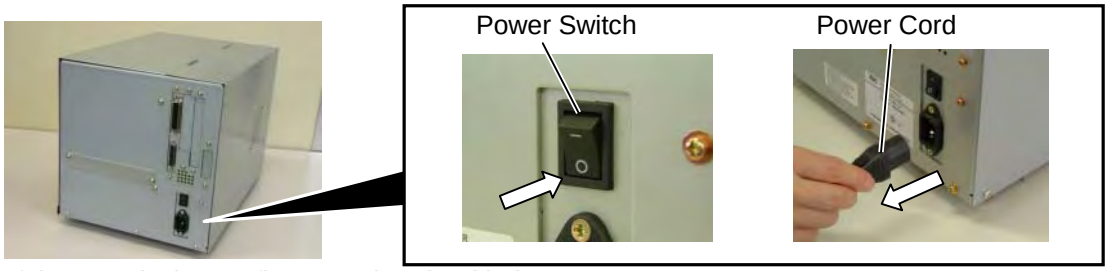


12) Attach the side panel (L) back to the printer in the reverse order of removal.

4.18 LAN INTERFACE BOARD (B-9700-LAN-QM-R)

WARNING!

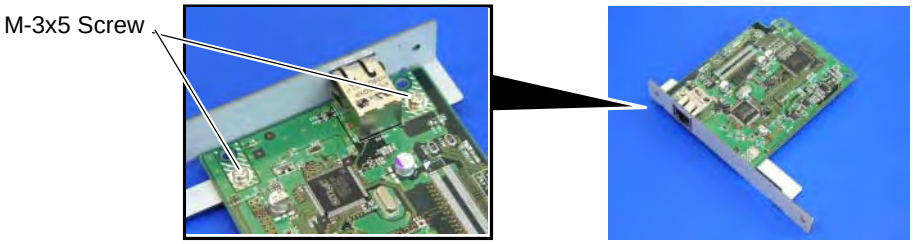
1. *Follow all manual instructions. Failure to do so could create safety hazards such as fire or electrocution.*
   - *Manual instructions must be followed when installing option kits or adding cables to avoid system failures and to insure proper performance and operation.*
   - *Failure to follow manual instructions or any unauthorized modifications, substitution or change to this product will void the limited product warranty.*
2. *Turn the power OFF and disconnect the power cord before installing the LAN interface board.*



3. *Be careful not to pinch your fingers or hands with the covers.*

CAUTION!

1. *Loosen the two M-3x5 screws of the LAN interface board before installing it. Failure to do this may cause damage to the connector.*



2. *When using the PCMCIA interface board together, first install the PCMCIA PC board, and then LAN interface board.*

License Agreement
Please be sure to read the License Agreement before opening the sealed LAN Interface Board. If you do not agree with the License Agreement, please do not use this product. Your unpacking the product indicates your approval for the License Agreement.

NOTE: *When both B-9700-LAN-QM-R and B-9700-PCM-QM-R are installed, inserting a LAN PC card into the slot of the B-9700-PCM-QM-R disables the B-9700-LAN-QM-R.*

4.18.1 Applicable Model

This optional device is the LAN interface board, which is intended for the following models:

B-SX4T-QM-R Series, B-SX5T-QM-R Series

4.18.2 Packing List

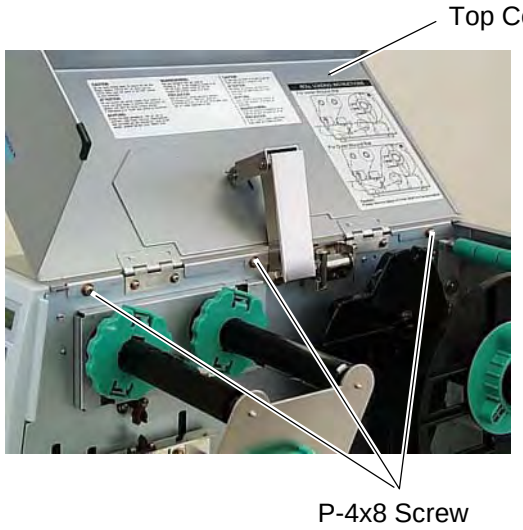
All the following parts are supplied with the kit. Make sure you have all items shown below.

LAN Interface Board (1pc.)	PCB Attachment Plate

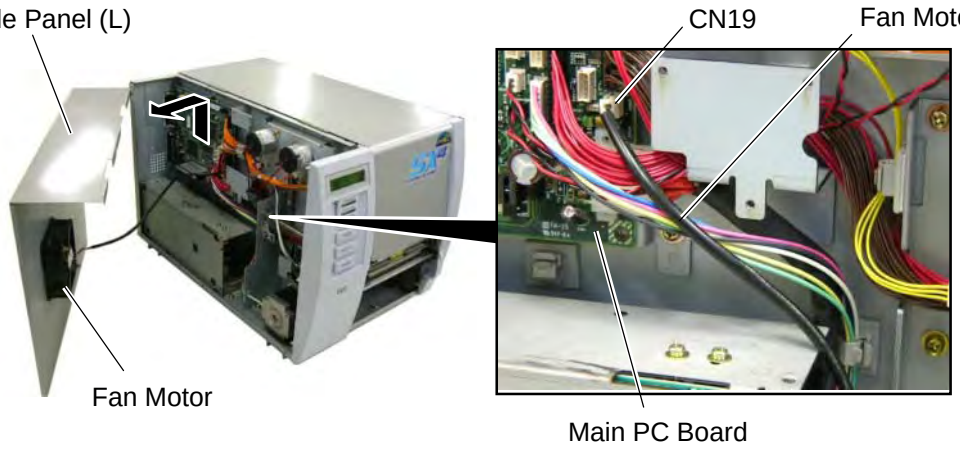
- Installation Manual (1 copy)
- License Agreement (1 copy)
- SM-3x6 Screw (4 pcs.)

4.18.3 Installation Procedure

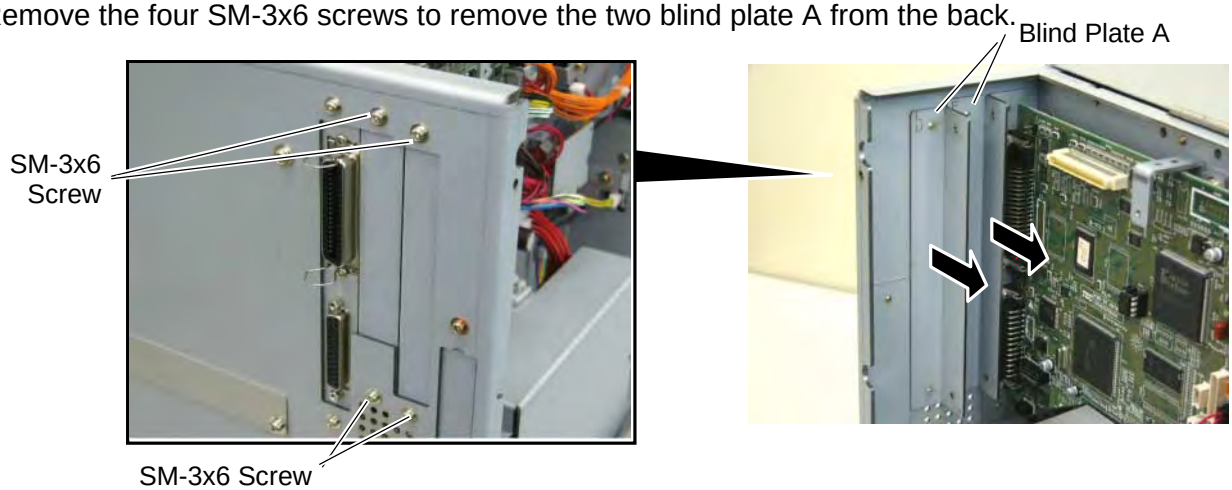
1) Turn the power off and disconnect power cord.
2) Remove the four B-4x5 screws from the side panel (L).
3) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).



3) Lift the side panel (L) and put it aside.
4) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).

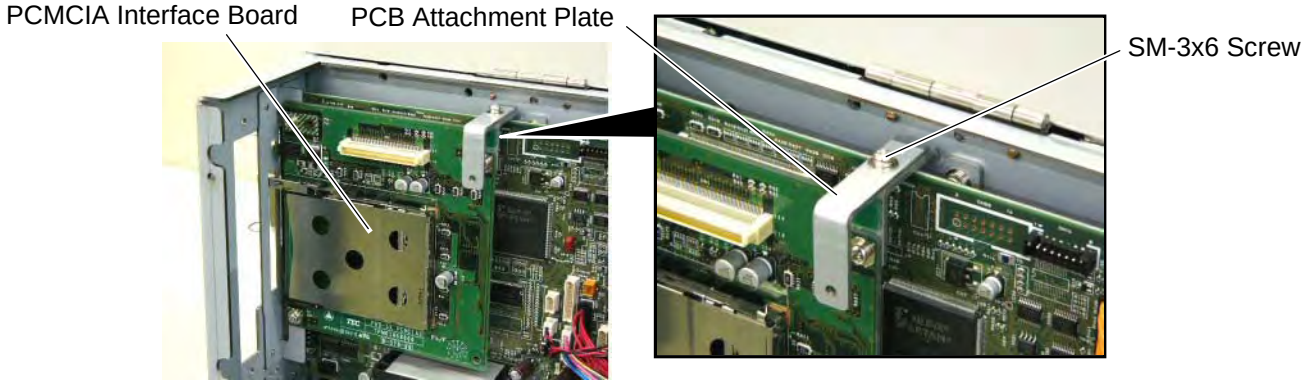


5) Remove the four SM-3x6 screws to remove the two blind plate A from the back.



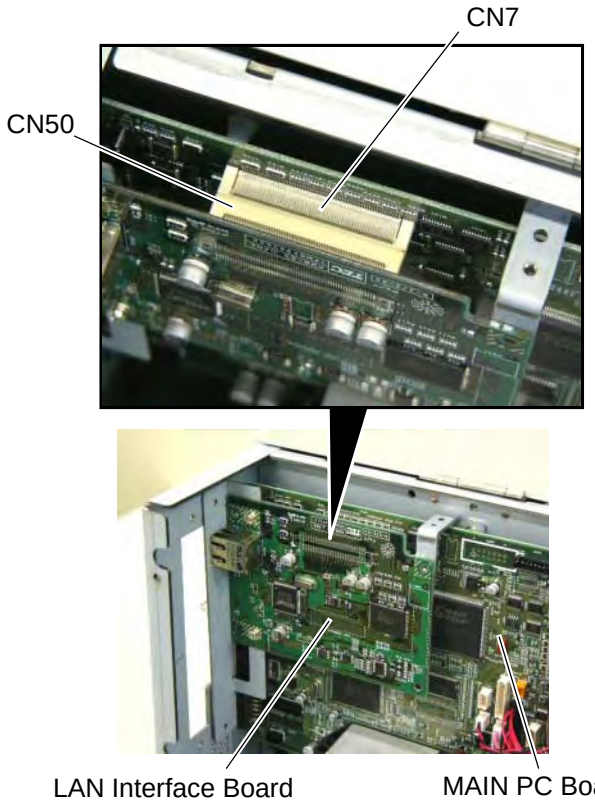
***NOTE**: When only the LAN interface board is installed, one of the blind plate A and the SM-3x6 screws will be used later. (Refer to Step 11)*

6) If the PCMCIA interface board is also installed, attach the PCB attachment plate to the plate to which the PCMCIA interface board is secured with the SM-3x6 screw. If not, go to the next step.

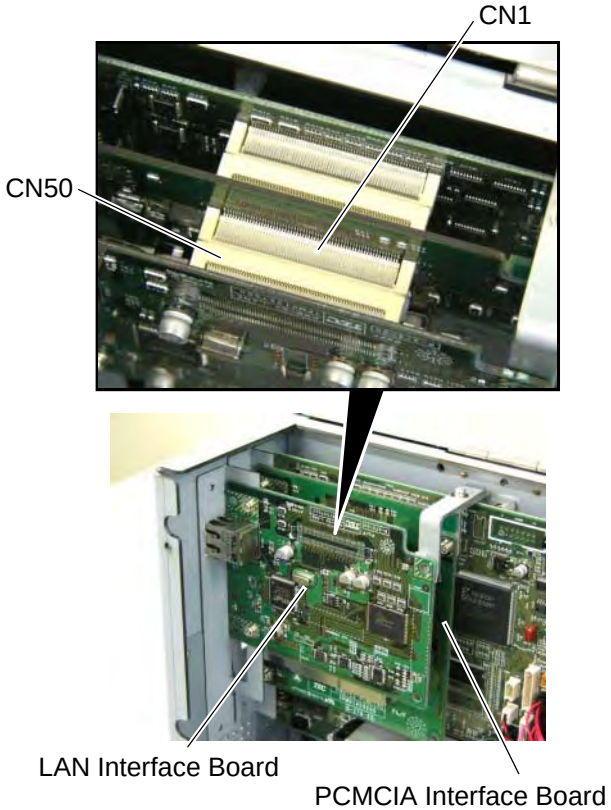


7) Firmly connect CN50 on the LAN interface board directly to CN7 on the Main PC board or CN1 on the PCMCIA interface board.

When connecting to the Main PC Board

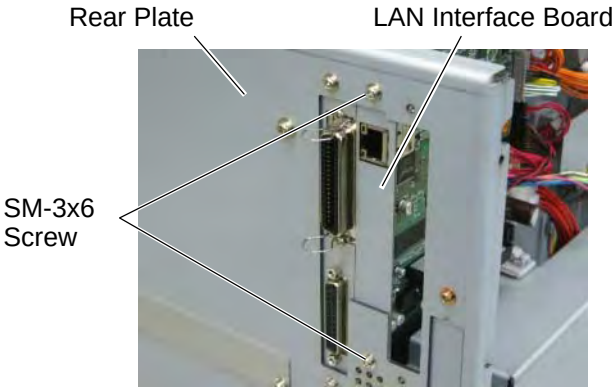


When connecting to the PCMCIA Interface Board

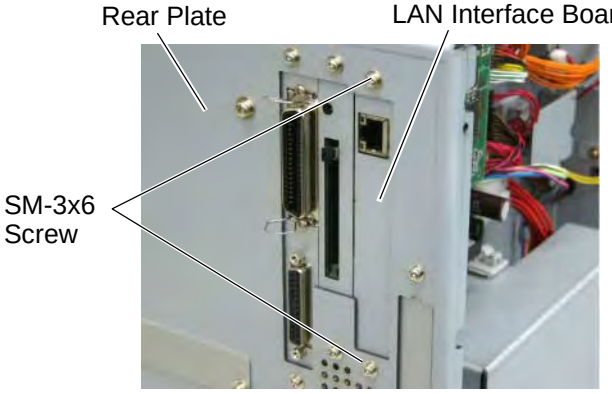


8) Secure the LAN interface board to the rear plate with the two SM-3x6 screws.

When connecting to the Main PC Board

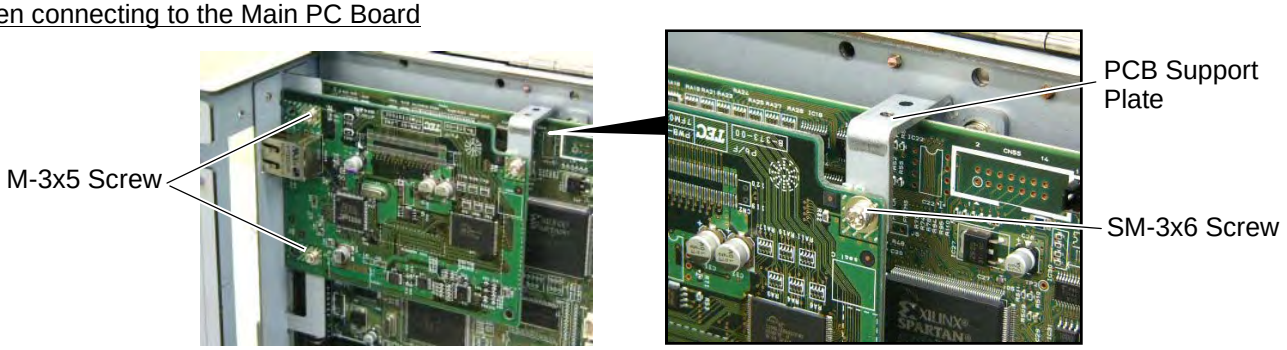


When connecting to the PCMCIA Interface Board

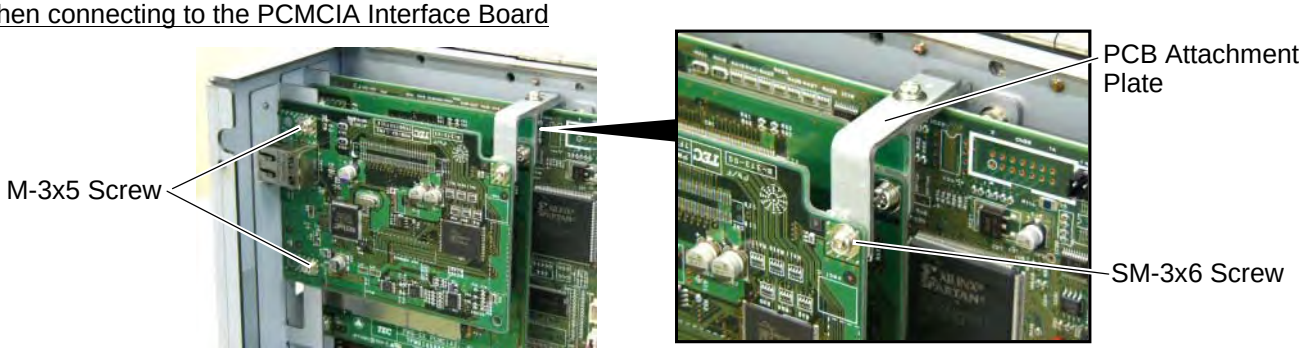


9) Tighten the two M-3x5 screws on the LAN interface board that were loosened previously. (Refer to Caution)
10) Secure the LAN interface board to the PCB support plate (when connecting to the Main PC board) or PCB attachment plate (when connecting to the PCMCIA interface board) with the SM-3x6 screw.

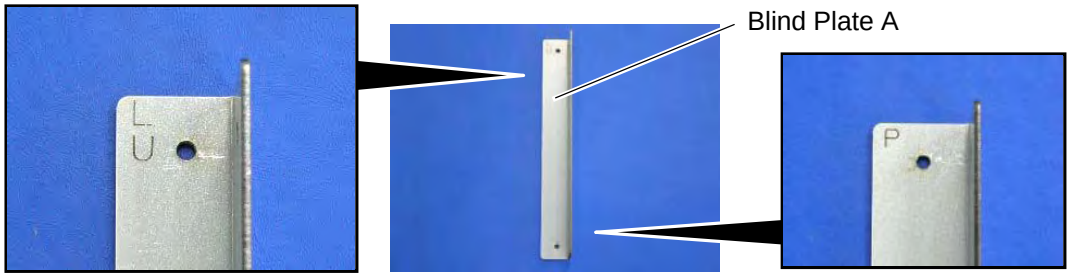
When connecting to the Main PC Board



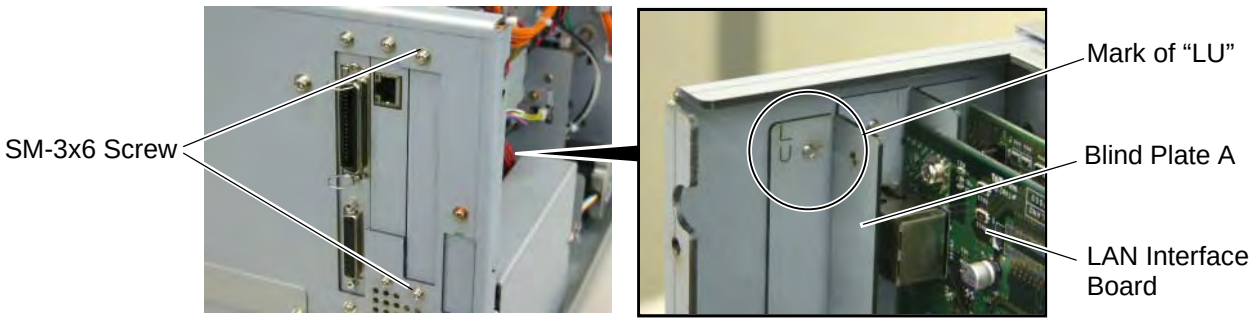
When connecting to the PCMCIA Interface Board



11) When installing the LAN interface board only, attach a blind plate A with the SM-3x6 screws to the printer back, which were removed in Step 5, to cover the unused slot.
Please note that “LU” and “P” are printed on the blind plate A, as shown below.



Attach the blind plate A with the mark of “LU” positioned topside. It cannot be attached in an improper orientation.



12) Attach the side panel (L) back to the printer in the reverse order of removal.

NOTE: *Precaution for the LAN cable connection*
When connecting a LAN cable with the hooded connectors to the LAN interface board, it may not be connected depending on the shape of the hood. In this case, move aside the hood, connect the cable, and return the hood to the former position.

4.19 EXPANSION I/O INTERFACE BOARD (B-7704-IO-QM-R)

WARNING!

1. 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.*
2. *Turn the power OFF and disconnect the power cord before installing the expansion I/O board.*
3. *Be careful not to pinch your fingers or hands with the covers.*

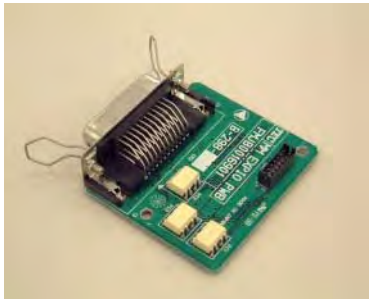
4.19.1 Applicable Model

This optional device is the expansion I/O board, which is intended for the following models:

B-SX4T-QM-R Series

4.19.2 Packing List

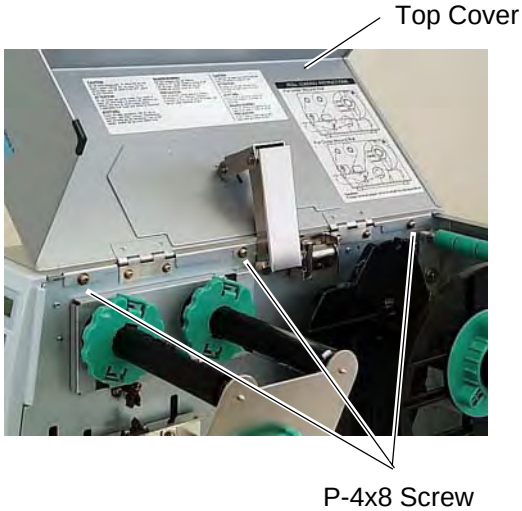
All the following parts are supplied with the kit. Make sure you have all items shown below.

Expansion I/O Board (1 pc.)	Expansion I/O Cable (1 pc.)
	

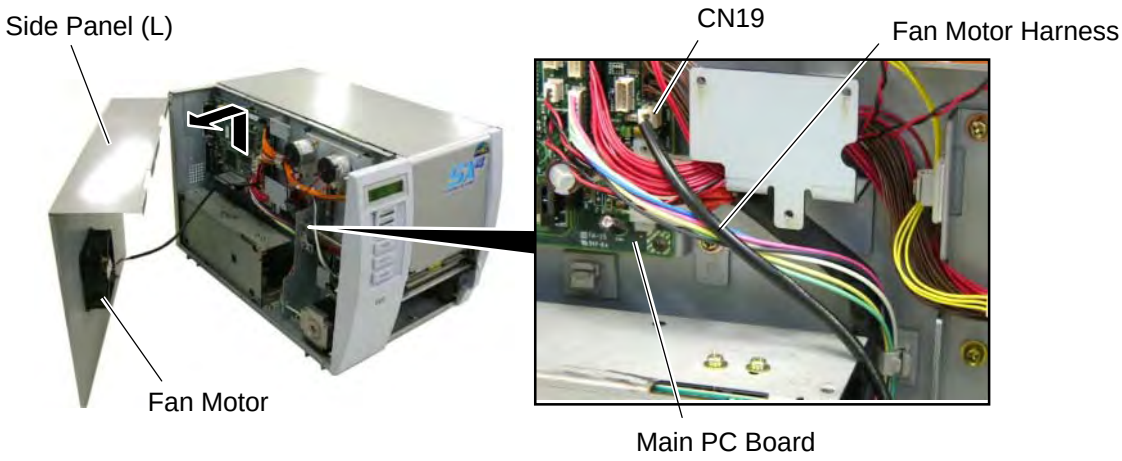
• Installation Manual (1 copy)

4.19.3 Installation Procedure

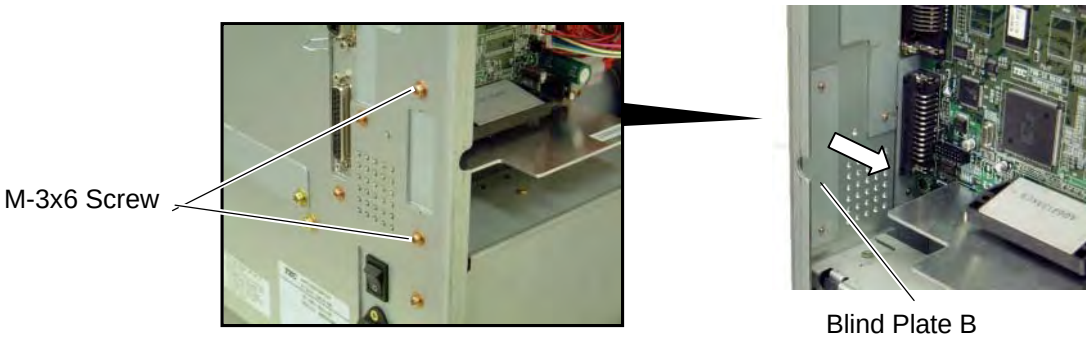
1) Turn the power off and disconnect the power cord.
2) Remove the four B-4x5 screws from the side panel (L).
3) Open the top cover and remove the three P-4x8 screws that secure the side panel (L).



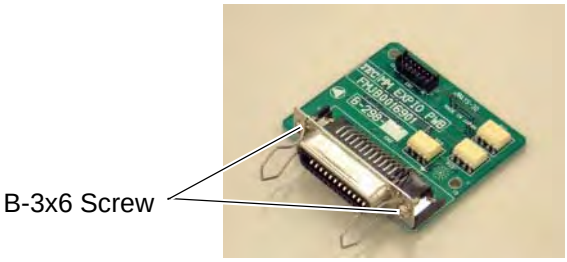
4) Lift the side panel (L) and put it aside.
5) Disconnect the fan motor harness from CN19 on the Main PC board, and then separate the side panel (L).



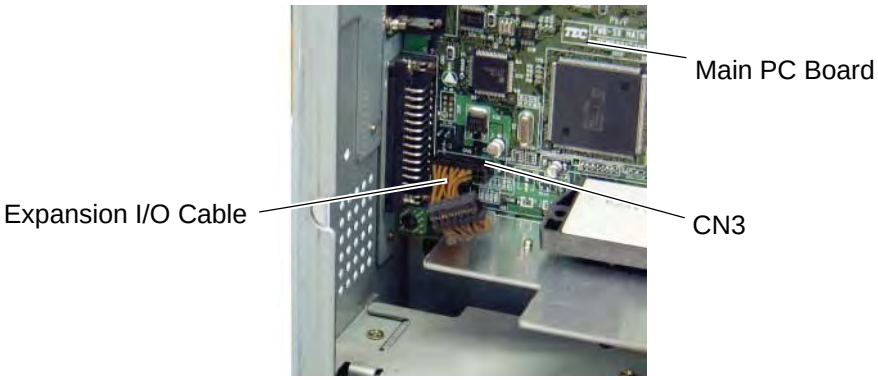
6) Remove the two M-3x6 screws and detach the blind plate B from the back.



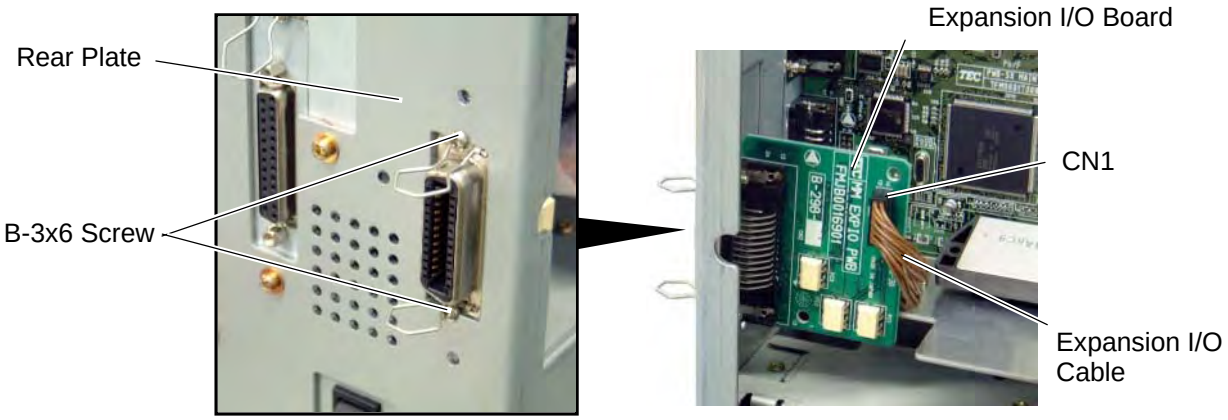
7) Remove the two B-3x6 screws from the expansion I/O board.



8) Connect the expansion I/O cable to CN3 on the Main PC board.



9) Secure the expansion I/O board to the rear plate with the two B-3x6 screws removed in Step 7.
10) Connect the expansion I/O cable to CN1 on the expansion I/O board.



11) Reassemble the side panel (L) in the reverse order of removal.
12) Perform a loop back check to confirm that the expansion I/O board functions properly.

4.20 FANFOLD PAPER GUIDE MODULE (B-4905-FF-QM-R)

WARNING!
Disconnect the power cord before installing the Fanfold Paper Guide Module.

4.20.1 Applicable Model

This optional device is the fan fold paper guide, which is intended for the following models:

B-SX4T-QM-R Series, B-SX5T-QM-R Series

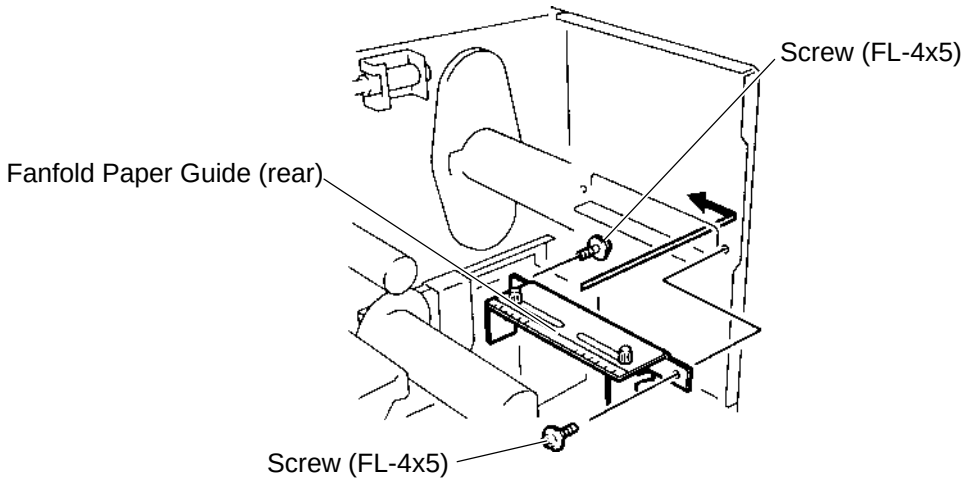
4.20.2 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below.

Description	Q'ty/unit
Fanfold Paper Guide (rear)	1

4.20.3 Installation Procedure

1) Open the top cover.
2) Remove the two FL-4x5 screws to detach the blind plate on the back of the printer and attach the fanfold paper guide (rear) with these same screws.



4.21 WIRELESS LAN MODULE (B-9700-WLAN-QM-R)

WARNING!

1. ***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.***
2. ***Turn the power off and disconnect the power cord before installing the wireless LAN board.***

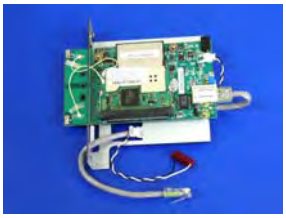
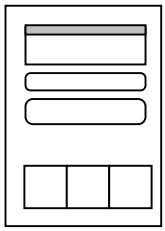
4.21.1 Applicable Model

This optional device is the fan fold paper guide, which is intended for the following models:

B-SX4T-QM-R Series, B-SX5T-QM-R Series

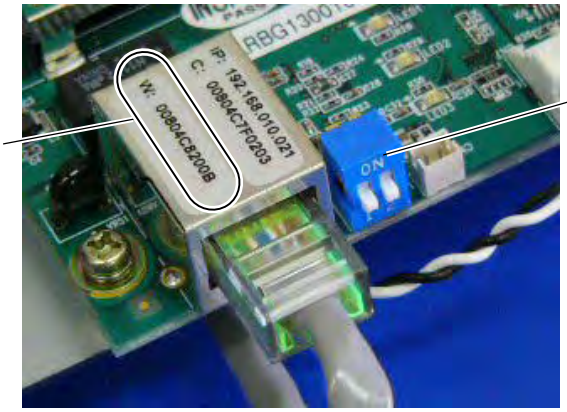
4.21.2 Packing List

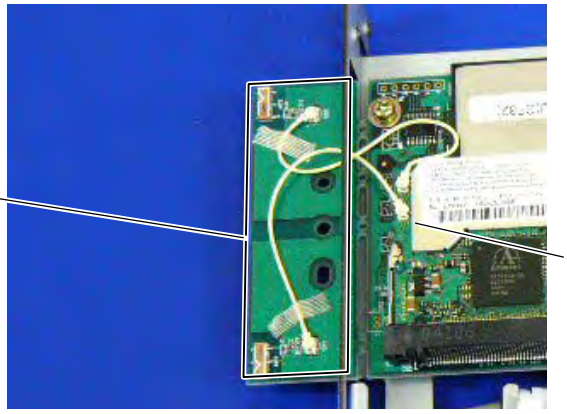
All the following parts are supplied with the kit. Make sure you have all items shown below.

Wireless LAN Board (1 pc.) 	Antenna Cover (1 pc.) 	SMW-3x6 Screw (3 pcs.)
Installation Manual (1 copy) 	WLAN Support Plate (1 pc.) 	FCC/IC Sticker (1 pc.)

NOTES:

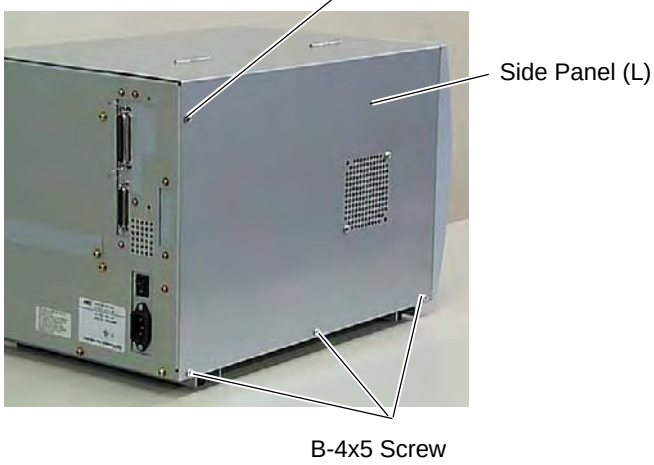
1. *DO NOT CHANGE the DIP Switch settings on the Wireless LAN Board. Doing so may cause a malfunction.*
2. *MAC address of the Wireless LAN module will be necessary when setting the MAC address filtering function of an access point. As it is printed on the top of the wired LAN connector on the Wireless LAN Board, write down it on Installation Manual before mounting the covers so that an end user can know the MAC address.*
3. *Be careful not to hit or damage the antenna when installing this kit. A damaged antenna may affect the performance.*



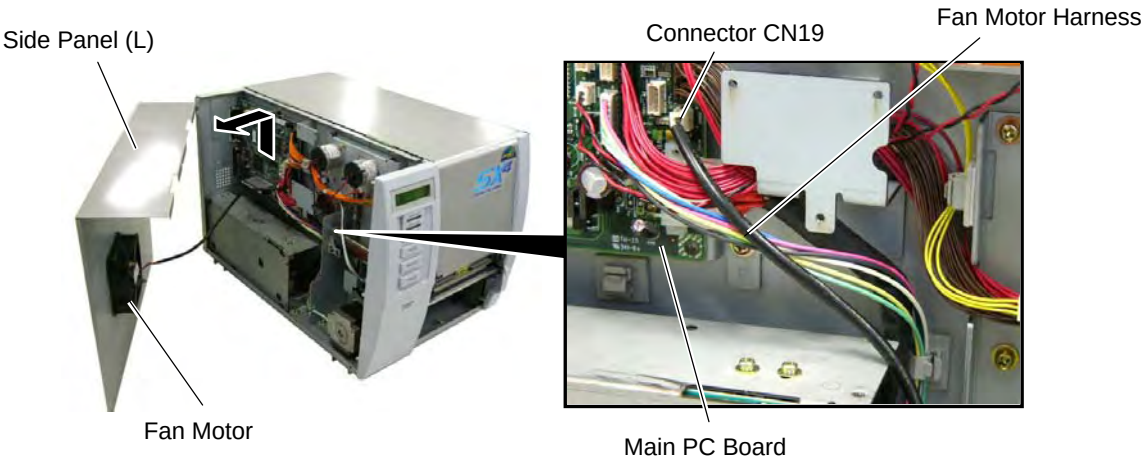


4.21.3 Installation Procedure

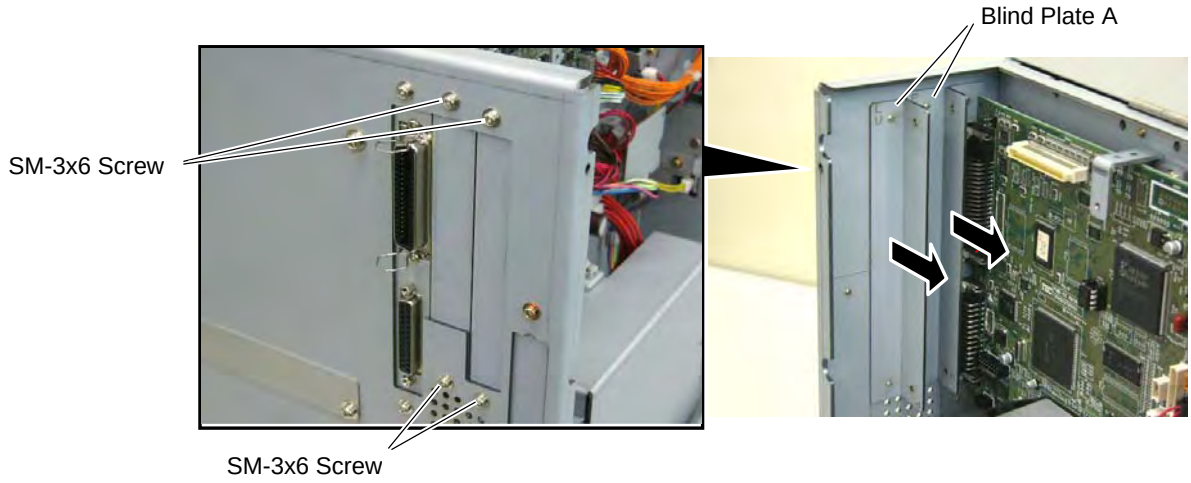
1) Remove the four B-4x5 screws from the Side Panel (L).
2) Open the Top Cover and remove the three P-4x8 screws that secure the Side Panel (L).



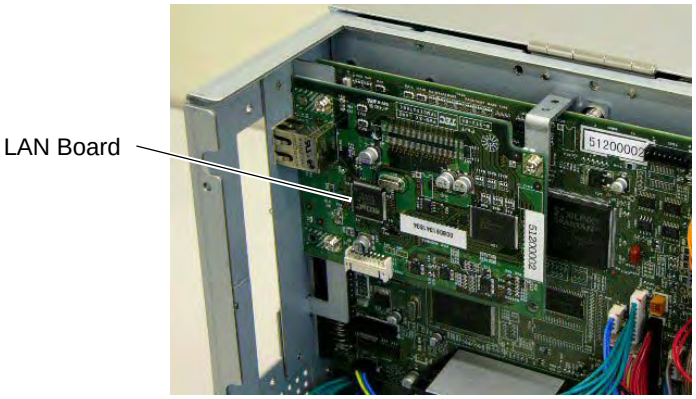
3) Lift the Side Panel (L) and put it aside. Disconnect the Fan Motor Harness from CN19 on the Main PC Board, and then separate the Side Panel (L).



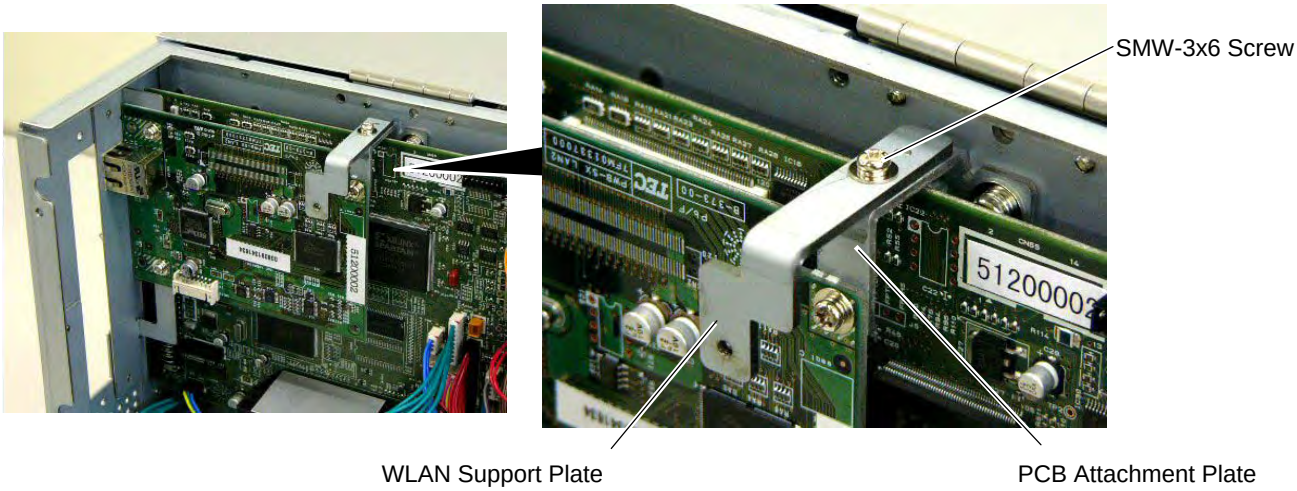
4) Remove the four SM-3x6 screws to remove the two Blind Plate A from the back.



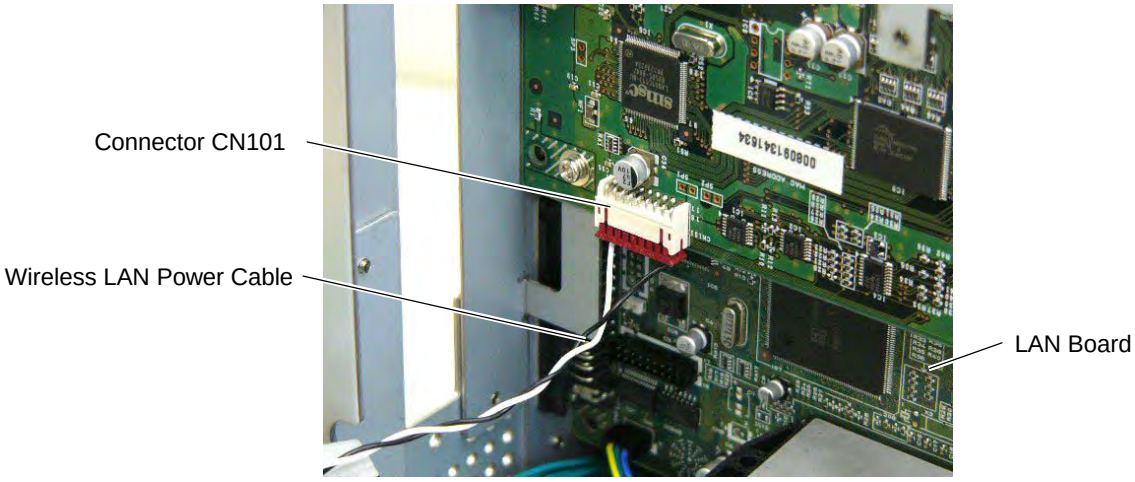
5) Install the B-9700-LAN-QM-R LAN Board in the printer. For detail of the installation procedure, please refer to B-9700-LAN-QM-R Installation Manual.



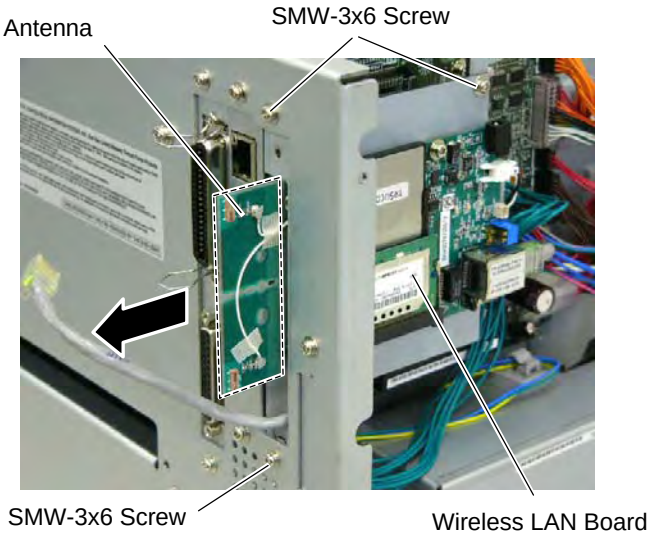
6) Secure the WLAN Support Plate to the following position with the SMW-3x6 screw.



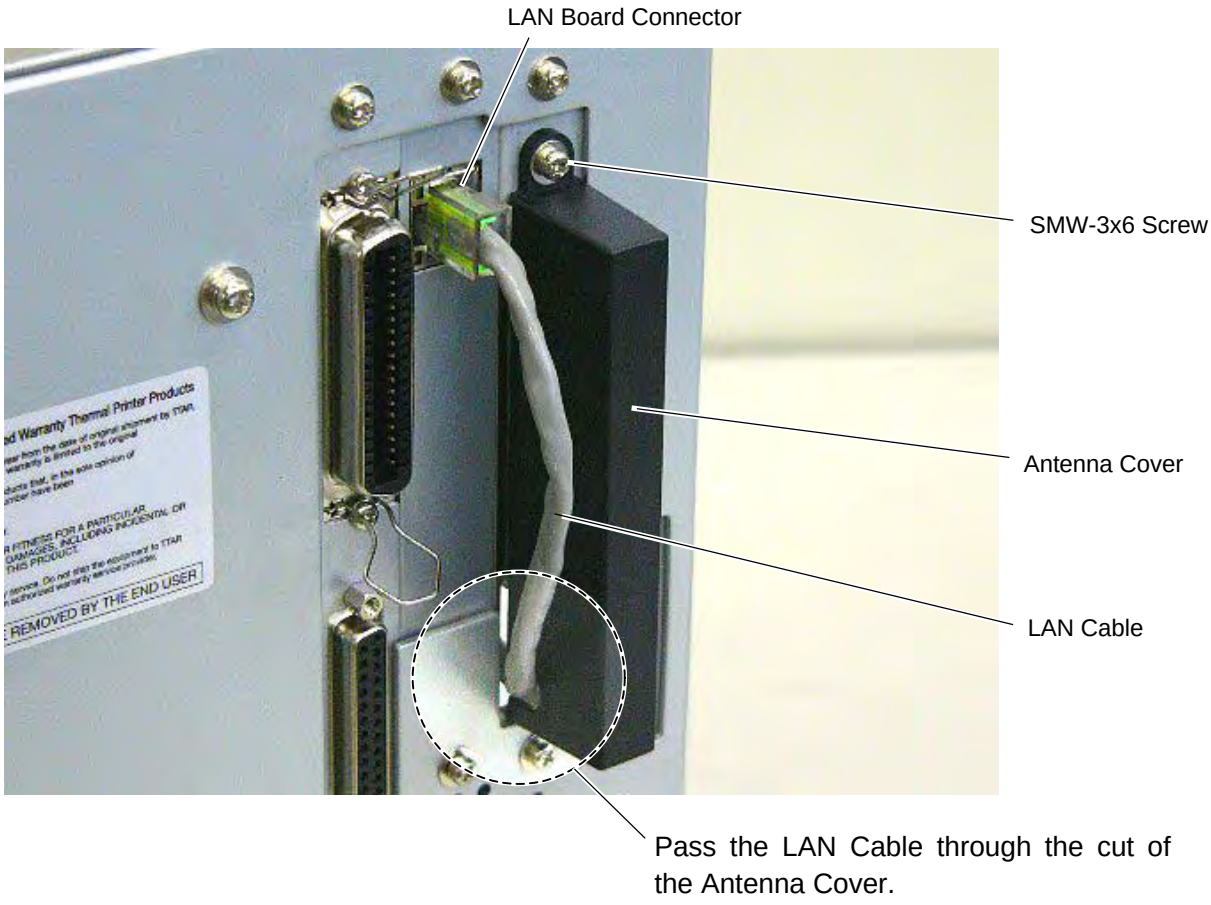
7) Connect the Wireless LAN Power Cable to CN101 on the LAN Board.



8) Put the Antenna of the Wireless LAN Board out of the opening in the printer back.
Care must be taken not to hit the Antenna against the printer frame, as damaged antenna may affect the performance. Secure the Wireless LAN Board to the printer with the three SMW-3x6 screws (two of them are those removed in Step 4.)



9) Attach the Antenna Cover to the printer back with the SMW-3x6 screw, as shown below. Pass the LAN Cable through the cut of the Antenna Cover.



10) Re-attach the Side Panel (L) to the printer.

11) After installing the wireless LAN module, attach the FCC/IC sticker to any available space of the printer back.

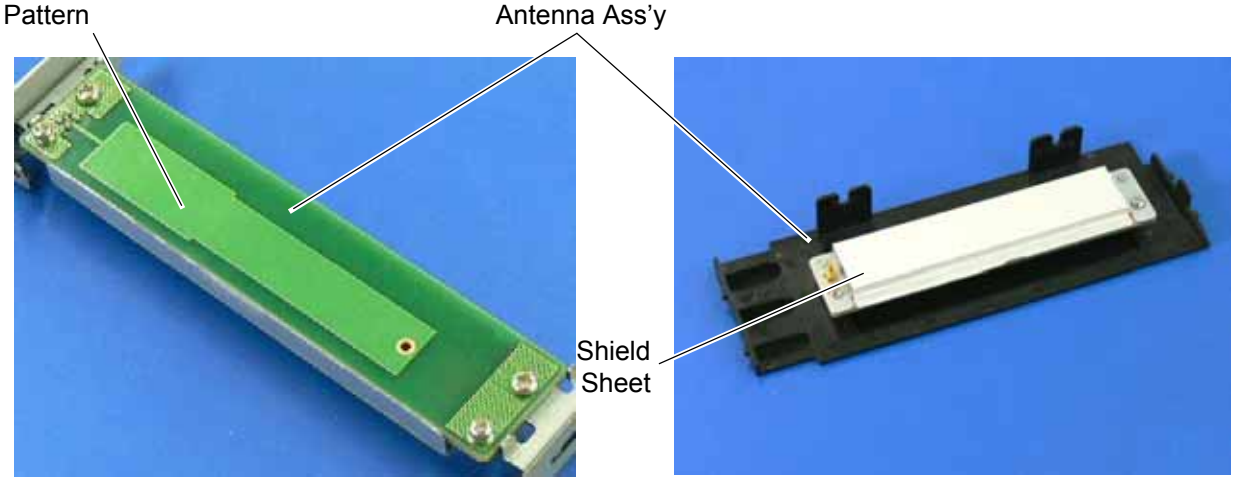
4.22 RFID MODULE (B-SX704-RFID-U2-EU-R)

The B-SX704-RFID-U2-EU-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.



4.22.1 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.

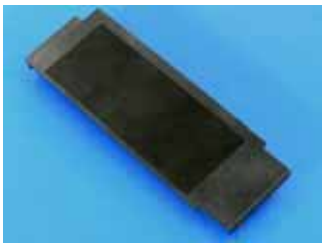
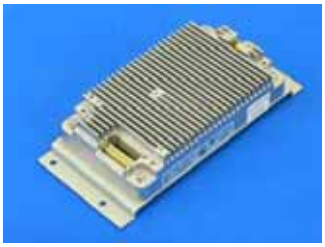
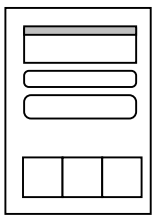
(2) To use this device, printer firmware V4.5 or greater is required. Upgrade the firmware to V4.5 or greater, if necessary. For the downloading procedure, refer to the B-SX4T/SX5T Series Maintenance Manual.
Note that a RAM clear needs to be performed after downloading, so print out the maintenance counter 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:

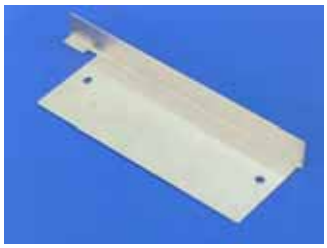
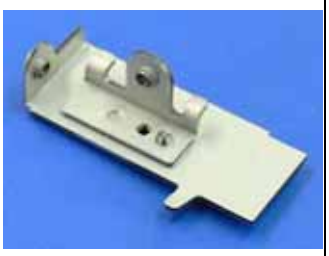
Model Name	Frequency Band	Applicable Countries
B-SX704-RFID–U2-EU-R	UHF 869.7 to 870.0MHz (Center frequency: 869.85MHz)	EU member states and EFTA member states

4.22.2 Packing List

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.) 	• 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 Plate (1 pc.)	• Shield Sheet (1 pc.)	• Antenna Plate L (1 pc.)	• Antenna Plate R (1 pc.)
			

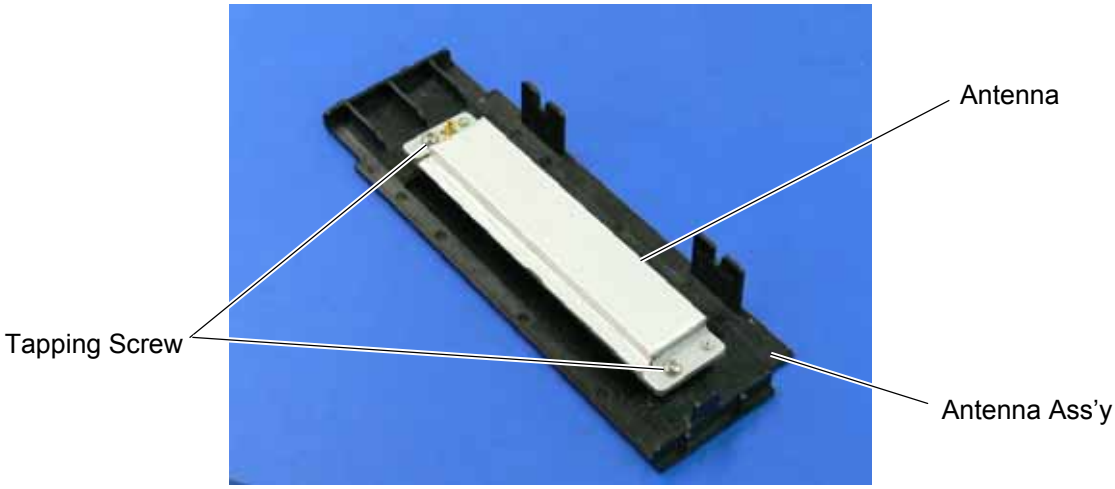
• Pan Head Screw P-3x6 (6 pcs.)

4.22.3 Installation Procedure

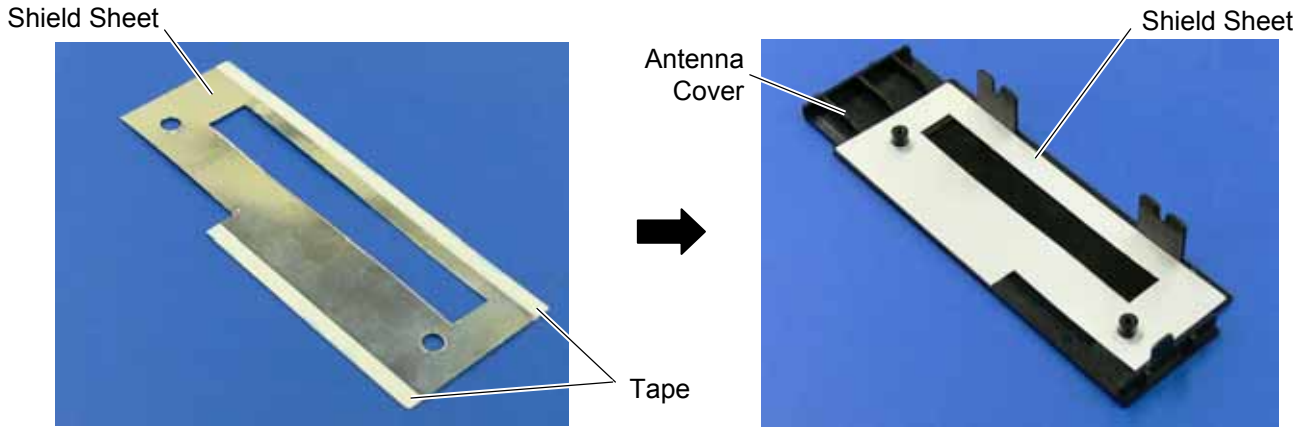
4.22.3.1 Preparation for Use of Short-Pitch RFID Tags (20mm)

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 4.22.3.2.

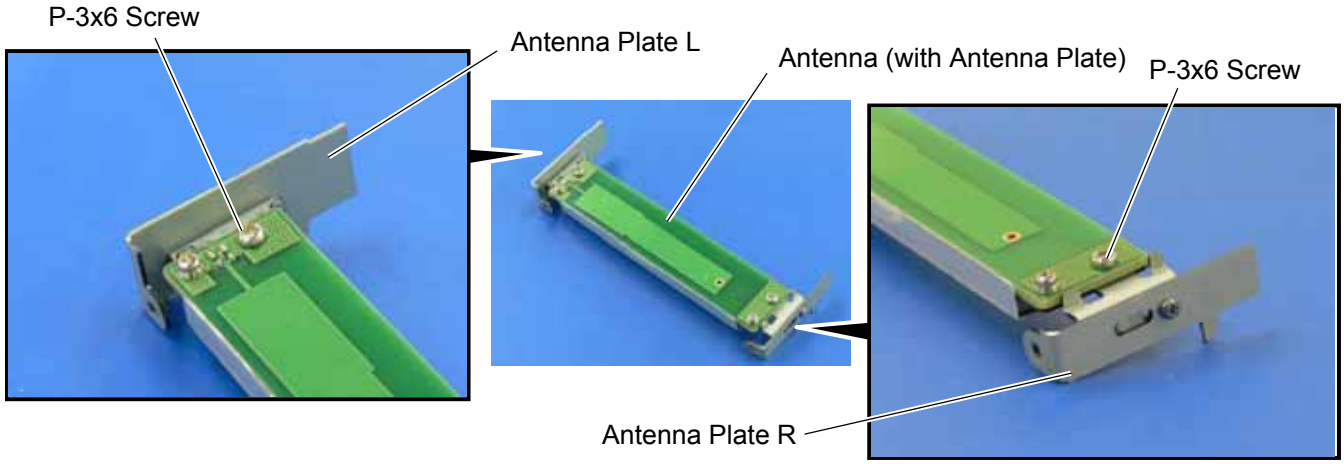
1. Remove the two Tapping Screws to detach the Antenna from the Antenna Ass'y.



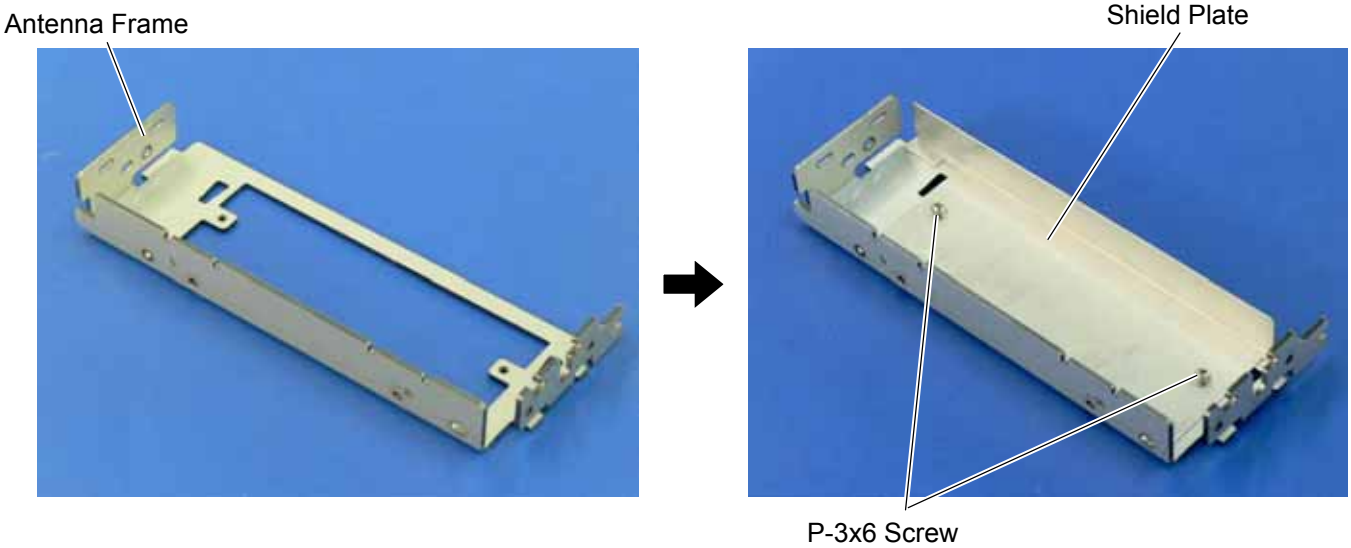
2. Remove the backing tapes from the reverse side of the Shield Sheet and attach it to the Antenna Cover, as shown below.



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



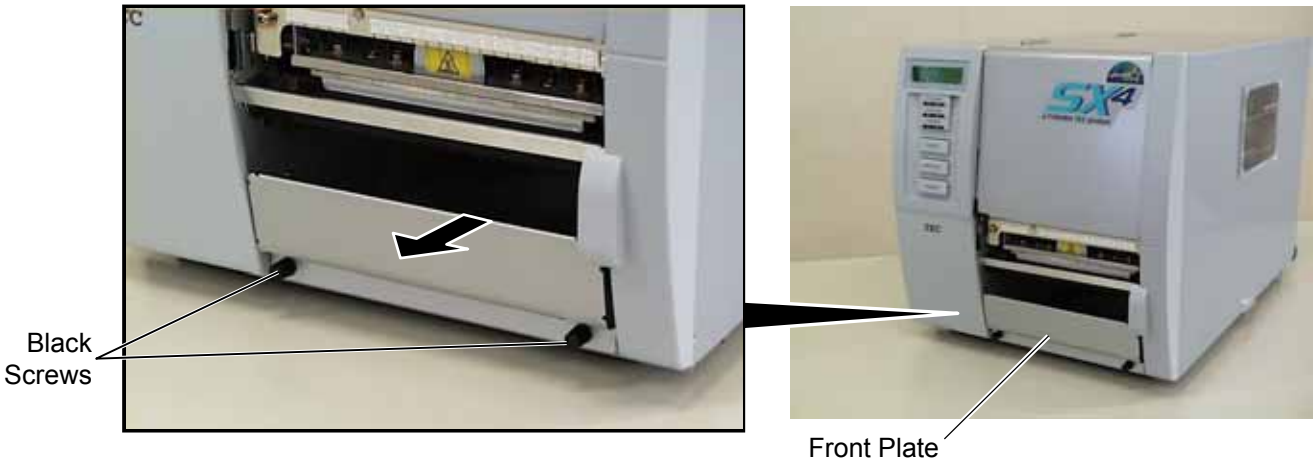
4. Attach the Shield Plate to the Antenna Frame. Secure the Shield Plate to the Antenna Frame with the P-3x6 screws.



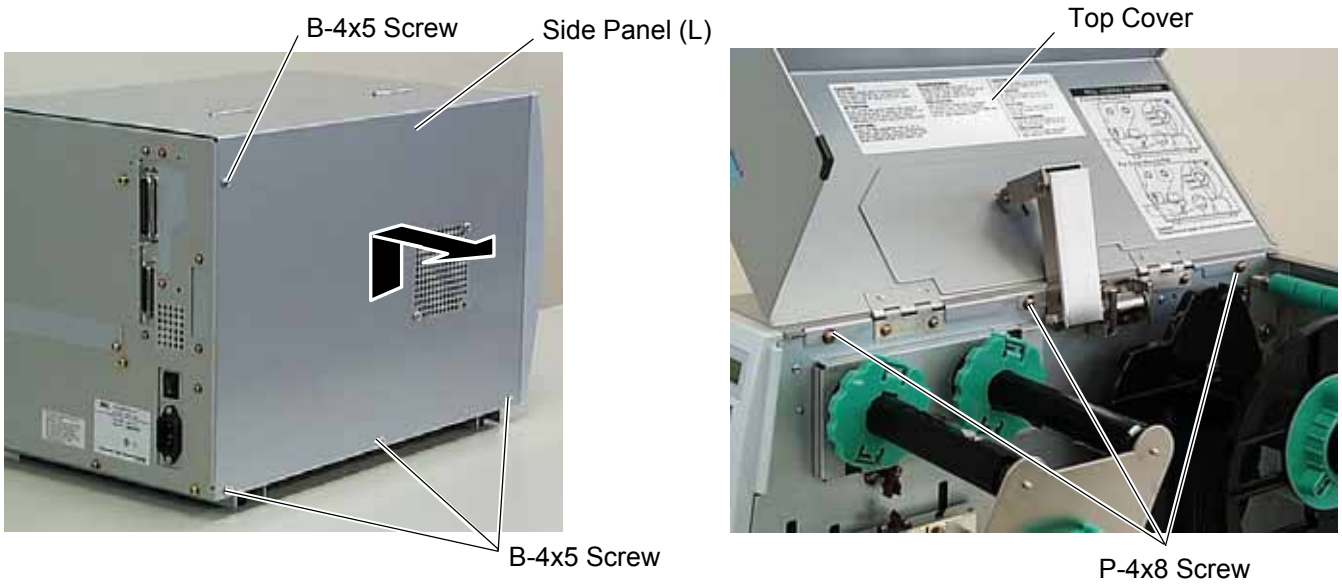
5. Refer to Section 3.2 and install an RFID module in the printer.

4.22.3.2 Preparing for the RFID Module Installation

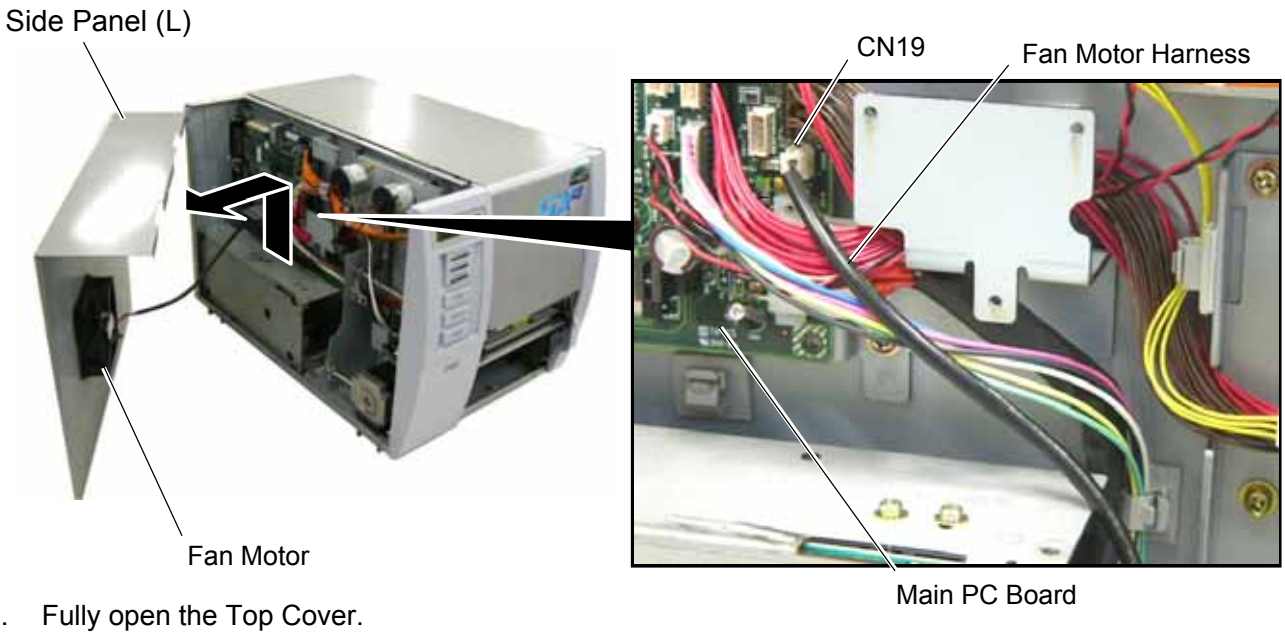
1. Turn the power off and disconnect the Power Cord.
2. Remove the two Black Screws to detach the Front Plate.



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).



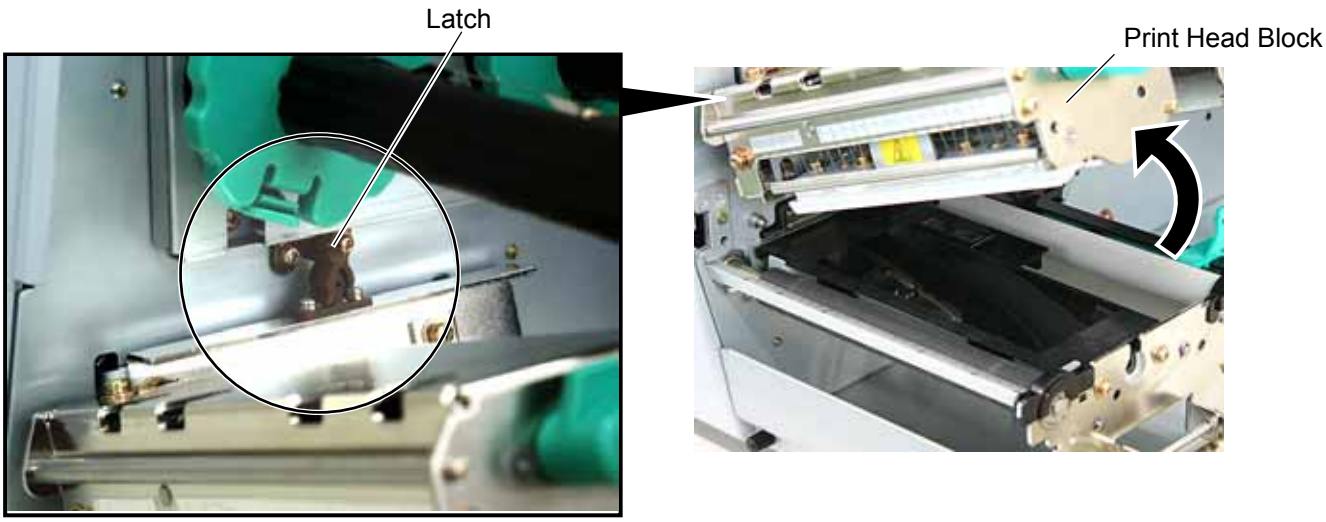
5. Lift the Side Panel (L) and put it aside.
6. Disconnect the Fan Motor Harness from CN19 on the Main PC Board, and then remove the Side Panel (L).



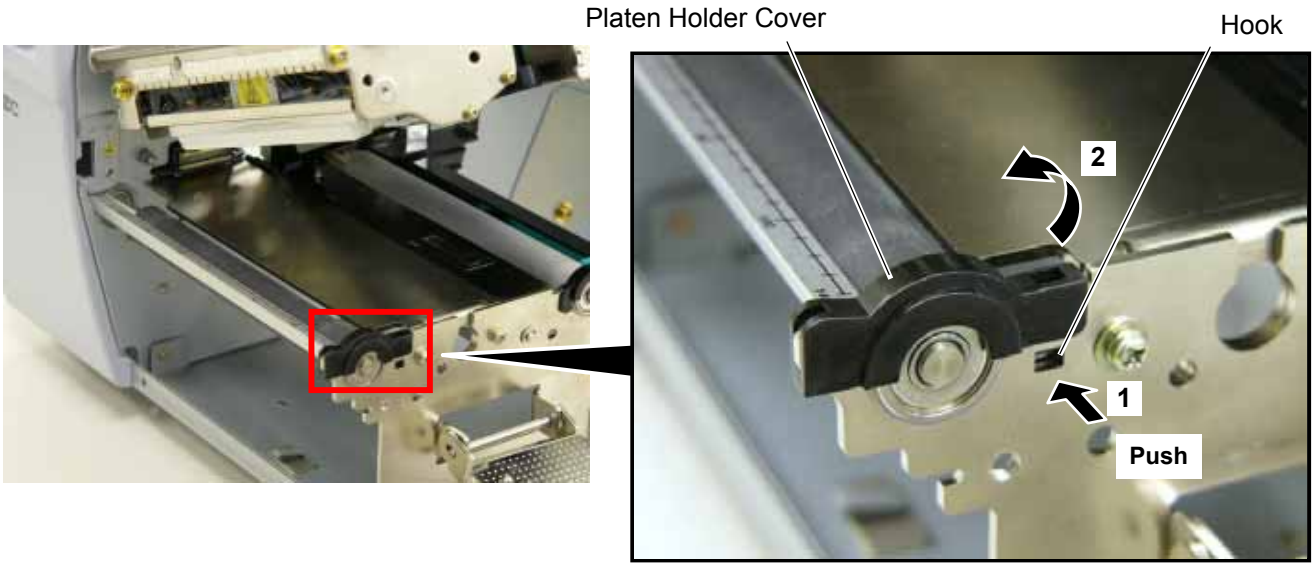
7. Fully open the Top Cover.

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

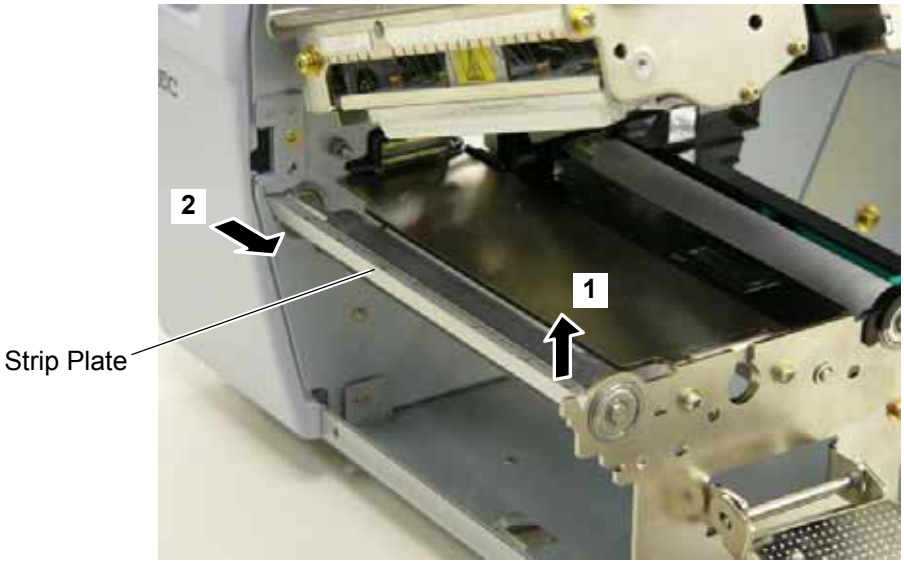
9. Open the Print Head Block and lock it with the Latch.



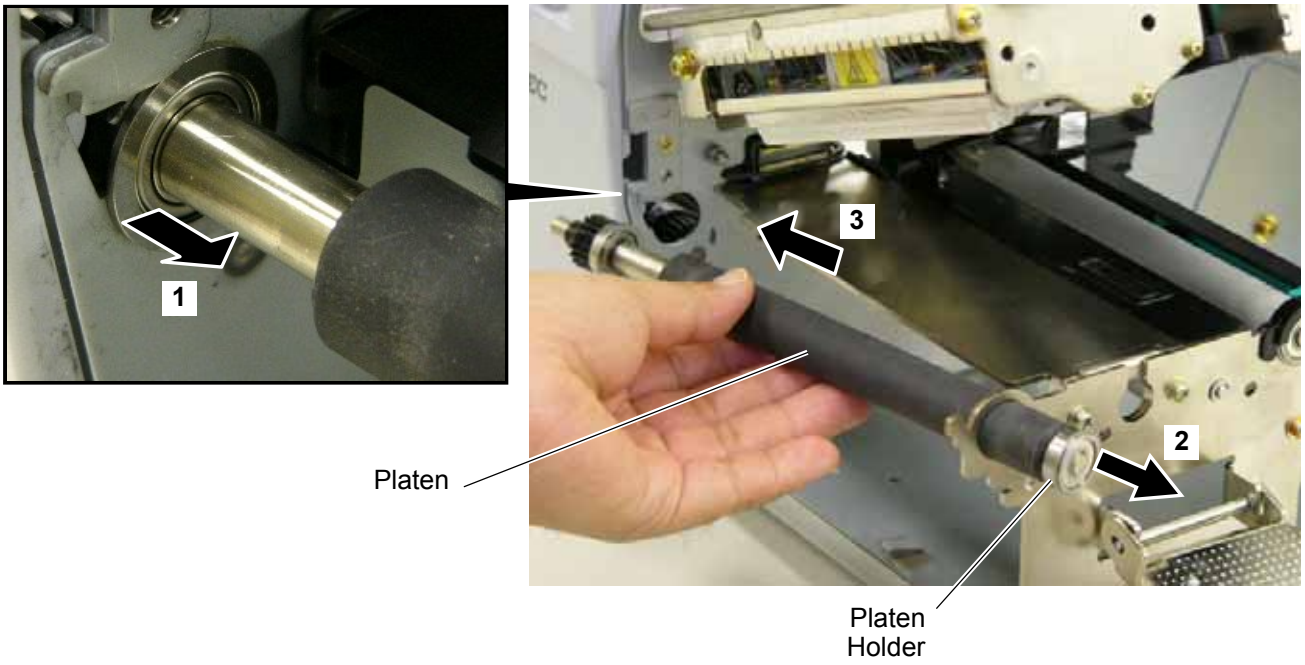
10. Push the Hook through the rectangle hole with a jeweler's screw driver or something, and remove the Platen Holder Cover in the direction indicated by the arrow.



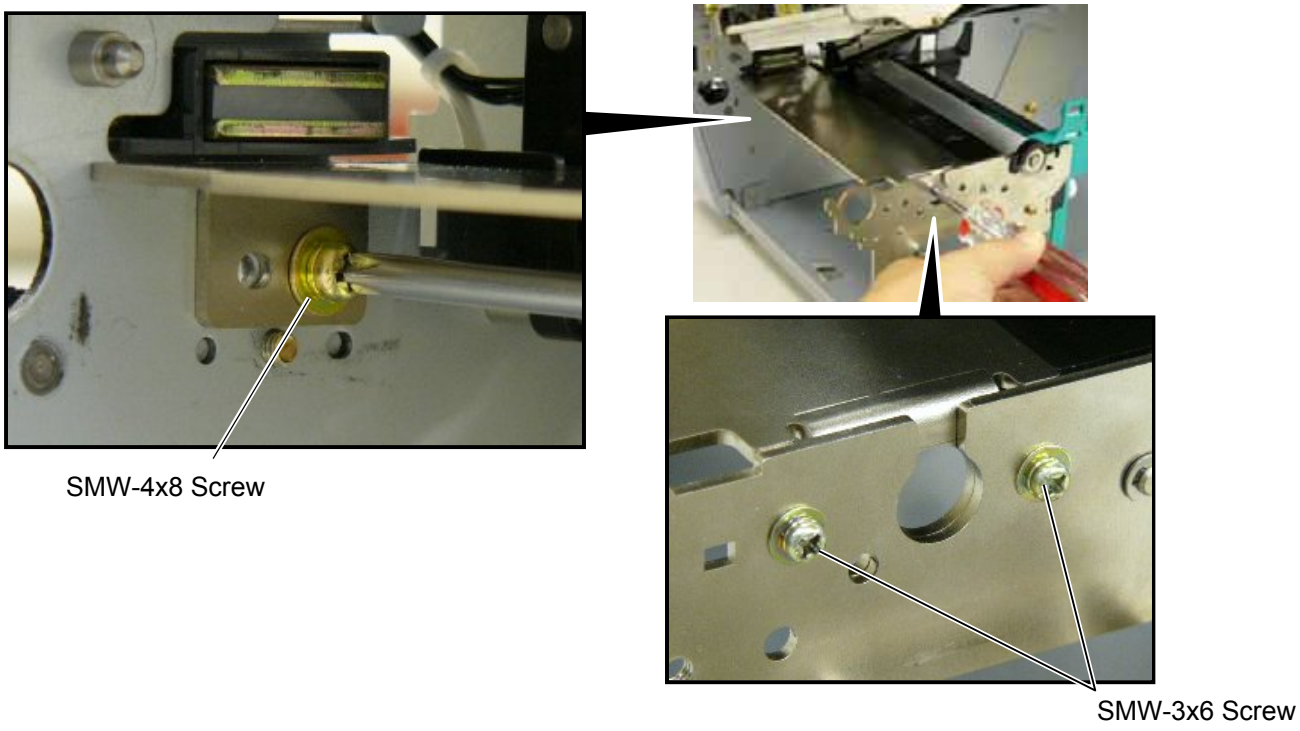
11. Lift the right side of the Strip Plate, and then pull and remove it.



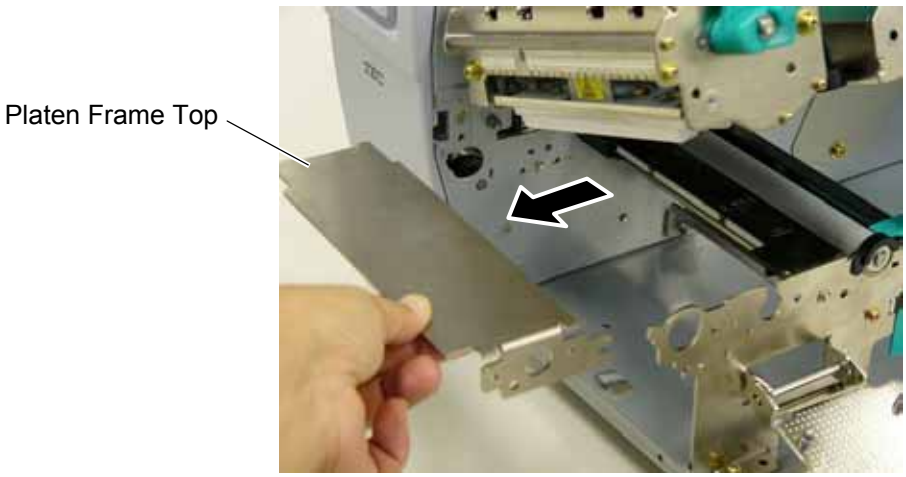
12. Remove the Platen and the Platen Holder in the direction of the arrows 1 to 3 as shown below.



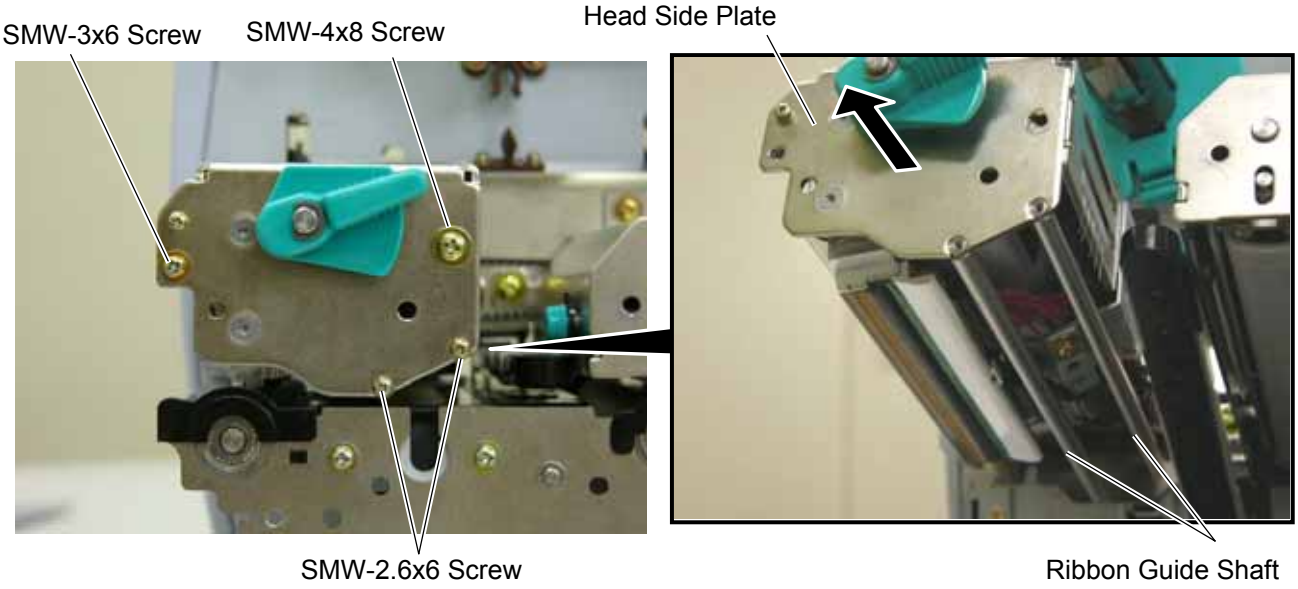
13. Remove the following three screws.



14. Remove the Platen Frame Top from the printer.

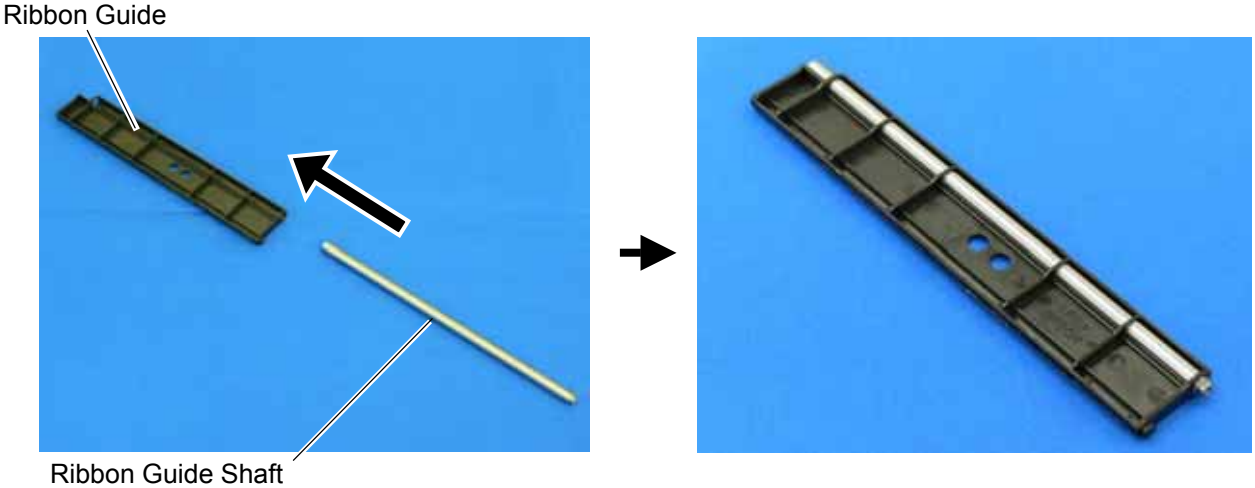


15 Remove the four screws from the side of the Print Head Block, slightly pull the Head Side Plate, and remove the two Ribbon Guide Shafts.

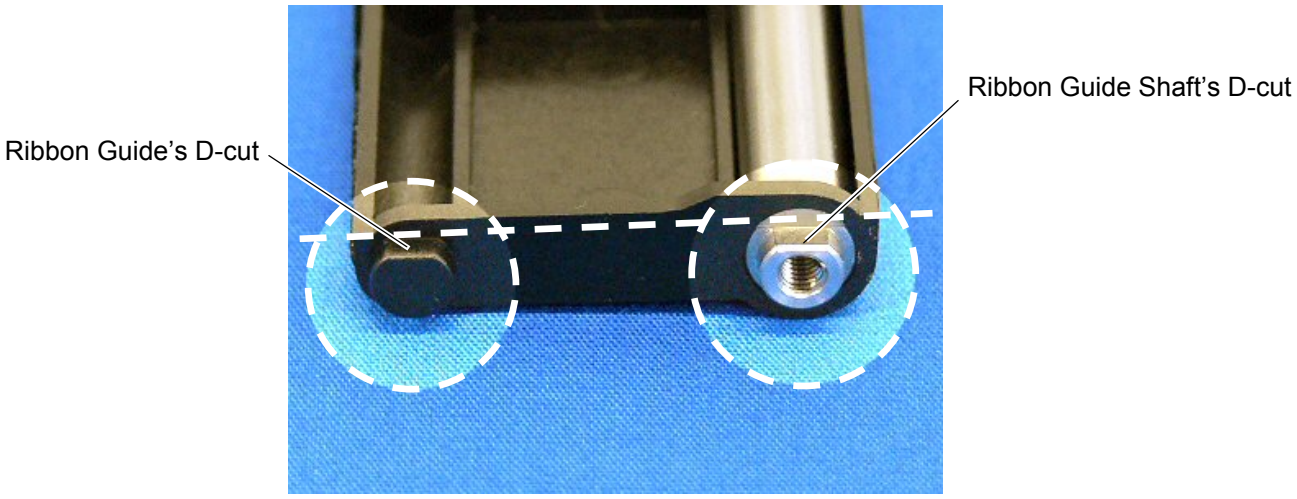


NOTE: *One of the removed Ribbon Guide Shafts and SMW-2.6x6 Screws are re-used when attaching the Ribbon Guide. Keep the unused ones for future use.*

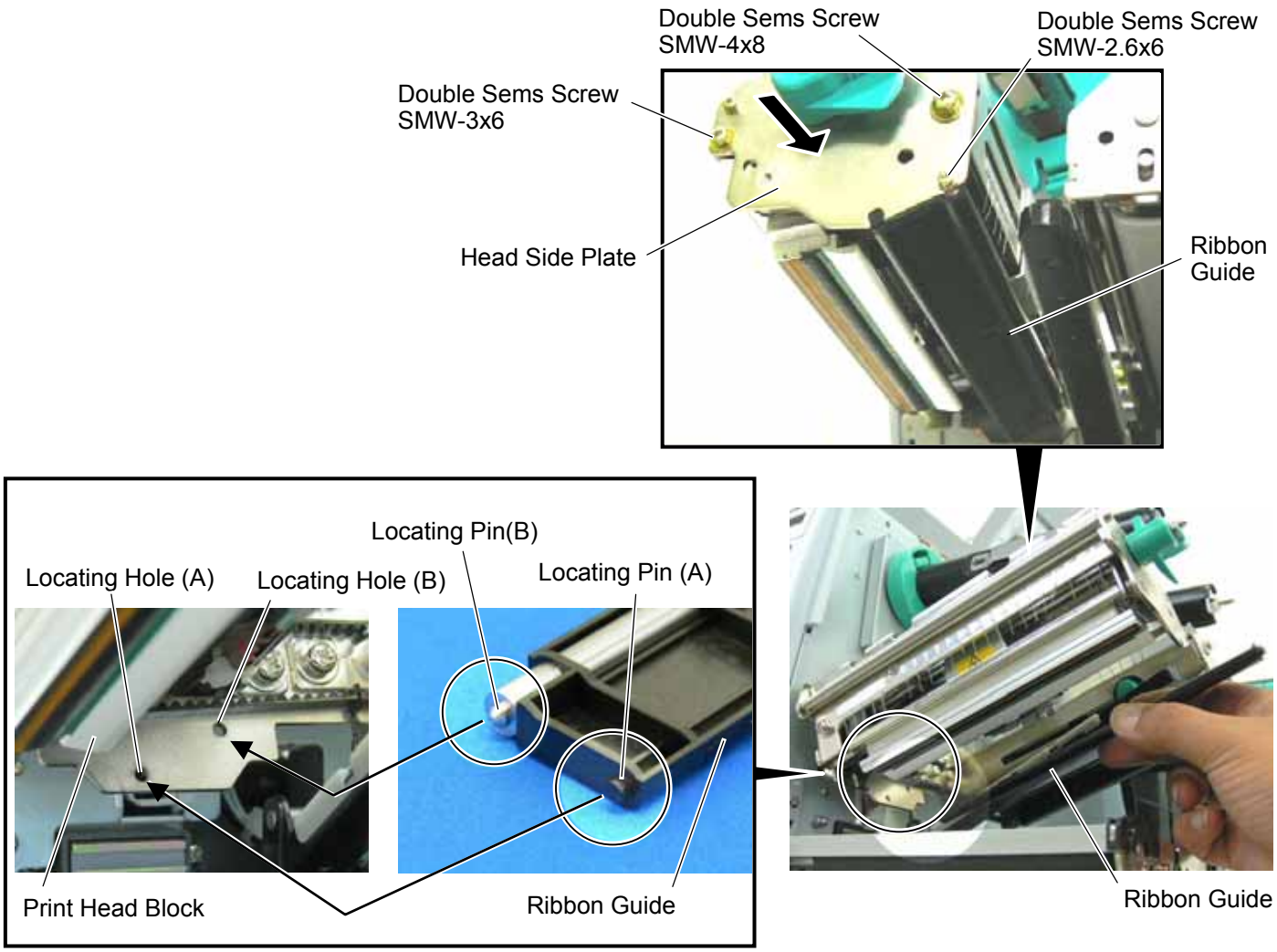
16. Insert one of the Ribbon Guide Shafts removed in Step 15 into the Ribbon Guide.



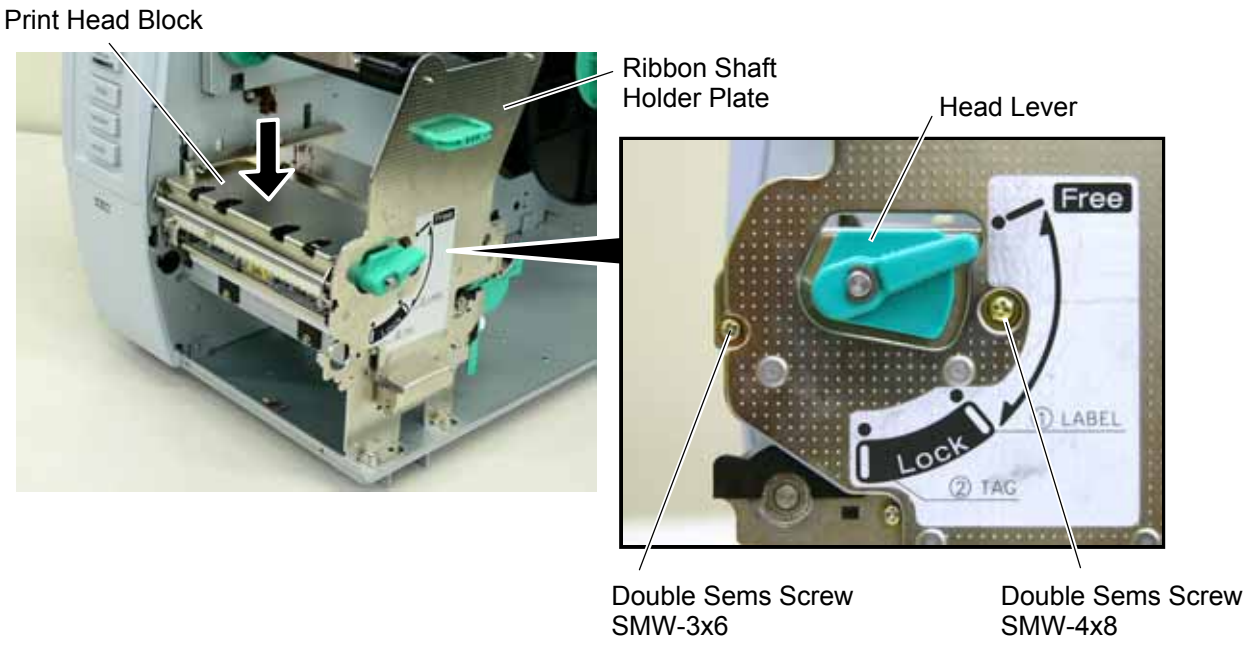
17. Rotate the Ribbon Guide Shaft so that its D-cut is in the same orientation with the Ribbon Guide's D-cut. Without doing this, the Ribbon Guide cannot be fit in the Print Head Block.



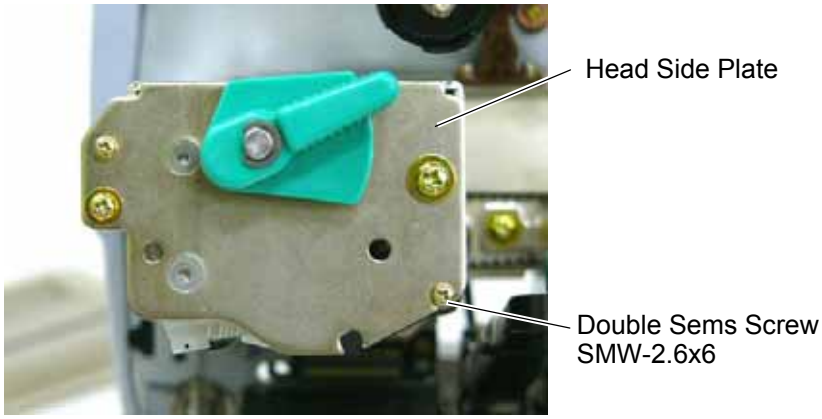
18. Fit the Ribbon Guide including the Ribbon Guide Shaft in the Print Head Block, and secure it to the Head Side Plate with the SMW-2.6x6 screw. Temporarily secure the Head Side Plate to the Print Head Block with the SMW-3x6 Screw and the SMW-4x8 Screw. Be sure to fit the locating pins provided on the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

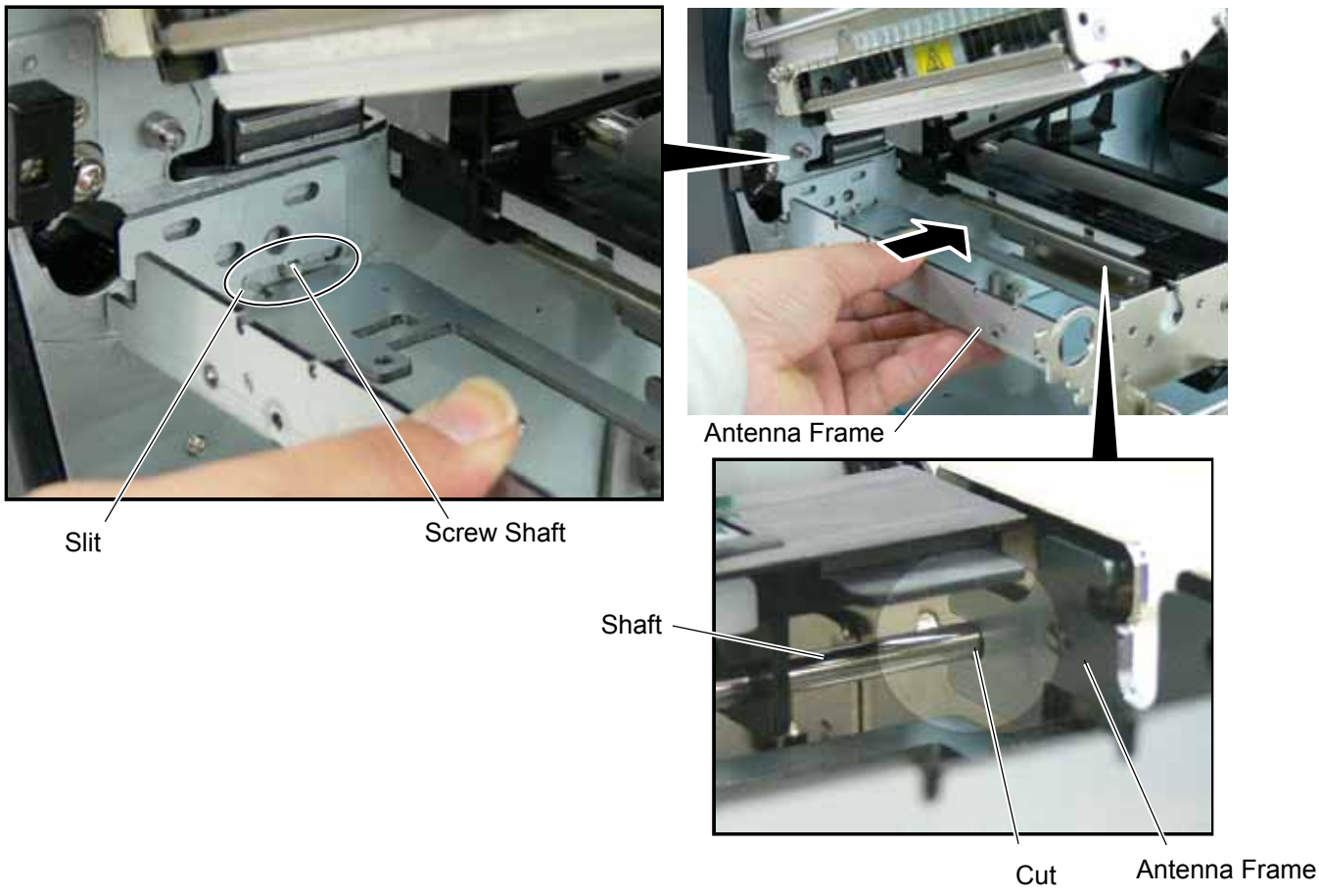


4.22.3.3 Attaching the Antenna Frame and the Antenna Ass'y

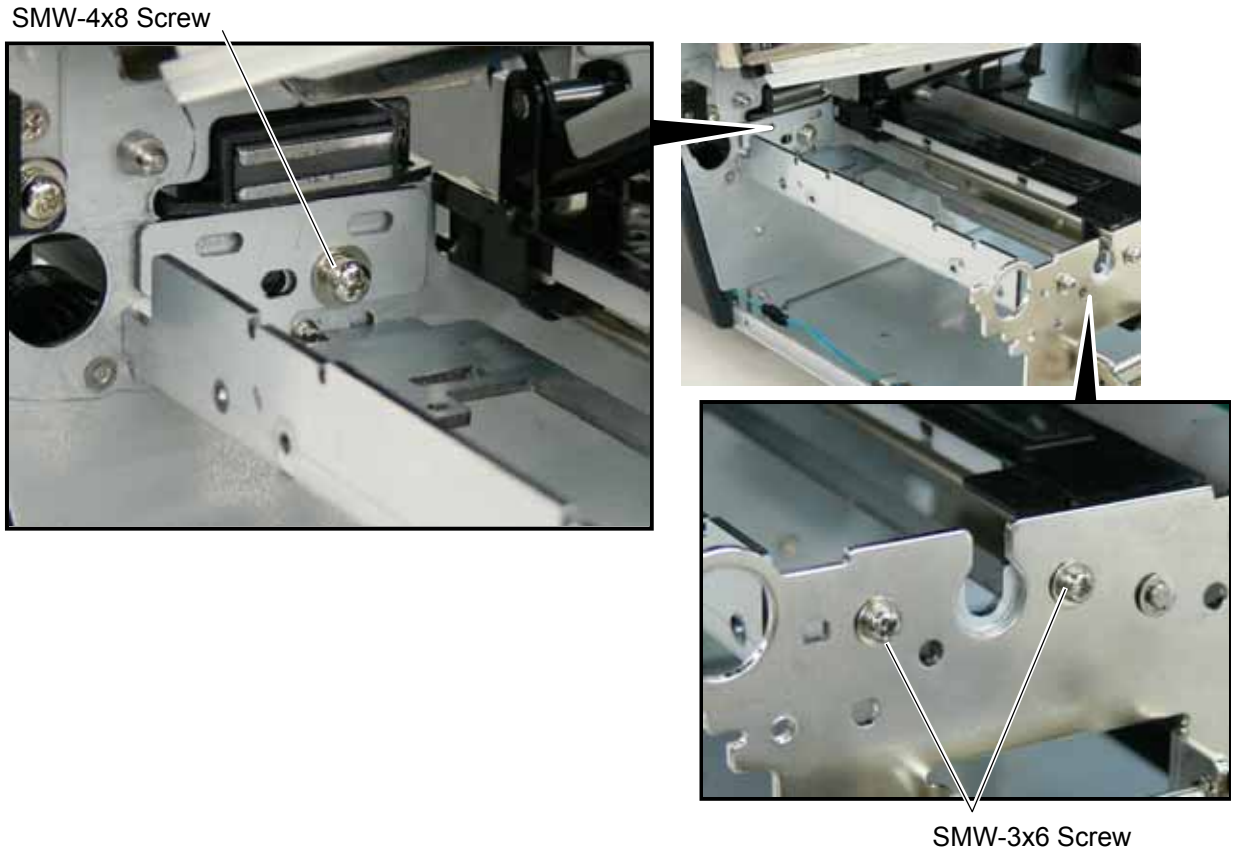
This section describes the procedure for attaching the Antenna Frame and the Antenna Ass'y.
When short-pitch tags (20 mm) are used, the procedure is different from the following. Skip step (1) and go to step (2).

(1) When using RFID tags other than short-pitch type:

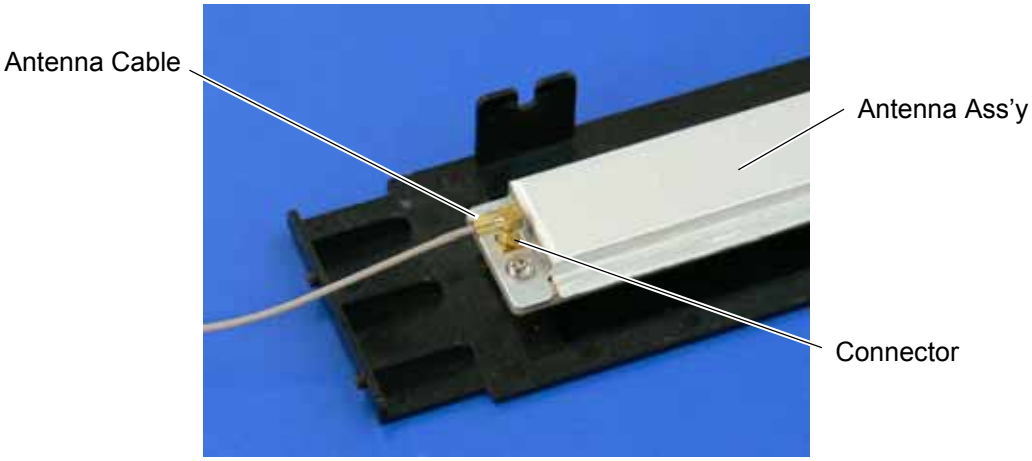
1. Raise the Print Head Block, and slide the Antenna Frame into the printer as shown below. Make the protruding screw shaft of the printer pass through the slit of the Antenna Frame. Also, make the Shaft of the printer fit in the Cut of the right side of Antenna Frame.



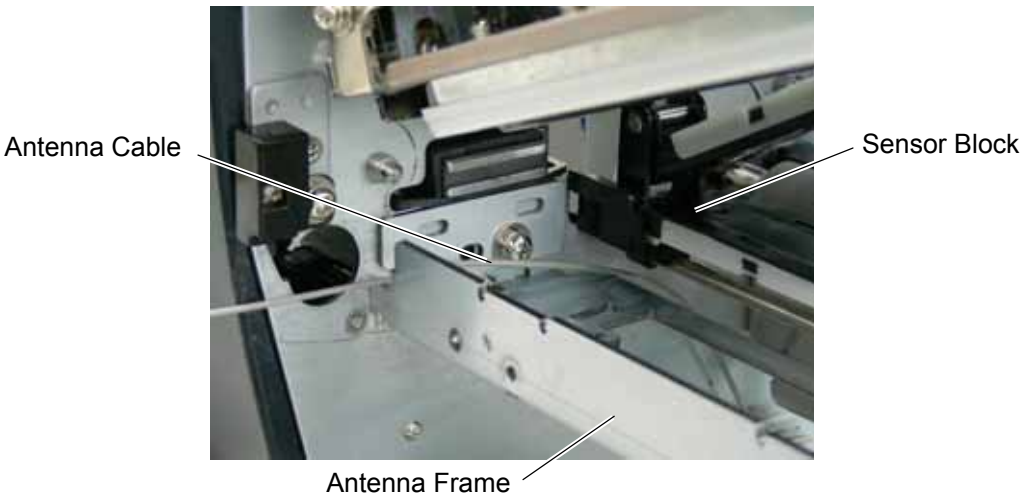
2. Secure the Antenna Frame with the three screws removed in Step 13 of Section 4.22.3.2.



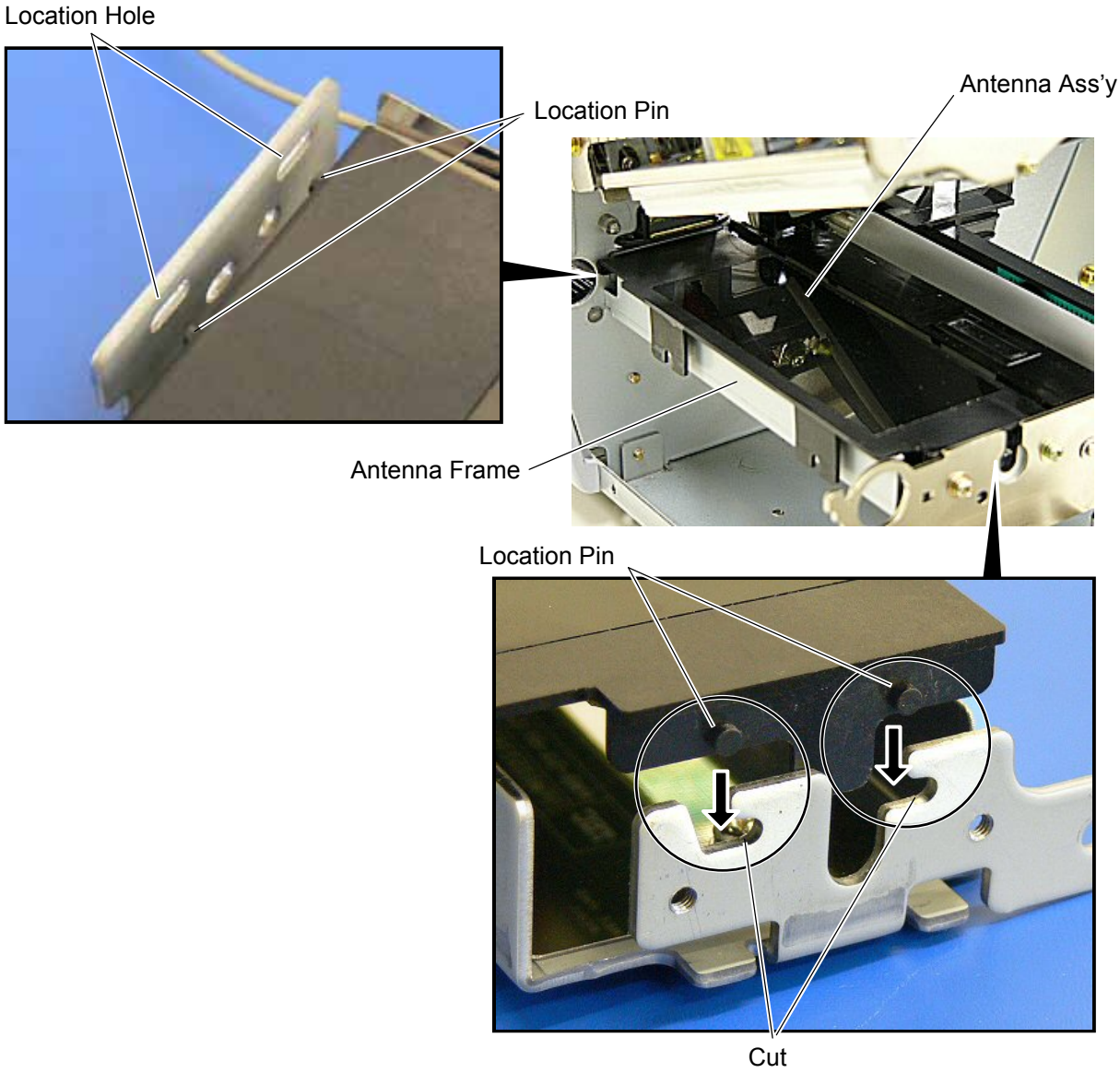
3. Connect the Antenna Cable to the Antenna Ass'y until it clicks.



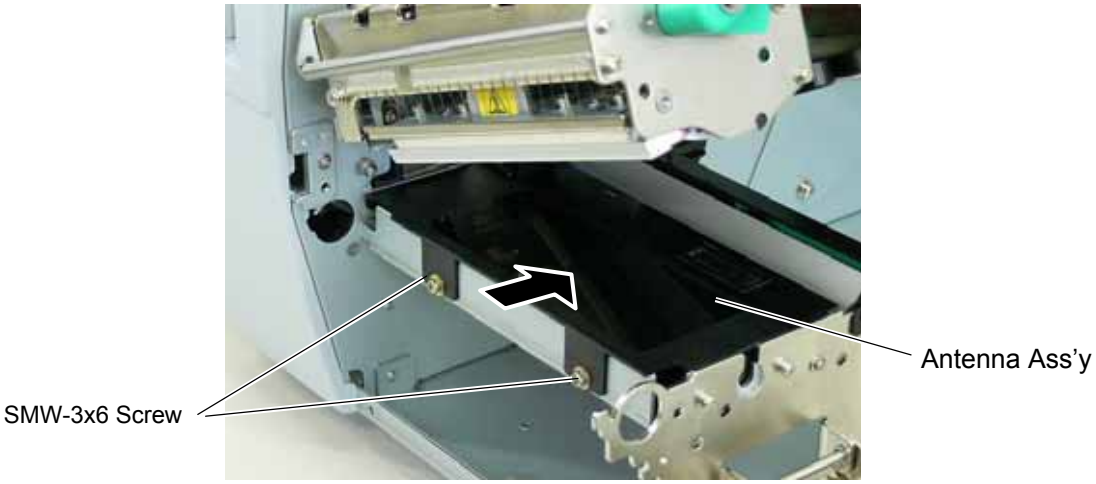
4. Pass the Antenna Cable between the Sensor Block and the Antenna Frame, as shown below.



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.

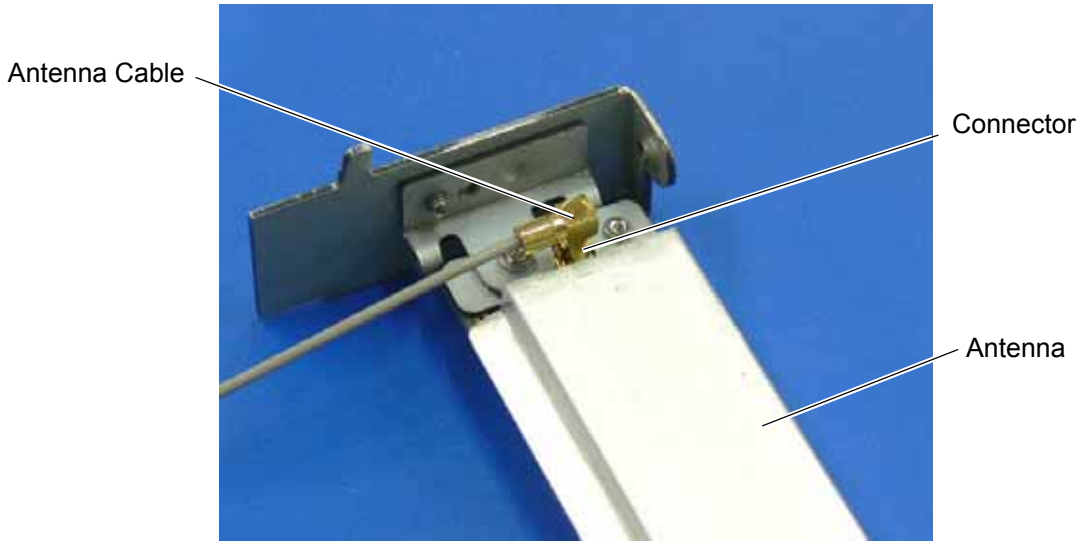


7. Go to Section 4.22.3.4 and attach the RFID Module.

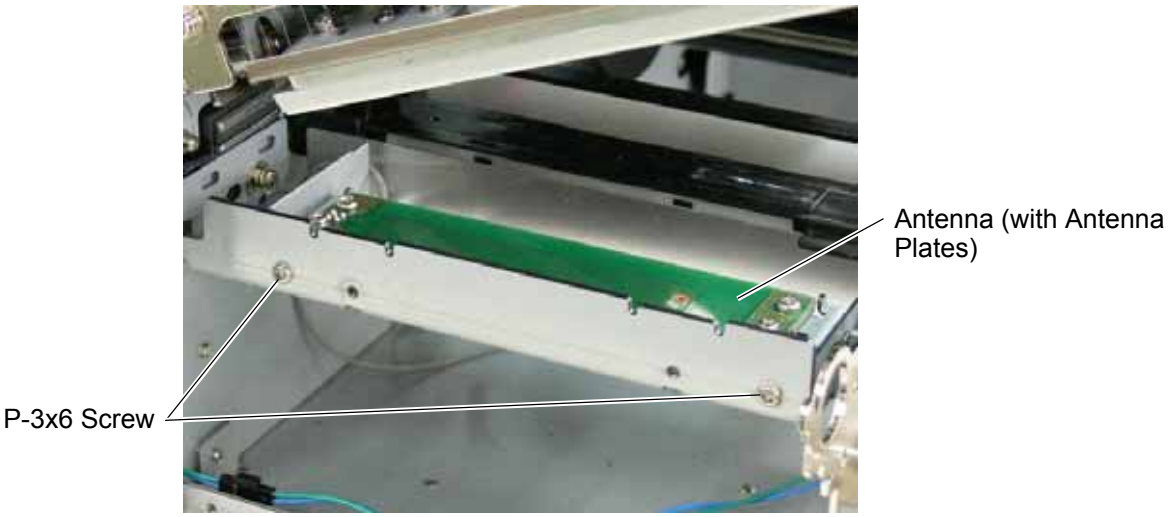
(2) When using short-pitch tags (20 mm)

1. Attach the Antenna Frame, to which the Shield Plate was attached in Section 4.22.3.1, to the printer in the same way as described in Step 1 of "(1) When using RFID tags other than short-pitch type".

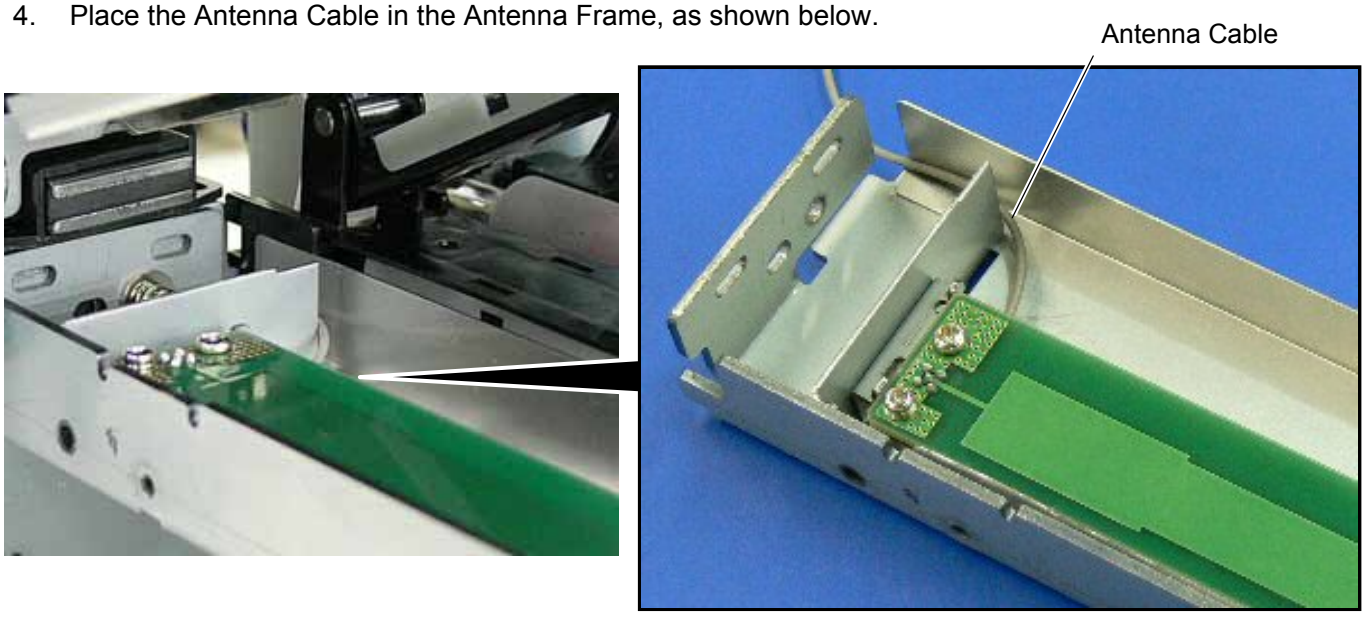
2. Connect the Antenna Cable to the Antenna, to which the Antenna Plates were attached in Section 4.22.3.1, until it clicks.



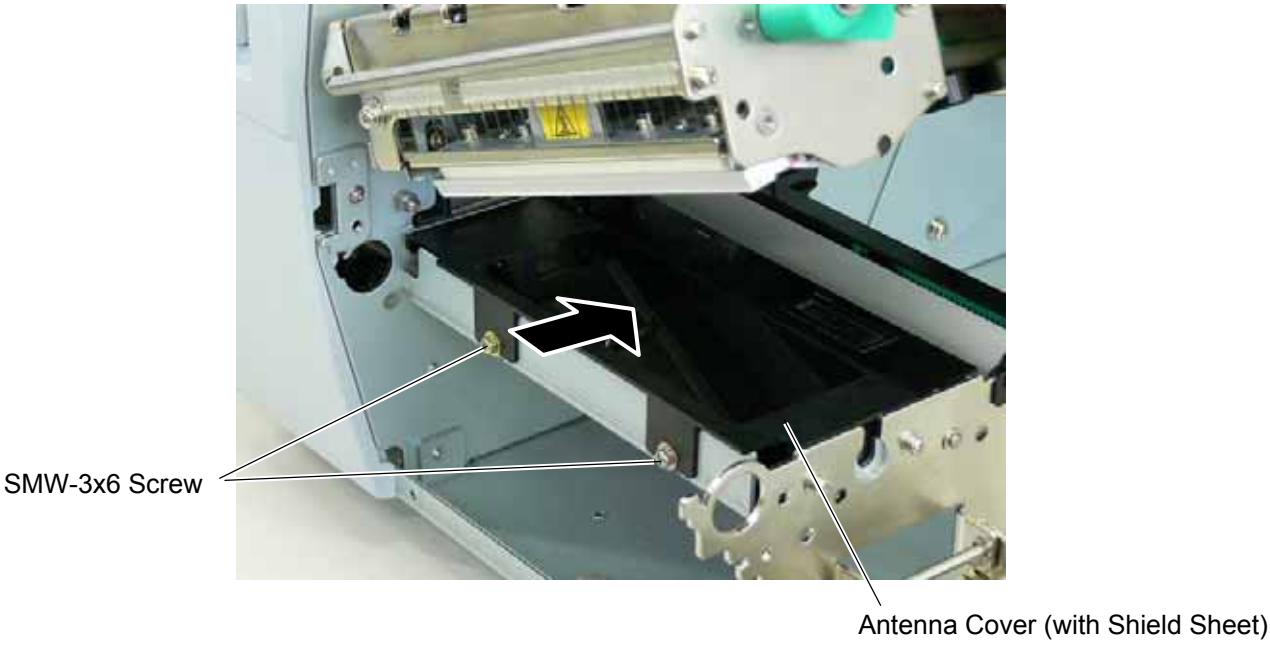
3. Secure the Antenna to the Antenna Frame with the P-3x6 screws.



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



5. Refer to Steps 5 and 6 in “(1) When using RFID tags other than short-pitch type” and attach the Antenna Cover, to which the Shield Sheet was attached in Section 4.22.3.1, to the Antenna Frame with the SMW-3x6 screws.

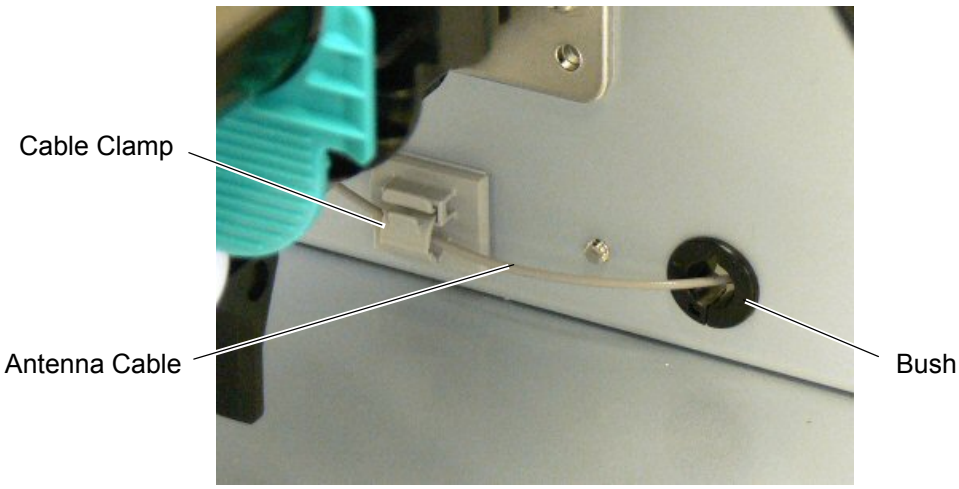


6. Go to Section 4.22.3.4 and attach the RFID Module.

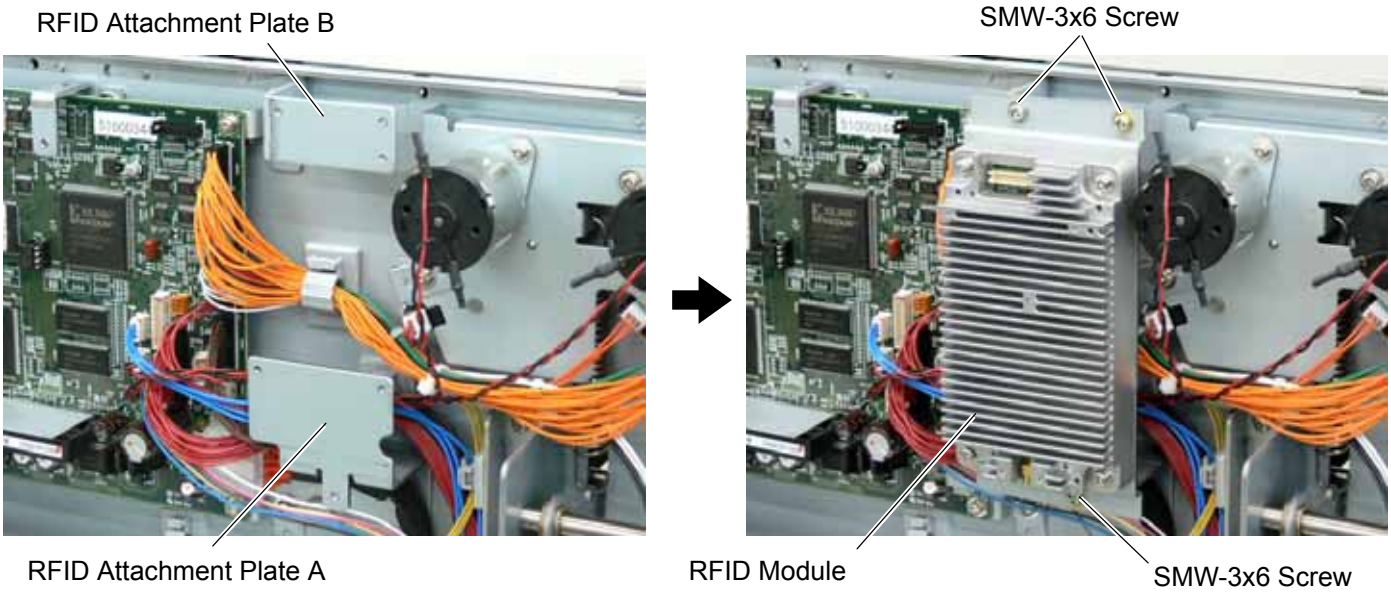
4.22.3.4 Attaching the RFID Module

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

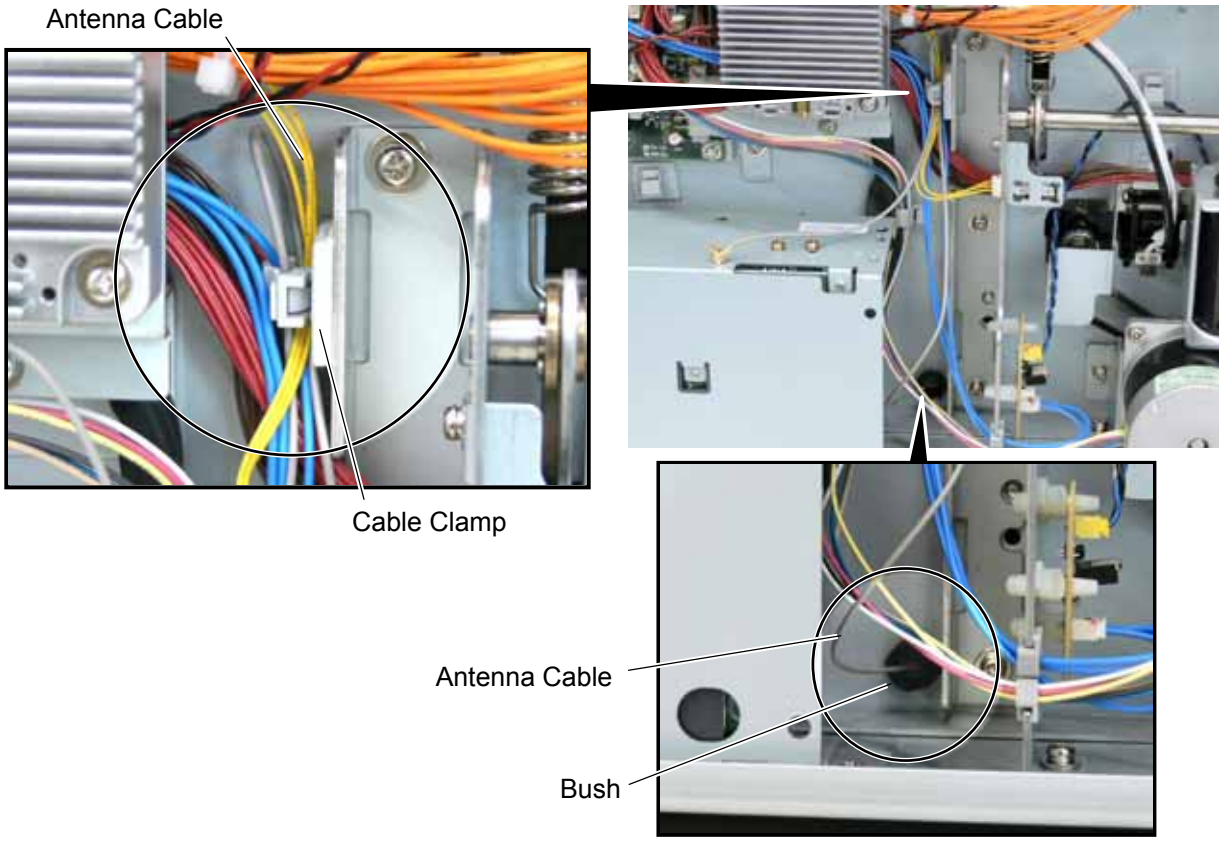
2. Pass the Antenna Cable through the Bush, and fasten the cable with the Cable Clamp.



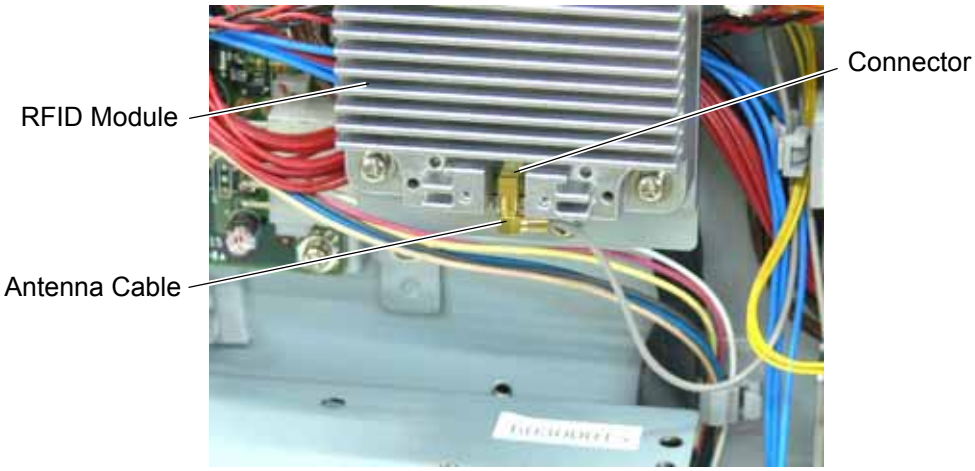
3. Attach the RFID Module to the RFID Attachment Plate A and the RFID Attachment Plate B with the three SMW-3x6 screws.



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.



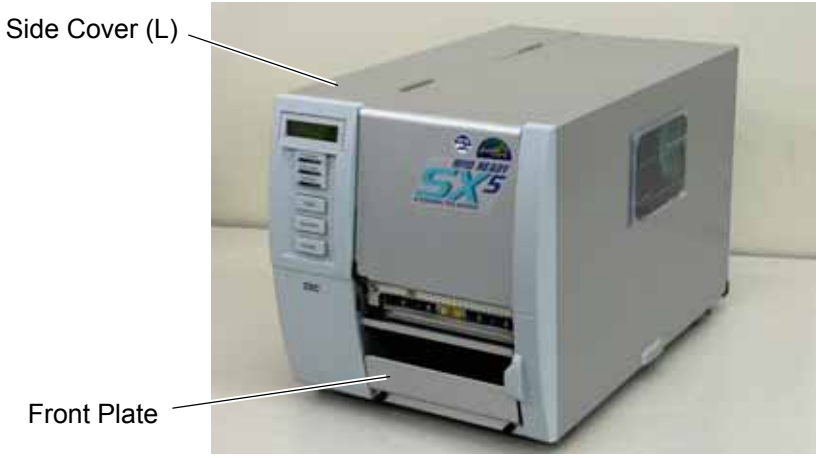
5. Connect the Antenna Cable to the RFID Module until it clicks.



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).



9. Installing the RFID kit in the printer is now completed. Then, go to Section 4.22.4 and configure the RFID module settings.

4.22.4 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

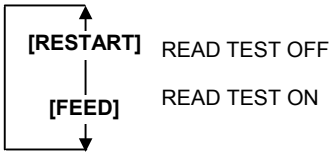
RFID setting menu "<10>RFID" is displayed.
Press the **[PAUSE]** key.

[PAUSE]

↓

<10>RFID
READ TEST OFF

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



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.

[PAUSE]

↓

<10>RFID
CAREERSENSE OFF

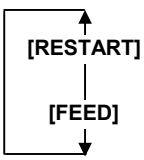
Carrier sense setting menu is displayed. This menu is not available to the B-SX704-RFID-U2-EU -R. Press the **[PAUSE]** key to skip this menu.

[PAUSE]

↓

<10>RFID
MODULE NONE

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



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

[PAUSE]

Press the **[PAUSE]** key.

↓

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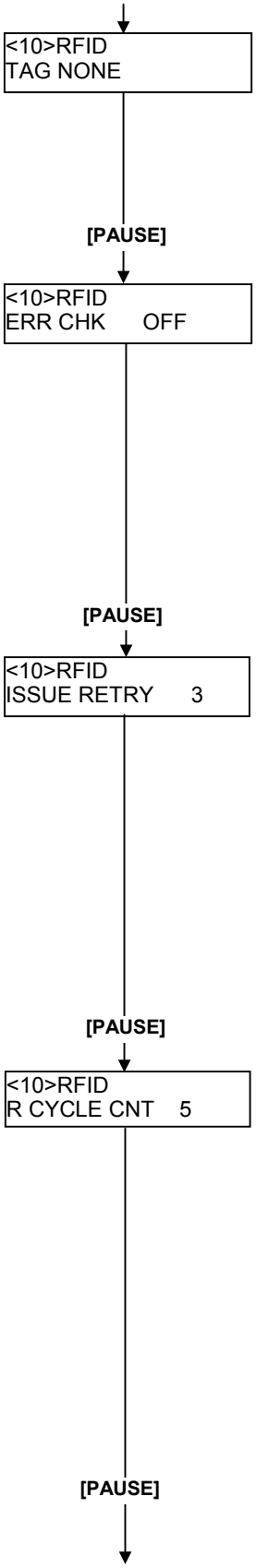
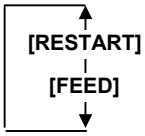


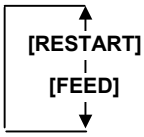
RFID tag type setting menu is displayed.
Choose "EPC C1 Gen2: 24" with the **[FEED]** or **[RESTART]** key.



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.

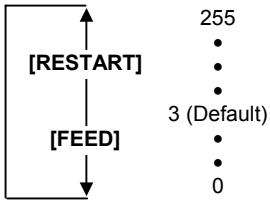


OFF: An error tag detection is not performed. (Usually, choose OFF.)
ON: An error tag detection is performed.

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.

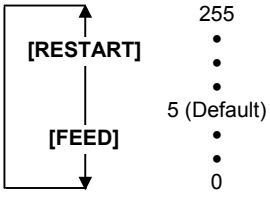
Press the **[PAUSE]** key.

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.

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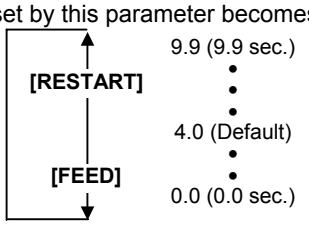
<10>RFID
R CYCLE TIM 4.0

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.

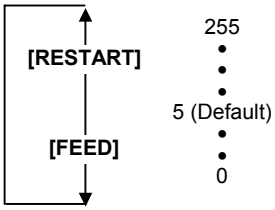


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
W CYCLE CNT 5

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.

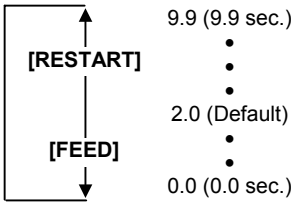


[PAUSE]

Press the **[PAUSE]** key.

<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.

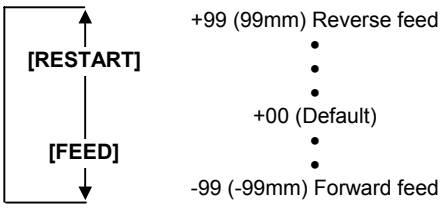


[PAUSE]

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.

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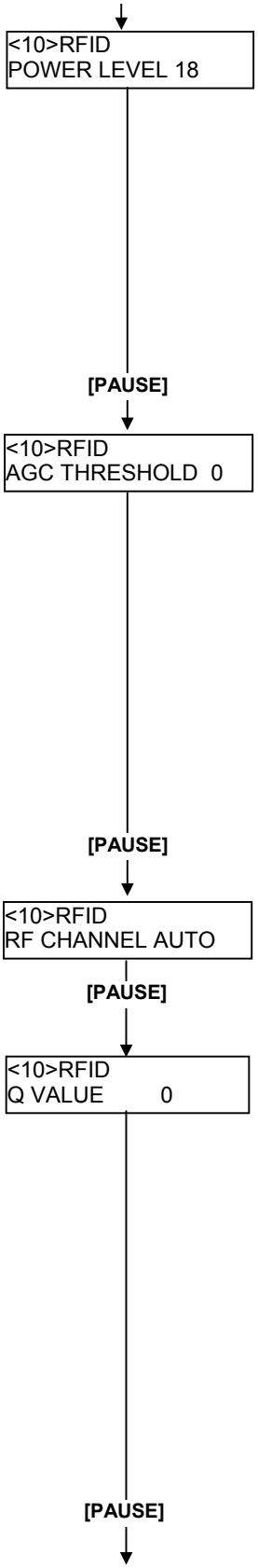
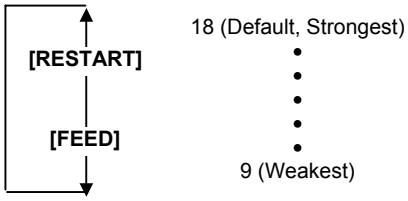
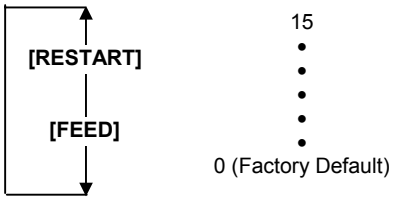


Radio output power level setting menu is displayed.
When the value is “9”, the power is the weakest, and when “18”, the power is the strongest.
The factory default setting is “18”. The optimum value differs depending on the tag types.
Usually, it is not necessary to change this value but changing the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



Press the **[PAUSE]** key.

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.

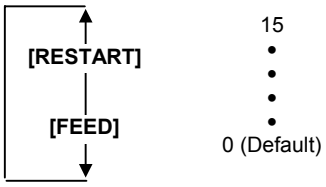


Press the **[PAUSE]** key.

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

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

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 4.22.5 AGC Threshold Setting.)
The factory default is 0.



Press the **[PAUSE]** key.

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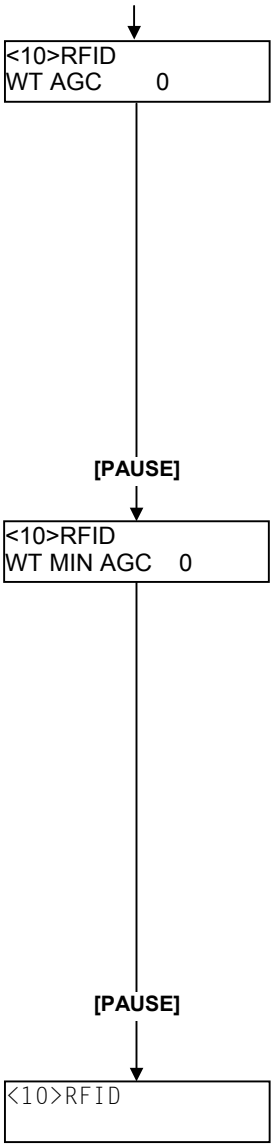
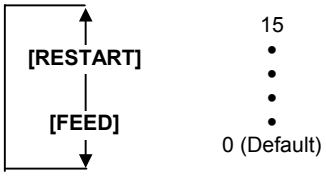
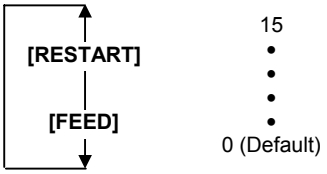


AGC threshold for data write setting menu is displayed.
When the Q value is set to 1 or greater, the AGC threshold for data write becomes effective.
When the obtained gain of an RFID tag is lower than the AGC thresholdfor data write, data write is not performed. In other words, setting an AGC threshold 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 4.22.5 AGC Threshold Setting.)
Set an AGC threshold for data write with the **[FEED]** or **[RESTART]** key, if necessary.



Press the **[PAUSE]** key.

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 4.22.5 AGC Threshold Setting.)
Set the lower limit for retry with the **[FEED]** or **[RESTART]** key, if necessary.



Press the **[PAUSE]** key.

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 4.22.5.

4.22.5 AGC Threshold Setting

The B-SX704-RFID-U2-EU-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.

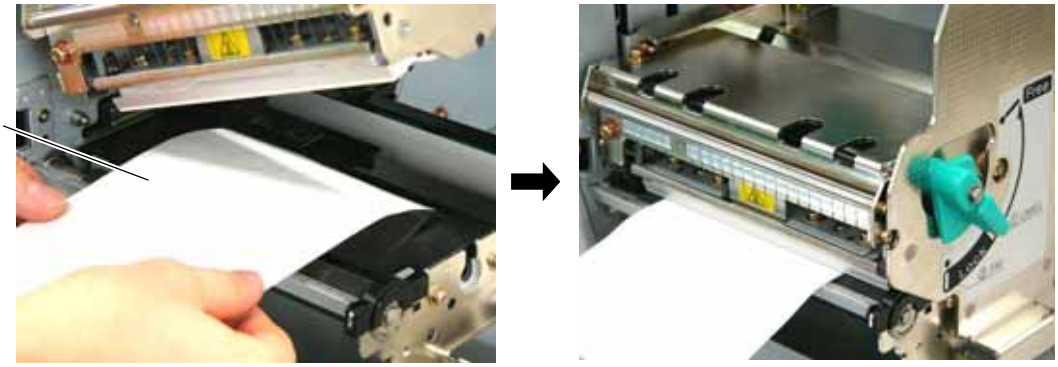
Step 1. Load an RFID tag embedded media in the printer.
Step 2. Follow the procedure below to measure the radio intensity of the tags.
1) Place the media so that an RFID tag (IC chip) is positioned above the Antenna, and close the Top Cover.

***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

RFID Tag



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

<1>DIAG. V4.5

[RESTART]

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

<10>RFID

[PAUSE]

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

<10>RFID
Q VALUE 2

[PAUSE]

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

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

[RESTART]

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

<10>RFID

[PAUSE]

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

<10>RFID
READ TEST OFF

[FEED] or [RESTAT]

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

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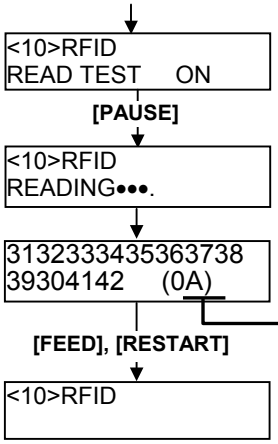


Press the **[PAUSE]** key to implement a read test.

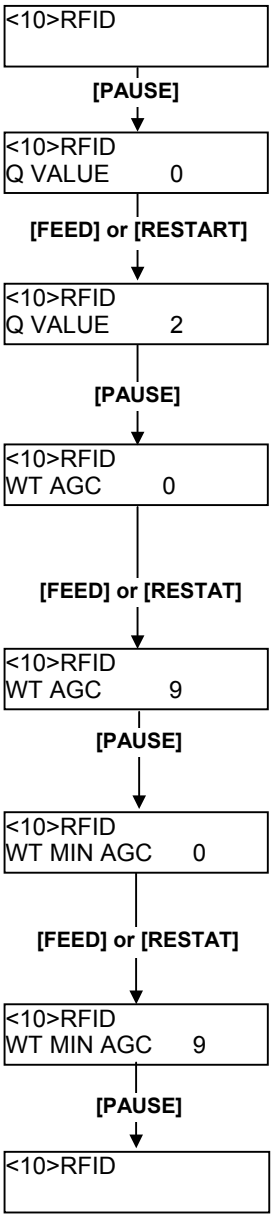
Read data is displayed.

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").

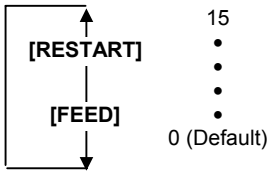
3) Set an AGC threshold of data write.
Set a value which is lower than the AGC value obtained by a read test by 1 or 2, taking variation of RFID tags in performance into consideration.

Example



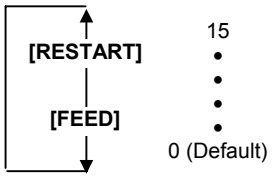
When "<10>RFID" is displayed, press the **[PAUSE]** key until the Q value setting menu is displayed.

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



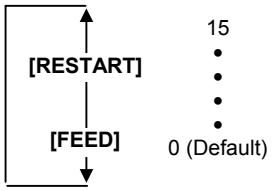
Press the **[PAUSE]** key.

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.

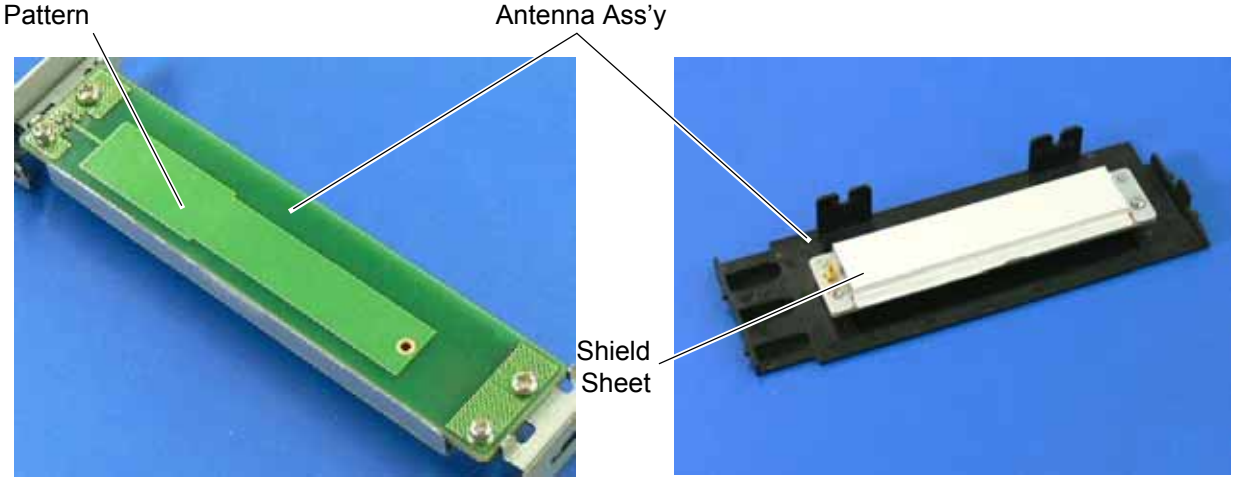
4.23 RFID MODULE (B-SX704-RFID-U2-AU-R)

The B-SX704-RFID-U2-AU-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.



4.23.1 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.

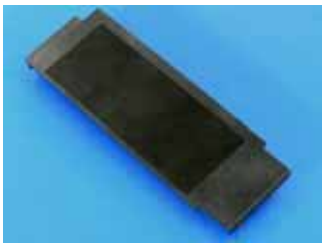
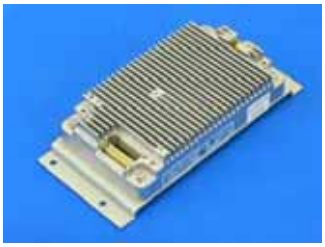
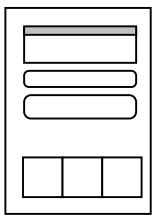
(2) To use this device, printer firmware V4.5 or greater is required. Upgrade the firmware to V4.5 or greater, if necessary. For the downloading procedure, refer to the B-SX4T/SX5T Series Maintenance Manual.
Note that a RAM clear needs to be performed after downloading, so print out the maintenance counter 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:

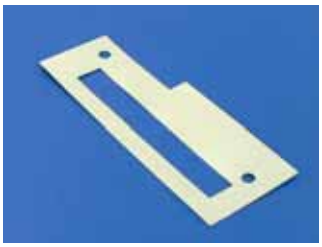
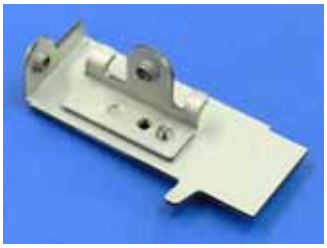
Model Name	Frequency Band	Applicable Countries
B-SX704-RFID–U2-AU-R	UHF 918.25 to 925.75MHz (Center frequency: 922MHz)	Australia

4.23.2 Packing List

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.) 	• Installation Manual (1 copy) 		

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

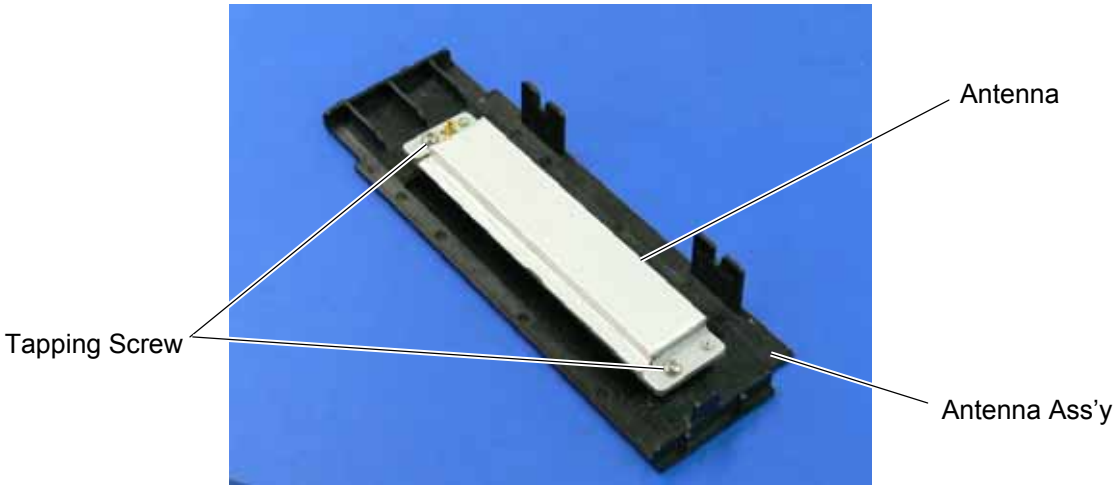
• Shield Sheet (1 pc.)	• Antenna Plate L (1 pc.)	• Antenna Plate R (1 pc.)	• Pan Head Screw P-3x6 (4 pcs.)
			

4.23.3 Installation Procedure

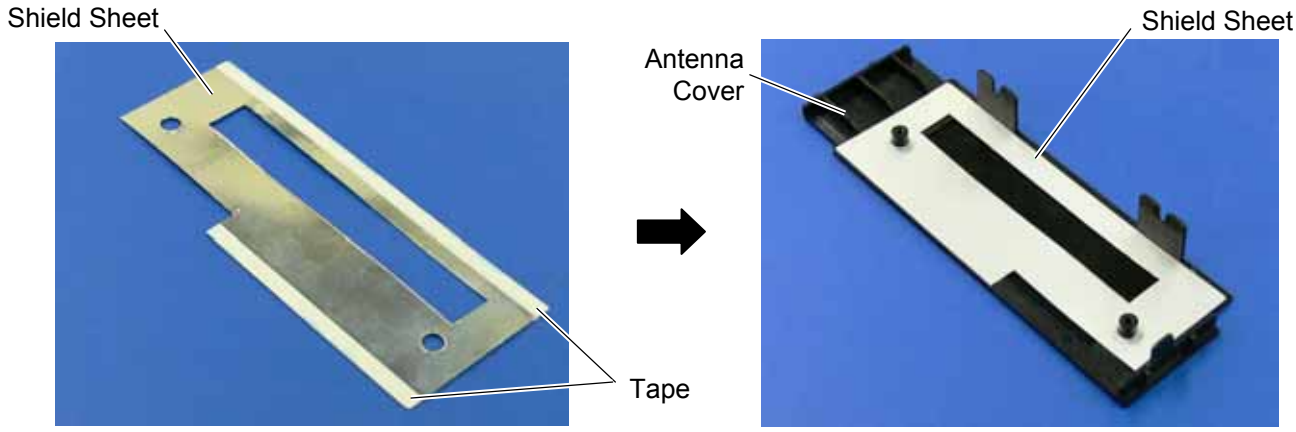
4.23.3.1 Preparation for Use of Short-Pitch RFID Tags (20mm)

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 4.23.3.2.

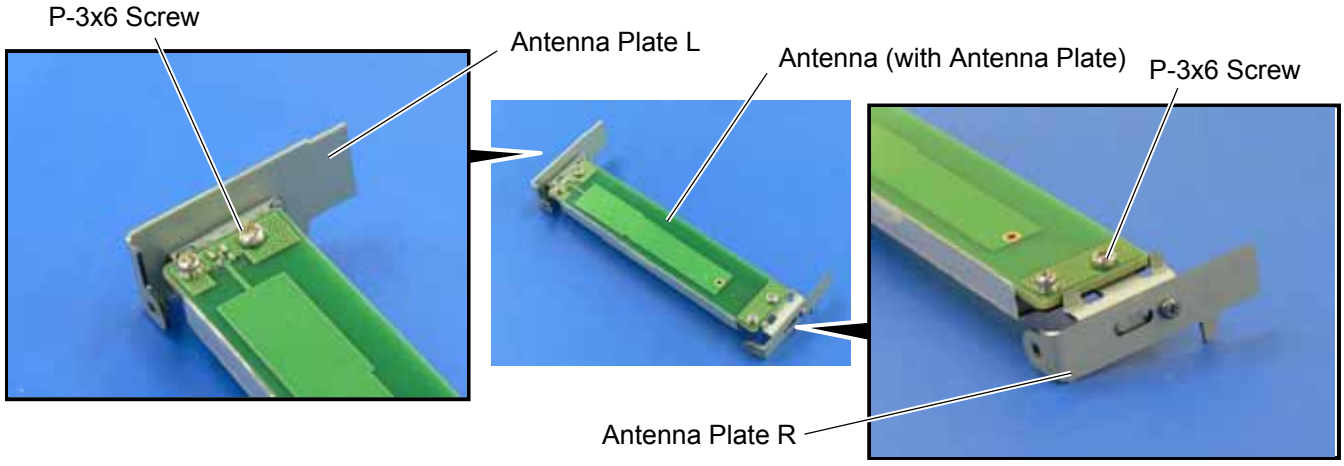
1. Remove the two Tapping Screws to detach the Antenna from the Antenna Ass'y.



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



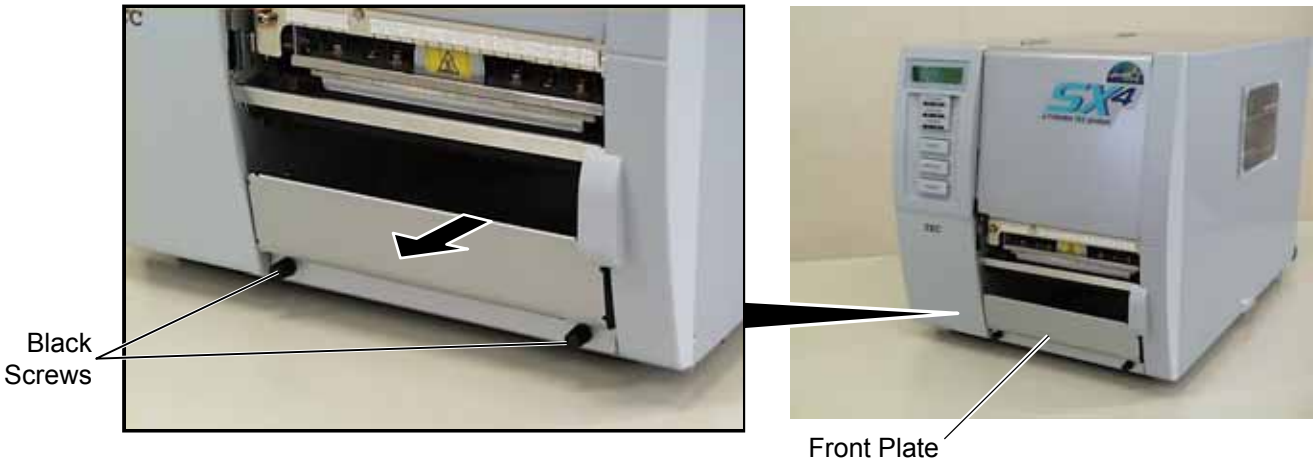
3. Attach the Antenna Plate L and Antenna Plate R to the Antenna with the P-3x6 screws.



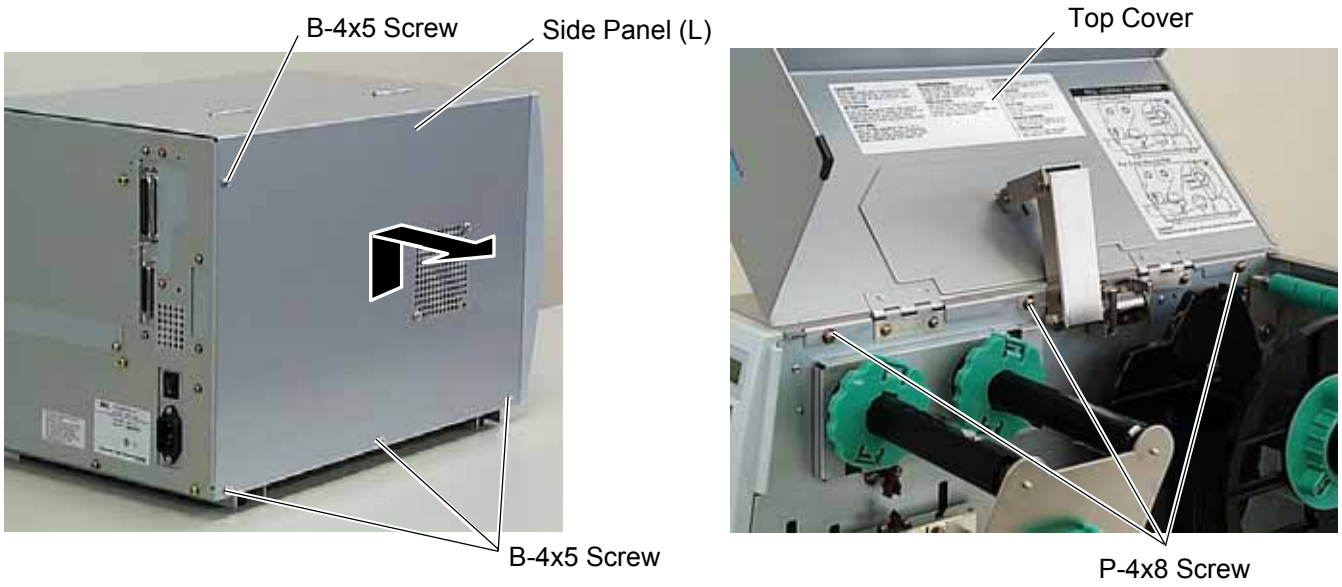
4. Refer to Section 4.23.3.2 and install an RFID module in the printer.

4.23.3.2 Preparing for the RFID Module Installation

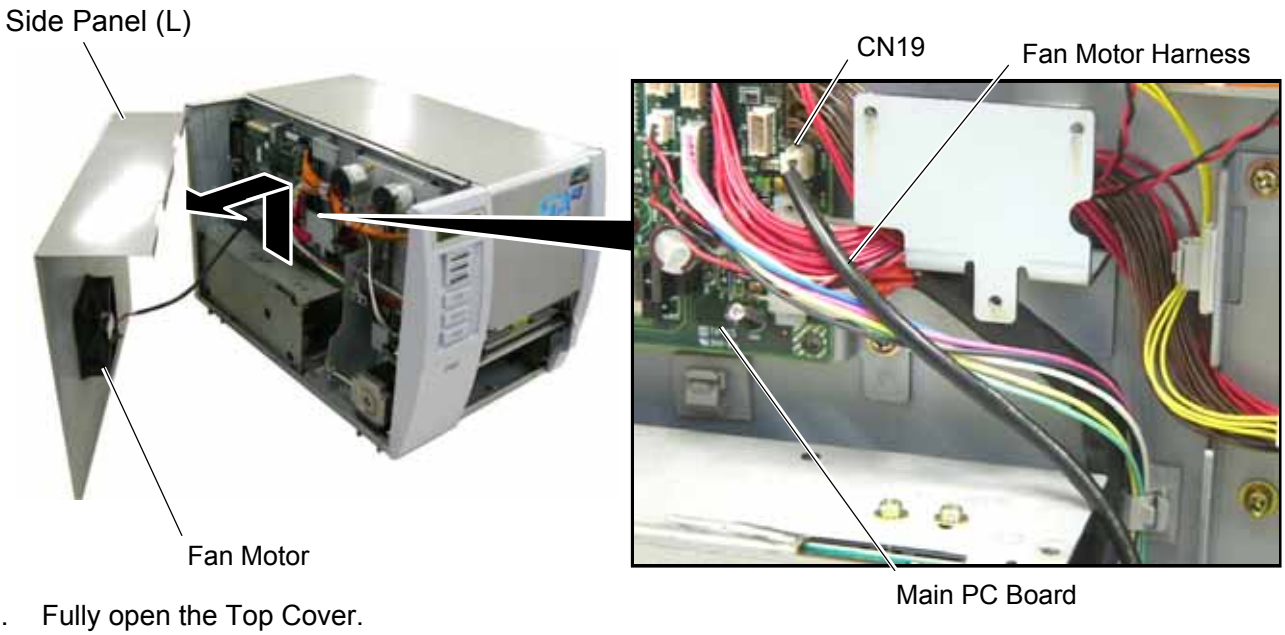
1. Turn the power off and disconnect the Power Cord.
2. Remove the two Black Screws to detach the Front Plate.



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).



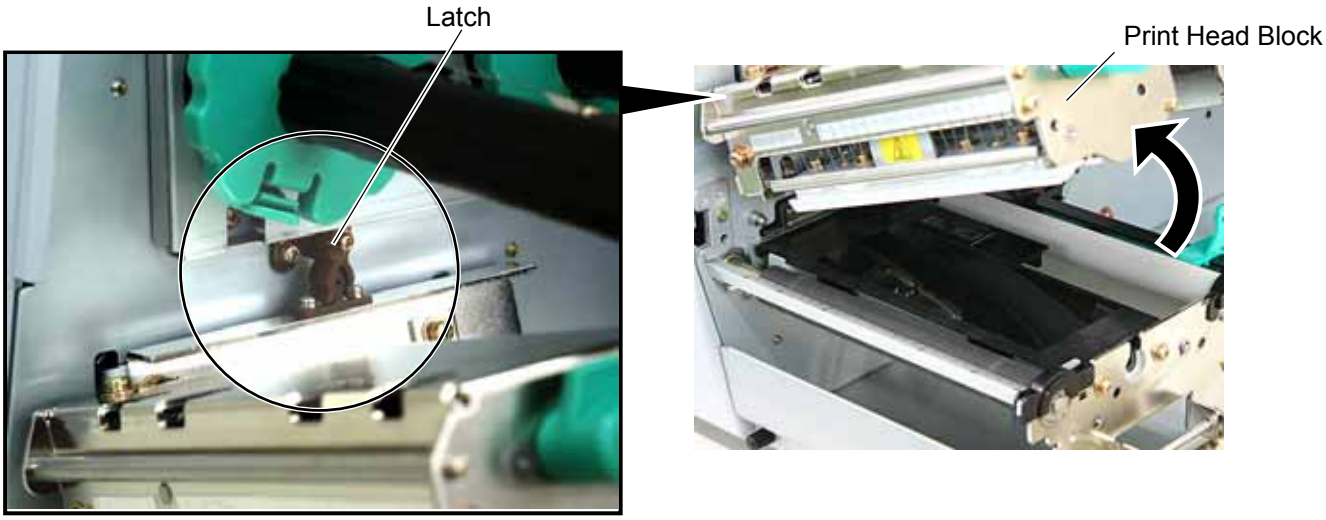
5. Lift the Side Panel (L) and put it aside.
6. Disconnect the Fan Motor Harness from CN19 on the Main PC Board, and then remove the Side Panel (L).



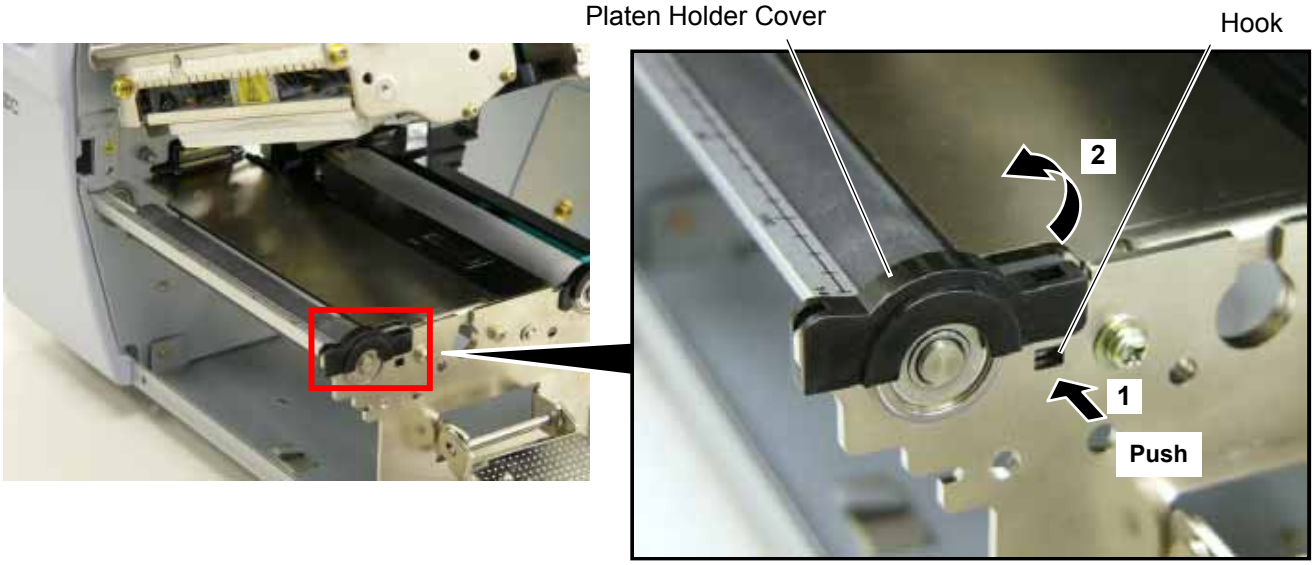
7. Fully open the Top Cover.

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

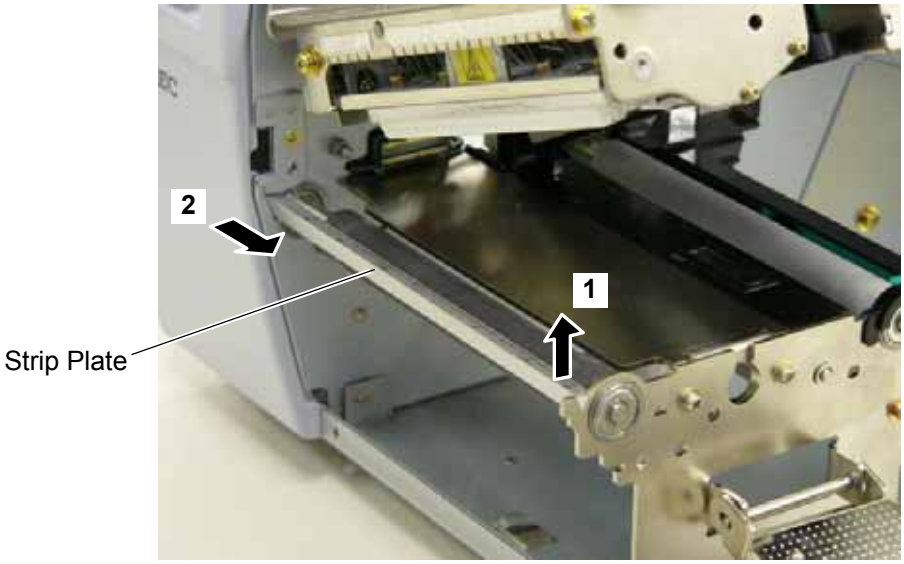
9. Open the Print Head Block and lock it with the Latch.



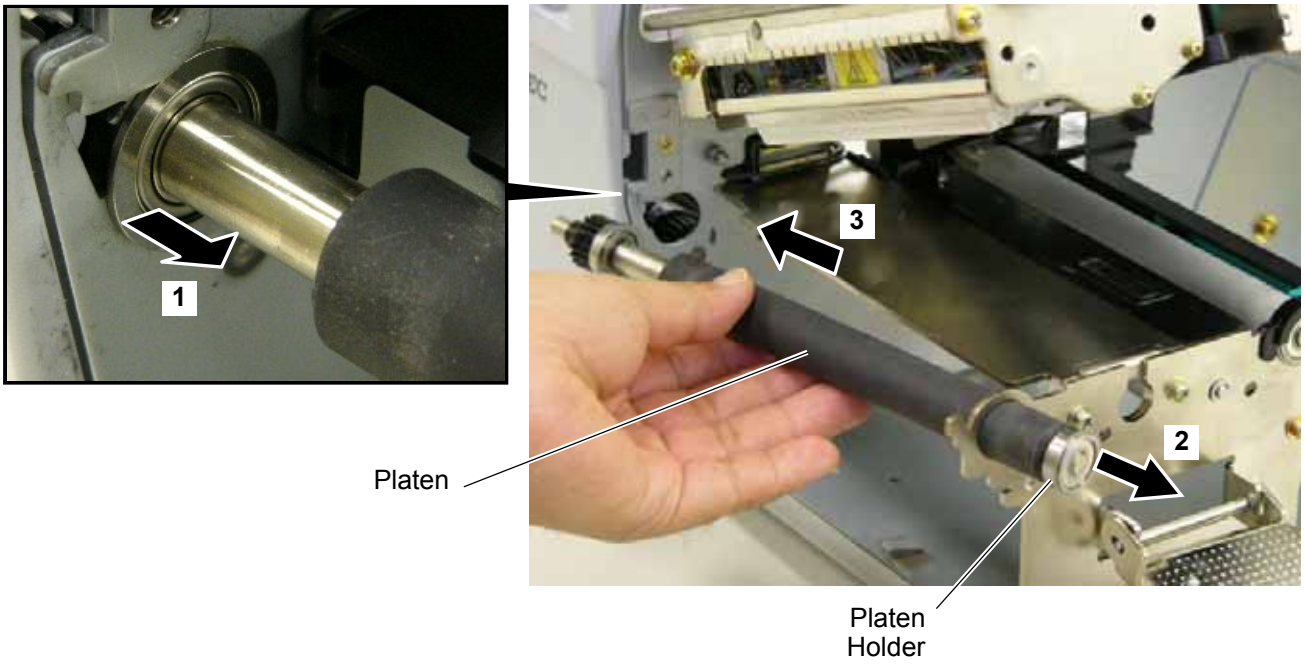
10. Push the Hook through the rectangle hole with a jeweler's screw driver or something, and remove the Platen Holder Cover in the direction indicated by the arrow.



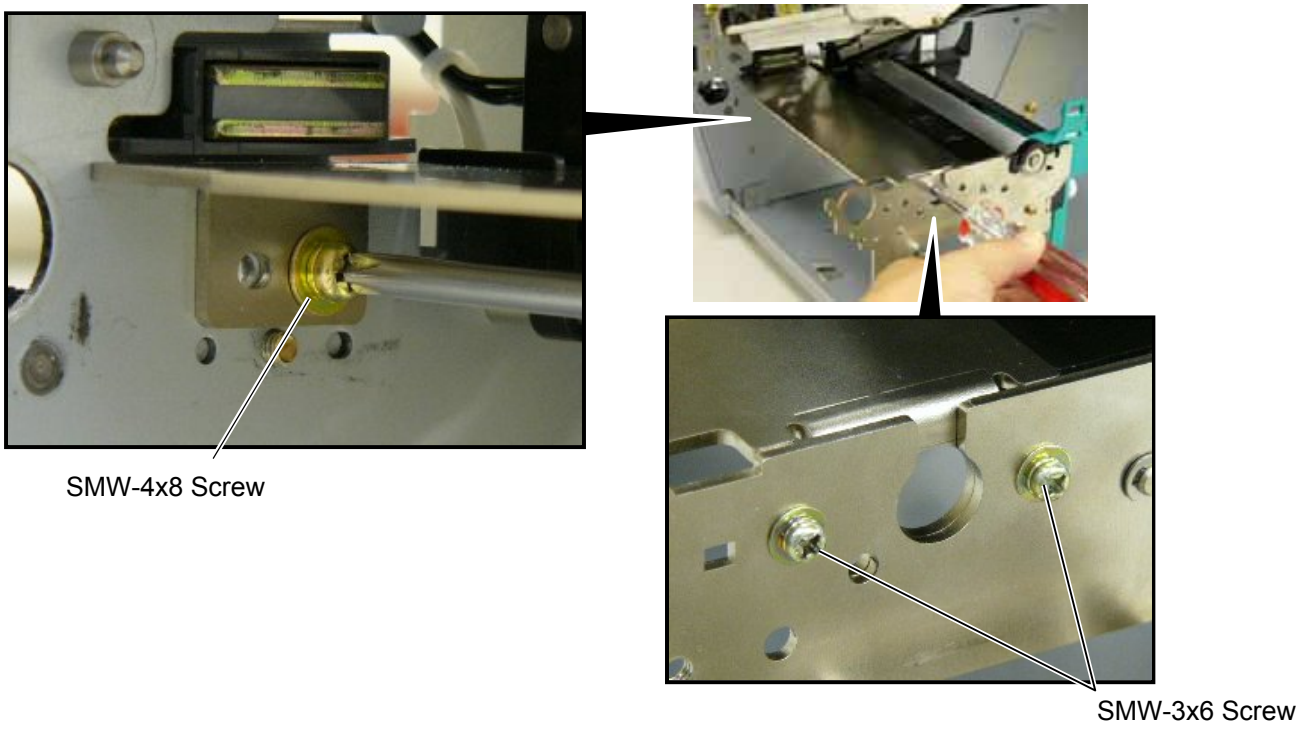
11. Lift the right side of the Strip Plate, and then pull and remove it.



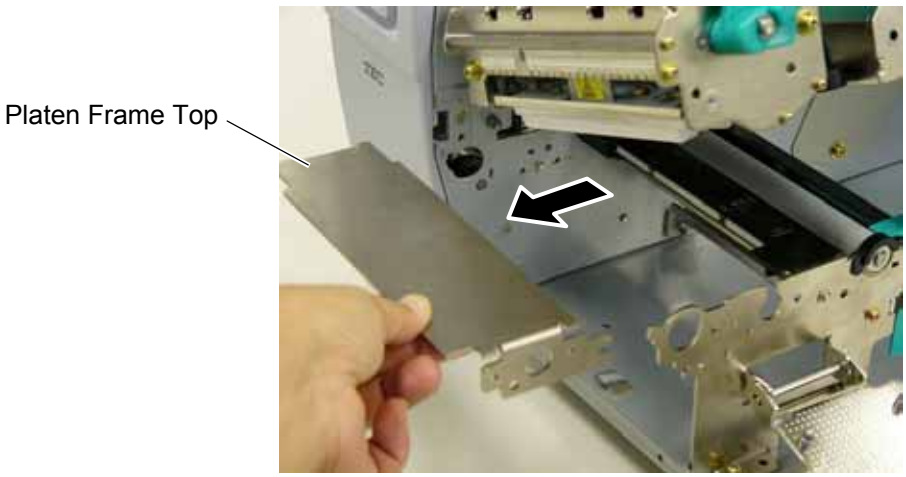
12. Remove the Platen and the Platen Holder in the direction of the arrows 1 to 3 as shown below.



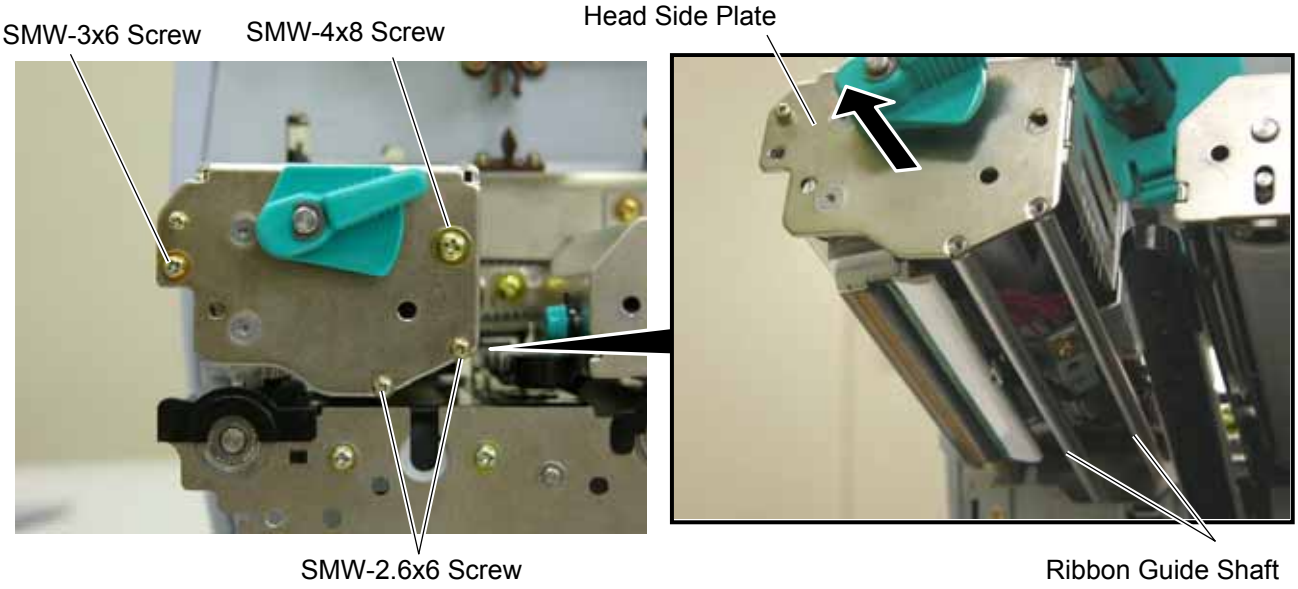
13. Remove the following three screws.



14. Remove the Platen Frame Top from the printer.

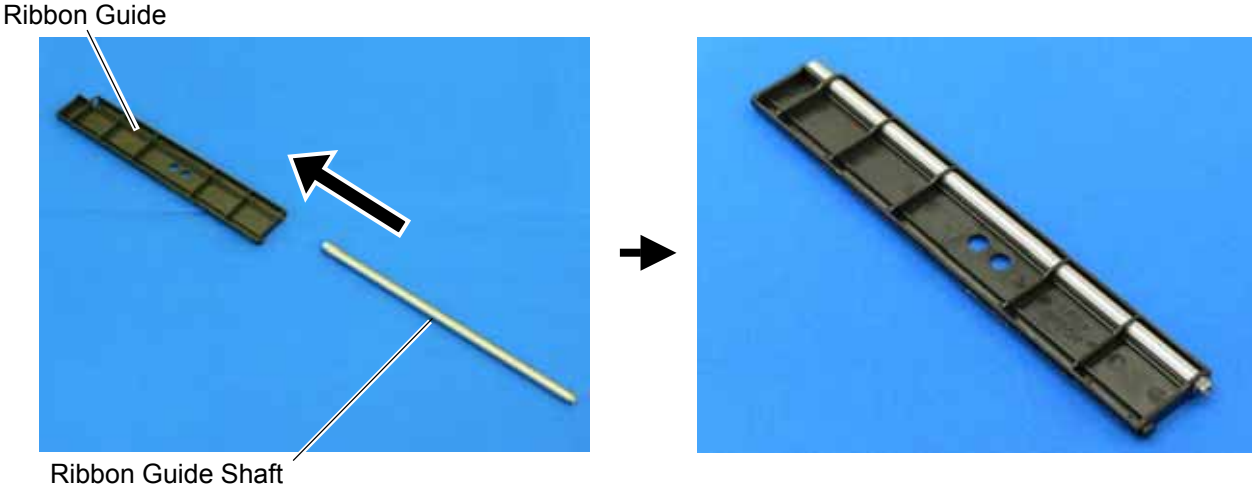


15 Remove the four screws from the side of the Print Head Block, slightly pull the Head Side Plate, and remove the two Ribbon Guide Shafts.

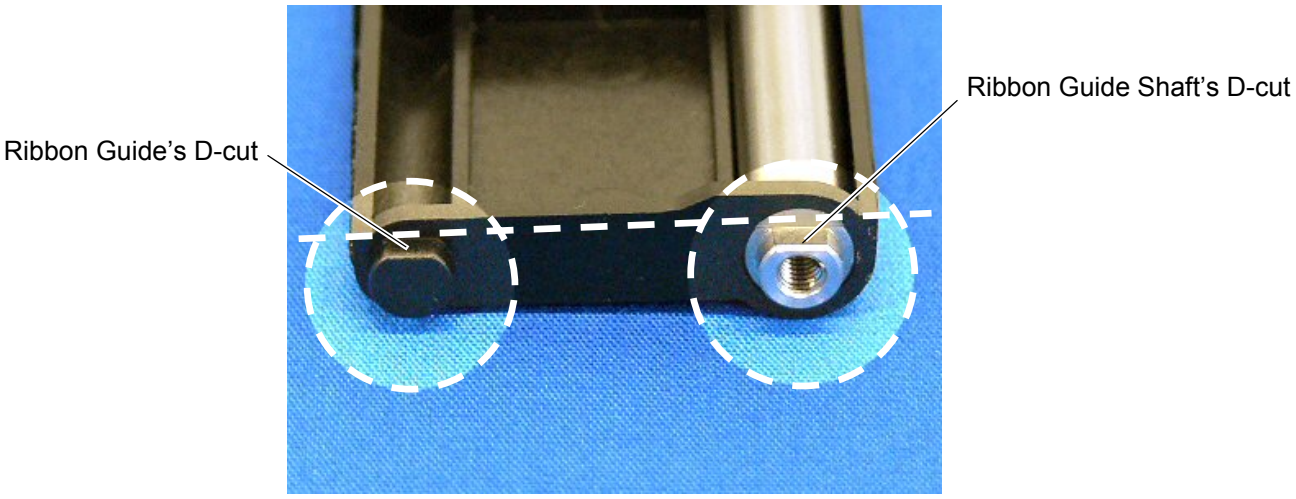


NOTE: *One of the removed Ribbon Guide Shafts and SMW-2.6x6 Screws are re-used when attaching the Ribbon Guide. Keep the unused ones for future use.*

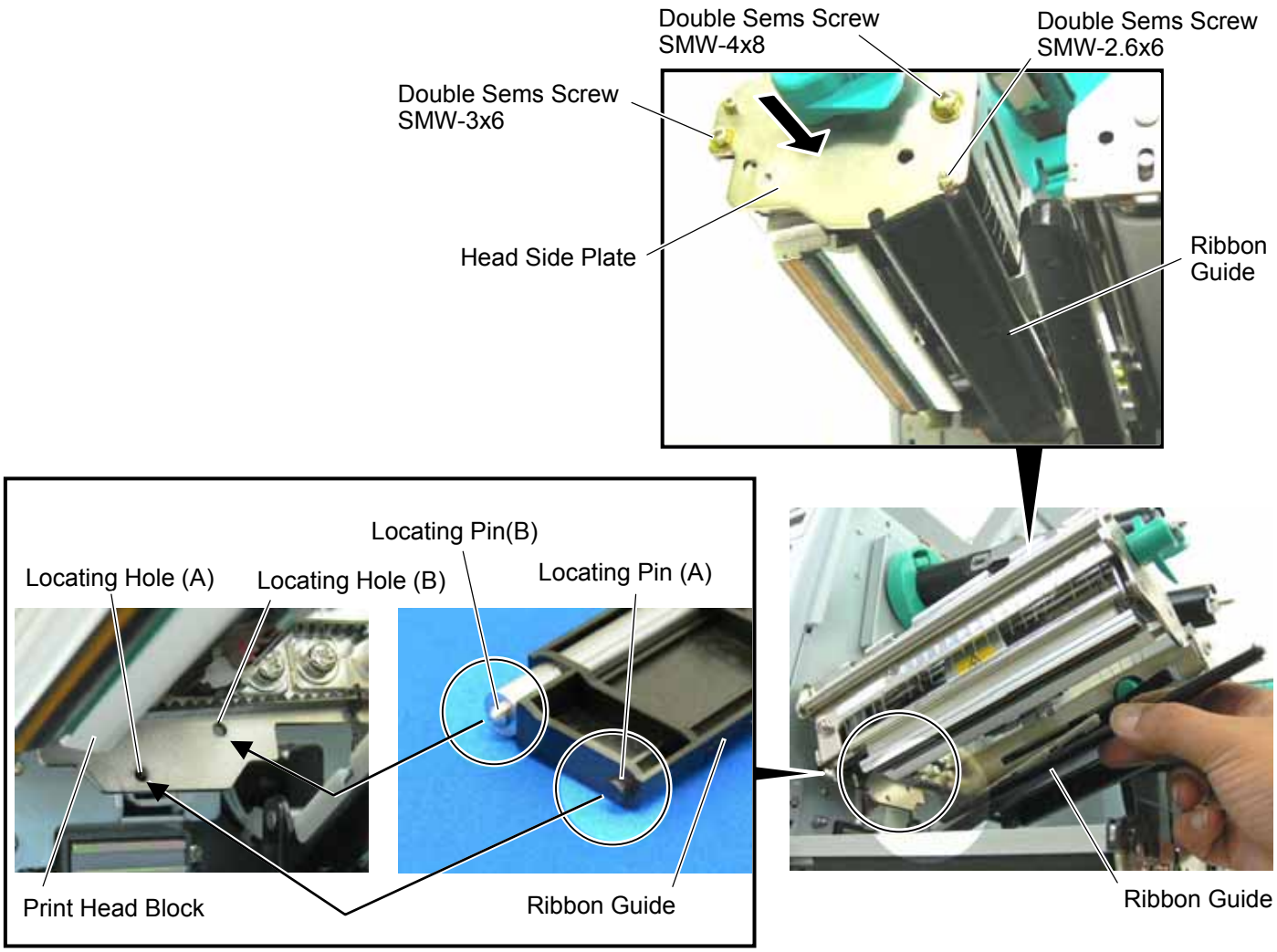
16. Insert one of the Ribbon Guide Shafts removed in Step 15 into the Ribbon Guide.



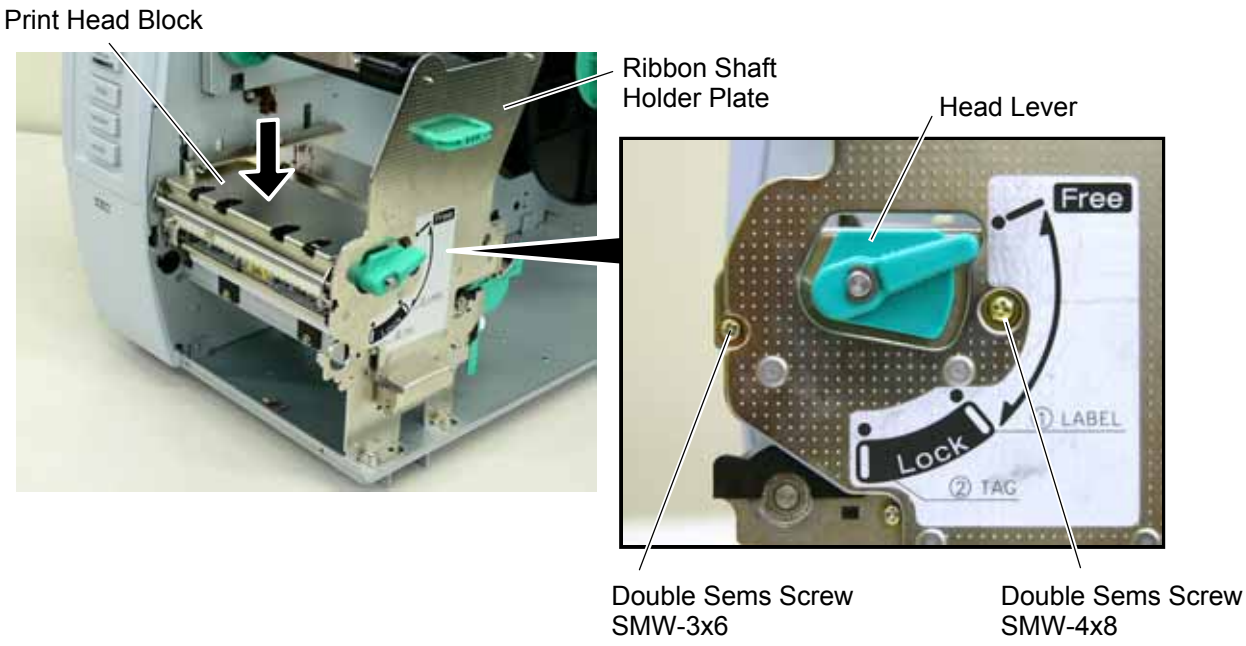
17. Rotate the Ribbon Guide Shaft so that its D-cut is in the same orientation with the Ribbon Guide's D-cut. Without doing this, the Ribbon Guide cannot be fit in the Print Head Block.



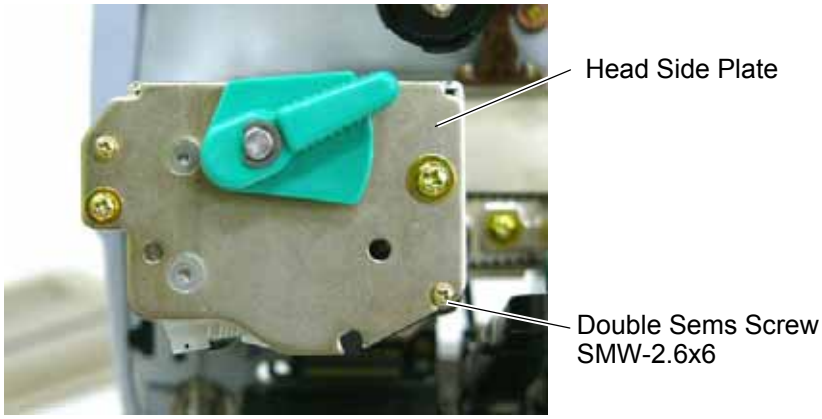
18. Fit the Ribbon Guide including the Ribbon Guide Shaft in the Print Head Block, and secure it to the Head Side Plate with the SMW-2.6x6 screw. Temporarily secure the Head Side Plate to the Print Head Block with the SMW-3x6 Screw and the SMW-4x8 Screw. Be sure to fit the locating pins provided on the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

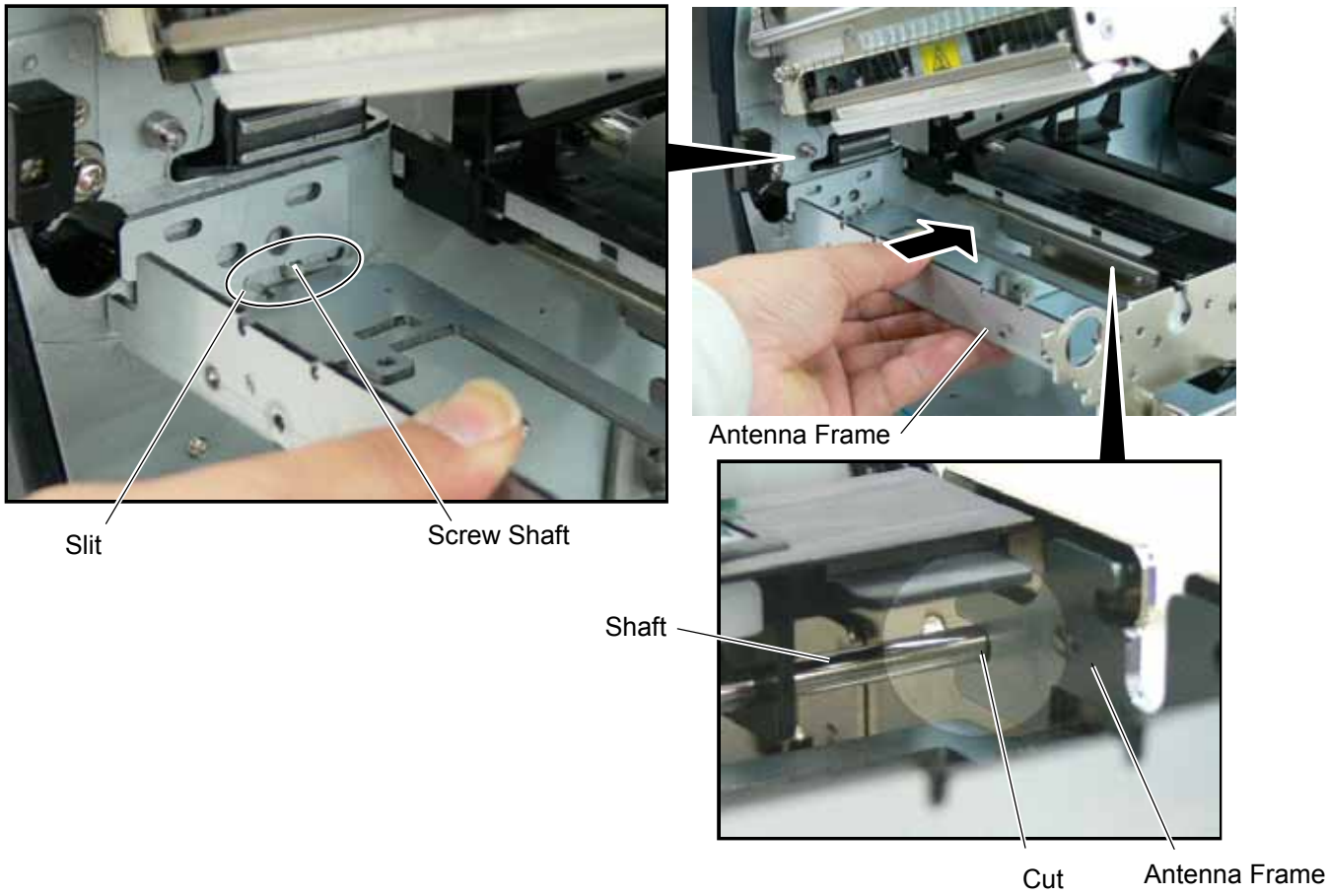


4.23.3.3 Attaching the Antenna Frame and the Antenna Ass'y

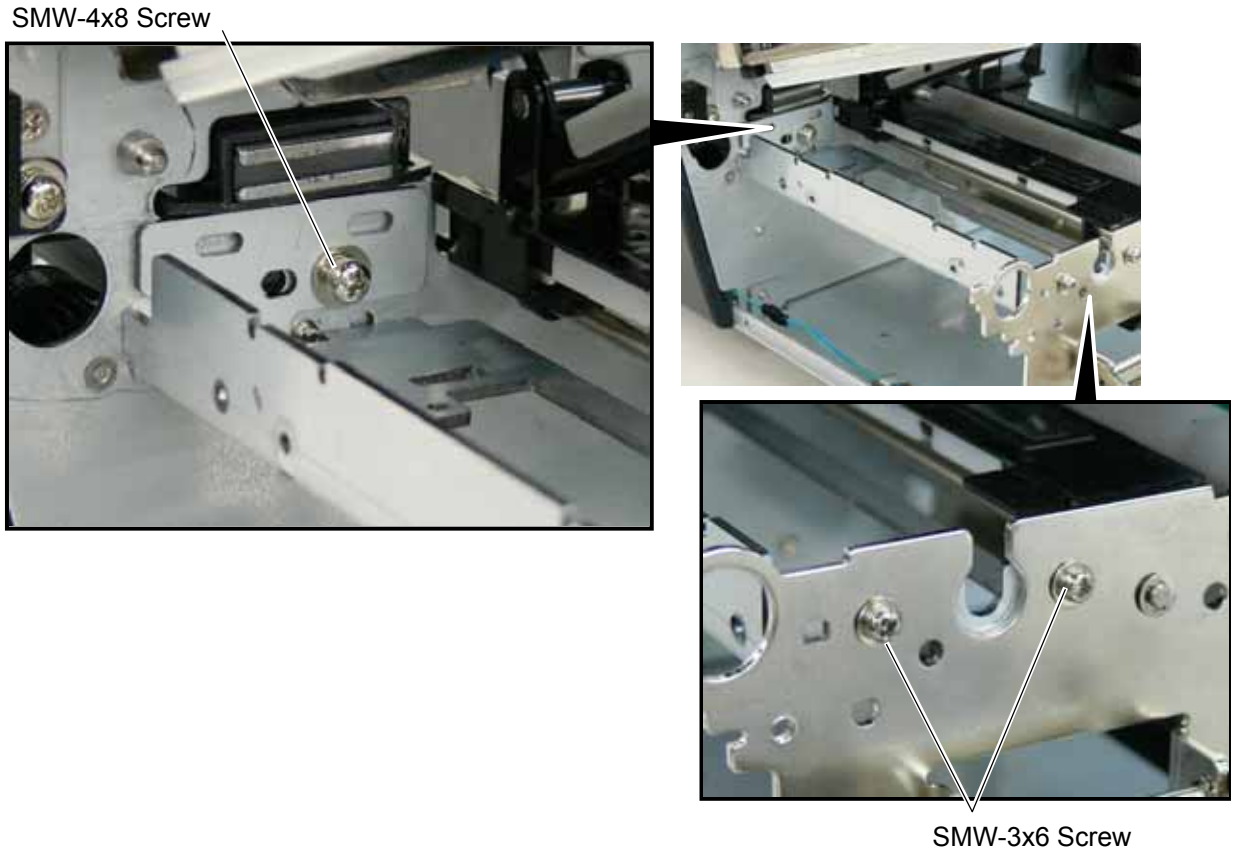
This section describes the procedure for attaching the Antenna Frame and the Antenna Ass'y.
When short-pitch tags (20 mm) are used, the procedure is different from the following. Skip step (1) and go to step (2).

(1) When using RFID tags other than short-pitch type:

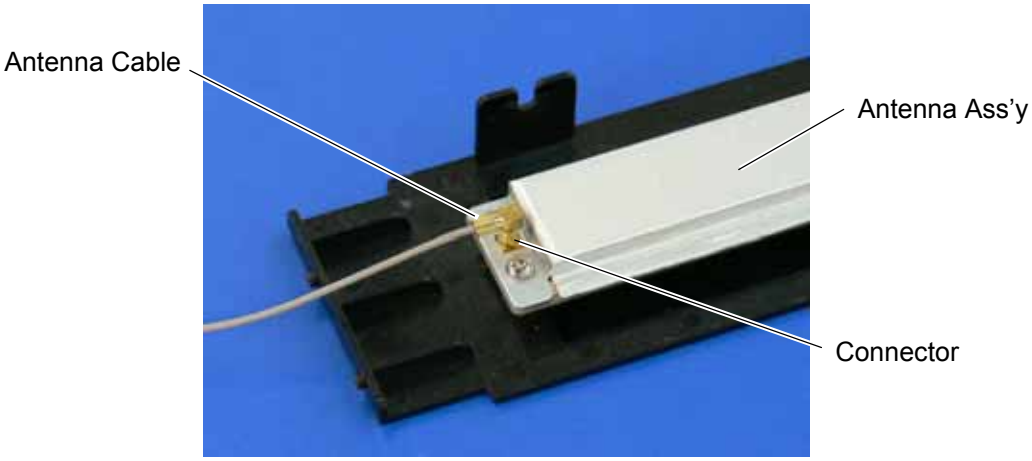
1. Raise the Print Head Block, and slide the Antenna Frame into the printer as shown below. Make the protruding screw shaft of the printer pass through the slit of the Antenna Frame. Also, make the Shaft of the printer fit in the Cut of the right side of Antenna Frame



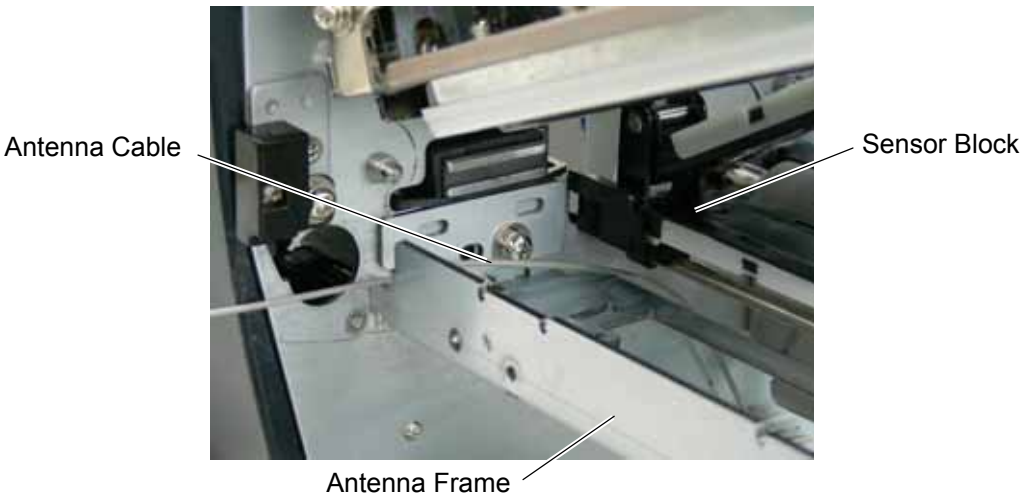
2. Secure the Antenna Frame with the three screws removed in Step 13 of Section 4.23.3.2.



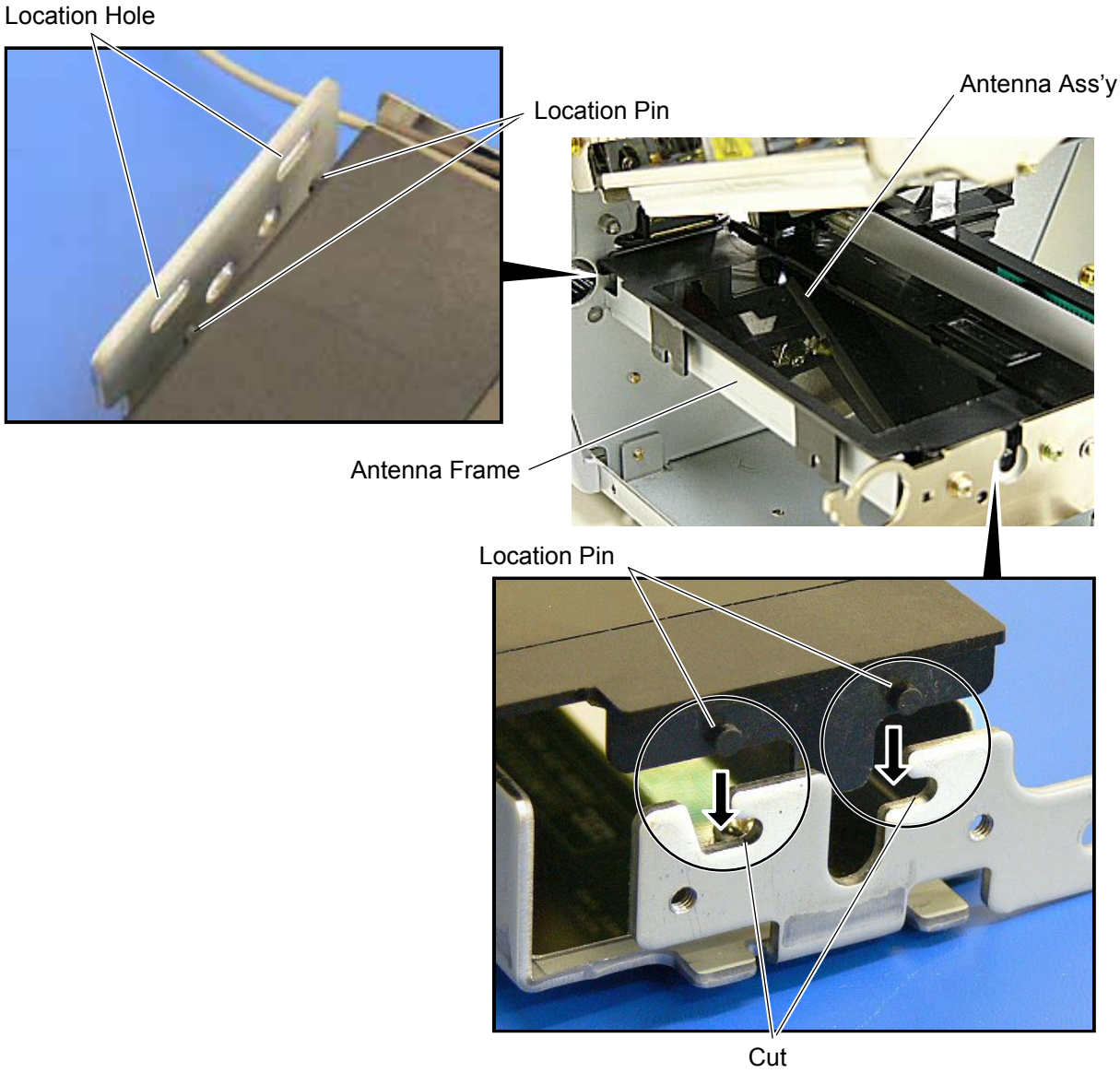
3. Connect the Antenna Cable to the Antenna Ass'y until it clicks.



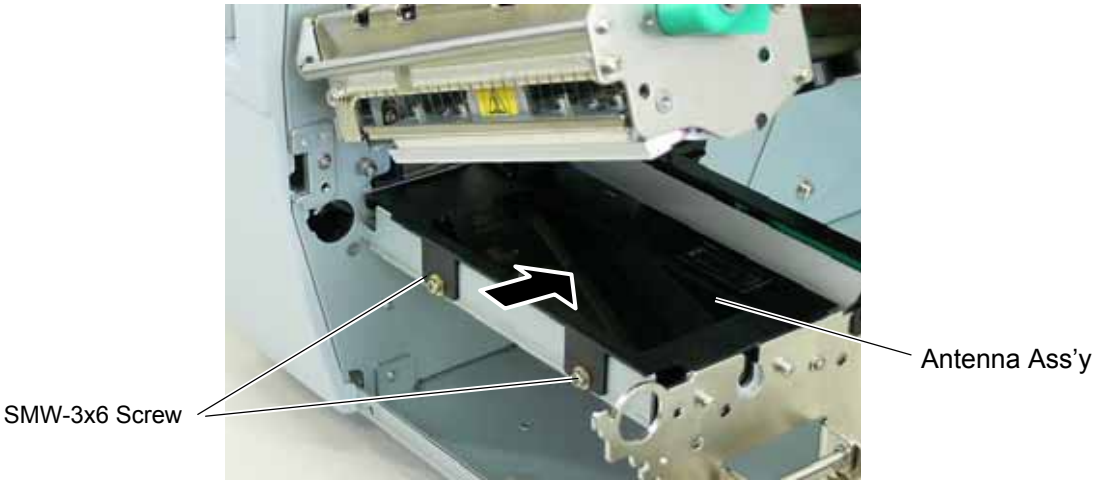
4. Pass the Antenna Cable between the Sensor Block and the Antenna Frame, as shown below.



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.



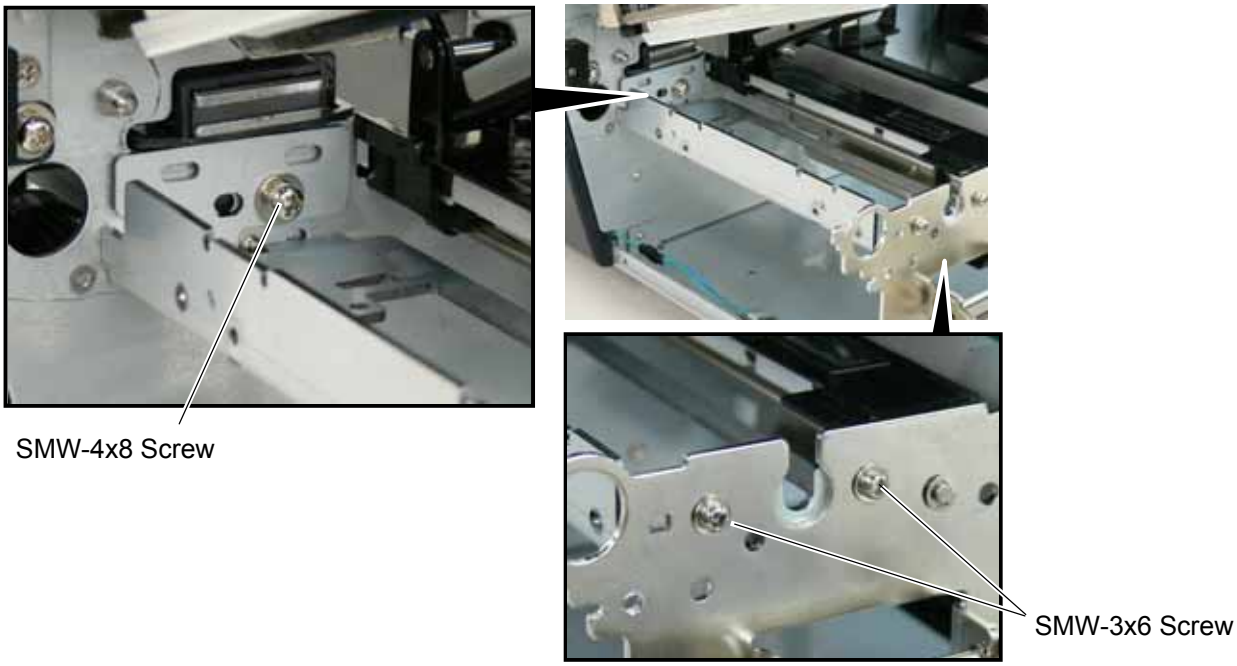
6. Push the Antenna Ass'y in the arrow-indicating direction, and secure it with the two SMW-3x6 screws.



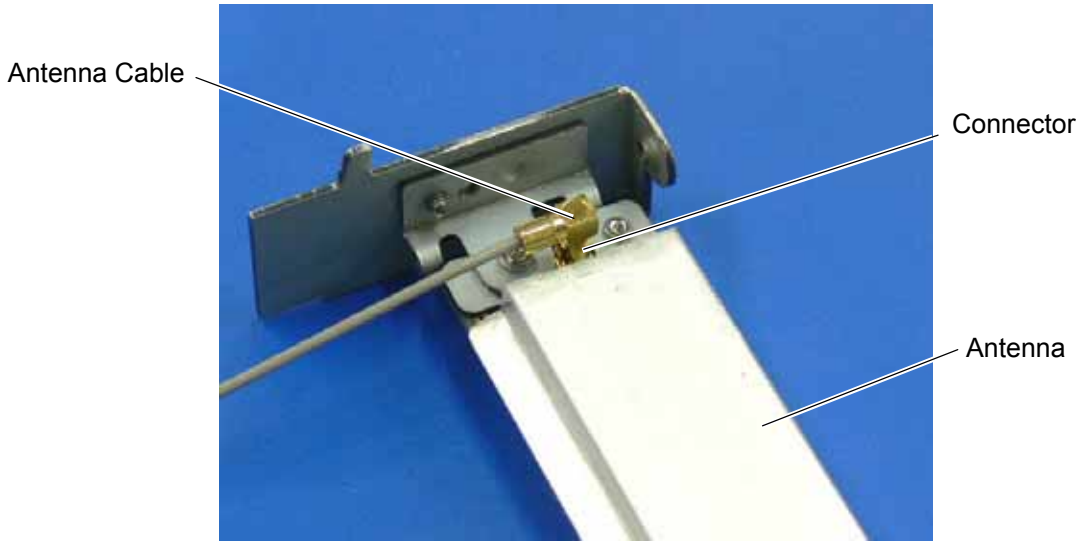
7. Go to Section 4.23.3.4 and attach the RFID Module.

(2) When using short-pitch tags (20 mm)

1. Attach the Antenna Frame to the printer in the same way as described in Step 1 of Section 4.23.3.4.

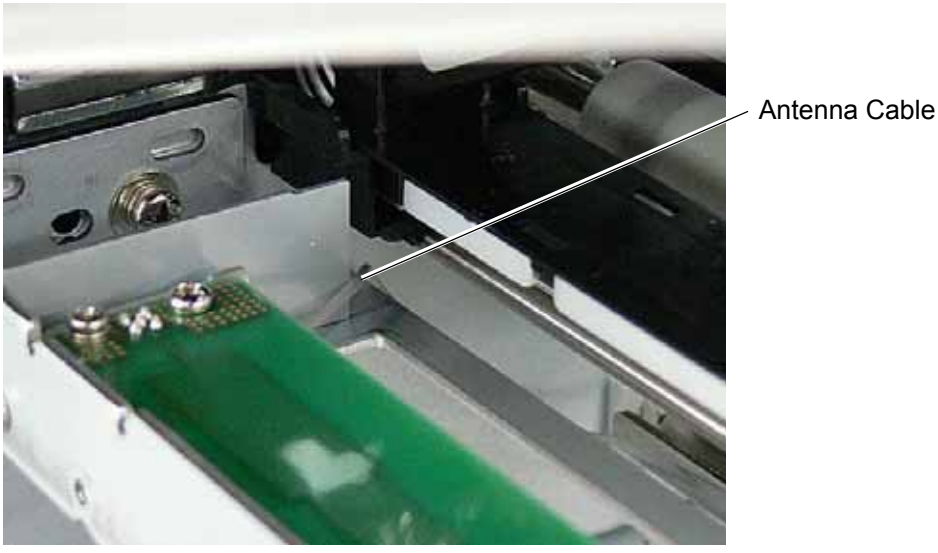


2. Connect the Antenna Cable to the Antenna, to which the Antenna Plates were attached in Section 4.23.3.1, until it clicks.

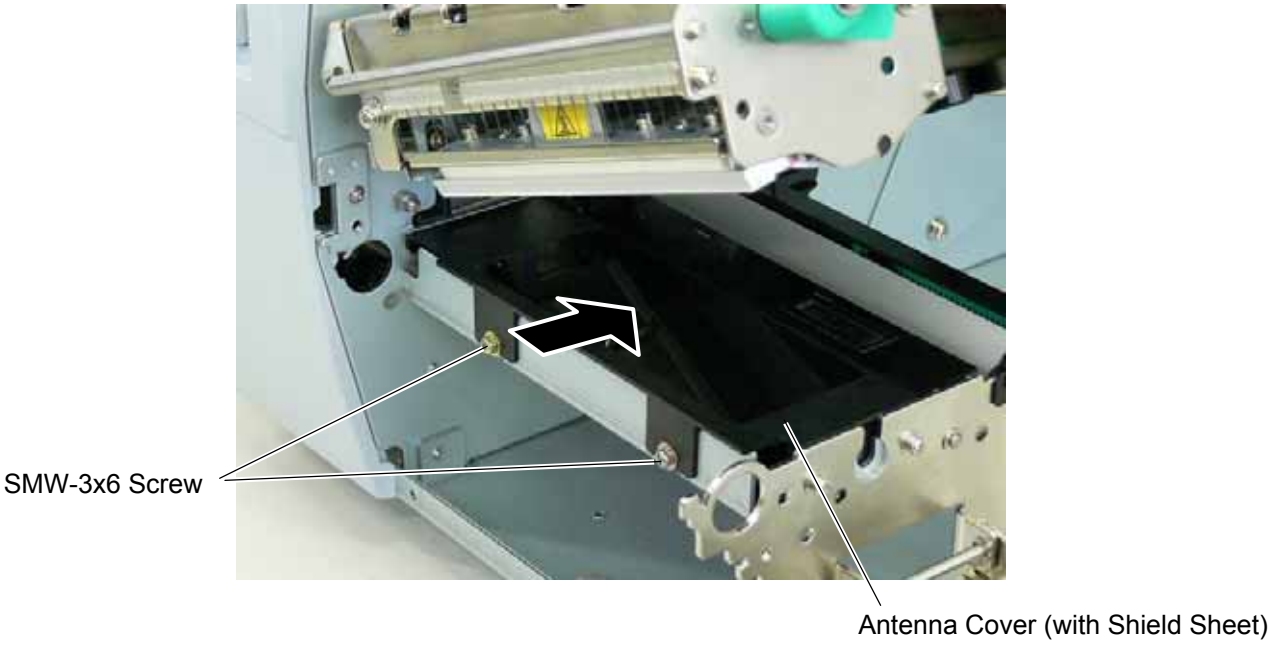


3. Secure the Antenna to the Antenna Frame with the P-3x6 screws.

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



5. Refer to Steps 5 and 6 in "(1) When using RFID tags other than short-pitch type" and attach the Antenna Cover, to which the Shield Sheet was attached in Section 4.23.3.1, to the Antenna Frame with the SMW-3x6 screws.

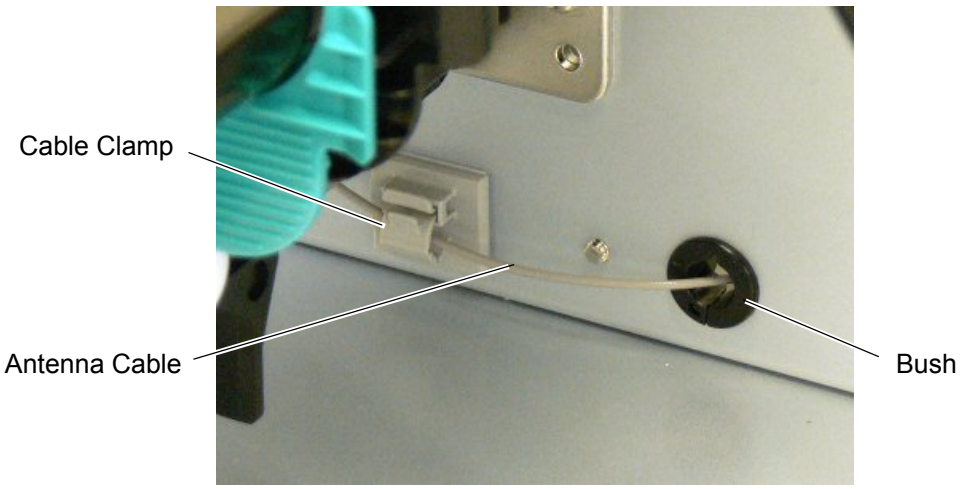


6. Go to Section 4.23.3.4 and attach the RFID Module.

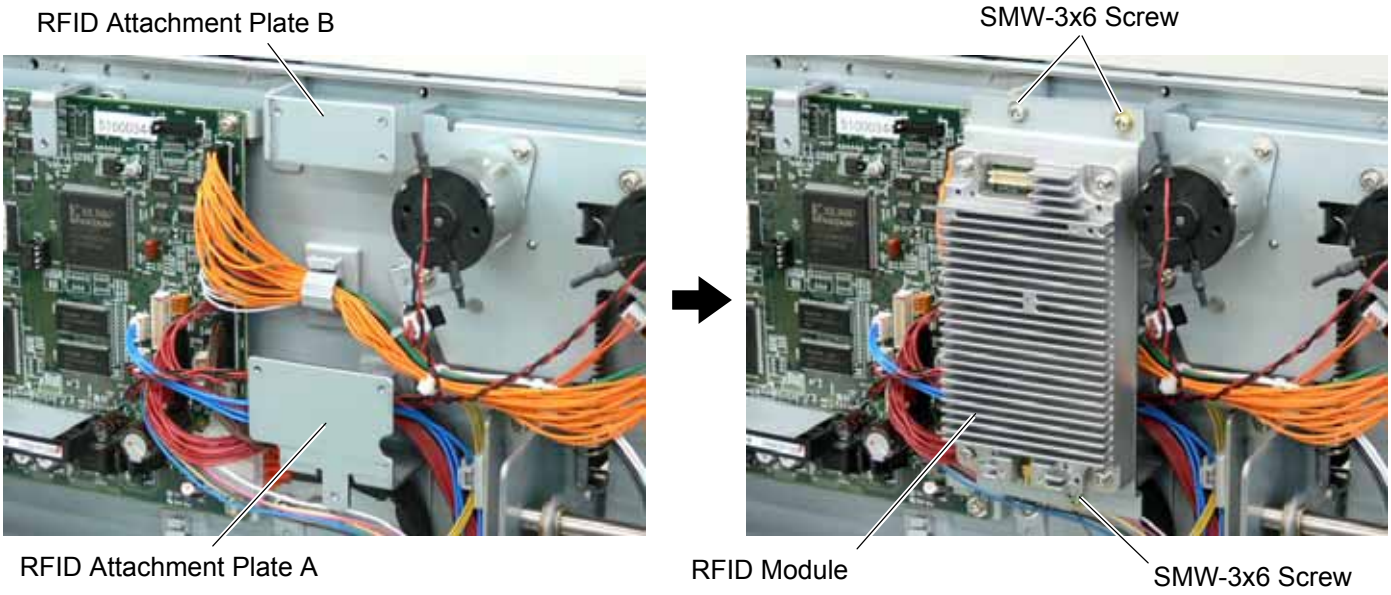
4.23.3.4 Attaching the RFID Module

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

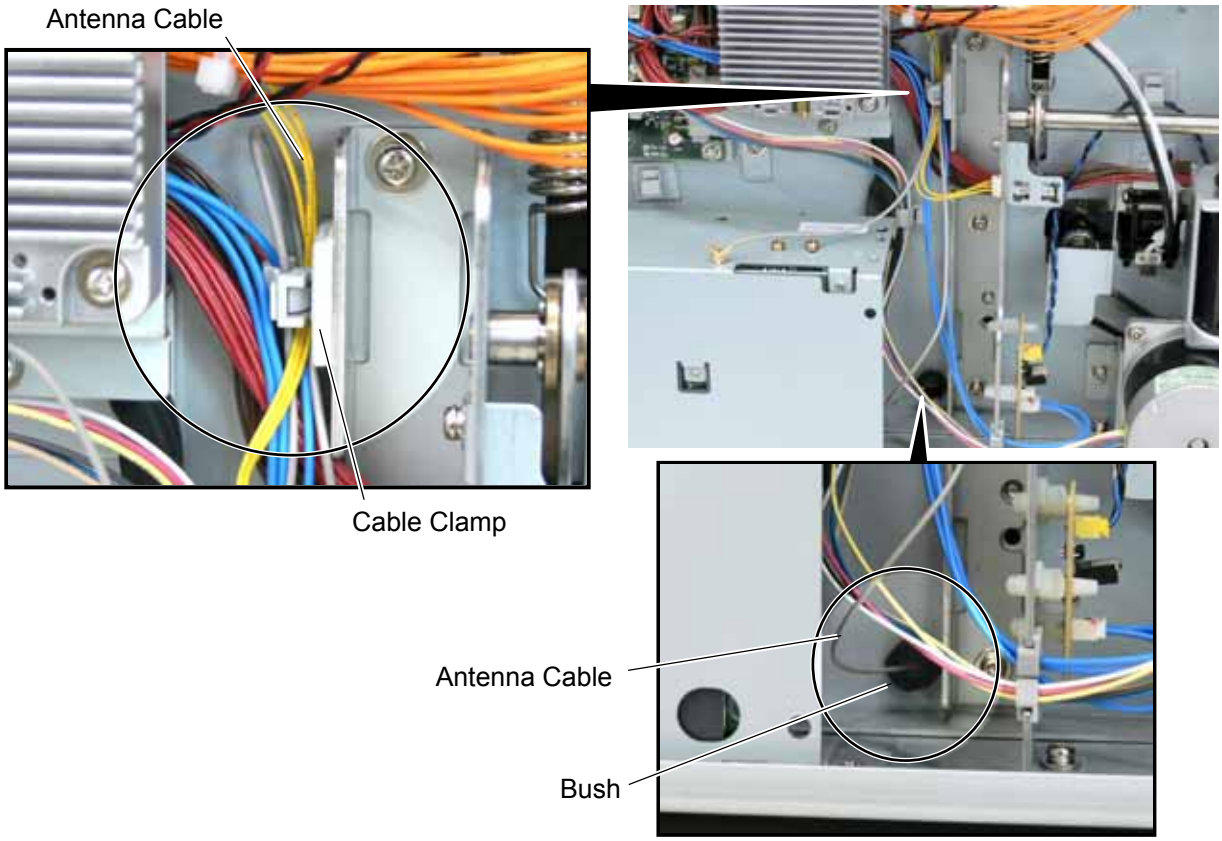
2. Pass the Antenna Cable through the Bush, and fasten the cable with the Cable Clamp.



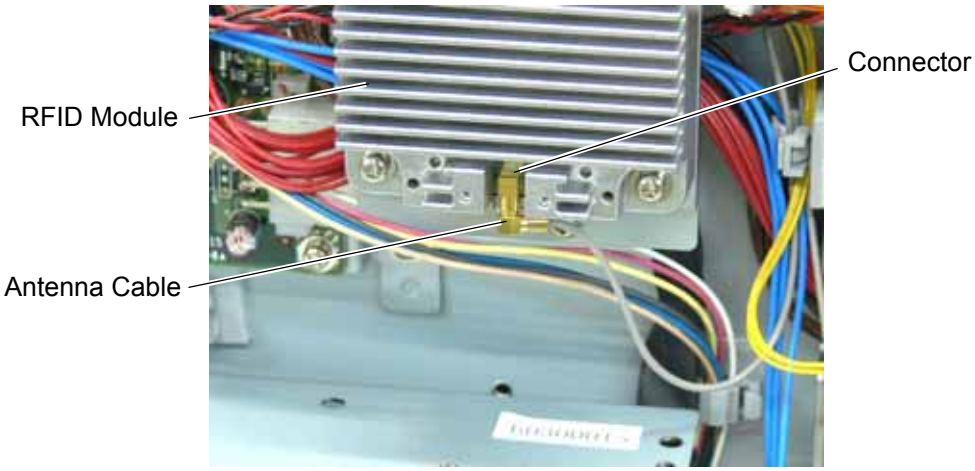
3. Attach the RFID Module to the RFID Attachment Plate A and the RFID Attachment Plate B with the three SMW-3x6 screws.



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.



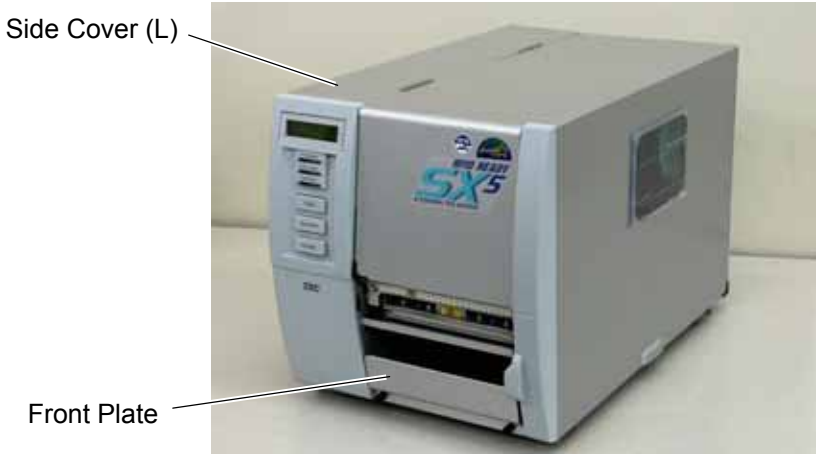
5. Connect the Antenna Cable to the RFID Module until it clicks.



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).



9. Installing the RFID kit in the printer is now completed. Then, go to Section 4.23.4 and configure the RFID module settings.

4.23.4 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

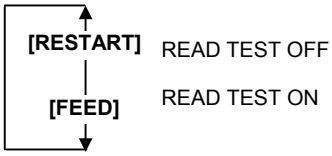
RFID setting menu "<10>RFID" is displayed.
Press the **[PAUSE]** key.

[PAUSE]

↓

<10>RFID
READ TEST OFF

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



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.

[PAUSE]

↓

<10>RFID
CAREERSENSE OFF

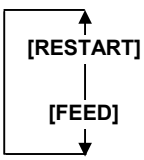
Carrier sense setting menu is displayed. This menu is not available to the B-SX704-RFID-U2-AU -R. Press the **[PAUSE]** key to skip this menu.

[PAUSE]

↓

<10>RFID
MODULE NONE

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



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

[PAUSE]

Press the **[PAUSE]** key.

↓

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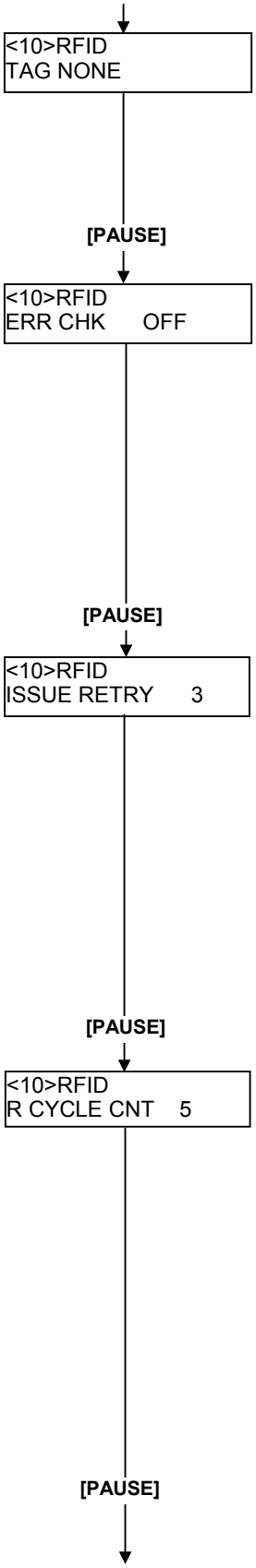
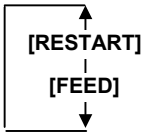


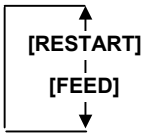
RFID tag type setting menu is displayed.
Choose "EPC C1 Gen2: 24" with the **[FEED]** or **[RESTART]** key.



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.

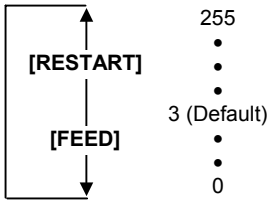


OFF: An error tag detection is not performed. (Usually, choose OFF.)
ON: An error tag detection is performed.

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.

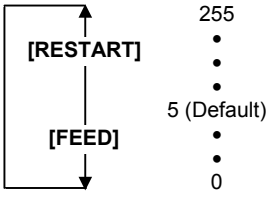
Press the **[PAUSE]** key.

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.

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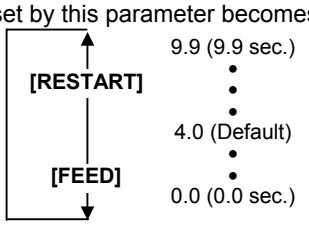
<10>RFID
R CYCLE TIM 4.0

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.

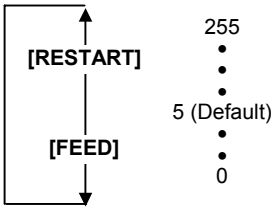


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
W CYCLE CNT 5

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.

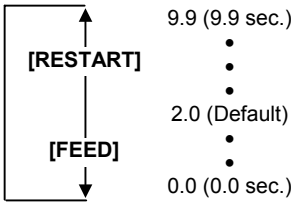


[PAUSE]

Press the **[PAUSE]** key.

<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.

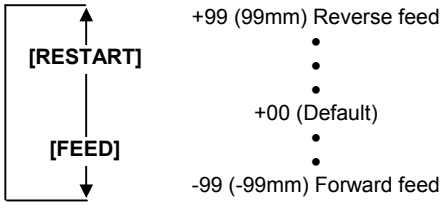


[PAUSE]

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.

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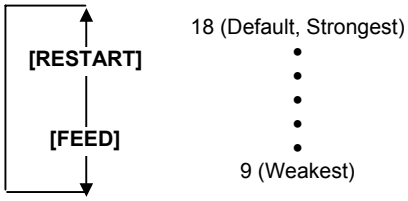
<10>RFID
POWER LEVEL 18

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.

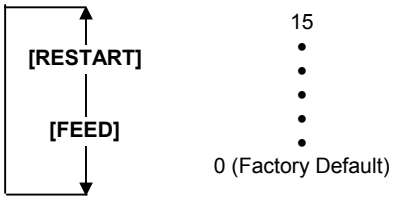


[PAUSE]

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.

<10>RFID
RF CHANNEL AUTO

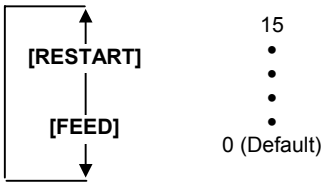
RFID channel setting menu is not available to the B-SX704-RFID-U2-AU-R.

[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 4.23.5 AGC Threshold Setting.)
The factory default is 0.



[PAUSE]

Press the **[PAUSE]** key.

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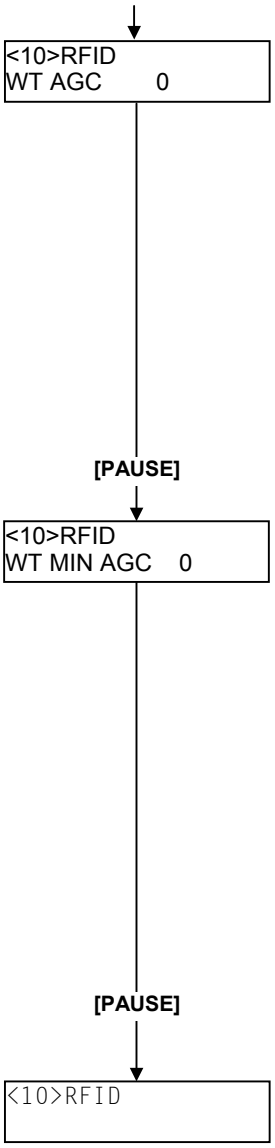
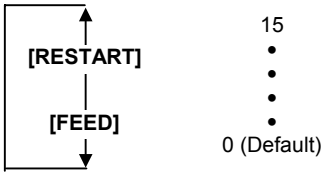
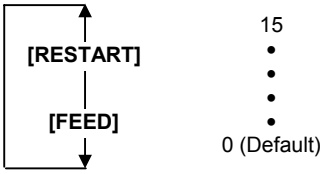


AGC threshold for data write setting menu is displayed.
When the Q value is set to 1 or greater, the AGC threshold for data write becomes effective.
When the obtained gain of an RFID tag is lower than the AGC thresholdfor data write, data write is not performed. In other words, setting an AGC threshold 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 4.23.5 AGC Threshold Setting.)
Set an AGC threshold for data write with the **[FEED]** or **[RESTART]** key, if necessary.



Press the **[PAUSE]** key.

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 4.23.5 AGC Threshold Setting.)
Set the lower limit for retry with the **[FEED]** or **[RESTART]** key, if necessary.



Press the **[PAUSE]** key.

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 4.23.5.

4.23.5 AGC Threshold Setting

The B-SX704-RFID-U2-AU-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.

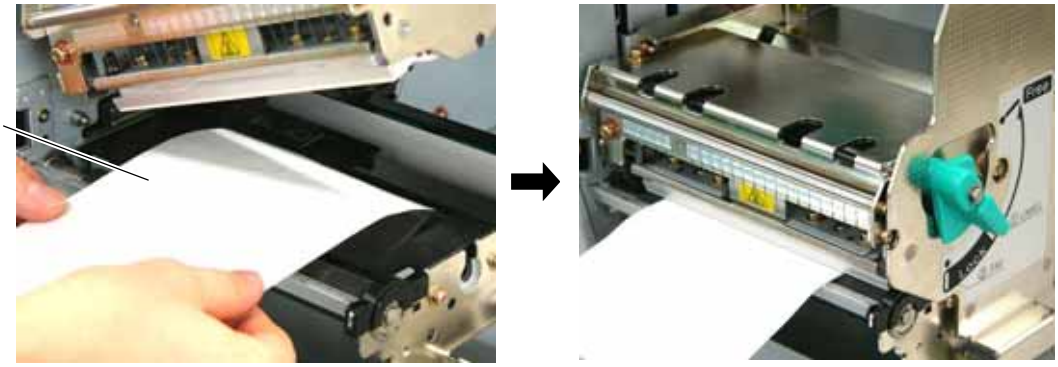
Step 1. Load an RFID tag embedded media in the printer.
Step 2. Follow the procedure below to measure the radio intensity of the tags.
1) Place the media so that an RFID tag (IC chip) is positioned above the Antenna, and close the Top Cover.

***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

RFID Tag



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]

↓

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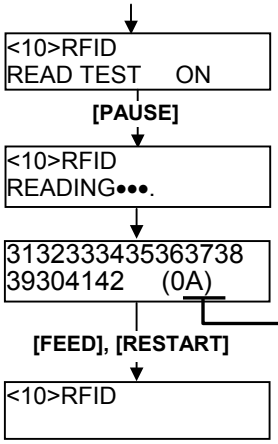


Press the **[PAUSE]** key to implement a read test.

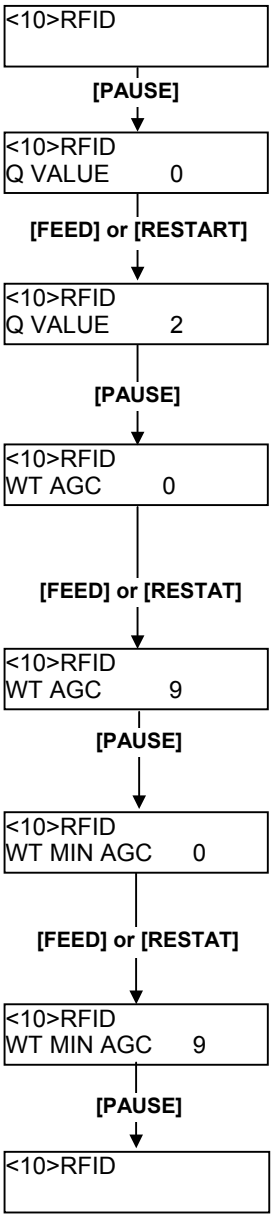
Read data is displayed.

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").

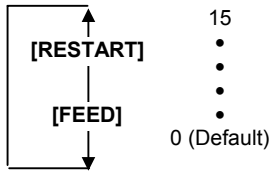
3) Set an AGC threshold of data write.
Set a value which is lower than the AGC value obtained by a read test by 1 or 2, taking variation of RFID tags in performance into consideration.

Example



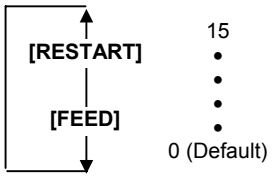
When "<10>RFID" is displayed, press the **[PAUSE]** key until the Q value setting menu is displayed.

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



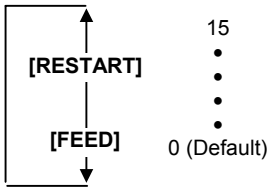
Press the **[PAUSE]** key.

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.

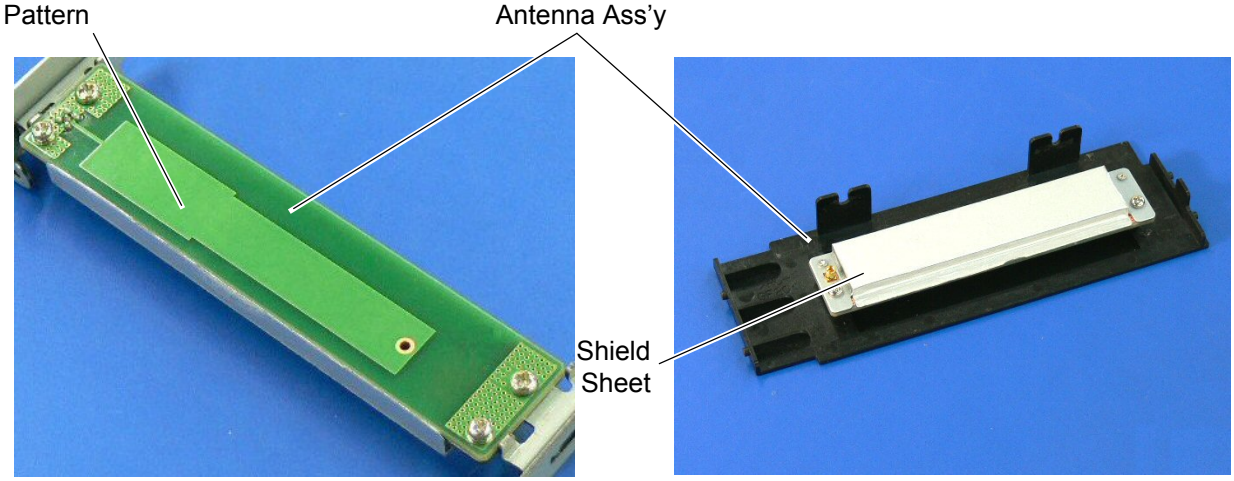
4.24 RFID MODULE (B-SX704-RFID-U2-US-R)

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.



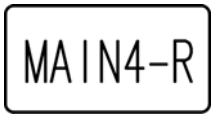
4.24.1 Applicable Model

(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) As from the January 2009 production (Serial Number 2809Axxxxxx and after), the AU (Australia) specification has been supported by the B-SX704-RFID-U2-US-R RFID Module. Also the KR (South Korea) and TW (Taiwan) specifications have been added.
The firmware of the B-SX4T/SX5T-R series barcode printer should be V4.7 or greater. If V4.6A or less, please install the firmware V4.7 into the printer.
Make sure the firmware version is V4.7 and greater when turning on the printer.

When the firmware version is V4.6A or less, it is necessary to upgrade the firmware to V4.7 and greater. For the downloading procedure, refer to the B-SX4T/SX5T Series Maintenance Manual.
For the printer to which back side the sticker MAIN4-R is attached, the firmware V5.0 and greater has been installed. Since the firmware V5.0 and greater is exclusive to this printer, do not install the firmware V4.7 into it.



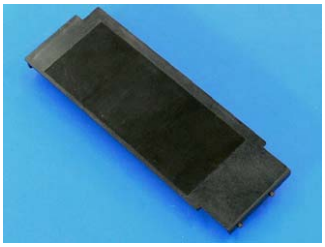
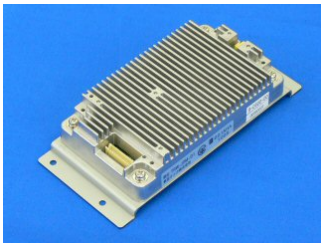
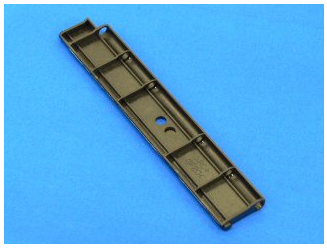
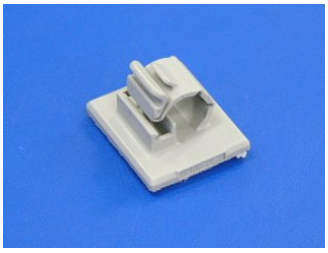
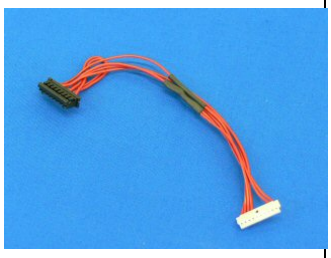
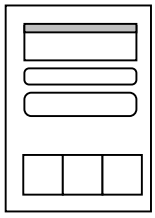
To use this device, printer firmware V4.7 or greater is required. Upgrade the firmware to V4.5 or greater, if necessary. For the downloading procedure, refer to Section 7 PROGRAM DOWN LOAD.
Note that a RAM clear needs to be performed after downloading, so print out the maintenance counter and parameter settings prior to downloading. After performing a RAM clear, restore the printer parameter settings to the former states.
Destination Code Setting should be performed in the system mode of the printer according to the destination.

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

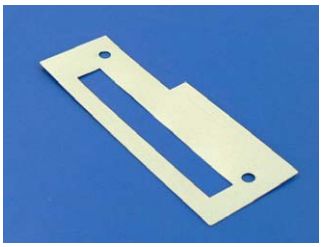
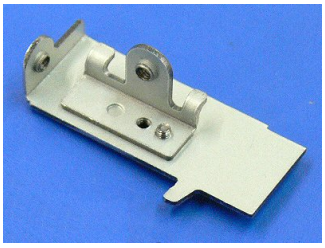
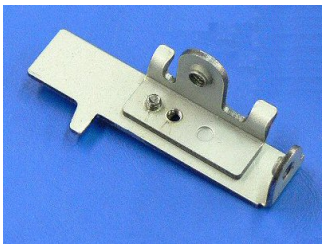
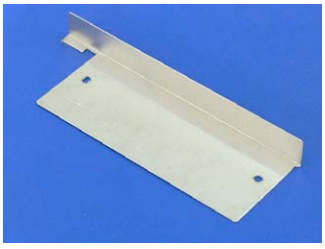
Model Name	Setting	Frequency Band	Applicable Countries
B-SX704-RFID–U2-US-R	US	UHF 902.75 to 927.5MHz	U.S.A., Canada
	AU	UHF 918.25 to 925.75 MHz	Australia
	KR	UHF 910.4 to 913.6 MHz	Korea
	TW	UHF 922.25 to 927.25 MHz	Taiwan

4.24.2 Packing List

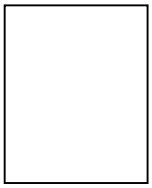
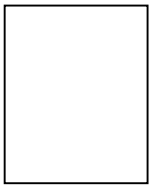
If any part is missing, please contact your TOSHIBA TEC sales agent.

• 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 (6 pcs.)
• Shield Plate (1 pc.) 			

The following parts have been added to the kit. (Serial Number 2809Axxxxxx or later)

Certification Sticker (for Taiwan only), (1 sheet)	Precaution Sheet (for Taiwan only), (1 sheet)	Certification Data Sheet (for Korea only), (1 sheet)
		

Notes:

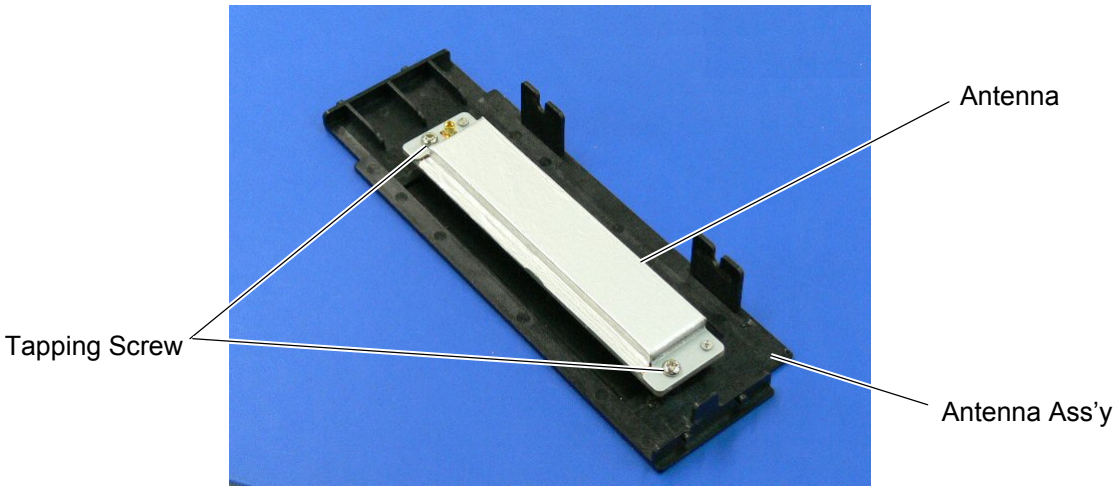
1. The precaution sheet is exclusive to Taiwan. Please certainly pass the document to end users for the use of the product in Taiwan.
2. The certification data sheet is exclusive to Korea. Please certainly pass the document to end users for the use of the product in Korea.

4.24.3 Installation Procedure

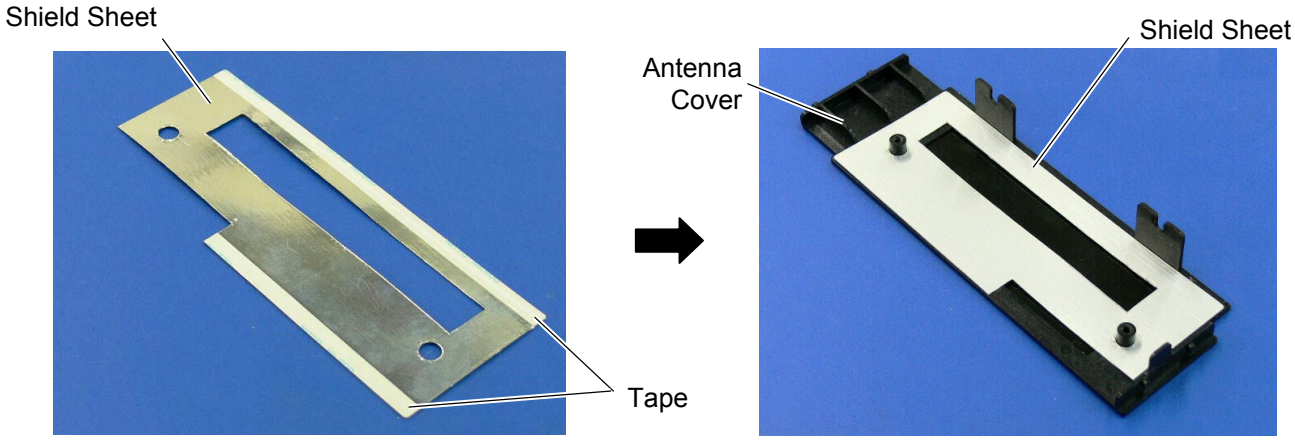
4.24.3.1 Preparation for Use of Short-Pitch RFID Tags (20mm)

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 4.24.3.2.

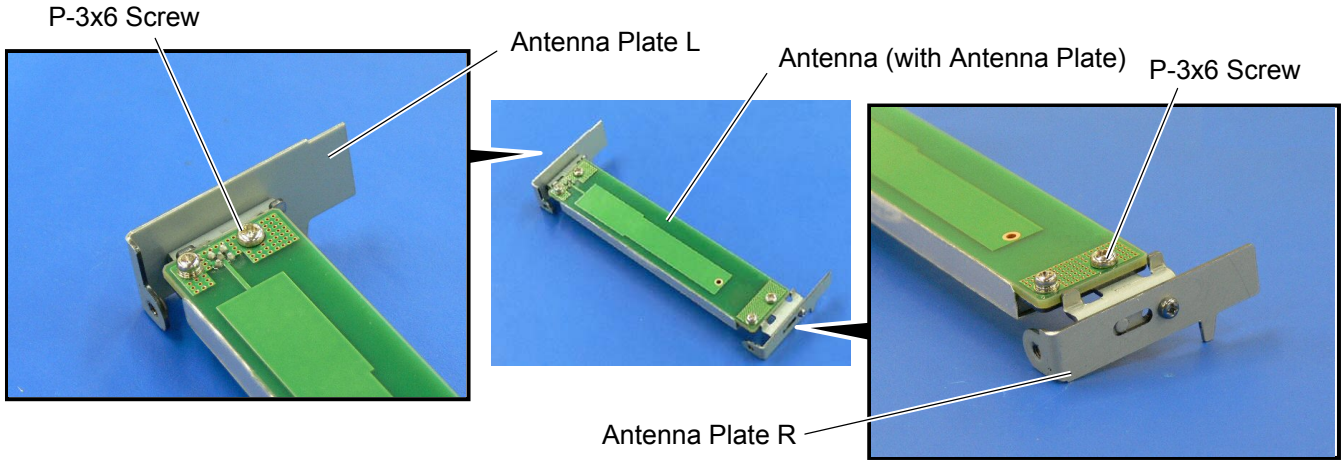
1. Remove the two Tapping Screws to detach the Antenna from the Antenna Ass'y.



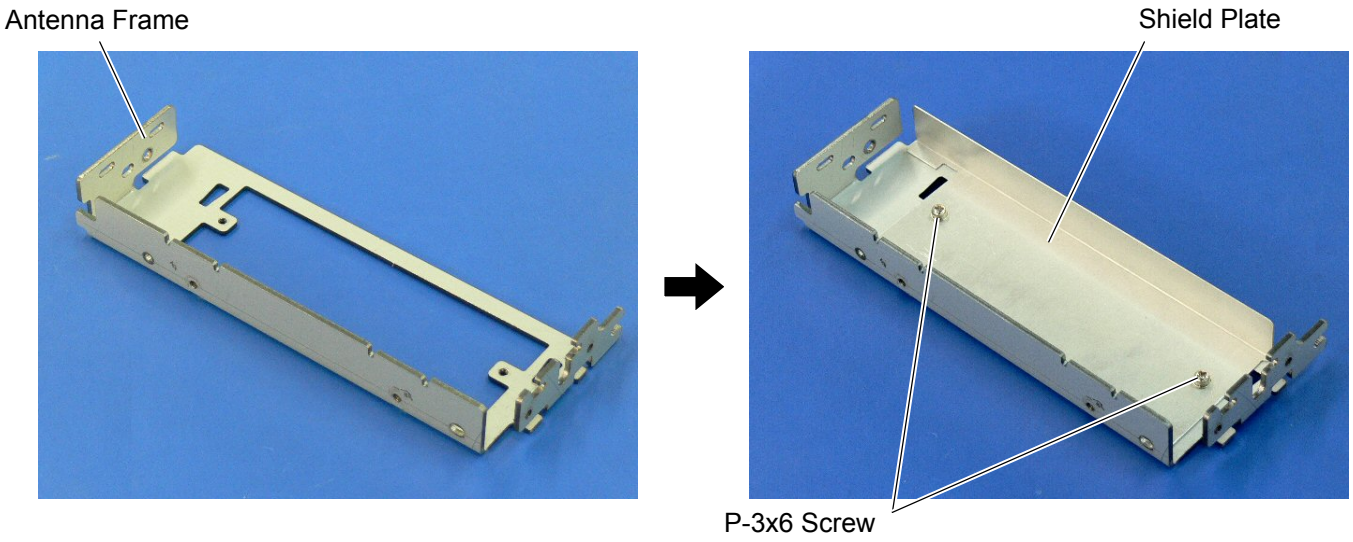
2. Remove the backing tapes from the reverse side of the Shield Sheet and attach it to the Antenna Cover, as shown below.



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



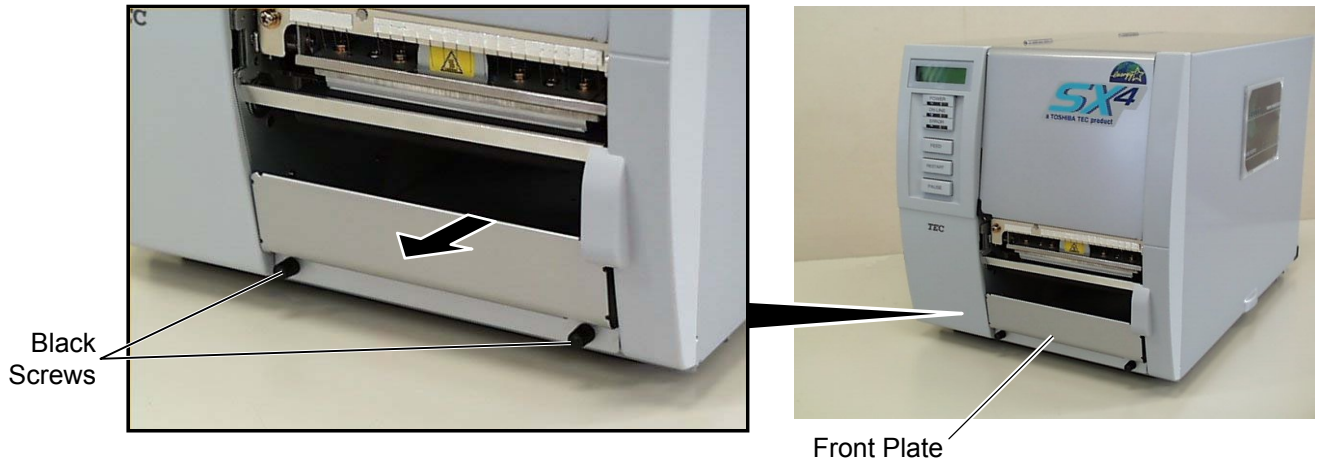
4. Attach the Shield Plate to the Antenna Frame. Secure the Shield Plate to the Antenna Frame with the P-3x6 screws.



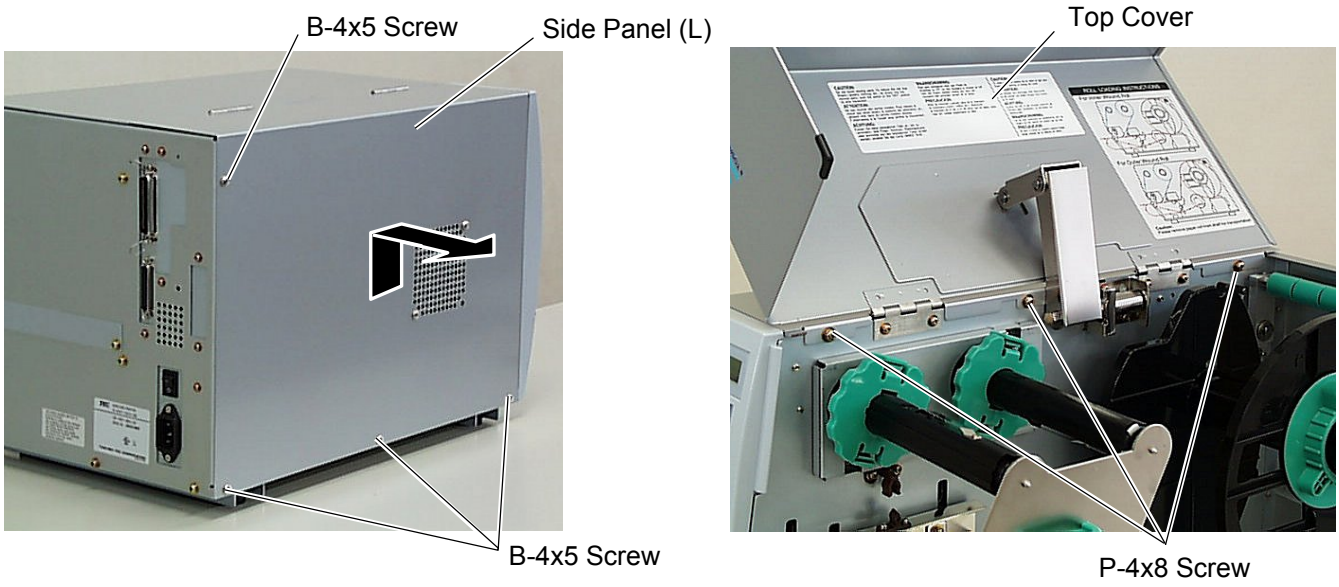
5 Refer to Section 4.24.3.2 and install an RFID module in the printer.

4.23.3.2 Preparing for the RFID Module Installation

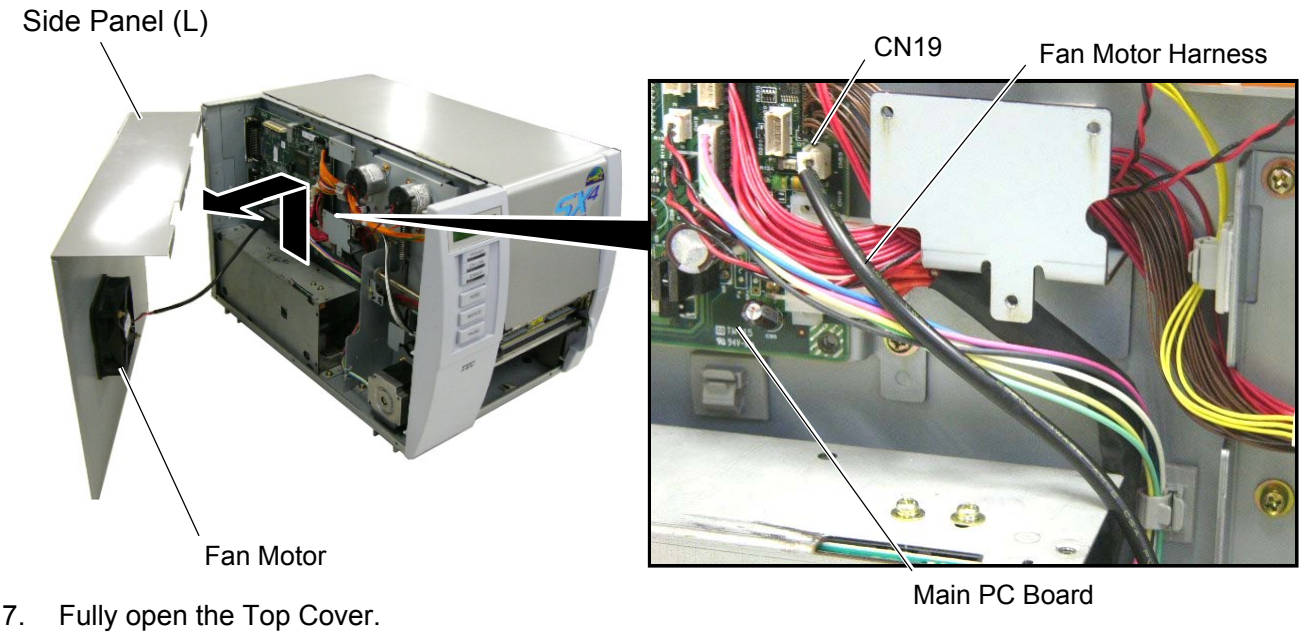
1. Turn the power off and disconnect the Power Cord.
2. Remove the two Black Screws to detach the Front Plate.



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).



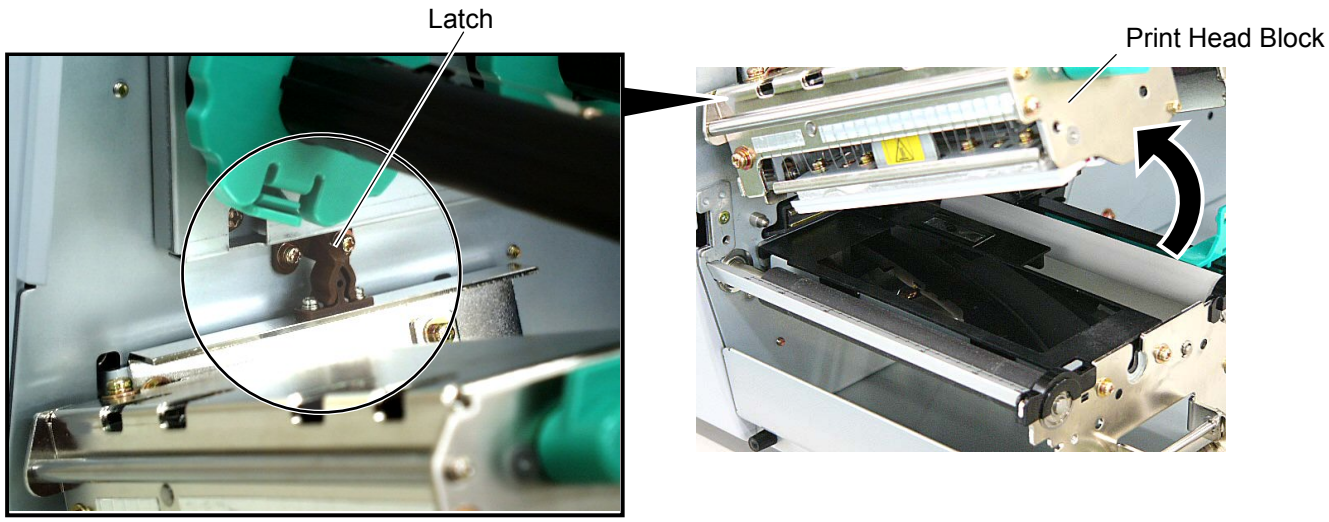
5. Lift the Side Panel (L) and put it aside.
6. Disconnect the Fan Motor Harness from CN19 on the Main PC Board, and then remove the Side Panel (L).



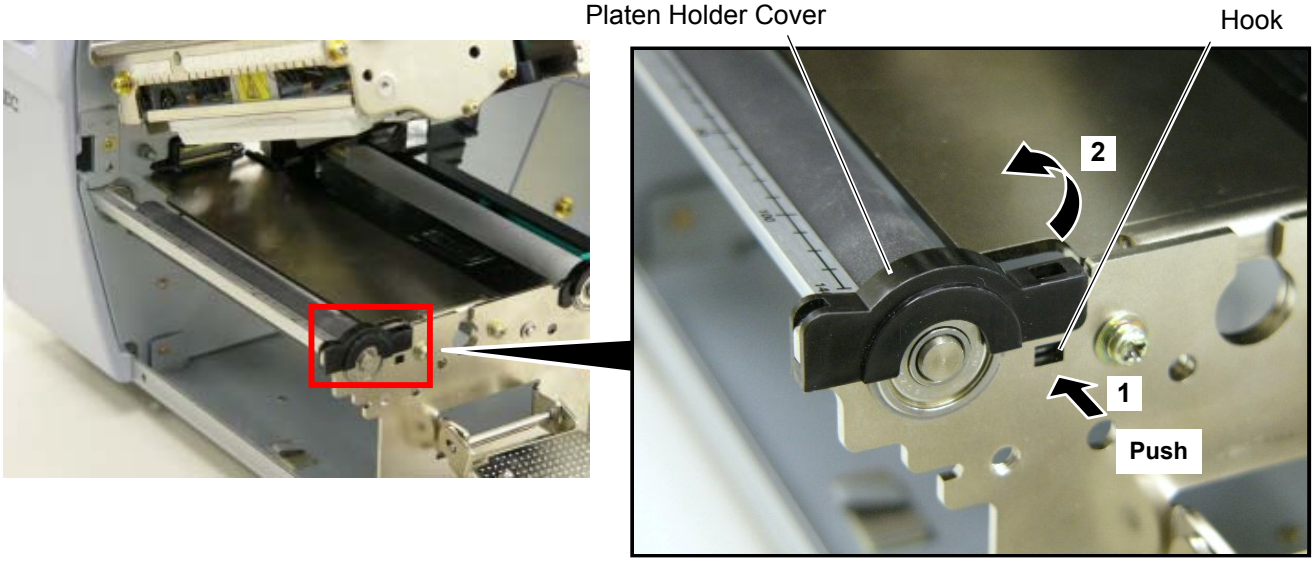
7. Fully open the Top Cover.

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

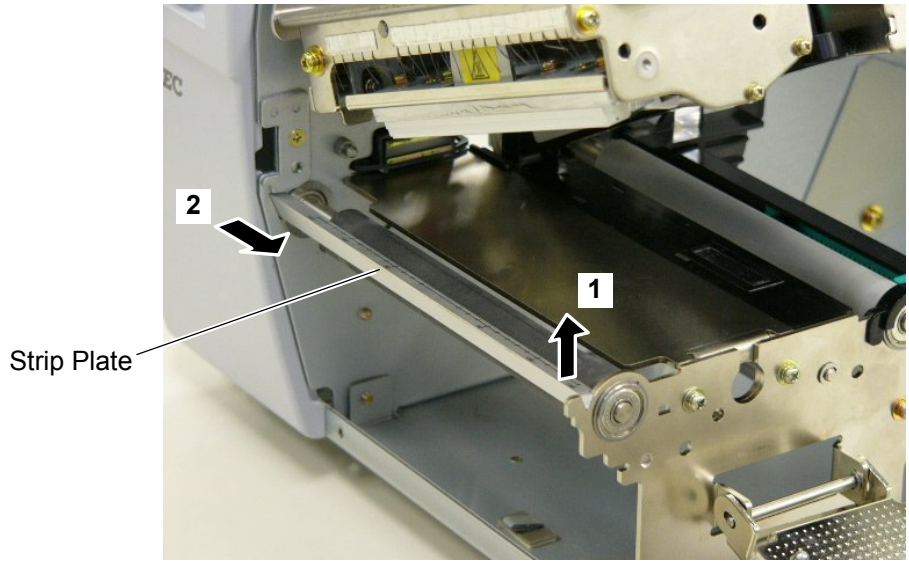
9. Open the Print Head Block and lock it with the Latch.



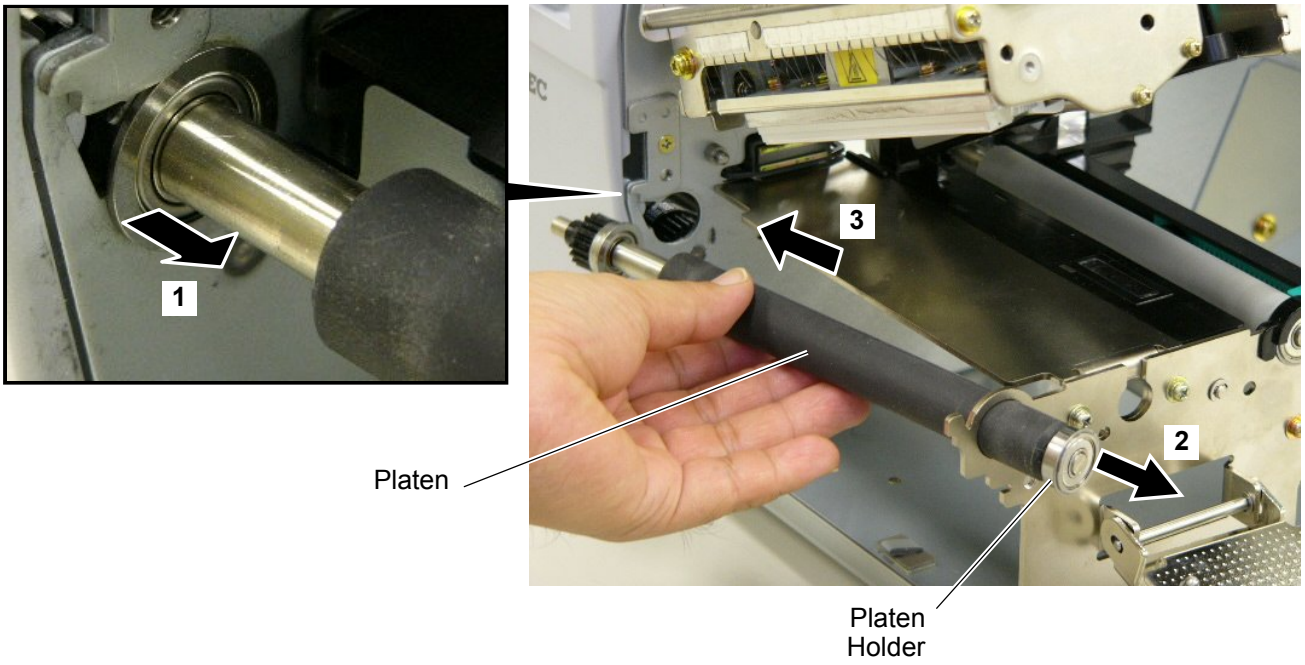
10. Push the Hook through the rectangle hole with a jeweler's screw driver or something, and remove the Platen Holder Cover in the direction indicated by the arrow.



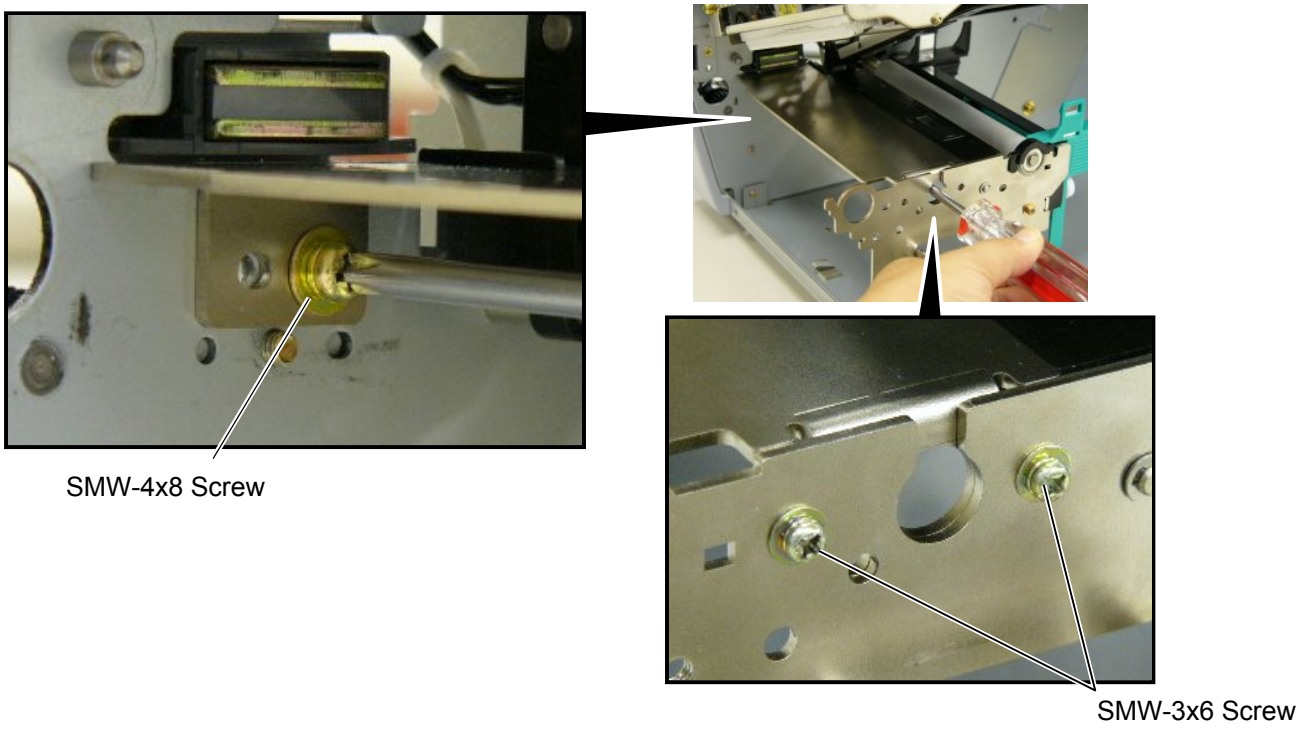
11. Lift the right side of the Strip Plate, and then pull and remove it.



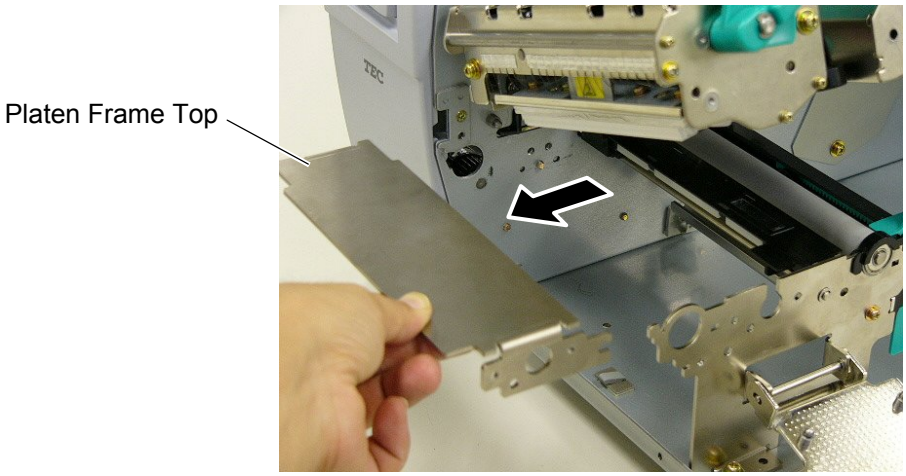
12. Remove the Platen and the Platen Holder in the direction of the arrows 1 to 3 as shown below.



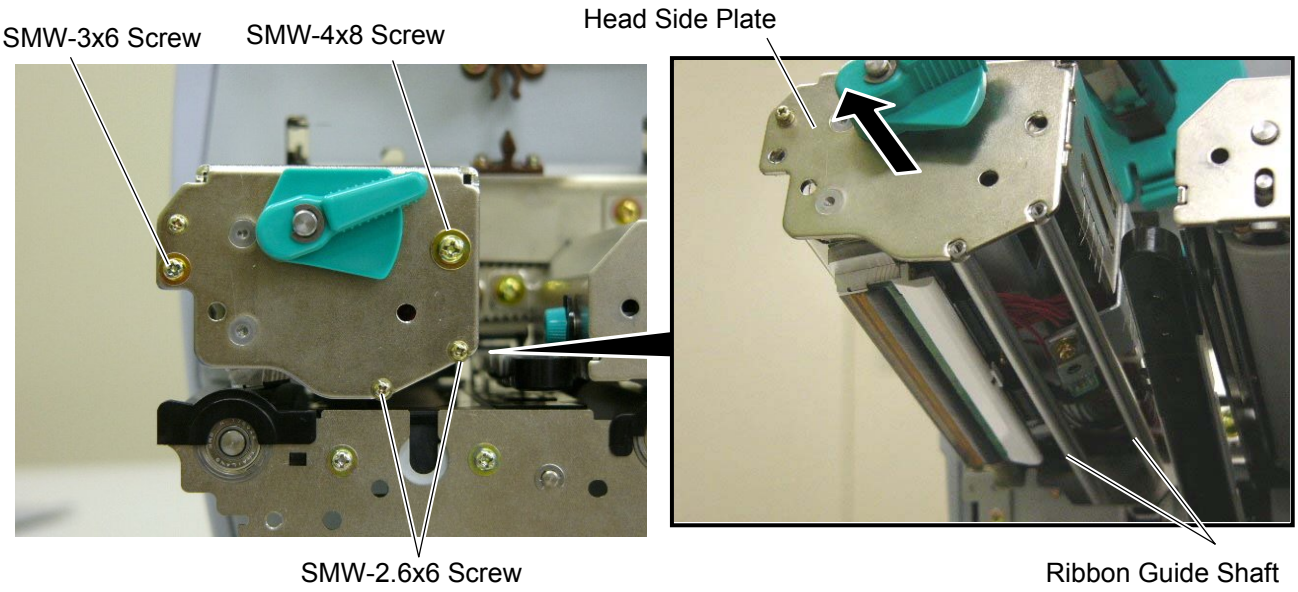
13. Remove the following three screws.



14. Remove the Platen Frame Top from the printer.

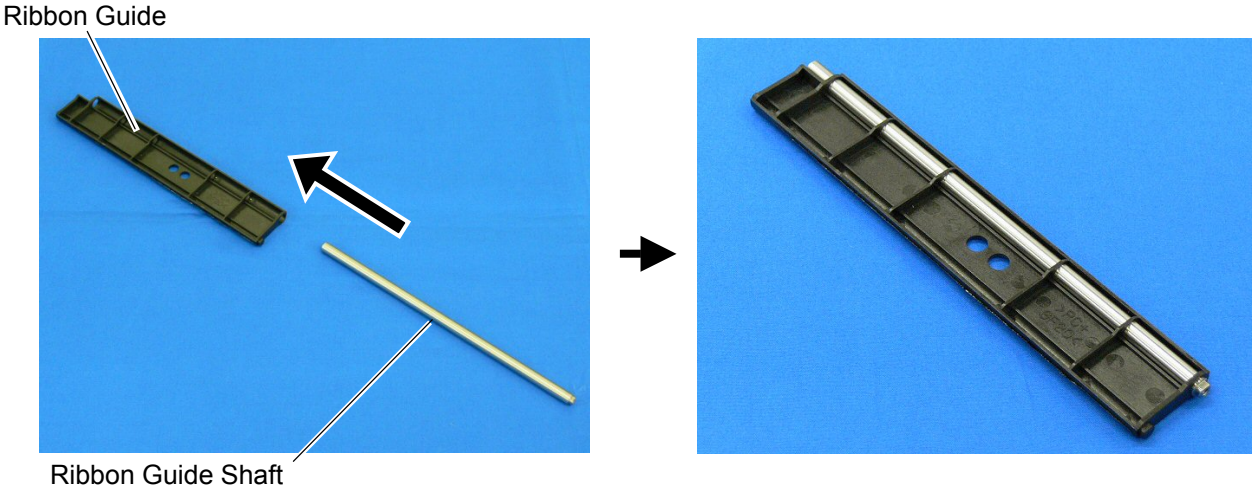


15 Remove the four screws from the side of the Print Head Block, slightly pull the Head Side Plate, and remove the two Ribbon Guide Shafts.

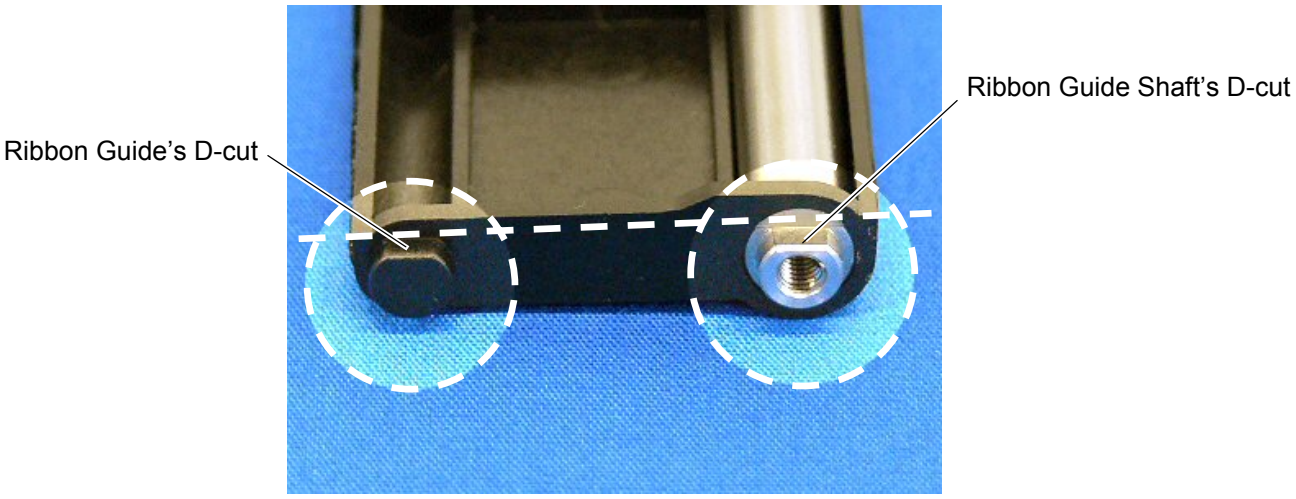


NOTE: *One of the removed Ribbon Guide Shafts and SMW-2.6x6 Screws are re-used when attaching the Ribbon Guide. Keep the unused ones for future use.*

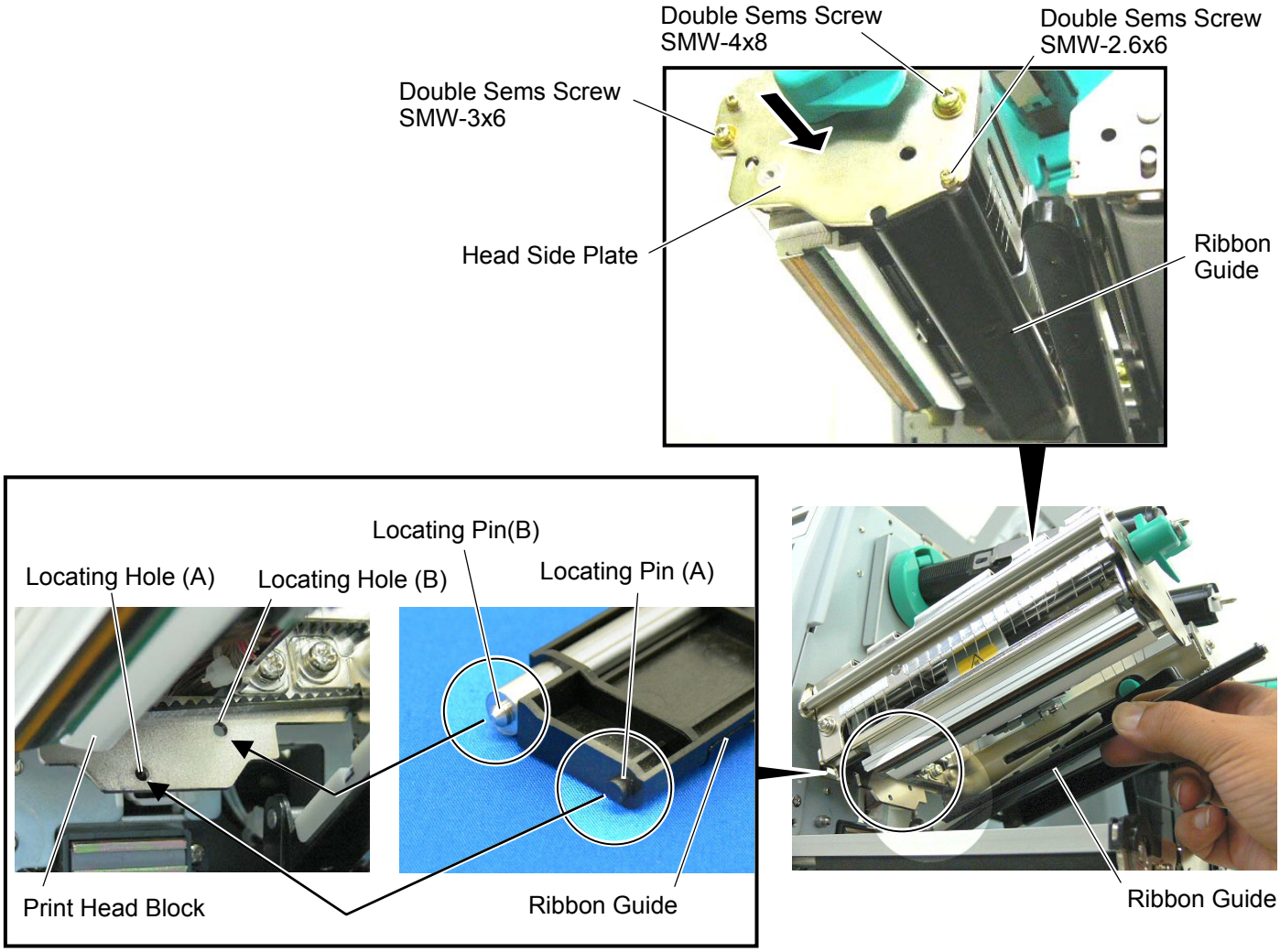
16. Insert one of the Ribbon Guide Shafts removed in Step 15 into the Ribbon Guide.



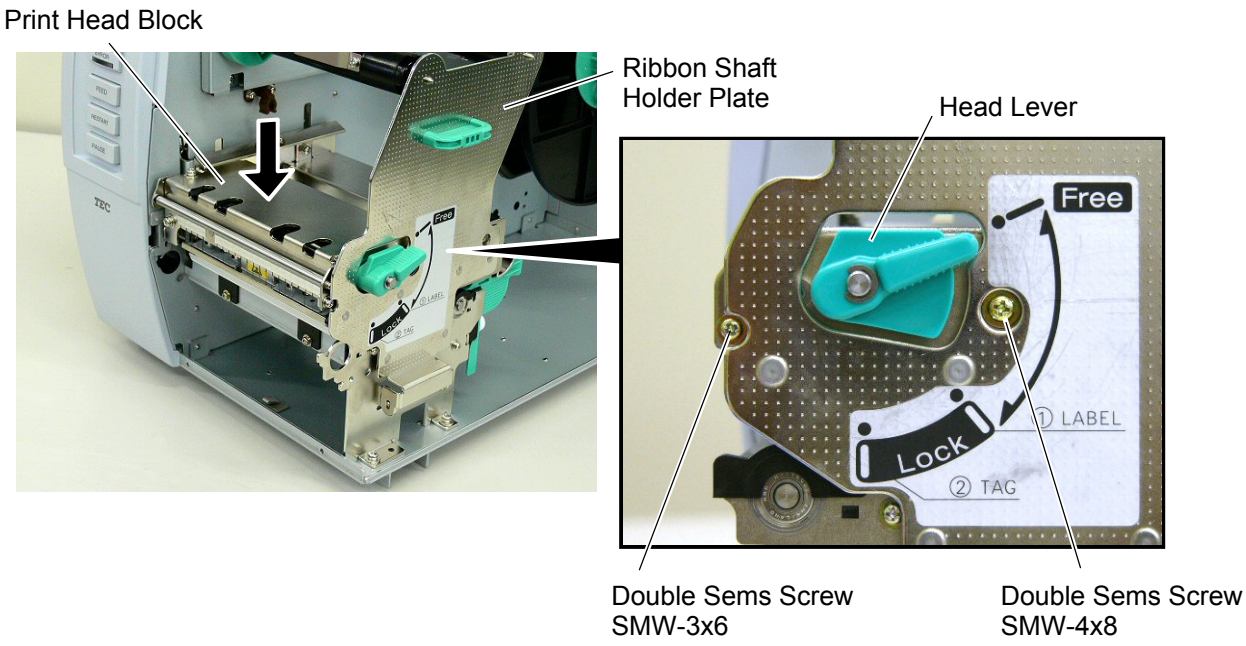
17. Rotate the Ribbon Guide Shaft so that its D-cut is in the same orientation with the Ribbon Guide's D-cut. Without doing this, the Ribbon Guide cannot be fit in the Print Head Block.



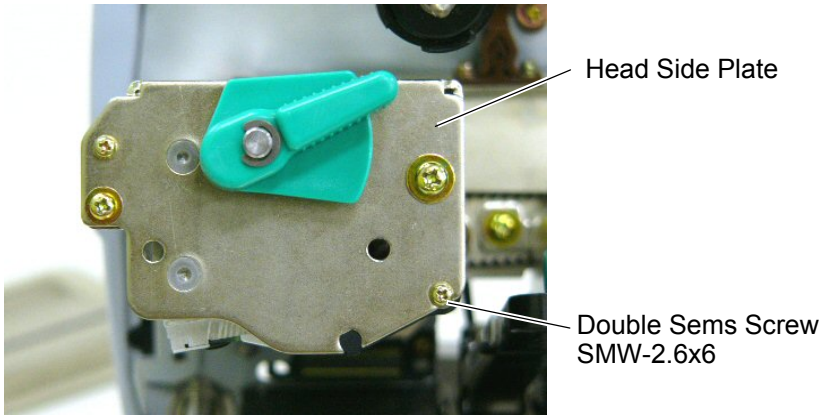
18. Fit the Ribbon Guide including the Ribbon Guide Shaft in the Print Head Block, and secure it to the Head Side Plate with the SMW-2.6x6 screw. Temporarily secure the Head Side Plate to the Print Head Block with the SMW-3x6 Screw and the SMW-4×8 Screw. Be sure to fit the locating pins provided on the 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 SMX-2.6x6 screw to secure the Head Side Plate.

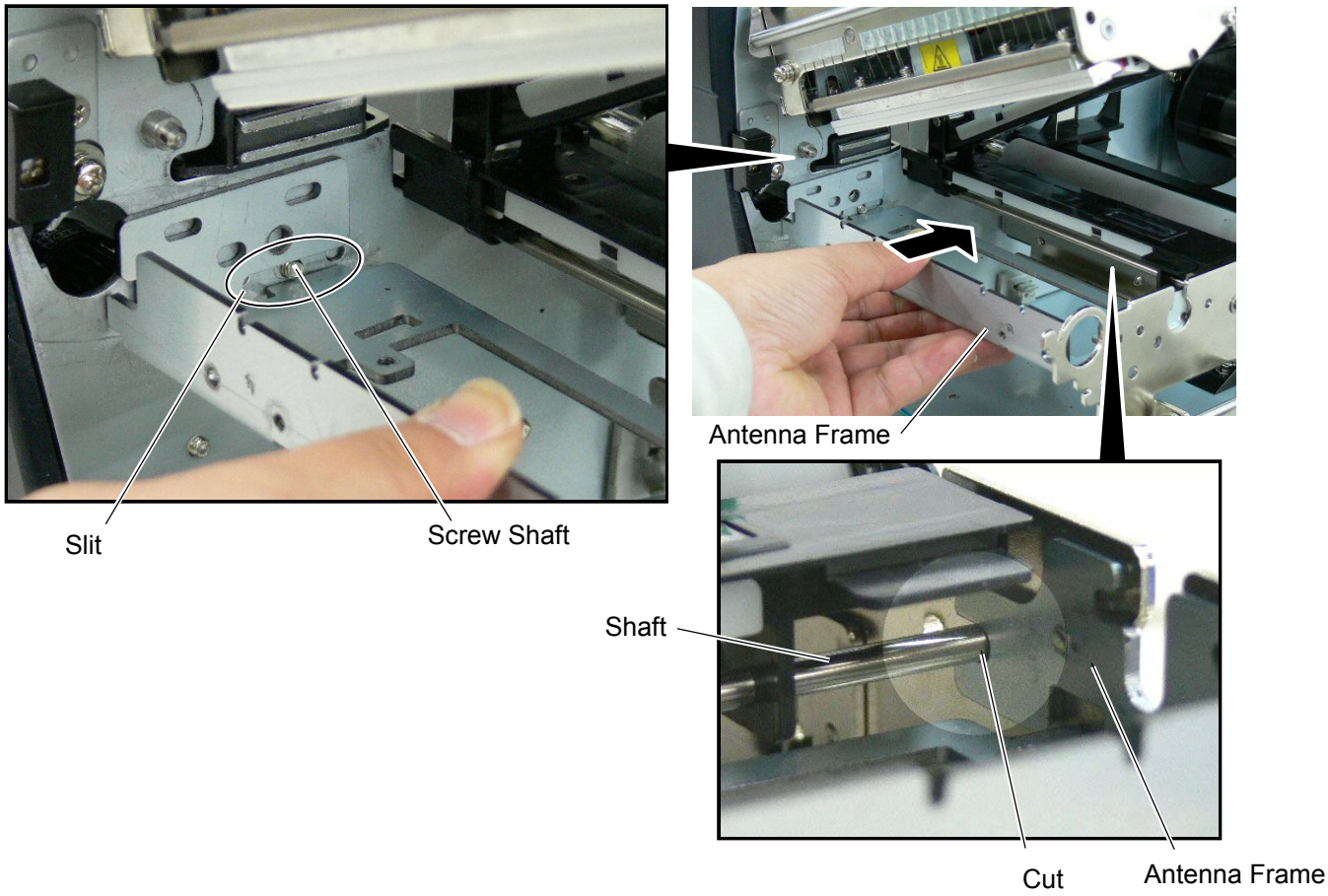


4.24.3.3 Attaching the Antenna Frame and the Antenna Ass'y

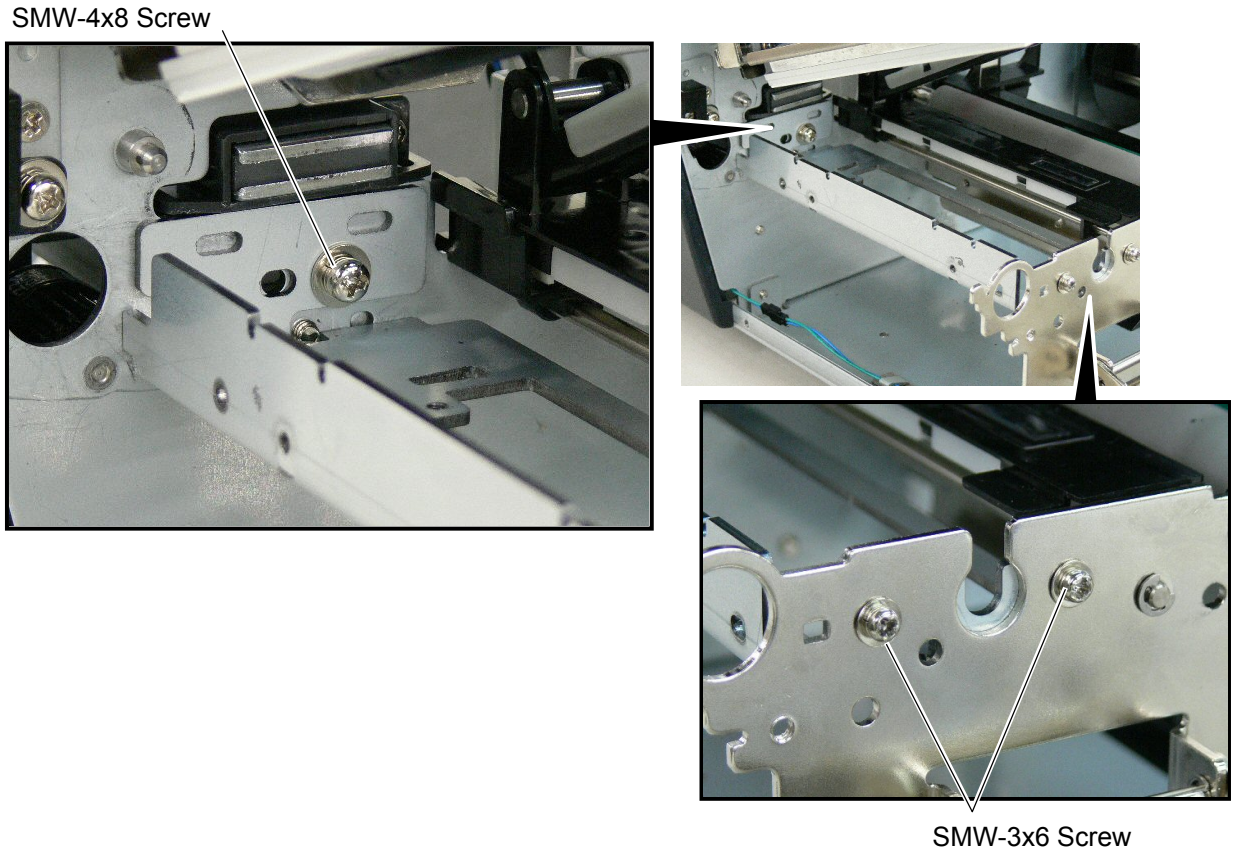
This section describes the procedure for attaching the Antenna Frame and the Antenna Ass'y.
When short-pitch tags (20 mm) are used, the procedure is different from the following. Skip step (1) and go to step (2).

(1) When using RFID tags other than short-pitch type:

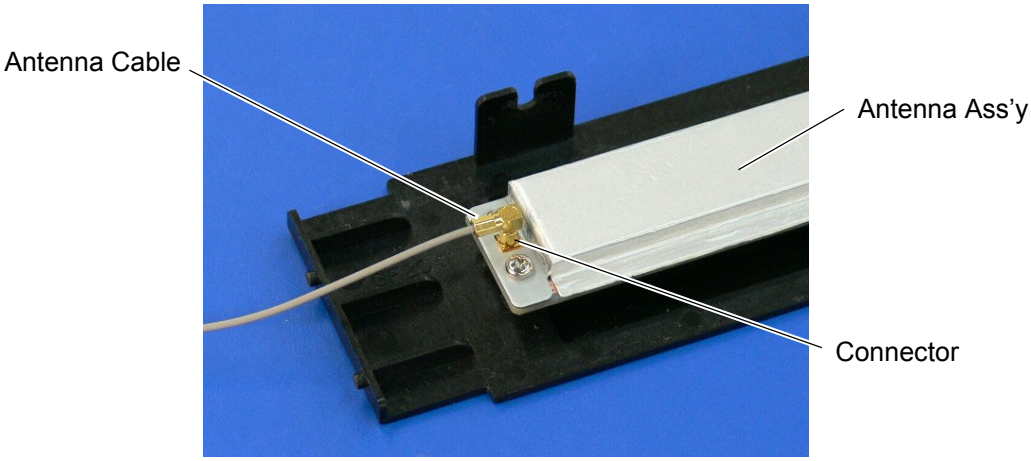
1. Raise the Print Head Block, and slide the Antenna Frame into the printer as shown below. Make the protruding screw shaft of the printer pass through the slit of the Antenna Frame. Also, make the Shaft of the printer fit in the Cut of the right side of Antenna Frame



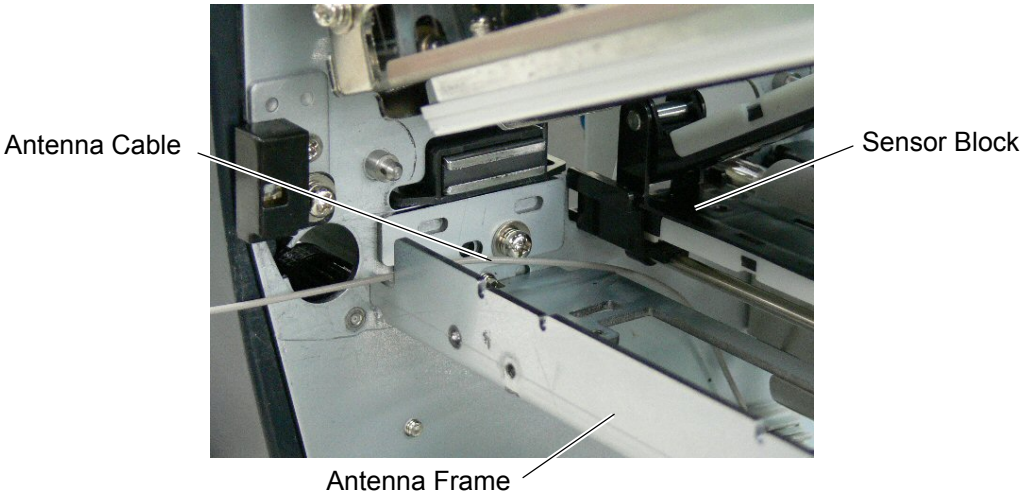
2. Secure the Antenna Frame with the three screws removed in Step 13 of Section 4.24.3.2.



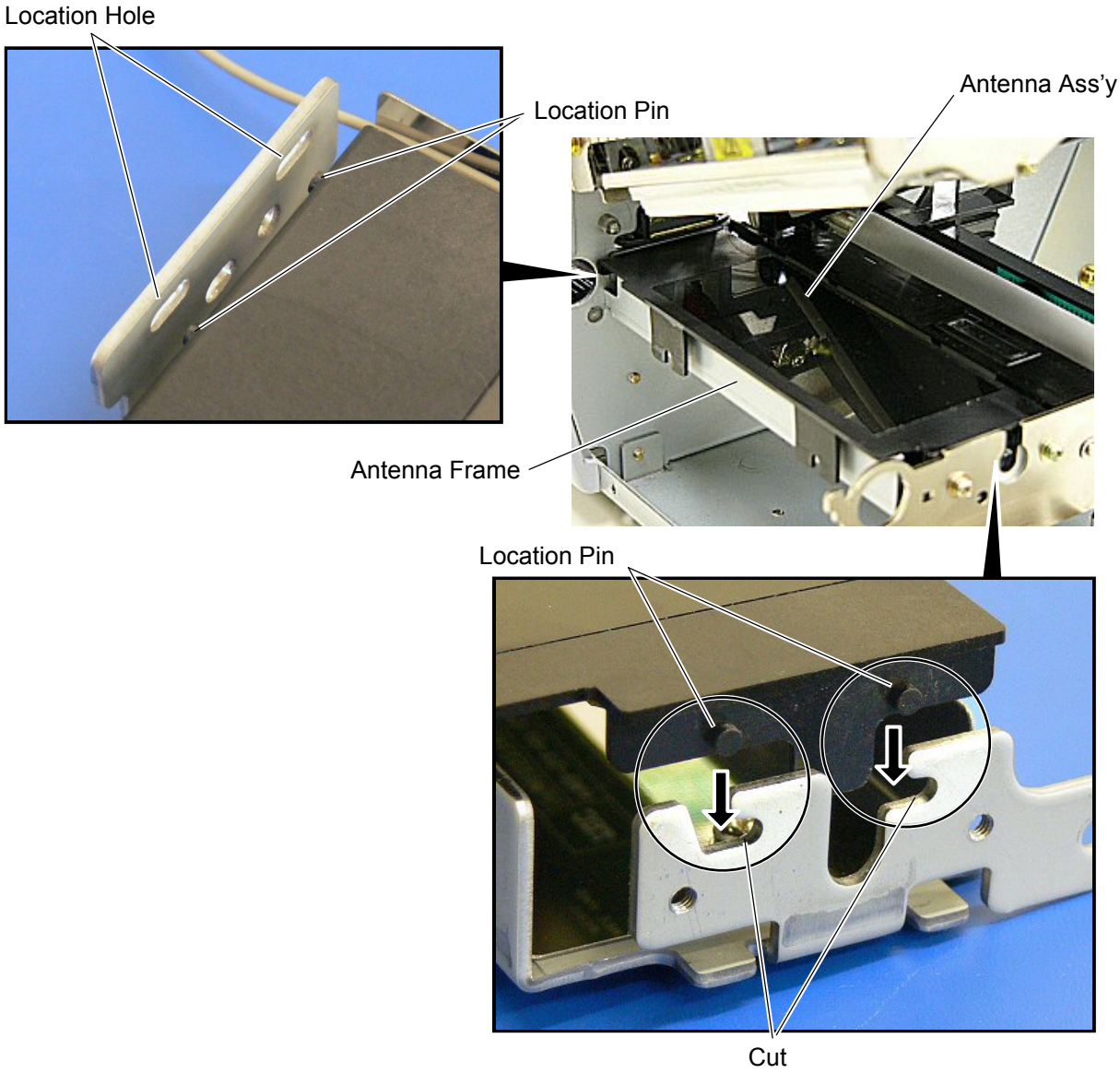
3. Connect the Antenna Cable to the Antenna Ass'y until it clicks.



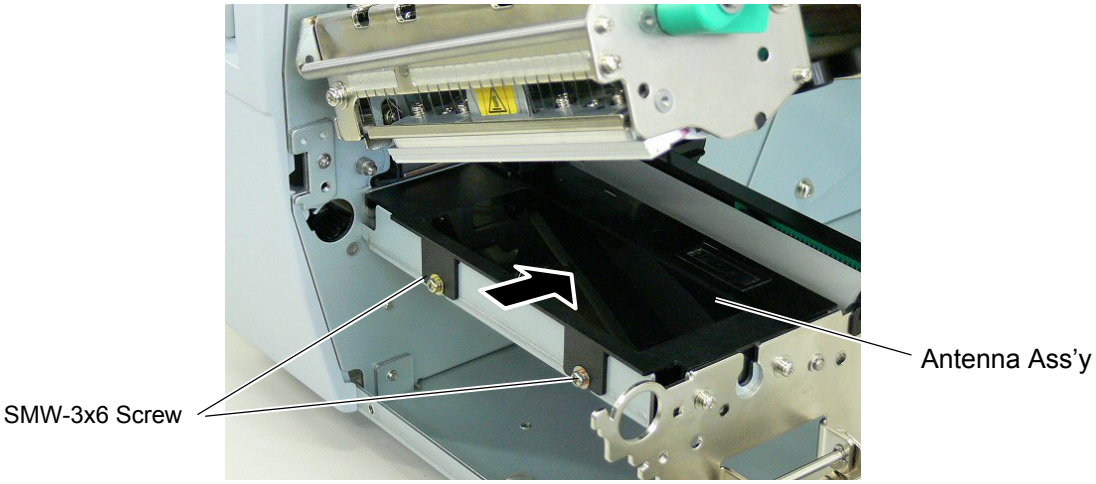
4. Pass the Antenna Cable between the Sensor Block and the Antenna Frame, as shown below.



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.



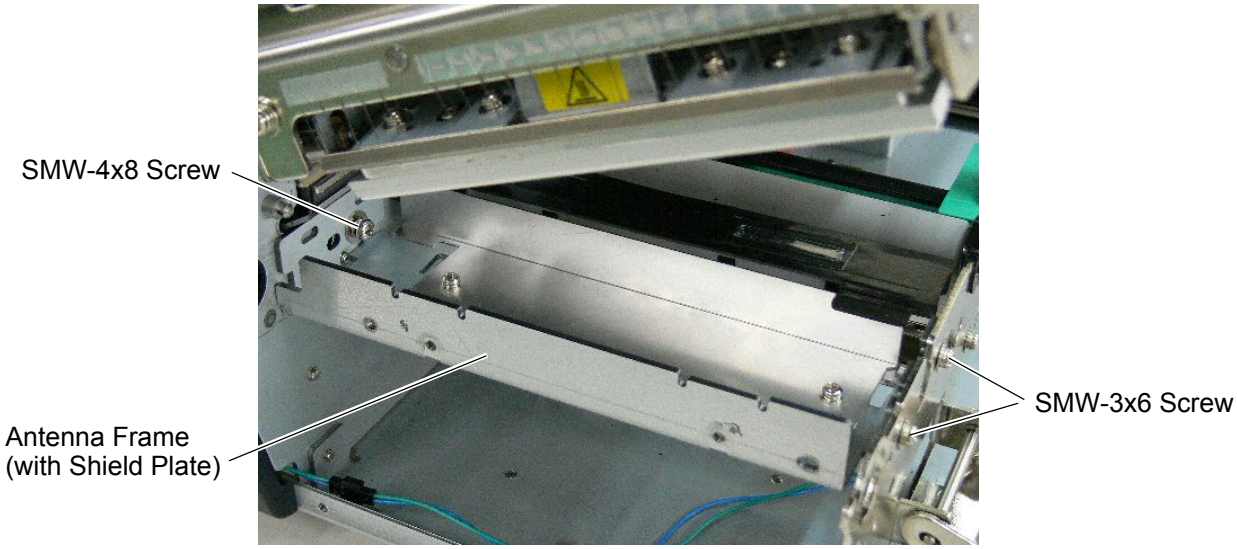
6. Push the Antenna Ass'y in the arrow-indicating direction, and secure it with the two SMW-3x6 screws.



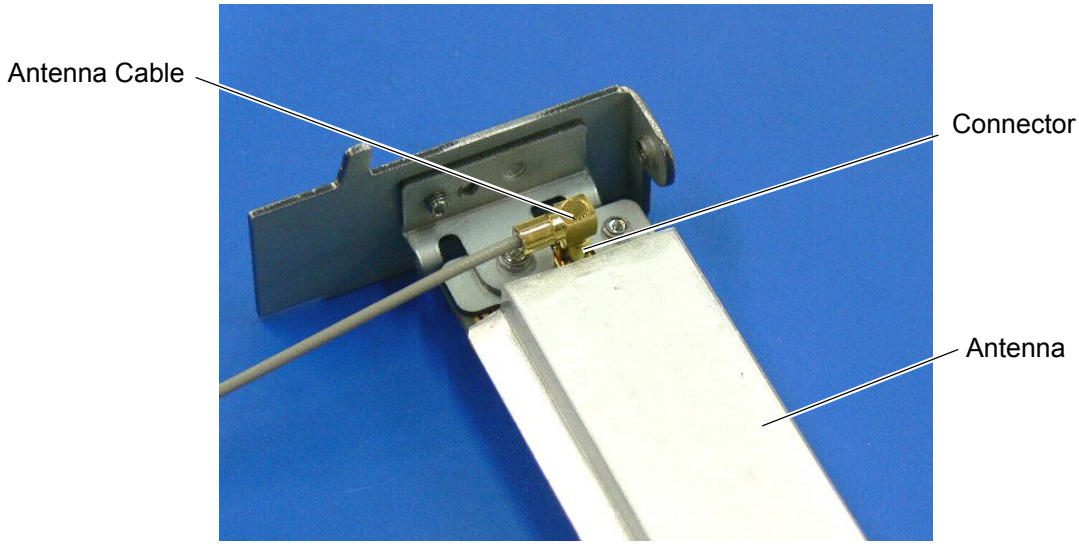
7. Go to Section 4.24.3.4 and attach the RFID Module.

(2) When using short-pitch tags (20 mm)

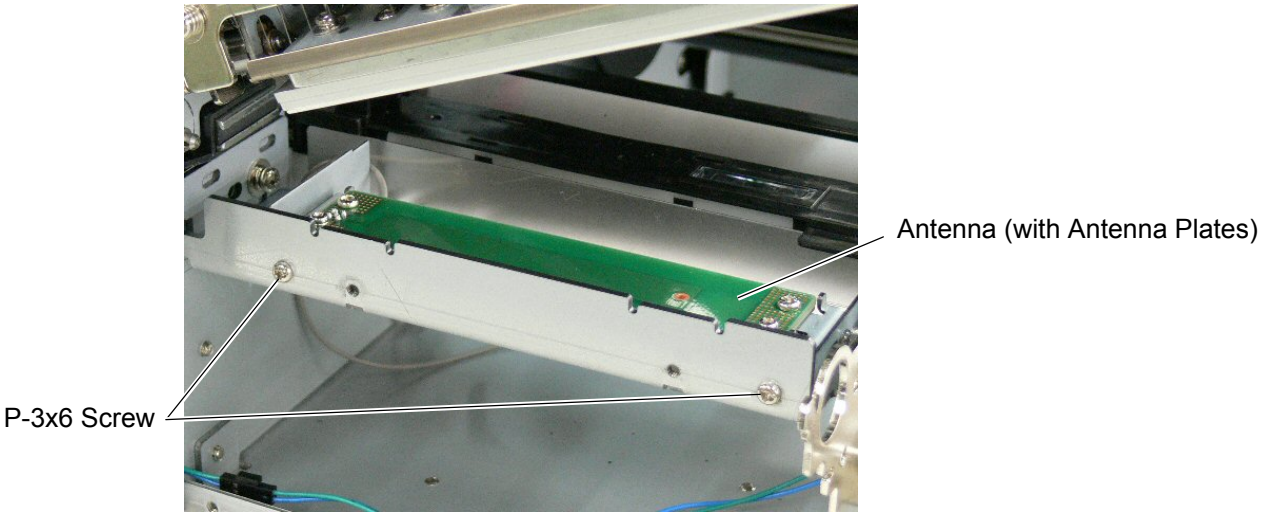
1. Attach the Antenna Frame to which the Shield Plate was attached in Section 4.24.3.1, to the printer in the same way as described in Step 1 of Section 4.24.3.3.



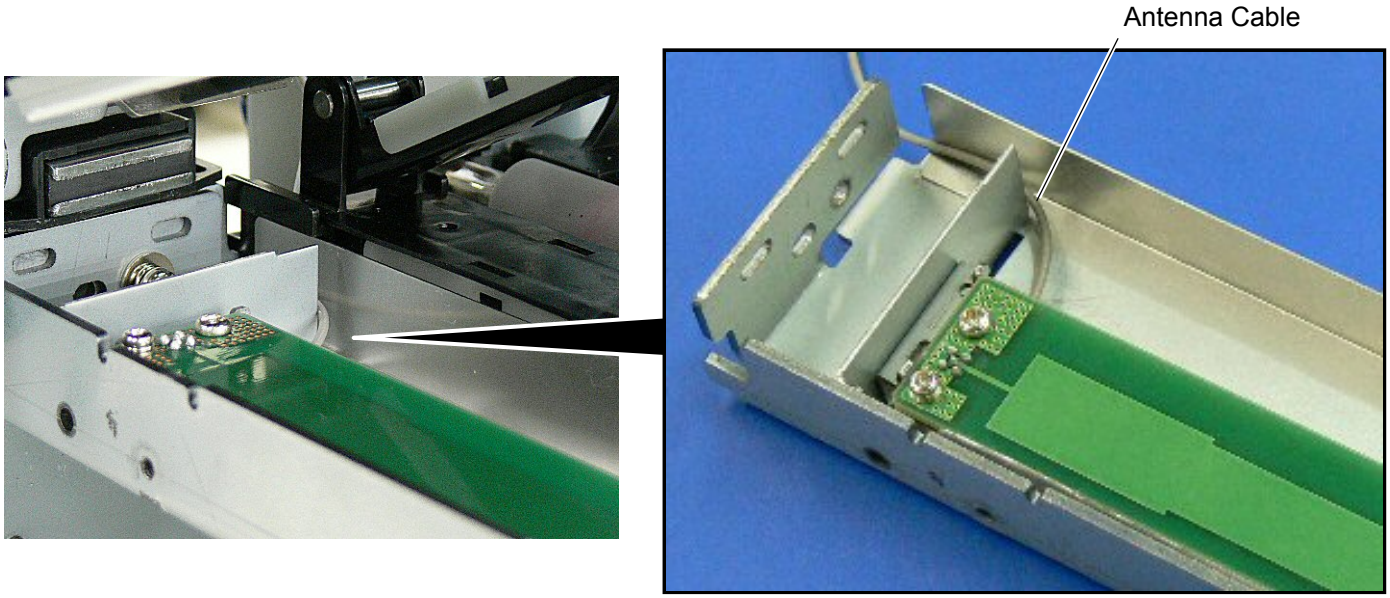
2. Connect the Antenna Cable to the Antenna, to which the Antenna Plates were attached in Section 4.24.3.1, until it clicks.



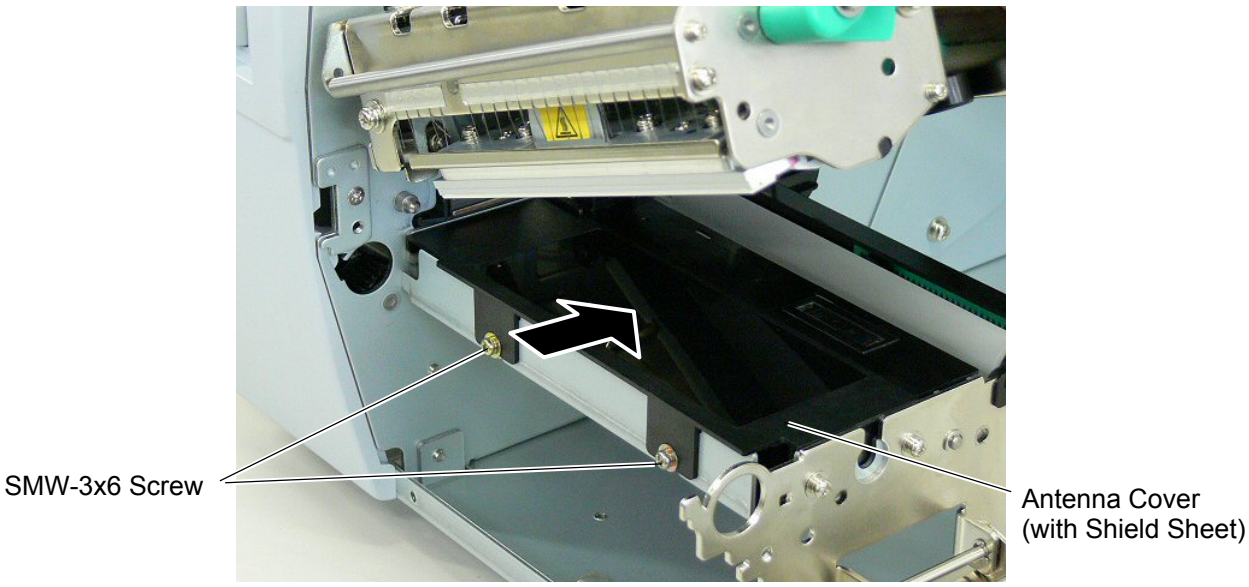
3. Secure the Antenna to the Antenna Frame with the P-3x6 screws.



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



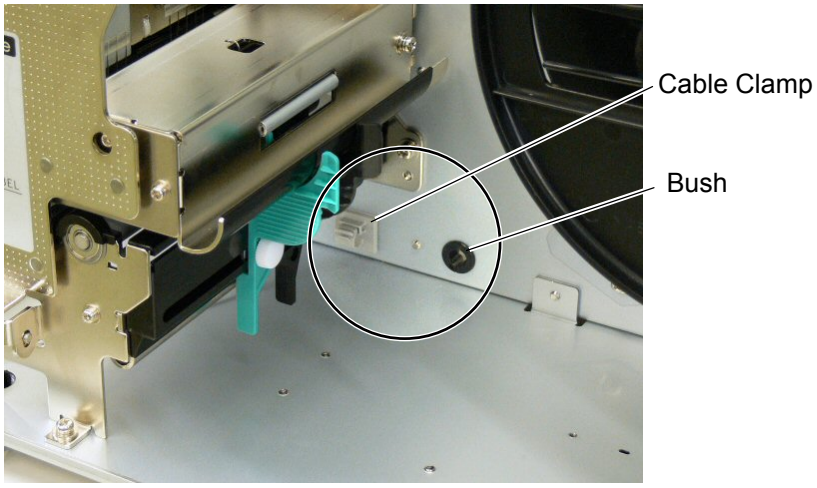
5. Refer to Steps 5 and 6 in "(1) When using RFID tags other than short-pitch type" and attach the Antenna Cover, to which the Shield Sheet was attached in Section 4.24.3.1, to the Antenna Frame with the SMW-3x6 screws.



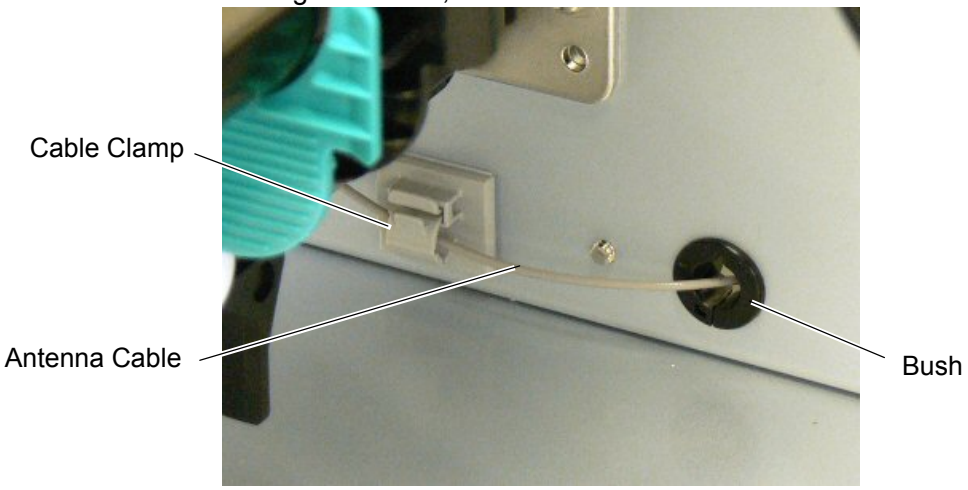
6. Go to Section 4.24.3.4 and attach the RFID Module.

4.24.3.4 Attaching the RFID Module

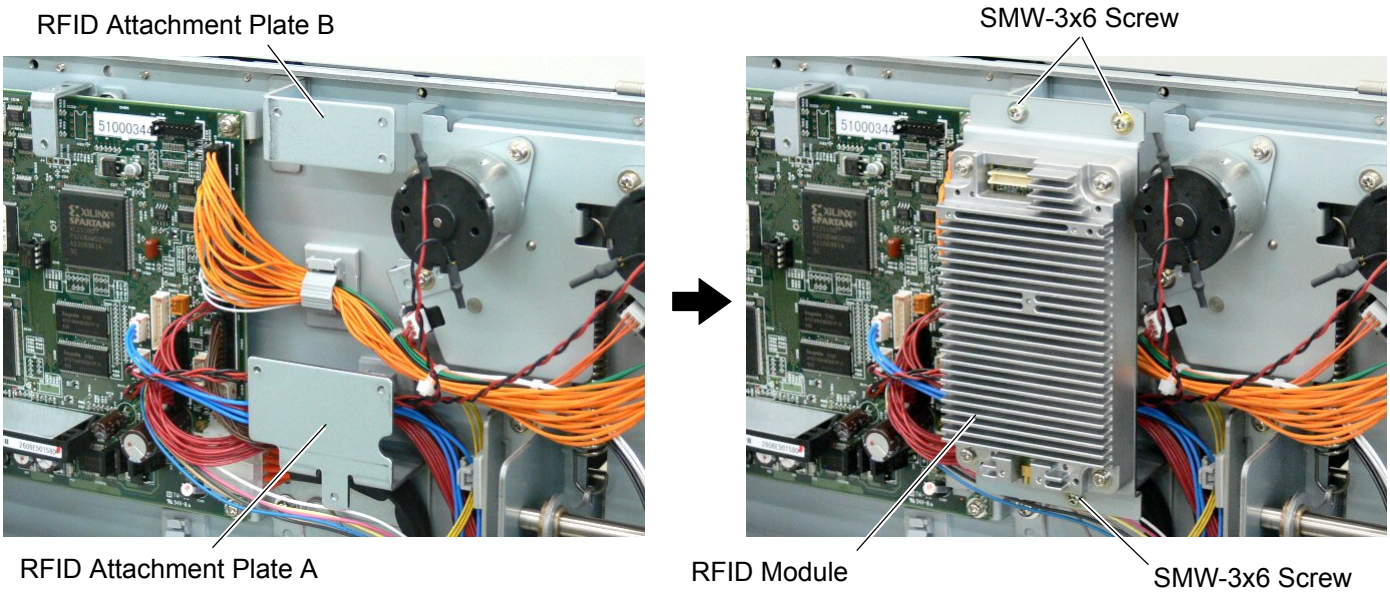
1. Attach the Cable Clamp to and fit the Bush into the positions shown in the picture below.



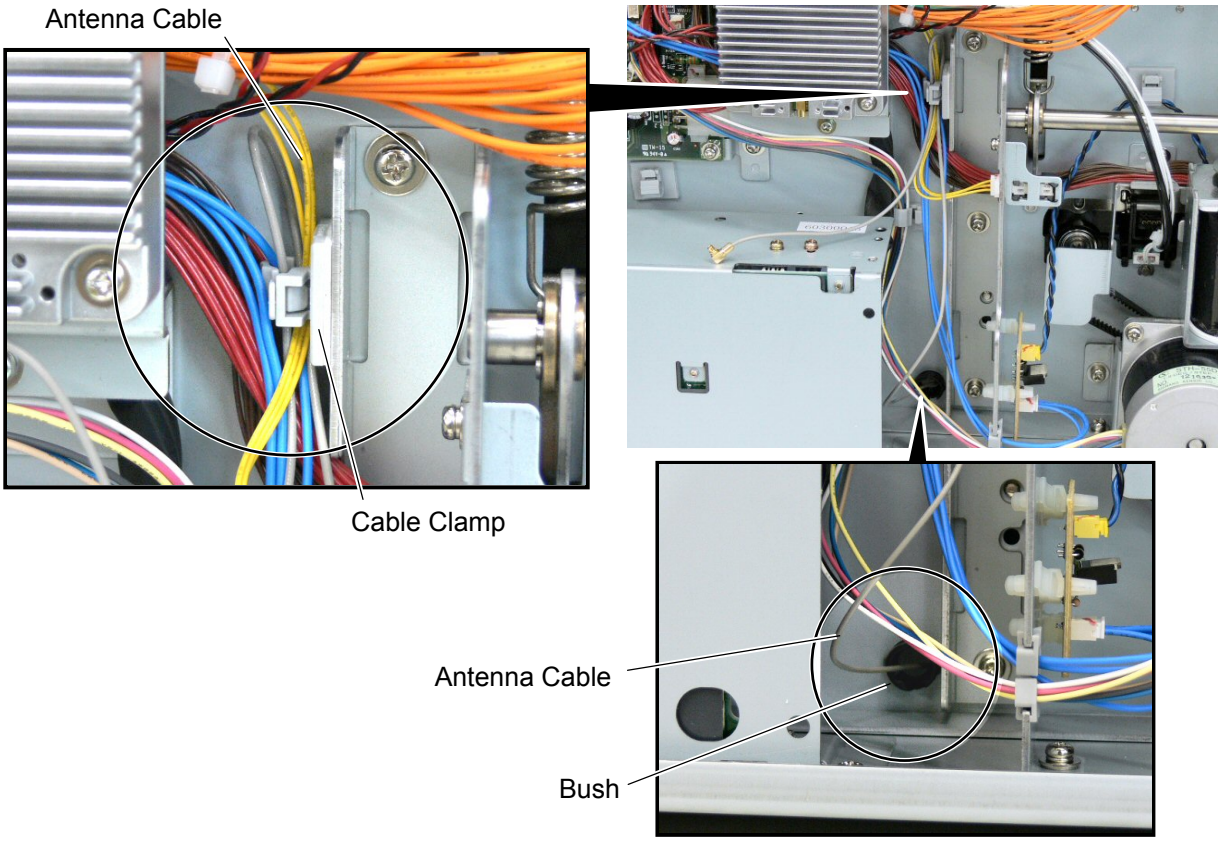
2. Pass the Antenna Cable through the Bush, and fasten the cable with the Cable Clamp.



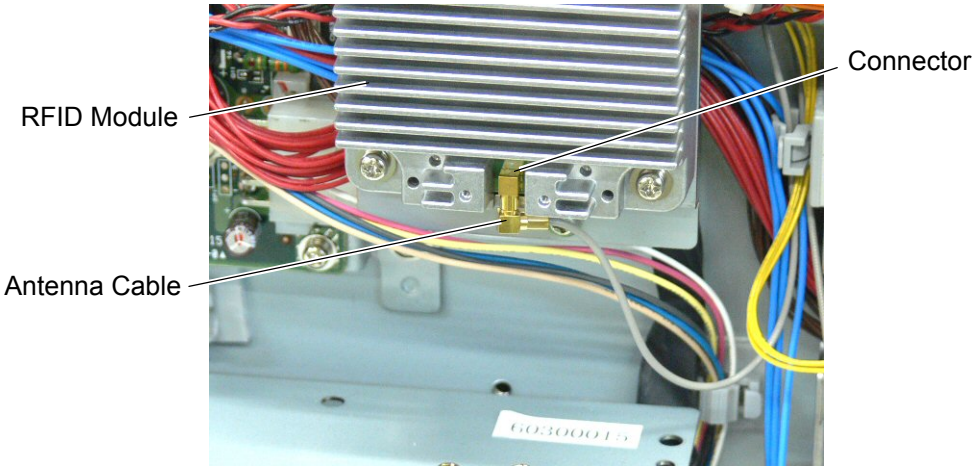
3. Attach the RFID Module to the RFID Attachment Plate A and the RFID Attachment Plate B with the three SMW-3x6 screws.



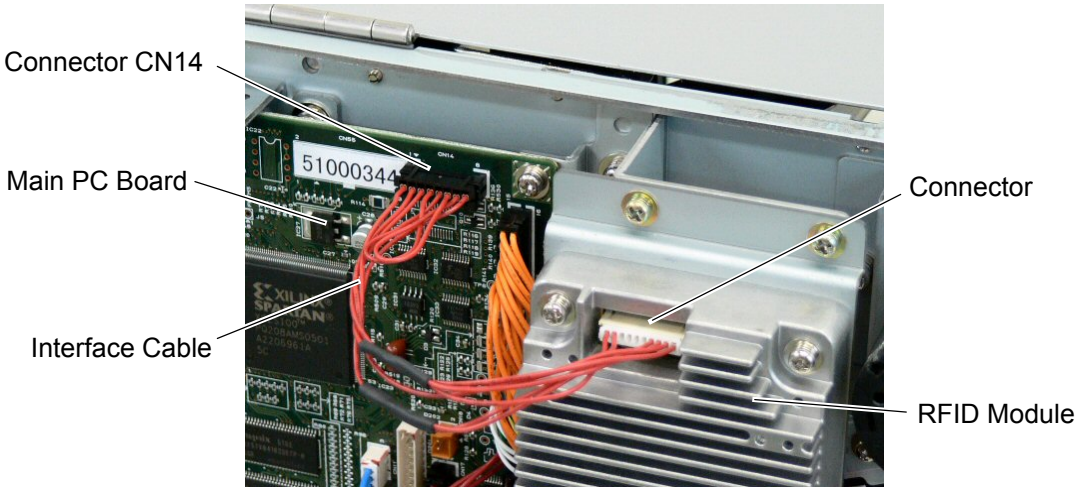
4. Fold the Antenna Cable and fasten it with the Cable Clamp together with the other cables to prevent the Antenna Cable from being caught in the Side Panel (L) or Fan Motor.



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

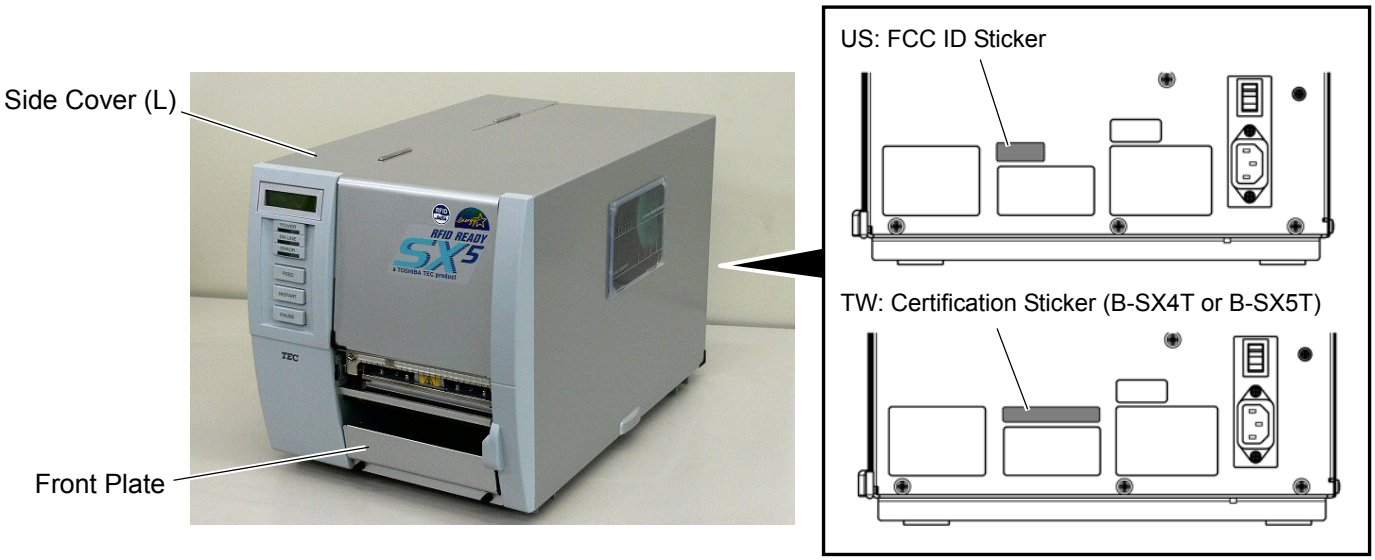


6. Connect the RFID Module to CN14 on the Main PC Board with the Interface Cable.



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).
   Attach the sticker to the backside of the printer according to the country setting.
   US: Attach the FCC ID sticker to the backside of the printer as shown below.
   TW: Attach the certification sticker to the backside of the printer as shown below.
   AU, KR: Attachment of the sticker is not required.



9. Installing the RFID kit in the printer is now completed. Then, go to Section 4.24.4 and configure the RFID module settings.

4.24.4 RFID Module Settings

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

Destination Code Setting should be performed in the system mode of the printer according to the destination. (Printer Firmware Version V4.7 or later) For details, please refer to Section 5.11.

According to the addition of the country setting and the password setting to the RFID module setting menu, the procedures have been partly changed. For details, refer to the B-SX4T/SX5T Series Section 5.11.

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]

<10>RFID
READ TEST OFF

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.

[PAUSE]

<10>RFID
CAREERSENSE OFF

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.

[PAUSE]

<10>RFID
MODULE NONE

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.

[PAUSE]

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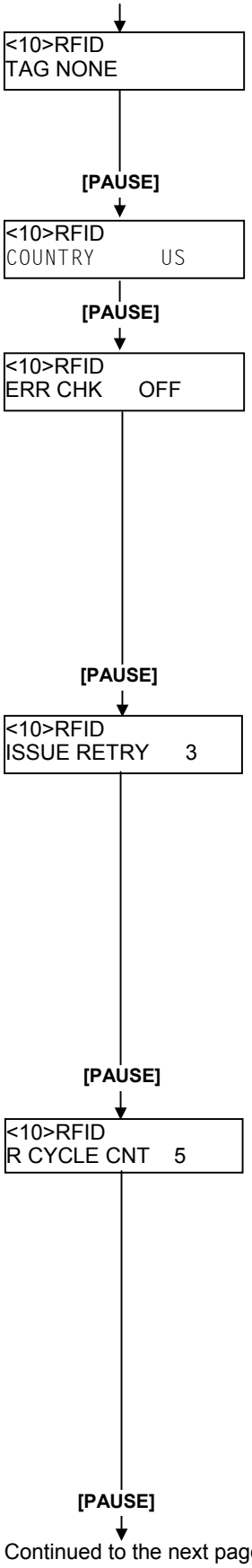
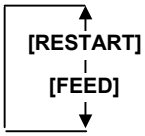


RFID tag type setting menu is displayed.
Choose "EPC C1 Gen2: 24" with the **[FEED]** or **[RESTART]** key.



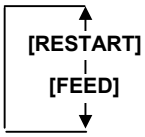
NONE: When a tag type is not selected.
EPC C1 Gen2: 24

Press the **[PAUSE]** key.

RFID module's destination code setting. For details, please refer to Section 5.11.
Module Type: U2 only, Printer firmware verion: V4.7 or later

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.

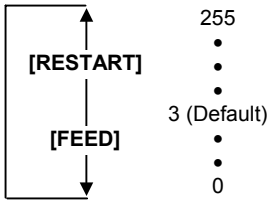


OFF: An error tag detection is not performed. (Usually, choose OFF.)
ON: An error tag detection is performed.

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.

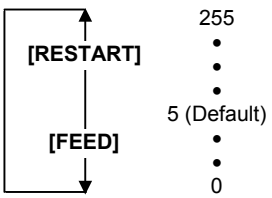
Press the **[PAUSE]** key.

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.

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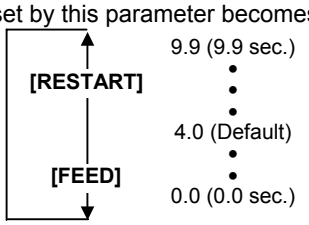
<10>RFID
R CYCLE TIM 4.0

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.

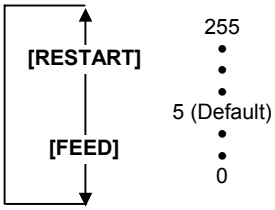


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
W CYCLE CNT 5

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.

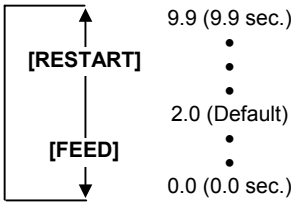


[PAUSE]

Press the **[PAUSE]** key.

<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.

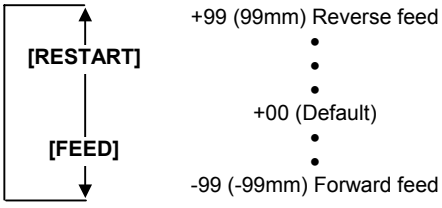


[PAUSE]

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.

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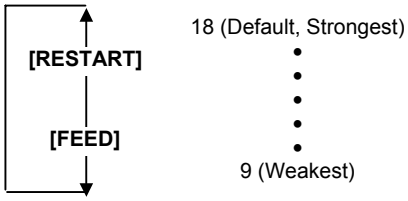
<10>RFID
POWER LEVEL 18

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.

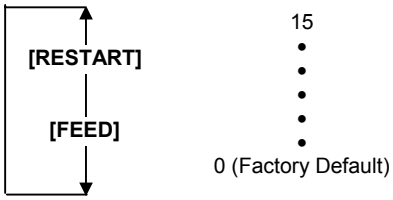


[PAUSE]

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.

<10>RFID
RF CHANNEL AUTO

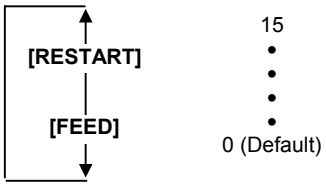
RFID channel setting menu is not available to the B-SX704-RFID-U2-US-R.

[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 4.24.5 AGC Threshold Setting.)
The factory default is 0.



[PAUSE]

Press the **[PAUSE]** key.

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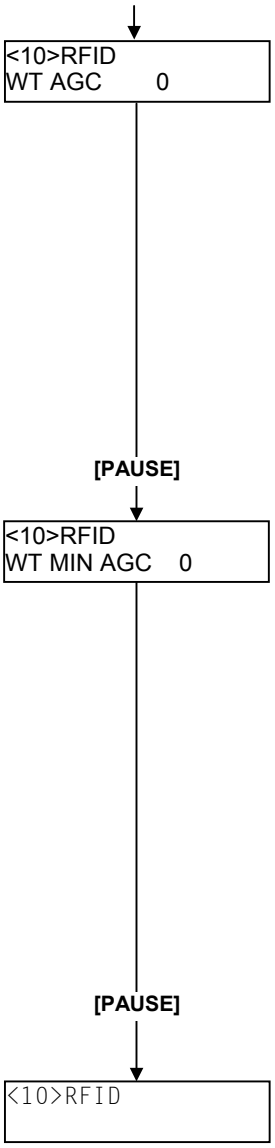
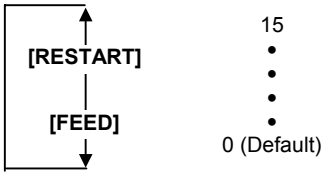
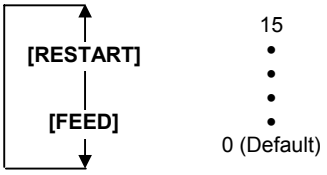


AGC threshold for data write setting menu is displayed.
When the Q value is set to 1 or greater, the AGC threshold for data write becomes effective.
When the obtained gain of an RFID tag is lower than the AGC thresholdfor data write, data write is not performed. In other words, setting an AGC threshold 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 4.24.5 AGC Threshold Setting.)
Set an AGC threshold for data write with the **[FEED]** or **[RESTART]** key, if necessary.



Press the **[PAUSE]** key.

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 4.24.5 AGC Threshold Setting.)
Set the lower limit for retry with the **[FEED]** or **[RESTART]** key, if necessary.



Press the **[PAUSE]** key.

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 4.24.5.

4.24.5 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.

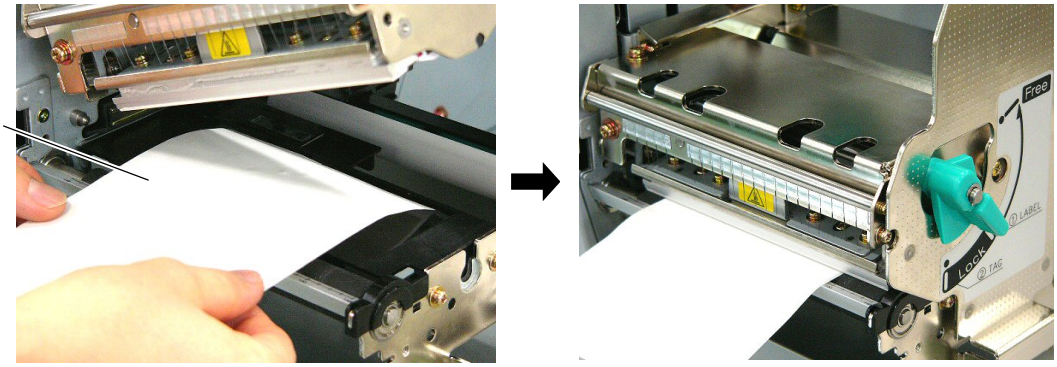
Step 1. Load an RFID tag embedded media in the printer.
Step 2. Follow the procedure below to measure the radio intensity of the tags.
1) Place the media so that an RFID tag (IC chip) is positioned above the Antenna, and close the Top Cover.

***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

RFID Tag



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]

↓

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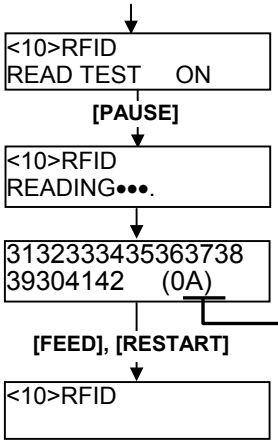


Press the **[PAUSE]** key to implement a read test.

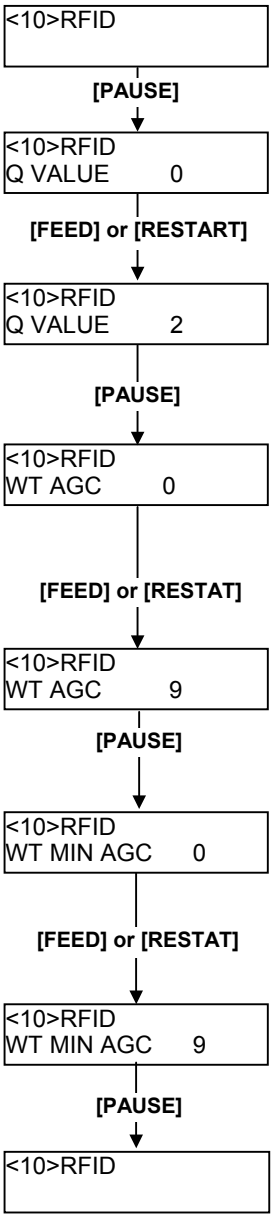
Read data is displayed.

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").

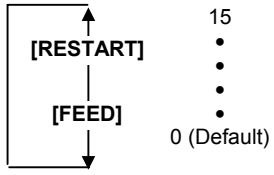
3) Set an AGC threshold of data write.
Set a value which is lower than the AGC value obtained by a read test by 1 or 2, taking variation of RFID tags in performance into consideration.

Example



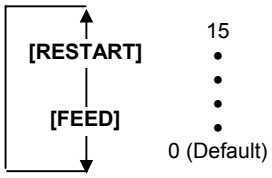
When "<10>RFID" is displayed, press the **[PAUSE]** key until the Q value setting menu is displayed.

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



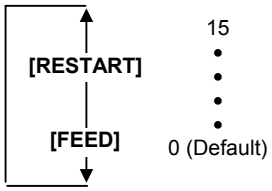
Press the **[PAUSE]** key.

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.

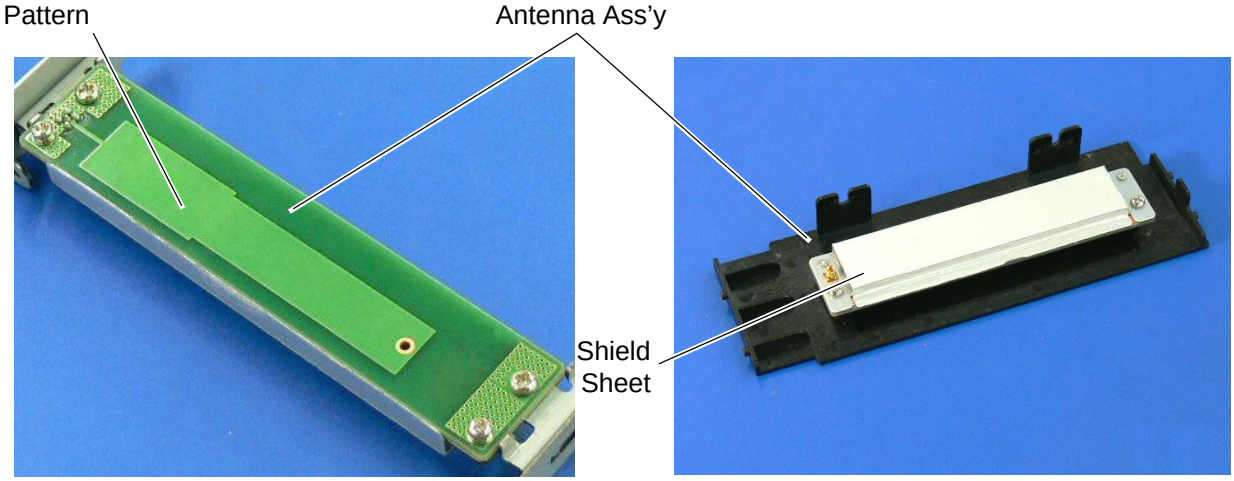
4.25 RFID MODULE (B-SX704-RFID-U2-CN-R)

The B-SX704-RFID-U2-CN-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.



4.25.1 Applicable Model

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

B-SX4T-GS20-CN-R and B-SX5T-TS22-CN-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-CN and B-SX5T-TS12-CN 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.

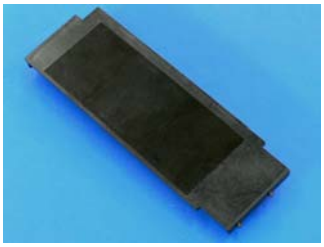
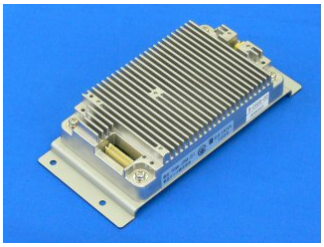
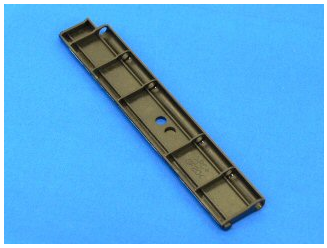
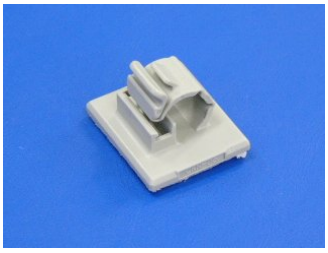
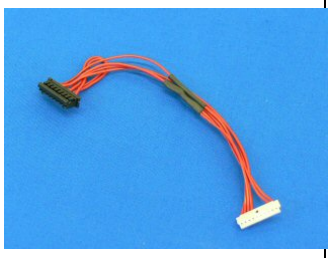
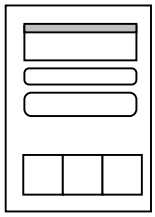
Note that a RAM clear needs to be performed after downloading, so print out the maintenance counter and parameter settings prior to downloading. After performing a RAM clear, restore the printer parameter settings to the former states.

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

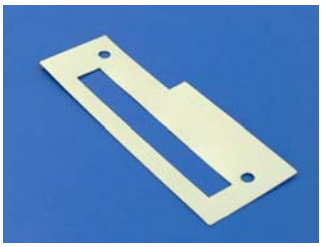
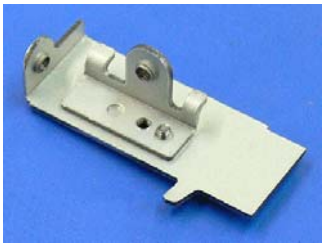
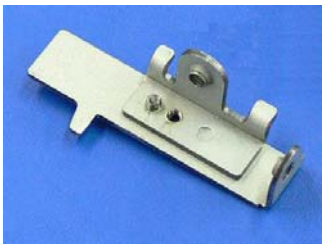
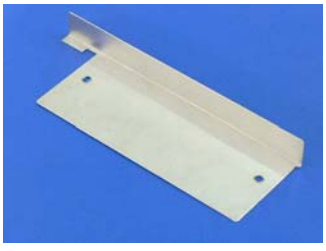
Model Name	Frequency Band	Applicable Countries
B-SX704-RFID–U2-CN-R	UHF 920.625 to 924.375MHz	China

4.25.2 Packing List

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.) 	• CMII ID Sticker (1 pc.) CMII ID 2008xxxxxx	• 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 (6 pcs.)
• Shield Plate (1 pc.) 			

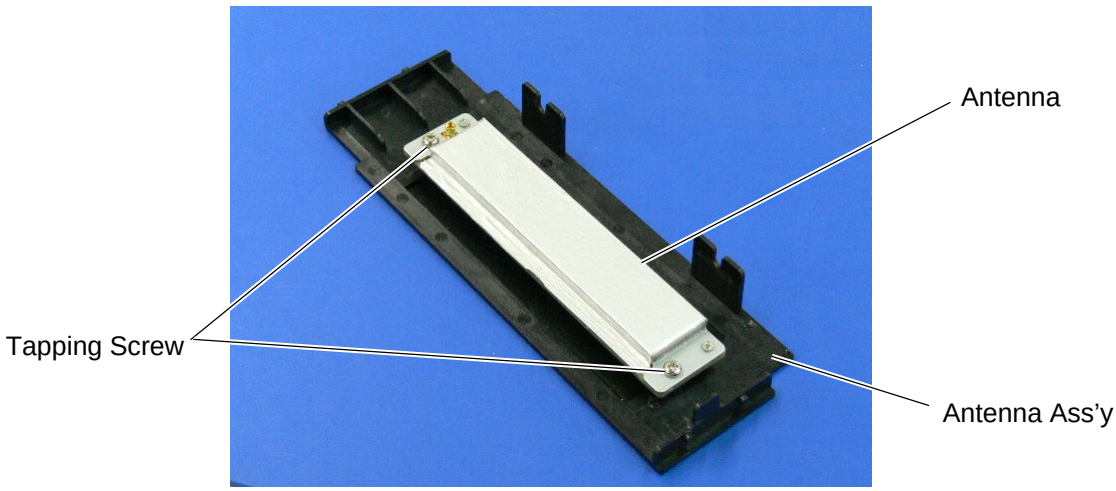
4.25.3 Installation Procedure

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

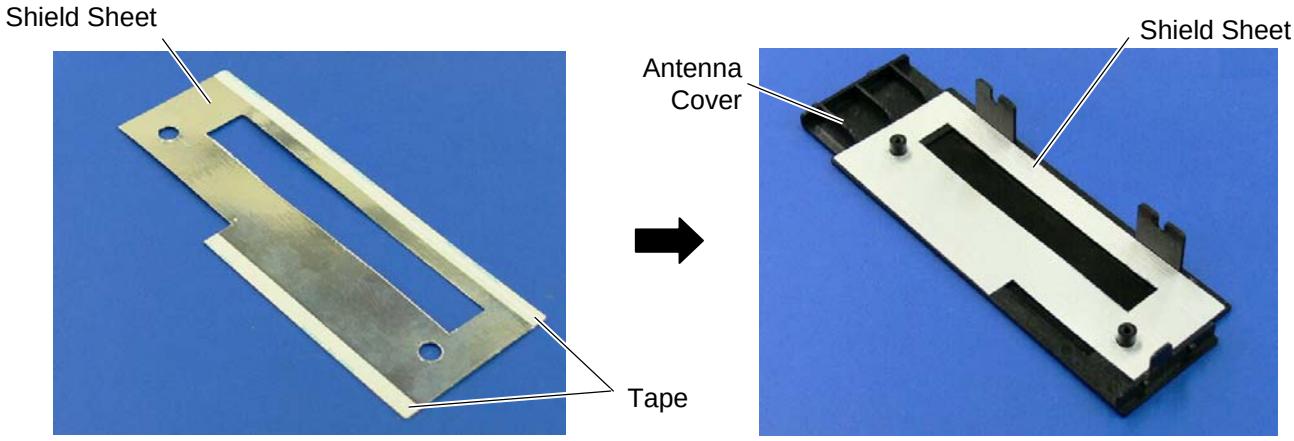
> ***NOTE:***
> NOTE: Before using a short-pitch RFID tag, be sure to ask the dealer whether or not the tag can be used with the B-SX4T/SX5T series. Some types of tags may not write data correctly on the target RFID tags.

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 4.25.3.2.

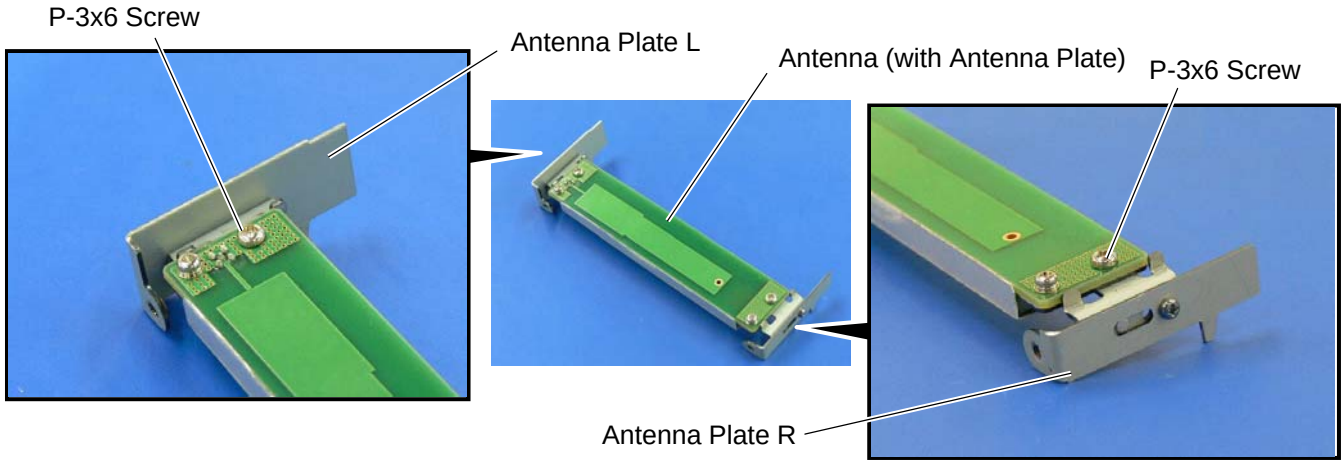
1. Remove the two Tapping Screws to detach the Antenna from the Antenna Ass'y.



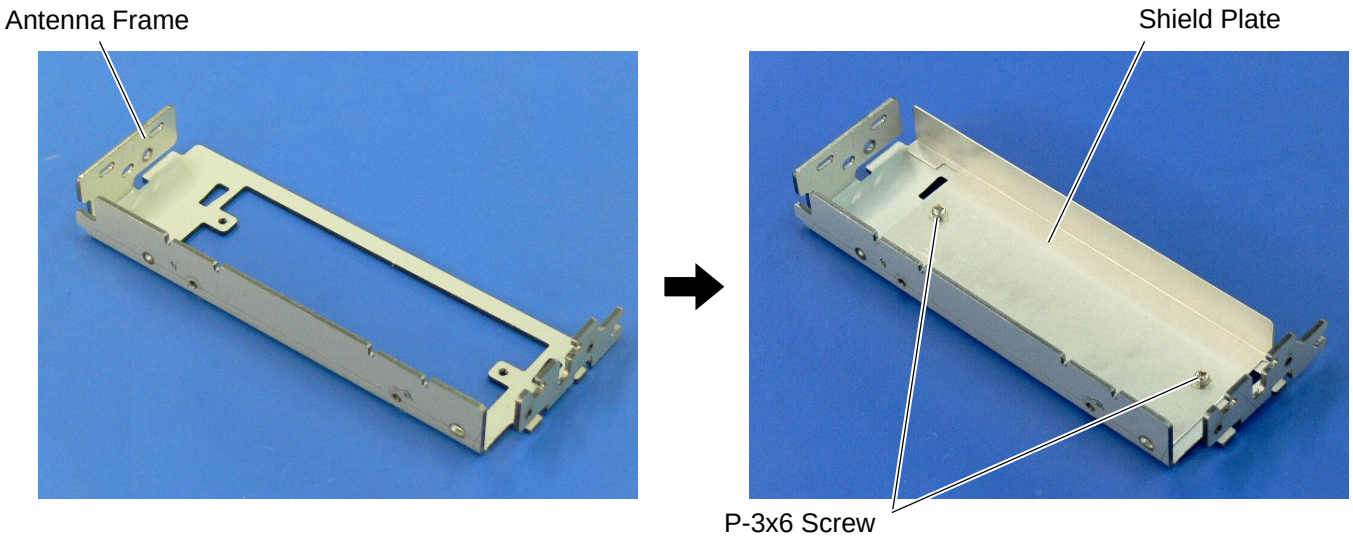
2. Remove the backing tapes from the reverse side of the Shield Sheet and attach it to the Antenna Cover, as shown below.



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



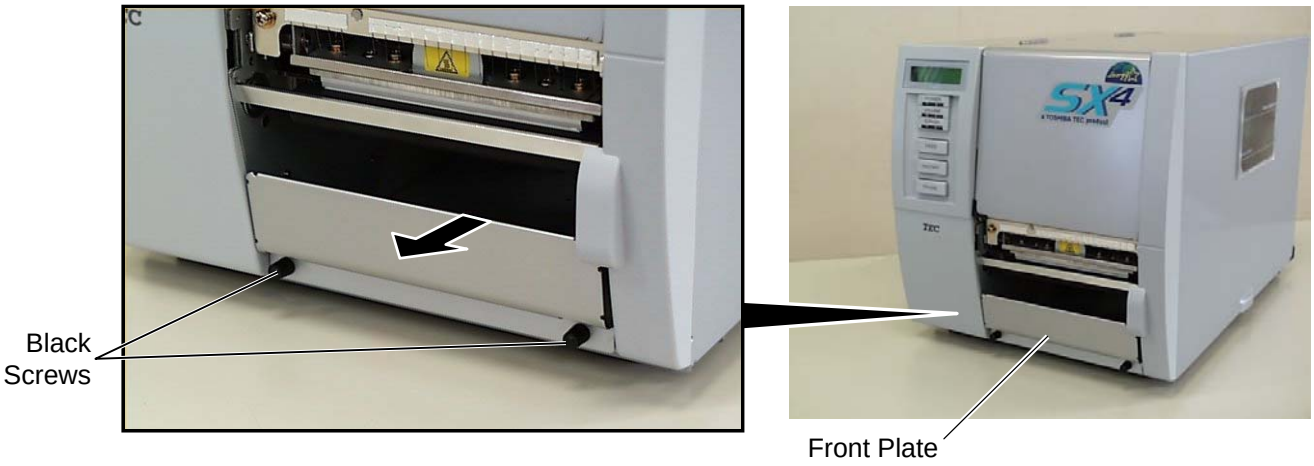
4. Attach the Shield Plate to the Antenna Frame. Secure the Shield Plate to the Antenna Frame with the P-3x6 screws.



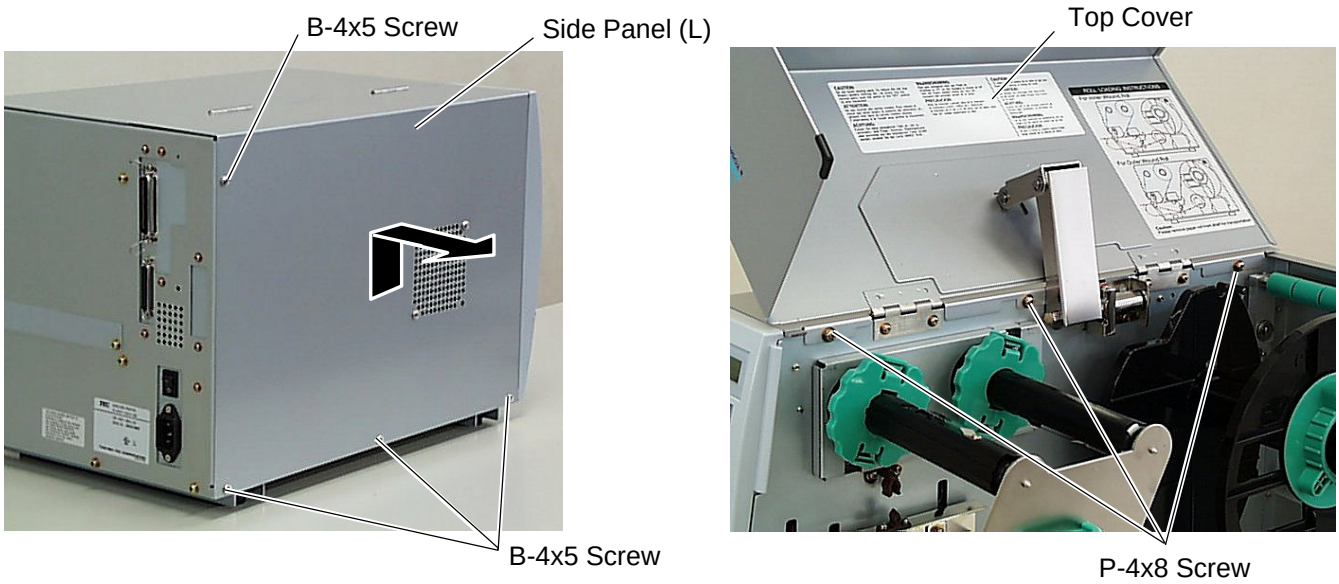
5 Refer to Section 4.24.3.2 and install an RFID module in the printer.

4.25.3.2 Preparing for the RFID Module Installation

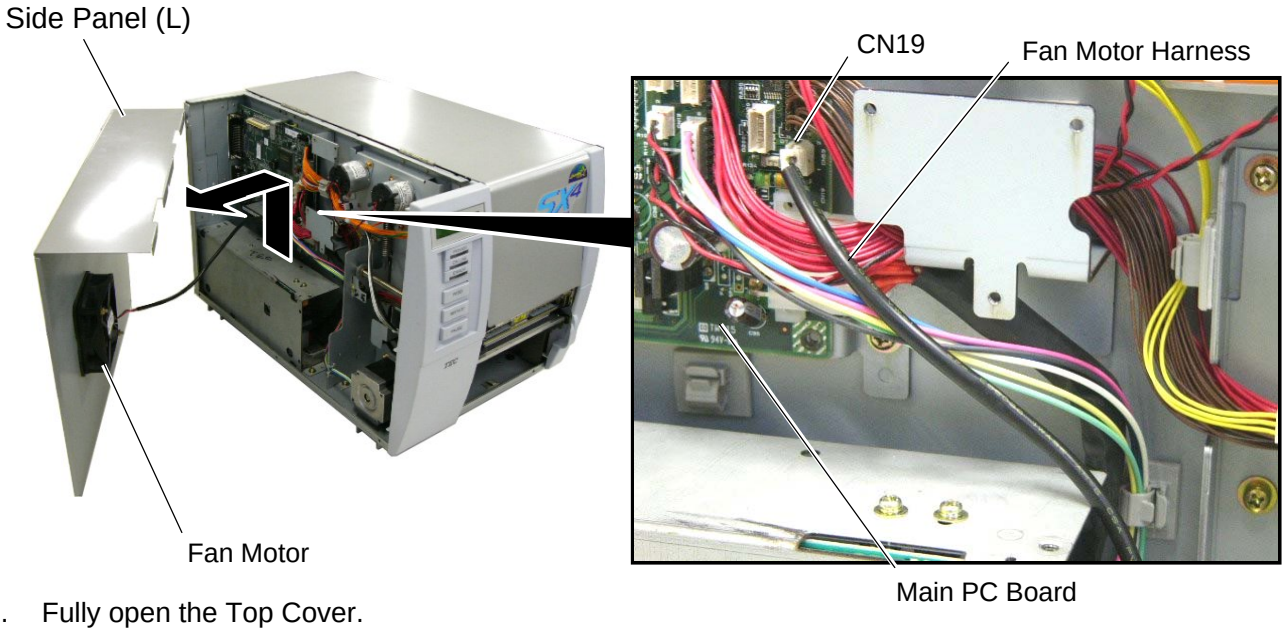
1. Turn the power off and disconnect the Power Cord.
2. Remove the two Black Screws to detach the Front Plate.



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).



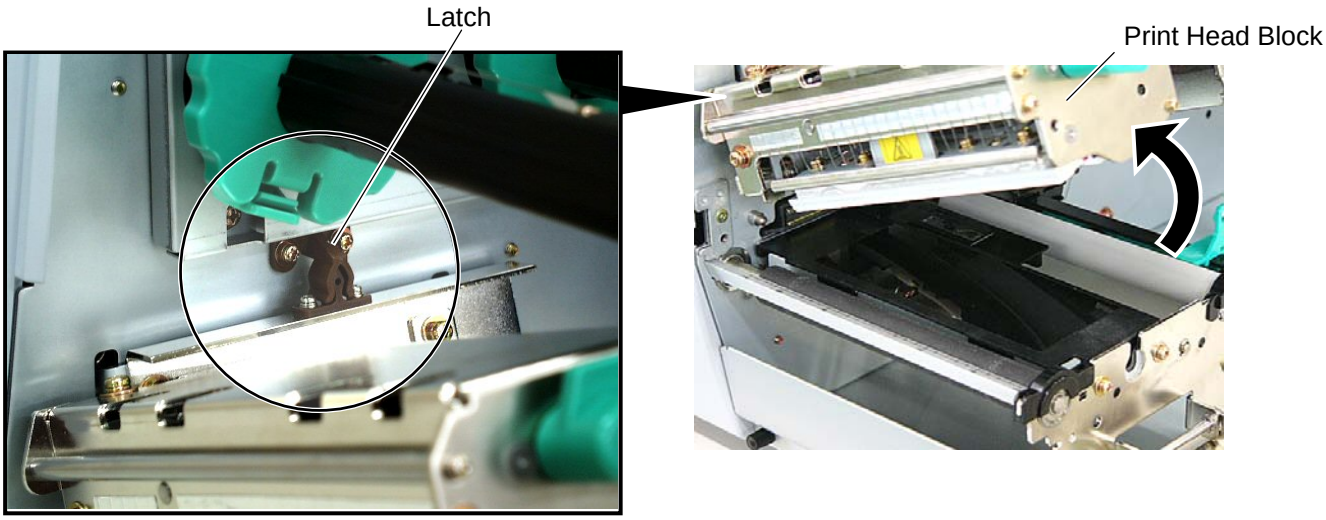
5. Lift the Side Panel (L) and put it aside.
6. Disconnect the Fan Motor Harness from CN19 on the Main PC Board, and then remove the Side Panel (L).



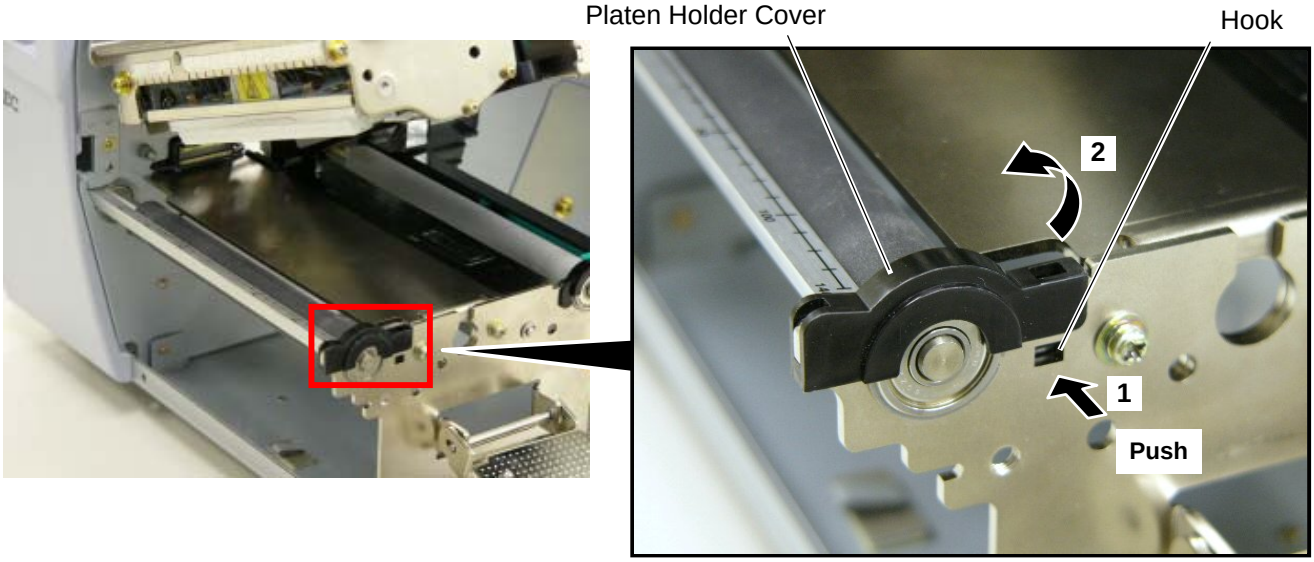
7. Fully open the Top Cover.

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

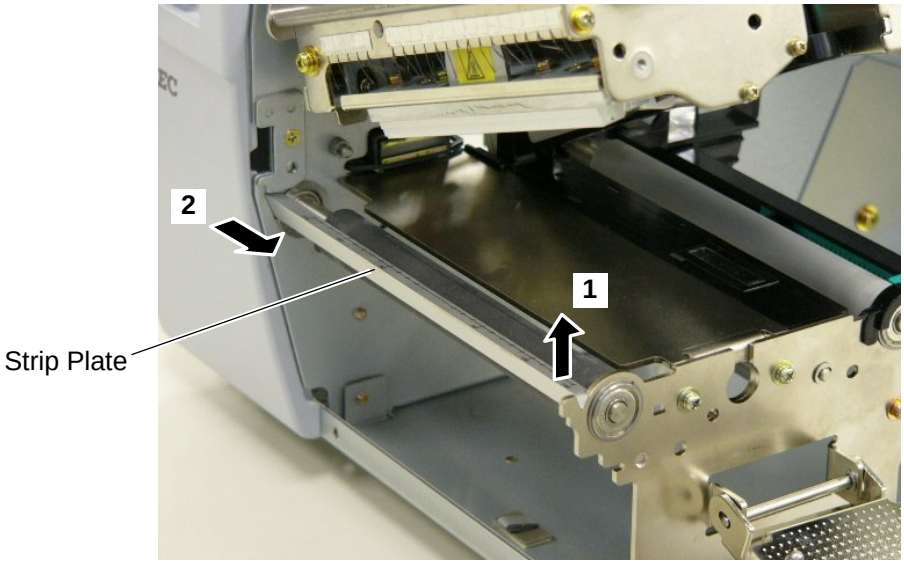
9. Open the Print Head Block and lock it with the Latch.



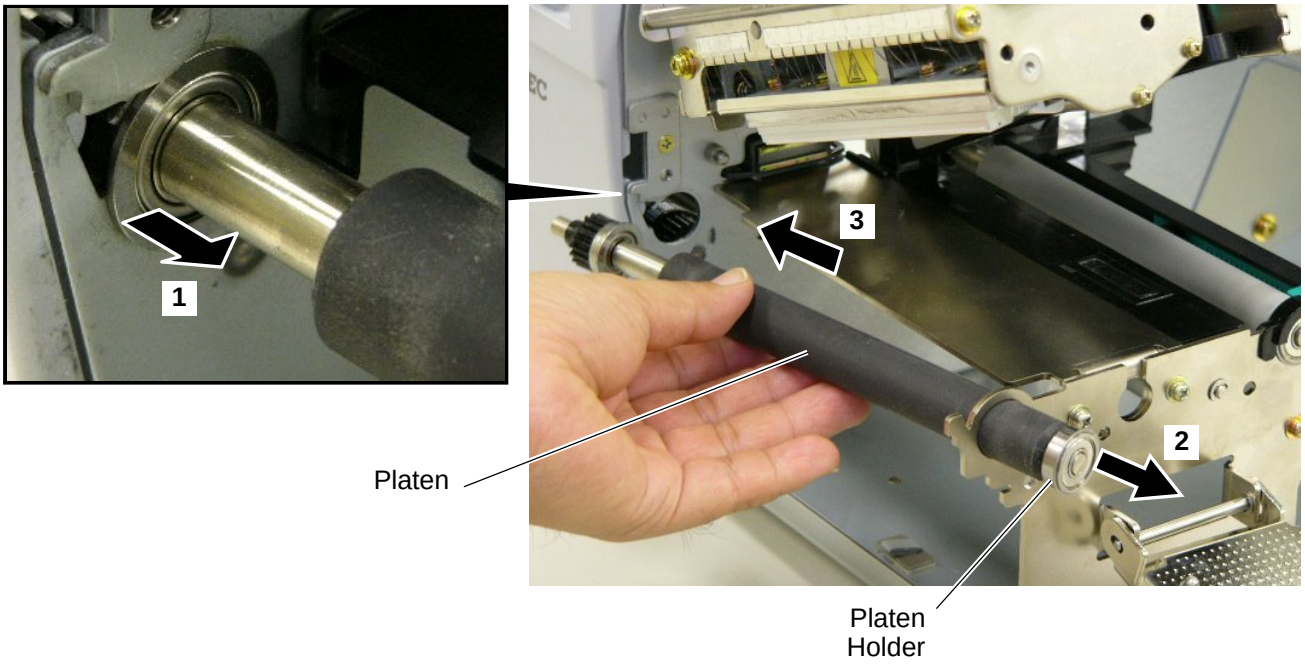
10. Push the Hook through the rectangle hole with a jeweler's screw driver or something, and remove the Platen Holder Cover in the direction indicated by the arrow.



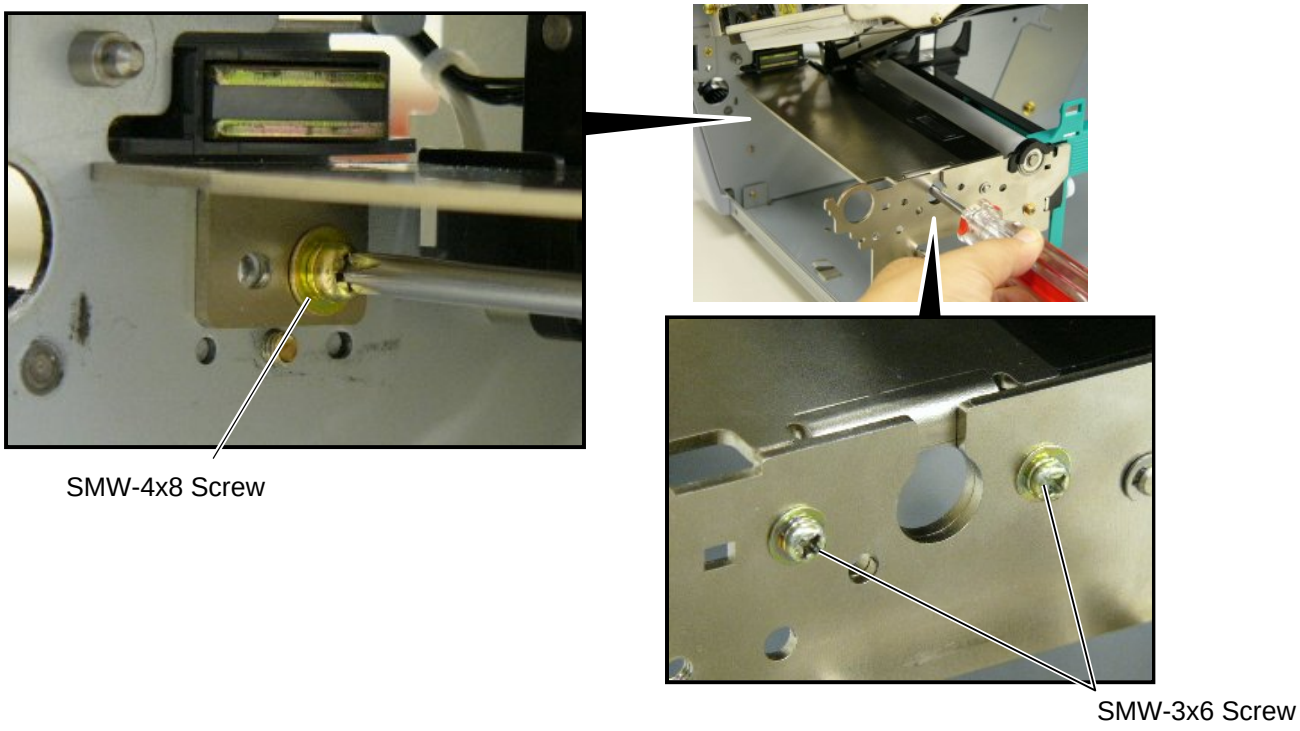
11. Lift the right side of the Strip Plate, and then pull and remove it.



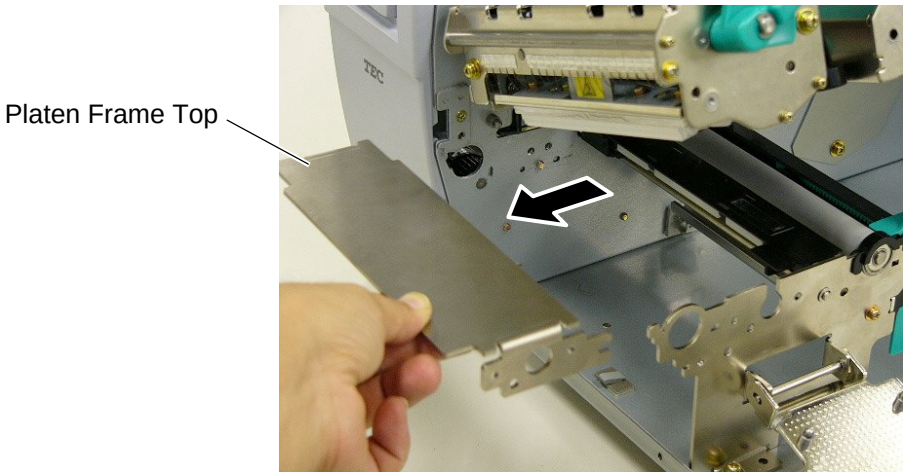
12. Remove the Platen and the Platen Holder in the direction of the arrows 1 to 3 as shown below.



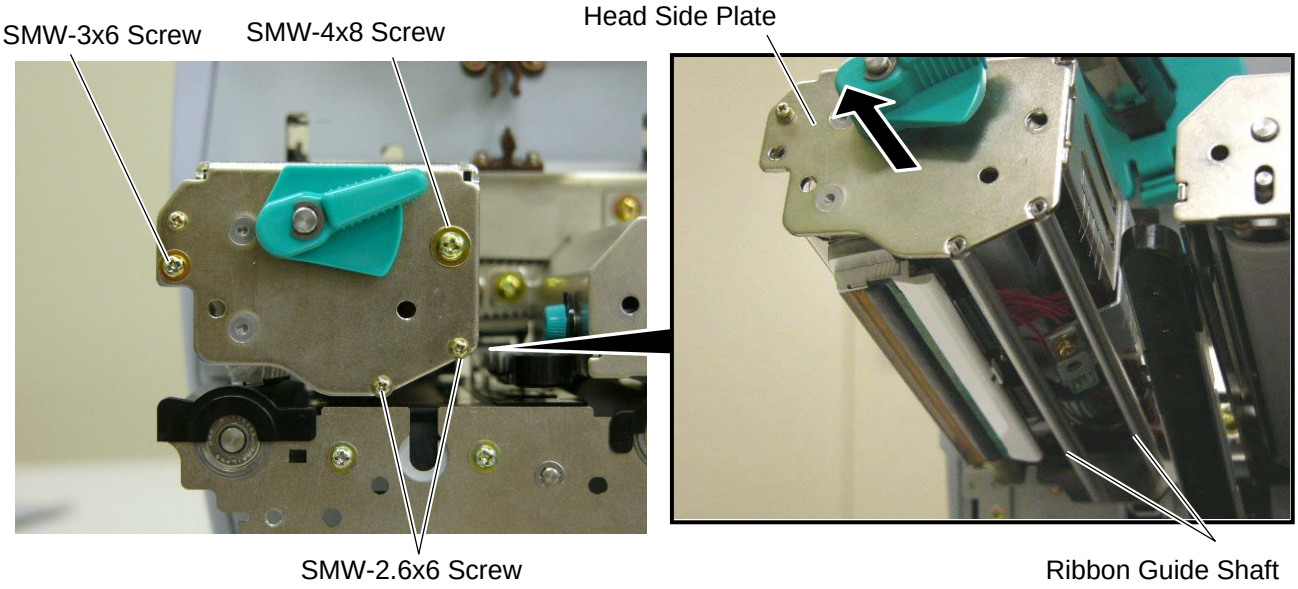
13. Remove the following three screws.



14. Remove the Platen Frame Top from the printer.

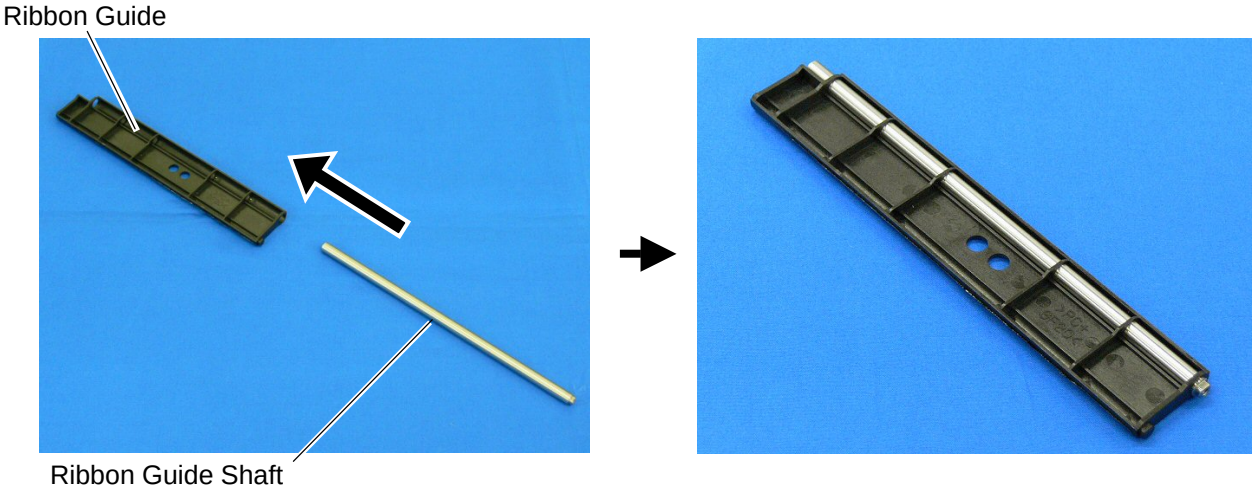


15 Remove the four screws from the side of the Print Head Block, slightly pull the Head Side Plate, and remove the two Ribbon Guide Shafts.

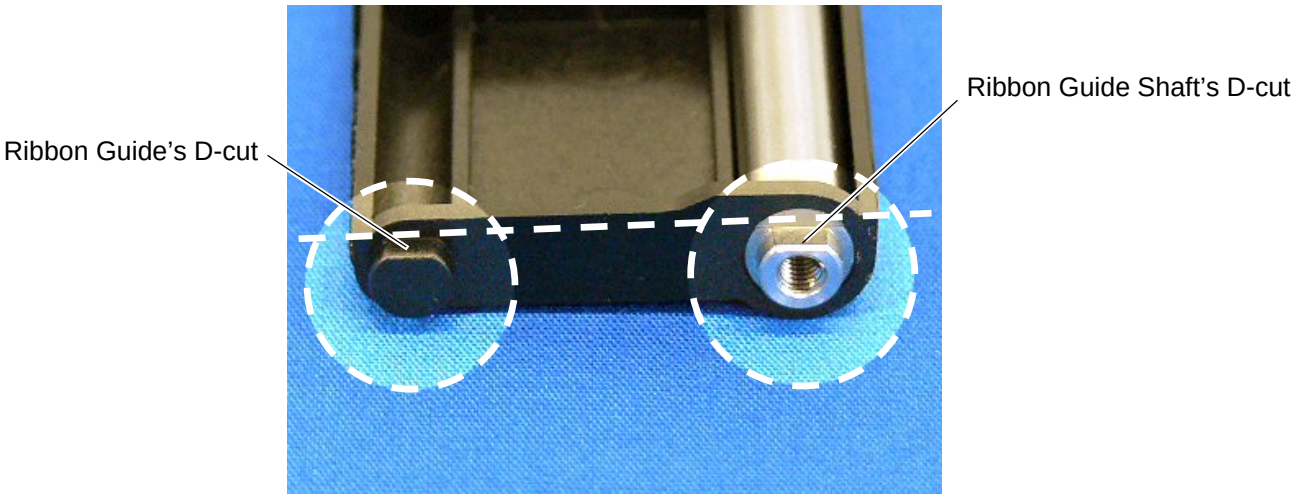


NOTE: *One of the removed Ribbon Guide Shafts and SMW-2.6x6 Screws are re-used when attaching the Ribbon Guide. Keep the unused ones for future use.*

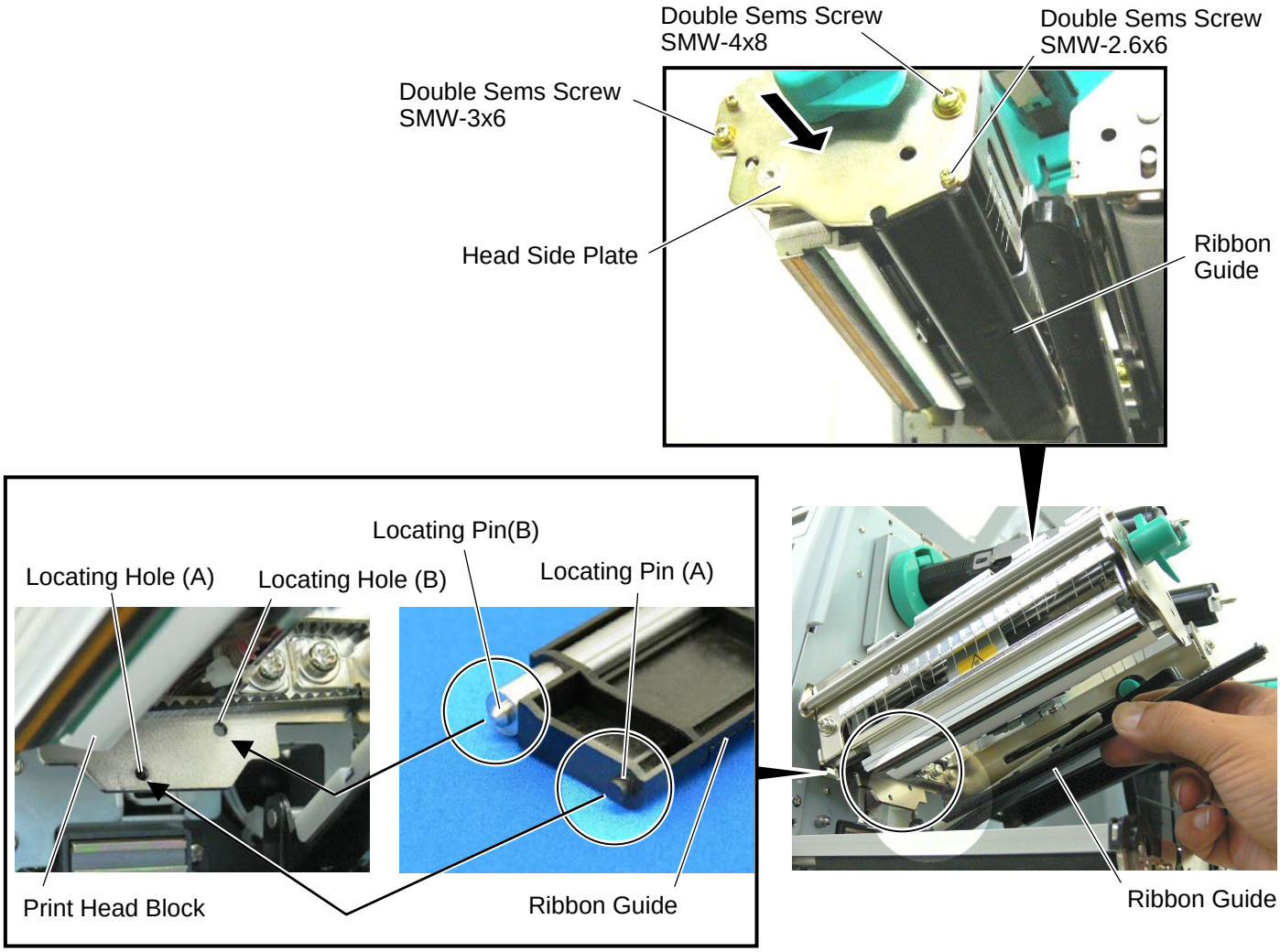
16. Insert one of the Ribbon Guide Shafts removed in Step 15 into the Ribbon Guide.



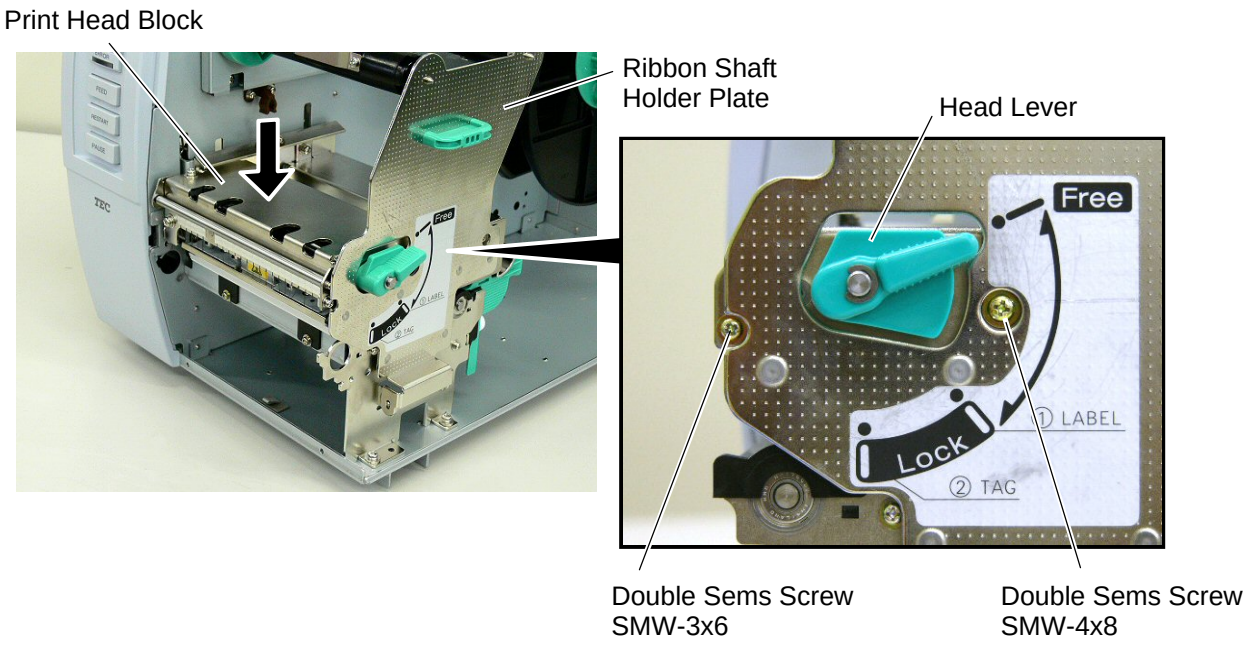
17. Rotate the Ribbon Guide Shaft so that its D-cut is in the same orientation with the Ribbon Guide's D-cut. Without doing this, the Ribbon Guide cannot be fit in the Print Head Block.



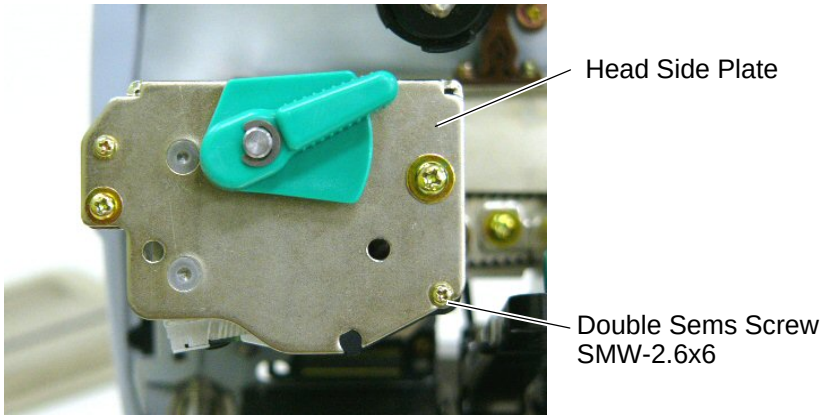
18. Fit the Ribbon Guide including the Ribbon Guide Shaft in the Print Head Block, and secure it to the Head Side Plate with the SMW-2.6x6 screw. Temporarily secure the Head Side Plate to the Print Head Block with the SMW-3x6 Screw and the SMW-4x8 Screw. Be sure to fit the locating pins provided on the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

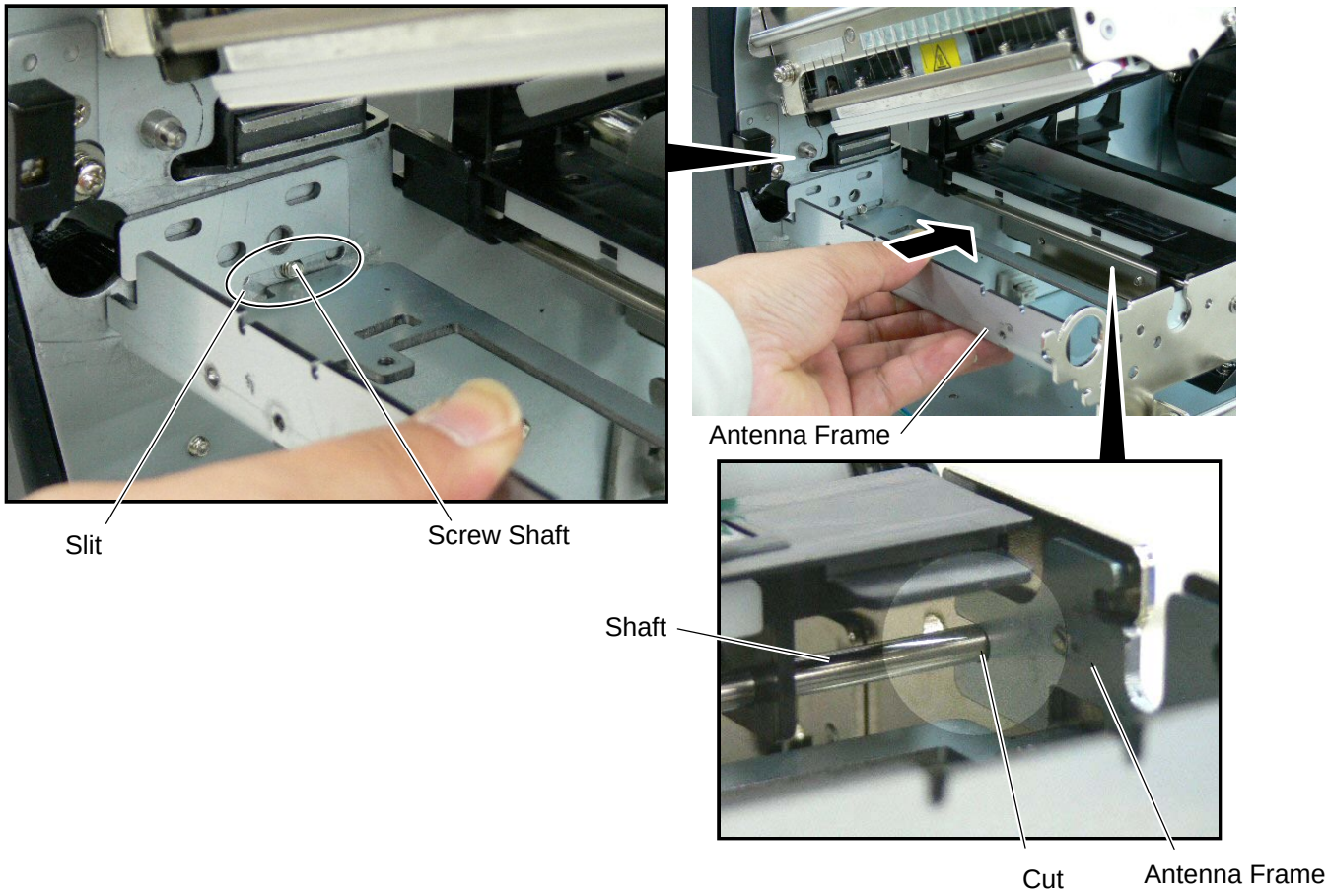


4.25.3.3 Attaching the Antenna Frame and the Antenna Ass'y

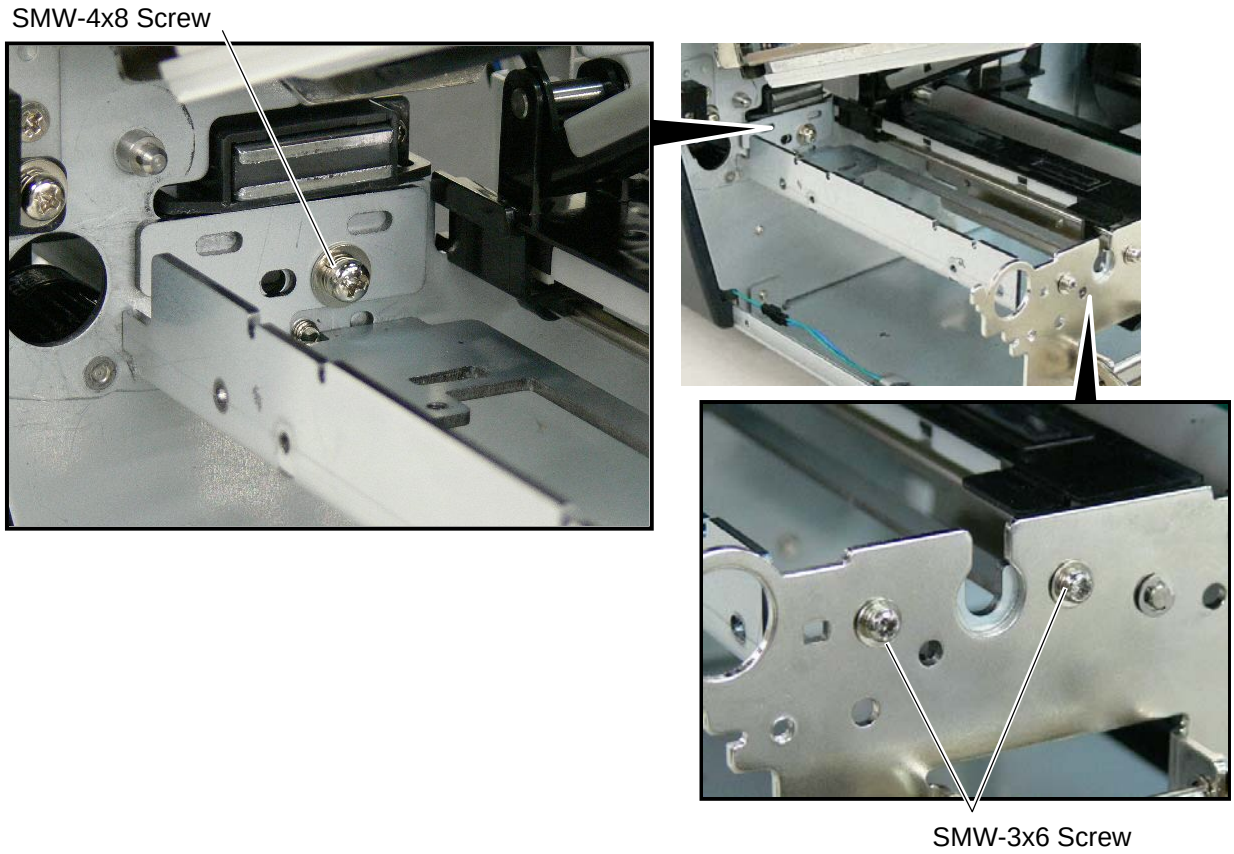
This section describes the procedure for attaching the Antenna Frame and the Antenna Ass'y.
When short-pitch tags (20 mm) are used, the procedure is different from the following. Skip step (1) and go to step (2).

(1) When using RFID tags other than short-pitch type:

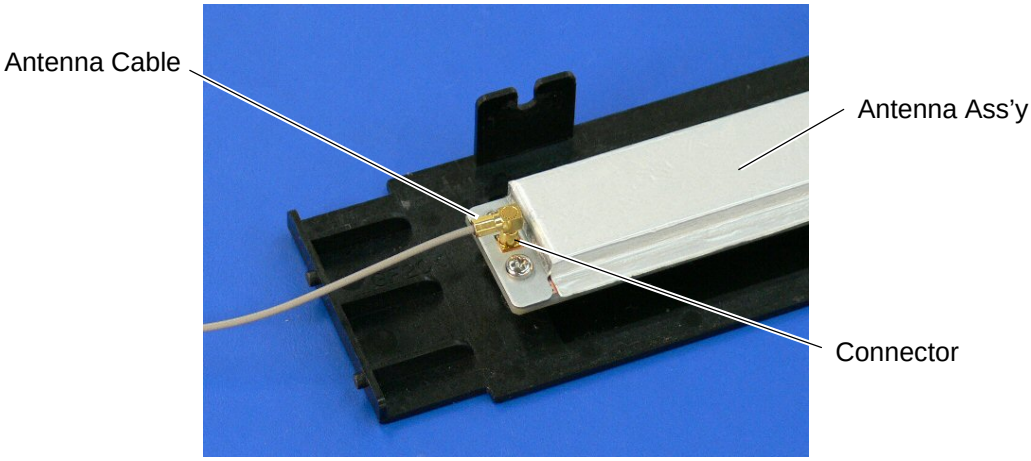
1. Raise the Print Head Block, and slide the Antenna Frame into the printer as shown below. Make the protruding screw shaft of the printer pass through the slit of the Antenna Frame. Also, make the Shaft of the printer fit in the Cut of the right side of Antenna Frame



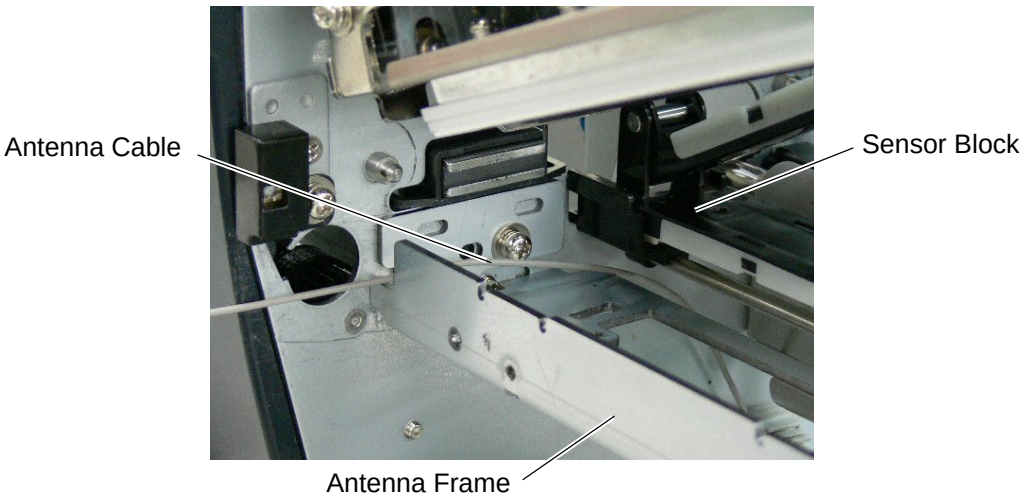
2. Secure the Antenna Frame with the three screws removed in Step 13 of Section 4.25.3.2.



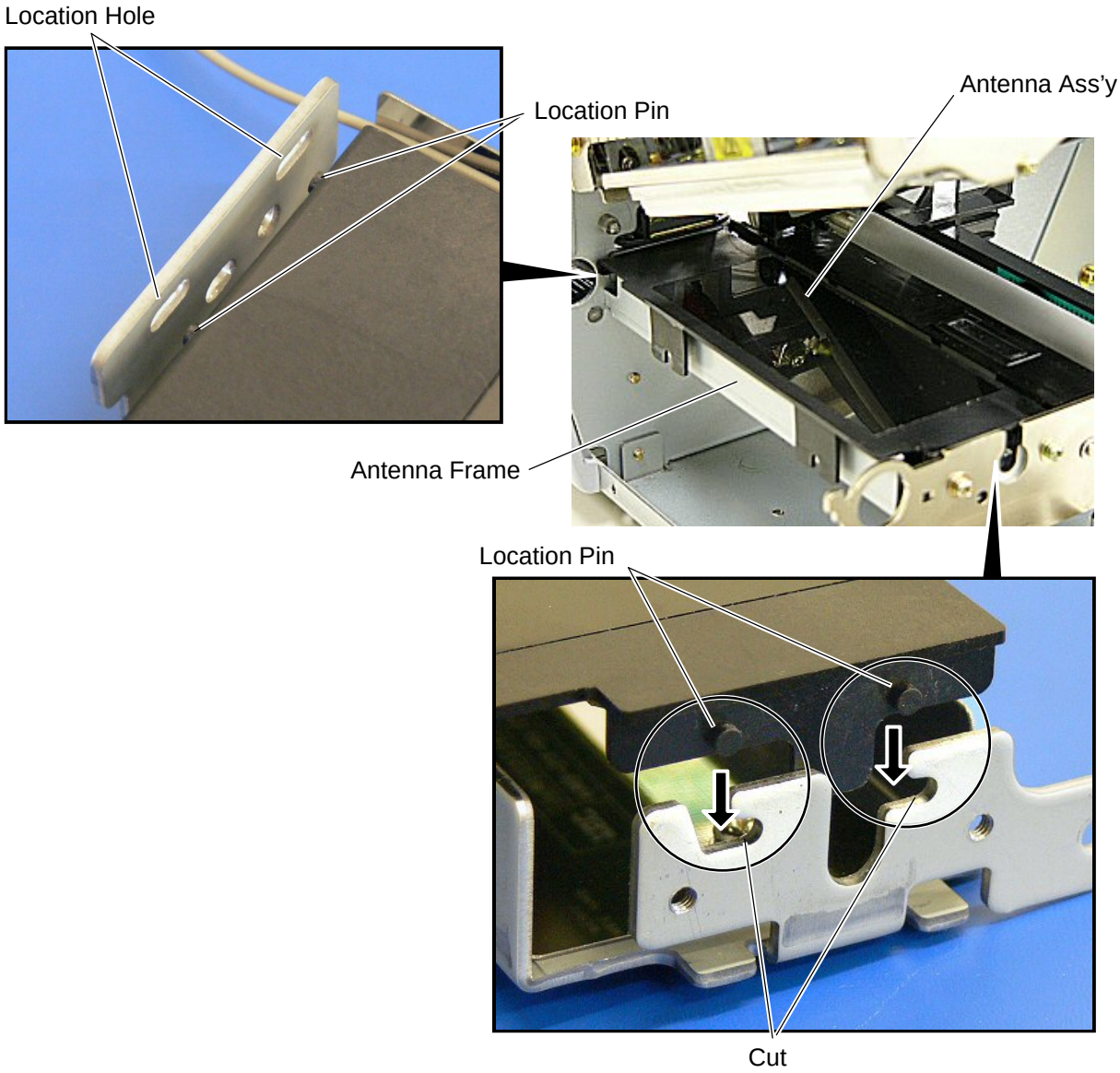
3. Connect the Antenna Cable to the Antenna Ass'y until it clicks.



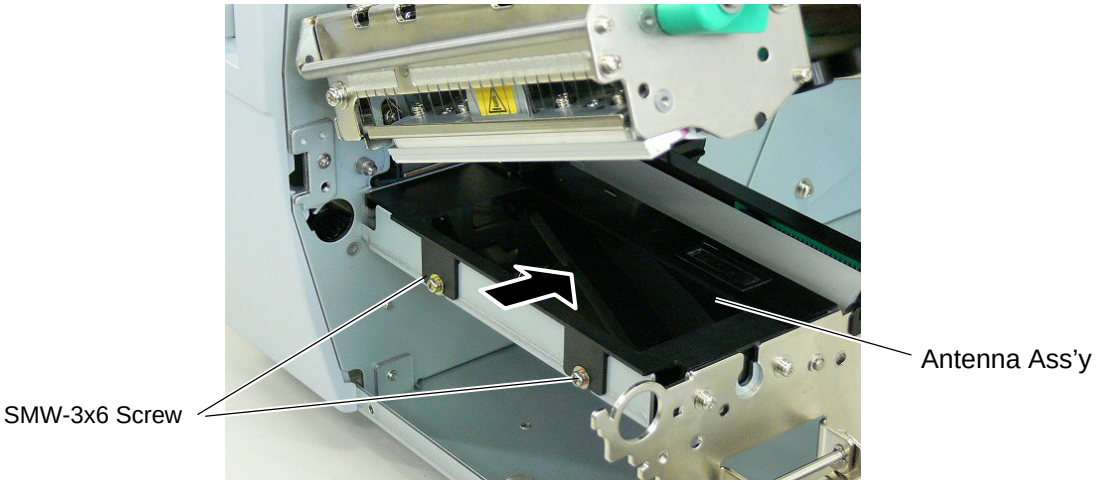
4. Pass the Antenna Cable between the Sensor Block and the Antenna Frame, as shown below.



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.



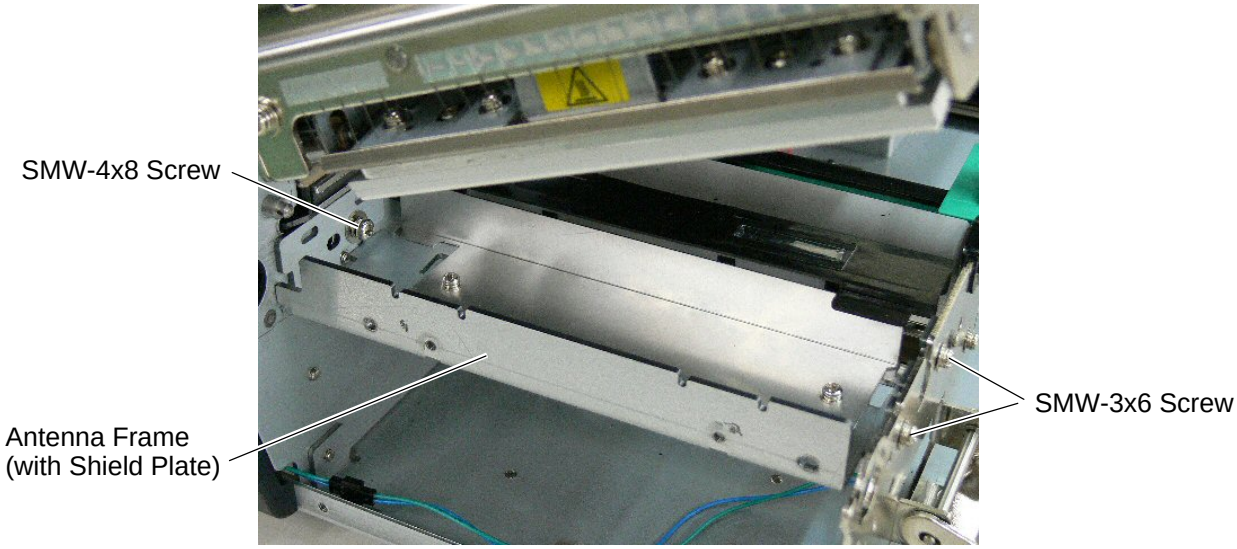
6. Push the Antenna Ass'y in the arrow-indicating direction, and secure it with the two SMW-3x6 screws.



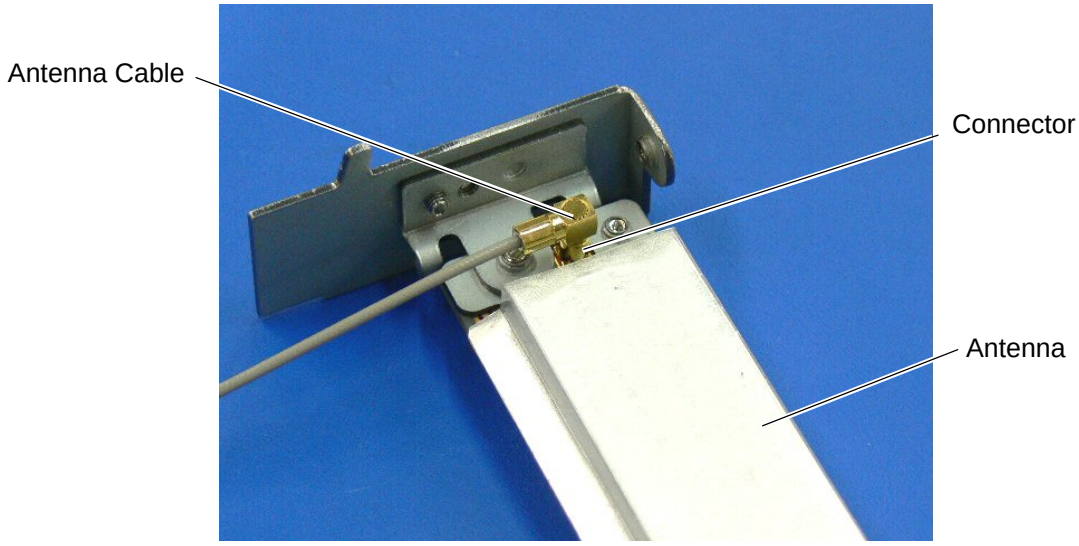
7. Go to Section 4.25.3.4 and attach the RFID Module.

(2) When using short-pitch tags (20 mm)

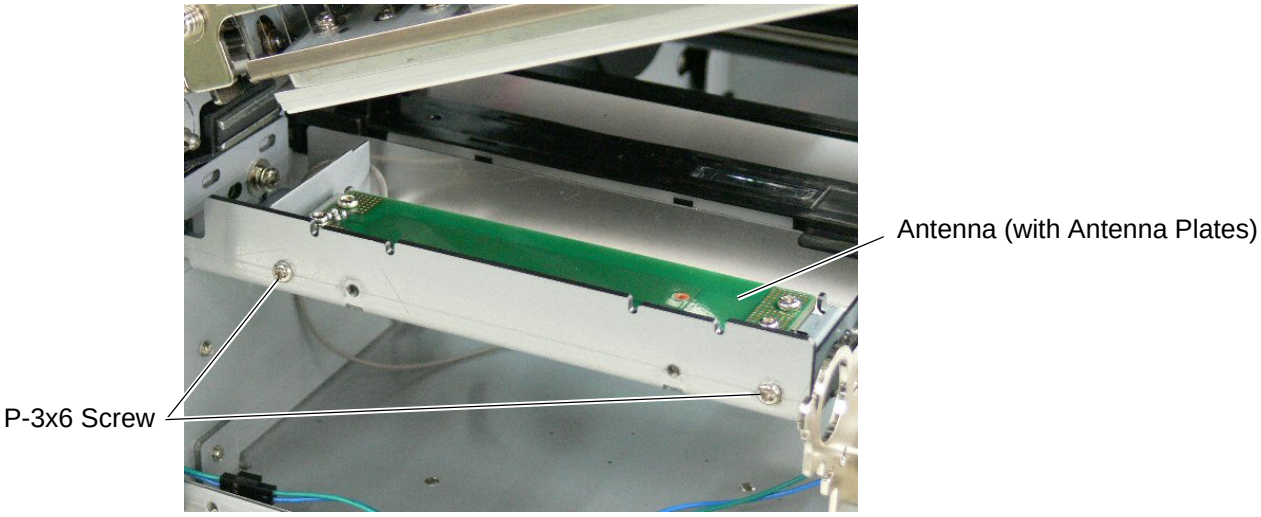
1. Attach the Antenna Frame to which the Shield Plate was attached in Section 4.25.3.1, to the printer in the same way as described in Step 1 of Section 4.25.3.3.



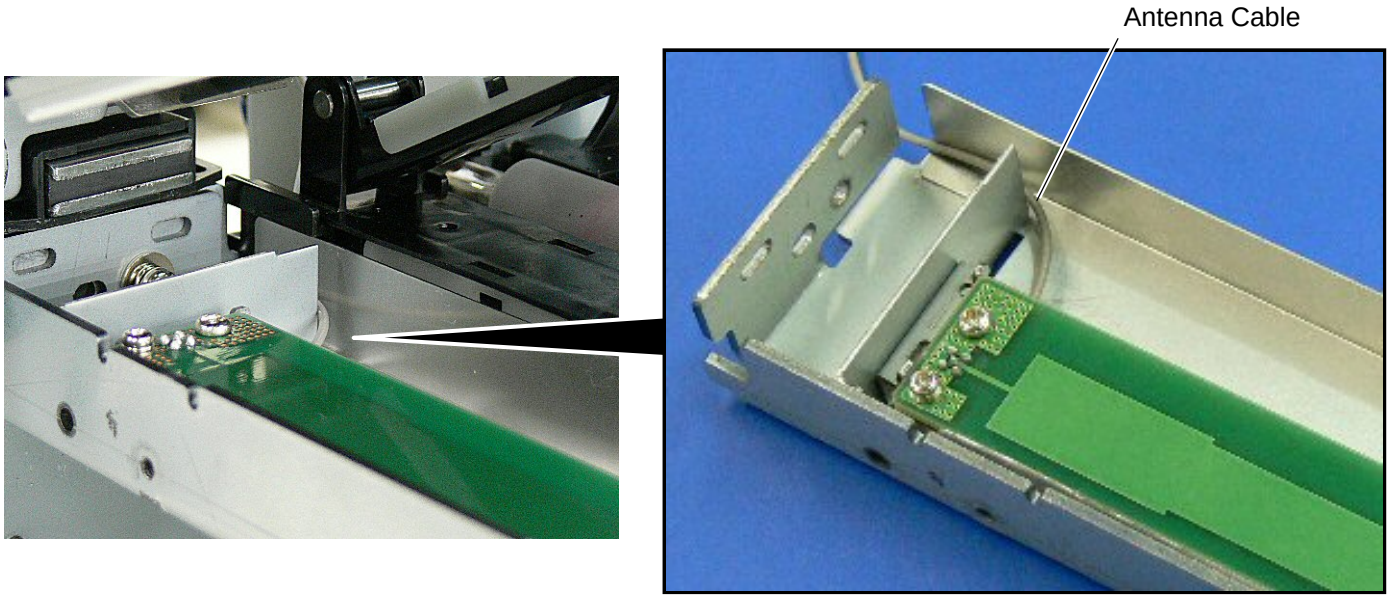
2. Connect the Antenna Cable to the Antenna, to which the Antenna Plates were attached in Section 4.25.3.1, until it clicks.



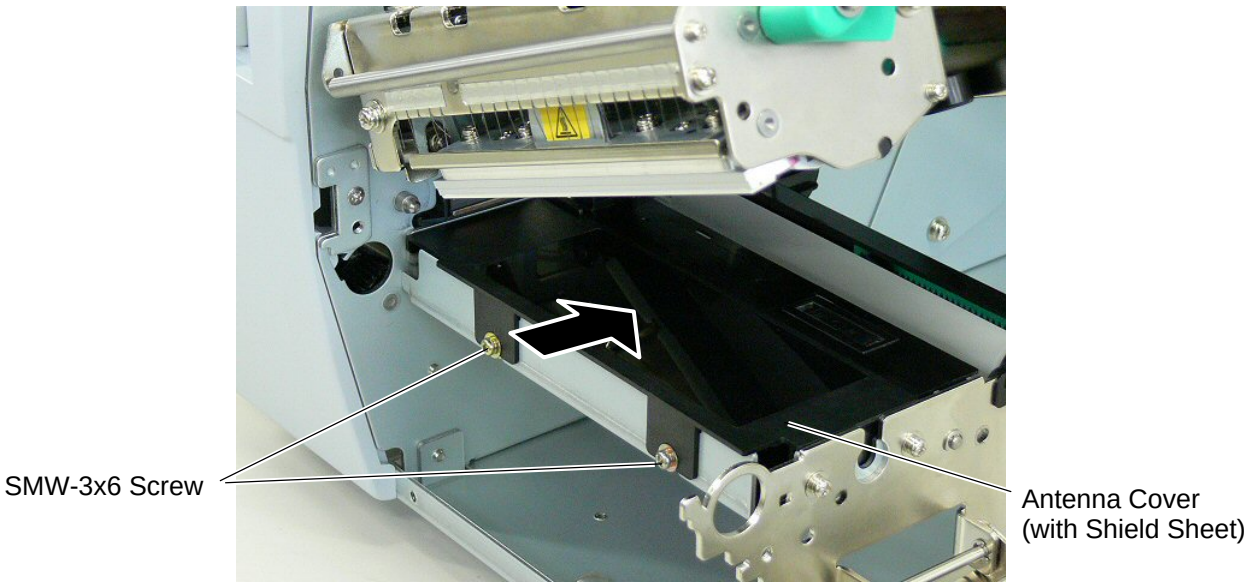
3. Secure the Antenna to the Antenna Frame with the P-3x6 screws.



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



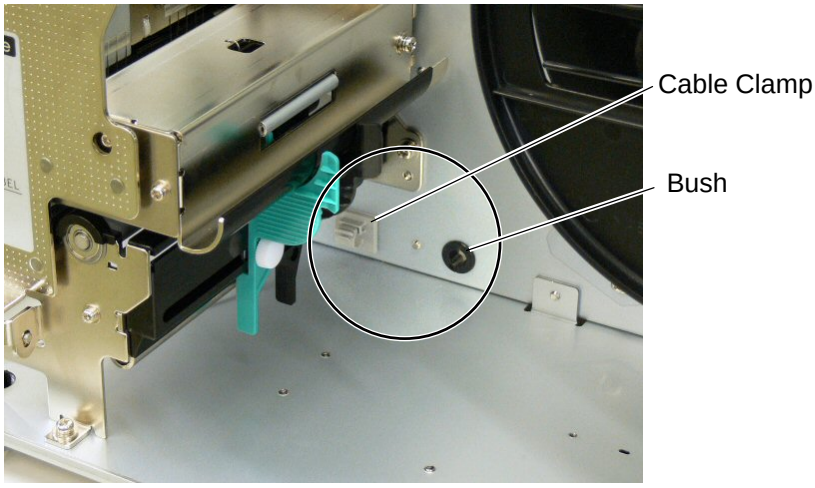
5. Refer to Steps 5 and 6 in “(1) When using RFID tags other than short-pitch type” and attach the Antenna Cover, to which the Shield Sheet was attached in Section 4.25.3.1, to the Antenna Frame with the SMW-3x6 screws.



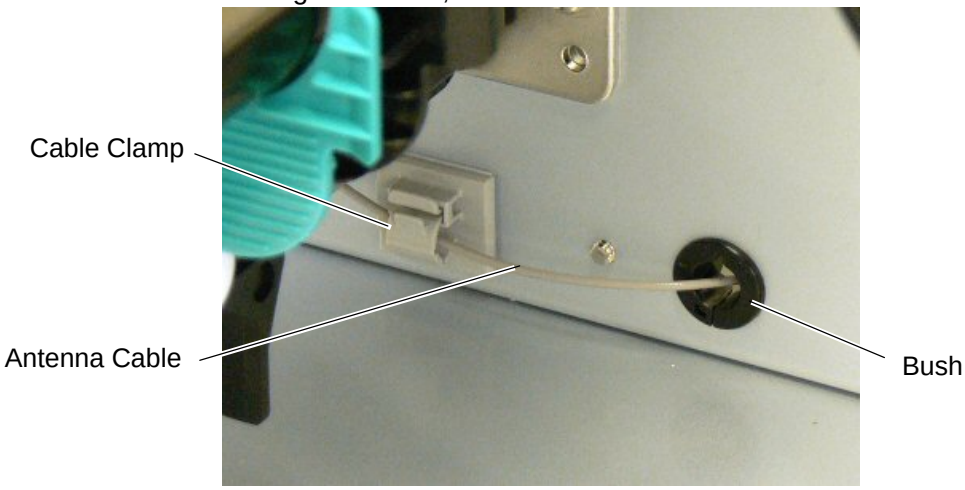
6. Go to Section 4.25.3.4 and attach the RFID Module.

4.25.3.4 Attaching the RFID Module

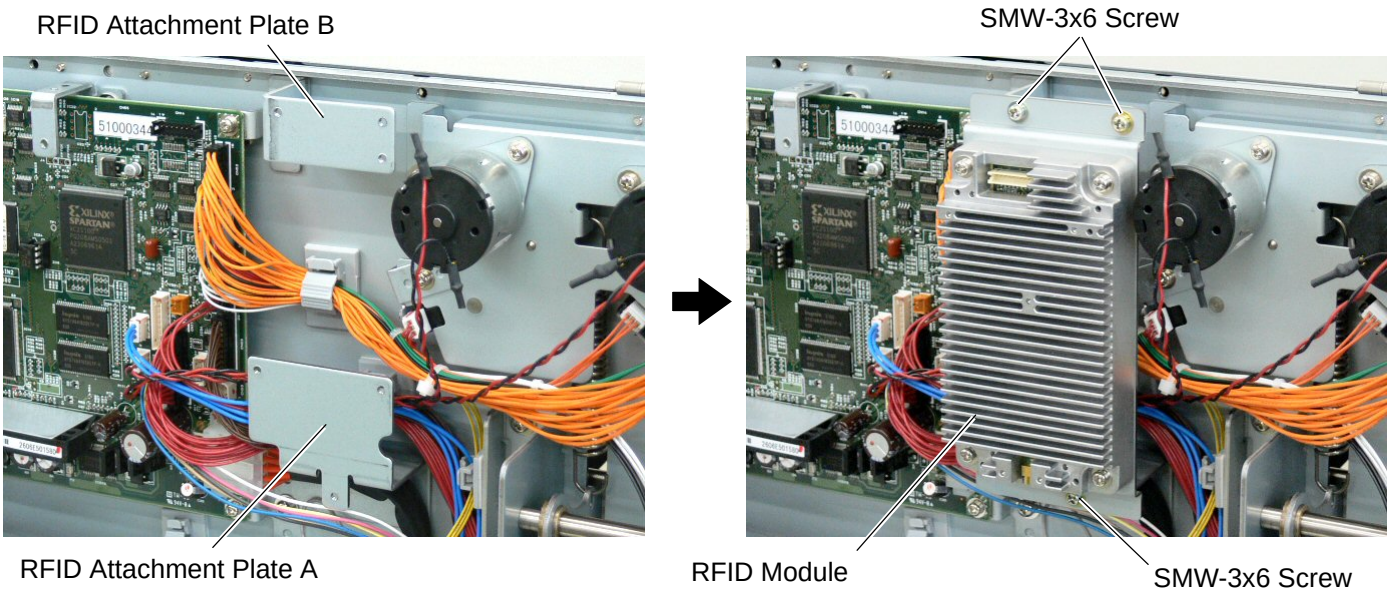
1. Attach the Cable Clamp to and fit the Bush into the positions shown in the picture below.



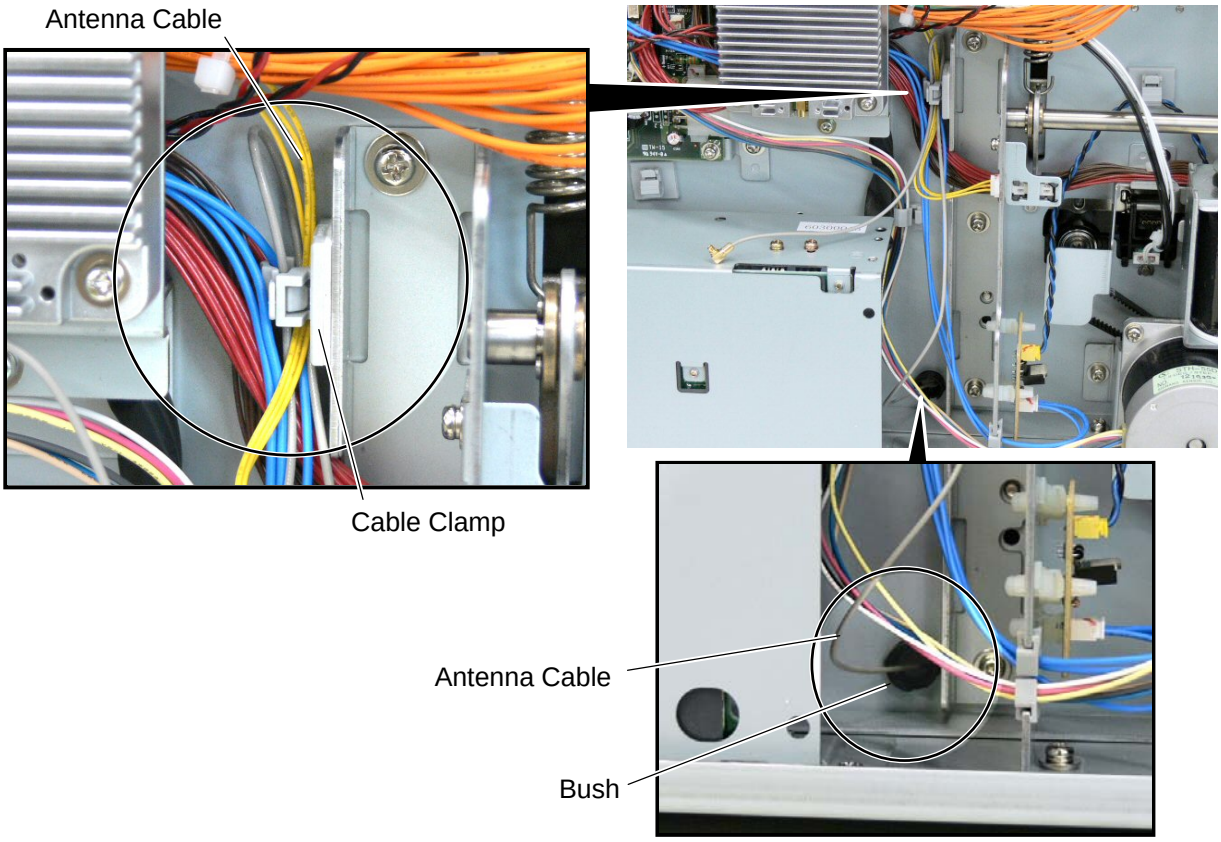
2. Pass the Antenna Cable through the Bush, and fasten the cable with the Cable Clamp.



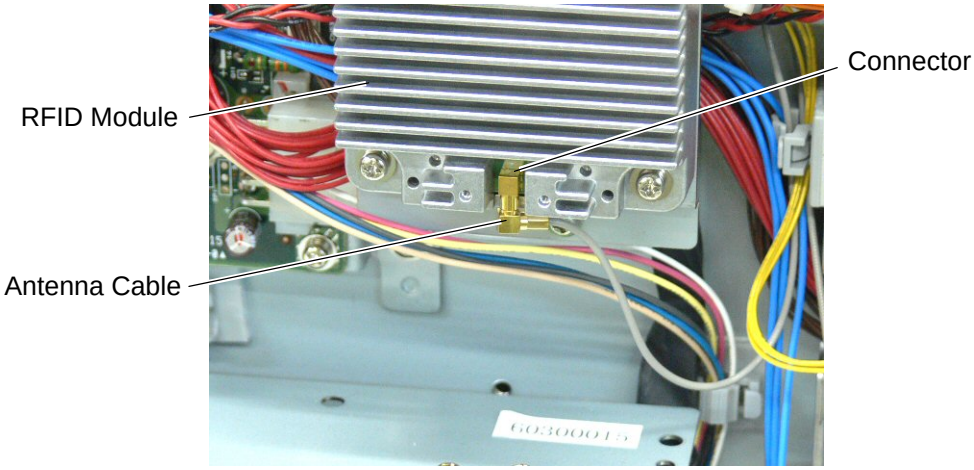
3. Attach the RFID Module to the RFID Attachment Plate A and the RFID Attachment Plate B with the three SMW-3x6 screws.



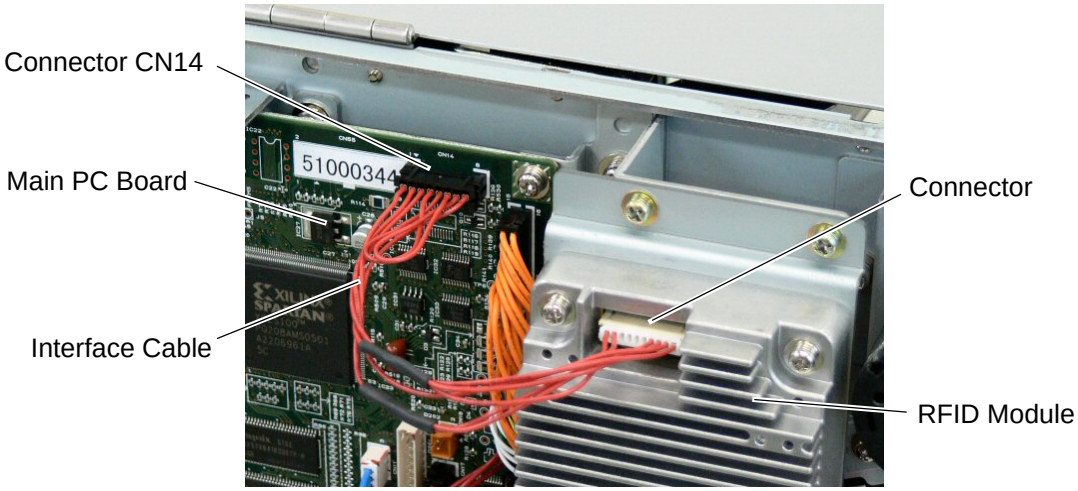
4. Fold the Antenna Cable and fasten it with the Cable Clamp together with the other cables to prevent the Antenna Cable from being caught in the Side Panel (L) or Fan Motor.



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

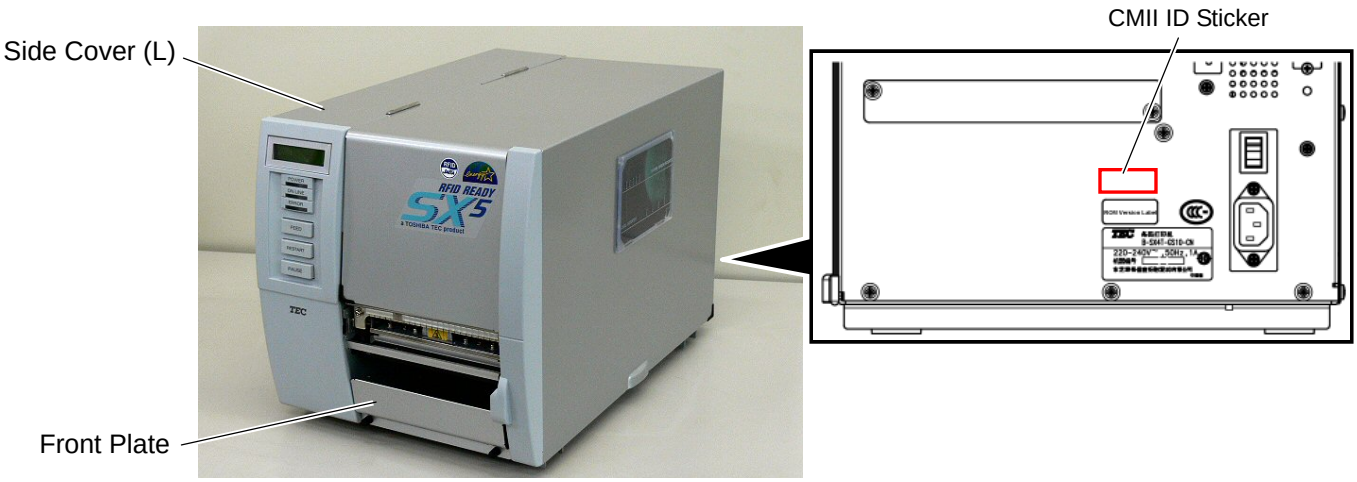


6. Connect the RFID Module to CN14 on the Main PC Board with the Interface Cable.



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).
   Attach the sticker to the backside of the printer according to the country setting.
   CN: Attach the CMII 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 4.25.4 and configure the RFID module settings.

4.25.4 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

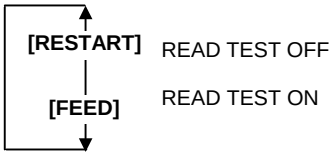
RFID setting menu "<10>RFID" is displayed.
Press the **[PAUSE]** key.

[PAUSE]

↓

<10>RFID
READ TEST OFF

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



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.

[PAUSE]

↓

<10>RFID
CAREERSENSE OFF

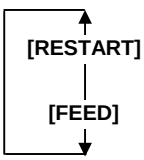
Carrier sense setting menu is displayed. This menu is not available to the B-SX704-RFID-U2-CN -R. Press the **[PAUSE]** key to skip this menu.

[PAUSE]

↓

<10>RFID
MODULE NONE

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



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

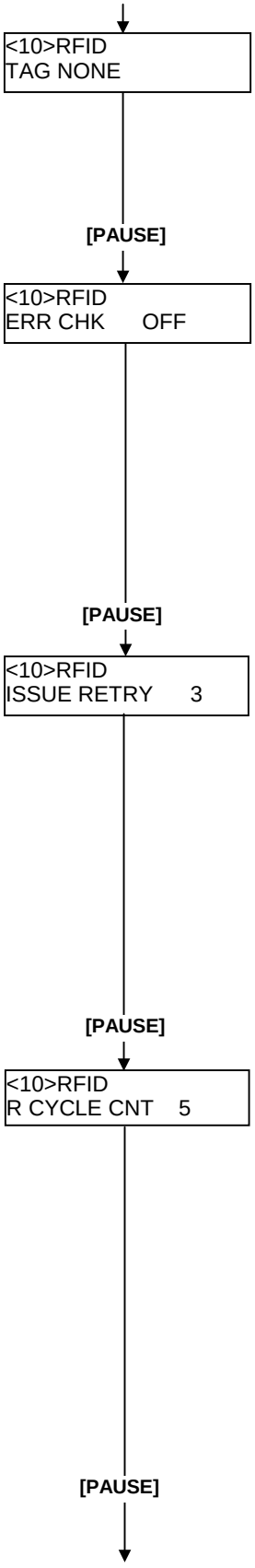
[PAUSE]

Press the **[PAUSE]** key.

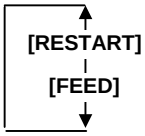
↓

Continued to the next page.

Continued from the previous page.



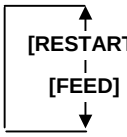
RFID tag type setting menu is displayed.
Choose "EPC C1 Gen2: 24" with the **[FEED]** or **[RESTART]** key.



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.

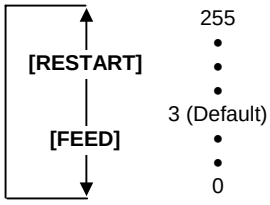


OFF: An error tag detection is not performed. (Usually, choose OFF.)
ON: An error tag detection is performed.

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.

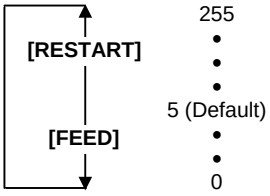
Press the **[PAUSE]** key.

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.

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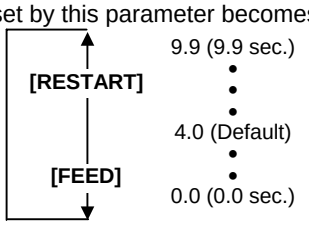
<10>RFID
R CYCLE TIM 4.0

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.

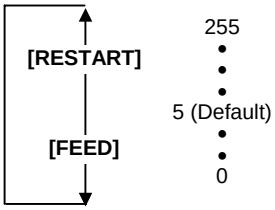


[PAUSE]

Press the **[PAUSE]** key.

<10>RFID
W CYCLE CNT 5

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.

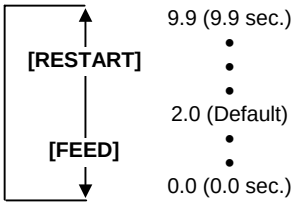


[PAUSE]

Press the **[PAUSE]** key.

<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.

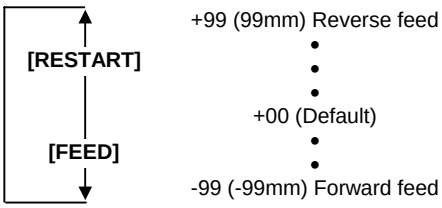


[PAUSE]

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.

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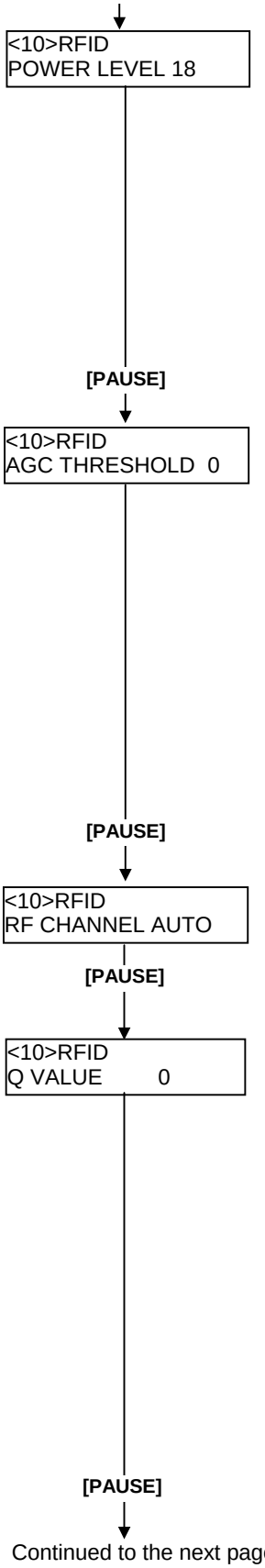
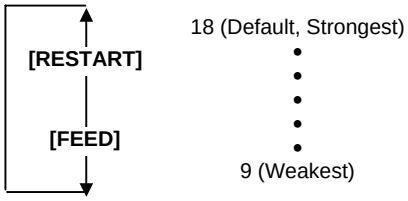
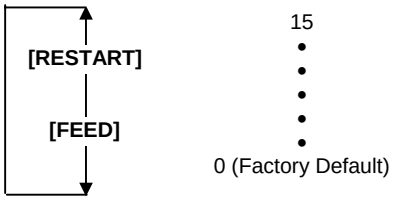


Radio output power level setting menu is displayed.
When the value is “9”, the power is the weakest, and when “18”, the power is the strongest.
The factory default setting is “18”. The optimum value differs depending on the tag types.
Usually, it is not necessary to change this value but changing the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



Press the **[PAUSE]** key.

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.

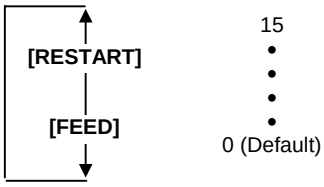


Press the **[PAUSE]** key.

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

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

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 4.25.5 AGC Threshold Setting.)
The factory default is 0.



Press the **[PAUSE]** key.

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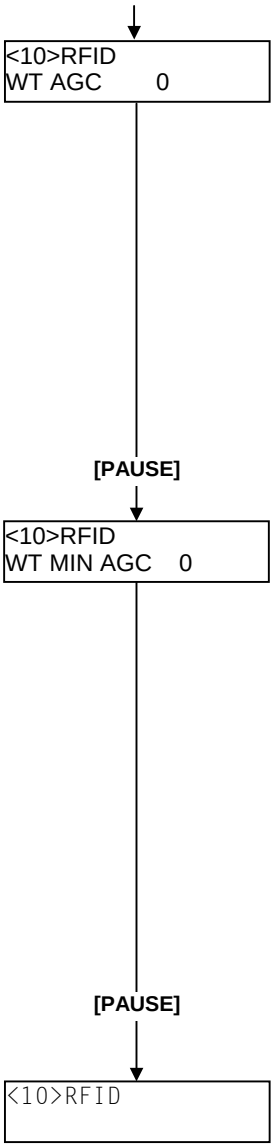
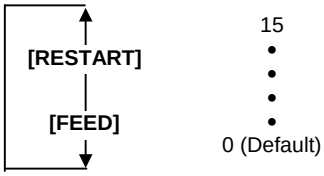
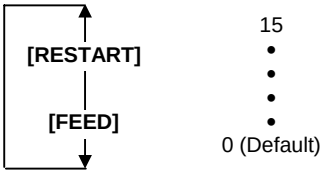


AGC threshold for data write setting menu is displayed.
When the Q value is set to 1 or greater, the AGC threshold for data write becomes effective.
When the obtained gain of an RFID tag is lower than the AGC thresholdfor data write, data write is not performed. In other words, setting an AGC threshold 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 4.25.5 AGC Threshold Setting.)
Set an AGC threshold for data write with the **[FEED]** or **[RESTART]** key, if necessary.



Press the **[PAUSE]** key.

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 4.25.5 AGC Threshold Setting.)
Set the lower limit for retry with the **[FEED]** or **[RESTART]** key, if necessary.



Press the **[PAUSE]** key.

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 4.25.5.

4.25.5 AGC Threshold Setting

The B-SX704-RFID-U2-CN-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.

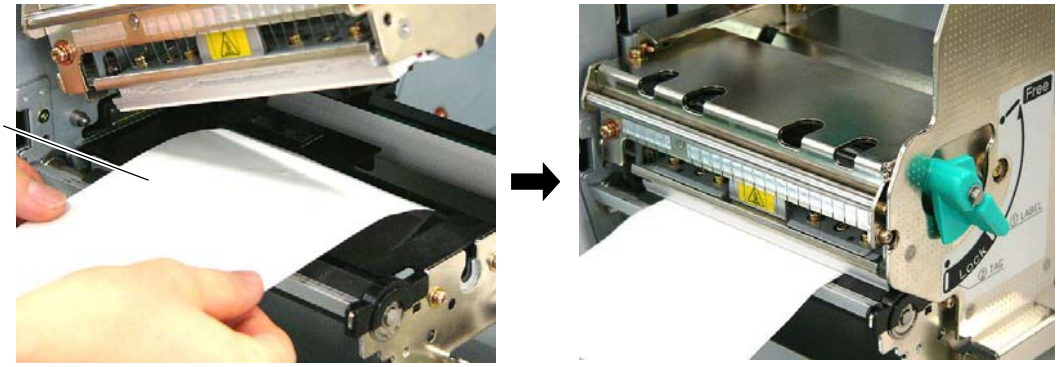
Step 1. Load an RFID tag embedded media in the printer.
Step 2. Follow the procedure below to measure the radio intensity of the tags.
1) Place the media so that an RFID tag (IC chip) is positioned above the Antenna, and close the Top Cover.

***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

RFID Tag



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]

↓

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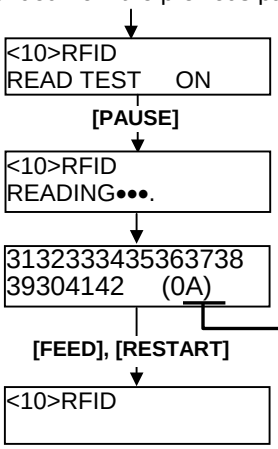


Press the **[PAUSE]** key to implement a read test.

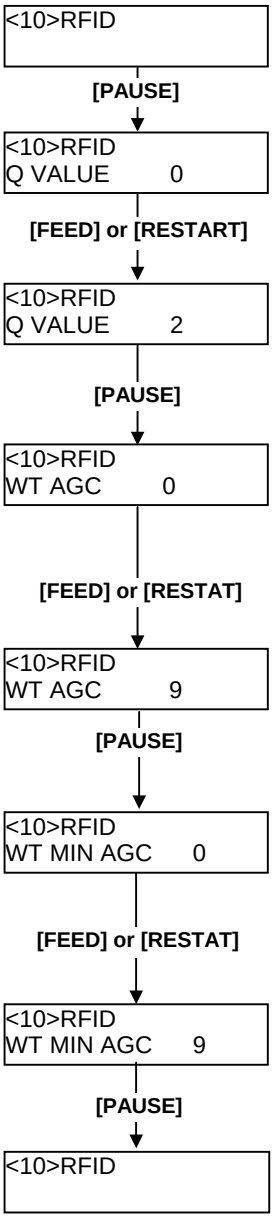
Read data is displayed.

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").

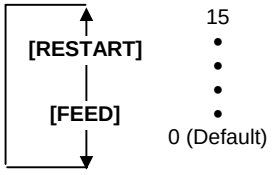
3) Set an AGC threshold of data write.
Set a value which is lower than the AGC value obtained by a read test by 1 or 2, taking variation of RFID tags in performance into consideration.

Example



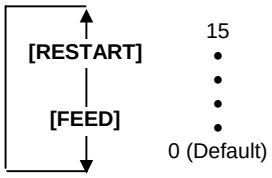
When "<10>RFID" is displayed, press the **[PAUSE]** key until the Q value setting menu is displayed.

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



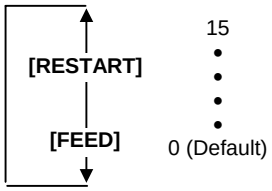
Press the **[PAUSE]** key.

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.

4.26 IDENTIFICATION OF THE RFID MODULE (B-SX704-RFID-U2-US/EU/AU/CN-R)

As from the production manufactured in October 2008, the standard label has been added to the RFID module, which is used for the B-SX4T/SX5T series, for improving the efficiency of assembly.

RFID Module Label

B-SX704-RFID-U2-EU-R

TRW-EUM-01 CE 0682 ⓘ
TOSHIBA TEC CORPORATION

B-SX704-RFID-U2-AU-R

TRW-AUM-01 N258
TOSHIBA TEC CORPORATION

B-SX704-RFID-U2-US-R (Serial Number: 2809Axxxxxx and earlier)

TRW-USM-01
FCC ID : BJIOH0006
IC 1004A-OH0006
TOSHIBA TEC CORPORATION

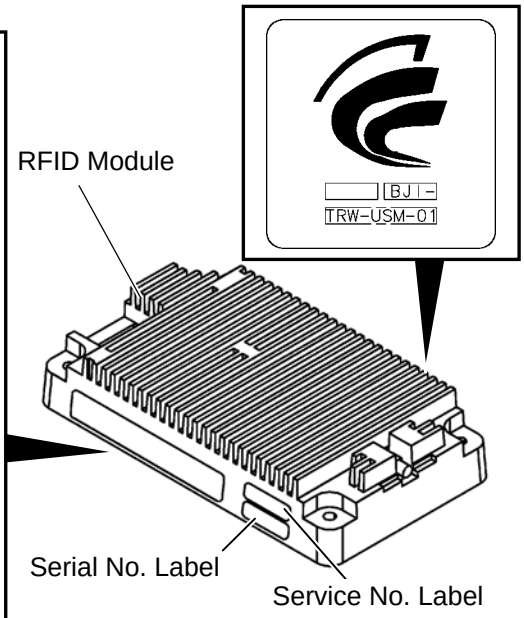
B-SX704-RFID-U2-US-R (Serial Number: 2809Dxxxxxx or later)

TRW-USM-01
FCC ID:BJIOH0006
IC:1004A-OH0006 N258
TOSHIBA TEC CORPORATION

B-SX704-RFID-U2-CN-R

TRW-CNM-01
TOSHIBA TEC CORPORATION

Cercification Label (South Korea)
B-SX704-RFID-U2-US-R
(Serial Number 2809Axxxxxx or later)



Note:

The module manufactured in January 2009 (Serial Number 2809Axxxxxx) is not available in Australia because the C-Tick Mark is not printed on the module label.

For details of serial number label and serviece number label, refer to the next page.

Notes:

1. Descriptio of the serial number label and service number label

Description of Service Number Label

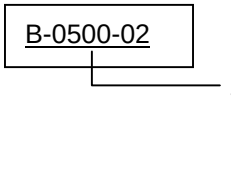
B-SX704-RFID-U2-EU-R

B-0500-01

B-SX704-RFID-U2-AU-R

B-0500-04

B-SX704-RFID-U2-US-R
(RFID Kit Serial Number 2808Yxxxxxx and earlier)



B-SX704-RFID-U2-US-R
(RFID Kit Serial Number 2809Axxxxxx or later)

B-SX704-RFID-U2-CN-R

B-0500-03

Description of Serial Number Label

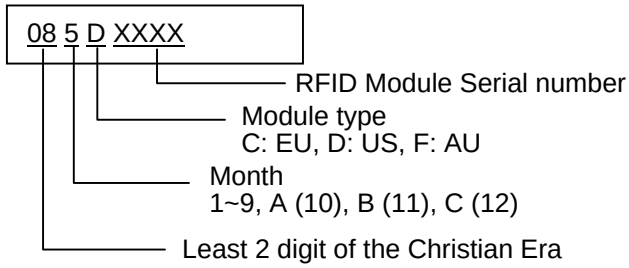
B-SX704-RFID-U2-EU-R

08 5 C XXXX

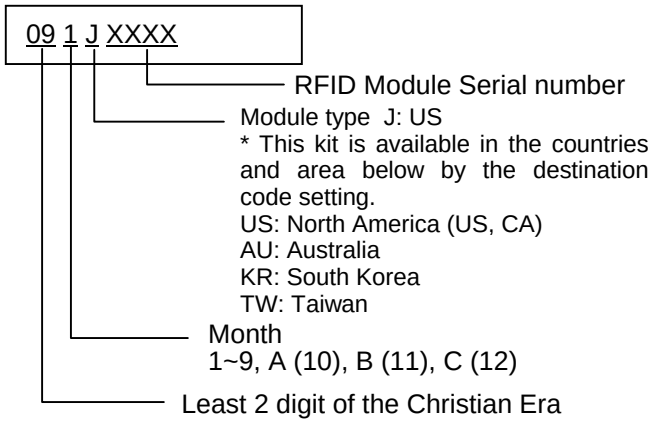
B-SX704-RFID-U2-AU-R

08 5 F XXXX

B-SX704-RFID-U2-US-R
(RFID Kit Serial Number 2808Yxxxxxx and earlier)



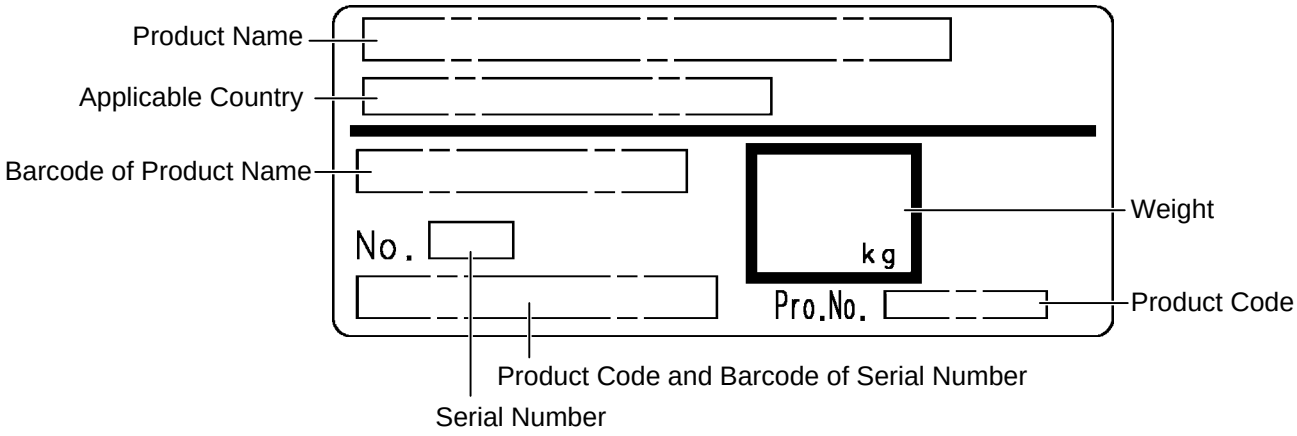
B-SX704-RFID-U2-US-R
(RFID Kit Serial Number 2809Axxxxxx or later)



B-SX704-RFID-U2-CN-R

08 5 E XXXX

2. Carton Label of B-SX704-RFID-U2-US-R (Kit Serial Number 2809Axxxxxx or later)



Descriptions of the carton label

Revision	Product Name	Applicable Country	Product Code	Weight
R01	B-SX704-RFID-U2-US-R	(R01):[US•CA•AU•KR•TW]	10021165263	0.7

5. SYSTEM MODE

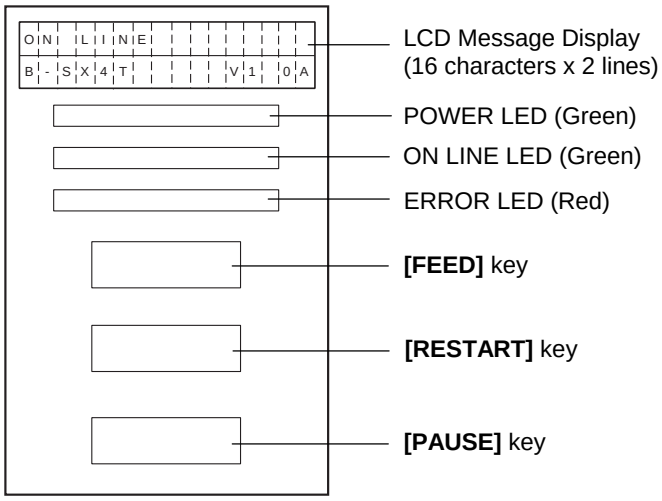
This chapter describes usage and purpose of the keys on the Operation Panel in System Mode.

For service personnel, System Mode should be used for the following eight purposes:

- To check and print the system status, the Maintenance Counter, and the Print Head Element.
- To set the parameters for the communication with the host computer, and the printer functions such as the keys and LCD Message Display.
- To make fine adjustment related to the media issue.
- To perform a test print for checking print quality.
- To check the status of the sensors and to set the threshold of the media sensors.
- To perform a Maintenance Counter clear and Parameter clear.
- To set the IP Address.
- To set the Basic setting.
- To perform the factory mode.

5.1 OPERATION PANEL

The figure below illustrates the Operation Panel and key functions.



The LCD Message Display shows messages in alphanumeric characters and symbols to indicate the printer's status. Up to 16 characters in 2 lines can be displayed.

There are three LEDs on the Operation Panel.

LED	Illuminates when…
POWER	The printer is turned on.
ON LINE	The printer is ready to print.
ERROR	Any error occurs with the printer.

In System Mode, the **[FEED], [RESTART]** and **[PAUSE]** keys function as described below.

FEED	Used to start the system mode as a **[PAUSE]** key does. Used to select the parameter mode or to fine adjust the parameters in the negative direction (-).
RESTART	Used to select the parameter mode or to fine adjust the parameters in the positive direction (+).
PAUSE	Used to start the system mode as a **[FEED]** key does and to select the parameter mode. Used as an enter key.

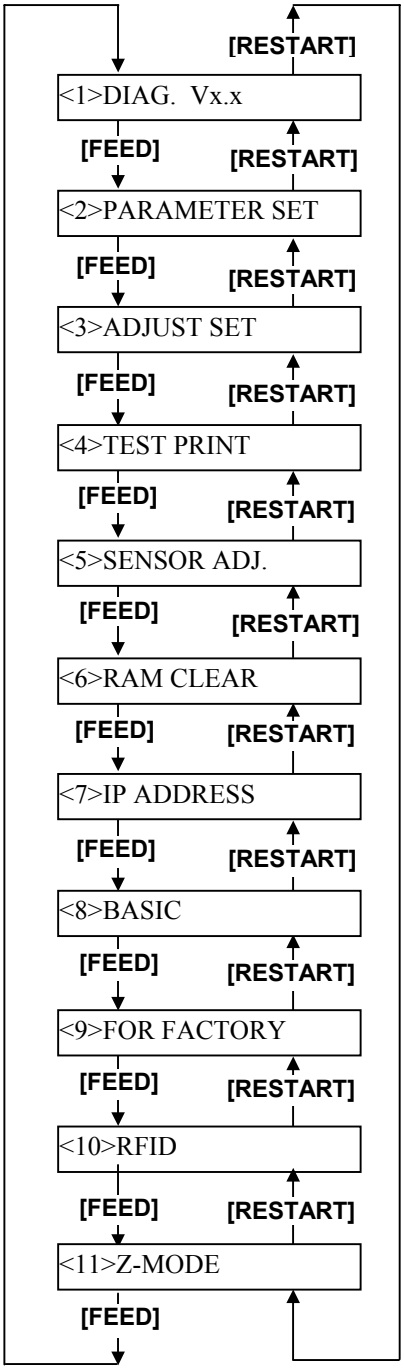
NOTE: *Use the **[RESTART]** key to resume printing after a pause condition, or after clearing an error.*

5.2 OVERVIEW

System Mode consists of nine main menus: Self-Diagnostic Test, Parameter Setting, Printer Parameter Fine Adjustment, Test Print, Sensor Adjustment, RAM Clear, IP Address Setting, Basic Setting, and Factory Mode.

While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until "<1>DIAG. Vx.x" message appears on the display.

When a system mode password has been set, the password prompt display will appear first. Enter a correct password to enter the system mode. For details, refer to Section 5.4.31.



This is the start of the Self-Diagnostic Test menu.

This is the start of the Parameter Setting menu.

This is the start of the Printer Parameter Fine Adjustment menu.

This is the start of the Test Print menu.

This is the start of the Sensor Adjustment menu.

This is the start of the RAM Clear menu.

This is the start of the IP Address Setting menu.

This is the start of the Basic Setting menu.

This is the start of the Factory Mode menu.

This is the start of the RFID Setting menu.

This is the start of the Z-Mode menu.

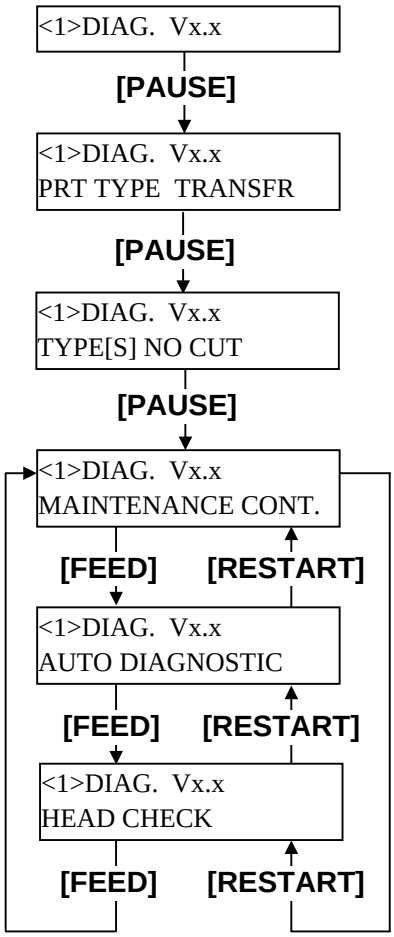
NOTES: *1. System Mode menus can be selected with the **[RESTART]** or **[FEED]** key.*
*2. Pressing the **[PAUSE]** key allows you to enter the sub menus of each System Mode menu. Flowcharts of each menu's sub menus are provided on the following pages.*
3. "x.x" of "DIAG. Vx.x" indicates firmware version and revision.

5.3 SELF-DIAGNOSTIC TEST

■ **Outline of Self-Diagnostic Test**

In the Self-Diagnostic Test mode ,the printer checks and prints out the printer system information such as the sensor or interface, and the Maintenance Counter. Also it makes the print head broken element check.

The **Self-Diagnostic Test** contains the following sub menus:



Selection of the printing mode.

Selection of the dispensing mode.

Prints out the Maintenance Counter /Parameter Settings.

Performs a Self-Diagnostic Test, and prints out the result.

Checks to see if there is any problem with the print head.

NOTE: *Use the **[FEED]** or **[RESTART]** key to select a desired option.*

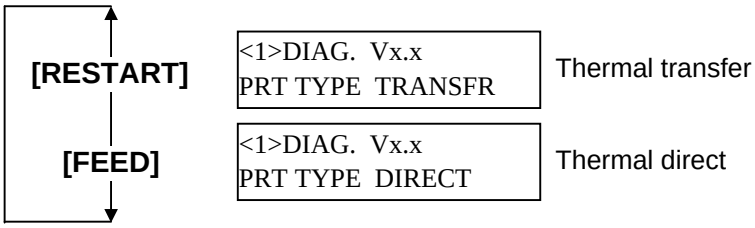
While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" message appears in the display.

<1>DIAG. Vx.x

***NOTE**: When a system mode password has been set, the password prompt display will appear first. Enter a correct password to enter the system mode. For details, refer to Section 5.4.31.*

5.3.1 Printing Mode Selection

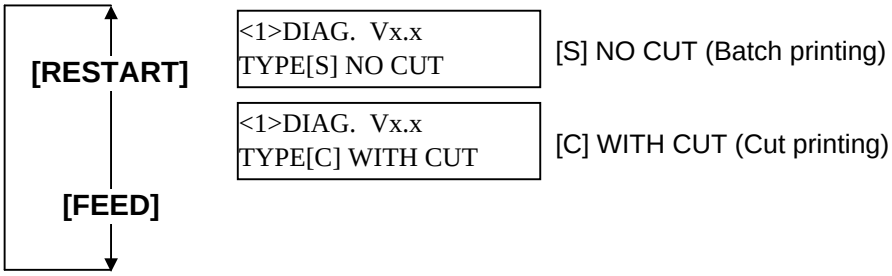
Press the **[PAUSE]** key. The type of printing mode can be selected:
"TRANSFR" (Thermal transfer) or "DIRECT" (Thermal direct).
After selecting the printing mode to be used, press the **[PAUSE]** key.



NOTE: *When using the ribbon, be sure to select "Thermal Transfer". When using the thermal media, be sure to select the "Thermal Direct".*

5.3.2 Dispensing Mode Selection

When "TYPE[S] NO CUT" is displayed, press the **[PAUSE]** key. The type of dispensing mode can be selected:
"[S] NO CUT" (Batch printing), "[C] WITH CUT" (Cut printing) or "[H] PEEL OFF" (Strip printing).
After selecting the dispensing mode to be used, press the **[PAUSE]** key.



NOTE: *When using the cutter module, be sure to select "[C] WITH CUT". When using neither cutter module nor strip module, be sure to select "[S] NO CUT".*

5.3.3 Maintenance Counter/Parameter Settings Print Out

The printer is ready to print out the Maintenance Counter/Parameter Settings. Press the **[PAUSE]** key to start.

```
<1>DIAG.  Vx.x
MAINTENANCE CONT
```

The printer starts printing out the Maintenance Counter/Parameter Settings. During printing, the message below appears on the display.

```
<1>DIAG.  Vx.x
CHECKING & PRINT
```

After printing is completed, the display returns to "<1>DIAG. Vx.x".

• **Print Sample**

"MAIN4-R" is printed for V5.0 or later. →

(1)	TOTAL FEED		1.1km	MAIN4-R [QQ]	
(2)	FEED		1.1km		
(3)	PRINT		0.5km		
(4)	CUT		96		
(5)	HEAD U/D		32		
(6)	RIBBON		3h		
(7)	SOLENOID		0h		
(8)	232C ERR		255		
(9)	SYSTEM ERR		0		
(10)	POWER FAIL		0		
	[PC]		[KEY]		
(11)	FEED	+2.0mm	FEED	+0.0mm	
(12)	CUT	+0.0mm	CUT	+1.0mm	
(13)	BACK	+0.0mm	BACK	+0.0mm	
(14)	TONE(T)	+0 step	TONE(T)	+0 step	
(15)	TONE (D)	+0 step	TONE(D)	+0 step	
(16)	RBN(FW)	-10	RBN (FW)	-8	
(17)	RBN (BK)	+0	RBN (BK)	+0	
(18)	X ADJ.	+0.0mm			
(19)	THRESHOLD (R)		1.0V		
(20)	THRESHOLD (T)		1.4V		
(21)	FONT		[PC-850] [0]		
(22)	SPEED		[9600]		
(23)	DATA LENG.		[8]		
(24)	STOP BIT		[1]		
(25)	PARITY		[EVEN]		
(26)	CONTROL		[XON+READY AUTO]		
(27)	MESSAGE		[ENGLISH]		
(28)	FORWARD WAIT		[ON]+0.0mm	[MODE 1]	
(29)	HU CUT/RWD.		[OFF]		
(30)	RIBBON SAVE		[ON: TAG] [TYPE2]		
(31)	CODE		[AUTO]		
(32)	PEEL OFF STATUS		[ON]		
(33)	FEED KEY		[FEED]		
(34)	KANJI		[TYPE1]		
(35)	EURO CODE		[B0]		
(36)	AUTO HD CHK		[OFF]		
(37)	ACK/BUSY		[TYPE1]		
(38)	WEB PRINTER		[OFF]		
(39)	INPUT PRIME		[ON]		
(40)	RIBBON NEAR END		[OFF]		
(41)	EX. I/O MODE		[TYPE1]		
(42)	CENTRO MODE		[SPP]		
(43)	PLUG & PLAY		[OFF]		

```
                                                                                
(44) LBL/RBN END              [TYPE1]
(45) PRE PEEL OFF             [OFF]
(46) BACK SPEED               [STD]
(47) MAXI CODE SPEC.          [TYPE1]
(48) THERMAL HEAD             [V2 HEAD]
(49) PRTR IP ADDRESS          [192.168.010.020]
(50) GATE IP ADDRESS          [000.000.000.000]
(51) SUBNET MASK              [255.255.255.000]
(52) TTF AREA                 [640KB]
(53) EXT CHR AREA             [128KB]
(54) BASIC AREA               [  64KB]
(55) PC SAVE AREA             [  64KB]
(56) SOCKET PORT              [OFF][08000]
(57) BASIC                    [OFF]
(58) BASIC TRACE              [OFF]
(59) DHCP                     [OFF]
(60) DHCP ID                  [FFFFFFFFFFFFFFFFFFFF]
                              [FFFFFFFFFFFF]
(61) ESS ID                   [SymbolAP                ]
                              [                        ]
(62) CONNECTION               [INFRASTRUCTURE]
(63) CHANNEL                  [01]
(64) AUTH                     [OPEN SYSTEM]
(65) WEP                      [OFF]
(66) WEP TYPE                 [40bit]
(67) SEND KEY                 [1]
(68) WEP KEY #1               [10111213141516171819 1A1B1C]
(69) WEP KEY #2               [20212223242526272829 2A2B2C]
(70) WEP KEY #3               [30313233343536373839 3A3B3C]
(71) WEP KEY #4               [40414243444546474849 4A4B4C]
(72) RFID MODULE              [U1]
(73) RFID TAG TYPE            [NONE ]
(74) RFID ERR CHECK           [PASS]  [ON]  [ON]
(75) RFID RETRY               [  3]
(76) RFID RD CYCLE            [  5] [2.0sec]
(77) RFID WT CYCLE            [  5] [2.0sec]
(78) RFID ADJ RETRY           [+00mm]
(79) RFID POWER LEV           [251]
(80) RFID AGC THR.            [0]
(81) RFID CHANNEL             [AUTO]
(82) RFID Q VAL               [2]
(83) RFID WT AGC              [11]
(84) RFID AGC MIN             [11]
(85) RFID WT OK TAGS          0
(86) RFID VOID PRINT TAGS     0
(87) SYSTEM PASSWORD          [OFF]
(88) LAN                      [OFF]
(89) XML SPEC.                [STD]
```

The number of digits to display has been increased to 4 from V5.0/X5.0/C5.0.

Only V4.4 or late, except V4.4A →

V4.4A, Xx.x only →

NOTE: *Print conditions:*
Preset count: 1, Print speed: 6"/sec. (B-SX4T) or 5"/sec. (B-SX5T), Sensor: No sensor, Printing mode: Thermal transfer, Media length: 288 mm, Issue mode: Batch printing

• Descriptions of the Maintenance Counter

#	Item	Count Condition	Range
(1)	Total media distance covered	Counted when the feed motor drives to feed, print and issue the media. (Counted also during ribbon saving operation and back feed.) See ***NOTE 6***.	0.0 to 3200.0 km
(2)	Media distance covered		0.0 to 3200.0 km
(3)	Print distance	Counted while printing. (back feed is not counted.) See ***NOTE 2***.	0.0 to 200.0 km
(4)	Cut count	Counts every cut. See ***NOTE 3***.	0 to 1000000 times
(5)	Print head up and down count	Counts every up and down of the print head using the solenoid for ribbon save operation. (Up + down = 1 count) See ***NOTE 3***.	0 to 2000000 times
(6)	Ribbon motor driving time	Counts when the ribbon motor drives to feed, print and issue the media. (The driving time is not counted during ribbon saving operation, but is during back feed.) See ***NOTE 4***.	0 to 2000 hours
(7)	Solenoid driving time	Counted during ribbon saving operation. See ***NOTE 4***.	0 to 1000 hours
(8)	RS-232C hardware error count	Counted when a parity, overrun or framing error occurs. See ***NOTE 5***.	0 to 255 times
(9)	System error count	Counted when any error occurs.	0 to 15 times
(10)	Momentary power failure count	Counts the number of times the power restores while the CPU is busy after reset.	0 to 15 times
(85)	Number of successful RFID write	Counts when an RFID write has succeeded.	0 to 9999999 times
(86)	Number of failure in RFID write	Counts when an RFID write has failed.	0 to 9999999 times

NOTES:
1. *Item from (2) through (10) are initialized to "0" after RAM clear.*
2. *If the print distance is 8.2m or less (B-SX4T) or 5.5m or less (B-SX5T), it is rounded down and no data is added to the memory at power off.*
3. *If the count is 31 or less, it is rounded down and no data is added to the memory at power off.*
4. *If the driving time is 32 sec. or less (B-SX4T) or 27sec. or less (B-SX5T), it is rounded down and no data is added to the memory at power off.*
5. *When a sent command results in an error, the same number as the data capacity of the command is counted by byte.*
6. *If the media distance covered is 50.0 cm or less, it is rounded down and no data is added to the memory at power off.*

• Descriptions of the Parameters

#	Item	Contents
(11)	Feed length fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm *(See NOTE below.)*
(12)	Cut/strip position fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm *(See NOTE below.)*
(13)	Back feed length fine adjustment (PC), (KEY)	-9.9 mm to +9.9 mm (PC) -9.5 mm to +9.5 mm (Key)*(See NOTE below.)*
(14)	Print tone fine adjustment (Thermal transfer), (PC), (KEY)	-10 step to +10 step
(15)	Print tone fine adjustment (Thermal direct), (PC), (KEY)	-10 step to +10 step
(16)	Ribbon take-up motor driving voltage fine adjustment (PC), (KEY)	-15 step to +0 step
(17)	Ribbon feed motor driving voltage fine adjustment (PC), (KEY)	-15 step to +0 step
(18)	X axis fine adjustment	-99.5 mm to +99.5 mm
(19)	Threshold manual fine adjustment for the black mark sensor	0.0V to 4.0V
(20)	Threshold manual fine adjustment for the feed gap sensor	0.0V to 4.0V
(21)	Character	PC-850 PC-851 PC-1252 LATIN9 PC-852 PC-855 PC-1253 Arabic PC-857 PC-1250 PC-1254 PC-8 PC-1251 PC-1257

#	Item	Contents
(22)	Baud rate	2400: 2400 bps 38400: 38400 bps 4800: 4800 bps 115200: 115200 bps 9600: 9600 bps 19200: 19200 bps
(23)	Data length	7: 7 bits 8: 8 bits
(24)	Stop bit length selection	1: 1 bit 2: 2 bits
(25)	Parity	NON: None ODD: ODD EVEN: EVEN
(26)	Transmission control code	XON/XOFF: XON/XOFF READY/BUSY: READY/BUSY (DTR) XON+READY AUTO: XON/XOFF+READY/BUSY (DTR) XON/XOFF AUTO: XON/XOFF READY/BUSY RTS: RTS

***NOTE**: Since the resolution of the B-SX4T's print head is 8 dots/mm, setting the fine adjustment value to "X.2mm" and "X.3mm" will become the same result. Therefore, "X.3mm" will be printed regardless of "X.2 mm" settings. In the same way, "X.7mm" setting will be printed as "X.8mm".*

#	Item		Contents
(27)	Language selection for LCD message		ENGLISH: English GERMAN: German FRENCH: French DUTCH: Dutch SPANISH: Spanish JAPANESE: Japanese ITALIAN: Italian
(28)	Auto forward wait		ON: Available OFF: Unavailable ***NOTE:** The stop position fine adjustment value is also printed out.*
	Mode selection		MODE 1: Stops after 13.7-mm feed. MODE 2: Stops after 6-mm back feed and 3-mm forward feed. (Only when the cut mode, thermal transfer, and feed gap sensor are selected.) In other cases, the printer stops after 13.7-mm feed.
(29)	Head up on in cut mode		ON: Available OFF: Unavailable
	Rewinder selection		ON: Rewinder is used. OFF: Rewinder is not used.
(30)	Ribbon saving module	Ribbon saving function ON/OFF	ON (TAG): Available (When the Head Lever is set to "(2) TAG".) ON (LBL): Available (When the Head Lever is set to "(1) LABEL".) OFF: Unavailable
		Solenoid type selection	TYPE1: TDS-12C TYPE2: TDS-16A (Stronger pull force type)

#	Item		Contents
(31)	Transmission control code selection		AUTO: Automatic selection ESC LF NUL: ESC LF NUL mode { | }: Mainframe mode xx xx xx: Optional code (The values are given in HEX.)
(32)	Strip wait status selection		ON: Available OFF: Unavailable
(33)	Feed key function		FEED: Feeds one label PRINT: Prints image buffer on one label
(34)	Kanji code type (Not supported QQ/QP models)		TYPE 1: Windows code TYPE 2: Original code
(35)	Euro font code		20H to FFH
(36)	Auto print head broken element check		ON: Available OFF: Unavailable
(37)	Centronics interface ACK/BUSY timing setting		TYPE1: The timing of ACK signal going up matches with that of the release of BUSY status. TYPE2: The timing of ACK signal going down matches with that of the release of BUSY status.
(38)	Web printer function		ON: Available OFF: Unavailable
(39)	Input prime selection (Reset operation when $\overline{\text{INIT}}$ signal is ON)		ON: Available OFF: Unavailable
(40)	Ribbon near end detect setting		30m: Near end is detected when the remains of the ribbon is 30m long. 70m: Near end is detected when the remains of the ribbon is 70m long. OFF: Near end is not detected.
(41)	Expansion I/O interface operating mode		TYPE1: Standard mode TYPE2: Inline mode
(42)	Centronics interface operating mode		SPP: Compatible mode ECP: ECP mode
(43)	Plug & Play setting		ON: Available OFF: Unavailable
(44)	Print processing setting at the label/ribbon end detection		TYPE1: Printing is paused in the middle of printing. TYPE2: Printing is paused after the label is issued.
(45)	Pre-Strip setting		ON: Available OFF: Unavailable
(46)	Back Feed Speed setting		STD: 3”/second LOW: 2”/second
(47)	MAXI code specification selection		TYPE1: Compatible with the current version TYPE2: Special specification
(48)	Print head type selection	B-SX4T series	V1: TPH104R2, V2: TPH104R7 or equivalent
		B-SX5T series	V1: TPH128R4, V2: TPH128R5 or equivalent
(49)	Printer IP address		***.***.***.***
(50)	Gateway IP address		***.***.***.***
(51)	Subnet mask		***.***.***.***

#	Item	Contents
(52)	True type font registration area size	Firmware Version V4.x/X4.x/C4.x or earlier: 0 KB to 896 KB (in units of 64 KB) Firmware Version V5.0/X5.0/C5.0 or later: 0 KB to 3072 KB (in units of 64 KB)
(53)	External character registration area size	Firmware Version V4.x/X4.x/C4.x or earlier: 0 KB to 896 KB (in units of 64 KB) Firmware Version V5.0/X5.0/C5.0 or later: 0 KB to 3072 KB (in units of 64 KB)
(54)	BASIC file store area size	Firmware Version V4.x/X4.x/C4.x or earlier: 0 KB to 896 KB (in units of 64 KB) Firmware Versioni V5.0/X5.0/C5.0 or later: 0 KB to 3072 KB (in units of 64 KB)
(55)	PC saving area size	Firmware Version V4.x/X4.x/C4.x or earlier: 0 KB to 896 KB (in units of 64 KB) Firmware Version V5.0/X5.0/C5.0 or later: 0 KB to 3072 KB (in units of 64 KB)
(56)	Socket port number	ON: Available OFF: Unavailable Port No. 0 to 65535
(57)	BASIC interpreter setting	ON: Available OFF: Unavailable
(58)	BASIC interpreter trace setting	ON: Available OFF: Unavailable
(59)	DHCP function setting	ON: Available OFF: Unavailable
(60)	DHCP ID setting	Max. 16 characters
(61)	ESS ID (ESS ID for wireless LAN)	Max. 32 characters
(62)	CONNECTION (Wireless LAN connecting method)	INFRASTRUCTURE: Infrastructure mode ADHOC: Adhoc mode
(63)	CHANNEL (Channel No. setting to connect wireless LAN)	Channel No. 00 to 14
(64)	AUTH (Wireless LAN authorization method)	OPEN SYSTEM: Open system method SHARED KEY: Shared key method
(65)	WEP (Wired Equivalent Privacy) (Wireless LAN coding setting)	ON: Available OFF: Unavailable
(66)	WEP TYPE (Wireless LAN coding key setting)	40 bits: 40-bit coding key 128 bits: 128-bit coding key
(67)	SEND KEY(Wireless LAN coding key No. at the data sending)	1 to 4
(68)	WEP KEY #1 (Wireless LAN coding key No.1)	13 bytes fixed (Only the top 5 bytes are valid for 40-bit coding key.)
(69)	WEP KEY #2 (Wireless LAN coding key No.2)	13 bytes fixed (Only the top 5 bytes are valid for 40-bit coding key.)
(70)	WEP KEY #3 (Wireless LAN coding key No.3)	13 bytes fixed (Only the top 5 bytes are valid for 40-bit coding key.)
(71)	WEP KEY #4 (Wireless LAN coding key No.4)	13 bytes fixed (Only the top 5 bytes are valid for 40-bit coding key.)
(72)	RFID module type	NONE: No RFID kit is installed. U1: B-SA704-RFID-U1-EU/US/EU-R H1: B-SA704-RFID-H1-QM H2: B-SX704-RFID-H2 U2: U2: B-SX704-RFID-U2(-EU/US/CN/AU-R)
(73)	RFID tag type	NONE 11: I-Code 12: Tag-it 13: C220 14: ISO15693 15: C210 16: C240 21: EPC C0 22: EPC C1 23: ISO18000-6B 24: EPC C1 Gen2

#	Item	Contents
(74)	RFID error tag detection	OFF: An error tag detection is not performed. EPC: RFID error tag detection for EPC area data PASS: RFID error tag detection for access password area data (only when using a Gen2 tag) When PASS is selected, the following settings are subsequently displayed: Password setting to protect error tag detection ON: Enabled OFF: Disabled Automatic unlock function setting ON: Enabled OFF: Disabled
(75)	Maximum number of RFID issue retries	0 to 255
(76)	Maximum number of RFID read retries RFID read retry time-out	0 to 255 0 sec. to 9.9 sec.
(77)	Maximum number of RFID write retries RFID write retry time-out	0 to 255 0 sec. to 9.9 sec.
(78)	RFID adjustment for retry	-99 mm to +99 mm
(79)	RFID wireless power level setting	0 to 255 (for the B-9704-RFID-U1-US/EU(-R)) 18 to 26 (for the B-SX704-RFIDU2) 9 to 18 (for B-SX704-RFID-U2-EU/US/CN/AU-R)
(80)	RFID AGC Threshold Setting	0 to 15
(81)	RFID Channel Setting	Auto, 2ch to 8ch
(82)	RFID Q VAL (Q value)	0 to 5
(83)	RFID WT AGC (AGC threshold for data write)	0 to 15
(84)	RFID WT MIN AGC (AGC threshold lower limit for retry	0 to 15
(87)	System mode password setting	OFF: Password is not asked to enter the system mode. ON: Password is asked to enter the system mode.
(88)	LAN Setting	ON: Available OFF: Unavailable
(89)	XML SPEC (XML function setting), Supported only by V4.4A, Xx.x)	STD: Standard specification ORACLE: Specification for Oracle

5.3.4 Self-Diagnostic Test and Result Print Out

When the Maintenance Counter/Parameter Settings is printed, the message returns to "<1>DIAG. Vx.x". Press the **[PAUSE]** key twice.

The Self-Diagnostic Test is ready. Press the **[PAUSE]** key to start.

```
<1>DIAG. Vx.x
AUTO DIAGNOSTIC
```

The printer starts printing out the Self-Diagnostic Test, and prints out the result. During printing, the message below appears on the display.

```
<1>DIAG. Vx.x
CHECKING & PRINT
```

After printing is completed, the display returns to "<1>DIAG. Vx.x".

NOTE: *If an error occurs, an error message appears, and the printer stops printing. After clearing the error, press the **[PAUSE]** key to return the display to "<1>DIAG.Vx.x". The printer does not restart printing automatically.*

• Print Sample

```
(1)  PROGRAM      B-SX4T 7FM00226000
                  MAIN 01DEC2002 V1.0A: 1A00
                  BOOT 16DEC2002 V1.0:  8500
(2)  FONT         5600
(3)  KANJI        NONE: 0000
                  NONE: 0000
(4)  EEPROM       OK
(5)  SDRAM        8MB
(6)  CARD         SLOT1   ATA
                  SLOT2   LAN
(7)  SENSOR1      00000000, 00000000
(8)  SENSOR2      [H]20°C [A]22°C [S]25°C
                  [R]4.2V [T]2.5V [E]2.7V
                  [RANK]7
(9)  EXP.I/O      NG
(10) EX.232C      NG
(11) RFID         OK  #00RV972 (EU0)  R01
     BASIC M Z-SX4-MV10F. V1.0F:7479
     BASIC S Z-SX4-SV10E. V1.0E:AD36
```

When the firmware version of the MAIN PC Board is V4.1:xx00 or later, drawing number for the software is not printed.

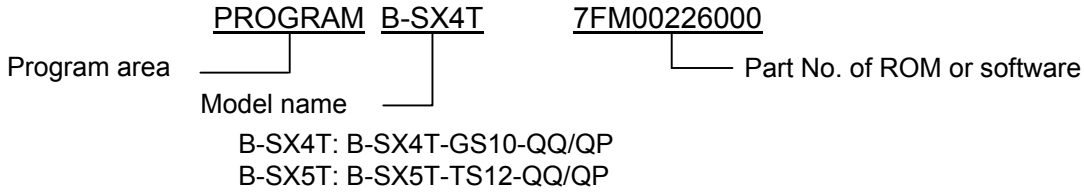
When the MAIN PC Board type is the PWA-SX MAIN2 (Part No.: 7FM00503x00), the heat sink sensor status is not printed.

The BASIC program file name and system mode file name are printed only when the firmware version is C5.3 or greater. (Version Cx.x only.)

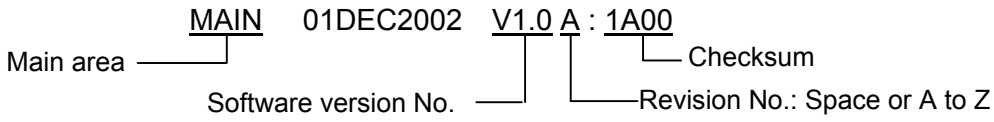
NOTES:
1. *Print conditions: Preset count: 1, Print speed: 6"/sec. (B-SX4T) or 5"/sec. (B-SX5T), Sensor: No sensor, Printing method: Thermal transfer, Supply length: 87 mm, Issue mode: Batch printing*
2. *Software version No., Part No. of ROM and checksum vary according to the software version of PROGRAM ROM.*
3. *The last two digits of the checksum are usually "00".*
4. *When Kanji ROM is not installed, the checksum becomes "0000".*
5. *The symbol "°" of "°C" may not be printed depending on the type of character code.*
6. *When the Main program version is V4.1 or greater, the part number of the firmware is not printed.*
7. *In the case the printer firmware version is C5.3 or greater, a BASIC program file name and system mode program file name are printed. When the first 4 letters of the each program file name are "Z-SX", the checksum will be also printed.*

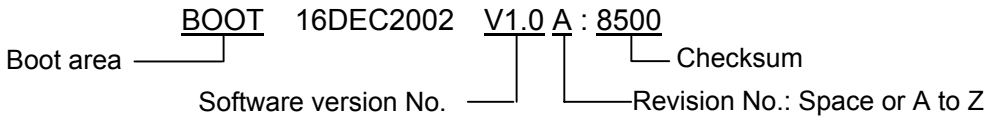
• Descriptions

(1) Program ROM Check (Model Name, Date, Version, Part number, Checksum)

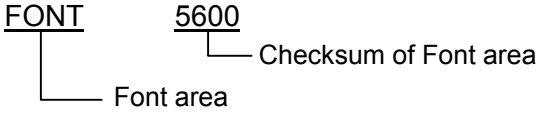


B-SX4T: B-SX4T-GS10-QQ/QP
B-SX5T: B-SX5T-TS12-QQ/QP

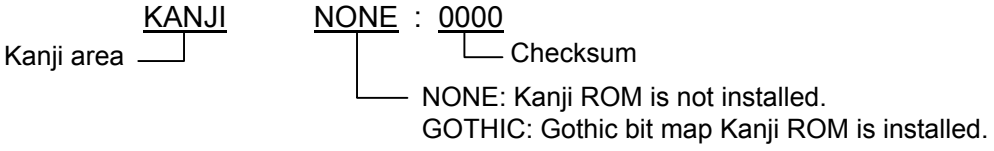


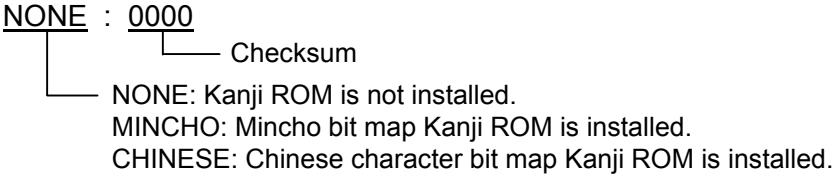


(2) Alphanumeric Font ROM Check

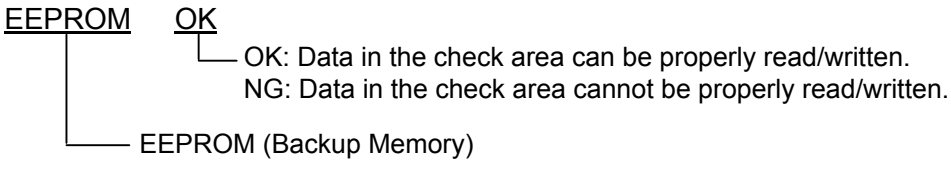


(3) Kanji ROM Check

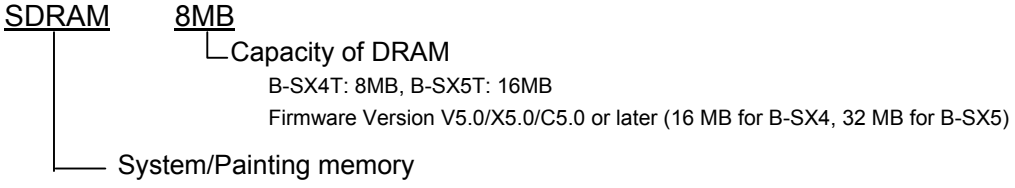




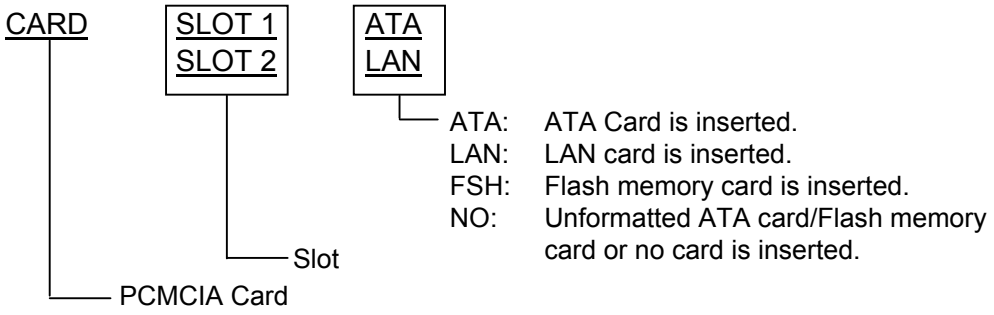
(4) EEPROM Check



(5) SDRAM Capacity

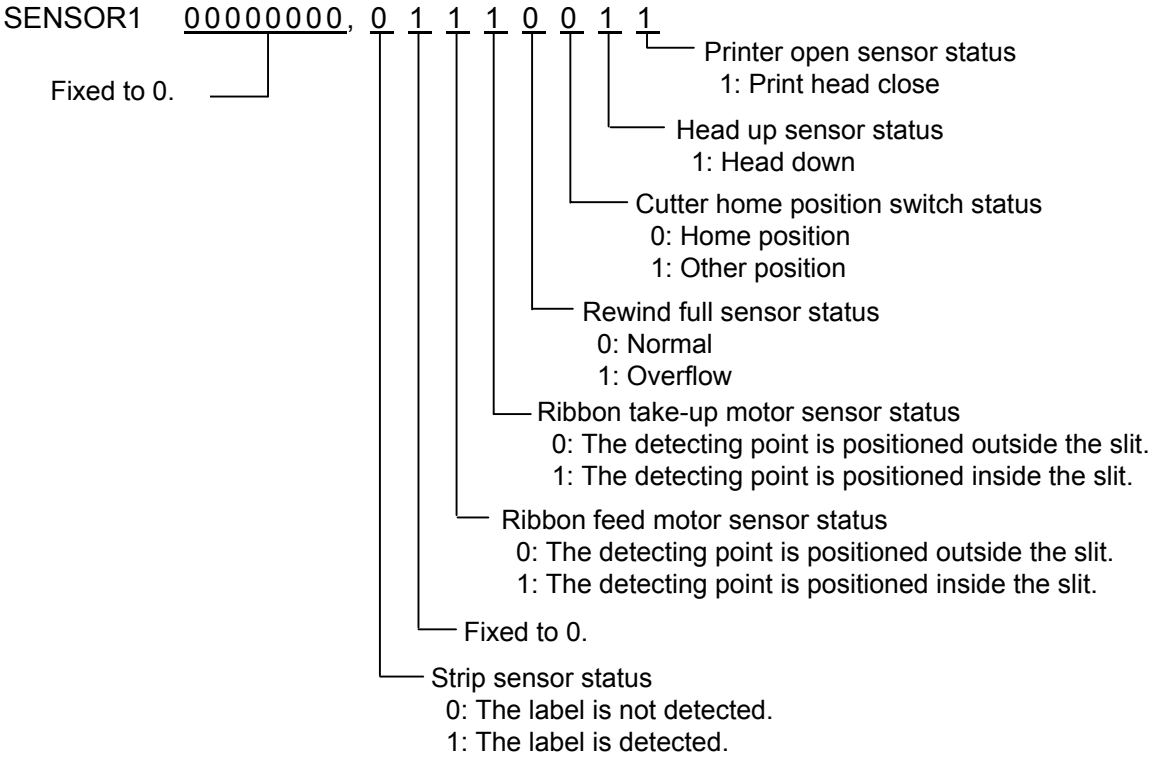


(6) PC Card Slot Check



(7) Sensor 1 Check

The status of the Strip Sensor, Ribbon Feed Motor Sensor, Ribbon Take-up Motor Sensor, Rewind Full Sensor, Cutter Home Position Switch, Head Up Sensor, and Printer Open Sensor are printed.



Sensor/Switch	Print status content description
Printer open sensor	Detects the Open or Close status of the print head block. When the print head block is closed, printing is performed.
Head up sensor	Detects the Up or Down status of the print head. When the print head is down, printing is performed.
Cutter home position switch	Indicates whether or not the cutter is at the home position.
Rewind full sensor	Detects the amount of the rewound backing paper in strip printing mode. If the amount overflows the capacity, printing cannot be performed.
Ribbon take-up motor sensor Ribbon feed motor sensor	Controls ribbon motor rotation by detecting the slit on the ribbon take-up motor and the ribbon feed motor. Indicates the position of the slit sensor.
Strip sensor	Detects whether or not the label is at the paper outlet in strip printing mode. When the label is not detected, the printer feeds the label at the print start position.

(8) Sensor 2 Check

The status of the Print Head Thermistor, Environmental Temperature Thermistor, Heat Sink Thermistor, Black Mark Sensor, Feed Gap Sensor, and Ribbon End Sensor are printed.

SENSOR2 [H]20°C [A]22°C [S]25°C [R]4.2V [T]2.5V [E]2.7V

- [E]: Ribbon end sensor status: 0.0 – 5.0V
- [T]: Feed gap sensor status: 0.0 – 5.0V
- [R]: Black mark sensor status: 0.0 – 5.0V
- [S]: Heat sink thermistor status (See NOTE.): 25°C, 80°C, 90°C
- [A]: Environmental temperature thermistor status: 0 - 86°C. If it is undetectable, "--°C " is printed.
- [H]: Print head thermistor status: 0°C - 86°C

[RANK] 7

- [RANK]: Print head resistance rank: 0 – 15

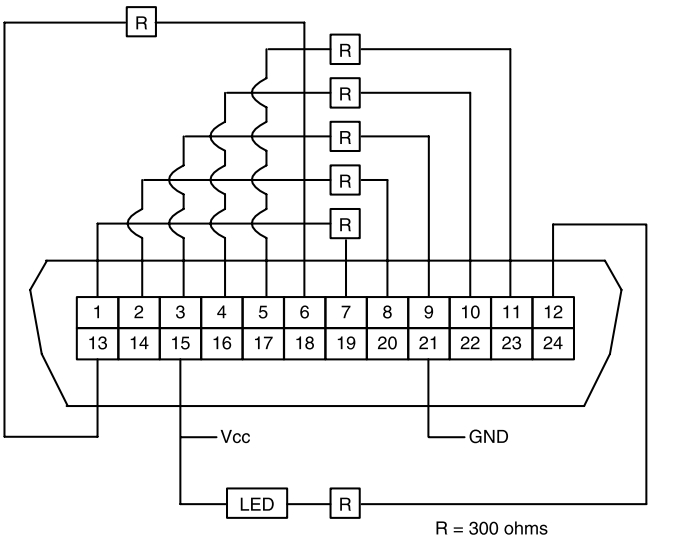
***NOTE**: When the MAIN2 PC board is installed in the printer, Heat sink thermistor status will not be printed. (B-SX4T with the serial number of 3T311411 or later, and B-SX5T with the serial number of 3Wxxxxxx or later.)*

Print Head Resistance Rank	B-SX4T Average Resistance (ohm)	B-SX5T Average Resistance (ohm)
0	748 ~ 758	1100~ 1116
1	759 ~ 770	1117 ~ 1133
2	771 ~ 782	1134 ~ 1150
3	783 ~ 794	1151 ~ 1168
4	795 ~ 806	1169 ~ 1185
5	807 ~ 818	1186 ~ 1203
6	819 ~ 831	1204 ~ 1222
7	832 ~ 843	1223 ~ 1240
8	844 ~ 856	1241 ~ 1259
9	857 ~ 869	1260 ~ 1279
10	870 ~ 883	1280 ~ 1298
11	884 ~ 896	1299 ~ 1318
12	897 ~ 910	1319 ~ 1338
13	911 ~ 924	1339 ~ 1358
14	925 ~ 938	1359 ~ 1379
15	939 ~ 952	1380 ~ 1400

(9) Expansion I/O Interface Check

EXP.I/O OK
- Loopback test
  OK: The circuit has no problem.
  NG: The circuit has a problem or loopback jig is not attached.
- Expansion I/O PC board

Connect the jig like below to the Expansion I/O PC board's connector and perform a loop back check.

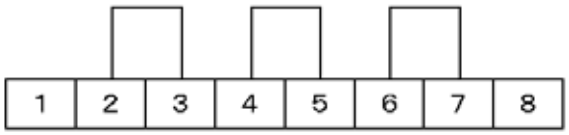


R = 300 ohms
Connector: FCN-781P024-G/P

(10) Internal Serial Interface Check

EX.232C NG
- OK: The circuit has no problem.
  NG: The circuit has a problem or loopback jig is not attached.
- Internal Serial Interface

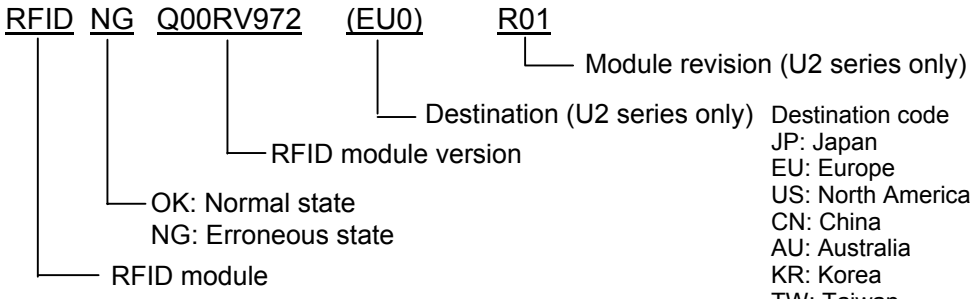
Connect the jig like below to the serial interface connector and perform a loop back check.



Connector: DF3-8S-2C
Contact: DF3-2428SCF

(11) RFID module check

Before performing this check, RFID module setting needs to be done. (Refer to Section 5.11.)



Module revisions and corresponding countries

B-SX704-RFID-U2-US-R

Revision	Country
R00	US
R01	US, AU, KR, TW

B-SX704-RFID-U2-EU-R

Revision	Country
R00	EU

B-SX704-RFID-U2-R

Revision	Country
R00	JP

5.3.5 Print Head Element Check

When the Self-Diagnostic Test result is printed, the message returns to "<1>DIAG. Vx.x". Press the **[PAUSE]** key three times and **[FEED]** key twice.

The printer is ready to check the print head to see if there is any problem with the print head. Press the **[PAUSE]** key to start.

```
<1>DIAG.  Vx.x
HEAD CHECK
```

The printer starts checking the print head.

```
<1>DIAG.  Vx.x
CHECKING
```

If there is no problem with the print head, the print head check is complete. Press the **[PAUSE]** key to return to "<1>DIAG. Vx.x".

```
<1>DIAG.  Vx.x
NORMAL END
```

If there is a problem with the print head, the following message is displayed.

```
<1>DIAG.  Vx.x
HEAD ERROR
```

Press the **[PAUSE]** key to return to "<1>DIAG. Vx.x".

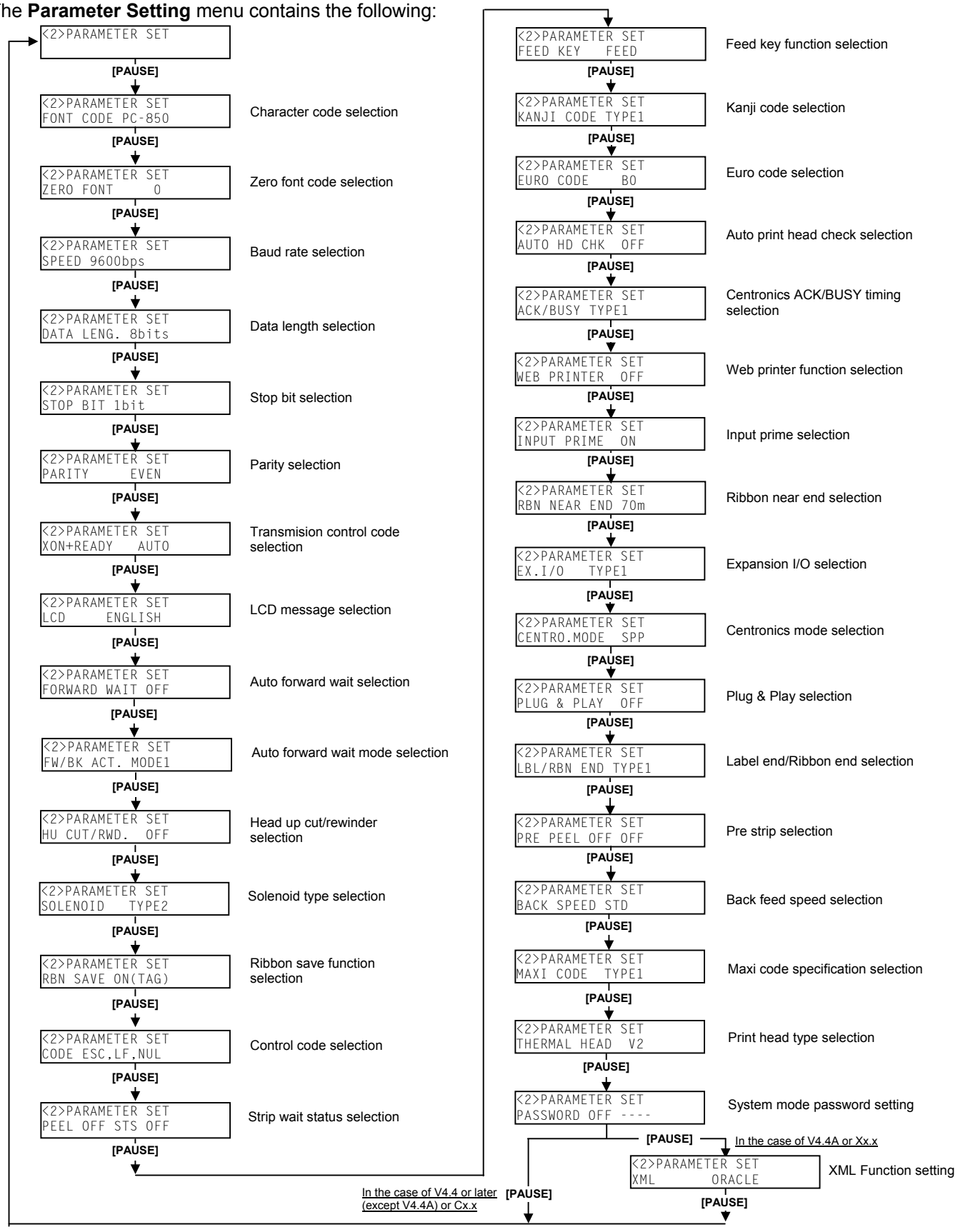
NOTES: *1. Make sure that the Top Cover is closed before starting the print head check.*
2. If "HEAD ERROR" appears, the print head element may be damaged. Replace the print head.
3. The print head element check can be performed at the power on time.
For selecting this function, refer to Section 5.4 Parameter Setting.

5.4 PARAMETER SETTING

■ Outline of Parameter Setting

In the Parameter Setting mode, various kinds of parameters, such as communication, key, LCD, etc. can be set. This will allow the use of the printer to comply with your operating conditions.

The **Parameter Setting** menu contains the following:



NOTE: *Baud rate, Data length, Parity, and Transmission control code should be set to the same values as those of the host computer. Failure to do this causes improper operation.*

While pressing the **[FEED]** and the **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" message appears.

```
<1>DIAG.   Vx.x
```

Press the **[FEED]** key. The printer is at the start of the Parameter Setting menu.

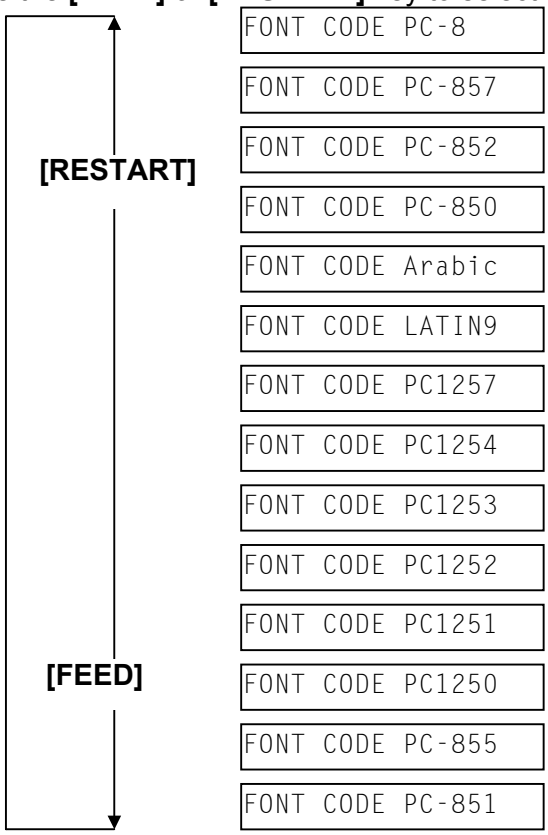
```
<2>PARAMETER SET
```

5.4.1 Character Code Selection

With this parameter you can select a character font code. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key.

```
<2>PARAMETER SET
FONT CODE PC-850
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the character code, press the **[PAUSE]** key.

NOTES: *1. When pressing the **[FEED]** and **[RESTART]** keys at the same time in the parameter setting, the message returns to "<2>PARAMETER SET".*

*2. If holding the **[FEED]** or **[RESTART]** key for 0.5 seconds or longer in the parameter setting the key is entered continuously.*

*3. A changed parameter becomes enabled by pressing the **[PAUSE]**.*

Example: Character code table

Printable characters depend on the fonts. The fonts of the following characters are Times New Roman, Helvetica, Letter Gothic, Prestige Elite, Courier, and Gothic 725 Black

PC-850

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	∈		ð	Ó	–
1			!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2			"	2	B	R	b	r	é	Æ	ó			Ê	Ô	=
3			#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4			$	4	D	T	d	t	ä	ò	Ñ			È	õ	¶
5			%	5	E	U	e	u	à	ò	Ñ	Á		ı	Õ	§
6			&	6	F	V	f	v	å	û	¬	Â	Ã	Í	µ	÷
7			'	7	G	W	g	w	ç	ù	∧	À	Ã	Î	þ	¸
8			(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9			)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A			*	:	J	Z	j	z	è	Ü	¬				Û	·
B			+	;	K	[	k	{	ï	ø	½				Ù	¹
C			,	<	L	\	l	|	î	£	¼				ý	³
D			-	=	M	]	m	}	ì	Ø	¡	¢		¦	Ý	²
E			.	>	N	^	n	~	Ä	×	«	¥		Ì	—	■
F			/	?	O	_	o	▒	Å	ƒ	»		¤		´	

PC-8

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	∈			α	≡
1			!	1	A	Q	a	q	ü	æ	í				ß	±
2			"	2	B	R	b	r	é	Æ	ó				Γ	≥
3			#	3	C	S	c	s	â	ô	ú				π	≤
4			$	4	D	T	d	t	ä	ò	ñ				Σ	⌠
5			%	5	E	U	e	u	à	ò	Ñ				σ	⌡
6			&	6	F	V	f	v	å	û	¬				µ	÷
7			'	7	G	W	g	w	ç	ù	∧				τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿				Φ	°
9			)	9	I	Y	i	y	ë	Ö	•				Θ	•
A			*	:	J	Z	j	z	è	Ü	¬				Ω	·
B			+	;	K	[	k	{	ï	¢	½				δ	√
C			,	<	L	\	l	|	î	£	¼				∞	η
D			-	=	M	]	m	}	ì	¥	¡				φ	²
E			.	>	N	^	n	~	Ä	Pt	«				ε	■
F			/	?	O	_	o	▒	Å	ƒ	»				∩	

PC-852

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	∈			Ó	–
1			!	1	A	Q	a	q	ü		í			Đ	ß	
2			"	2	B	R	b	r	é		ó				Ô	
3			#	3	C	S	c	s	â	ô	ú			Ë		
4			$	4	D	T	d	t	ä	ö						
5			%	5	E	U	e	u				Á				§
6			&	6	F	V	f	v				Â		Í		÷
7			'	7	G	W	g	w	ç					Î		¸
8			(	8	H	X	h	x								°
9			)	9	I	Y	i	y	ë	Ö					Ú	¨
A			*	:	J	Z	j	z		Ü	¬					·
B			+	;	K	[	k	ï								
C			,	<	L	\	l	|	î						ý	
D			-	=	M	]	m	}							Ý	
E			.	>	N	^	n	~	Ä	×	«					■
F			/	?	O	_	o	▒			»		¤			

PC-857

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	€		∧	Ó	–
1			!	1	A	Q	a	q	ü	æ	í			¬	ß	±
2			"	2	B	R	b	r	é	Æ	ó			É	Ô	
3			#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4			$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5			%	5	E	U	e	u	à	ò	Ñ	Á			Õ	§
6			&	6	F	V	f	v	å	û		À	ã	Í	µ	÷
7			'	7	G	W	g	w	ç	ù		À	Ã	Î		¸
8			(	8	H	X	h	x	ê		¿	©		Ï	×	°
9			)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A			*	:	J	Z	j	z	è	Ü	¬				Û	·
B			+	;	K	[	k	f	ï	ø	½				Ù	¹
C			,	<	L	\	l	|	î	£	¼				ì	³
D			-	=	M	]	m	]		Ø	¡	¢		¦	ÿ	²
E			.	>	N	^	n	~	Ä		«	¥		Ì	—	■
F			/	?	O	_	o	▒	Å		»		¤		´	

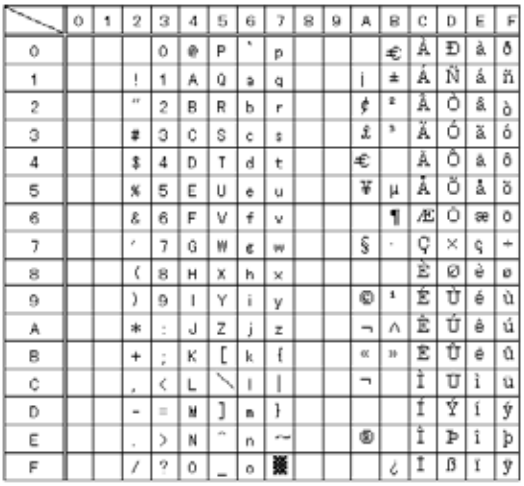
B-851

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç			©				
1			!	1	A	Q	a	q	ü							±
2			"	2	B	R	b	r	é							
3			#	3	C	S	c	s	â	õ						
4			$	4	D	T	d	t	ä	ö						
5			%	5	E	U	e	u	à							§
6			&	6	F	V	f	v		û						
7			'	7	G	W	g	w	ç	ù						¸
8			(	8	H	X	h	x	ê							°
9			)	9	I	Y	i	y	ë	Ö						¨
A			*	:	J	Z	j	z	è	Ü						
B			+	;	K	[	k	{	ï		½					
C			,	<	L	\	l	|	î	£					
D			-	=	M	]	m	}								
E			.	>	N	^	n	~	Ä		«					■
F			/	?	O	_	o	▒			»					

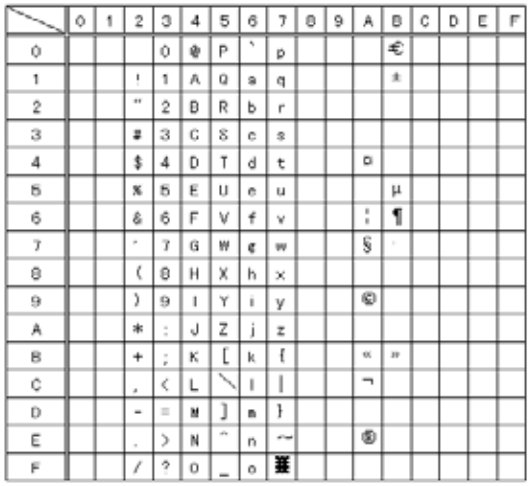
B-855

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p				©				
1			!	1	A	Q	a	q								
2			"	2	B	R	b	r								
3			#	3	C	S	c	s								
4			$	4	D	T	d	t								
5			%	5	E	U	e	u								
6			&	6	F	V	f	v								
7			'	7	G	W	g	w								
8			(	8	H	X	h	x								
9			)	9	I	Y	i	y								
A			*	:	J	Z	j	z								
B			+	;	K	[	k	{								
C			,	<	L	\	l	|								
D			-	=	M	]	m	}								§
E			.	>	N	^	n	~			«					■
F			/	?	O	_	o	▒			»		¤			

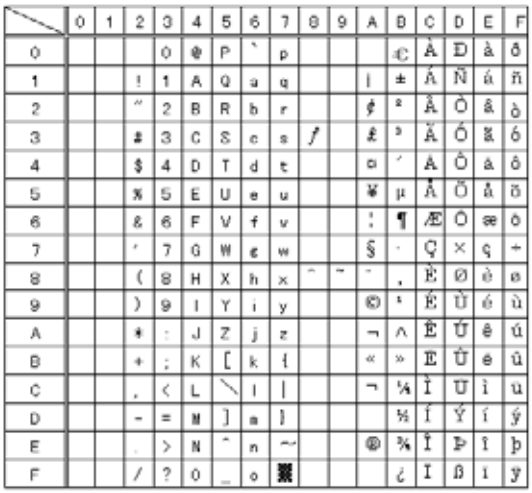
PC-1250



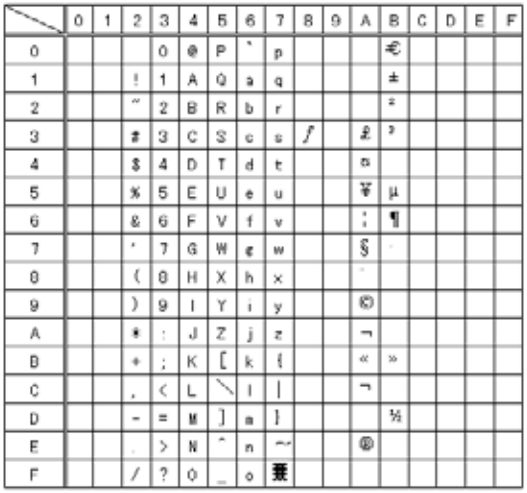
PC-1251



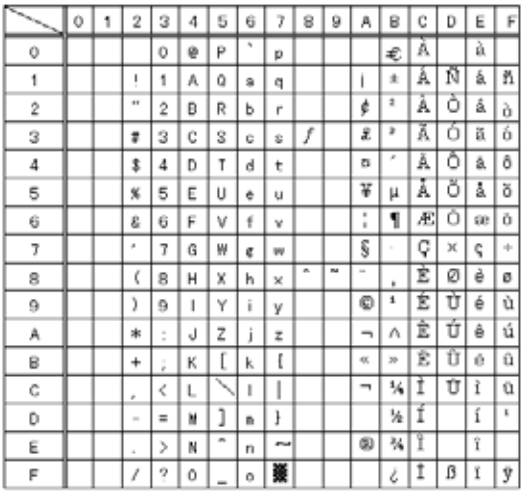
PC-1252



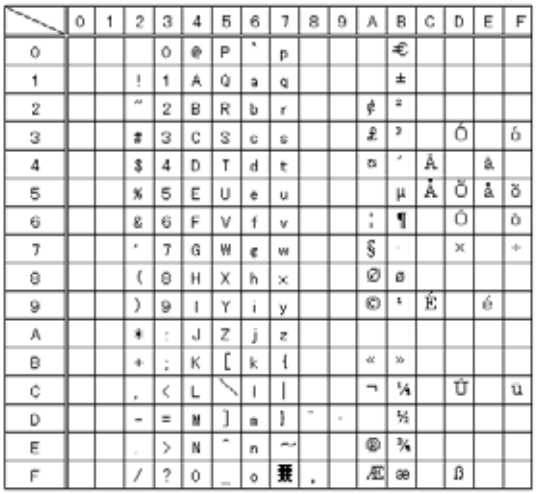
PC-1253



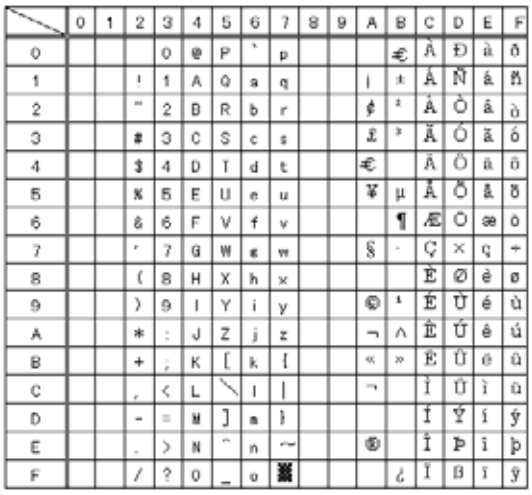
PC-1254



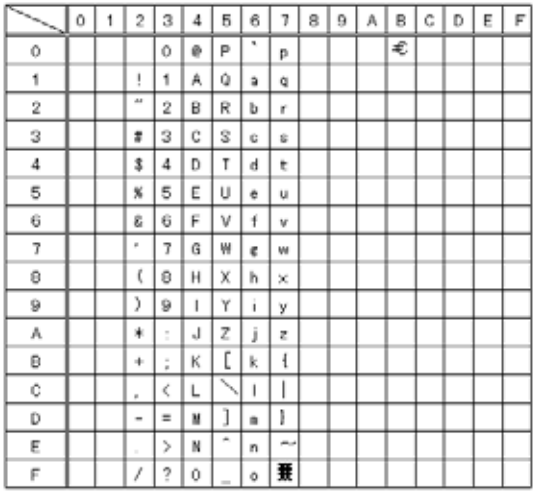
PC-1257



LATIN9



Arabic



NOTE: *Euro font codes are changeable. For details, refer to Euro Code Selection of Section 5.4 Parameter Setting.*

5.4.2 Zero Font Code Selection

With this parameter you can select the way to indicate zero between "0" and "ø".
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key twice.

```
<2>PARAMETER SET
ZERO FONT      0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

[RESTART]
[FEED]

```
ZERO FONT      0
```
(Without slash)

```
ZERO FONT      ø
```
(With slash)

After selecting the zero font code, press the **[PAUSE]** key.

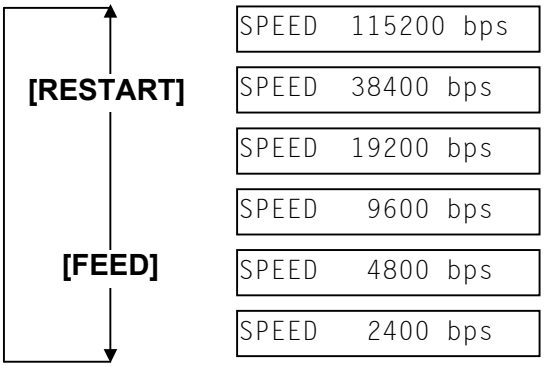
NOTE*: The following fonts do not support a zero with slash.*
Bit Map Font: OCR-A, OCR-B, GOTHIC 725 Black
Outline Font: Price Font 1, Price Font 2, Price Font 3, DUTCH 801 Bold, BRUSH 738 Regular, GOTHIC 725 Black, True Type Font

5.4.3 Baud Rate Selection

With this parameter you can select the baud rate of the RS-232C interface.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key three times.

```
<2>PARAMETER SET
SPEED   9600bps
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the baud rate, press the **[PAUSE]** key.

5.4.4 Data Length Selection

With this parameter you can select the communication data length of the RS-232C interface. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 4 times.

```
<2>PARAMETER SET
DATA LENG. 8bits
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

After selecting the data length, press the **[PAUSE]** key.

5.4.5 Stop Bit Selection

With this parameter you can select the stop bit of the RS-232C interface.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 5 times.

```
<2>PARAMETER SET
STOP BIT  1bit
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

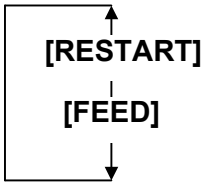
After selecting the stop bit, press the **[PAUSE]** key.

5.4.6 Parity Selection

With this parameter you can select the parity of the RS-232C interface.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** 6 times.

```
<2>PARAMETER SET
PARITY     NONE
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.




```
PARITY     EVEN
PARITY     ODD
PARITY     NONE
```

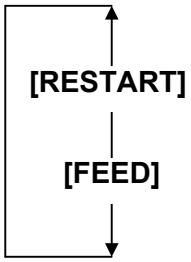
After selecting the parity, press the **[PAUSE]** key.

5.4.7 Transmission Control Code Selection

With this parameter you can select the transmission control code of the RS-232C interface. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 7 times.

```
<2>PARAMETER SET
XON+READY  AUTO
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



XON/XOFF AUTO	XON/XOFF mode
XON+READY AUTO	XON/XOFF+READY/BUSY (DTR) mode
READY/BUSY	READY/BUSY (DTR) mode
XON/XOFF	XON/XOFF mode
READY/BUSY RTS	RTS mode

After selecting the transmission control code, press the **[PAUSE]** key.

NOTE: *The following is the detailed descriptions for each transmission control code.*

1) XON/XOFF AUTO
At the power on time, the printer outputs XON. At the power off time, the printer outputs XOFF.

2) XON+READY AUTO
At the power on time, the printer outputs XON. At the power off time, the printer outputs XOFF.

3) READY/BUSY
At the power on time, the DTR signal output from the printer turns to High level (READY). At the power off time, the printer does not output XOFF.

4) XON/XOFF
At the power on time, the printer outputs XON. At the power off time, the printer does not output XOFF.

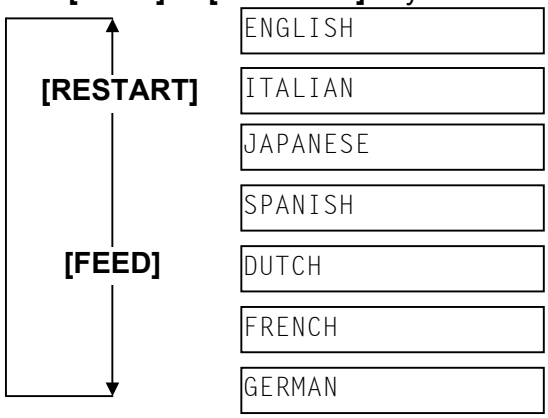
5) READY/BUSY RTS
At the power on time, the RTS signal output from the printer turns to High level (READY). At the power off time, the printer does not output XOFF.

5.4.8 LCD Message Selection

With this parameter you can select the language in which the LCD message is displayed.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 8 times.

```
<2>PARAMETER SET
LCD   ENGLISH
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



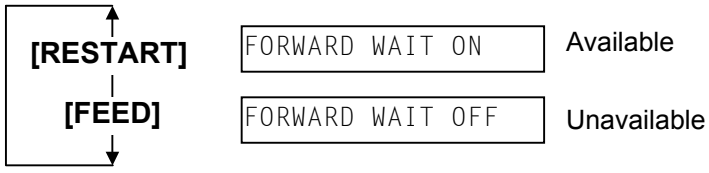
After selecting the language, press the **[PAUSE]** key.

5.4.9 Auto Forward Wait Selection

With this parameter you can select whether or not the Auto Forward Wait function is activated. This function, used in the cut mode, automatically feeds the media for about 16.4 mm if there is more than 3-second idle time after printing to prevent the media from curling.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 9 times.

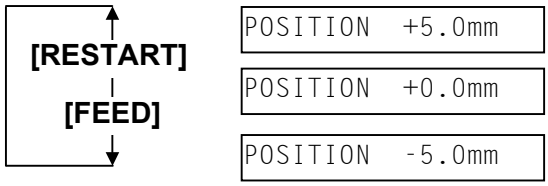
```
<2>PARAMETER SET
FORWARD WAIT OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



When ON is selected, pressing the **[PAUSE]** key will result that the LCD Message Display shows the stop position fine adjustment value setting screen.

```
<2>PARAMETER SET
POSITION  +0.0mm
```



[FEED] key: Pressing the **[FEED]** key one time causes a –0.5mm change, up to –5.0 mm.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.5mm change, up to +5.0 mm.

After selecting the auto forward wait, press the **[PAUSE]** key.

NOTES: *1. If the printer is not used for a few days, the top edge of the media may become curly, resulting in a paper jam. The Auto Forward Wait Function prevents this problem since the media feed amount is increased so that the media stops past the platen.*
2. When the Stop Position Fine Adjustment Value is set to + direction, the media will stop past the media outlet.
When the value is set to – direction, the media will stop inside the media outlet.
3. This setting will be useful to fine adjust the cut position of labels.

5.4.10 Forward/Backward Feed Action Selection (Auto Forward Wait Mode Selection)

When the Auto Forward Wait is set to ON, you can select the auto forward wait action with this parameter. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 10 times.

```
<2>PARAMETER SET
FW/BK ACT. MODE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

[RESTART]
[FEED]

FW/BK ACT. MODE1	Stops after 13.7-mm feed.
FW/BK ACT. MODE2	Stops after 6-mm back feed and 3-mm forward feed. (Only when the cut mode, thermal transfer, and feed gap sensor are selected.) In other cases, the printer stops after 13.7-mm feed.

After selecting the forward/backward feed action, press the **[PAUSE]** key.

5.4.11 Head Up Cut/Rewinder Selection

With this parameter you can select the print head up in cut mode or the use of the Rewinder. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 11 times.

```
<2>PARAMETER SET
HU CUT/RWD. OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

[RESTART]
[FEED]

HU CUT/RWD. OFF	Head up is OFF or the Rewinder is not used.
HU CUT/RWD. ON	Head up is ON or the Rewinder is used.

After selecting the Head Up Cut/Rewinder, press the **[PAUSE]** key.

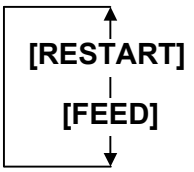
NOTES: *1. In cut mode, you can select ON/OFF status of the head up. In batch mode, you can select the use of the built-in Rewinder.*
2. In cut mode, be careful that the head up is unavailable depending on the rise of the solenoid's temperature.

5.4.12 Solenoid Type Selection

With this parameter you can select the solenoid type that is actually installed. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 12 times.

```
<2>PARAMETER SET
SOLENOID   TYPE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



SOLENOID TYPE1	TDS-12C (Insulation type is blue.)
SOLENOID TYPE2	TDS-16A (Stronger pull force type) (Insulation type is black.)

After selecting the solenoid type, press the **[PAUSE]** key.

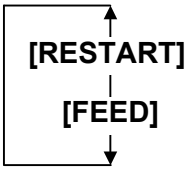
***NOTE**: Improper setting of the solenoid type may disable the ribbon saving function.*

5.4.13 Ribbon Saving Function Selection

With this parameter you can select the ribbon saving function. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 13 times.

```
<2>PARAMETER SET
RBN SAVE OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



RBN SAVE OFF	Unavailable
RBN SAVE ON(LBL)	Available (When the head lever is set to "(1) LABEL".)
RBN SAVE ON(TAG)	Available (When the head lever is set to "(2) TAG".)

After selecting the Ribbon Saving Function, press the **[PAUSE]** key.

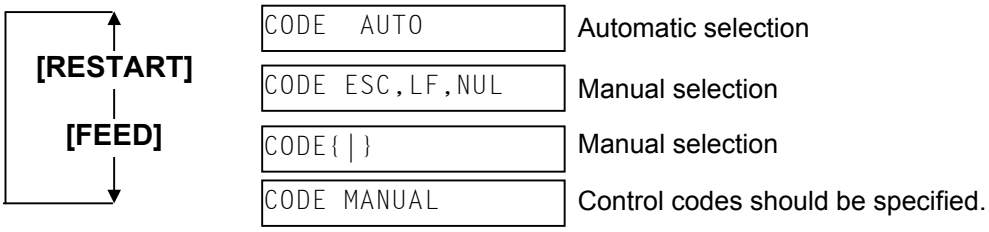
***NOTES**: 1. When setting this function to ON, be sure to install the ribbon saving module (option: B-SX4T). Failure to do this may slacken the ribbon, causing print failures.*
2. The above options should be selected according to the head lever position. Incorrect setting may disable the proper ribbon saving function.

5.4.14 Control Code Selection

With this parameter you can select a Control Code. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 14 times.

```
<2>PARAMETER SET
CODE  AUTO
```

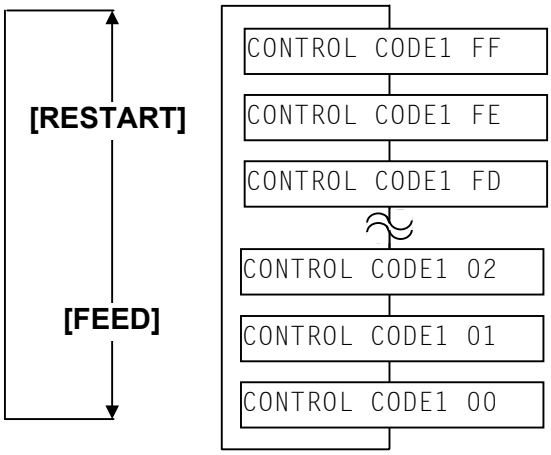
Use the **[FEED]** or **[RESTART]** key to select a desired option.



NOTES: *1. This parameter is used to select the Control Code for the communication between the printer and the host computer.*
2. Selecting "Manual" enables you to set the control code.

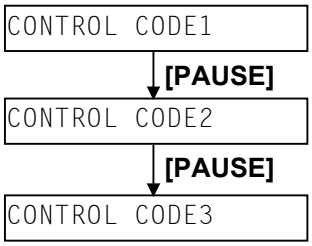
When "CODE MANUAL" is selected and the **[PAUSE]** key is pressed, the LCD display will show the setting screen of CONTROL CODE1 to CONTROL CODE3 as follows.

```
<2>PARAMETER SET
CONTROL CODE1 1B
```



NOTES: *1. Pressing the **[FEED]** or **[RESTART]** key causes 1 byte change in the Control Code value.*
2. You cannot specify the same control code with the one used for the commands.
3. You cannot use the specified Control Code for the data of the Data Command or Display Command.

After setting the control code for Control Code 1, press the **[PAUSE]** key to show the CONTROL CODE2 screen. In a same manner, press the **[PAUSE]** key after setting the control code for Control Code 2 to display the CONTROL CODE3 screen.



Press the **[PAUSE]** key after setting the control code for Control Code 3, and the Strip Wait Status Selection screen will appear.

5.4.15 Strip Wait Status Selection

With this parameter you can select the strip wait status. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 15 times.

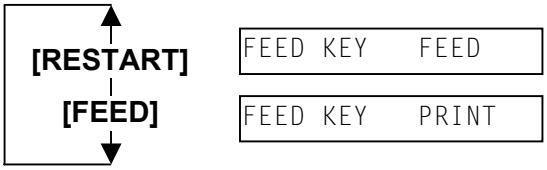
Use the **[FEED]** or **[RESTART]** key to select a desired option.

After selecting the Strip Wait Status, press the **[PAUSE]** key.

5.4.16 FEED Key Function Selection

With this parameter you can select the function of the **[FEED]** key.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 16 times.

Use the **[FEED]** or **[RESTART]** key to select a desired option.



NOTE: *When "FEED" is selected, the **[FEED]** key will feed one media when pressed. When "PRINT" is selected, the **[FEED]** key will print the data in the Image Buffer (The last printed data).*

After selecting the FEED key function, press the **[PAUSE]** key.

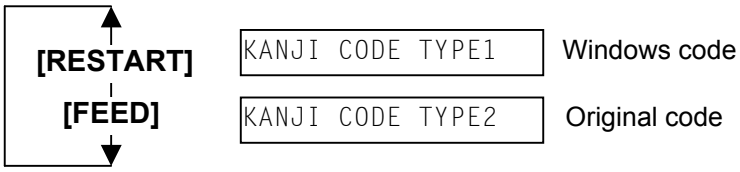
After selecting the Kanji code, press the **[PAUSE]** key.

5.4.17 KANJI Code Selection

With this parameter you can select KANJI code. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 17 times.

```
<2>PARAMETER SET
KANJI CODE TYPE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



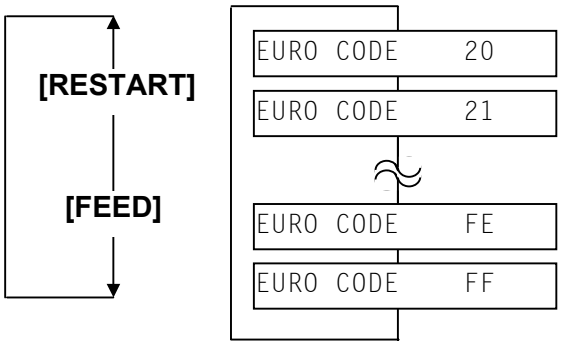
NOTE: *Kanji code selection is not supported by the QQ/QP models as the Kanji ROMs are not installed.*

5.4.18 EURO Code Selection

With this parameter you can select Euro Font code (€). When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 18 times.

```
<2>PARAMETER SET
EURO CODE   B0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



NOTE: *Pressing the **[FEED]** or **[RESTART]** key causes 1 byte change in the Euro Code value.*

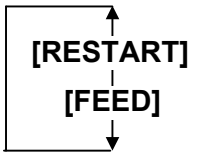
After selecting the Euro font code, press the **[PAUSE]** key.

5.4.19 Auto Print Head Check Selection

With this parameter you can select whether or not the Auto Print Head Check function is activated at the power on time. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 19 times.

```
<2>PARAMETER SET
AUTO HD CHK OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



AUTO HD CHK OFF	Auto print head broken element check is not performed.
AUTO HD CHK ON	Auto print head broken element check is performed.

NOTES: *1. It will take about 2 seconds to perform the Auto Print Head check.*
2. It is recommended that this function is turned on when high quality printing such as bar codes printing is required, otherwise turned off.

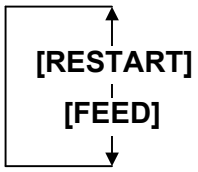
After selecting the auto print head check, press the **[PAUSE]** key.

5.4.20 Centronics Interface ACK/BUSY Timing Selection

With this parameter you can select the ACK/BUSY timing of the Centronics interface.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 20 times.

```
<2>PARAMETER SET
ACK/BUSY TYPE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

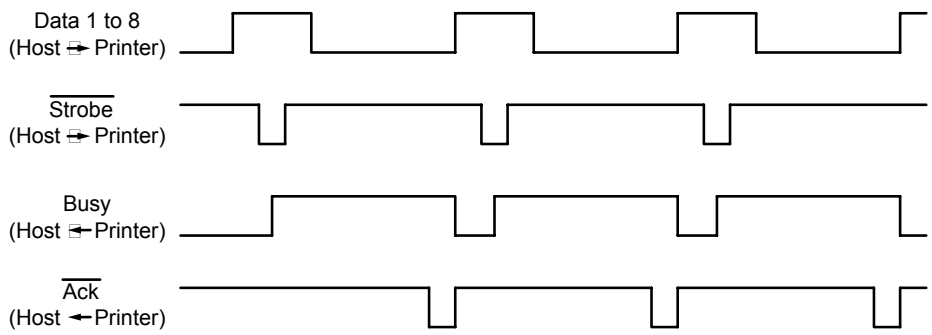


ACK/BUSY TYPE1
ACK/BUSY TYPE2

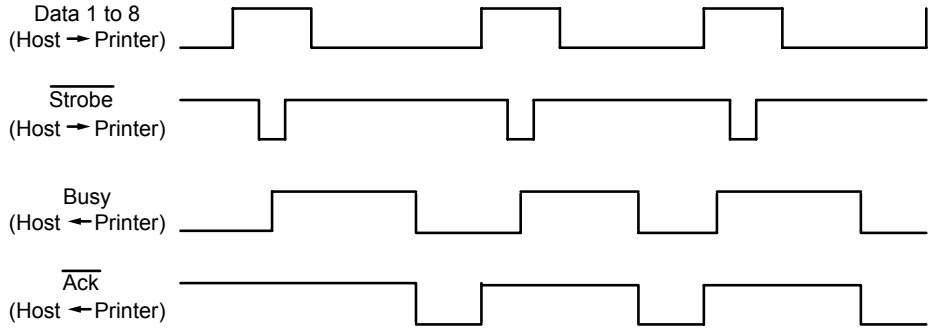
After selecting the ACK/BUSY timing, press the **[PAUSE]** key.

NOTE: *ACK/BUSY Signal Timing Chart*
If the error occurs with the Centronics interface communication, change the types.

(1) TYPE1



(2) TYPE2



5.4.21 Web Printer Function Selection

With this parameter you can select whether or not the B-SX series printer can be used as a web printer. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 21 times.

```
<2>PARAMETER SET
WEB PRINTER  OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

After selecting the Web printer function, press the **[PAUSE]** key.

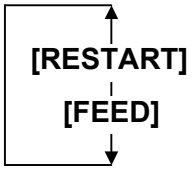
NOTE: *When "WEB PRINTER ON" is selected, the status of the B-SX series printer connected in a network can be checked through the Web browser.*

5.4.22 Input Prime Selection

With this parameter you can select whether or not the Reset operation can be performed when $\overline{\text{INIT}}$ signal is ON. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 22 times.

```
<2>PARAMETER SET
INPUT PRIME  ON
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



INPUT PRIME ON	Available
INPUT PRIME OFF	Unavailable

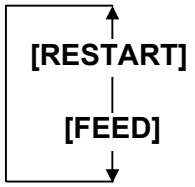
After selecting the Input Prime, press the **[PAUSE]** key.

5.4.23 Ribbon Near End Selection

With this parameter you can select the value to be detected the ribbon near end.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 23 times.

```
<2>PARAMETER SET
RBN NEAR END 70m
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



RBN NEAR END 70m	Near end is detected when the remains of the ribbon is 70m long.
RBN NEAR END 30m	Near end is detected when the remains of the ribbon is 30m long.
RBN NEAR END OFF	Near end is not detected.

After selecting the Ribbon Near End, press the **[PAUSE]** key.

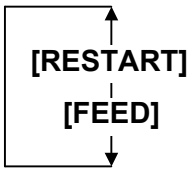
***NOTE**: There may be some variances in ribbon near end detection.*

5.4.24 Expansion I/O Interface Selection

With this parameter you can select Type of the Expansion I/O interface operating mode.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 24 times.

```
<2>PARAMETER SET
EX.I/O   TYPE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



EX.I/O TYPE1	TYPE1: Standard mode
EX.I/O TYPE2	TYPE2: Inline mode

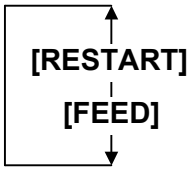
After selecting the Expansion I/O Interface, press the **[PAUSE]** key.

5.4.25 Centronics Interface Selection

With this parameter you can select Type of the Centronics interface operating mode.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 25 times.

```
<2>PARAMETER SET
CENTRO.MODE  SPP
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



CENTRO.MODE SPP	SPP: Compatible mode
CENTRO.MODE ECP	ECP: ECP mode

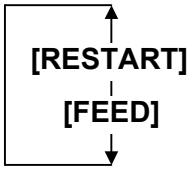
After selecting the Centronics Interface, press the [PAUSE] key

5.4.26 Plug & Play Selection

With this parameter you can select whether or not the Plug & Play function is activated.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 26 times.

```
<2>PARAMETER SET
PLUG & PLAY OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



PLUG & PLAY OFF	Unavailable
PLUG & PLAY ON	Available

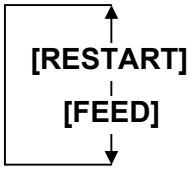
After selecting the Plug & Play, press the **[PAUSE]** key.

5.4.27 Label End/Ribbon End Selection

With this parameter you can select printing process when the label end or ribbon end is detected.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 27 times.

```
<2>PARAMETER SET
LBL/RBN END TYP1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



LBL/RBN END TYP1	TYPE1: When a label/ribbon end is detected in the middle of printing, printing is immediately paused.
LBL/RBN END TYP2	TYPE2: When a label/ribbon end is detected in the middle of printing, the printer prints the half-finished label as far as possible, and stops when the next label is at the home position.

After selecting the Label End, press the **[PAUSE]** key.

NOTE: *Difference between TYPE 1 and TYPE 2*

TYPE1:
When a label end or ribbon end is detected, printing is immediately stopped. When the printing is restarted, first the initial feed is performed, and then the printer starts printing from the unfinished label.

TYPE2:
TYPE 2 is available only when the ribbon saving function is set to OFF. If the ON (LBL) or ON (TAG) is selected, TYPE 1 will be automatically performed regardless of the selection.

When a label end is detected:
When a label end is detected in the middle of printing, the printer completes the half-finished label and stops when the next label is at the home position, displaying the error message "NO PAPER X".
NOTES: *1. "X" indicates the remaining number of labels.*
The remaining number of labels = Specified number of labels − The number of finished labels including half-finished one
2. If a label end is detected while the specified last label is printed, the position of "X" will be blank.
When the printing is restarted, first the initial feed is performed, and then the printer starts printing from the next label.

Example) Specified number of labels = 5, A label end is detected while the 3rd label is printed.
(1) After the 3rd label is printed completely, the printer stops printing, displaying "NO PAPER 2".
(2) When printing is restarted, first the initial feed is performed, then the 4th and 5th labels are printed.
(3) All of 5 labels have been finished.

When a ribbon end is detected when the unfinished label length is 30 mm or more.
After printing for 20mm, the printer stops printing, displaying an error message "NO RIBBON X".
NOTES*: 1. "X" indicates the remaining number of labels.*
The remaining number labels = Specified number of labels − The number of finished labels − 1
2. If a ribbon end is detected while the specified last label is printed, the position of "X" will be blank.
When the printing is restarted, first the initial feed is performed, and then the printer starts printing from the next label.

Example) Specified number of labels = 5, A label end is detected while the 3rd label is printed.
(1) After the 3rd label is printed for 20 mm, the printer stops printing, displaying "NO RIBBON 2".
(2) When printing is restarted, first the initial feed is performed, then the 4th and 5th labels are printed.
(3) Only the 3rd label has not been printed completely.

When a ribbon end is detected when the unfinished label length is less than 30 mm.
The printer completes the half-finished label and stops printing when the next label is at the home position, displaying the error message "NO RIBBON X".
NOTES*: 1. "X" indicates the remaining number of labels.*
The remaining number of labels = Specified number of labels − The number of finished labels including half-finished one
2. If a ribbon end is detected while the specified last label is printed, the position of "X" will be blank.
When the printing is restarted, first the initial feed is performed, and then the printer starts printing from the next label.

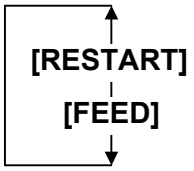
Example) Specified number of labels = 5, A label end is detected while the 3rd label is printed.
(1) After the 3rd label is printed completely, the printer stops printing, displaying "NO RIBBON 2".
(2) When printing is restarted, first the initial feed is performed, then the 4th and 5th labels are printed.
(3) All of 5 labels have been finished.

5.4.28 Pre-Strip Selection

With this parameter you can select whether or not the Pre Strip function is activated.
When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 28 times.

```
<2>PARAMETER SET
PRE PEEL OFF OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



PRE PEEL OFF OFF	Unavailable
PRE PEEL OFF ON	Available

After selecting the Pre Strip, press the **[PAUSE]** key.

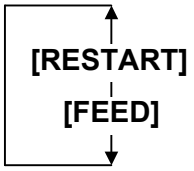
***NOTE**: When the print speed is set to 10"/sec., the pre-strip function will be activated regardless of this parameter setting.*

5.4.29 Back Feed Speed Selection

With this parameter you can select the speed of back feed. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 29 times.

```
<2>PARAMETER SET
BACK SPEED   STD
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



BACK SPEED STD	STD: 3 inch/second
BACK SPEED LOW	LOW: 2 inch/second

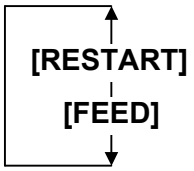
After selecting the Back Feed Speed, press the **[PAUSE]** key.

5.4.30 Maxi Code Specification Selection

With this parameter you can select the Maxi code specification. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 30 times.

```
<2>PARAMETER SET
MAXI CODE  TYPE1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



MAXI CODE TYPE1	TYEP1: Compatible specification with the current version
MAXI CODE TYPE2	TYPE2: Special specification

After selecting the Maxi code specification, press the **[PAUSE]** key.

5.4.31 Print Head Type Selection

***NOTE**: This specification is supported from the firmware V3.1.*

With this parameter you can select the print head type that is actually installed. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 31 times.

```
<2>PARAMETER SET
THERMAL HEAD  V2
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

[RESTART]
[FEED]

```
THERMAL HEAD  V1
```

```
THERMAL HEAD  V2
```

	Print Head Type	
	B-SX4T	B-SX5T
V1 (Current type)	TPH104R2	TPH128R4
V2 (Enhanced type)	TPH104R7 or equivalent	TPH128R5 or equivalent

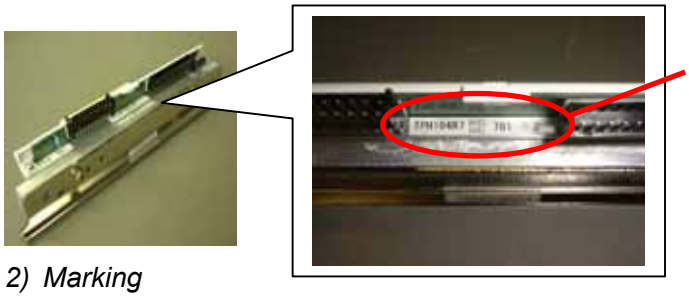
After selecting the print head type, press the **[PAUSE]** key.

NOTE:
There are two types of print head for the B-SX series: V1 (current type) and V2 (enhanced type).
The V2 print head has been installed in the B-SX4T series with the serial number of 2804Sxxxxxx or later and the B-SX5T series with the serial number of 2804Wxxxxxx or later.
When the installed print head type is changed, this parameter should be also changed accordingly. Failure to do this may affect the print quality or print head life.

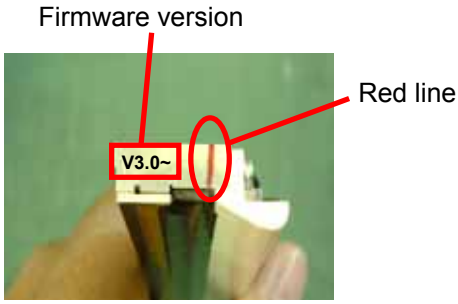
- ***How to identify the print head type:***

1) Part number and print head type label

	B-SX4T Series		B-SX5T Series	
	Current print head	Enhanced print head	Current print head	Enhanced print head
Part No.	7FM00172000	7FM00706000	7FM00172100	7FM00706100
Print head type	TPH104R2	TPH104R7	TPH128R4	TPH128R5



2) Marking
The enhanced print head has a red line on the side.
Only for the service spare parts, the firmware version is also marked on the side of the enhanced print head.



- ***Program version check***

Since this parameter is supported from firmware V3.1, it may be necessary to upgrade the main program to V3.1 and the boot program to V1.1A (MAIN PC board) or V2.0A (MAIN 2 PC board).
Refer to Section 5.3.4 to print the self-diagnostic test result, and confirm each version.

Model	Program version supporting this parameter
B-SX5T series	Main program V3.1 or greater
B-SX4T series	Boot program: V1.1A (MAIN PC board)/V2.0A (MAIN 2 PC board) or greater

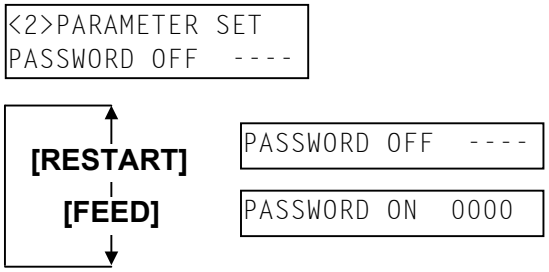
If necessary, refer to the Maintenance Manual, Section 7 and upgrade the programs.

5.4.32 System Mode Password Setting

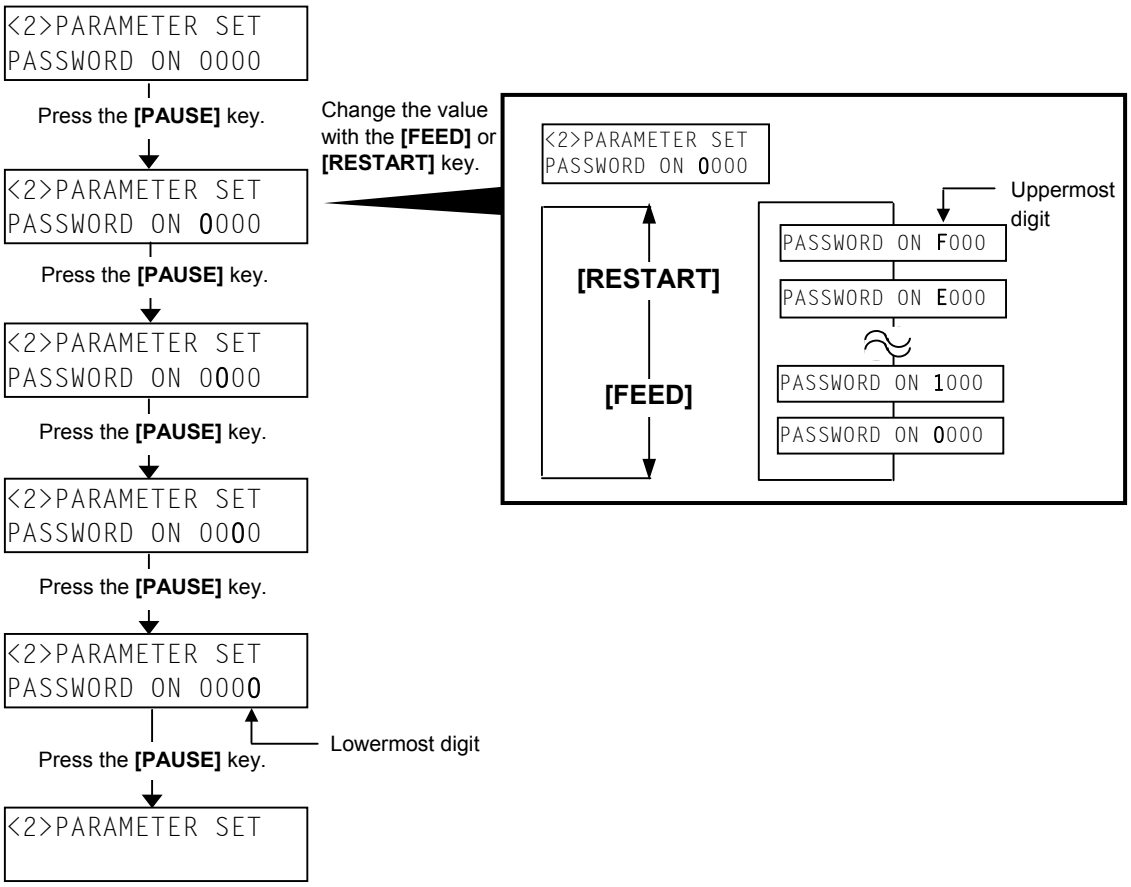
With this parameter you can select whether to set a password to enter the system mode, and if so, you can set a 4-digit password. When this parameter is set to ON, the password entry display appears right after the printer is started in the system mode. To enter the system mode, it is necessary to input a correct password

The following is the password setting procedure.

While "PASSWORD OFF ----" is displayed, select OFF or ON with the **[FEED]** or **[RESTART]** key.

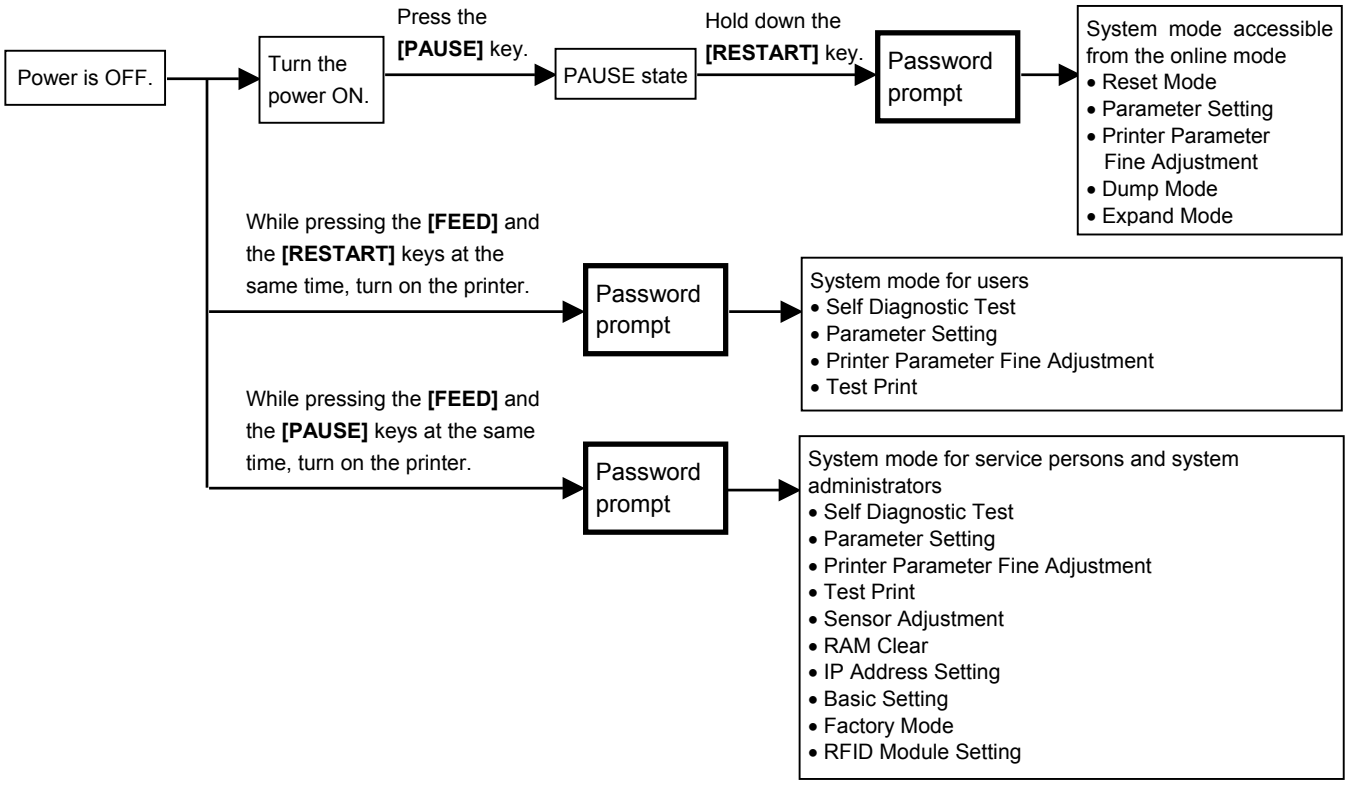


When "PASSWORD ON 0000" is displayed, a 4-digit password can be set in hexadecimal value (0 to 9, A to F).
First, set the uppermost digit by using the **[FEED]** or **[RESTART]** key. When the **[PAUSE]** key is pressed, the cursor moves to the next digit. Set the all digits in the same way.

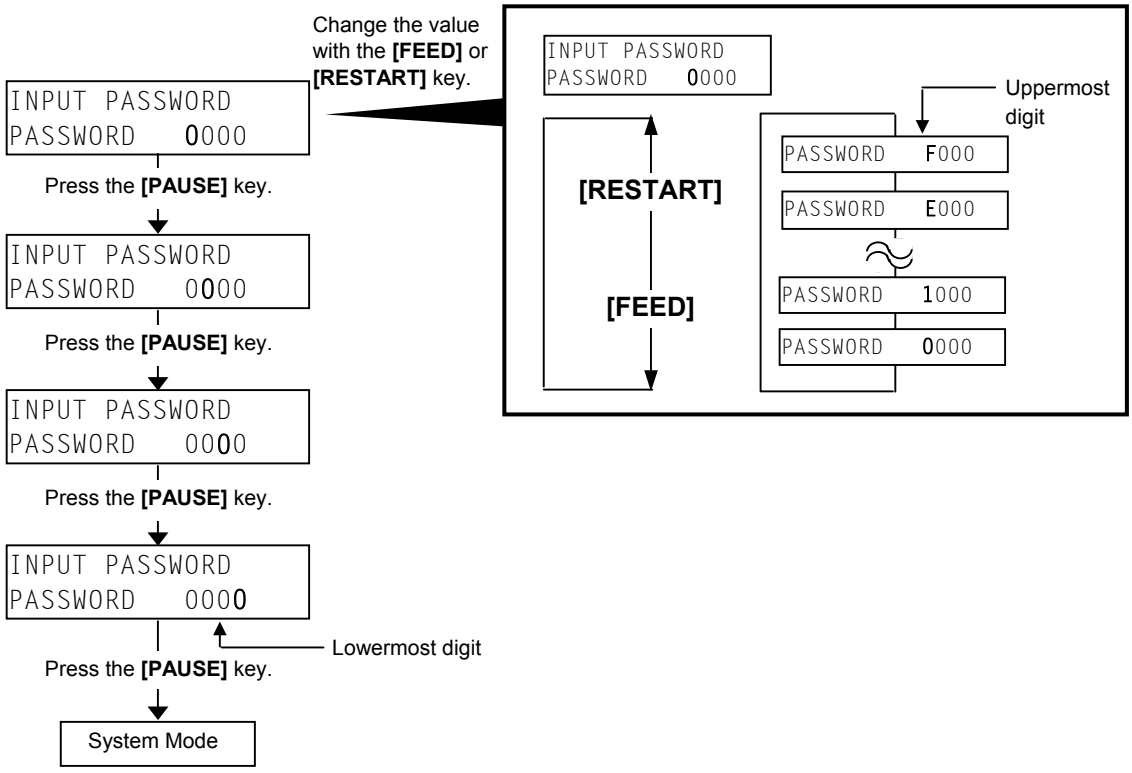


After setting the system mode password, press the **[PAUSE]** key.
The printer returns to the start of the Parameter Setting menu.

When a password has been set, the password prompt display will appear when you try to enter the following system modes:



Enter the 4-digit password digit by digit in hexadecimal character (0 to 9, A to F).
First, enter the uppermost digit by using the **[FEED]** or **[RESTART]** key. When the **[PAUSE]** key is pressed, the cursor moves to the next digit. When the all digits have been entered, press the **[PAUSE]** key. If the entered password is correct, the printer enters the system mode.



NOTES:

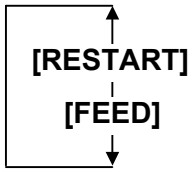
1. *If a password entry fails three consecutive times when you try to enter the system mode for service persons and system administrators or the system mode for users, the printer starts in the online mode.*
2. *If a password entry fails three consecutive times when you try to enter the system mode accessible from the online mode, the message "Please Power OFF" appears on the LCD and the printer locks up.*
3. *The system mode password cannot be cleared by a RAM clear. If the system password is forgotten, disable the system mode password using the @010 command. (For details, please refer to the External Equipment Interface Specification.)*

5.4.33 XML Function Setting (Supported only by V4.4A or Xx.x.)

With this parameter you can select the XML specification. When "<2>PARAMETER SET" appears, press the **[PAUSE]** key 33 times.

```
<2>PARAMETER SET
XML         ORACLE
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.




```
XML         STD
```

STD: Standard specification

```
XML         ORACLE
```

ORACLE: Specification for Oracle

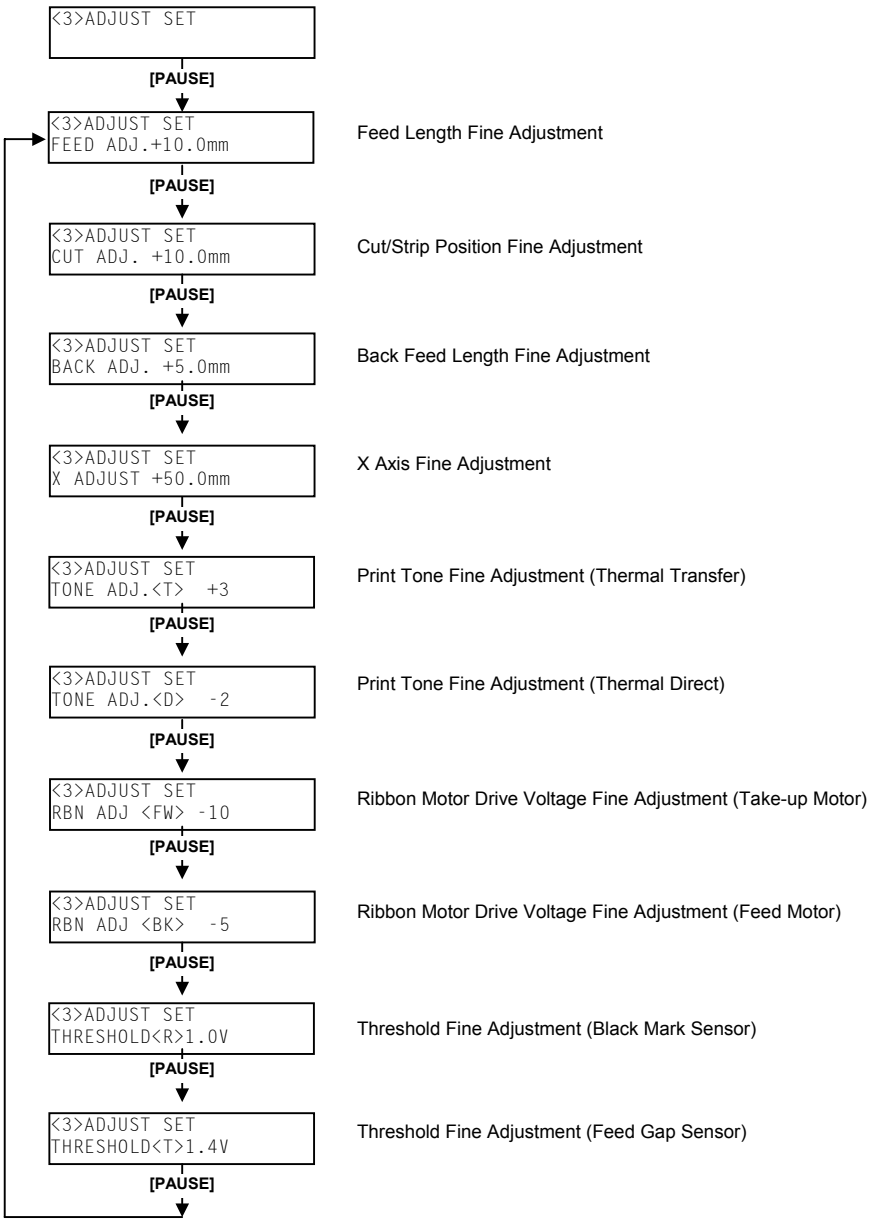
After setting the XML specification, press the **[PAUSE]** key.
The printer returns to the start of the Parameter Setting menu.

5.5 PRINTER PARAMETER FINE ADJUSTMENT

■ Outline of Printer Parameter Fine Adjustment

In the Printer Parameter Fine Adjustment mode, you can fine adjust each parameter, such as Print tone, Print start position, Threshold, etc. which are set by the PC command. This is useful when using several types of media by turns or when the print start position or cut/strip position is required to be fine adjusted.

The **Printer Parameter Fine Adjustment** menu contains the following.



While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

```
<1>DIAG.   Vx.x
```

Press the **[FEED]** key twice.
The printer is at the start of the Printer Parameter Fine Adjustment menu.

```
<3>ADJUST SET
```

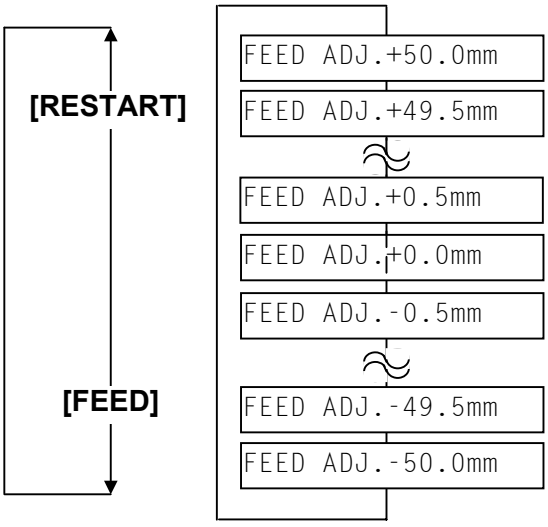
NOTES: *1. When pressing the **[FEED]** and **[RESTART]** keys at the same time in the parameter setting, the message returns to "<3>ADJUST SET".*
*2. If holding the **[FEED]** or **[RESTART]** key for 0.5 seconds or longer in the Printer Parameter Fine Adjustment, the key is entered continuously.*
*3. A changed parameter becomes enabled by pressing the **[PAUSE]**.*
*4. Use the **[FEED]** or **[RESTART]** key to select a desired value or option.*

5.5.1 Feed Length Fine Adjustment

With this parameter you can fine adjust the feed length. When "<3>ADJUST SET" appears, press the **[PAUSE]** key.

```
<3>ADJUST SET
FEED ADJ. +0.0mm
```

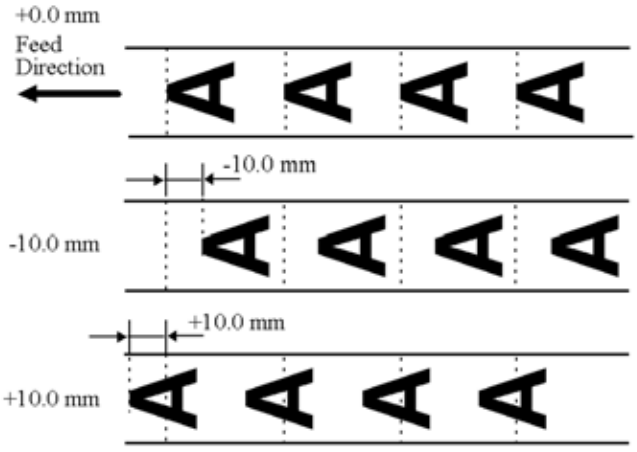
Use the **[FEED]** or **[RESTART]** key to select a desired option.



[FEED] key: Pressing the **[FEED]** key one time causes a –0.5mm change, up to –50.0 mm.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.5mm change, up to +50.0 mm.

After completing the fine adjustment, press the **[PAUSE]** key.

• Feed Length Fine Adjustment (Example)



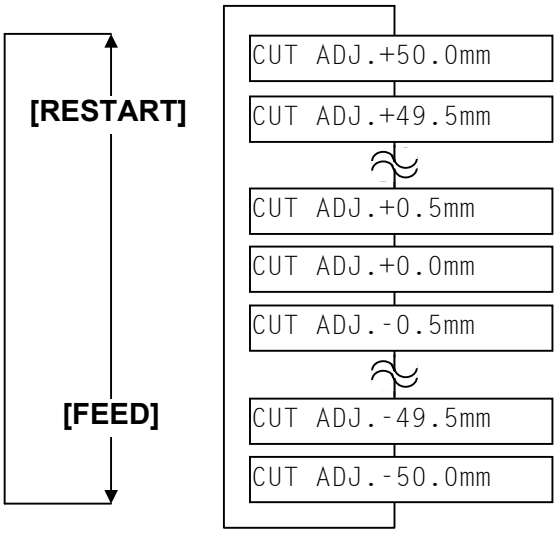
NOTE: *The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter.*
The maximum feed length fine adjustment value is ±50.0mm. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

5.5.2 Cut/Strip Position Fine Adjustment

With this parameter you can fine adjust the cut or strip position. When "<3>ADJUST SET" appears, press the **[PAUSE]** key twice.

```
<3>ADJUST SET
CUT ADJ. +0.0mm
```

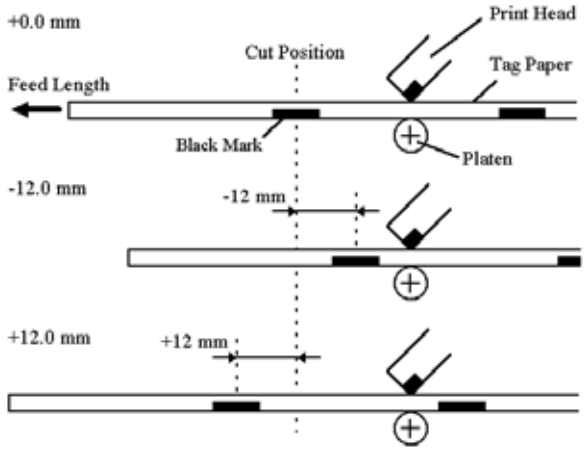
Use the **[FEED]** or **[RESTART]** key to select a desired option.



[FEED] key: Pressing the **[FEED]** key one time causes a –0.5mm change, up to –50.0 mm.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.5mm change, up to +50.0 mm.

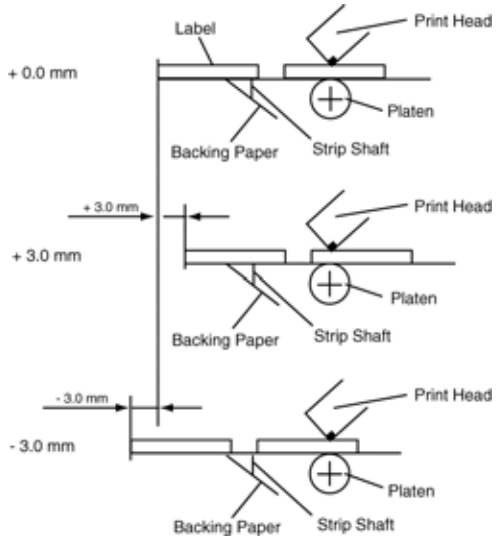
After completing the fine adjustment, press the **[PAUSE]** key.

• Cut Position Fine Adjustment (Example)

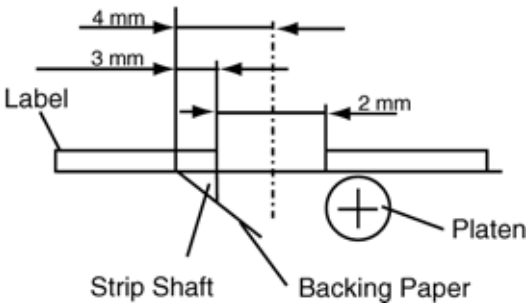


NOTES: *1. Cut issue is available only when the optional cutter unit (B-7208-QM) is installed.*
2. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter.
The maximum cut position fine adjustment value is ±50.0mm. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

• Strip Position Fine Adjustment (Example)



NOTE*: The print stop position when printing the label in strip mode varies according to label length as the strip mode printing stops so that the edge of the strip shaft is 4 mm from the middle of the gap. This is because the gap length is programmed as 2 mm. When the gap length is 5 mm or more, the effective print length should be set to the value obtained by subtracting 2mm from the label pitch, that is, set the gap length to 2 mm. If the print format hangs over the gap as a result, correct the print start position.*

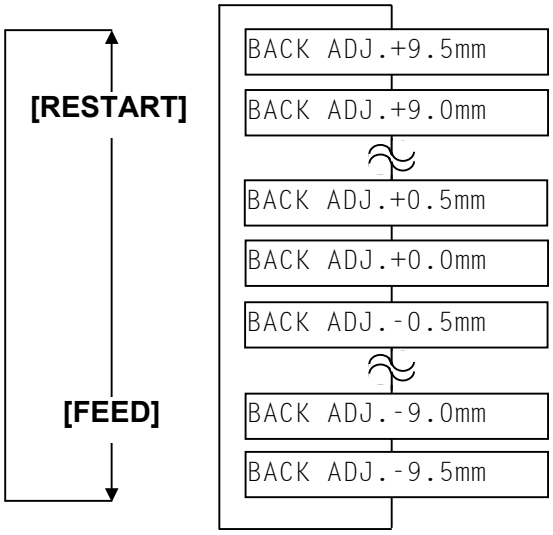


5.5.3 Back Feed Length Fine Adjustment

With this parameter you can fine adjust the Back Feed Length. When "<3>ADJUST SET" appears, press the **[PAUSE]** key three times.

```
<3>ADJUST SET
BACK ADJ. -0.0mm
```

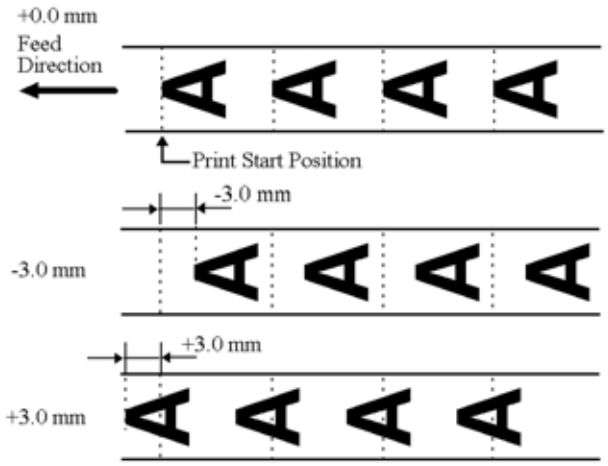
Use the **[FEED]** or **[RESTART]** key to select a desired option.



[FEED] key: Pressing the **[FEED]** key one time causes a –0.5mm change, up to –9.5 mm.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.5mm change, up to +9.5 mm.

After completing the fine adjustment, press the **[PAUSE]** key.

• Back Feed Length Fine Adjustment (Example)



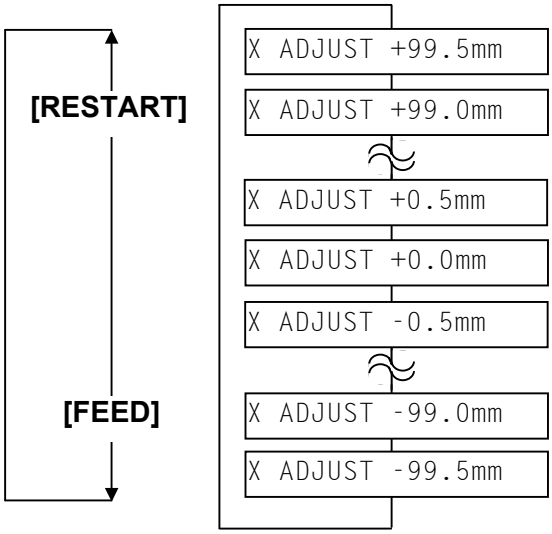
NOTE: *The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter. The maximum back feed length fine adjustment value is ±9.5mm. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.*

5.5.4 X Axis Fine Adjustment

With this parameter you can fine adjust the print position on X Axis. When "<3>ADJUST SET" appears, press the **[PAUSE]** key 4 times.

```
<3>ADJUST SET
X ADJUST +0.0mm
```

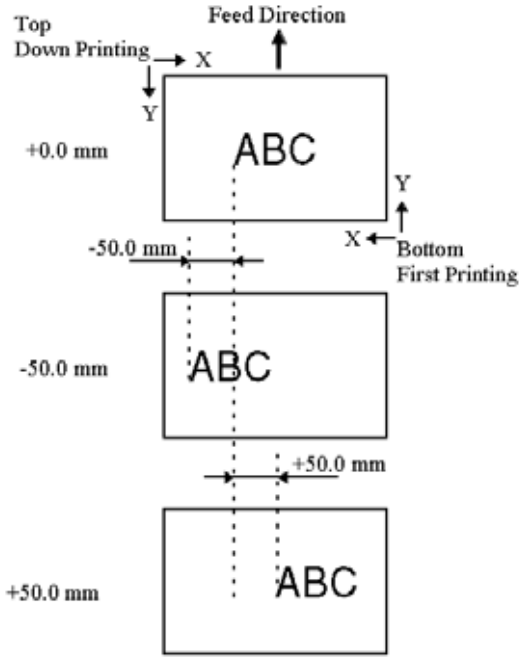
Use the **[FEED]** or **[RESTART]** key to select a desired option.



[FEED] key: Pressing the **[FEED]** key one time causes a –0.5mm change, up to –99.5 mm.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.5mm change, up to +99.5 mm.

After completing the fine adjustment, press the **[PAUSE]** key.

• X-Axis Fine Adjustment (Example)



NOTES: *1. The X Axis fine adjustment is performed to fine adjust the print position in horizontal direction (left or right).*
2. Adjust the X axis within the effective print range. After the value reaches the coordinate 0, the value remains unchanged even if the subsequent fine adjustment is performed in the negative direction.
3. This adjustment cannot be used in the Self Test mode or Test print.
4. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter. The maximum X axis fine adjustment value is ±99.5mm. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

5.5.5 Print Tone Fine Adjustment (Thermal Transfer/Thermal Direct Print)

With this parameter you can fine adjust the Print Tone. When "<3>ADJUST SET" appears, press the **[PAUSE]** key 5 times to enter the Print Tone Fine Adjustment (Thermal transfer print) menu.

```
<3>ADJUST SET
TONE ADJ.<T> +0
```

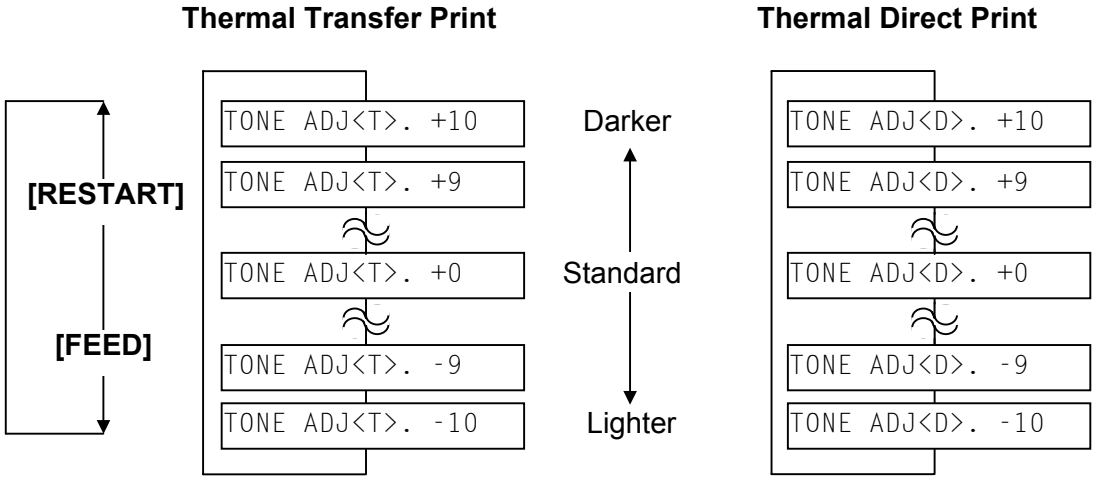
Thermal Transfer

To change the screen to the Print Tone Fine Adjustment (Thermal direct print), press the **[PAUSE]** key again.

```
<3>ADJUST SET
TONE ADJ.<D> +0
```

Thermal Direct

When the LCD display shows "TONE ADJ.<T>" or "TONE ADJ.<D>", select a desired option with the **[FEED]** or **[RESTART]** key.



[FEED] key: Pressing the **[FEED]** key one time causes a –1 tone change, up to –10 tones.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 tone change, up to +10 tones.

After completing the fine adjustment, press the **[PAUSE]** key.

NOTES: *1. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter. The maximum print tone fine adjustment value is ±10. The following table shows the maximum fine adjustment value for each print speed. Even if the set value exceeds the maximum value, it will be automatically adjusted to the following value.*

	B-SX4T				B-SX5T			
	V1 type: TPH104R2		V2 type: TPH104R7		V1 type: TPH128R4		V2 type: TPH128R5	
Print speed	Thermal direct	Thermal transfer	Thermal direct	Thermal transfer	Thermal direct	Thermal transfer	Thermal direct	Thermal transfer
3 ips	+10 step	+10 step	+10 step	+10 step	+10 step	+10 step	+10 step	+10 step
5 ips	----	----	----	----	+7 step	+10 step	+7 step	+10 step
6 ips	+8 step	+8 step	+8 step	+8 step	----	----	----	----
8 ips	----	----	----	----	+3 step	+10 step	+3 step	+10 step
10 ips	+4 step	+8 step	+5 step	+7 step	----	----	----	----

2. This is useful when print tone is required to be fine adjusted e.g.) When the ribbon is changed to different type.

5.5.6 Ribbon Motor Voltage Fine Adjustment (Feed/Take-up Motor)

With this parameter you can fine adjust the Ribbon Motor Voltage (Torque). When "<3>ADJUST SET" appears, press the **[PAUSE]** key 7 times to enter the Ribbon Motor Voltage Fine Adjustment (Take-up Motor) menu.

```
<3>ADJUST SET
RBN ADJ<FW> +0
```

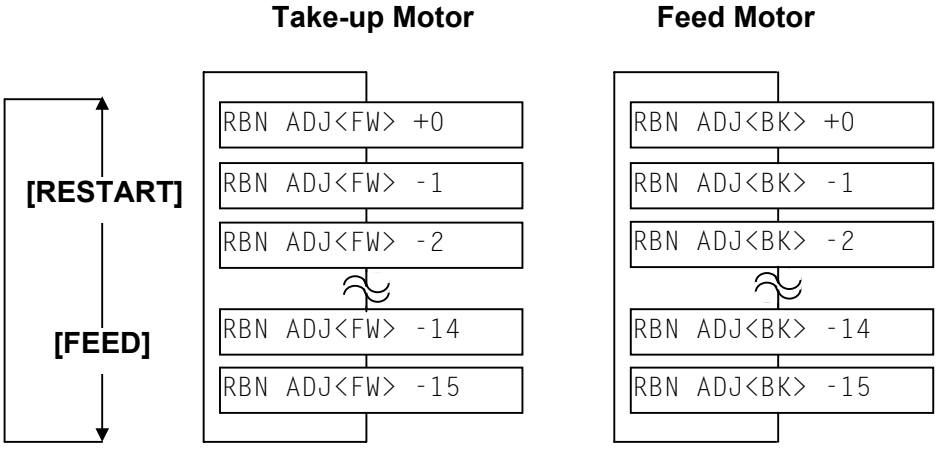
Take-up Motor

To change the screen to the Ribbon Motor Voltage Fine Adjustment (Feed Motor), press the **[PAUSE]** key again.

```
<3>ADJUST SET
RBN ADJ<BK> +0
```

Feed Motor

When the LCD display shows "RBN ADJ<FW>" or "RBN ADJ<BK>", select a desired option with the **[FEED]** or **[RESTART]** key.



[FEED] key: Pressing the **[FEED]** key one time causes a –1 step change, up to –15 steps.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 step change, up to +0 steps.

After completing the fine adjustment, press the **[PAUSE]** key.

NOTES: *1. The fine adjustment value equals to the sum of the fine adjustment values set by the PC command and this parameter. The maximum ribbon motor voltage fine adjustment value is -15. When the value reached the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.*
2. One step corresponds to 5% of the standard voltage and up to 75% of the voltage can be decreased.
3. Please make this adjustment if a ribbon error occurs though the ribbon is proper.

5.5.7 Threshold Manual Fine Adjustment (Black Mark/Feed Gap Sensor)

With this parameter you can fine adjust the Threshold of the Black Mark and Feed Gap Sensors. When "<3>ADJUST SET" appears, press the **[PAUSE]** key 9 times to enter the Threshold Manual Fine Adjustment (Black Mark Sensor) menu.

```
<3>ADJUST SET
THRESHOLD<R>1.0V
```

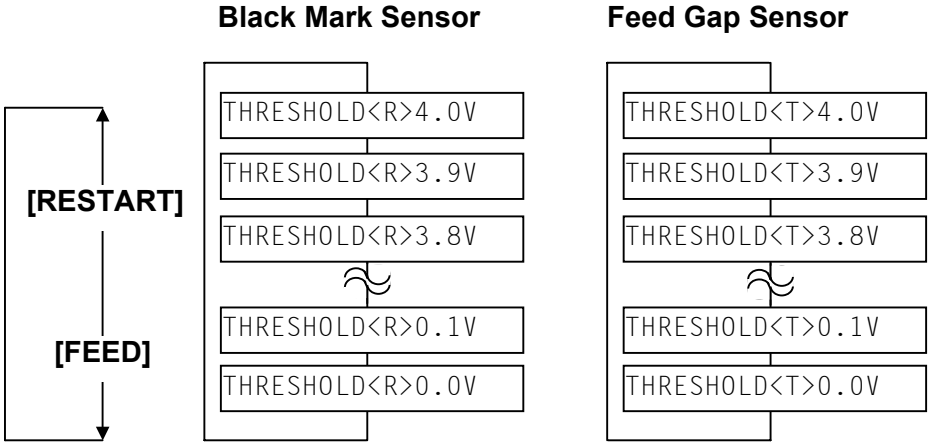
Black Mark Sensor

To change the screen to the Threshold Manual Fine Adjustment (Feed Gap Sensor), press the **[PAUSE]** key again.

```
<3>ADJUST SET
THRESHOLD<T>1.4V
```

Feed Gap Sensor

When the LCD display shows "THRESHOLD<R>" or "THRESHOLD<T>", select a desired option with the **[FEED]** or **[RESTART]** key.



[FEED] key: Pressing the **[FEED]** key one time causes a –0.1V change, up to 0.0V.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.1V change, up to +4.0V.

After completing the fine adjustment, press the **[PAUSE]** key.

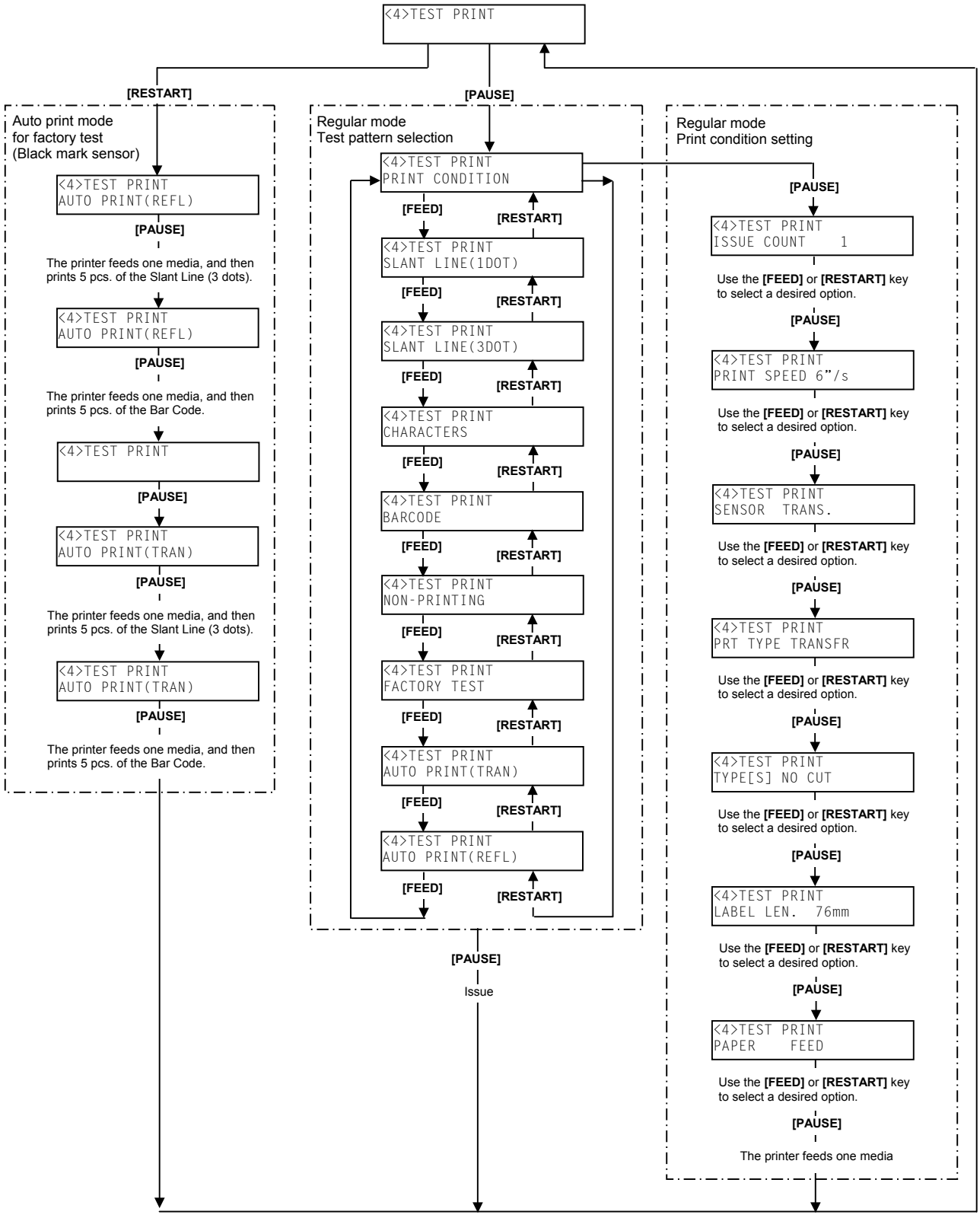
NOTE: *This is useful to fine adjust the threshold when the media issue is improper even after the sensor threshold setting is performed. (See Section 6.1 Threshold Setting.)*

5.6 TEST PRINT

■ Outline of Test Print

In the Test Print mode, you can print the test pattern and set its conditions. This is useful to check the print quality of new media or ribbon.

The **Test Print** menu contains the following:



While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

```
<1>DIAG.   Vx.x
```

Press the **[FEED]** key 3 times.
The Test Print is ready to be performed.

```
<4>TEST PRINT
```

NOTES:

1. *When pressing the **[FEED]** and **[RESTART]** keys at the same time in the Test Print menu, the message returns to "<4>TEST PRINT".*
2. *If holding the **[FEED]** or **[RESTART]** key for 0.5 seconds or longer in the Test Print menu, the key is entered continuously.*
3. *The fine adjustment parameters are effective for the Test Print. (except for X Axis Fine Adjustment.)*
4. *If any error occurs, an error message appears, and the printer stops printing. After clearing the errors, press the **[PAUSE]** key to return to the System Mode menu. The printer does not restart printing automatically.*
5. *A changed parameter becomes enabled by pressing the **[PAUSE]** key.*
6. *A label size greater than the image buffer length cannot be designated. If designated, the printer prints in the image buffer, or the printer stops because of an error.*
7. *The printer doesn't support the rotary cutter (B-8204-QM) at the print speed of 10 inches/second. Accordingly, for the printer providing with the rotary cutter (regardless of cut mode), even if the print speed of 10"/second is selected, the printer performs at 6 inches/second automatically.*
   When 15mm-or-less label pitch at 3 inches/seconds or 30mm-or-less label pitch at 6 inches/second is designated, the printer performs printing without cut.

5.6.1 Specifying the Print Condition for the Test Print

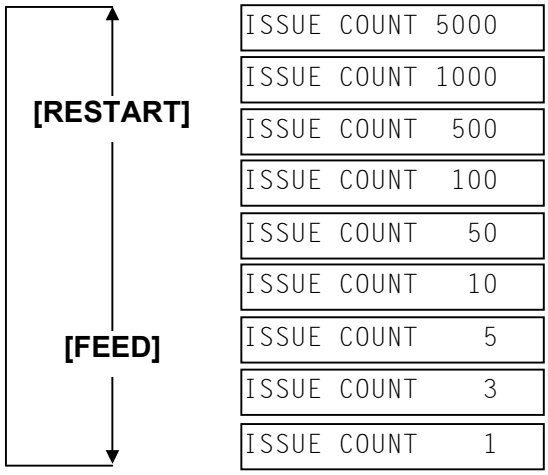
The print conditions for the Test Print should be specified before printing. When "<4>TEST PRINT" appears, press the **[PAUSE]** key.

```
<4>TEST PRINT
PRINT CONDITION
```

Issue Count Setting

To enter the Issue Count Setting menu, press the **[PAUSE]** key.

```
<4>TEST PRINT
ISSUE COUNT    1
```

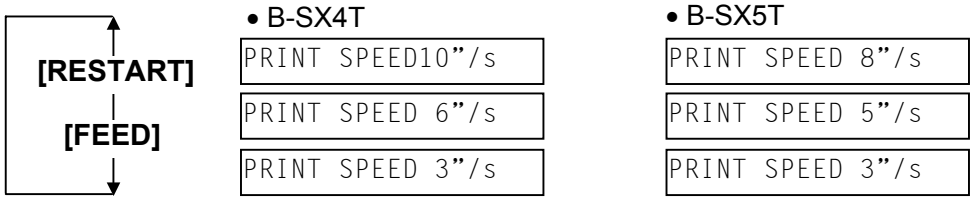


After selecting the issue count, press the **[PAUSE]** key to go to Print Speed Setting.

Print Speed Setting

Select the print speed for the test print among 10"/sec., 6"/sec., and 3"/sec. (B-SX4T), or 8"/sec., 5"/sec., and 3"/sec. (B-SX5T).

```
<4>TEST PRINT
PRINT SPEED 6"/s
```



After selecting the print speed, press the **[PAUSE]** key to go to Sensor Type Selection.

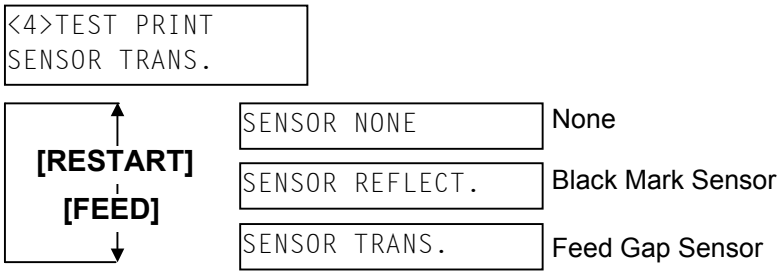
***NOTES**: 1. For the B-SX4T, the rotary cutter does not support the print speed of 10"/sec. Therefore, selection of 10"/sec. will be automatically changed to 6"/sec. when the rotary cutter is installed.*

2. On the following conditions, the rotary cutter does not cut.

	Media pitch	*Print speed*
B-SX4T	*Less than 15 mm*	*3"/sec.*
	Less than 30 mm	*6"/sec.*
B-SX5T	*Less than 15 mm*	*3"/sec.*
	Less than 25 mm	*5"/sec.*
	Less than 38 mm	*8"/sec.*

Sensor Type Selection

Select the sensor type among “TRANS” (Feed Gap Sensor), “REFLECT” (Black Mark Sensor) and “NONE”.

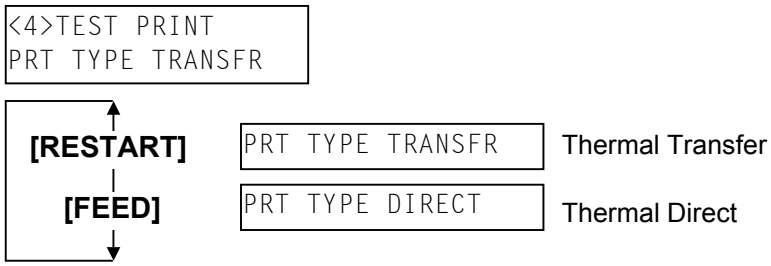


After selecting the sensor type, press the **[PAUSE]** key to go to Printing Mode Selection.

NOTE: *Select the sensor type which is proper to the media being used. Basically, the Reflective Sensor (Black Mark Sensor) is for tag paper, and the Transmissive Sensor (Feed Gap Sensor) is for label.*

Printing Mode Selection

Select the printing mode for the test print between “TRANSFR” (Thermal transfer) and “DIRECT” (Thermal direct).

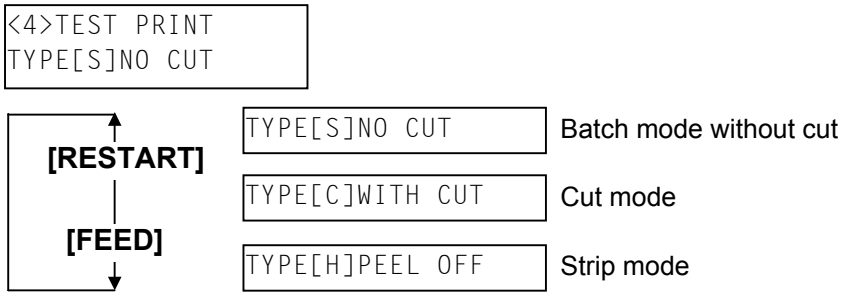


After selecting the printing mode, press the **[PAUSE]** key to go to Issue Mode Selection.

NOTE: *Select the printing mode which is proper to the operating conditions. Basically, the Thermal Transfer is for the use of ribbon, and the Thermal Direct is for the use of thermal paper.*

Issue Mode Selection

Select the issue mode for the test print among “[S]NO CUT” (Batch mode without cut), “[C]WITH CUT” (Cut mode), and “[H]PEEL OFF” (Strip mode).

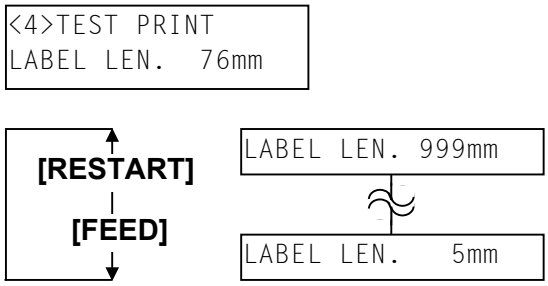


After selecting the Issue Mode, press the **[PAUSE]** key to go to Label Length Setting.

NOTE: *Cut mode is available only when the optional cutter module (B-4205-QM or B-8204-QM) is installed. Strip mode is available only when the optional strip module (B-9904-H-QM) is installed.*

Label Length Setting

Select the label length for the test print in a range from 5 mm to 999 mm.



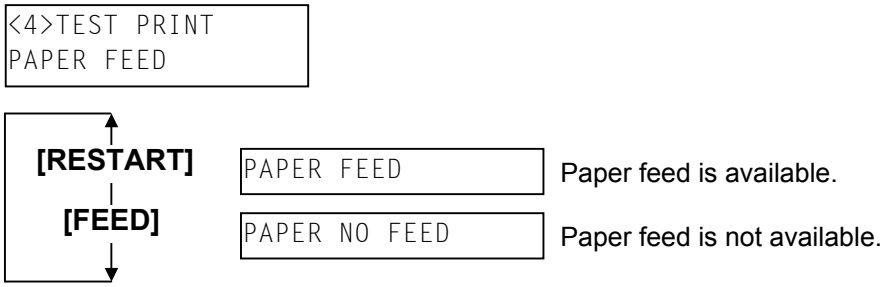
[FEED] key: Pressing the **[FEED]** key one time causes a –1 mm change, up to 5 mm.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 mm change, up to 999 mm.

After selecting the label length, press the **[PAUSE]** key to go to Paper Feed Selection.

NOTE: *Pressing and holding the **[RESTART]** or **[FEED]** key causes the display to show the values quickly and continuously. To stop it, release the key.*

Paper Feed Selection

Select whether or not a paper feed is performed prior to a test print.



After selecting the paper feed, press the **[PAUSE]** key. The display returns to the "<4>TEST PRINT".

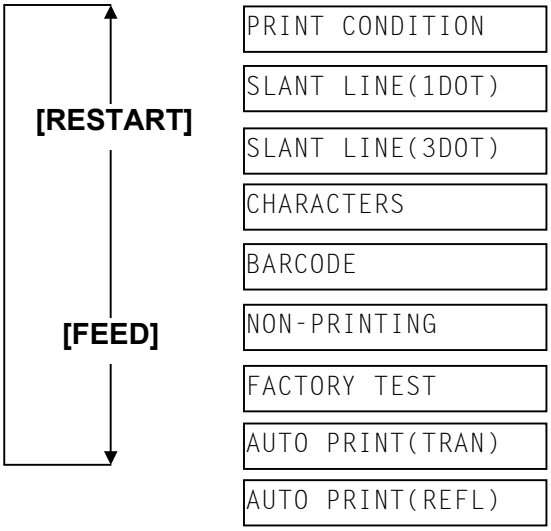
NOTE: *When "PAPER FEED" is selected, the printer feeds the media prior to a test print to adjust the print start position. When "PAPER NO FEED" is selected, the printer starts printing without print start position adjustment. If the print start position adjustment is unnecessary, you can save the media by selecting "PAPER NO FEED".*

5.6.2 Test Print Pattern Selection

When "<4>TEST PRINT" appears after paper feed selection, press the **[PAUSE]** key.

```
<4>TEST PRINT
PRINT CONDITION
```

Select a test print pattern from the following options.



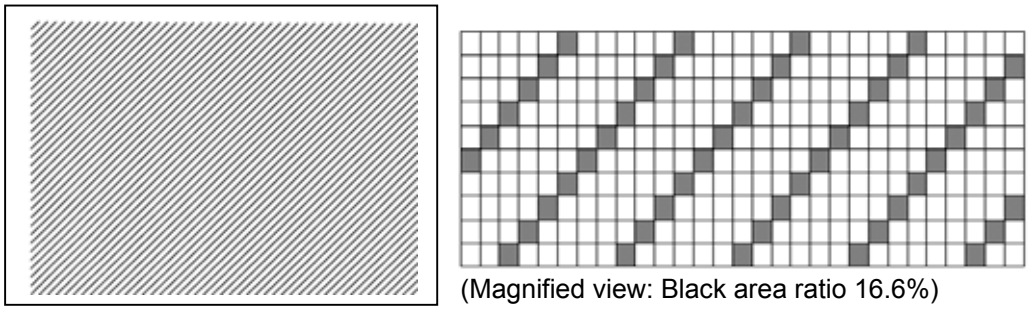
5.6.3 Slant Line (1 dot)

```
SLANT LINE(1DOT)
```

While selecting the Slant Line (1 dot), press the **[PAUSE]** key to start printing the slant line patterns (1 dot). After printing is completed, the display returns to "<4>TEST PRINT".

Pressing the **[PAUSE]** key causes the display to show "SLANT LINE (1DOT)" again. Then, press the **[FEED]** key.

■ **Print Sample of Slant Line (1 dot)**



(Magnified view: Black area ratio 16.6%)

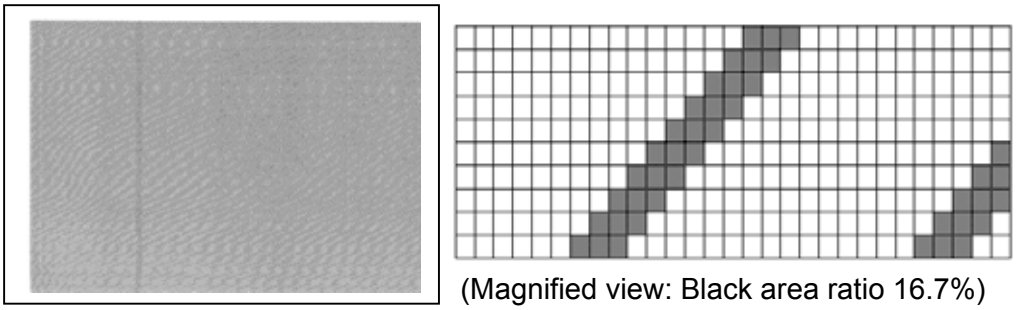
5.6.4 Slant Line (3 dots)

```
SLANT LINE(3DOT)
```

While selecting the Slant Line (3 dots), press the **[PAUSE]** key to start printing the slant line patterns (3 dots). After printing is completed, the display returns to "<4>TEST PRINT".

Pressing the **[PAUSE]** key causes the display to show "SLANT LINE (3DOT)" again. Then, press the **[FEED]** key.

■ **Print Sample of Slant Line (3 dots)**



(Magnified view: Black area ratio 16.7%)

5.6.5 Characters

```
CHARACTERS
```

While selecting the Characters, press the **[PAUSE]** key to start printing the characters. After printing is completed, the display returns to "<4>TEST PRINT".

Pressing the **[PAUSE]** key causes the display to show "CHARACTERS" again. Then, press the **[FEED]** key.

■ **Print Sample of Characters**

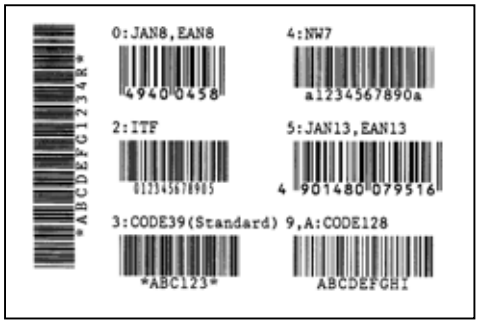
5.6.6 Barcode

```
BARCODE
```

While selecting the Barcode, press the **[PAUSE]** key to start printing the bar codes. After printing is completed, the display returns to “<4>TEST PRINT”.

Pressing the **[PAUSE]** key causes the display to shown “BARCODE” again. Then, press the **[FEED]** key.

■ **Print Sample of Barcodes**



5.6.7 Non-Printing

```
NON-PRINTING
```

While selecting the Non-printing, press the **[PAUSE]** key to start issuing a blank media. After printing is completed, the display returns to “<4>TEST PRINT”.

Pressing the **[PAUSE]** key causes the display to shown “NON-PRINTING” again. Then, press the **[FEED]** key.

NOTE: *The Non-Printing function looks like a media feeding.*

■ **Print Sample of Non-print**

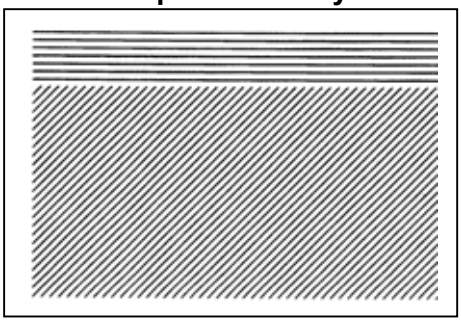
5.6.8 Factory Test

FACTORY TEST

While selecting the Factory test, press the **[PAUSE]** key to start printing the factory test pattern. After printing is completed, the display returns to "<4>TEST PRINT".

Pressing the **[PAUSE]** key causes the display to shown "FACTORY TEST" again. Then, press the **[FEED]** key.

■ **Print Sample of Factory Test**



5.6.9 Auto Print

AUTO PRINT(TRAN)	Feed Gap Sensor
AUTO PRINT(REFL)	Black Mark Sensor

While selecting the Auto Print, press the **[PAUSE]** key to feed one media and print slant lines (3 dots) on 5 pieces of media.
Next, press the **[PAUSE]** key to print bar codes on 5 pieces of media. Pressing the **[PAUSE]** key again causes the printer to print characters on 5 pieces of media.

NOTES: *1. Select "AUTO PRINT (TRAN)" when using labels, and "AUTO PRINT (REFL)" when using tag paper.*
2. Auto print is performed under the conditions below. Parameter setting and print tone fine adjustment value is ignored.

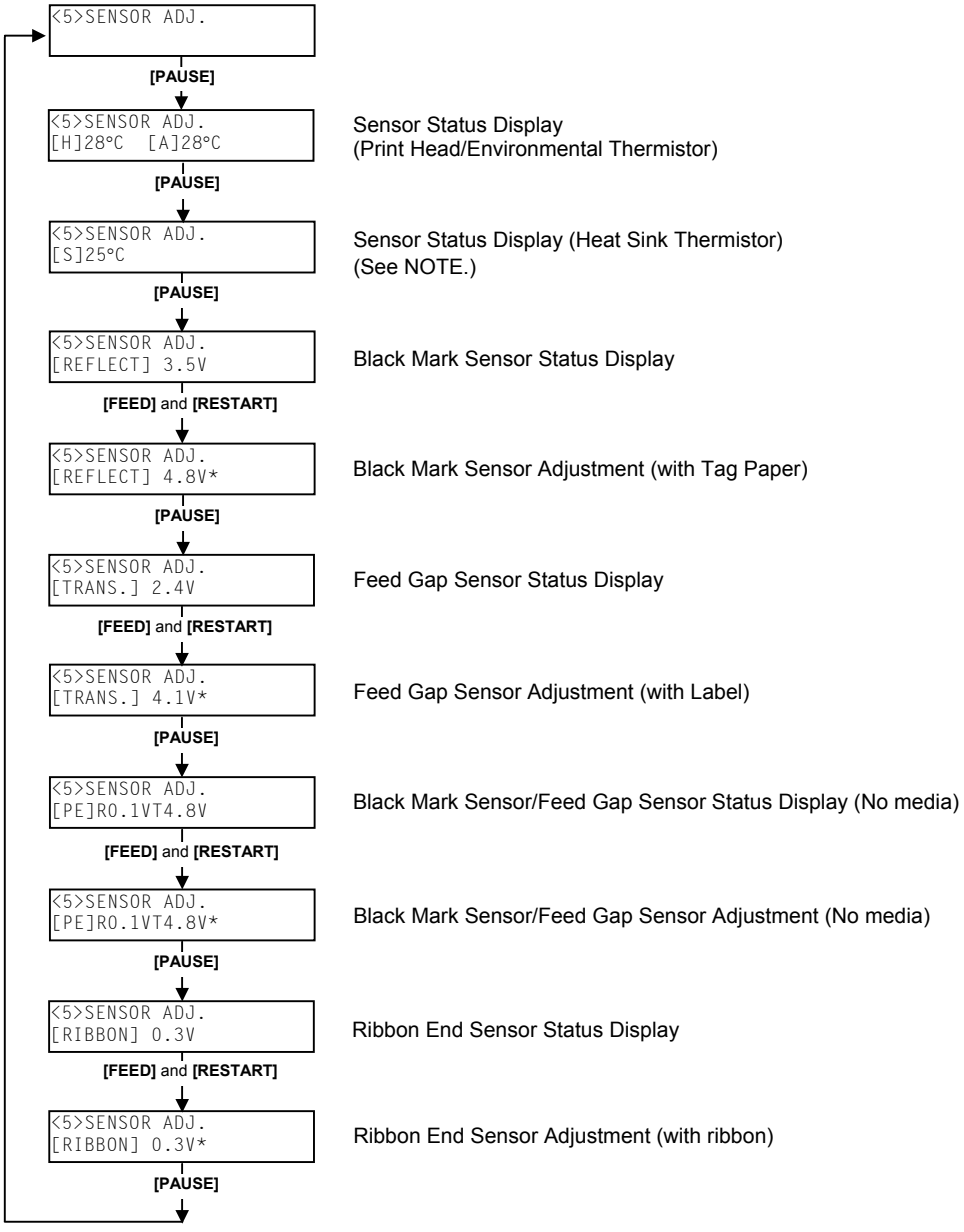
Print speed:	*6 inches/second (B-SX4T)*
	5 inches/second (B-SX5T)
Sensor type:	*Black mark or feed gap sensor*
Printing method:	*Thermal transfer*
Issuing mode:	*Batch printing*
Label size:	*76mm*
Print tone fine adjustment value:	*±0*

5.7 SENSOR ADJUSTMENT

■ Outline of the Sensor Adjustment

In the Sensor Adjustment mode, the status of the sensors and thermistors is displayed. Also you can make a Threshold Setting for the Black Mark, Feed Gap, and Ribbon End Sensors.

The **Sensor Adjustment** menu contains the following:



***NOTE**: When the MAIN2 PC board is installed in the printer, Heat Sink Thermistor Status will not be displayed. (B-SX4T with the serial number of 3T311411 or later, and B-SX5T with the serial number of 3Wxxxxxx or later.)*

NOTES: 1. *Perform a sensor threshold setting after changing the media to a different type.*
2. *An error related to the print position may be caused by the improperly set sensor threshold. In this case please perform a threshold setting in this mode. In case further adjustment is required, refer to Section 5.5 Printer Parameter Fine Adjustment to make the threshold fine adjustment.*
3. *When pressing the **[FEED]** and **[RESTART]** keys at the same time in the Sensor Adjustment menu, the display returns to "<5>SENSOR ADJ.".*
4. *The sensor status is checked every 200 msec. Therefore, the display may change according to the status.*

While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

```
<1>DIAG.   Vx.x
```

Press the **[FEED]** key 4 times. The printer is at the start of the Sensor Adjustment menu.

```
<5>SENSOR ADJ.
```

5.7.1 Sensor Status Display

When "<5>SENSOR ADJ." appears, press the **[PAUSE]** key to display the following.

```
<5>SENSOR ADJ.
[H]20°C  [A]22°C
```

Environmental Temperature Thermistor Status
0 to 86 °C

Print Head Temperature Thermistor Status
0 to 86 °C

Pressing the **[PAUSE]** key again shows the following display:

```
<5>SENSOR ADJ.
[S]25°C
```

Heat Sink Temperature Sensor Status
25°C, 80°C, 90°C, 99°C

NOTE: *When the MAIN2 PC board is installed in the printer, Heat Sink Thermistor Status will not be displayed. (B-SX4T with the serial number of 3T311411 or later, and B-SX5T with the serial number of 3Wxxxxxx or later.)*

Press the **[PAUSE]** key to show the current black mark sensor status.

5.7.2 Black Mark Sensor Adjustment

```
<5>SENSOR ADJ.
[REFLECT] 3.8V
```

The status detected by the Black Mark Sensor
0.0V to 5.0V

Follow the Black mark sensor adjustment procedure below.

(1) Load a tag stock in the B-SX series printer so that the Black Mark Sensor detects a print area (no black mark).
(2) Press and hold the **[RESTART]** or **[FEED]** key for more than 3 seconds.

```
<5>SENSOR ADJ.
[REFLECT] 2.8V*
```

When the adjustment is completed, "*" appears.

(3) Remove the tag stock from the printer.
(4) Press the **[PAUSE]** key to show the current Feed Gap Sensor status.

5.7.3 Feed Gap Sensor Adjustment

```
<5>SENSOR ADJ.
[TRANS.]  2.3V
```

Status detected by the Feed Gap Sensor
0.0V to 5.0V

Follow the Feed Gap Sensor adjustment procedure below.

(1) Place the backing paper (labels are removed) in the B- SX series printer so that the Feed gap Sensor detects it.
(2) Press and hold the **[RESTART]** or **[FEED]** key for more than 3 seconds.

```
<5>SENSOR ADJ.
[TRANS.]  4.1V*
```

When the adjustment is completed, "*" appears.

(3) Remove the backing paper from the printer.
(4) Press the **[PAUSE]** key to show the current status of the Black Mark Sensor and the Feed Gap Sensor with no paper.

5.7.4 Black Mark Sensor and Feed Gap Sensor Adjustment (No Paper)

```
<5>SENSOR ADJ.
[PE]R1.0VT4.8V
```

Status detected by the Feed Gap Sensor (No paper)

Status detected by the Black Mark Sensor (No paper)

Follow the Black Mark Sensor (no paper)/Feed Gap Sensor (no paper) adjustment procedure below.

(1) Remove any paper from the detecting area of the Black Mark Sensor and the Feed Gap Sensor.

(2) Press and hold the **[RESTART]** or **[FEED]** key for more than 3 seconds.

```
<5>SENSOR ADJ.
[PE]R1.0VT4.8V*
```

When the adjustment is completed, "*" appears.

(3) Press the **[PAUSE]** key to show the current Ribbon End Sensor status.

5.7.5 Ribbon End Sensor Adjustment

```
<5>SENSOR ADJ.
[RIBBON]  0.3V
```

Status detected by the Ribbon End Sensor

Follow the Ribbon End Sensor adjustment procedure below.

(1) Place the ribbon in the B-SX series printer so that the Ribbon End Sensor detects it.

(2) Press and hold the **[RESTART]** or **[FEED]** key for more than 3 seconds.

```
<5>SENSOR ADJ.
[RIBBON]  0.3V*
```

When the adjustment is completed, "*" appears.

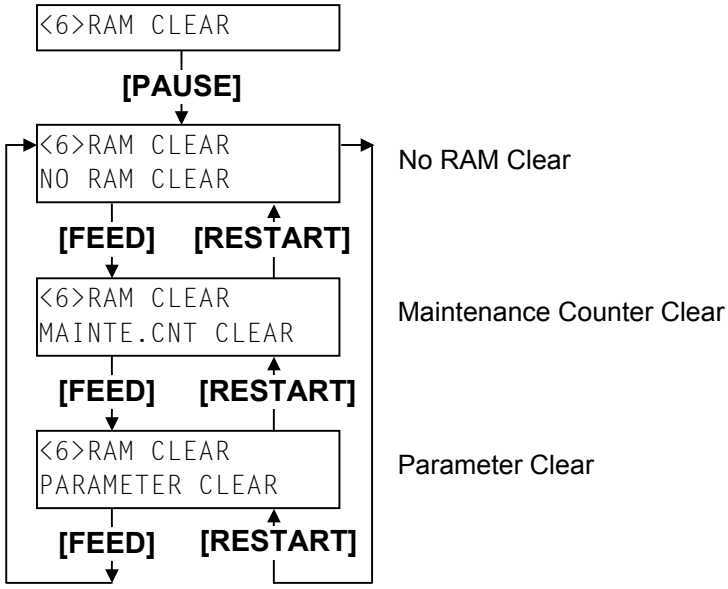
(3) Press the **[PAUSE]** key to return to "<5>SENSOR ADJ." display.

5.8 RAM CLEAR

■ **Outline of RAM Clear**

In the RAM Clear mode, clearing the Maintenance Counter and initializing the Parameters are possible. After replacing the print head, ribbon motor, or platen, perform a maintenance clear.

The **RAM Clear** menu contains the following:



While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

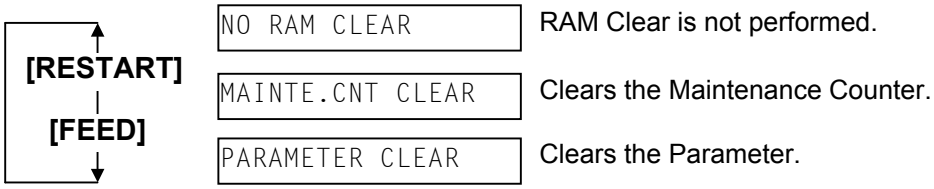
```
<1>DIAG.   Vx.x
```

Press the **[FEED]** key 5 times. The printer is at the start of the RAM Clear menu.

```
<6>RAM CLEAR
```

5.8.1 RAM Clear Menu Selection

When "<6>RAM CLEAR" appears, press the **[PAUSE]** key.
Select the RAM Clear menu among "No RAM Clear", "Maintenance Counter Clear", or "Parameter Clear".



NOTES: *1. To exit the RAM clear menu selection, press the **[FEED]** and **[RESTART]** keys at the same. The display returns to "<6>RAM CLEAR".*
2. After RAM clear, the following items are still stored: Label distance covered, Sensor adjustment value, IP address, Language for the LCD message, data in the flash memory, and data in the ATA card.

5.8.2 No RAM Clear

```
NO RAM CLEAR
```

Press the **[PAUSE]** key. No RAM Clear operation is performed and the display returns to "<6>RAM CLEAR".

Pressing the **[PAUSE]** key again causes the display to return to "NO RAM CLEAR".

5.8.3 Maintenance Counter Clear

```
MAINTE.CNT CLEAR
```

Press the **[PAUSE]** key to perform the Maintenance Counter Clear.
When the Maintenance Counter Clear is completed, the following message appears.

```
*** COMPLETE ***
```

Turn off the printer to exit this mode.

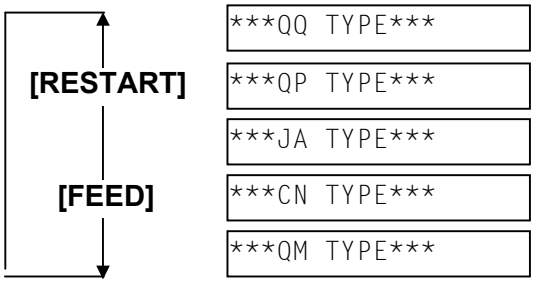
■ **Initial values after clearing the maintenance counter (MANTE.CNT CLEAR)**

Item	Initial Value
Label distance covered	0 km
Print distance	0 km
Cut count	0 time
Head up/down count	0 time
Ribbon motor drive time	0 hour
Solenoid drive time	0 hour
RS-232C hardware error count	0 time
System error count	0 time
Momentary power failure count	0 time

5.8.4 Printer Parameter Clear

```
PARAMETER CLEAR
```

Press the **[PAUSE]** key to show the destination code selection display.



Specifications for North /Central /South America
Specifications for Europe and Asia
Specifications for Japan
Specifications for China
Specifications for North /Central /South America, Europe, Asia and China

Select the destination code of the printer being used, and press the **[PAUSE]** key to perform a Printer Parameter Clear.
When the Printer Parameter Clear is completed, the following message appears.

```
*** COMPLETE ***
```

Turn off the printer to exit this mode.

■ Initial values after clearing the parameters (PARAMETER CLEAR)

Item	Initial Value
Feed length fine adjustment (PC), (KEY)	0 mm
Cut (Strip) position fine adjustment (PC), (KEY)	0 mm
Back feed length fine adjustment (PC), (KEY)	0 mm
Print tone fine adjustment (Thermal transfer), (PC), (KEY)	0
Print tone fine adjustment (Thermal direct), (PC), (KEY)	0
Ribbon take-up motor driving voltage fine adjustment (PC), (KEY)	0
Ribbon feed motor driving voltage fine adjustment (PC), (KEY)	0
Threshold manual fine adjustment for the black mark sensor	1.0V
Threshold manual fine adjustment for the feed gap sensor	1.4V
X axis fine adjustment	0 mm
Character code and zero font code	PC-850, “0” (without slash)
Control code	AUTO
Baud rate	9600 bps
Data length	QP/JA: 8 bits, QQ: 7 bits
Stop bit	1 bit
Parity	QQ/QP/CN/QM: None, JA: EVEN
Transmission control code	QP/CN/QM/JA: XON+READY AUTO QQ: READY/BUSY
Forward wait	QQ/QP/CN: OFF JA (without cutter): OFF JA (with cutter): ON
Forward/backward feed action	QQ/QP/CN: Mode 1 JA (without cutter): Mode 1 JA (with cutter): Mode 2
Feed key function	FEED
Kanji code type	TYPE1
Euro code	B0H
Auto print head check	OFF
Web printer function	OFF
Status response	ON
Label pitch	76.2 mm
Effective print length	74.2 mm
Effective print width	104.0 mm (B-SX4T), 128.0 mm (B-SX5T)
Printing mode	Thermal transfer
Sensor type	Feed gap sensor
Print speed	6”/sec. (B-SX4T), 5”/sec. (B-SX5T)
Issue mode	Batch print
PC save automatic calling	ON (Save No. on the Main PCB (ID No.): 01)
ACK/BUSY timing	TYPE 1
LCD message language	QQ/QP/QM/CN: English, JA: Japanese
Head up in cut mode/Rewinder selection	Head up: OFF, Rewinder: OFF
Solenoid type selection	TYPE2 (Stronger pull force type)
Ribbon saving module	OFF: B-SX4T ON (TAG): B-SX5T
Strip wait status	OFF
Input prime (Reset operation when $\overline{\text{INIT}}$ signal is ON.)	ON: Available
Ribbon near end detect	OFF: No detection
Expansion I/O mode	TYPE1: Standard mode
Centronics I/O mode	QQ: ECP, QP/CN/JA: SPP
Plug & Play	QQ: ON, QP/CN/JA: OFF
Print processing at the label/ribbon end detection	TYPE1: Printing is paused in the middle of printing.
Pre strip	OFF: Unavailable

Item	Initial Value
Back feed speed	STD: 3 inches/second
Maxi code specification selection	TYPE1 (Compatible with the current version)
Print head	B-SX4T series: V2 head (TPH104R7 or equivalent) B-SX5T series: V2 head (TPH128R5 or equivalent)
Basic interpreter	OFF: Unavailable
Basic interpreter trace	OFF: Unavailable
DHCP function	OFF: Unavailable
RFID module type	NONE
RFID tag type	NONE
RFID module's destination code setting (user-inaccessible setting)	Depending on the module setting
RFID error tag detection	OFF: An error tag detection is not performed.
Password setting to protect error tag detection	Disabled: 0000
Access password setting	00000000
Automatic unlock function setting	Disabled
Maximum number of RFID issue retries	3
Maximum number of RFID read retries	5
RFID read retry time-out	4.0 sec.
Maximum number of RFID write retries	5
RFID write retry time-out	2.0 sec.
RFID adjustment for retry	+00 mm: No adjustment
RFID wireless power level setting	B-9704-RFID-U1: 251 B-SX704-RFID-U2: 20 B-9704-RFID-U1-EU-R: 50 B-SX704-RFID-U2-EU/US/CN/AU-R: 18
RFID AGC Threshold Setting	0
RFID Channel Setting	Auto
Q value	0
AGC threshold for data write	0
AGC threshold lower limit for retry	0
Number of successful RFID write	0
Number of failure in RFID write	0
System mode password setting	OFF
LAN enable/disable setting (V4.4 or later, except V4.4A)	ON SNMP ON
XML function setting (V4.4A or Xx.x)	STD
Z-MODE (C5.3 or later (Version Cx.x only))	OFF

NOTES: *1. The initial values of Data length, Parity, Control code, LCD message language are different according to the destination code.*

2. The number of successful RFID write, the number of failure in RFID write, and the system mode password will not be cleared by a RAM clear.

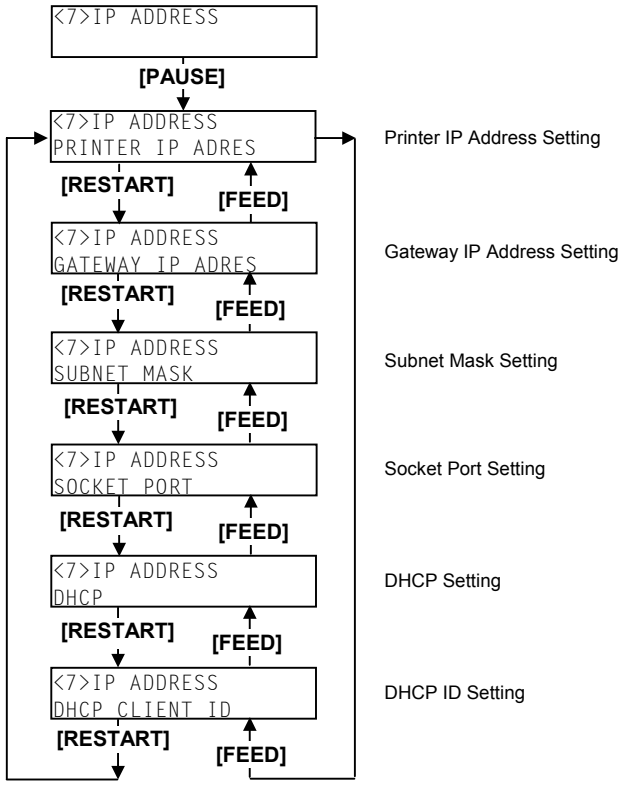
3. RFID module's destination code setting (user-inaccessible setting), password setting to protect error tag detection, access password setting, and automatic unlock function setting cannot be cleared by RAM clear. (The initial values in the table are the factory default.)

5.9 IP ADDRESS SETTING

■ **Outline of the IP Address Setting**

In the IP Address Setting mode, you can set the IP Address, Gateway Address, Subnet Mask, DHCP, and DHCP ID which are necessary for a network communication. Since each setting value is different depending on your operating environment.

The **IP Address Setting** menu contains the following:



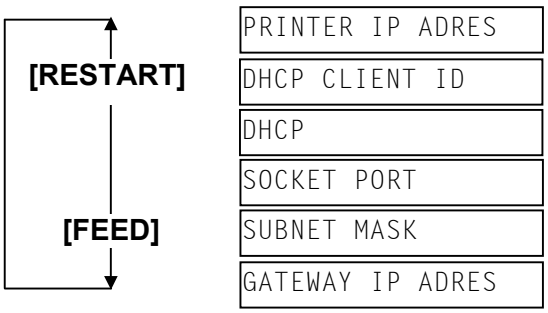
While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

```
<1>DIAG.   Vx.x
```

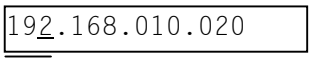
Press the **[FEED]** key 6 times.
The printer is at the start of the IP Address Setting menu.

```
<7>IP ADDRESS
```

When "<7>IP ADDRESS" appears, press the **[PAUSE]** key.
Select the IP Address menu among "Printer IP Address", "Socket Port", "Gateway IP Address", "Subnet Mask", "DHCP", or "DHCP Client ID".

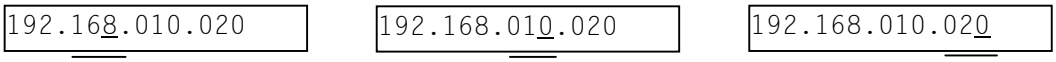


(1) Printer IP Address, Gateway IP Address, and Subnet Mask Settings
After selecting the menu set the IP address using the following procedure.



Set the first 3 digit value with the **[FEED]** or **[RESTART]** key.

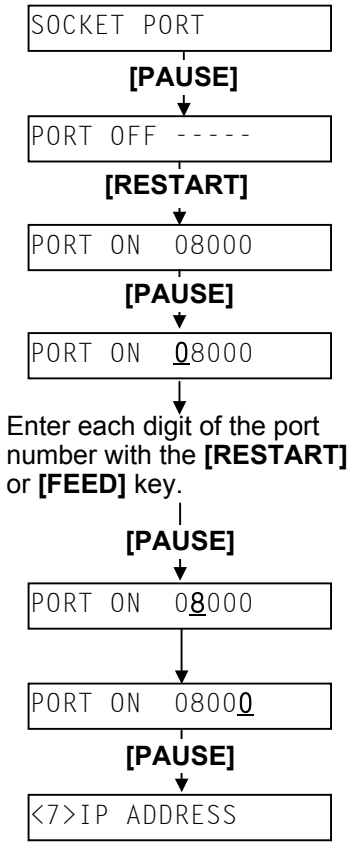
Press the **[PAUSE]** key to move the cursor to the next 3 digit value.
Set the next values in the same way.



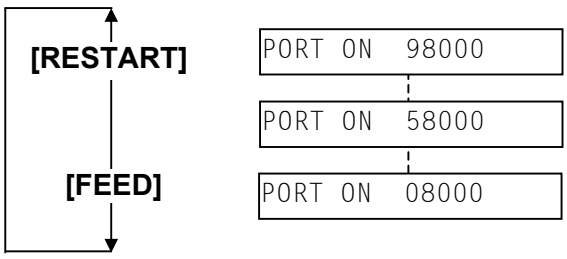
NOTES: *1. Pressing the **[FEED]** key one time causes a –1 change. Pressing the **[RESTART]** key one time causes a +1 change.*
*2. If holding the **[FEED]** or **[RESTART]** key for 0.5 seconds or longer in the parameter setting, the key is entered continuously.*

After the last 3 digit value is set, press the **[PAUSE]** key. The display will show "GATEWAY IP ADDRESS". Set the values for the Gateway IP Address and Subnet Mask, respectively.

(2) Socket Port Setting
To set the socket port number, follow the procedure below.



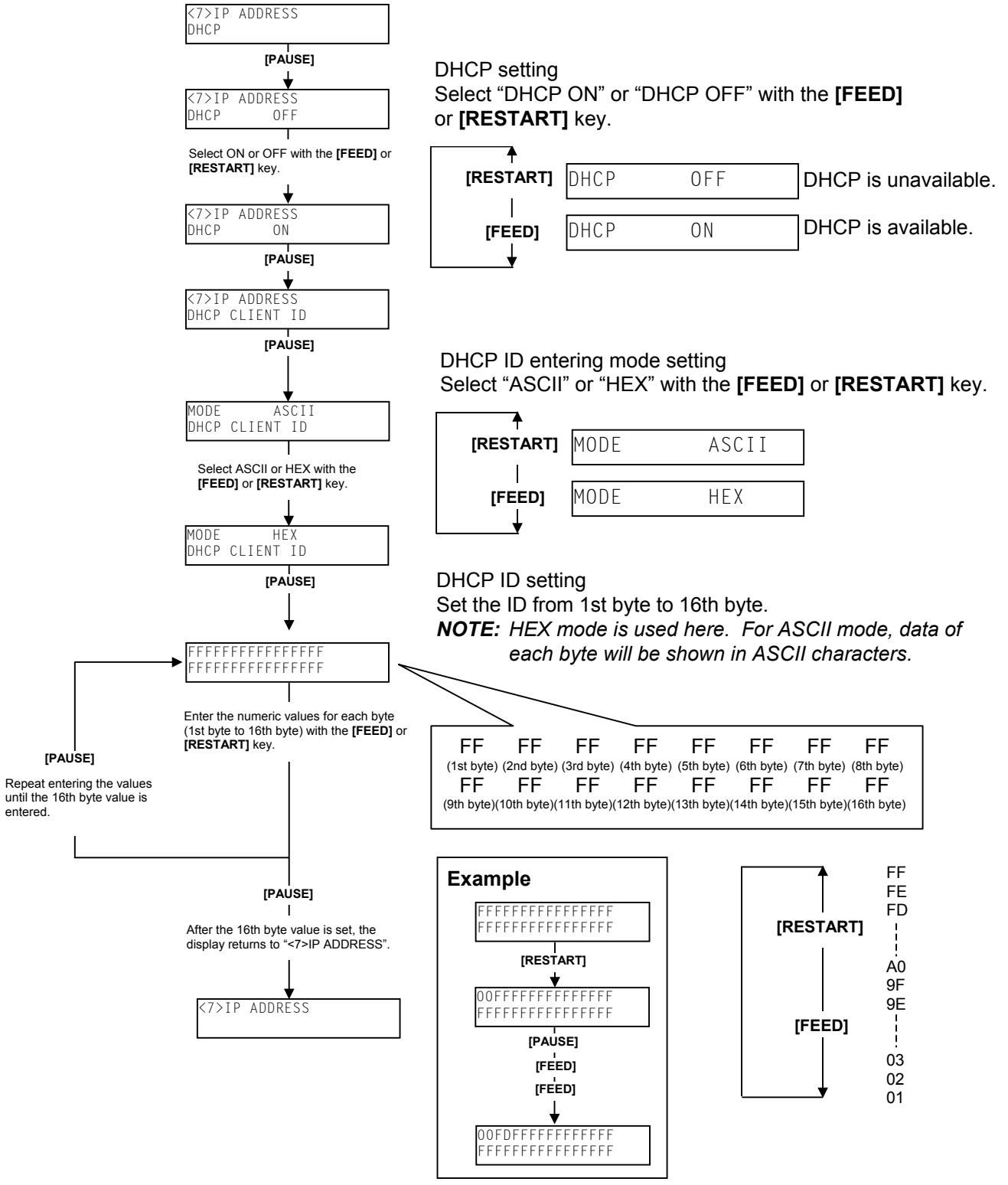
Select "PORT ON" or "PORT OFF" with the **[RESTART]** or **[FEED]** key. When "PORT ON" is selected, a port number is displayed. Pressing the **[PAUSE]** key allows the port number setting.



Enter the 5th digit of the port number with the **[RESTART]** or **[FEED]** key. Pressing the **[PAUSE]** key allows the 4th digit setting.
Repeat this procedure until the 1st digit setting has been completed.

(3) DHCP and DHCP ID Settings

To set the DHCP and the DHCP ID, follow the procedure below.

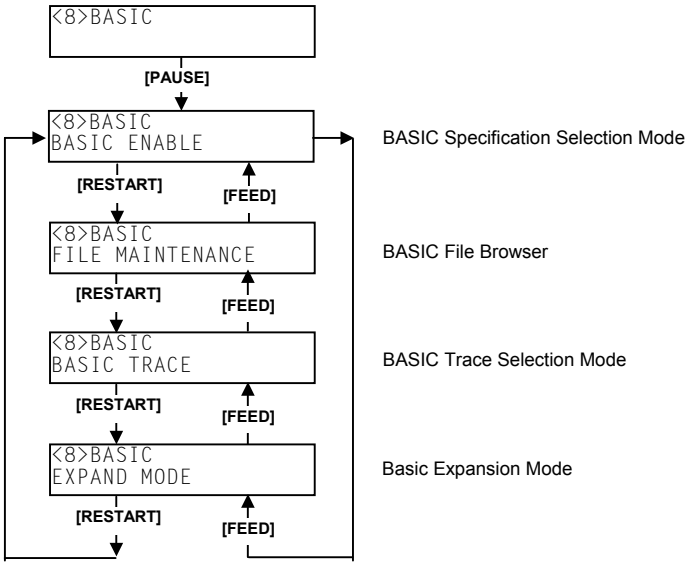


5.10 BASIC SETTING

■ Outline of Basic Setting

The Basic function enables the B-SX4T/SX5T printer to operate with the program created for other printers, by converting it to Basic program and downloading this Basic program to the B-SX4T/SX5T printer. Setting the downloaded Basic program to be enabled/disabled, browsing the program file, data file, and area file, etc. are available in this mode.

The Basic Setting menu contains the following.



While pressing the **[FEED]** and **[PAUSE]** keys at the same time, turn on the printer. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

```
<1>DIAG.   Vx.x
```

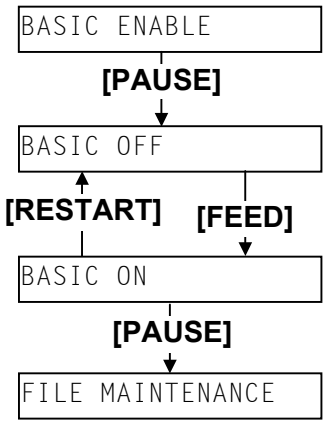
Press the **[FEED]** key 8 times.
The printer is at the start of the BASIC setting menu.

```
<8>BASIC
```

When "<8>BASIC" appears, press the **[PAUSE]** key.

5.10.1 Basic Specification Selection Mode

Select whether the Basic specification is enable or not.

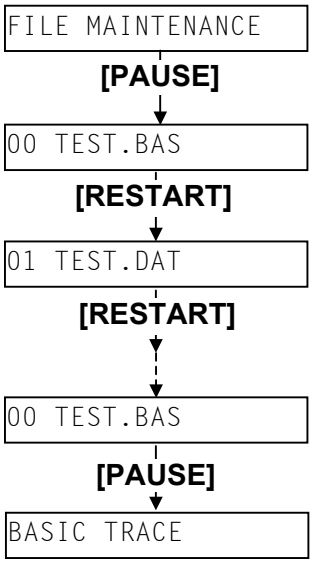


"BASIC ON" or "BASIC OFF" is selected each time the **[RESTART]** or **[FEED]** key is pressed.

Basic specification selection is completed by pressing the **[PAUSE]** key.

5.10.2 Basic File Browser

Data files in the program file and basic file area are displayed.
When "<8>BASIC" appears, press the **[PAUSE]** key, then **[RESTART]** key.



Program file is displayed.

Data file is displayed.

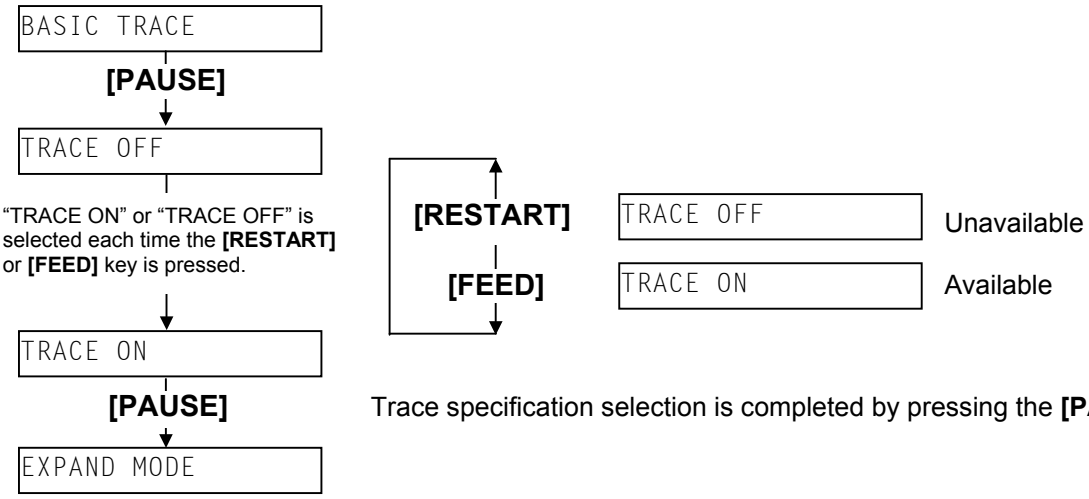
Data files in the BASIC file area are displayed each time the **[RESTART]** key is pressed.

Program file is displayed.

Basic file browser is completed by pressing the **[PAUSE]** key.

5.10.3 Basic Trace Selection Mode

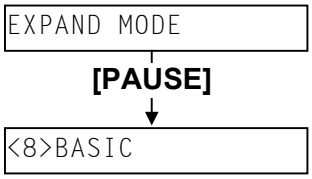
Select whether the Basic trace specification is enable or not.
When "<8>BASIC" appears, press the **[PAUSE]** key, then **[RESTART]** key twice.



Trace specification selection is completed by pressing the **[PAUSE]** key.

5.10.4 Basic Expansion Mode

In this mode it is possible to execute the Basic expansion mode program.
When "<8>BASIC" appears, press the **[PAUSE]** key, then **[RESTART]** key three times.



When the program for the Basic expansion mode has been downloaded, it will be executed by pressing the **[PAUSE]** key. The way of completion is different according to the program.

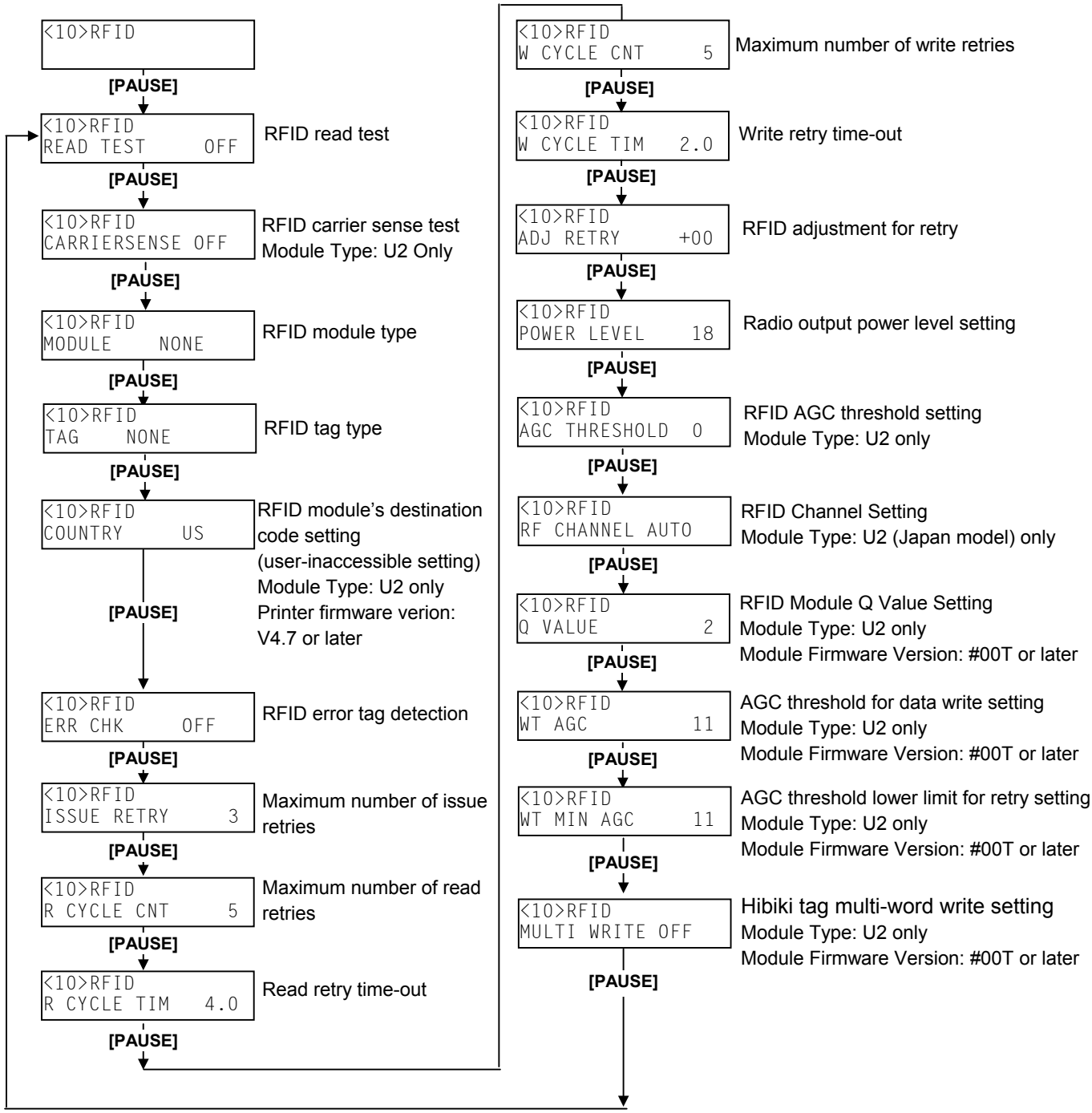
***NOTE**: In this mode, it is possible to add the program exlucisvely for the B-SX4T/SX5T to the programs for other pritner systems.*

5.11 RFID Module Setting

■ Outline of the RFID Module Setting

In the RFID Module Setting mode, you can set various parameters related to the RFID module.
It is necessary to set these parameters before operating the RFID module.
If a read or write error occurs frequently, adjust the values for the parameters.

The **RFID Module Setting** menu contains the following:



■ **How to Enter RFID Module Setting Mode**

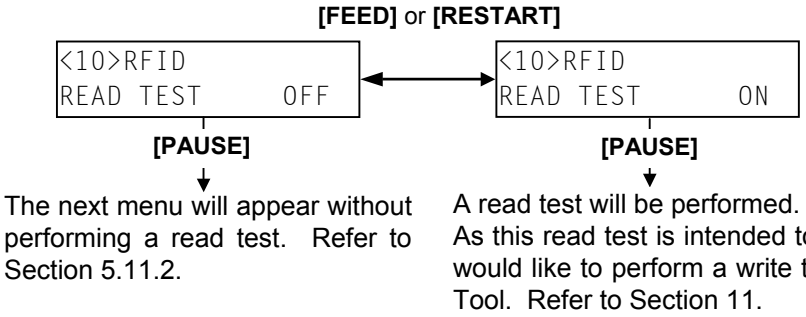
Turn on the printer while pressing the **[FEED]** and **[PAUSE]** keys at the same time. Hold both keys until the "<1>DIAG. Vx.x" Message appears.

```
<1>DIAG.   Vx.x
```

Press the **[RESTART]** key or **[FEED]** key until "<10>RFID" appears.

5.11.1 RFID Read Test

This parameter is to choose whether to perform an RFID read test. When using an RFID module for the first time, or when performing an RFID read test after performing a parameter clear, it is necessary to set the RFID module parameters in advance. Refer to Section 5.11.2.
When "<10>RFID" appears, press the **[PAUSE]** key.



<Read Test Procedure>

1) Place a TOSHIBA-recommended RFID tag as close as the antenna.

***NOTE**: Available RFID tag*
(1) B-9704-RFID-U1-US, B-9704-RFID-U1-EU and B-9704-RFID-U1-EU-R
EPC Class 0 (Read only)
ECP Class 1
ECP Class 1 Gen2 (Only when the RFID module supports GEN2.)
ISO 18000-6B
(2) B-9704-RFID-H1-QM and B-9704-RFID-H1-QM-R
*TAGSYS (C210, C220, C240, C320) *C320 is available only when the TAGSYS S003 module is used.*
I-Code
Tag-It
ISO15693
(3) B-SX704-RFID-U2-EU/AU/US/CN-R
EPC C1 Gen2

2) The printer enters the read test mode, and a read test is performed each time the [PAUSE] key is pressed. The read data on the tag is displayed on the LCD message display. If the tag cannot be read, “RFID TIMEOUT” or “RFID READ ERROR” is displayed. Only the tags selected by the RFID tag type selection can be read. An RFID tag read error will result if the type of the tag to be read and the type of the tag selected by the RFID tag type selection do not match. Make sure the RFID tag type has been selected before the read test is started.
LCD can display up to 16 digits x 2 lines data. (See below.)

```
1234567890123456
6543210987654321
```

In the case of the B-SX704-RFID-US-EU/US/CN/AU-R

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

The data, displayed in hex. numbers. Displayed data is an EPC code in the EPC area (only when the B-SX704-RFID-U2-EU/US/CN/AU-R is used.)
When the RFID tag contains data of 16 digits or more, the first 16 digits are displayed.
When data volume is less than 16 digits, the vacant digits will be filled with spaces.
In the case of the B-SX704-RFID-U2-EU/US/CN/AU-R, the AGC value of a read tag, enclosed with parentheses, is displayed on the right most place on the lower line.
Therefore, 14-byte data is displayed in hex. code.
When the RFID tag contains 14 bytes or more data, the first 14 bytes are displayed. When data volume is less than 14 bytes, the vacant digits will be filled with spaces.
If 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.
When the RFID module type is set to “NONE” or a communication cannot be established, a message, “NO RFID MODULE”, is displayed.
When the B-SX704-RFID-U2-US-R is used and if a RFID module’s destination code is not specified (user-inaccessible setting), an “RFID CONFIG ERR” error message is displayed.

“NO RFID MODULE”, “TIMEOUT” or “RFID READ ERROR” indicates an error. In that case, check the following:

- In case of NO RFID MODULE
  - Connection failure of the antenna cable ⇒ Check the connection.
  - Connection failure of the interface cable ⇒ Check the connection.
  - Wrong parameter setting ⇒ Check the parameter setting.
- In case of TIMEOUT or RFID READ ERROR
  - The RFID tag used is hard to read. ⇒ Refer to the Product Description and check the available RFID tag types.
  - TOSHIBA-recommended tag is not used. ⇒ Refer to the Product Description and check the available RFID tag types. Increase the value for R CYCLE CNT or R CYCLE TIM

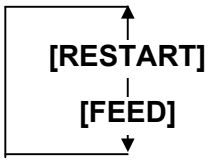
3) In case a test succeeded, a read test will be performed each time the **[PAUSE]** key is pressed.
4) To finish a read test, turn off the printer.

5.11.2 RFID Carrier Sense Test (B-SX704-RFID-U2 only)

This parameter is to choose whether to perform an RFID carrier sense test.

```
<10>RFID
CARRIERSENSE OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.




```
CARRIERSENSE OFF
```

OFF: A carrier sense is not performed.

```
CARRIERSENSE ON
```

ON: A carrier sense is performed.

OFF: A carrier sense is not performed.

ON: The printer enters the carrier sense mode, and performs a carrier sense. In 5 seconds, environmental radio wave of each channel is picked up for about 30 times (Enabled only when the B-SX704-RFID-U2 is used.)

LCD display example

```
1:100% MAX 0011
2:90%  MAX 0011
```

The left-most number indicates a channel number, and a percentage means the availability of the channel which is determined by performing approx. 30 carrier senses. Thus, “100%” means that this channel is not used by any other devices. The display can be scrolled up or down, from Channel 1 (1CH) to channel 9 (9CH), by using the **[FEED]** or **[RESTART]** key. Pressing the **[PAUSE]** key causes the printer to perform a carrier sense again. To quit a carrier sense, press the **[FEED]** and **[RESTART]** keys at the same time.
“MAX 0011” means the value of the maximum radio wave picked up.

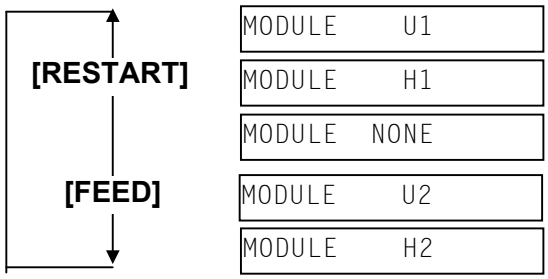
- When the RFID module type is set to “NONE” or a communication cannot be established, a message, “NON RFID MODULE”, is displayed.
- When the RFID module type is set to other than U2, a message, “NOT AVAILABLE” is displayed.
- When the RFID module type is set to U2 but effective data cannot be obtained, a message, “NO RESPONSE” is displayed.
- When the B-SX704-RFID-U2-US-R is used and if a RFID module’s destination code is not specified (user-inaccessible setting), an “RFID CONFIG ERR” error message is displayed.

5.11.3 RFID Module Type Selection

This parameter is to choose an RFID module type to be used. Improper choice will disable the RFID module. The initial setting (including the status after a parameter clear) is “MODULE NONE”.
When “MODULE NONE” is displayed, press the **[PAUSE]** key.

```
<10>RFID
MODULE  NONE
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



U1-US or U1-EU/U1-EU-R model is used.

H1-QM/H1-QM-R model is used.

RFID module is not used. (default)

B-SX704-RFID-U2 (-EU/US/CN/AU-R) is installed.

B-SX704-RFID-H2 is used. (Japan model only)

NOTE: *This parameter setting is effective when turning OFF then ON the printer.*
After selecting the RFID module type to be used, press the **[PAUSE]** key.

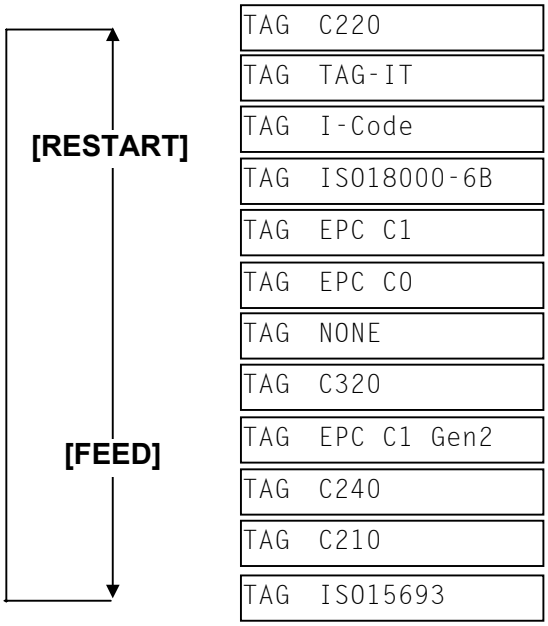
5.11.4 RFID Tag Type Selection

This parameter is to choose an RFID tag type to be used. Available tag type is different depending on the RFID module type.

(1) When the RFID Module Type has been set to NONE

```
<10>RFID
TAG          NONE
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.



After selecting the RFID tag type to be used, press the **[PAUSE]** key.

NOTE: *Combination of RFID module type and available tag type*

Tag type	Parameter for TPCL command	RFID module type
NONE	00	NONE
I-Code	11	
Tag-it	12	
C220	13	
ISO15693	14	
C210	15	
C240	16	
C320	17	
EPC C0	21	
EPC C1	22	
ISO18000-6B	23	
EPC C1 Gen2	24	
NONE	00	B-9704-RFID-H1-QM/QM-R
I-Code	11	
Tag-it	12	
C220	13	
ISO15693	14	
C210	15	
C240	16	
C320	17	
NONE	00	B-9704-RFID-U1-US/EU/EU-R
EPC C0	21	
EPC C1	22	
ISO18000-6B	23	
EPC C1 Gen2	24	
NONE	00	B-SX704-RFID-U2-EU/AU/CN/US-R
EPC C1 Gen2	24	
NONE	00	B-SX704-RFID-H2
ISO15693	14	

(2) When the RFID Module Type has been set to U2

```
<10>RFID
TAG          U2
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

After selecting the RFID tag type to be used, press the **[PAUSE]** key.

(3) When the RFID Module Type has been set to H2

```
<10>RFID
TAG          H2
```

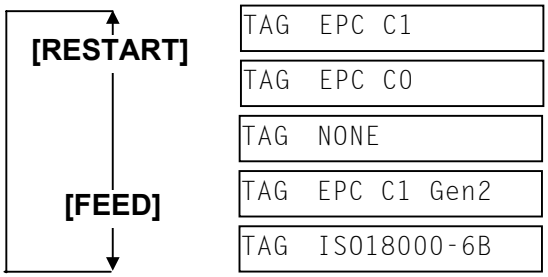
Use the **[FEED]** or **[RESTART]** key to select a desired option.

After selecting the RFID tag type to be used, press the **[PAUSE]** key.

(4) When the RFID Module Type has been set to U1

```
<10>RFID
TAG          U1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

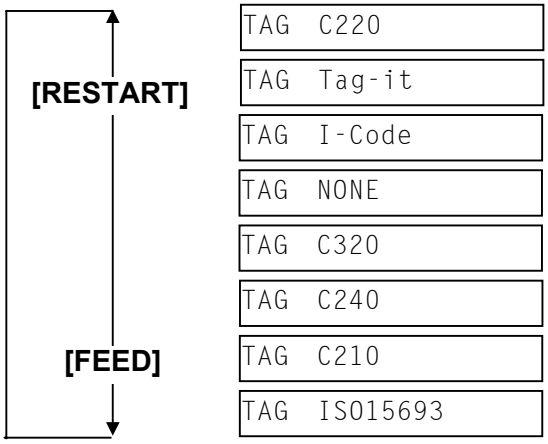


After selecting the RFID tag type to be used, press the **[PAUSE]** key.

(5) When the RFID Module Type has been set to H1

```
<10>RFID
TAG          H1
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.

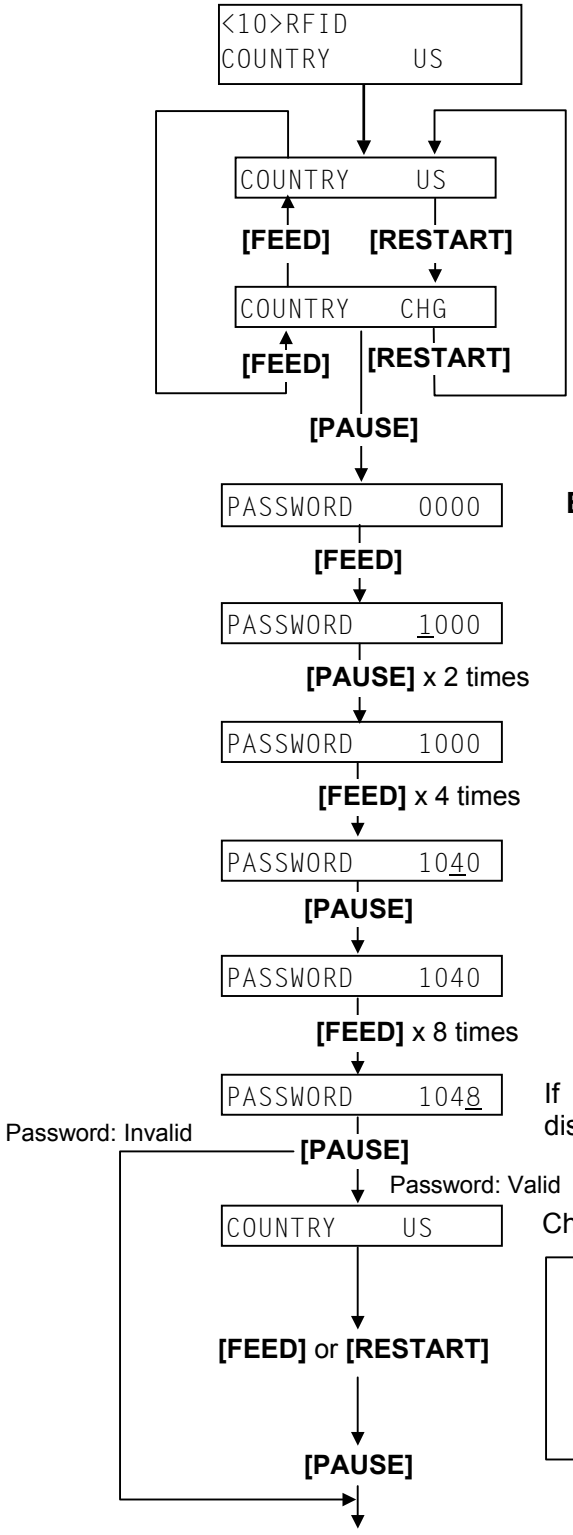


After selecting the RFID tag type to be used, press the **[PAUSE]** key.

5.11.5 RFID Module's Destination Code Setting (U2 Module Only)

Note: Supported from firmware V4.7, X4.7, C4.7, V5.0, X5.0, or C5.0

This menu allows setting or changing the destination code of the B-SX704-RFID-U2-US-R. The radio frequency output varies according to the destination codes. Therefore, an access to this menu is password-protected in order to prevent unauthorized changes by users.

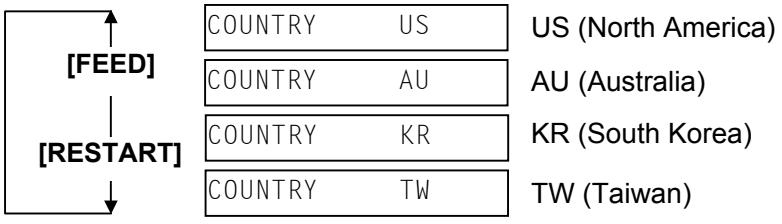


When the system enters this menu, the current setting is displayed and "CHG" is selectable. If the destination code has not been specified, "CHG" is displayed first.
For the B-SX704-RFID-US-US-R, choose "CHG" which enables changing or setting the destination code.
In the case of the RFID module other than B-SX704-RFID-US-US-R, "CHG" cannot be selected.

Enter the password "1048".

If the password does not match, "PASSWORD INVALID" is displayed and the system goes to the next setting.

Choose a destination code with the **[FEED]** or **[RESTART]** key.



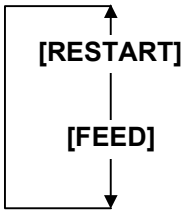
5.11.6 RFID Error Tag Detection

(1) Firmware Version V4.6A and earlier

This parameter is to to choose whether an error detection is performed or not before writing data on an RFID Tag. When “ON” is selected, data is written on an RFID only when no error is detected.
NOTE: This function is exclusively for Alien’s EPC C1 Squiggle tag. Choose”OFF” usually. When”ERR CHK OFF” is displayed, press the **[PAUSE]** key.

```
<10>RFID
ERR CHK    OFF
```

Use the **[FEED]** or **[RESTART]** key to select a desired option.




```
ERR CHK     OFF
```

Error tag detection is not performed. Atag is read before writing data on it, but data is always written regardless of the header data of the tag.

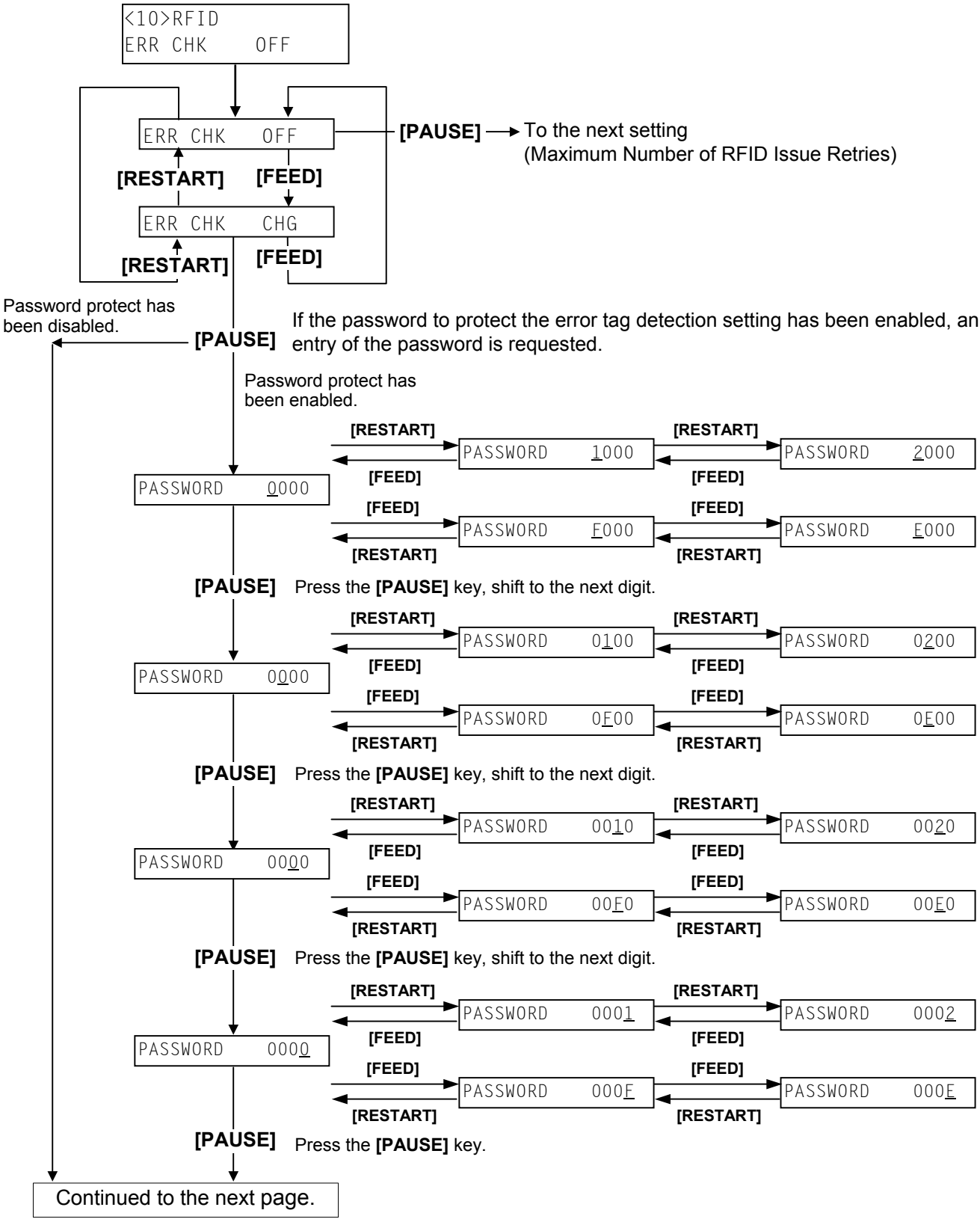
```
ERR CHK     ON
```

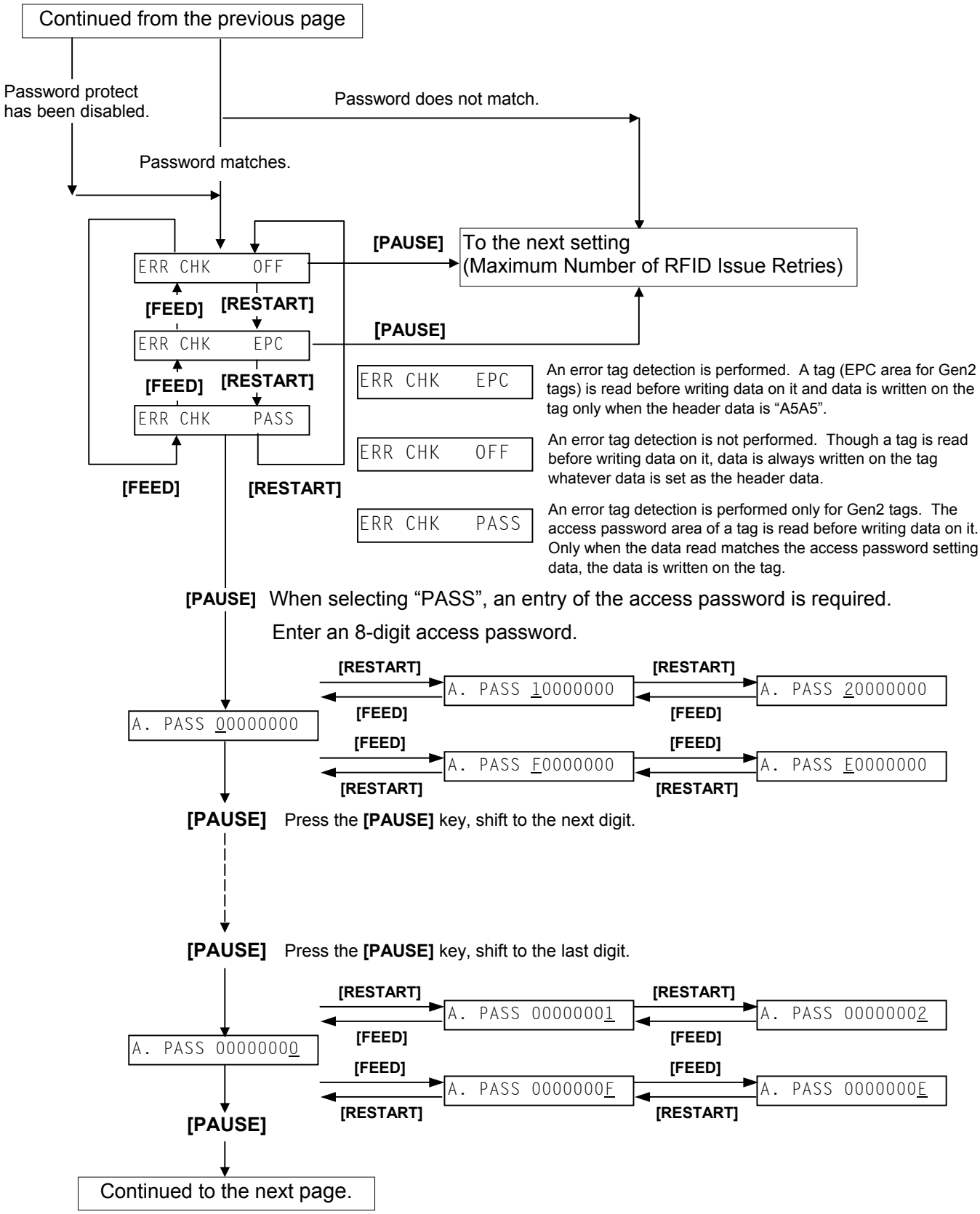
Error tag detection is performed. (Only when the header data of the RFID data is “A5A5”, data is written on the RFID tag. This function is available only for Alien’s EPC C1 Squiggle tag only.)

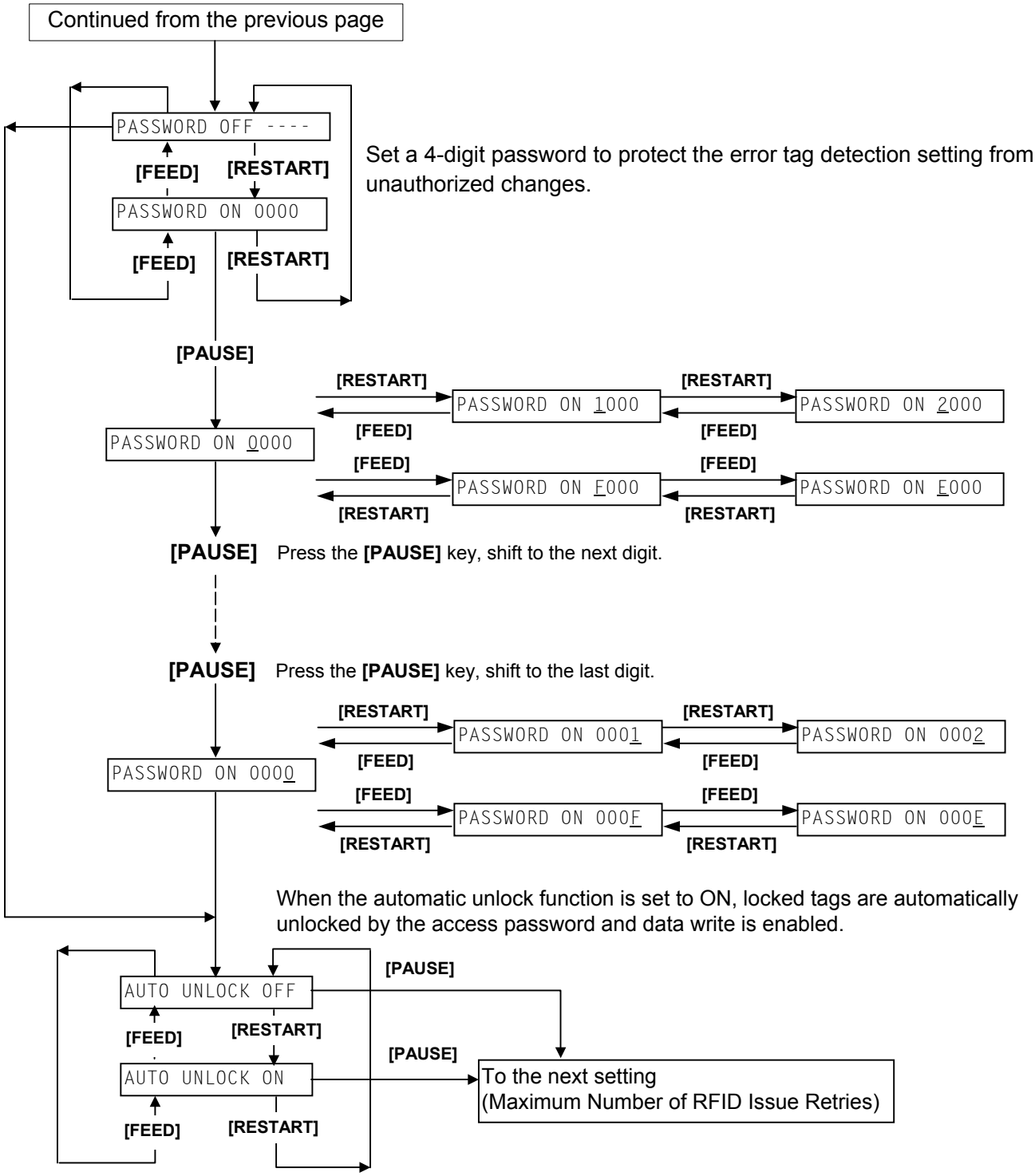
After selecting the RFID error tag detection function to be used, press the **[PAUSE]** key.

(2) Firmware Version: V4.7 or later.

This parameter is to choose whether an error detection is performed or not before writing data on an RFID tag.
To prevent unauthorized changes of the setting, a password to protect the error tag detection setting can be registered.




Continued from the previous page
Password protect has been disabled.
Password does not match.
Password matches.
ERR CHK OFF
ERR CHK EPC
ERR CHK PASS
[FEED]
[RESTART]
[PAUSE]
To the next setting
(Maximum Number of RFID Issue Retries)
ERR CHK EPC
An error tag detection is performed. A tag (EPC area for Gen2 tags) is read before writing data on it and data is written on the tag only when the header data is "A5A5".
ERR CHK OFF
An error tag detection is not performed. Though a tag is read before writing data on it, data is always written on the tag whatever data is set as the header data.
ERR CHK PASS
An error tag detection is performed only for Gen2 tags. The access password area of a tag is read before writing data on it. Only when the data read matches the access password setting data, the data is written on the tag.
[PAUSE] When selecting "PASS", an entry of the access password is required.
Enter an 8-digit access password.
A. PASS 00000000
A. PASS 10000000
A. PASS 20000000
A. PASS F0000000
A. PASS E0000000
[PAUSE] Press the [PAUSE] key, shift to the next digit.
[PAUSE] Press the [PAUSE] key, shift to the last digit.
A. PASS 00000000
A. PASS 00000001
A. PASS 00000002
A. PASS 0000000F
A. PASS 0000000E
[PAUSE]
Continued to the next page.



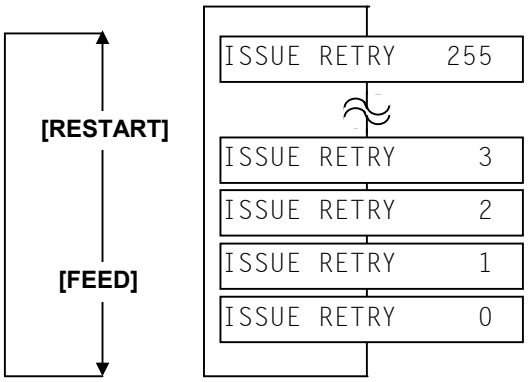
After selecting the RFID error tag detection function to be used, press the **[PAUSE]** key.

5.11.7 Maximum Number of RFID Issue Retries

This parameter is to set the maximum number of times to issue an RFID tag. If the printer fails to issue an RFID tag, it prints an error pattern ("VOID") and retries to issue the tag for up to a specified number of times. If the printer does not succeed even after having retried for the maximum number of times, the printer stops, resulting in an error (RFID WRITE ERROR).
When "ISSUE RETRY 3" is displayed, press the **[PAUSE]** key.

```
<10>RFID
ISSUE RETRY   3
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 255)



[FEED] key: Pressing the **[FEED]** key one time causes a –1 change, up to 0.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 change, up to 255.

After selecting the maximum number of issue retries, press the **[PAUSE]** key.

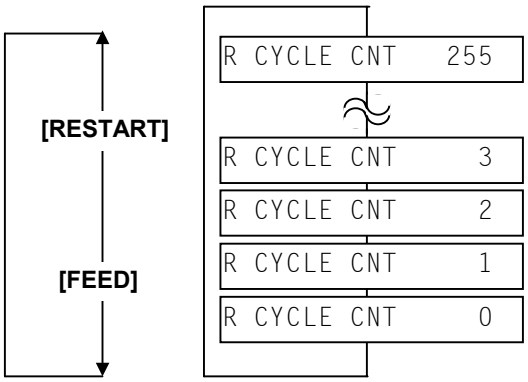
5.11.8 Maximum Number of RFID Read Retries

This parameter is to set the maximum number of times to read an RFID tag.
If the printer does not succeed even if after having retried for the maximum number of times, the printer stops, resulting in an error (TIMEOUT). In case of frequent read errors, increase this retry count. However, when the retry count is increased, a data read may become slower.
If the specified time-out runs out, the printer stops retry even before the maximum number of retry times is reached. The printer always reads an RFID tag for a maximum number of retry times set by this parameter before writing data to the RFID.

When "R CYCLE CNT 5" is displayed, press the **[PAUSE]** key.

```
<10>RFID
R CYCLE CNT     5
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 255)



[FEED] key: Pressing the **[FEED]** key one time causes a –1 change, up to 0.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 change, up to 255.

After selecting the maximum number of read retries, press the **[PAUSE]** key.

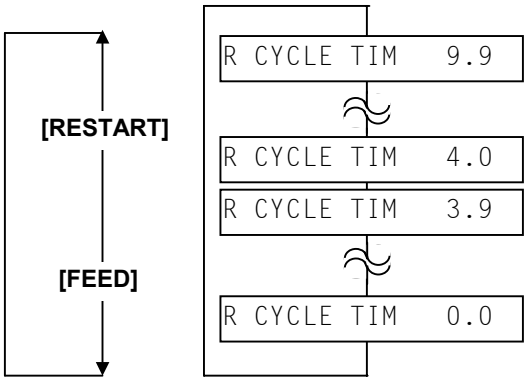
5.11.9 RFID Read Retry Time-out

This parameter is to set the time-out for retry to read an RFID tag.
If the printer does not succeed within the specified time-out, the printer stops, resulting in an error (TIMEOUT). In case of frequent read errors, increase the amount of time. However, when the amount of time is increased, a data read may become slower.
If the maximum number of retries is reached, the printer stops retry even before the specified time runs out.
The printer always reads an RFID tag for the specified time set by this parameter before writing data to the RFID.

When "R CYCLE TIM 4.0" is displayed, press the **[PAUSE]** key.

```
<10>RFID
R CYCLE TIM    4.0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0.0 sec. to 9.9 sec.)



[FEED] key: Pressing the **[FEED]** key one time causes a –0.1 change, up to 0.0.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.1 change, up to 9.9.

After selecting the time-out, press the **[PAUSE]** key.

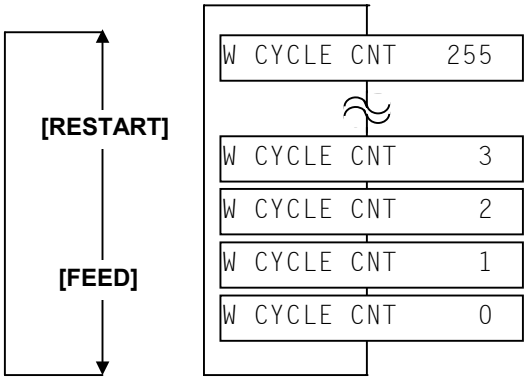
5.11.10 Maximum Number of RFID Write Retries

This parameter is to set the maximum number of times to write data onto an RFID tag.
If the printer does not succeed even if after having retried for the maximum number of times, the printer stops, resulting in an error (RFID WRITE ERROR). In case of frequent write errors, increase this retry count. However, when the retry count is increased, writing data may become slower.
If the specified time-out runs out, the printer stops retry even before the maximum number of retry times is reached.

When "W CYCLE CNT 5" is displayed, press the **[PAUSE]** key.

```
<10>RFID
W CYCLE CNT     5
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 255)



[FEED] key: Pressing the **[FEED]** key one time causes a –1 change, up to 0.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 change, up to 255.

After selecting the maximum number of write retries, press the **[PAUSE]** key.

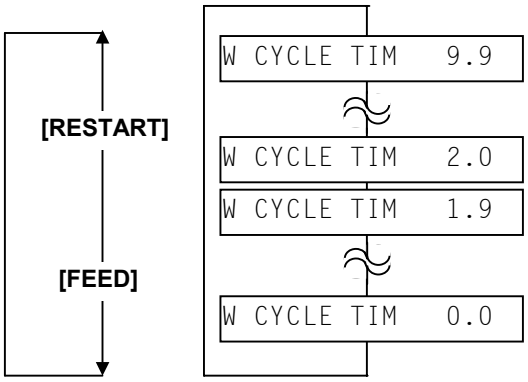
5.11.11 RFID Write Retry Time-out

This parameter is to set the time-out for retry to write data onto an RFID tag.
If the printer does not succeed within the specified time-out, the printer stops, resulting in an error (TIMEOUT). In case of frequent read errors, increase the amount of time. However, when the amount of time is increased, a data read may become slower.
If the maximum number of retries is reached, the printer stops retry even before the specified time runs out.
The printer always reads an RFID tag for the specified time set by this parameter before writing data to the RFID.

When "W CYCLE TIM 2.0" is displayed, press the **[PAUSE]** key.

```
<10>RFID
W CYCLE TIM    2.0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0.0 sec. to 9.9 sec.)



[FEED] key: Pressing the **[FEED]** key one time causes a –0.1 change, up to 0.0.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +0.1 change, up to 9.9.

After selecting the time-out, press the **[PAUSE]** key.

5.11.12 RFID Adjustment for Retry

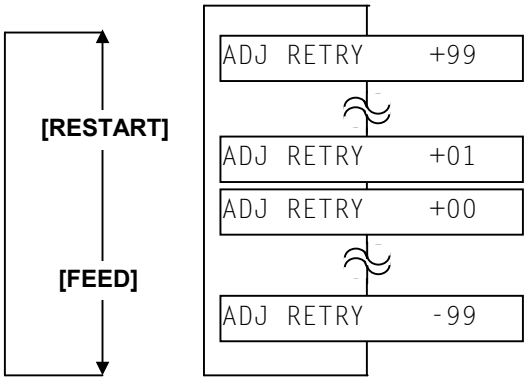
If the printer fails to write data to an RFID tag, it feeds the RFID tag forward or backward for a specified length, then starts retrying to write data. If "0" is set for this parameter, however, a feed or a reverse feed of the RFID tag is not performed.
As a write error may be caused by a misalignment of an RFID tag and the antenna, adjust the RFID tag position so that it stops just above the antenna.

Please obtain a value to be set for this parameter by using an RFID Analysis Tool (See Section 11.)

When "ADJ RETRY +00" is displayed, press the **[PAUSE]** key.

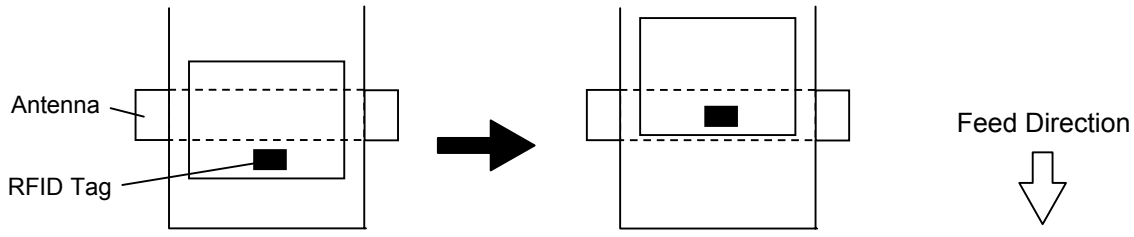
```
<10>RFID
ADJ RETRY    +00
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: -99mm to +99mm)

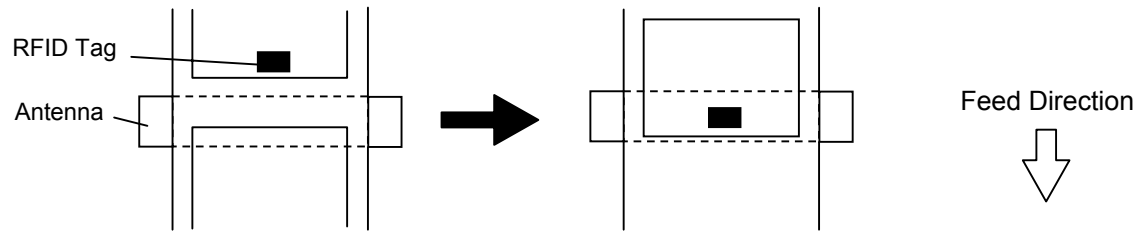


[FEED] key: Pressing the **[FEED]** key one time causes a –1mm change, up to –99mm.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1mm change, up to +99mm.

- Adjustment in negative (–) direction



- Adjustment in positive (+) direction



After selecting the adjustment value, press the **[PAUSE]** key.

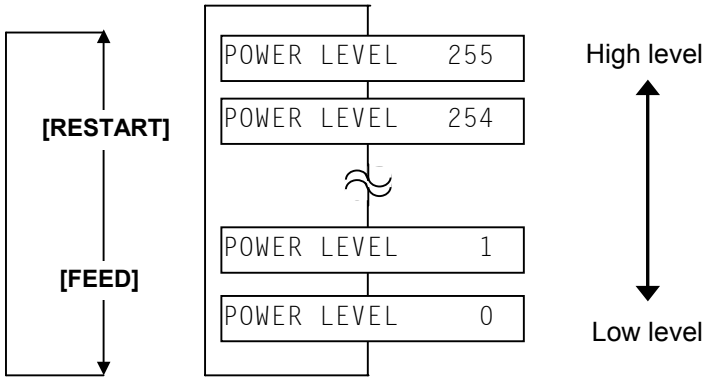
5.11.13 RFID Wireless Power Level Setting

With this parameter, it is possible to adjust the level of radio frequency output from the RFID module. The optimum level differs depending on the tag types and module types.
First, try issuing RFID tags with the default setting. If an error frequently occurs, adjust the output level.

(1) When the B-9704-RFID-U1-US/EU(-R) is installed.
When "POWER LEVE" is displayed, press the **[PAUSE]** key. (US: Default is 251., EU: Default is 50.)

```
<10>RFID
POWER LEVEL    251
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 255)



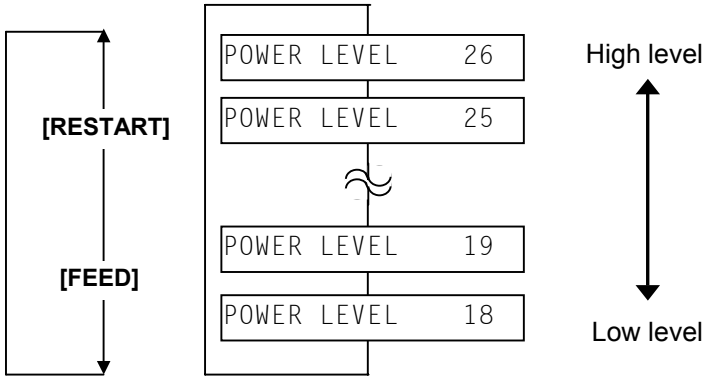
[FEED] key: Pressing the **[FEED]** key one time causes a –1 change, up to 0.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 change, up to 255.

After selecting the adjustment value, press the **[PAUSE]** key. The display returns to "<10>RFID".

(2) When the B-SX704-RFID-U2 is installed.
When "POWER LEVE" is displayed, press the **[PAUSE]** key. (Default is 18.)

```
<10>RFID
POWER LEVEL    20
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 18 to 26)



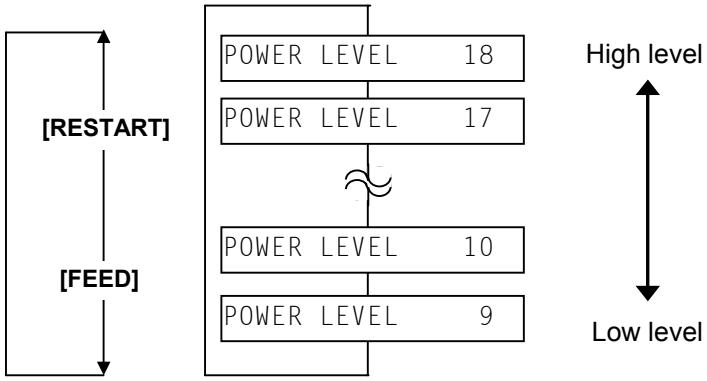
[FEED] key: Pressing the **[FEED]** key one time causes a –1 change, up to 0.
[RESTART] key: Pressing the **[RESTART]** key one time causes a +1 change, up to 255.

After selecting the adjustment value, press the **[PAUSE]** key. The display returns to "<10>RFID".

(3) When the B-SX704-RFID-U2-EU/US/AU/CN-R is installed.
When “POWER LEVE” is displayed, press the **[PAUSE]** key. (Default is 18.)

```
<10>RFID
POWER LEVEL    18
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 9 to 18)



After selecting the adjustment value, press the **[PAUSE]** key. The display returns to “<10>RFID”.

NOTE: *The optimal value is different depending on the tags used. Usually it is not necessary to change this value but changing the value sometimes can increase the number of successful read/write times.*

5.11.14 RFID AGC Threshold

This parameter is to set a threshold used to identify an RFID tag is defective or not.
Available only when the B-SX704-RFID-U2(-EU/US/CN/AU-R) is installed.
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.
The AGC levels are different between the RFID module firmware version V968 or earlier and V971 or greater. Refer to the following table.
For example, Rank 1 of the firmware V968 or earlier falls within Ranks 1 to 5 of the firmware V971 or greater. Rank 14 of the firmware V968 or earlier is corresponding to Rank 16 of the firmware V971 or greater.

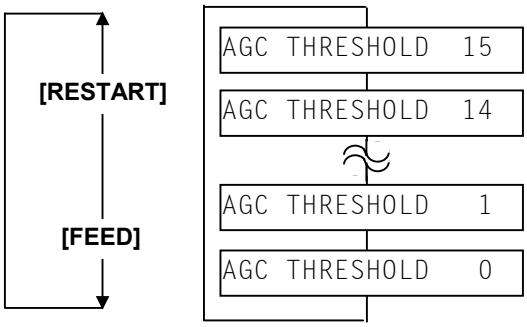
V968 or earlier	Rank					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Value					73	6a	61	58	4f	46	3d	34	2b	28	24	20	1c	18	14	10

V971 or greater	Rank	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15		16		
	Value	73	6b	64	5f	5a	55	50	4b	46	40	38	30	2b	24		1b		16		

Set an AGC threshold with the **[FEED]** or **[RESTART]** key.
When "AGC THRESHOLD" is displayed, press the **[PAUSE]** key.

```
<10>RFID
AGC THRESHOLD  0
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 15)



After selecting the adjustment value, press the **[PAUSE]** key.

5.11.15 RFID Channel Setting

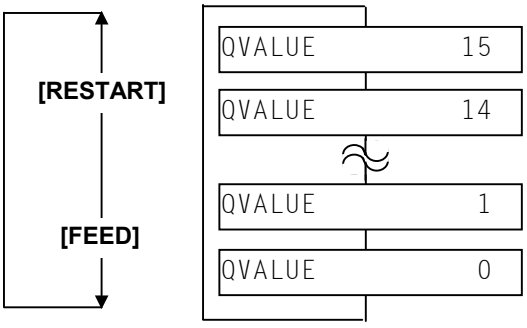
This parameter is enabled only when the B-SX704-RFID-U2 RFID module (Japan model) is used. Accordingly, press the **[PAUSE]** key when each parameter is default value. The display returns to "<10>RFID".

5.11.16 RFID Module Q Value Setting

This parameter is to set the Q value.
Available only to the B-SX704-RFID-U2-EU/US/CN/AU or the B-SX704-RFID-U2 with the module's firmware version of #00T or later.
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 4.22.5 of Maintenance Manual) The factory default is 0.
When "Q VALUE" is displayed, press the **[PAUSE]** key.

```
<10>RFID
Q VALUE         2
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 15)



After selecting the adjustment value, press the **[PAUSE]** key.

5.11.17 AGC Threshold for Data Write Setting

Available only to the B-SX704-RFID-U2-EU/US/CN/AU or the B-SX704-RFID-U2 with the module's firmware version of #00T or later.

This parameter is to set the AGC threshold for data write.
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 threshold for data write, a data write operation 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.

Supposing that the gain of a tag just above the antenna is 14 and that of a tag off the antenna is 7, setting the threshold to 11 (a value between 8 and 14) enables the printer to write data only to the tag just above the antenna.
When the threshold is set to 0, a data write operation is performed regardless of the gain of a tag.

The optimum value differs depending on the tag type. (For details, refer to Section 8 of Option Installation Manual.)

Difference between the AGC threshold and the AGC threshold for data write

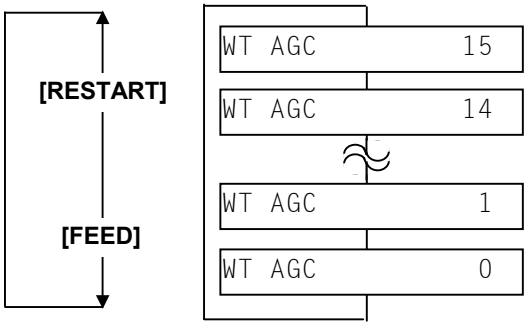
Both of the AGC threshold and the AGC threshold for data write are used to determine whether a tag is defective or not, but the timing of a gain measurement is different. In the case of the AGC threshold, this is performed after data is written to a tag.
On the contrary, when the AGC threshold for data write is effective a measurement is performed before data is written. And if a gain value is lower than the threshold, a data write operation is not performed.

Set an AGC threshold for data write with the **[FEED]** or **[RESTART]** key, if necessary.

When "WT AGC" is displayed, press the **[PAUSE]** key.

```
<10>RFID
WT AGC          11
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 15)



After selecting the adjustment value, press the **[PAUSE]** key.

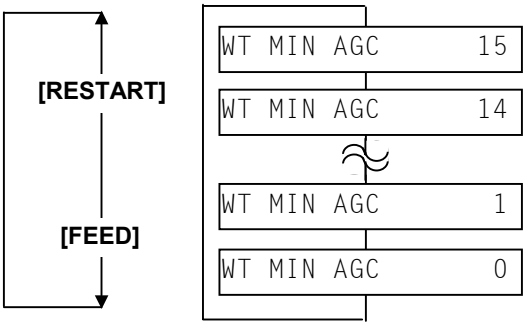
5.11.18 AGC Threshold Lower Limit for Retry Setting

Available only to the B-SX704-RFID-U2-EU/US/CN/AU or the B-SX704-RFID-U2 with the module's firmware version of #00T or later.
This parameter is to set an AGC threshold lower limit.
When the Q value is set to 1 or greater, the AGC threshold lower limit for retry becomes effective.
Even if a tag's gain is lower than the AGC threshold for data write, a data write to the tag may be successful in a retry if the gain is greater than the lower limit. For a retry, the printer lowers the threshold to the highest gain of the tag if it is greater than the lower limit or to the lower limit if it is greater than the highest gain of the tag. (For details, refer to Section 8 of Option Installation Manual.)
When the same value is set to the AGC threshold for data write and the AGC threshold lower limit for retry, respectively, the threshold will not be changed for a retry.
The optimum value differs depending on the tag type.
Set the lower limit for retry with the **[FEED]** or **[RESTART]** key, if necessary.

When "WT MIN AGC" is displayed, press the **[PAUSE]** key.

```
<10>RFID
WT MIN AGC     11
```

Use the **[FEED]** or **[RESTART]** key to select a desired option. (Range: 0 to 15)



After selecting the adjustment value, press the **[PAUSE]** key. The display returns to "<10>RFID".

Note:

Example 1

AGC threshold for data write: 11
Lower limit for retry: 9
Detected tag's gain: 10
As the gain of the tag is lower than the threshold, a data write operation is not performed for this tag at the first try. However, the gain is greater than the lower limit.
Then the printer retires to write data to this tag according to a new AGC threshold of 10.
In this case, a retry of a data write will mostly succeed because the detected tag's gain is greater than the new threshold. (However, the success rate is not 100% because a gain of a tag is not always the same.)

Example 2

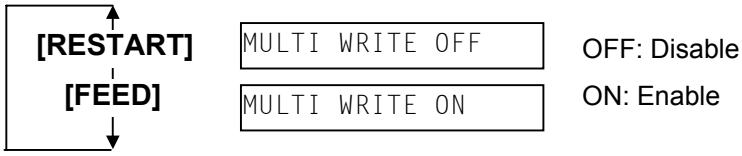
AGC threshold for data write: 11
Lower limit for retry: 9
Detected tag's gain: 8
As the gain of the tag is lower than the threshold, a data write operation is not performed for this tag at the first try. Also, the gain is lower than the lower limit.
Then the printer retries to write data to this tag according to a new AGC threshold of 9.
In this case, a retry of data write will mostly fail because the detected tag's gain is lower than the new threshold. (However, the error rate is not 100% because a gain of a tag is not always the same.)

5.11.19 Hibiki Tag Multi-Word Write

Available only to the B-SX704-RFID-U2-EU/US/CN/AU or the B-SX704-RFID-U2 with the module's firmware version of #00T or later.
Gen2-compatible Hibiki tag (HITACHI) has a function which reduces the time to write data on the RFID chips. This is called "Multi-word write". Use of this function enables a speed-up of the data write operation. However, this function is unique to the Hibiki tag, and not usable with the other Gen2-compatible chips. The factory default is set to OFF (disabled).

```
<10>RFID
MULTI WRITE OFF
```

When "MULTI WRITE" is displayed, press the **[PAUSE]** key.
Use the **[FEED]** or **[RESTART]** key to select a desired option.



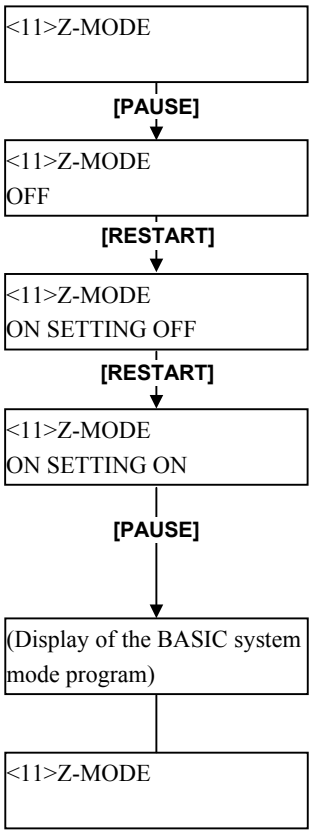
5.12 Z-MODE

NOTE: Supported by firmware version C5.3 or later (Version Cx.x only)

■ **Outline of the Z-MODE**

In the Z-mode, it is possible to start and execute a BASIC program and/or BASIC system mode program with a simple procedure.

The **Z-MODE** menu contains the following:



Z-MODE menu is displayed.

Z-MODE ON/OFF setting
Z-MODE is disabled.

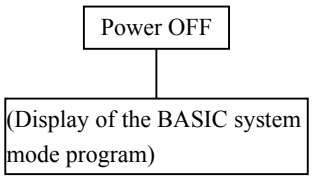
Z-MODE is enabled.
BASIC program is enabled but the BASIC system mode program is not activated

Z-MODE is enabled.
Both BASIC program and BASIC system mode program are activated.

The BASIC system mode program is started if it has been downloaded. The display depends on the program.

The BASIC system mode program exits.
(How to exit the program is depending on the BASIC system mode program in use.)

When the Z-MODE is enabled.



Power off state
Turn on the printer power.

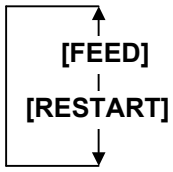
The BASIC program is started

5.12.1 Z-MODE Setting Selection

This parameter is to enable or disable the BASIC program and/or system mode program. The initial setting is “OFF”.
When “OFF” is displayed, press the **[FEED]** or **[RESTART]** key.

<11>Z-MODE
OFF

Use the **[FEED]** or **[RESTART]** key to select a desired option.

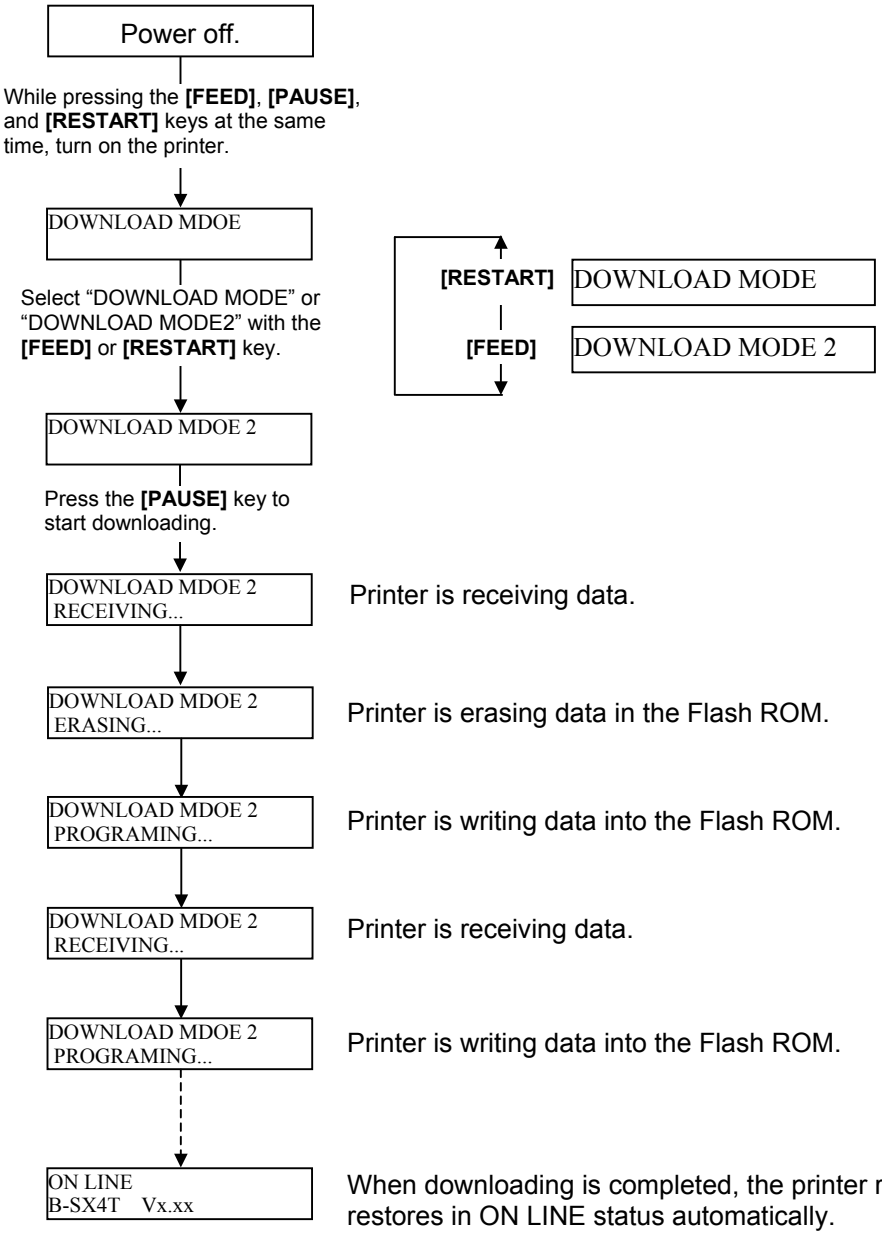


OFF	Z-MODE is disabled.
ON SETTING OFF	Z-MODE (BASIC program) is enabled, but the BASIC system mode program is not activated..
ON SETTING ON	Z-MODE (BASIC program) and BASIC system mode program are activated. .

***NOTE**: To cancel, press the **[FEED]** and **[RESTART]** keys at the same time.*

5.13 DOWNLOAD MODE

In this mode, the printer enables downloading.



NOTE: *Centronics Interface ACK/BUSY timing is different between "DOWNLOAD MODE" and "DOWNLOAD MODE 2".). If data cannot be downloaded in DOWNLOAD MODE, select "DOWNLOAD MODE 2" and retry downloading.*

6. ON LINE MODE

In the ON LINE mode, the following settings can be performed.

Threshold Setting for the Feed Gap Sensor
Threshold Setting for the Black Mark Sensor
Reset
Parameter Settings
Printer Parameter Fine Adjustment
Dump Mode

■ LED function

LED	Illuminates when…	Flashes when…
POWER	The printer is turned on.	-----
ON LINE	The printer is ready to print.	The printer is communicating with your computer.
ERROR	Any error occurs with the printer.	The ribbon is nearly over. (See NOTE.)

NOTE: *Flashes only when the Ribbon Near End Detection function is selected.*

■ Key function

PAUSE	Used to stop printing temporarily.
RESTART	Used to restart printing.
FEED	Used to feed the media.

NOTE: *Use the **[RESTART]** key to resume printing after a pause, or after clearing an error.*

■ Error messages

NOTES: *1. If an error is not cleared by pressing the **[RESTART]** key, turn the printer off and then on.*
2. After the printer is turned off, all print data in the printer is cleared.
*3. "****" indicates the number of unprinted media. Up to 9999 (in pieces).*

Error Messages	Problems/Causes	Solutions
HEAD OPEN	The Print Head Block is opened in Online mode.	Close the Print Head Block.
HEAD OPEN ****	Feeding or printing has been attempted with the Print Head Block open.	Close the Print Head Block. Then press the **[RESTART]** key.
COMMS ERROR	A communication error has occurred.	Make sure the interface cable is correctly connected to the printer and the host, and the host is turned on.
CUTTER ERROR ****** (Only when the cutter module is installed on the printer.)	The media is jammed in the cutter.	Remove the jammed media. Then press the **[RESTART]** key. If this does not solve the problem, turn off the printer, and call a TOSHIBA TEC authorised service representative.

■ Error messages (continued)

Error Messages	Problems/Cause	Solutions
PAPER JAM ****	1. The media is jammed in the media path. The media is not fed smoothly.	1. Remove the jammed media, and clean the Platen. Then reload the media correctly. Finally press the **[RESTART]** key.
	2. A wrong Media Sensor is selected for the media being used.	2. Turn the printer off and then on. Then select the Media Sensor for the media being used. Finally resend the print job.
	3. The Black Mark Sensor is not correctly aligned with the Black Mark on the media.	3. Adjust the sensor position. Then press the **[RESTART]** key.
	4. Size of the loaded media is different from the programmed size.	4. Replace the loaded media with one which matches the programmed size then press the **[RESTART]** key, or turn the printer off and then on, select a programmed size that matches the loaded media. Finally resend the print job.
	5. The Feed Gap Sensor cannot distinguish the print area from a label gap.	5. Refer to Section 5.4 to set the threshold. If this does not solve the problem, turn off the printer, and call a TOSHIBA TEC authorised service representative.
NO PAPER ****	1. The media has run out.	1. Load new media. Then press the **[RESTART]** key.
	2. The media is not loaded properly.	2. Reload the media correctly. Then press the **[RESTART]** key.
	3. The media is slack.	3. Take up any slack in the media.
RIBBON ERROR ******	The ribbon is not fed properly.	Remove the ribbon, and check the status of the ribbon. Replace the ribbon, if necessary. If the problem is not solved, turn off the printer, and call a TOSHIBA TEC authorised service representative.
NO RIBBON ******	The ribbon has run out.	Load a new ribbon. Then press the **[RESTART]** key.
REWIND FULL ******	The Built-In Rewinder Unit is full.	Remove the backing paper from the Built-In Rewinder Unit. Then press the **[RESTART]** key.
EXCESS HEAD TEMP	The Print Head has overheated.	Turn off the printer, and allow it to cool down (about 3 minutes). If this does not solve the problem, call a TOSHIBA TEC authorised service representative.
HEAD ERROR	There is a problem with the Print Head.	Replace the Print Head.
PASSWORD INVALID Please Power OFF	The password entered was not correct consecutively for three times.	Turn off the printer and back to on, then enter a password again. If the correct password is unknown, disable the password setting by sending a @010 command. (For details, please refer to External Equipment Interface Specification.)
Other error messages	A hardware or software problem may have occurred.	Turn the printer off and then on. If this does not solve the problem, turn off the printer again, and call a TOSHIBA TEC authorised service representative.

■ LCD message and LED indication

Symbols in the message

1: ❍: The LED is illuminated. ⊙: The LED is flashing. ●: The LED is unlit.
2: ****: the number of unprinted media. Up to 9999 (in pieces)
3: %%%%%%%: ATA Card's remaining memory 0 to 9999999 (in K bytes)
4: ####: Flash memory card remaining memory for PC save area: 0 to 3072 (in K bytes)
(3-digit display) for V4.x/X4.x/C4.x (MAIN3 PCB): Remaining memory capacity of PC save area: 0 to 869 (in K bytes)
5: &&&&: Remaining flash memory capacity for storing writable characters 0 to 3147 (in K bytes)

No.	LCD Message	LED Indication			Printer Status	Restoration by RESTART key Yes/No	Acceptance of Status Request Reset Command Yes/No
		POWER	ONLINE	ERROR			
1	ON LINE	❍	❍	●	In online mode	-----	Yes
	ON LINE	❍	⊙	●	In online mode (The printer in communication)	-----	Yes
2	HEAD OPEN	❍	●	●	The print head block is opened in online mode.	-----	Yes
3	PAUSE ****	❍	●	●	The printer is paused.	Yes	Yes
4	COMMS ERROR	❍	●	❍	A parity, overrun, or framing error has occurred during communication through the RS-232C.	Yes	Yes
5	PAPER JAM ****	❍	●	❍	The media is jammed during paper feed.	Yes	Yes
6	CUTTER ERROR****	❍	●	❍	A problem has occurred with the cutter module.	Yes	Yes
7	NO PAPER ****	❍	●	❍	The media has run out, or the media is not loaded properly.	Yes	Yes
8	NO RIBBON ****	❍	●	❍	The ribbon has run out.	Yes	Yes
9	HEAD OPEN ****	❍	●	❍	Feed or printing was attempted with the print head block open.	Yes	Yes
10	HEAD ERROR	❍	●	❍	There is a problem with the print head.	Yes	Yes
11	EXCESS HEAD TEMP	❍	●	❍	The print head is overheated.	No	Yes
12	RIBBON ERROR****	❍	●	❍	The ribbon has been torn. A problem has occurred with the sensor that determines the torque for the ribbon motor.	Yes	Yes
13	REWIND FULL ****	❍	●	❍	An overflow error has occurred in the rewinder unit.	Yes	Yes
14	SAVING%%%%%%% or SAVING ####&&&&	❍	❍	●	In writable character or PC command save mode	-----	Yes
15	FLASH WRITE ERR.	❍	●	❍	An error has occurred while writing to flash memory or ATA card.	No	Yes
16	FORMAT ERROR	❍	●	❍	An erase error has occurred in formatting the flash memory or ATA card.	No	Yes
17	FLASH CARD FULL	❍	●	❍	Data cannot be stored because the flash memory or ATA card is full.	No	Yes
18	Display of error message (See Notes.)	❍	●	❍	A command error has occurred in analyzing the command.	Yes	Yes
19	POWER FAILURE	❍	●	❍	A power failure has occurred.	No	No
20	INTIALIZING…	❍	●	●	A flash memory card is being initialized.	-----	-----
21	100BASE LAN INITIALIZING…	❍	●	●	100BASE LAN is now being initialized. (Only when the optional B-9700-LAN-QM is installed.)	-----	-----

No.	LCD Message	LED Indication			Printer Status	Restoration by RESTART key Yes/No	Acceptance of Status Request Reset Command Yes/No
		POWER	ONLINE	ERROR			
22	DHCP CLIENT INITIALIZING…	❍	●	●	DHCP CLIENT is now being initialized. (Only when the DHCP is effective.)	-----	-----
23	RFID WRITE ERROR	❍	●	❍	The printer did not succeed in writing data onto an RFID tag after having retried for a specified times	Yes	Yes
24	RFID ERROR	❍	●	❍	The printer cannot communicate with the RFID module	Yes	Yes
25	INPUT PASSWORD	❍	●	●	The printer is waiting for a password to be entered.	No	No
26	PASSWORD INVALID Please Power OFF	❍	●	●	The password entered was not correct consecutively for three times.	No	No
27	RFID CONFIG ERROR	❍	●	❍	B-SX704-RFID-U2-US-R only RFID module's destination code is not specified.	No	No

NOTES: *1. If a command error is found in the command received, 16 bytes of the command error, starting from the command code, will be displayed. (However, [LF] and [NUL] will not be displayed.)*

Example 1

[ESC] T20 G30 [LF] [NUL]
└ Command error

The following message appears.

```
T20G30
B-SX4T     V1.0A
```

Example 2

[ESC] XR; 0200, 0300, 0450, 1200, 1, [LF] [NUL]
└ Command error

The following message appears.

```
XR;0200,0300,045
B-SX4T     V1.0A
```

Example 3

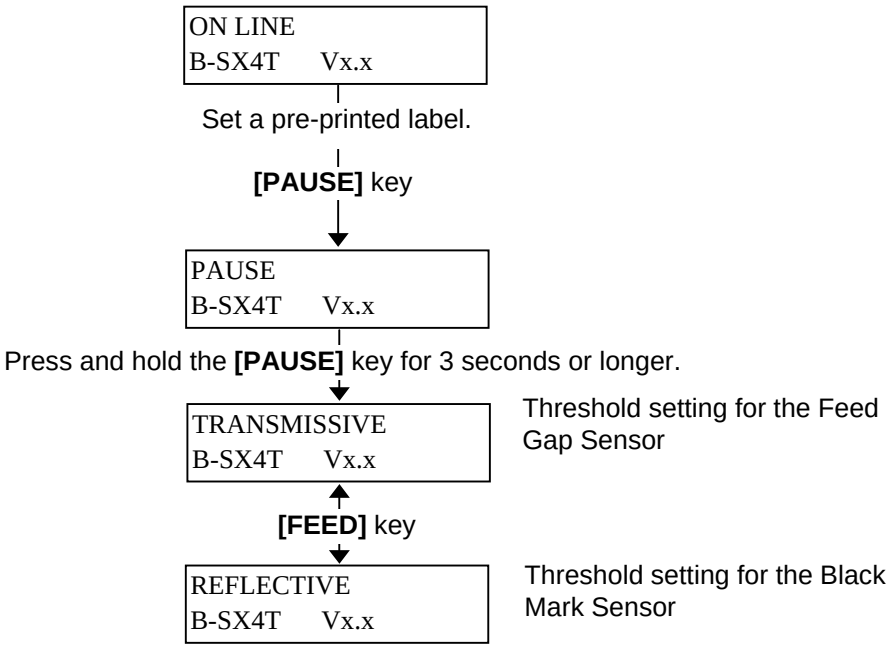
[ESC] PC001; 0A00, 0300, 2, 2, A, 00, B [LF] [NUL]
└ Command error

The following message appears.

```
PC001;0A00,0300,
B-SX4T     V1.0A
```

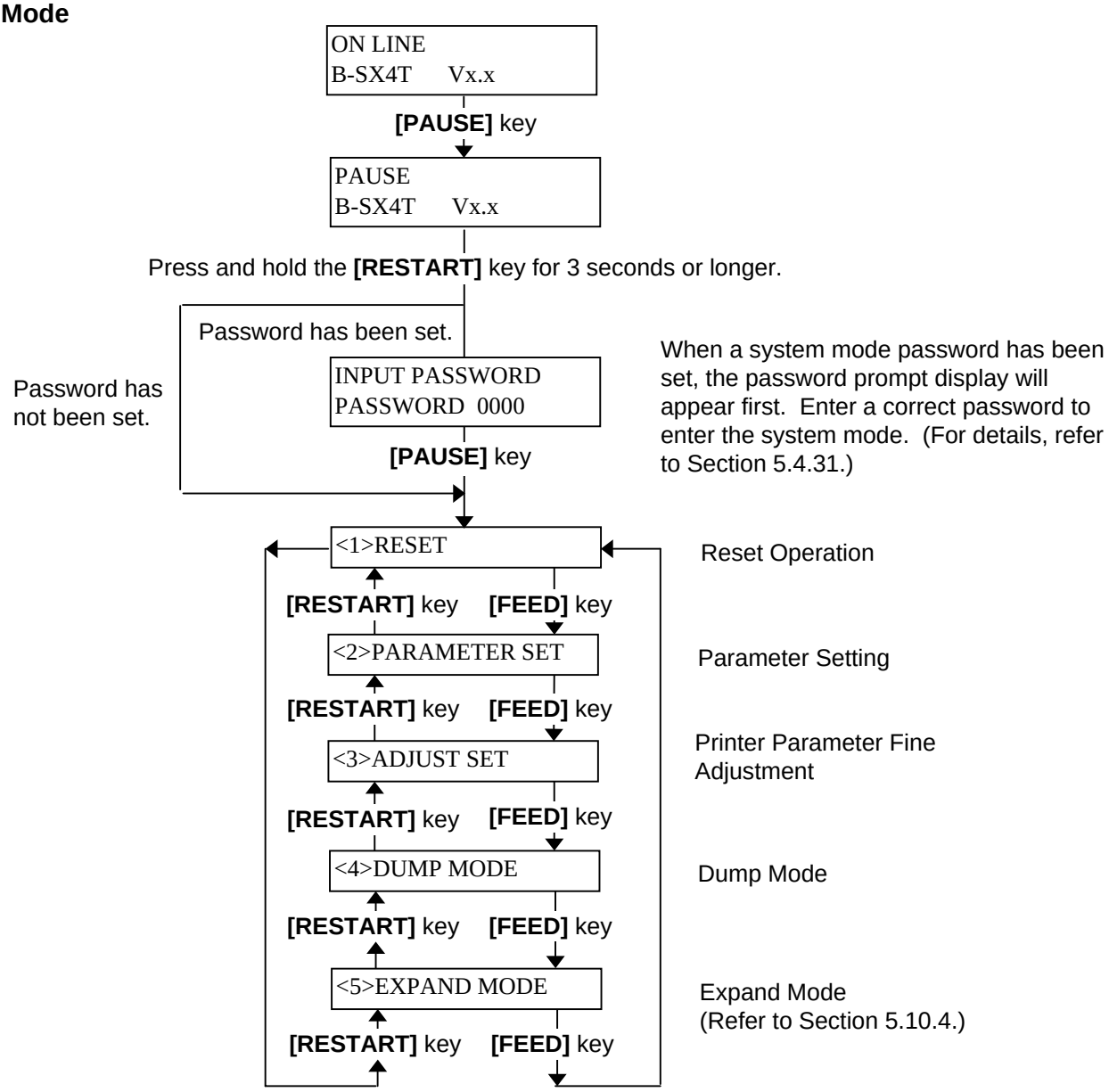
2. When the error command is shown, "? (3FH)" appears for codes other than codes 20H to 7FH and A0H to DFH.

Threshold Setting for the Feed Gap/Black Mark Sensor



NOTE: *For procedures, please refer to* ***6.1 THRESHOLD SETTING****.*

Reset Operation, Parameter Setting, Printer Parameter Fine Adjustment, Dump Mode, and Expand Mode



NOTE: *This section describes the threshold setting for the Feed Gap/Black Mark Sensor, Reset Operation, and Dump Mode. The procedures of the Parameter Setting and Printer Parameter Fine Adjustment are described in the System Mode, please refer to Section 5.4 and Section 5.5, respectively.*

6.1 THRESHOLD SETTING

To maintain a constant print position the printer uses the Transmissive Sensor to detect the gap between labels by measuring the amount of light passing through the media. When the media is pre-printed, the darker (or more dense) inks can interfere with this process causing paper jam errors. To get around this problem a minimum threshold can be set for the sensor in the following way.

■ **Threshold setting procedure**

(1) Turn the power ON. The printer is in stand by mode.

ON LINE B-SX4T Vx.x

(2) Load a media roll.

(3) Press the **[PAUSE]** key.

PAUSE B-SX4T Vx.x

(4) The printer enters the pause mode.

(5) Press and hold the **[PAUSE]** key for at least 3 seconds in the pause state.

TRANSMISSIVE B-SX4T Vx.x

(6) The sensor type is displayed.

(7) To select the Reflective Sensor (Black Mark Sensor), press the **[FEED]** key.

REFLECTIVE B-SX4T Vx.x

(8) To select the Transmissive Sensor (Feed Gap Sensor), press the **[FEED]** key again.

TRANSMISSIVE B-SX4T Vx.x

(9) Press and hold the **[PAUSE]** key until more than 1.5 labels (tags) have been advanced. The media is advanced until the **[PAUSE]** key is released. (Threshold setting is completed by this operation.)

PAUSE B-SX4T Vx.x

(10) Press the **[RESTART]** key.

ON LINE B-SX4T Vx.x

(11) The printer is in stand-by.

(12) Send an issue command from the PC to the printer.

ON LINE B-SX4T Vx.x

NOTES:

1. *If the **[PAUSE]** key is released within 3 seconds whilst in pause state, paper will not feed.*
2. *Failure to feed more than 1.5 labels may result in an incorrect threshold setting.*
3. *While the Print Head Block is raised, the **[PAUSE]** key does not work.*
4. *Errors such as paper end and cutter error are not detected during paper feed.*
5. *Selecting the Transmissive Sensor (for pre-printed labels) within software commands allows the printer to detect the proper print start position correctly even when using pre-printed labels.*
6. *If the printer continued to print out of position after setting the threshold, adjust the Feed Gap Sensor in the system mode. Reset the threshold again. Make sure that the Transmissive Sensor (for pre-printed labels) is selected in the feed and issue commands.*

6.2 RESET

Reset operation clears the print data sent to the printer from the computer, and returns the printer to an idle condition.

(1) The printer is turned on, standing by, or printing.

```
ON LINE
B-SX4T     Vx.x
```

(2) To stop printing, or clear the data sent from the computer, press the **[PAUSE]** key. The printer stops printing.

```
PAUSE       52
B-SX4T     Vx.x
```
← The number of unprinted media (See ***NOTE 2***.)

(3) Press and hold the **[RESTART]** key for 3 seconds or longer.
When the system mode password has been set, the password prompt display will appear first. Enter a correct password to enter the system mode. (For details, refer to Section 5.4.31.)
When a password has not been set, "<1>RESET" is displayed directly.

```
INPUT PASSWORD
PASSWORD  0000
```
[PAUSE] key
↓
```
<1>RESET
```

(4) Press the **[PAUSE]** key. The data sent from the computer will be cleared, and the printer returns to an idle condition.

```
ON LINE
```

NOTES:

1. *If the **[RESTART]** key is held for less than 3 seconds when the printer is in an error or pause state, the printer restarts printing. However, when a communication error or command error occurs, the printer returns to an idle condition.*
2. *When the **[PAUSE]** key is pressed during printing, the number of unprinted media is displayed.*

6.3 DUMP MODE

In Dump mode, any characters sent from the host computer will be printed. Received characters are expressed in hexadecimal values. This allows the user to verify programming commands and debug the program.

(1) The printer is turned on, standing by, or printing.

```
ON LINE
B-SX4T     Vx.x
```

(2) Press the **[PAUSE]** key.

```
PAUSE       52
B-SX4T     Vx.x
```
← The number of unprinted media (See ***NOTE***.)

(3) Press and hold the **[RESTART]** key for 3 seconds or longer.
When the system mode password has been set, the password prompt display will appear first. Enter a correct password to enter the system mode. (For details, refer to Section 5.4.31.)
When a password has not been set, "<1>RESET" is displayed directly.

```
INPUT PASSWORD
PASSWORD  0000
```
[PAUSE] key ↓
```
<1>RESET
```

(4) Press the **[FEED]** key. The display shows "<2>PARAMETER SET".

```
<2>PARAMETER SET
```

(5) Press the **[FEED]** key. The display shows "<3>ADJUST SET".

```
<3>ADJUST SET
```

(6) Press the **[FEED]** key. The display shows "<4>DUMP MODE". Press the **[PAUSE]** key to enter the Dump Mode.

```
<4>DUMP MODE
BUFFER  RS-232C
```

(7) Select the receive buffer to be dumped with the **[FEED]** or **[RESTART]** key.

```
<4>DUMP MODE
BUFFER  RS-232C
```

[RESTART] ↑ / **[FEED]** ↓

- RS-232C: RS-232C Receive Buffer
- CENTRO: Centronics Receive Buffer
- NETWORK: Network Interface Receive Buffer
- BASIC 1: BASIC Interpreter (I/F → Interpreter buffer)
- BASIC 2: BASIC Interpreter (Interpreter → Printer buffer)
- USB: USB Receive Buffer
- RFID: RFID Receive Buffer

(8) Select the printing method with the **[FEED]** or **[RESTART]** key.

[RESTART] ↑ / **[FEED]** ↓

ON DEMAND	The printer prints 166 lines (approx. 50cm) and then pauses printing.
ALL	The printer prints all buffer data, and then stops printing.

(9) Press the **[PAUSE]** key to start printing. The printer prints the data in the selected receive buffer.

```
NOW PRINTING…
```

(10) After completing the printing, the display returns to "<4>DUMP MODE".

<4>DUMP MODE

(11) Reset the printer by turning the power off and on. The display shows "ON LINE".

ON LINE

NOTE:

*When the **[PAUSE]** key is pressed during printing, the number of unprinted media is displayed.*

The data in the receive buffer is printed as follows:

```
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
7B 41 58 3B 2B 30 30 30 2C 2B 30 30 30 2C 2B 30   {AX;+000,+000,+0
30 7C 7D 7B 44 30 37 37 30 2C 31 31 30 30 2C 30   0|}{D0760,1100,0
37 34 30 7C 7D 7B 43 7C 7D 7B 4C 43 3B 30 30 33   740|}{C|}{LC;003
30 2C 30 30 32 30 2C 30 30 33 30 2C 30 36 36 30   0,0020,0030,0660
2C 30 2C 32 7C 7D 7B 4C 43 3B 30 30 37 30 2C 30   ,0,2|}{LC;0070,0
30 32 30 2C 30 30 37 30 2C 30 36 36 30 2C 30 2C   020,0070,0660,0,
39 7C 7D 7B 4C 43 3B 30 30 35 30 2C 30 30 32 30   9|}{LC;0050,0020
                                                  :
                                                  :
                                                  :
44 45 46 47 48 49 4A 7C 7D 7B 50 43 31 30 3B 30   DEFGHIJ|}{PC10;0
33 35 30 2C 30 34 30 30 2C 31 2C 31 2C 4B 2C 30   350,0400,1,1,K,0
30 2C 42 3D 41 42 43 44 65 66 67 68 69 6A 6B 6C   0,B=ABCDefghijkl

6D 6E 6F 70 7C 7D 7B 50 56 30 32 3B 30 33 33 30   mnop|}{PV02;0330
2C 30 36 36 30 2C 30 32 37 30 2C 30 32 35 30 2C   ,0660,0270,0250,
41 2C 30 30 2C 42 3D 42 7C 7D 7B 50 56 30 33 3B   A,00,B=B|}{PV03;
                                                  :
                                                  :
                                                  :
3B 30 39 30 30 2C 30 31 38 30 2C 54 2C 48 2C 30   ;0900,0180,T,H,0
35 2C 41 2C 30 3D 31 32 33 34 35 36 37 38 39 30   5,A,0=1234567890
41 42 43 44 45 7C 7D 00 00 00 00 00 00 00 00 00   ABCDE|}
                                                  :
                                                  :
```

Feed direction

Print Conditions

- Printing width: 4.2 inches
- Sensor selection: None
- Print speed: 6"/sec. (B-SX4T), 5"/sec. (B-SX5T)
- Printing mode: Depends on the selection in use.
- 16 bytes/line
- Data is printed in the order from the new one to the old one.
- Data specified by the receive buffer write pointer will be printed in boldface.

Receive buffer size

	B-SX4T	B-SX5T
RS-232C	1MB (65536 lines)	6MB (393216 lines)
Centronics	1MB (65536 lines)	6MB (393216 lines)
Network Interface	1MB (65536 lines)	6MB (393216 lines)
BASIC 1	8KB (512 lines)	8KB (512 lines)
BASIC 2	8KB (512 lines)	8KB (512 lines)
USB	1MB (65536 lines)	6MB (393216 lines)
RFID	8KB (512 lines)	8KB (512 lines)

Required label length

	B-SX4T	B-SX5T
RS-232C	198.2m	1189.2m
Centronics	198.2m	1189.2m
Network Interface	198.2m	1189.2m
BASIC 1	2m	2m
BASIC 2	2m	2m
USB	198.2m	1189.2m
RFID	2m	2m

NOTE:

*If an error occurs during dumping, the printer will display an error message and stop printing. The error can be cleared by pressing the **[PAUSE]** key, and then the display will show "<4>DUMP MODE" again.*
After recovery from the error the printer will not start printing automatically.

7. PROGRAM DOWN LOAD

This section provides step-by-step instructions on how to setup and download the firmware to the B-SX series thermal printer. The firmware download will be made from a PC via the RS-232C interface and Centronics interface of the printer.

7.1 OUTLINE OF FEATURES

The software for performing the program download will allow the download of the Firmware (Boot program, Application program, and Character generator) from the provided FDK. The software will be run on a standard PC and communication to the B-SX series printer will be via the RS-232C interface and the Centronics interface.

Firmware Download

The Boot program, Application program and Character generator are installed into the B-SX series printer's flash memory prior to being shipped to the customer. However, if specifications should change at a later date, this software will allow downloading firmware updates to the B-SX series printer.

Notes:

1. Firmware Down Load Tool List

	Current Down Load Tool	New Down Load Tool
Firmware for the MAIN3 PC board (V4.7 or less)	Supported	Supported
Firmware for the MAIN4 PC board (V5.0 and greater)	Supported	Supported
MAIN4 True Type Font, Basic File	Not supported	Supported

2. Firmware Version depending on the Production Month

Depending on the production month, the firmware below is installed into the printer.

Model	December 2008 or before (Serial No. 2608Yxxxxxx or before)	January 2009 (Serial No. 2609Axxxxxx)	February 2009 and after (Serial No. 2609Dxxxxxx and after)
B-SX4T-GS20-QM-R	V4.6A	V5.0	V5.0
B-SX5T-TS22-QM-R	V4.6A	V5.0	V5.0
B-SX4T-GS20-CN-R	V4.6A	V4.7	V5.0
B-SX5T-TS22-CN-R	V4.6A	V4.7	V5.0
SP40II-R	V4.6A	V5.0	V5.0

The printer containing the firmware V4.7 is CN model only.

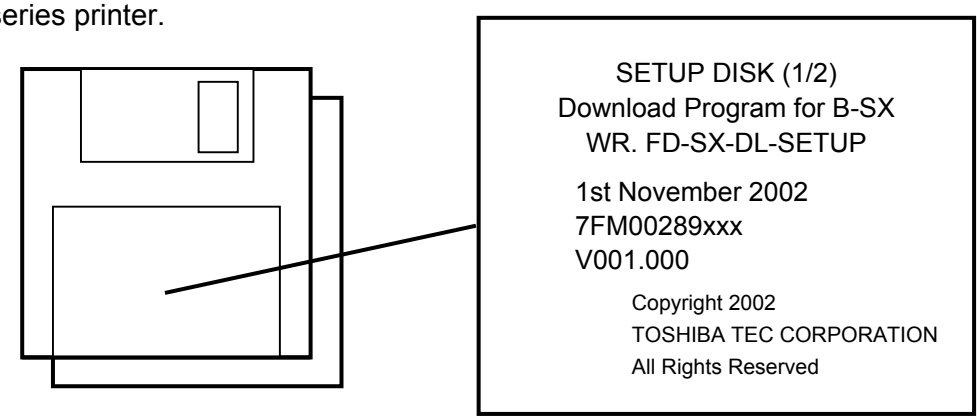
For the MAIN4 PC board, use the firmware program V5.0 and greater and the boot program V3.0 and greater.

4. Firmware Version and Main PC Board Chart

	Printer version	Firmware version	Main PC Baord	
			MAIN4 and after	MAIN3 or before
Firmware	B5.0 and greater	Boot program V3.0 and greater	The firmware is downloaded correctly.	After completing the transmission of the boot program with the program down loader, the printer displays “MODEL TYPE ERROR” on the LCD and causes an error. When using the COM port, the program down loader displays “Check Sum Error” and then forces to shut down. After restarting the printer, the program down loader starts with the previous status.
		Main program V5.0 and greater	The firmware is downloaded correctly.	During the transmission of the main program from the program down loader, the printer erases the data in the flash ROM and then displays “FORMAT ERROR” on the LCD, causing an error. When using the COM port or LPT1, the program down loader displays “Erase Error” and then forces to shut down. After restarting the printer, the program down loader starts in DOWNLOAD MODE. The printer is recoverable by downloading the main program less than V5.0.
	Less than B5.0	Boot program V3.0 or less	After completing the transmission of the boot program with the program down loader, the printer displays “MODEL TYPE ERROR” on the LCD and causes an error. When using the COM port, the program down loader displays “Check Sum Error” and then forces to shut down. After restarting the printer, the program down loader starts with the previous status.	The firmware is downloaded correctly.
		Main program V5.0 or less	After completing the transmission of the main program with the program down loader and completing the write, the printer displays “FIRM VER.INVALID” on the LCD and causes an error. When using the COM port, the program down loader displays “Check Sum Error” and then forces to shut down. After restarting the printer, the program down loader starts with the previous status. When turning on the printer again, the printer starts in DOWNLOAD MODE because the firmware is updated to the incorrect version. The printer restores by re-downloading the MAIN4-R main program V5.0 and greater.	The firmware is downloaded correctly.

7.2 DOWNLOAD PROGRAM INSTALLATION

Before you can communicate from your PC to the B-SX series printer, you must first copy the "Download Program for B-SX" from the two FDKs provided to the hard disk of your PC. This program allows you to download the firmware (Boot program, Application program and Character generator) to the B-SX series printer.



7.2.1 System Requirements

System

- IBM Compatible PC running Windows 95® or Windows 98
- Installed memory of 16MB minimum (32MB recommended)
- Available Hard Disk space of 10MB or more

NOTE: *Windows 3.1® is not supported.*
Windows 3.1®, Windows 95®, and Windows 98® are registered trademarks of the Microsoft Corporation.

Interface

The RS-232C interface and Centronics interface.

7.2.2 Setup

Setup Disk

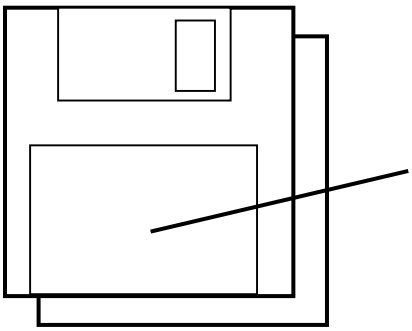
Make sure that you have all two diskettes available of the "Download Program for B-SX".

Installation Procedure

(1) While running Windows 95 or Windows 98, insert Setup Disk (1/2) into the PC floppy drive.
(2) Click on the START button then highlight RUN and click on RUN.
(3) When the RUN display appears, type in A:\SETUP and click on OK.
(4) Install the Download Program by following the messages on the display.

7.3 FIRMWARE DOWNLOAD

If it ever becomes necessary to upgrade the firmware in the B-SX series printer you will be supplied with a floppy disk containing the latest firmware revision similar to that shown below.



Firmware FDK (Main)

B-SX4T Series
FIRMWARE(MAIN)V1.0
WR. FD-SX-FIRM
MAIN:SX4-MAIN-V10-Z903-F9.EXE
(SX4-MAIN-V10-Z903-F9.ROM)
7FM00226000:F900
1st November 2002
V001.000
Copyright© 2002
TOSHIBA TEC CORPORATION
All Rights Reserved

Firmware FDK (Boot/CG)

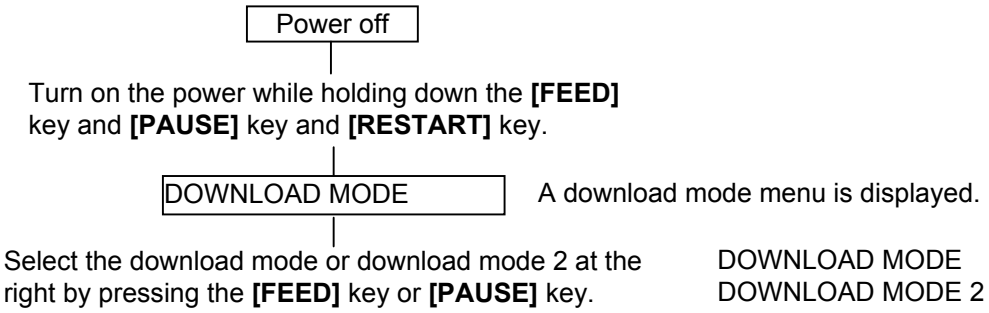
B-SX4T Series
FIRMWARE(BOOT/CG)V1.0
WR. FD-SX-FIRM
BOOT:SX4-BOOT-V10-Z900-71.ROM
7FM00226000:7100
C/G :SX-CG-AD00.ROM
7FM00227000:AD00
1st November 2002
V001.000
Copyright© 2002
TOSHIBA TEC CORPORATION
All Rights Reserved

The following paragraphs give the download procedure that the firmware (Boot program, Application program and Character generator) is copied onto the PC hard disk before being transferred to the printer.

Before starting the download procedure

- Copy the firmware program contained in the FDKs to your specified directory of the hard disk. If the file format of the file installed into the FDK is “*.EXE”, click it twice to decompress into “*.ROM” file.
- Connect the printer to your PC with the Centronics I/F cable or the RS-232C I/F cable. For the Centronics communication, cancel the network pass allocated to LPT 1 of the PC. Failure to do this will disable you from firmware download.

(1) Turn on the printer power by the following procedure.

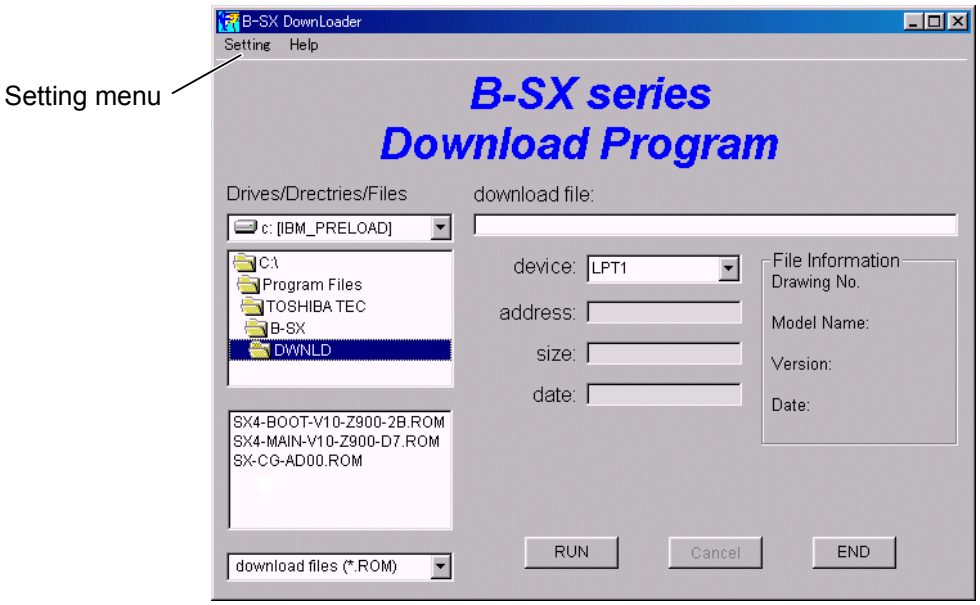


NOTE: *Program downloading must be performed in the DOWNLOAD MODE. It cannot be performed in On line mode or System mode.*

(2) Turn on the PC power and start up Windows.

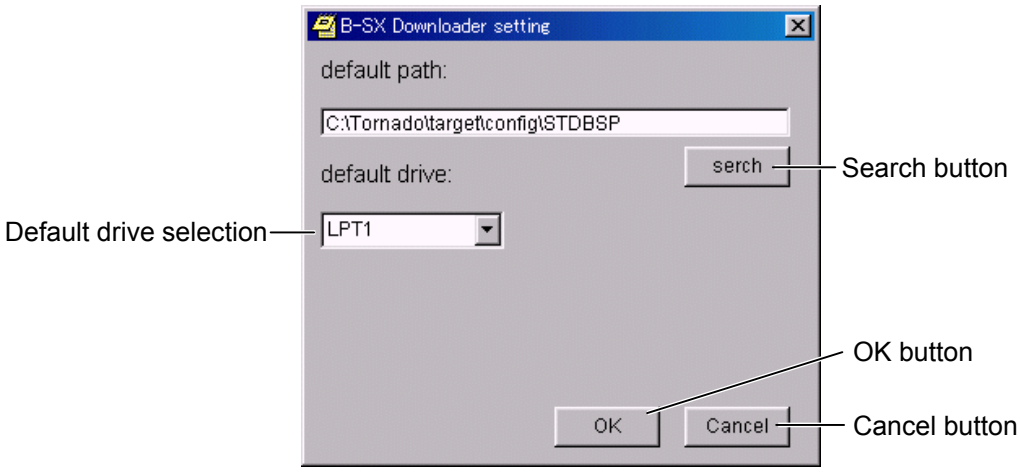
(3) Click on the START button to access the program menu.

(4) Highlight “TOSHIBA TEC”, ”B-SX” and “Dwnld”, and click on “B-SX Downloader” to start up the download program. The main menu screen will appear as shown below.

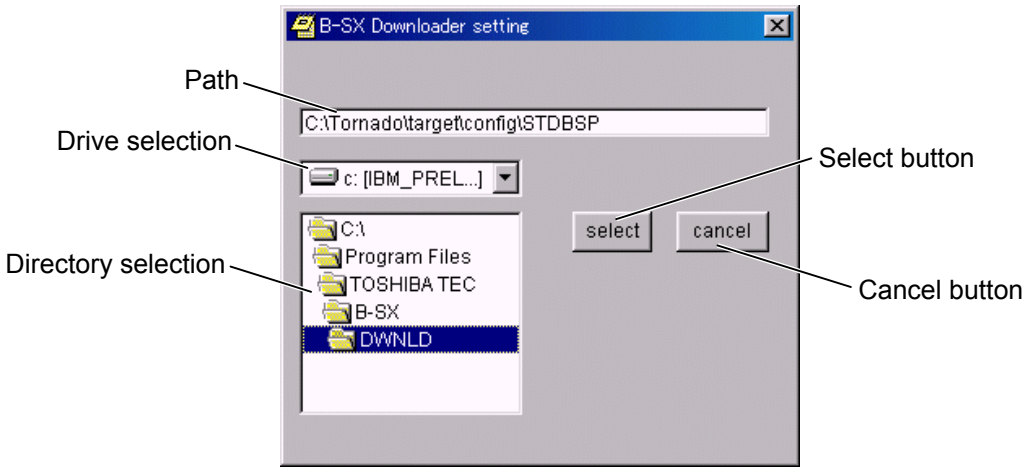


(5) On the main menu screen, perform Default Device setting and Default Path setting in the following procedure.

1) Click on “Setting” on the upper left corner of the main menu screen.
2) Click on “Open” to show the sub menu screen as shown below.

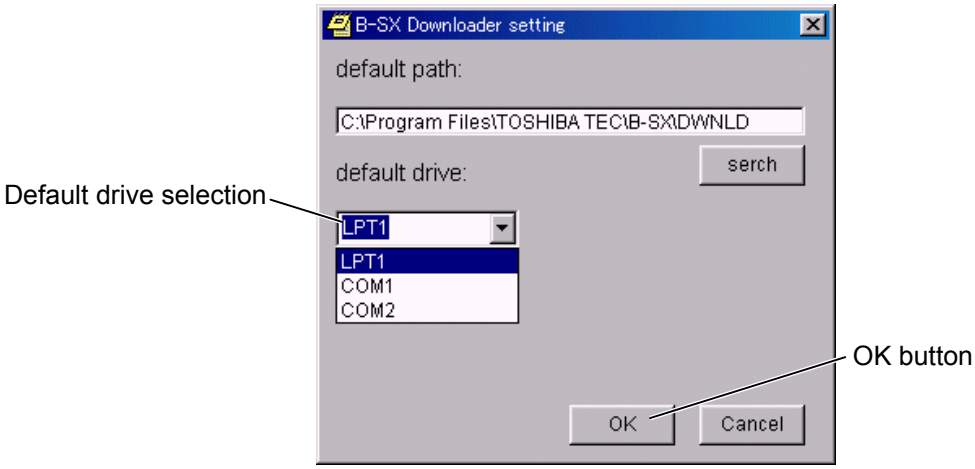


3) Click on the Search button to show the sub menu screen as shown below. Select a directly to be required as the default path.



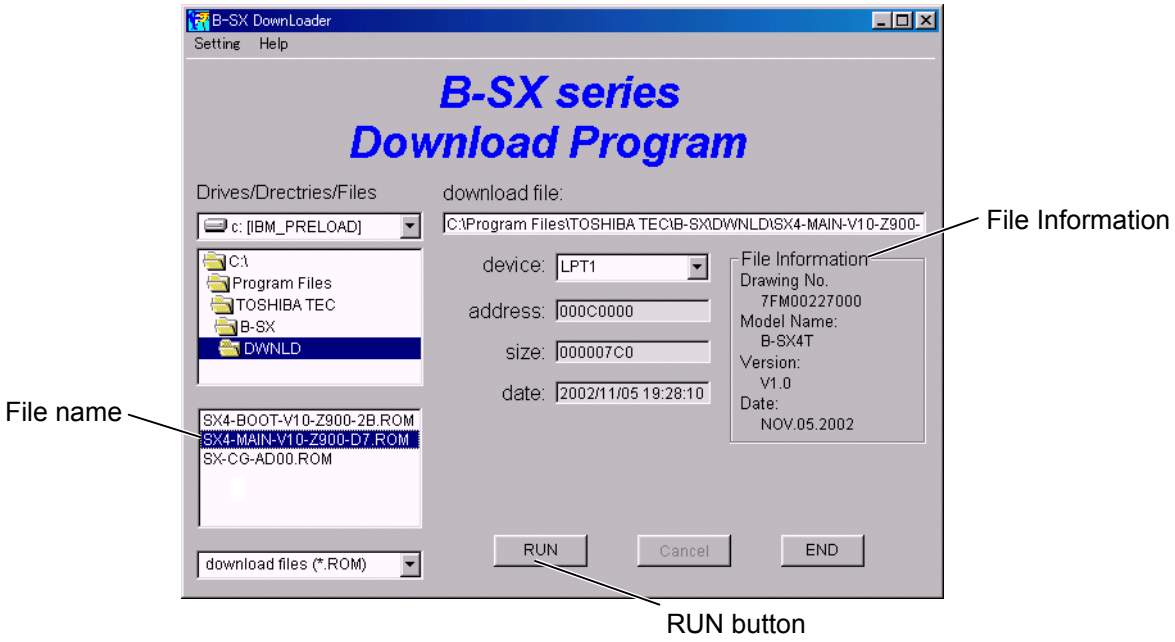
4) Click on the Select button and then the OK button. The default path setting is completed. This setting will be effective next time you start up Windows.

5) Select a device to be required as the default device, and then click the OK button. The default device setting is completed. This setting will be effective next time you start up Windows.

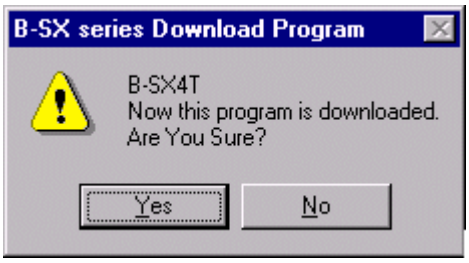


NOTES: *1. When COM1 or COM2 is selected as the default drive, communications parameter will be fixed as follows; Baud rate: 115200bps, Parity: even, Data Length: 8 bits, and Stop Bit: 1 bit.*
2. The default device is can be set on the main menu screen, however, it will be cleared at the termination of the download program.

(6) Select the drive directory in which the firmware file (*.ROM) was saved, and the file name to be downloaded. (File information will be showed on the right side of the screen. Click on the RUN button.

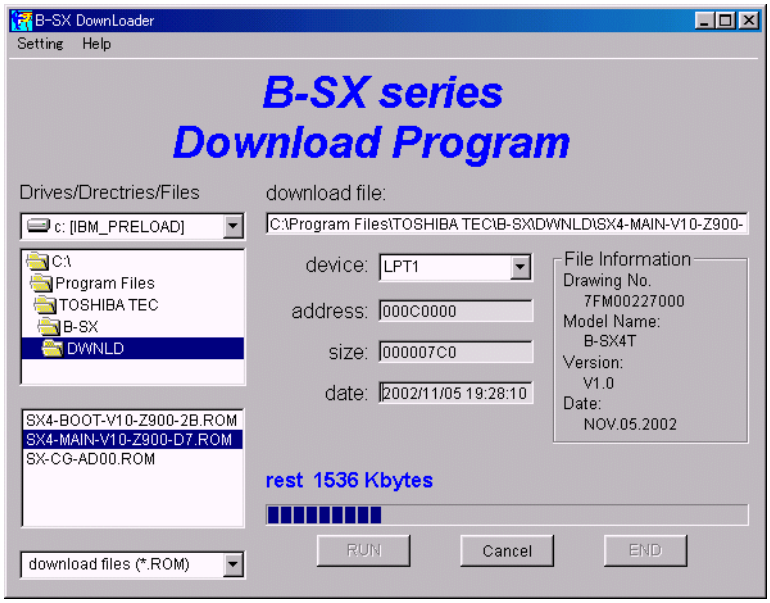


(7) The following message screen appears. Click on the Yes button to start the program download. If canceling the download, click on the No button.



NOTE: *While downloading, the following message will appear on the LCD display, respectively.*
Data in the Flash ROM is being erased.: *"ERASING…"*
The printer is receiving data.: *"RECEIVING…"*
Data is being written into the Flash ROM.: *"PROGRAMMING…"*

(8) While the printer prepares for the downloading, part of the screen may be disordered. After approximately 15 seconds, the following screen will appear causing the firmware to be transferred.



(9) After the firmware was transferred successfully, the display returns to the main menu screen.

(10) After data was written into the Flash ROM successfully, the message "*** COMPLETE ***" appears on the LCD display. And then the printer will restarts automatically.

NOTE*: If the printer does not restart and keeps on displaying the message "*** COMPLETE ***", wrong firmware may be downloaded. Confirm the model of the firmware, and then download it to the printer again.*

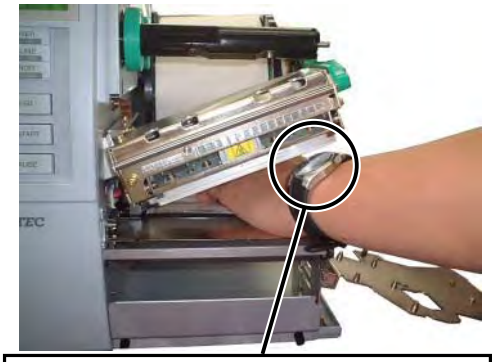
(11) Click on the END button to terminate the download program.

8. PERIODIC MAINTENANCE PROCEDURE

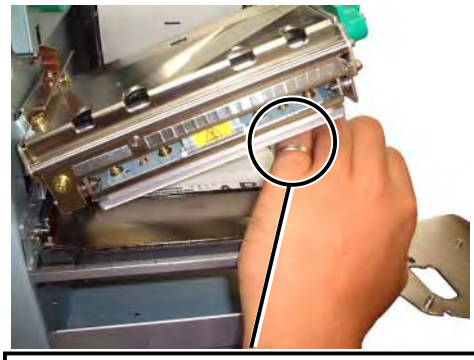
All machines are generally delivered in their best condition. To maintain optimal operating condition and help gain maximum performance and life of machines, we would recommend you to conduct periodic maintenance. Doing this is also effective in preventing unexpected troubles and avoiding wasteful system down time, by which more benefit is produced to your customers and greater reliance is placed on the product quality.
Please refer to the following general maintenance procedure and perform periodic servicing.

CAUTION!

When replacing parts or performing maintenance on the printer, be careful not to damage the print head with a hard object like a watch or a ring.



Care must be taken not to allow the metal or glass part of a watch to touch the print head edge.

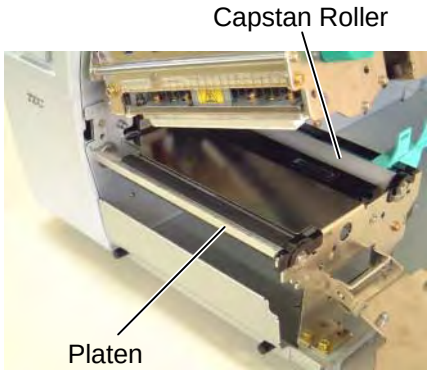


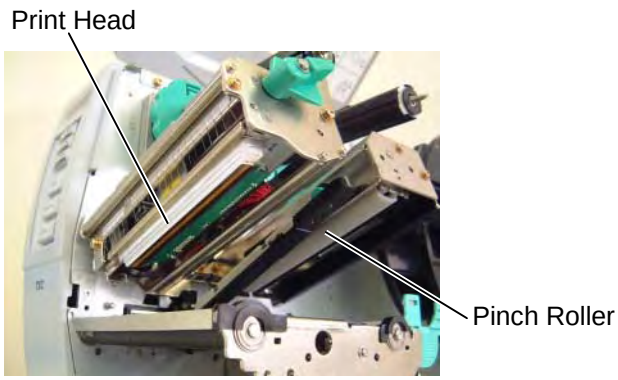
Care must be taken not to allow a metal object like a ring to touch the print head edge.

Since the print head element can be easily damaged by shock, please treat it carefully by not hitting a hard object against it.

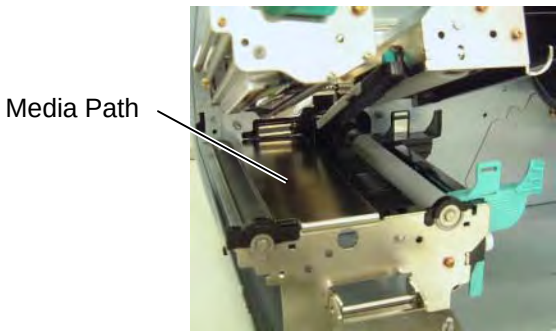
NOTE: *Before starting the periodic maintenance, be sure to read carefully and understand the Service Manuals, especially warnings, cautions and adjustment.*

1. Ask an operator or a manager about any machine trouble.
2. Check the run distance on the maintenance counter.
3. Turn the power off and disconnect the power cord.
4. Open the top cover.
5. Clean the inside of the printer.
   (1) The entire inside of the printer should be cleaned.
   (2) Wipe the platen, capstan roller, and pinch roller with a cloth moistened with alcohol.
   (3) Clean the print head elements with the TOSHIBA TEC-approved print head cleaner.





(4) Remove paper debris or label glue from the media path.

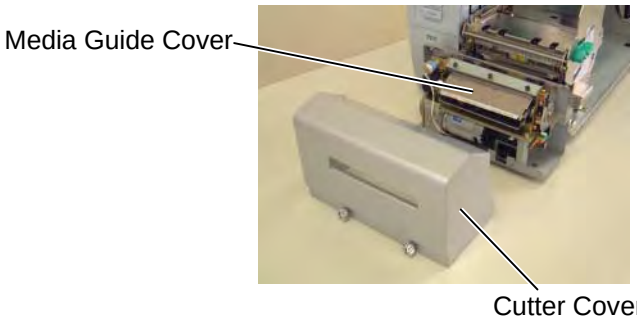


(5) When using the cutter unit, clean the cutter blade and the media path.

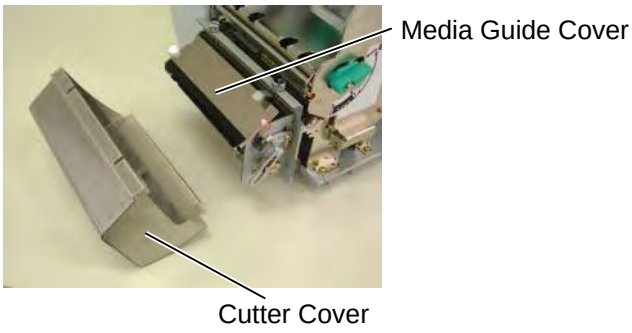
WARNING!
When cleaning the cutter, be careful not to be injured by the cutter blade.

1) Remove the cutter cover and the media guide cover.

B-8204-QM

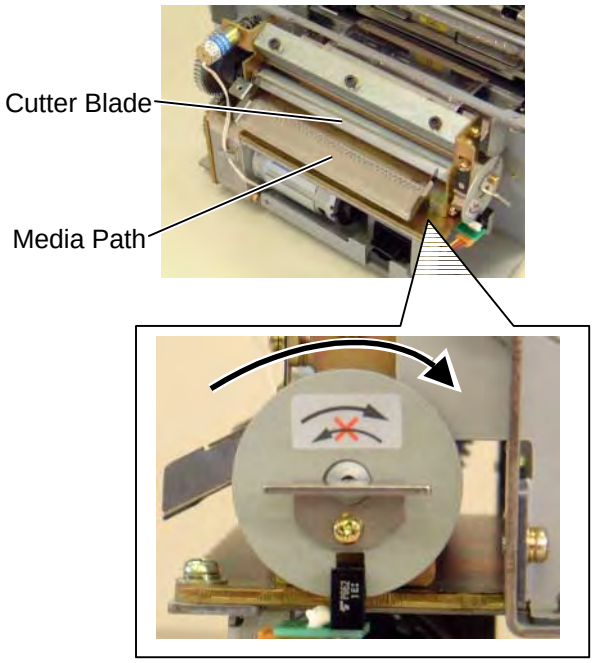


B-4205-QM

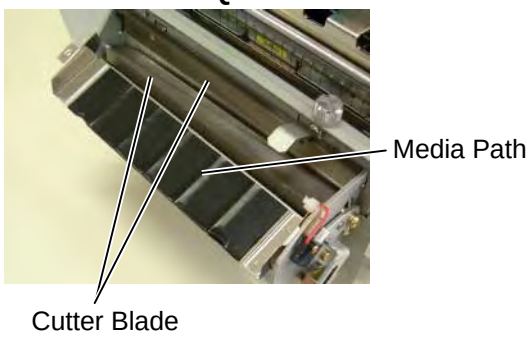


2) Wipe the cutter blade with a soft cloth or a cotton swab moistened with alcohol.
Wipe the media path with a soft cloth moistened with alcohol.

B-8204-QM



B-4205-QM



NOTE: *For the B-8204-QM, turn the cutter blade clockwise so as to clean easily.*

6. Apply FLOIL G-488 to the cutter unit using a soft cloth.

> ***CAUTION!***
> *1. Lubrication: During parts replacement*
> *2. Kinds of oil: FLOIL G-488: 1 Kg can. (Parts No. 19454906001)*
> *3. Do not spray the inside of the printer with lubricants. Unsuitable oil can damage the mechanism.*

All machines are generally delivered in their best condition. Efforts should be made to keep them that way. Lack of oil, or the presence of debris or dust, may cause an unexpected failure. To maintain in optional operating condition, periodically clean the machine and apply the proper kind of oil to each part in which lubrication is needed.

Although the frequency of lubrication varies according to how often the machine is used, as a minimum it is necessary to lubricate before any part becomes dry. It is also necessary to wipe off excessive oil or it will collect dirt.

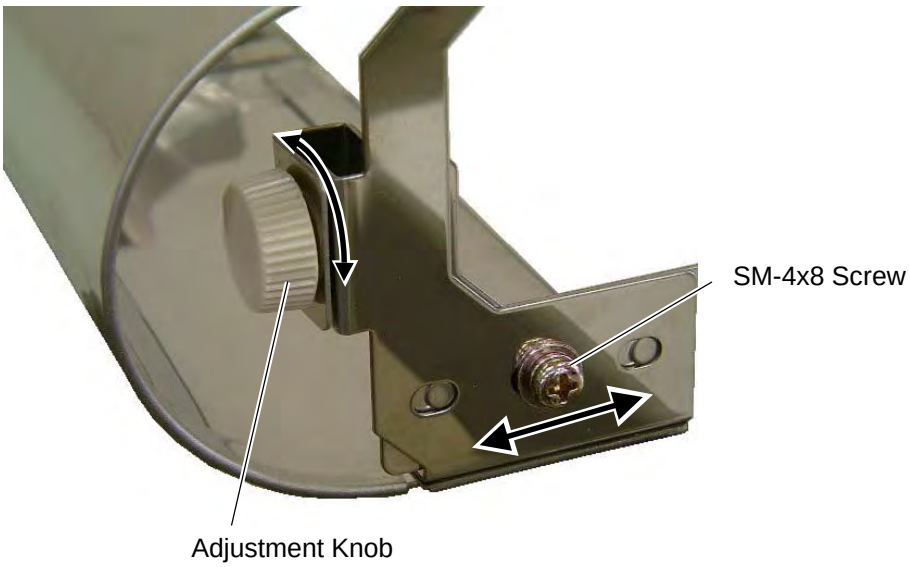
7. Confirm that the problem occurs as reported, and then take corrective action.
8. Replace the following parts periodically, if necessary. The following table shows approximate product life for each part.

No.	Part Name	Part No.	Standard interval of replacement
1	Cutter unit (Option: B-4205-QM)	GFM-0060001	300,000 cuts
2	Cutter unit (Option: B-8204-QM)	GFM-0066001	300,000 cuts
3	Platen	7FM00163000	50 km
4	Feed Roller	7FM00164000	50 km
5	Pinch Roller	7FM00169000	50 km

NOTES: *1. The above values of the cutter life are obtained on condition that the periodically maintained cutter is used with TOSHIBA TEC-approved supplies by the proper method described in the manuals.*
2. The above values differ depending on the thickness and substances of the media to be used. When using the cutter to cut the labels, be sure to cut the backing paper. Failure to do this may cause the glue to stick to the cutter and shorten the cutter life.

9. Confirm each part adjustment. Make any necessary adjustments.

10. Conduct the following tests and make sure that there is no problem.
    (1) Print test with TOSHIBA TEC-approved media and ribbon. (Print tone, print head position, etc.)
    (2) Paper skew
    When the Strip Module is used;
    If the label skews when using the built-in Rewinder unit, turn the adjustment knob of the rewinder guide plate to correct the label feed. Clockwise turn moves the rewinder guide plate forward and counterclockwise turn moves it backward.
    - When labels skew to the right:
      Loosen the SM-4x8 screw with a phillips-head screwdriver. Turn the adjustment knob clockwise, and tighten the SM-4x8 screw when the rewinder guide plate is positioned correctly.
    - When labels skew to the left:
      Loosen the SM-4x8 screw with a phillips-head screwdriver. Turn the adjustment knob counterclockwise, and tighten the SM-4x8 screw when the rewinder guide plate is positioned correctly.



    (3) Print start position adjustment (Horizontal: media position, vertical: sensor adjustment/adjustment by issuing commands.)
    (4) Communication test
    (5) Abnormal noise
    (6) Confirm that there are not any other errors.
11. Close the top cover.
12. Clean the outside of the printer.
13. Fill out a report form. Hand it to the manager and obtain a signature.

9. TROUBLESHOOTING

Problems	Cause	Solution
Power does not turn ON.	1. Input voltage to the printer is not within the rated voltage. (Check by CN1 on the PS unit.)	Replace the power cable or power inlet.
	2. Output voltage from the printer is not within the rated voltage. [Check that the voltage between +24V pins (1, 2 and 6) and PG pins (3, 7 and 8) of CN4 on the PS unit is 24V. And check that the voltage between +5V pin (5) and SG pin (4) is 5V.]	Replace the PS unit.
	3. No voltage to the MAIN PC board. [Check that the voltage between +27V pins (1, 2 and 6) and PG pins (3, 7 and 8) of CN501 on the MAIN PC board is 24V. And check that the voltage between +5V pin (5) and LG pin (4) is 5V.]	Replace the power harness.
	4. Failure of MAIN PC board.	Replace the MAIN PC board.
LED or LCD does not light.	1. Failure of the panel PC board or operation panel	Replace the panel PC board or operation panel.
	2. Failure of the operation panel harness	Replace the operation panel harness.
	3. Failure of the MAIN PC board	Replace the MAIN PC board.
Poor printing	1. Poor media quality.	Use the media approved by TOSHIBA TEC.
	2. Dirty print head	Clean the print head.
	3. The print head block is not set completely.	Close the print head block completely.
Printer does not print.	1. Print head failure	Replace the print head.
	2. Connection of the print head connector is incomplete, a bad contact, or broken elements.	Connect the harness completely, or replace the harness.
	3. Failure in rewinding/feeding of the ribbon.	Replace the ribbon take-up motor, ribbon feed motor or MAIN PC board.
	4. Failure of the MAIN PC board.	Replace the MAIN PC board.
	5. Failure of the software	Check the program.
	6. Failure of the printer cable.	Replace the printer cable.
Dot missing	1. Broken print head element	Replace the print head.
	2. Broken print head cable wires	Replace the print head harness.
	3. Failure of the MAIN PC board	Replace the MAIN PC board.
Blurred print	1. Poor media quality.	Use only TOSHIBA TEC-approved media.
	2. Dust is on the media.	Clean the print head and remove any dust from the media.

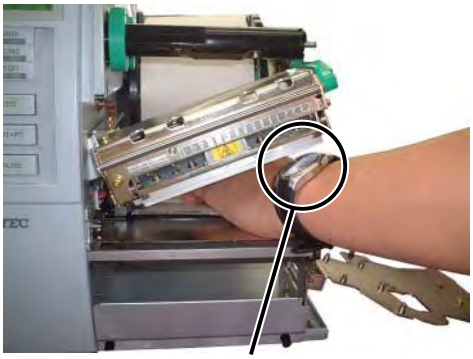
Problems	Cause	Solution
Ribbon wrinkle	1. Poor ribbon quality.	Use only TOSHIBA TEC-approved ribbon.
	2. Ribbon is not rewound or fed smoothly.	Replace the ribbon rewind motor or ribbon feed motor.
Media feed failure	1. Media is not set properly.	Set the media properly.
	2. Poor media quality	Use the media approved by TOSHIBA TEC.
	3. Improper adjustment of the feed gap sensor or black mark sensor.	Re-adjust the sensor.
	4. Threshold is improper.	Set the threshold correctly.
	5. Failure of the feed gap sensor or black mark sensor	Replace the feed gap sensor or black mark sensor.
	6. The cutter mechanism is not installed properly.	Install the cutter module properly.
	7. Failure of the stepping motor.	Replace the stepping motor or MAIN PC board.
Communication error	1. Failure of the communication cable	Replace the cable.
	2. Failure of the RS-232C connector	Replace the connector
	3. Failure of the communication connector	Replace the connector.
	4. Failure of the PC or application software	Modify the program.
	5. Failure of the MAIN PC board	Replace the MAIN PC board.

10. MAJOR UNIT REPLACEMENT

WARNING!
Turn the power off and disconnect the power cord before replacing the main parts.

CAUTION!

When replacing parts or performing maintenance on the printer, be careful not to damage the print head with a hard object like a watch or a ring.



Care must be taken not to allow the metal or glass part of a watch to touch the print head edge.

Care must be taken not to allow a metal object like a ring to touch the print head edge.

Since the print head element can be easily damaged by shock, please treat it carefully by not hitting a hard object against it.

NOTES:

1. *Be sure to disconnect all cables of the printer from the PC and the option devices. Never remove the screws fixing the printer block. (See Caution in Section 3.)*
2. *Major differences between the old printer and the new printer (low power consumption type)*
   - *(1) Serial number of the new printers*

     B-SX4T Series: Serial No.3T311411 or later
     B-SX5T Series: Serial No. 3Wxxxxxx or later
   - *(2) Major difference and interchangeability*

     a. MAIN PC Board Ass'y

     As the MAIN PC board ass'y of the new printer has been designed to release less heat than before, the heat sink and the thermistor of the heat sink are not provided on it.
     Please refer to the following comparison chart.

	Part name	Model	Service No.
Old	MAIN PC Board Ass'y	B-SX4T-GS10-QP	B-334-01
		B-SX4T-GS10-QQ B-SX4T-GS10-QQ-CCS	B-334-02
		B-SX5T-TS12-QP	B-334-03
		B-SX5T-TS12-QQ	B-334-04
New	MAIN2 PC Board Ass'y	B-SX4T-GS10-QP	B-357-00
		B-SX4T-GS10-QQ B-SX4T-GS10-QQ-CCS	B-357-01
		B-SX5T-TS12-QP	B-357-02
		B-SX5T-TS12-QQ	B-357-03

<Interchangeability>
The MAIN2 PC board ass'y can be installed in both old and new printers.
However, the old MAIN PC board ass'y cannot be installed in the new printer.

	Current Printer	New Printer
PWB-SX MAIN	Installable	Not installable
PWB-SX MAIN2	Installable	Installable

Because of the low power consumption printer, the fan base and the fan cover of the cooling fan for the MAIN PC board became unnecessary, and have been deleted.

b. Boot and Main Programs
There is no interchangeability between the old Boot program and the new Boot program.
The Main program of Firmware V2.0 or greater can be used in both old and new printers.

Part Name, Part No., Applicable model, and Version (ROM: IC11)

	Part Name	Model	Part No.	Version
Old	ASYS-SX4 SOFT	B-SX4T Series	7FM00226000	V1.2A or lower
	ASYS-SX5 SOFT	B-SX5T Series	7FM00227000	V1.2A or lower
New	ASYS-SX4(V) SOFT	B-SX4T Series	7FM00524000	V2.0 or greater
	ASYS-SX5(V) SOFT	B-SX5T Series	7FM00525000	V2.0 or greater

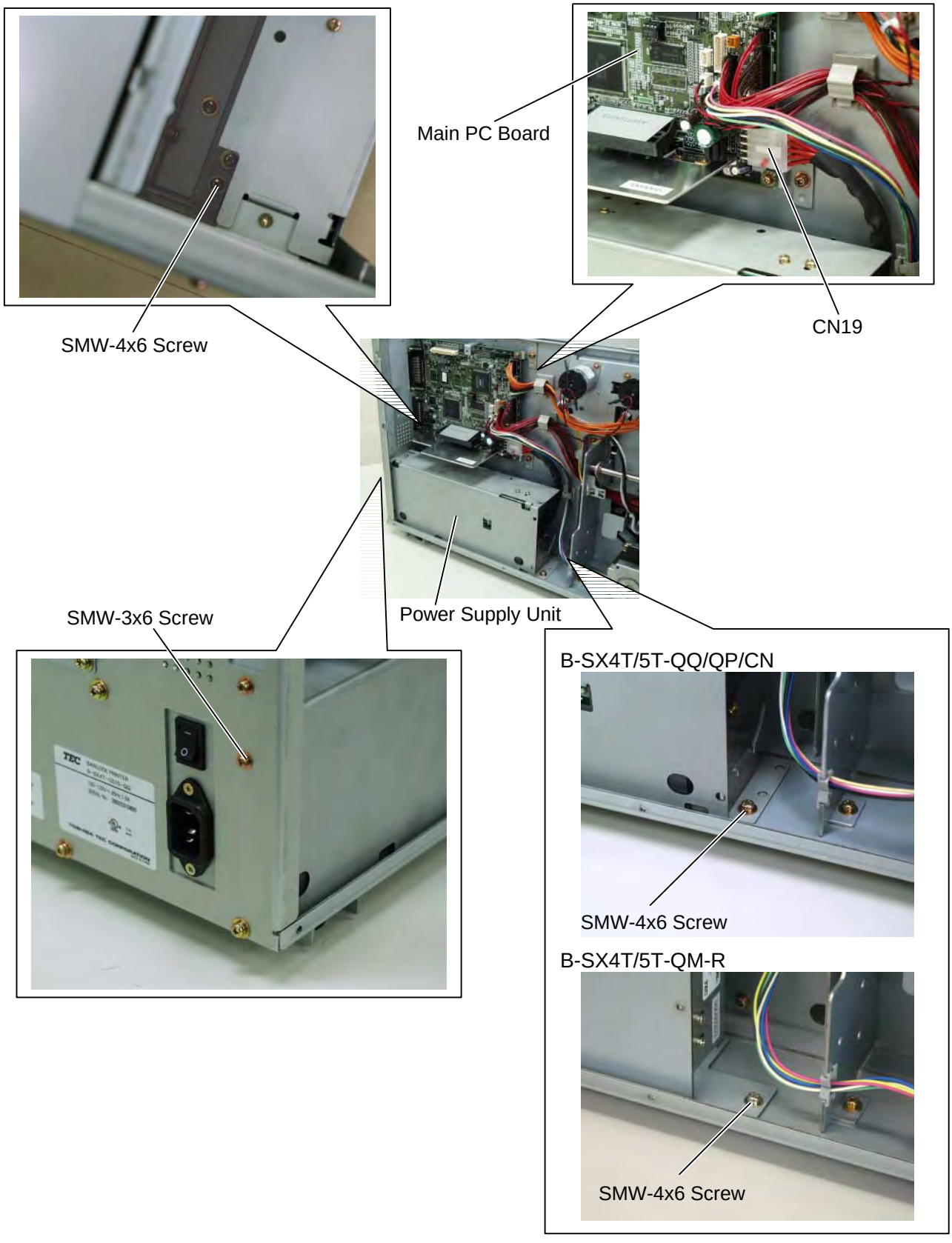
Service part FDK

	Part Name	Model	Part No.	Version
Old	WR.FD-SX4-FIRM	B-SX4T Series	7FM00258000	V1.2A or lower
	WR.FD-SX5-FIRM	B-SX5T Series	7FM00259000	V1.2A or lower
New	WR.FD-SX4(V)-FIRM	B-SX4T Series	7FM00538000	V2.0 or greater
	WR.FD-SX5(V)-FIRM	B-SX5T Series	7FM00539000	V2.0 or greater

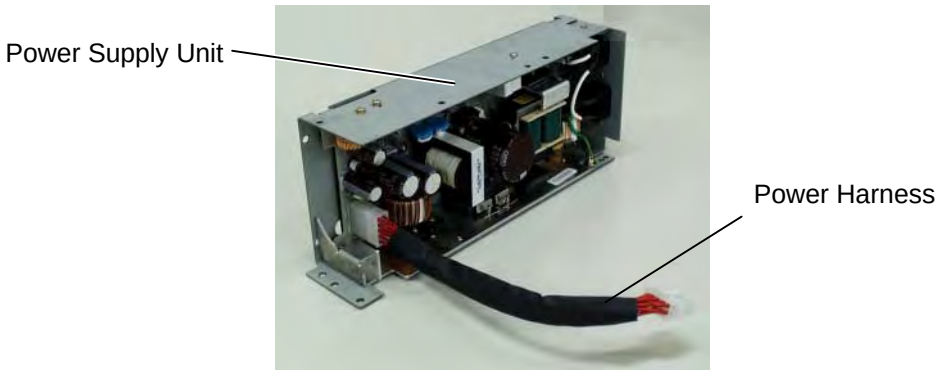
<Boot Program Download Protection>
If you try downloading wrong Boot Program to the printer, "MODEL TYPE ERROR" will be displayed on the printer's LCD, and downloading will be canceled. This is the Boot program download protection function.
Regarding the Main program, there is no protection function. Therefore, please be very careful not to download the program V1.2A or lower to the new printer. If you did by mistake, download the program V2.0 or greater to the printer again, or the printer malfunctions.
For Program Downloading procedure, refer to Section 7.

10.1 POWER SUPPLY UNIT

1) Remove the side panel (L). (Refer to Section 3.2.)
2) Disconnect the power supply harness from CN19 on the Main PC board.
3) Remove the SMW-3x6 and the two SMW-4x6 screws to detach the power supply unit from the printer.



4) Disconnect the power harness from the power supply unit.
5) Replace the power supply unit with a new one, then reassemble in the reverse order of removal.



10.2 MAIN PC BOARD

NOTES: 1. The installed Main PC board type is different according to the machine serial number. The pictures provided in this section are of the old MAIN PC board. For the layout of the MAIN2 PC board, please refer to the following diagram. IC No, Connector No., etc. are common to both MAIN PC boards.

2. Notes regarding the MAIN4 PC board

For the products manufactured in and after January 2009 (for QM-R and SP40II-R models)/February 2009 (for CN-R model), the MAIN PC board has been/is to be changed with the MAIN4 PC board containing large-capacity memory.

(1) Applicable Model and Production Month

Model Name	Production Month
SP40II-R	2009/01
B-SX5T-TS22-QM-R	2009/01
B-SX5T-TS22-CN-R	2009/02
B-SX4T-GS20-QM-R	2009/01
B-SX4T-GS20-CN-R	2009/02

When the new MAIN PC board with large-capacity memory (i.e. MAIN4 PC board) is installed into the printer manufactured prior to the above production month, please use a correct one as shown below.

Model	Current (MAIN3 PC Board)	New (MAIN4 PC Board)
B-SX4T-GS20-QM-R	Service No. B-372-**	Service No. B-0516-**
B-SX5T-TS22-QM-R	Service No. B-372-**	Service No. B-0516-**
B-SX4T-GS20-CN-R	Service No. B-372-**	Service No. B-0516-**
B-SX5T-TS22-CN-R	Service No. B-372-**	Service No. B-0516-**
SP40II-R	Service No. B-372-**	Service No. B-0516-**

For details of the service number, please refer to the Parts List.
MAIN3 is printed on the PWB of the MAIN4 PC board, however, it is possible to identify the PC board with the service No. label on it or the ROM version label (V5.0) on the ROM (IC11).
Also, the ”MAIN4-R” label to be described below has been enclosed with the MAIN4 PC board as service parts.

(2) Specification of the MAIN4 PC Board

<table>
<tr><th rowspan="2">Model</th><th colspan="4">Hardware</th><th colspan="2">Software</th></tr>
<tr><th>Flash ROM</th><th>RAM</th><th>Kanji ROM (IC7)</th><th>Kanji Font</th><th>Registry area size</th><th>Program area size</th></tr>
<tr><td>B-SX5T-TS22-QM-R</td><td rowspan="5">4MB → 8MB</td><td>16MB → 32MB</td><td colspan="2" rowspan="3">None</td><td rowspan="5">896KB
↓
3072KB</td><td rowspan="5">2304KB
↓
4096KB</td></tr>
<tr><td>B-SX4T-GS20-QM-R</td><td>8MB → 16MB</td></tr>
<tr><td>SP40II-R</td><td>8MB → 16MB</td></tr>
<tr><td>B-SX5T-TS22-CN-R</td><td>16MB → 32MB</td><td rowspan="2">None → 8MB</td><td rowspan="2">Simplified Chinese</td></tr>
<tr><td>B-SX4T-GS20-CN-R</td><td>8MB → 16MB</td></tr>
</table>

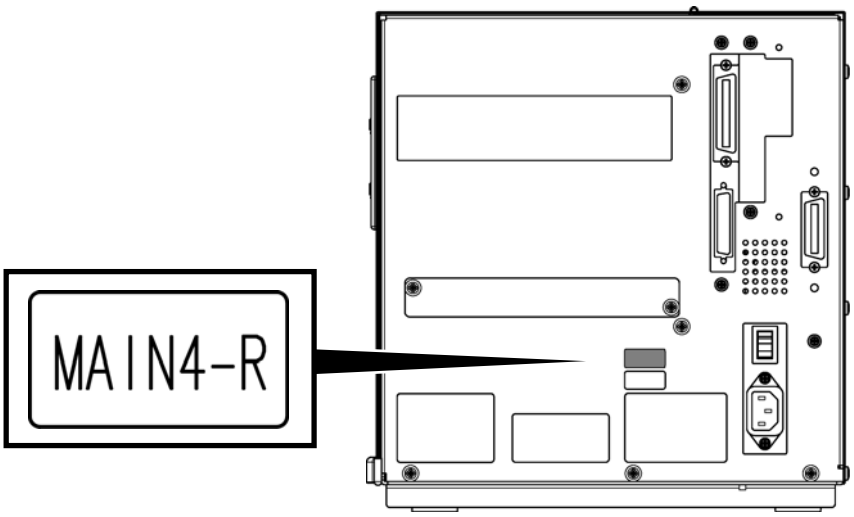
Except for the memory capacity, the specification of the MAIN4 PC board is equivalent to that of the MAIN3 PC board. However, the firmware V5.0 and greater (Main program V5.0, Boot program V3.0) is installed into the MAIN4 PC board only.

(3) Identification of the MAIN4 PC board

For the printer containing the MAIN4 PC board, ”MAIN4-R” is indicated on the carton label and the ”MAIN4-R” label is attached to the back of the printer.
Also the firmware version label attached to the ROM (IC11) on the MAIN4 PC board indicates V5.0.
The service No. B-0516-** is applied to the production of January 2009 and after, however, it may not partly meet the serial No. Accordingly, make sure the firmware version on the ROM label is V5.0 and greater to identify the MAIN4-R PC board with the service No. other than B-0516-**. Identify the MAIN PC board with these identification labels.

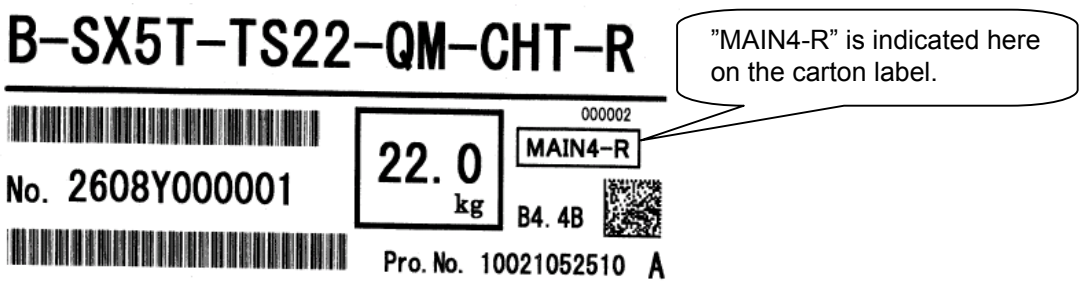
After that, perform a replacement operation.

- The “MAIN4-R” label on the back of the printer

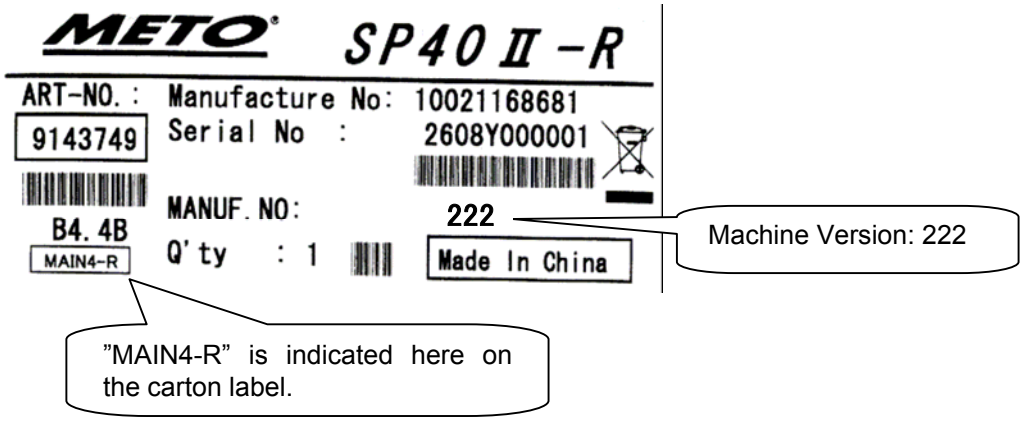


- ”MAIN4-R” indicated on the carton label

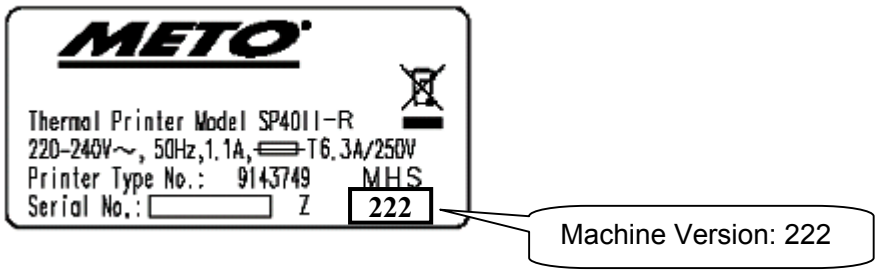
QM and CN model



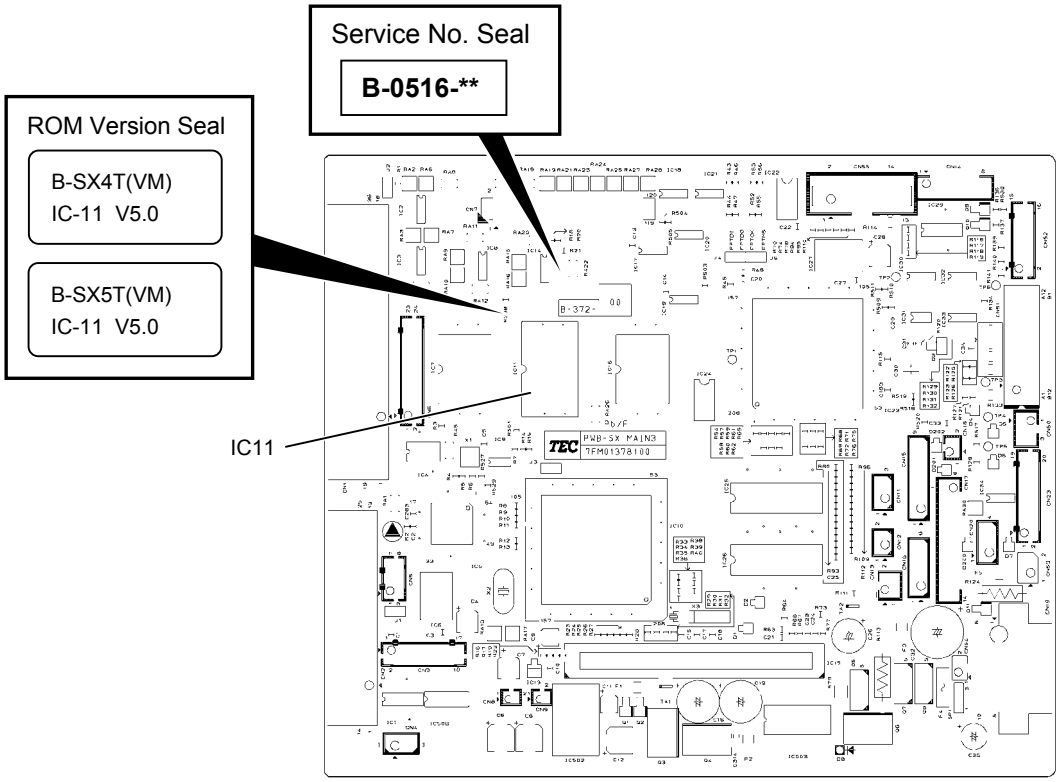
SP40II-R model



• Rating label
SP40II-R model



• Service No. seal and ROM Version Seal



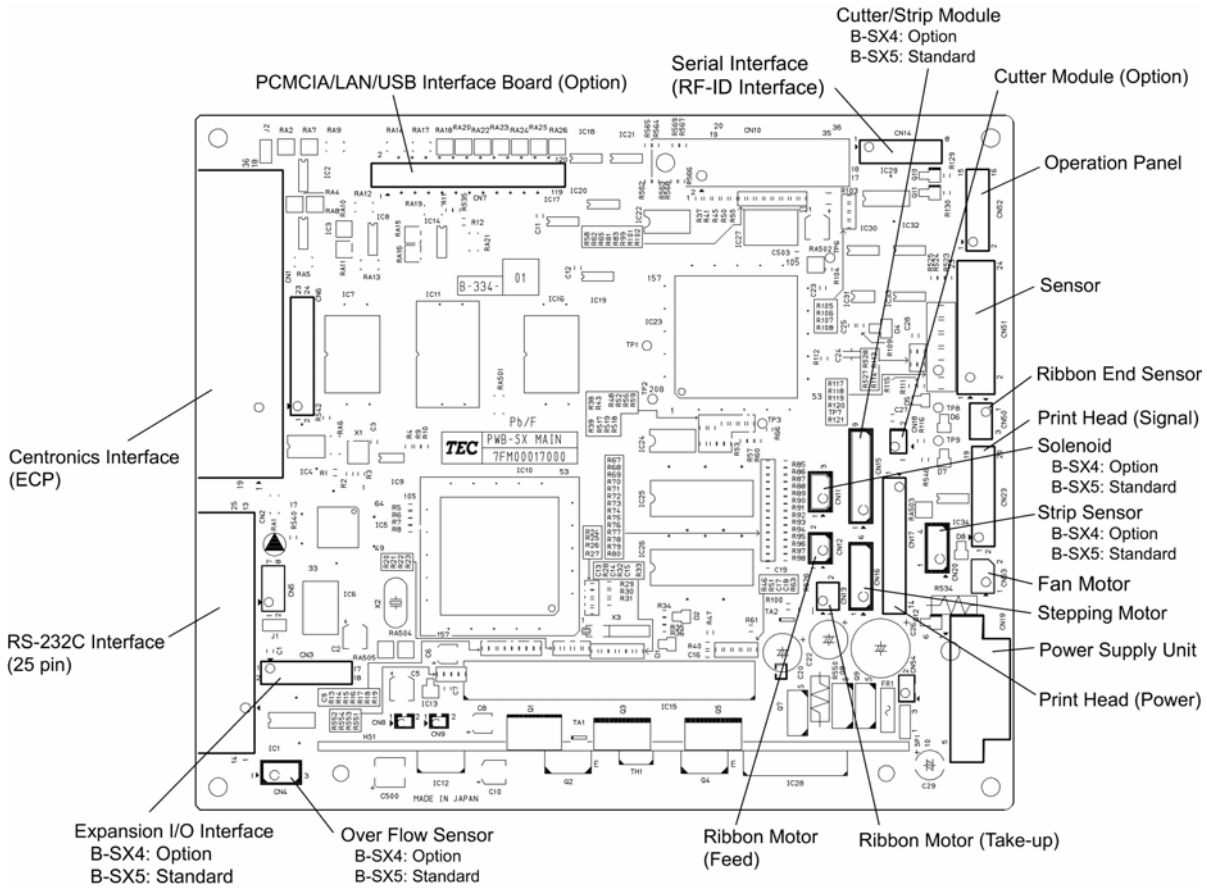
Note: The MAIN4 PC board is provided with these seals even though MAIN3 is printed on the PWB.

• Notes after replacement
When the MAIN PC board is replaced from MAIN3 to MAIN4, attach the ”MAIN4-R” label, which is enclosed with the MAIN4 PC board as service parts, to the back of the printer in order to visually identify the MAIN PC board. For the attaching portion, refer to the previous page.
For the MAIN4 PC board, use the firmware program V5.0 and greater and the boot program V3.0 and greater.
Note that when the firmware for the MAIN3 PC board (V4.7 or less) is downloaded into the MAIN4 PC board, it is necessary to re-download the firmware V5.0 or greater for recovering the printer. However, re-downloading the firmware is possible with any combination of the MAIN PC board and the firmware.
For details of the firmware download, please refer to the Section 7.

1) Remove the side panel (L). (Refer to Section 3.2.)
2) For the B-SX5T series, remove the expansion I/O board. (Refer to Section 4.)
3) Disconnect all the cables from the MAIN PC board.

■ **MAIN PC Board**

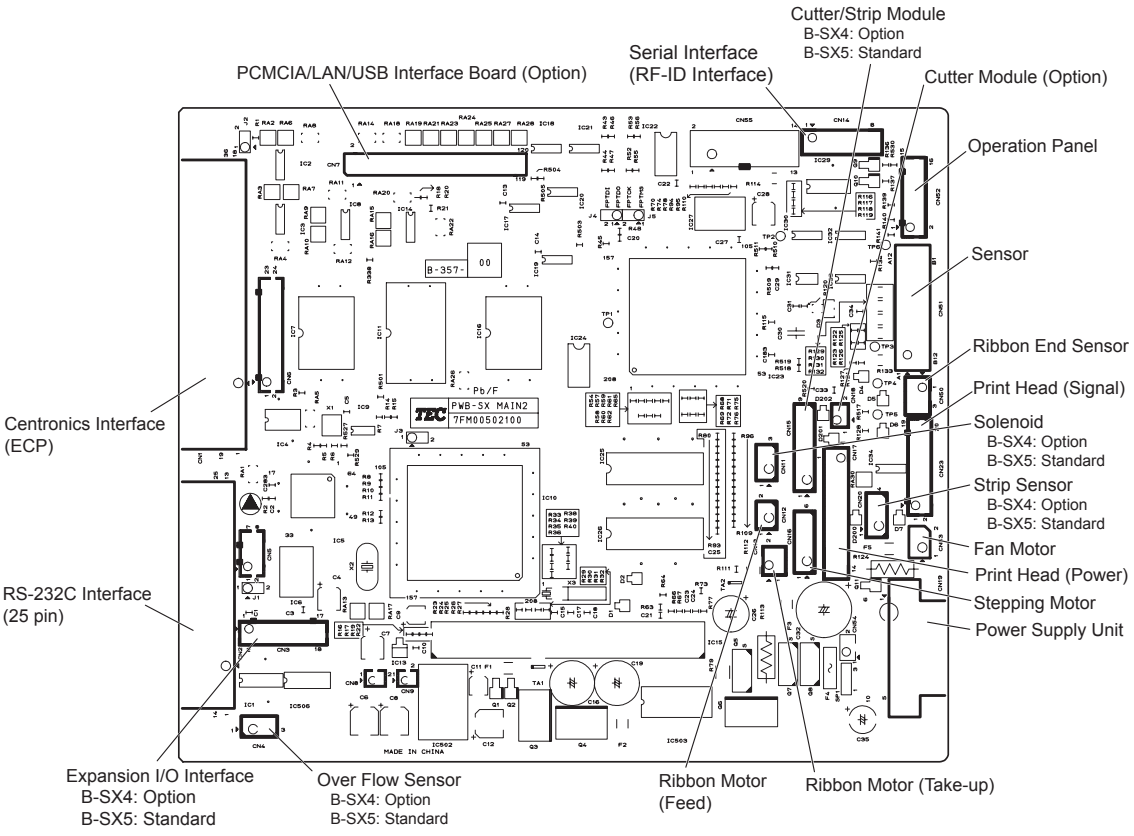
B-SX4T series: Serial No. 3T311410 or earlier
B-SX5T series: Serial No. 3Txxxxxx or earlier



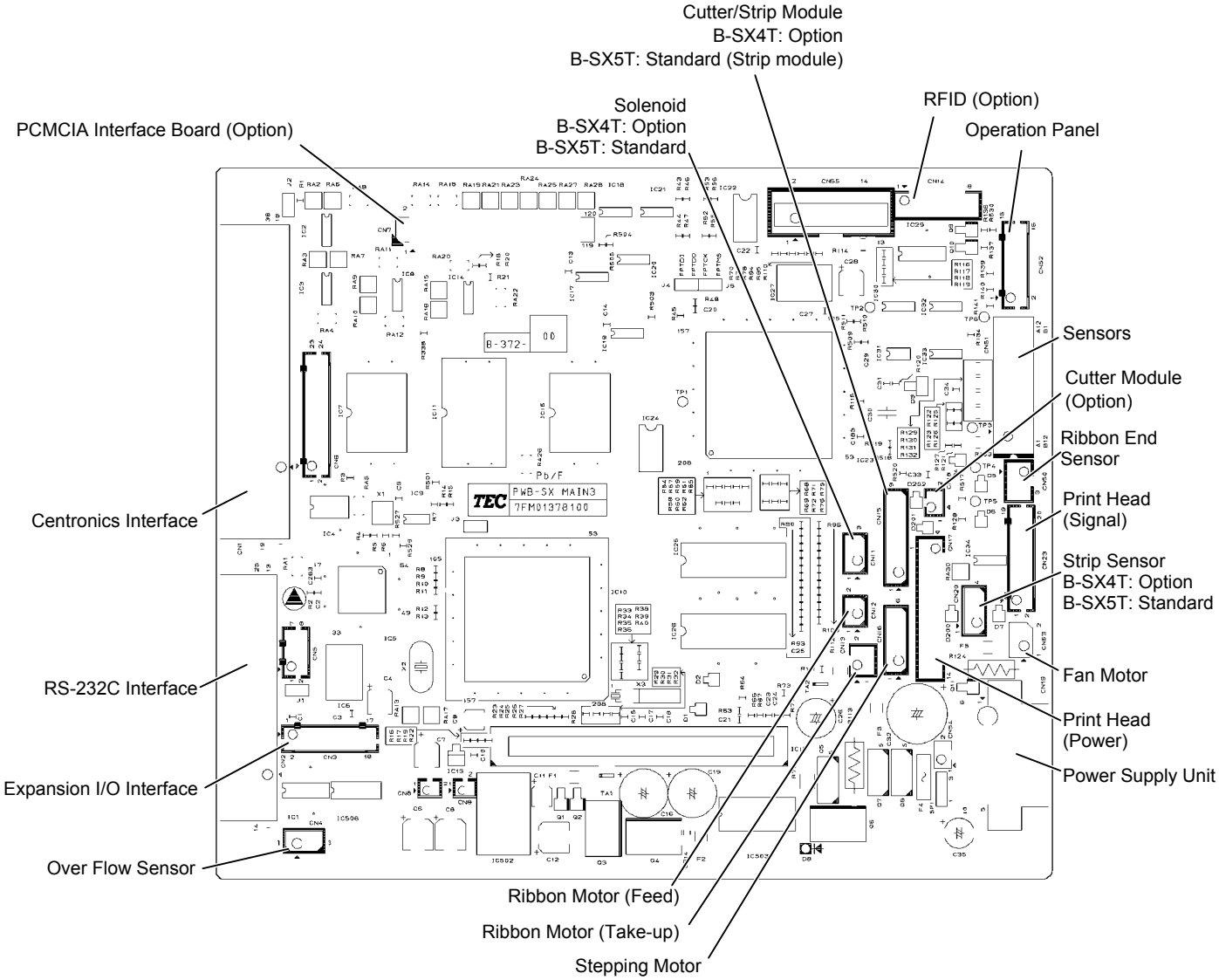
NOTE: *The cables are connected to the following connectors as standard (without option).*
B-SX4T: CN8, 9, 12, 13, 16, 17, 19, 23, 50 – 53
B-SX5T: CN3, 4, 8, 9, 11 – 13, 15 – 17, 19, 20, 23, 50 – 53

■ MAIN2 PC Board

B-SX4T series: Serial No. 3T311411 or later
B-SX5T series: Serial No. 3Wxxxxxx or later

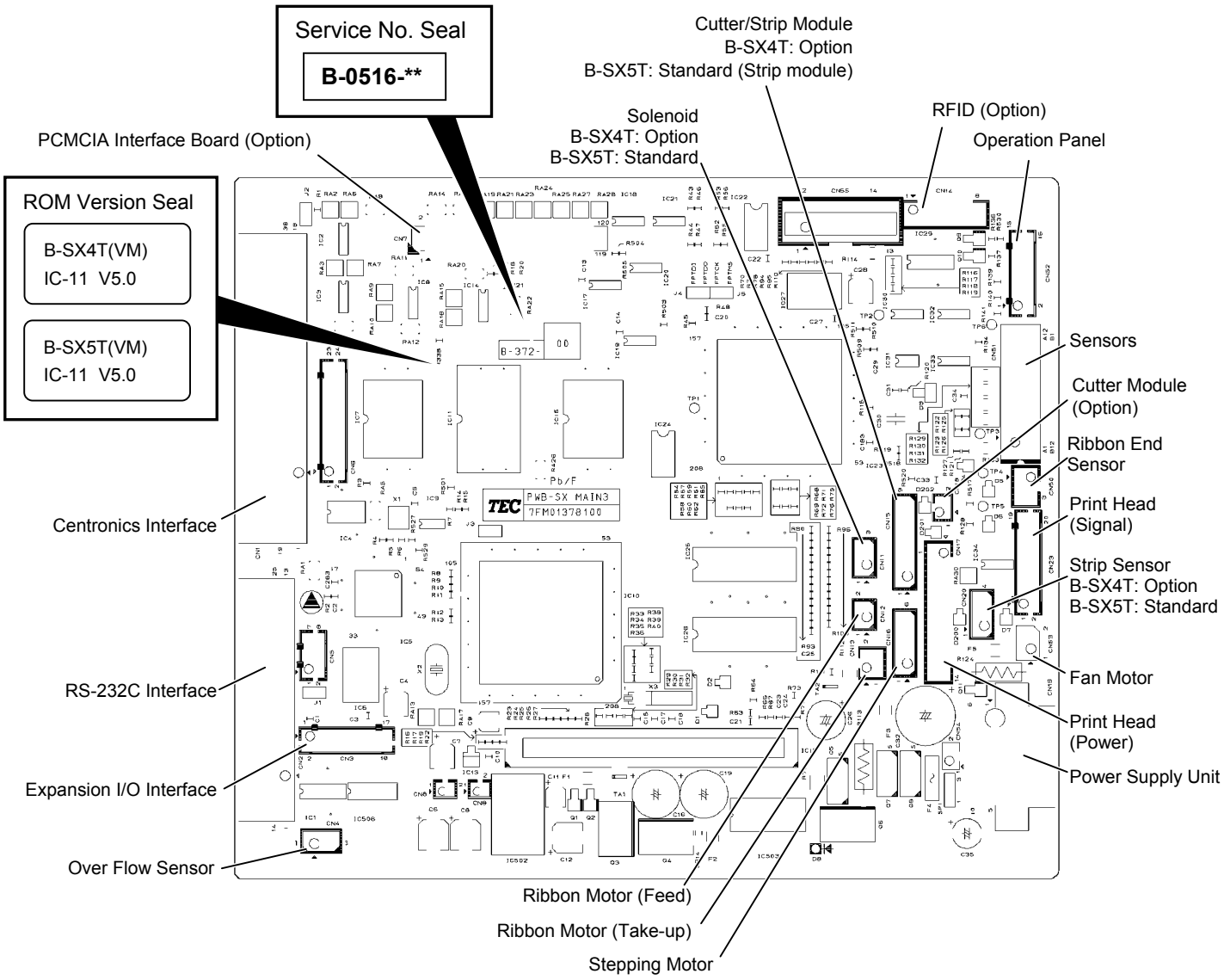


■ MAIN3 PC Board



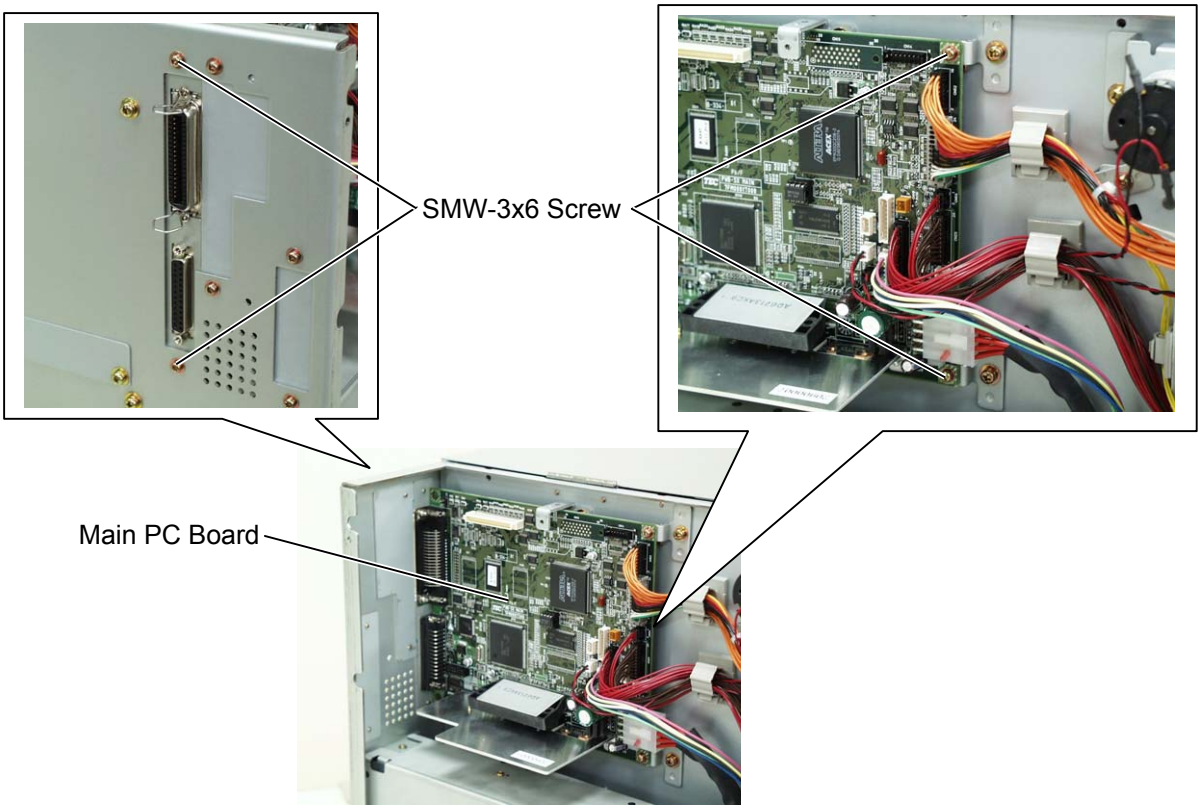
■ **MAIN4 PC Board**

B-SX4T-GS20-QM-R, SP40II-R, B-SX5T-TS22-QM-R: Serial No. 2609Axxxxxx or later
B-SX4T-GS20-CN-R, B-SX5T-TS22-CN-R: 2609Dxxxxxx or later

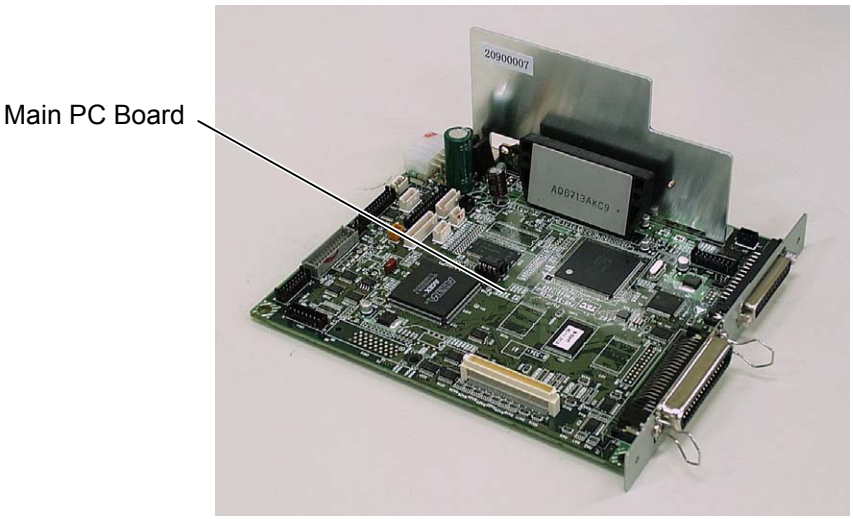


Note: The MAIN4 PC board is provided with these seals even though MAIN3 is printed on the PWB.

4) Remove the four SMW-3x6 screws to detach the Main PC board from the printer.



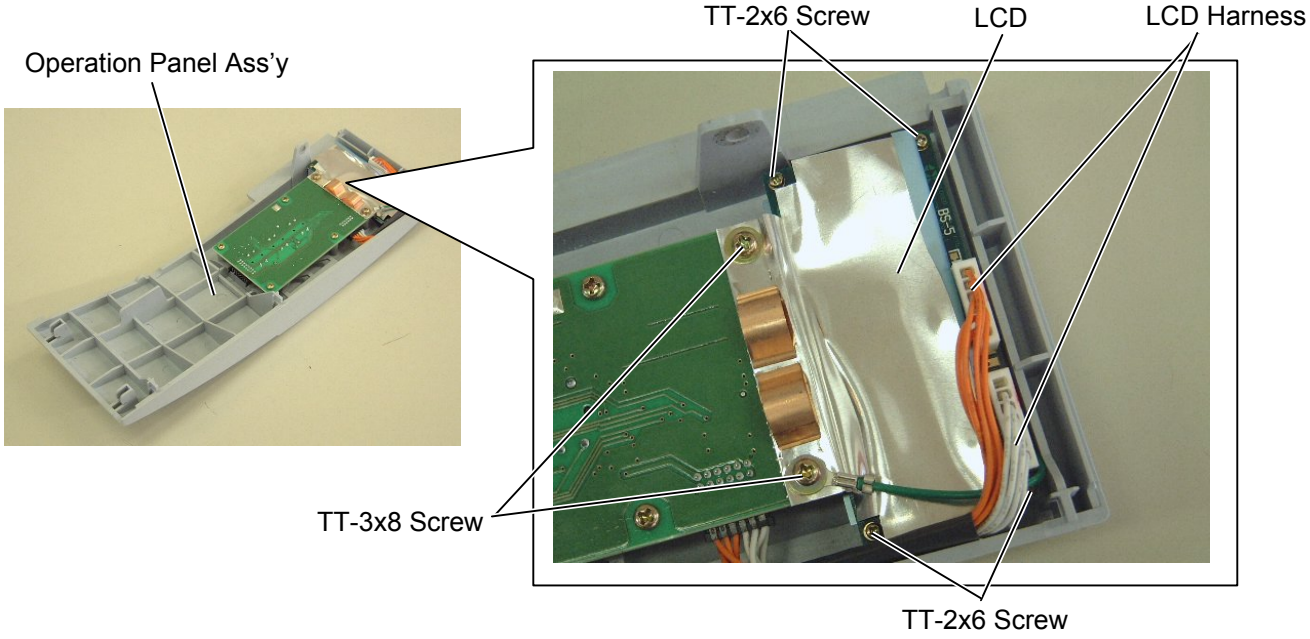
5) Replace the Main PC board with a new one, then reassemble in the reverse order of removal.



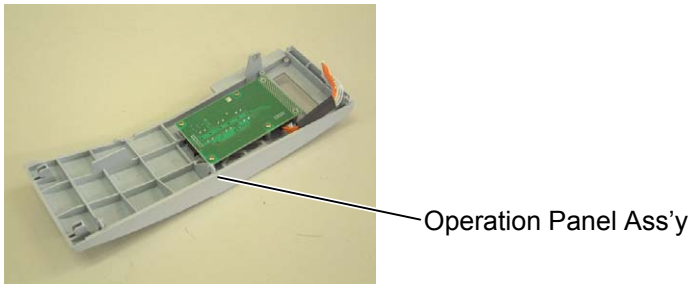
10.3 PANEL PC BOARD AND LCD UNIT

10.3.1 LCD

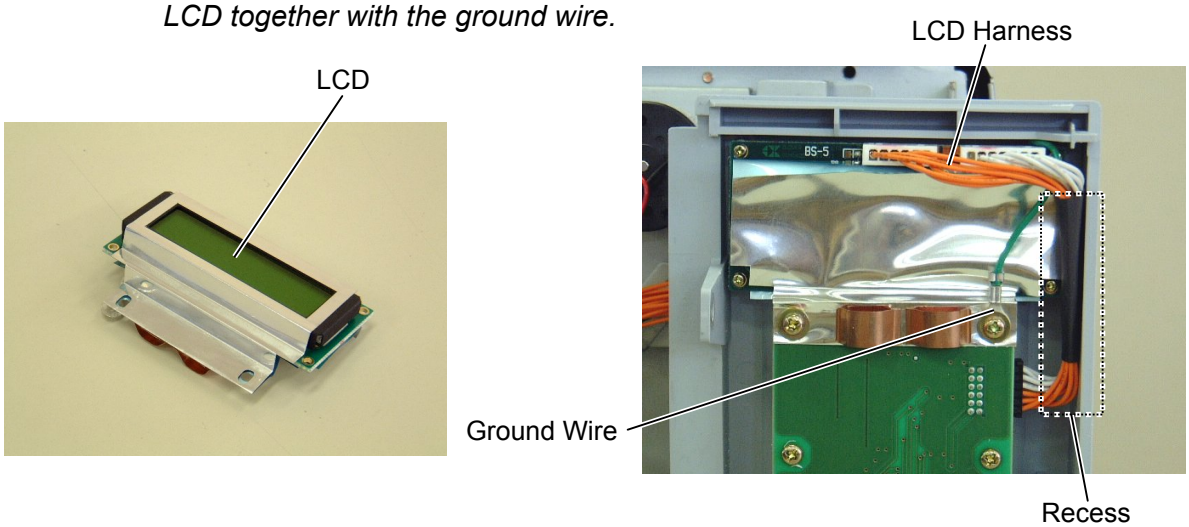
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Remove the operation panel ass'y. (Refer to Section 3.4.)
3) Remove the two LCD harnesses, the four TT-2x6 screws, and the two TT-3x8 screws from the LCD.



4) Detach the LCD from the operation panel ass'y.

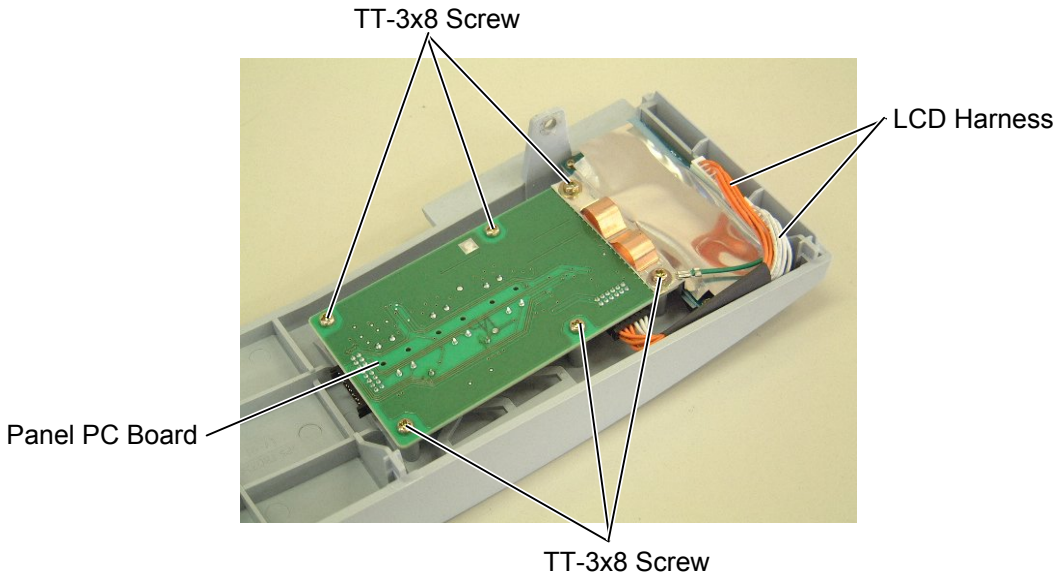


5) Replace the LCD with a new one, then reassemble in the reverse order of removal.
NOTE: *When reassembling, put the LCD harness into the recess as the picture below shows. Failure to do this may cause the cover to catch the harness. Also secure the LCD together with the ground wire.*

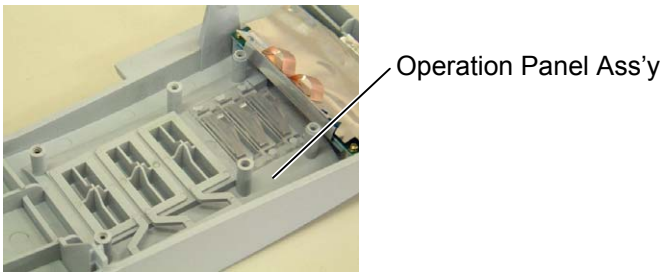


10.3.2 Panel PC Board

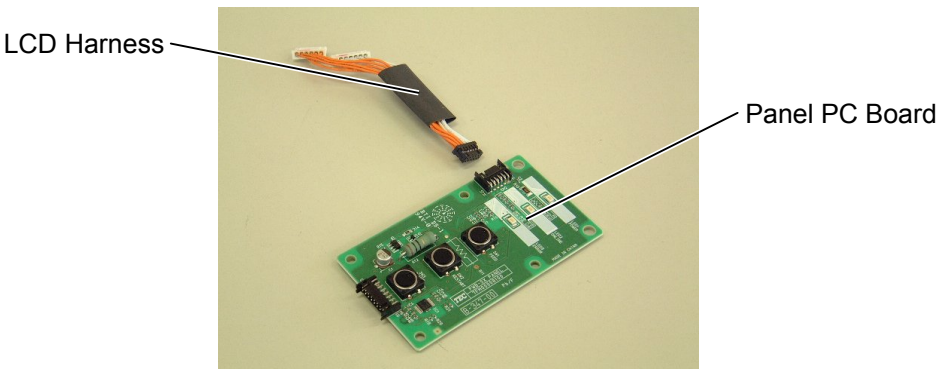
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Remove the operation panel ass'y. (Refer to Section 3.4.)
3) Remove the two LCD harnesses and the six TT-3x8 screws from the LCD.



4) Detach the panel PC board from the operation panel ass'y.



5) Disconnect the LCD harness from the panel PC board.

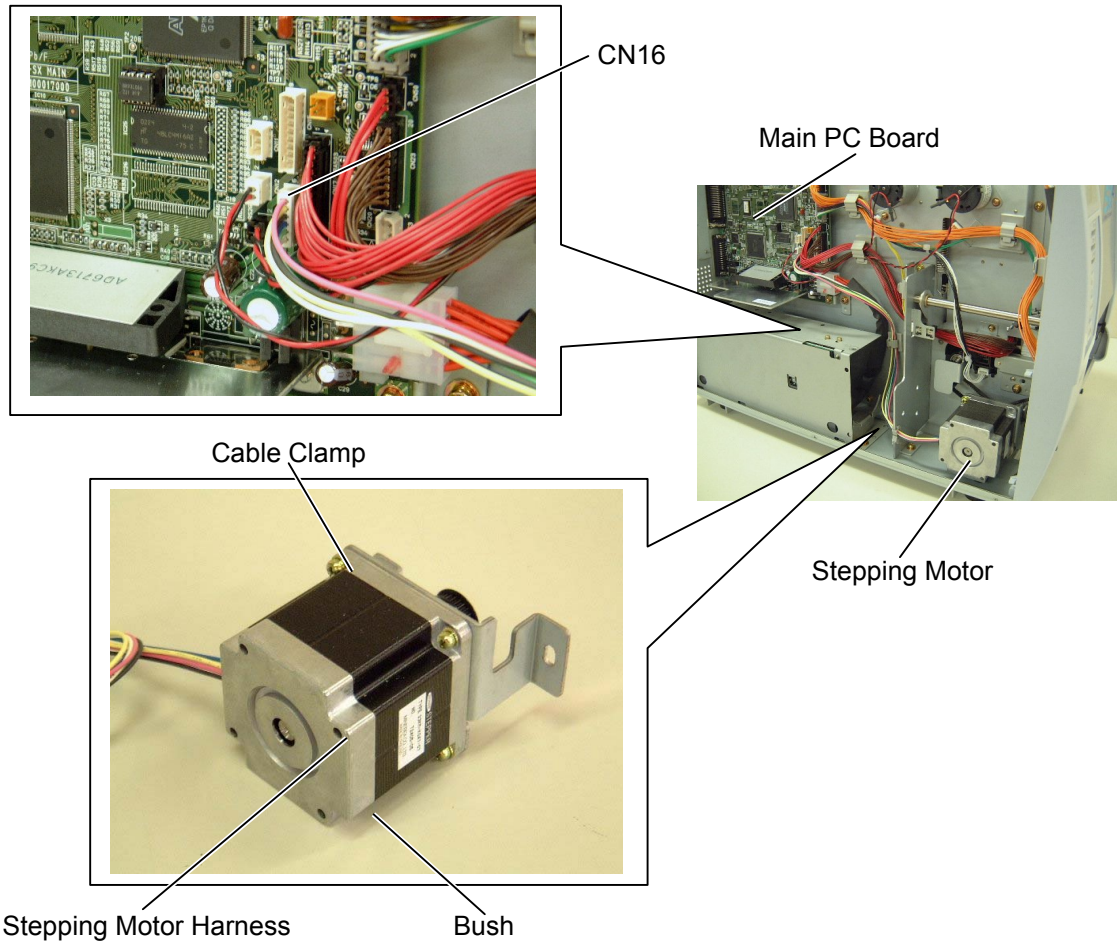


6) Replace the panel PC board with a new one, then reassemble in the reverse order of removal.

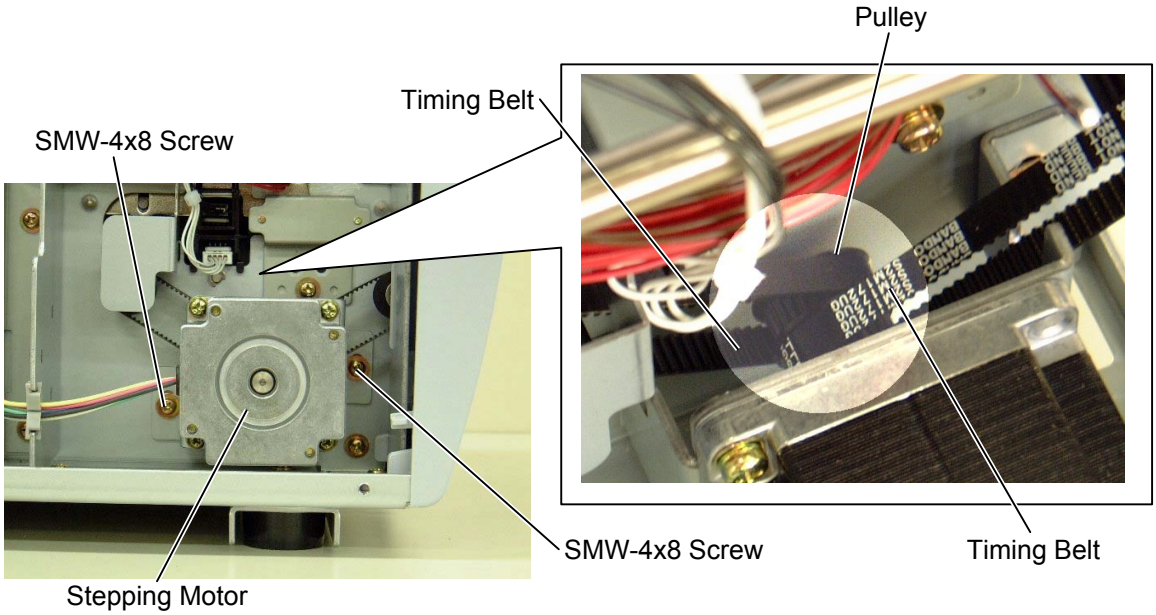
NOTE: *When reassembling, put the LCD harness into the recess. Failure to do this may cause the cover to catch the harness. (Refer to Section 10.3.1.)*

10.4 STEPPING MOTOR

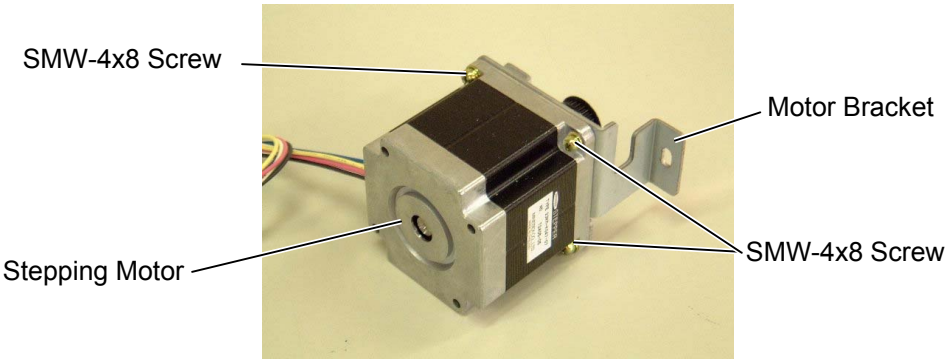
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Disconnect the stepping motor harness from CN16 on the Main PC board.
3) Release the stepping motor harness from the cable clamp and the bush.



4) Remove the two SMW-4x8 screws from the stepping motor. And then detach the stepping motor from the printer while taking the two timing belts off the pulley.

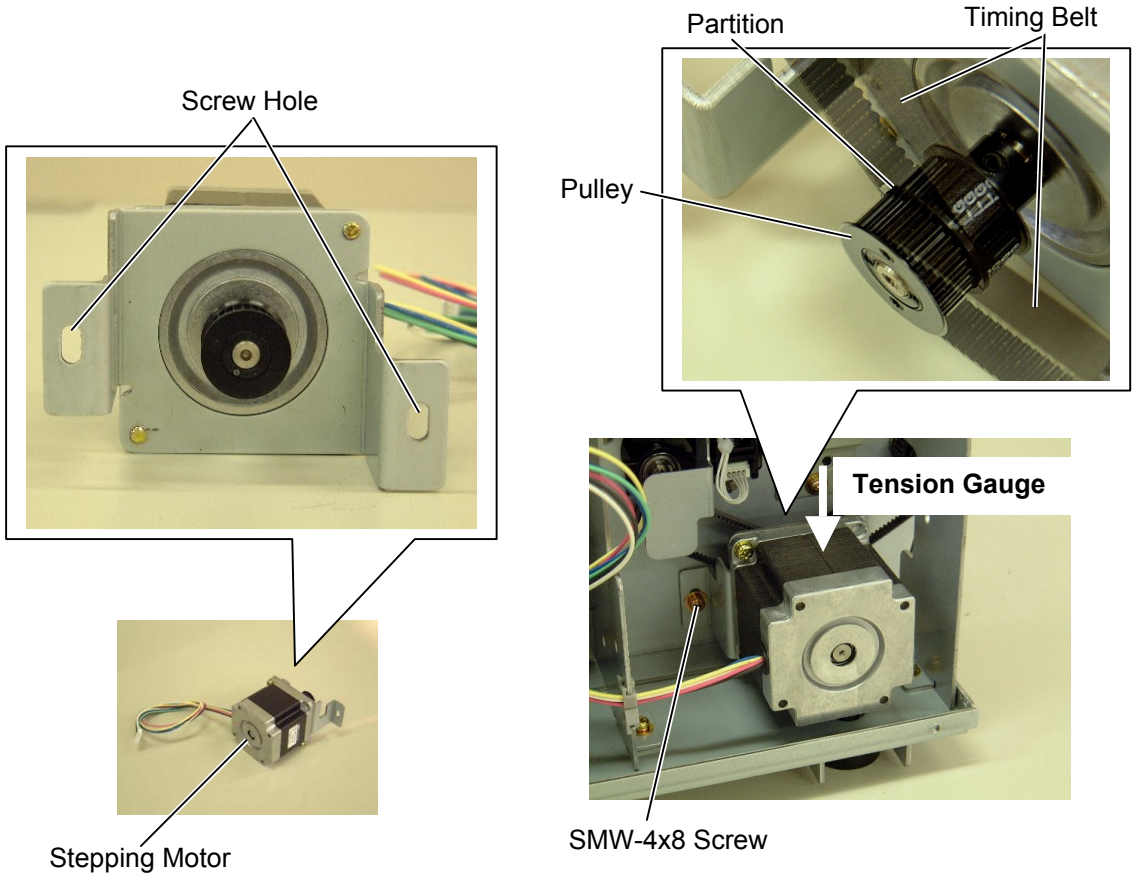


5) Remove the four SMW-4x8 screws to detach the stepping motor from the motor bracket.



6) Replace the stepping motor with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.

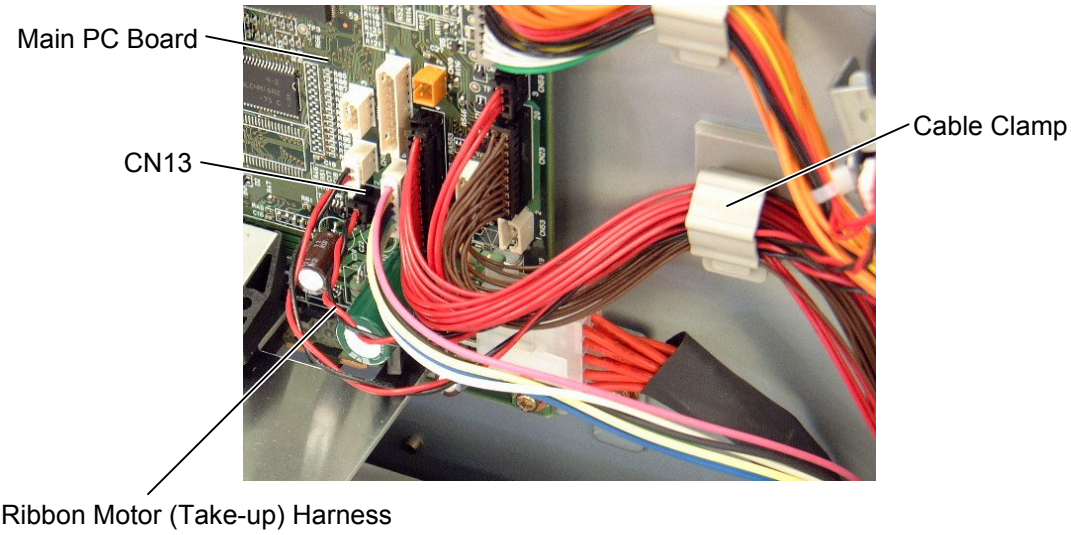
- Place the stepping motor so that the harness faces the Main PC board.
- When reassembling the stepping motor, place the two timing belts around the pulley so that the partition is positioned between two belts.
- The screw holes to attach the stepping motor are shaped oval, which allows you to adjust the attaching position. Hold down the tension gauge onto the stepping motor at 3kg force and secure it with the two SMW-4x8 screws.



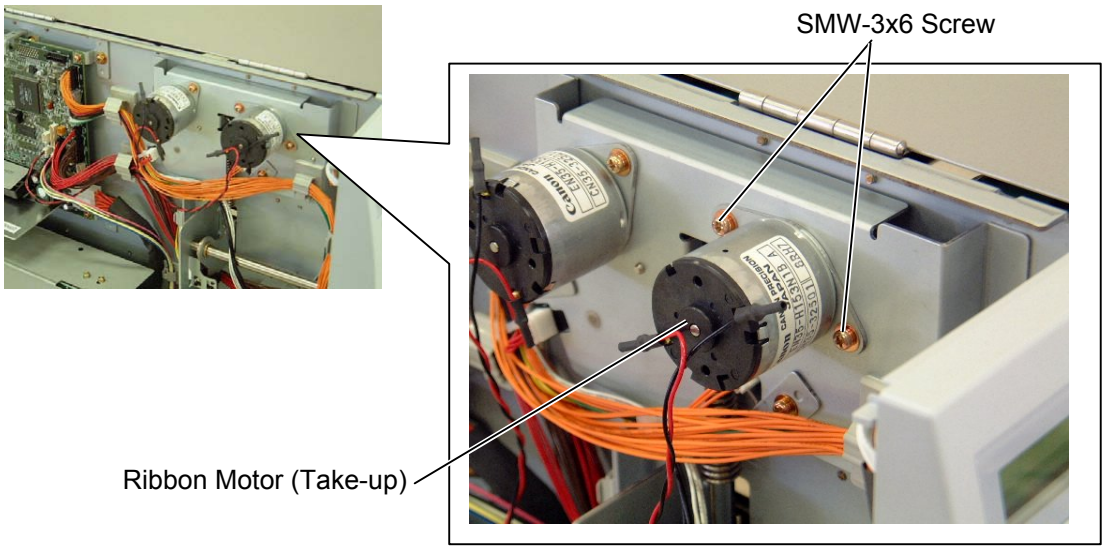
10.5 RIBBON MOTORS (TAKE-UP, FEED)

10.5.1 Ribbon Motor (Take-up)

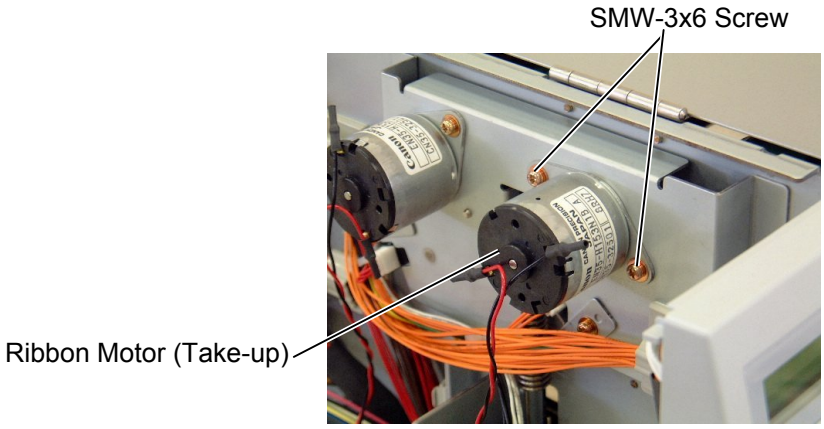
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Disconnect the ribbon motor (take-up) harness from CN13 on the Main PC board and release it from the cable clamp.



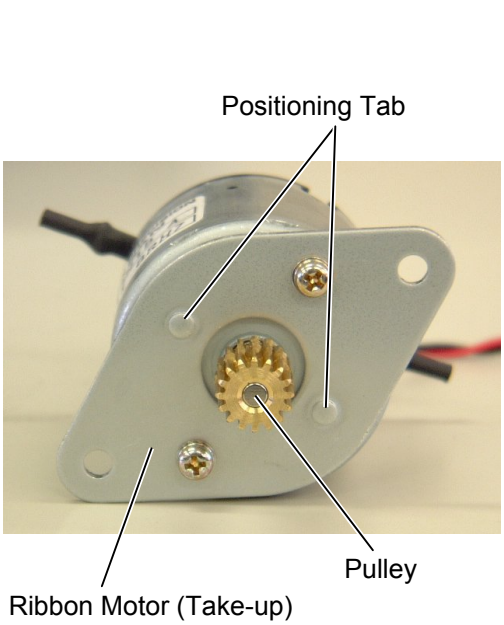
3) Remove the two SMW-3x6 screws to detach the ribbon motor (take-up).

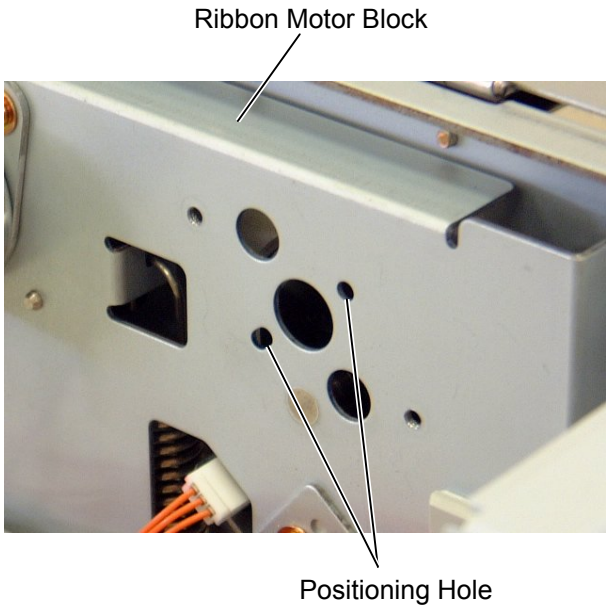


4) Replace the ribbon motor (take-up) with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
   - Tighten the two SMW-3x6 screws with 58.8 to 88.2N cm torque.



   - Fit the positioning tabs of the ribbon motor (take-up) into the positioning holes of the ribbon motor block.
   - Apply FLOIL G-488 to the pulley using a soft cloth.
   - Place the ribbon motor (take-up) so that the harness faces the Main PC board.

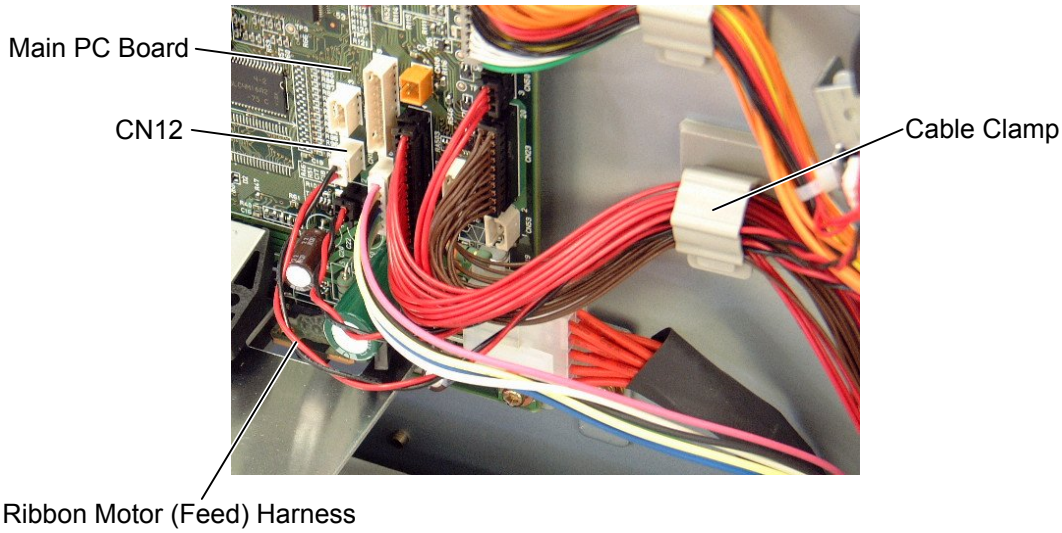




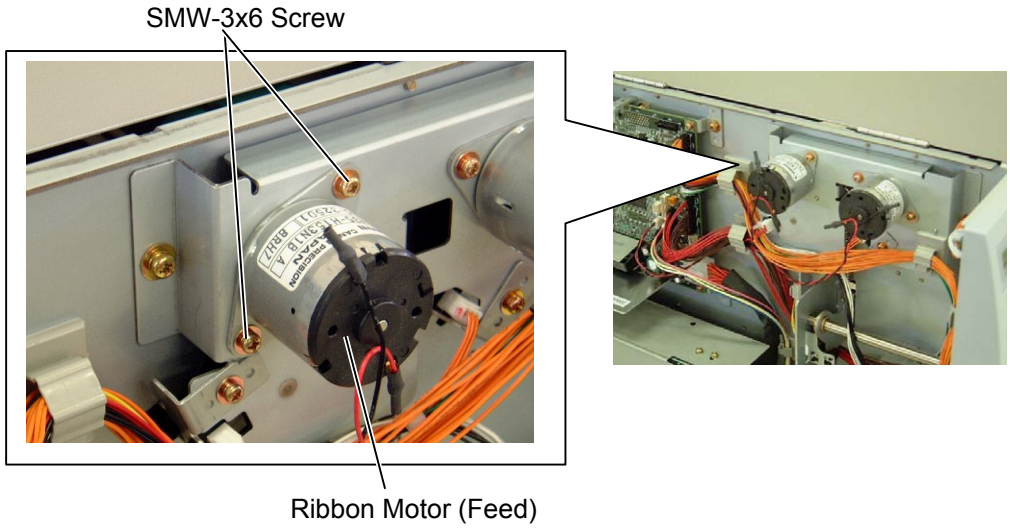
5) Refer to Section 5.5.6 to fine adjust the ribbon motor voltage.

10.5.2 Ribbon Motor (Feed)

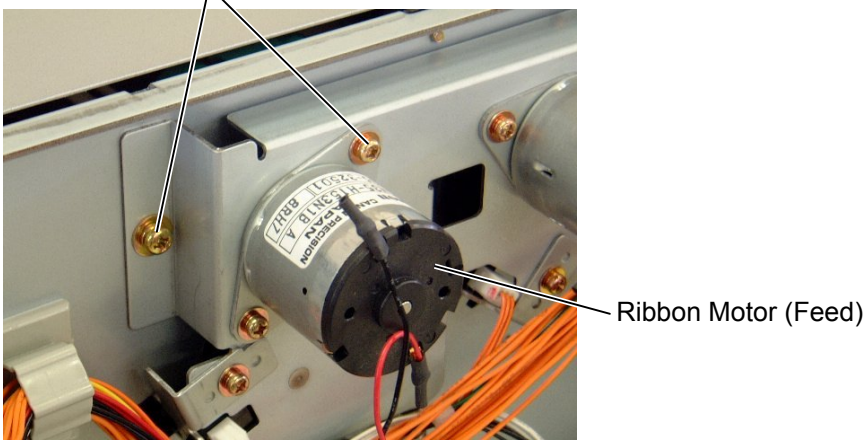
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Remove the ribbon motor (feed) harness from CN12 on the Main PC board and the cable clamp.



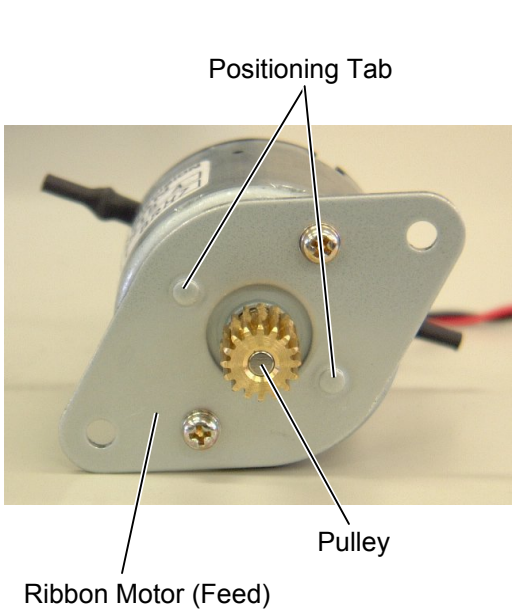
3) Remove the two SMW-3x6 screws to detach the ribbon motor (feed).

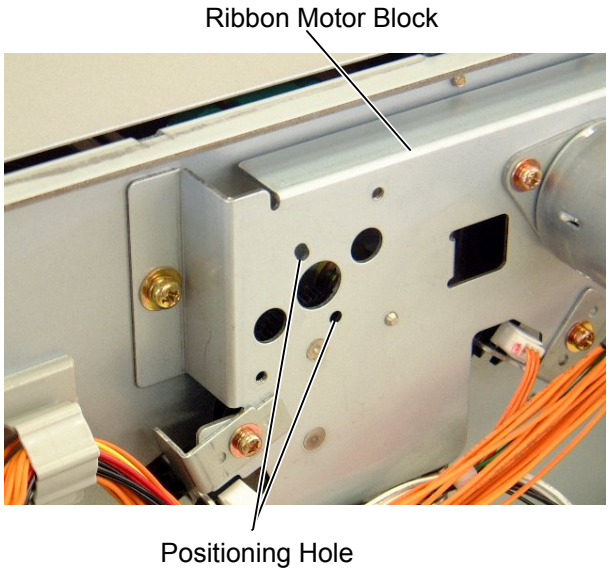


4) Replace the ribbon motor (feed) with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
   - Tighten the two SMW-3x6 screws with 58.8 to 88.2N cm torque.



   - Fit the positioning tabs of the ribbon motor (feed) into the positioning holes of the ribbon motor block.
   - Apply FLOIL G-488 to the pulley using a soft cloth.
   - Place the ribbon motor (feed) so that the harness faces the Main PC board.



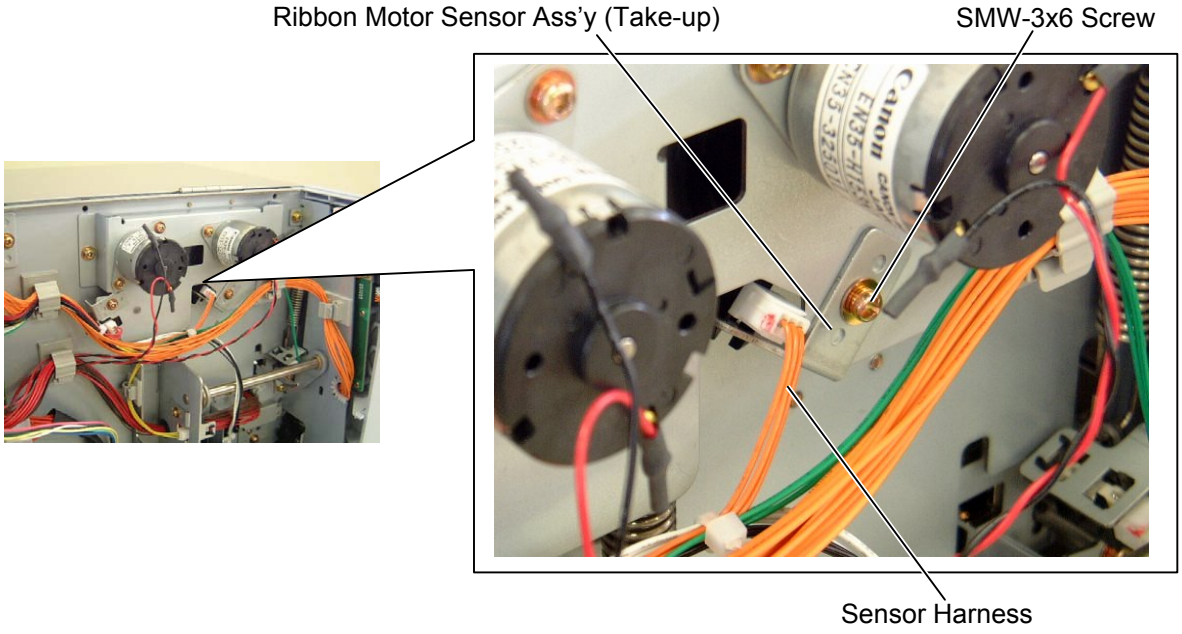


5) Refer to Section 5.5.6 to fine adjust the ribbon motor voltage.

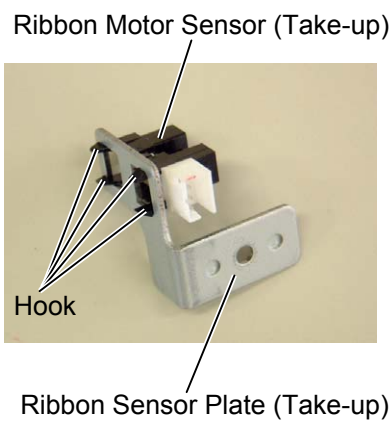
10.6 RIBBON MOTOR SENSORS (TAKE-UP, FEED)

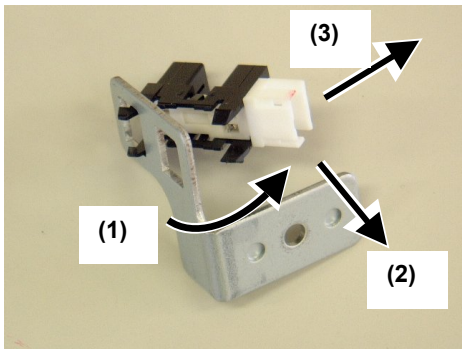
10.6.1 Ribbon Motor Sensor (Take-up)

1) Remove the side panel (L). (Refer to Section 3.2.)
2) Disconnect the sensor harness from the ribbon motor sensor ass'y (take-up).
   NOTE: *The other end of the sensor harness is connected to CN51 on the Main PC board.*
3) Remove the SMW-3x6 screw to detach the ribbon motor sensor ass'y (take-up).

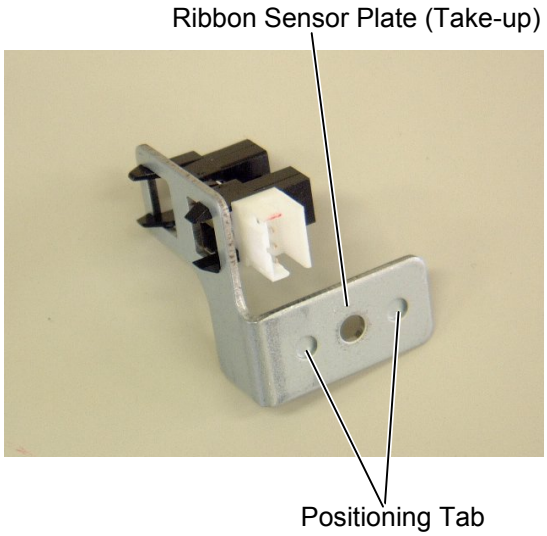


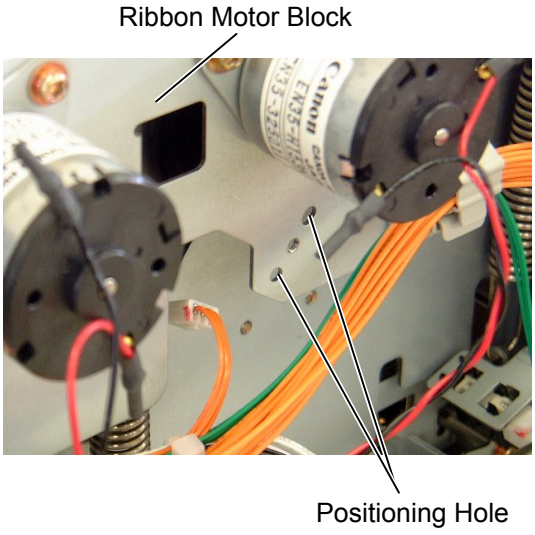
4) Detach the ribbon motor sensor (take-up) from the ribbon sensor plate (take-up) in the following steps.
   NOTE: *The ribbon motor sensor (take-up) is attached to the plate with the four hooks.*
   (1) Pull the ribbon motor sensor (take-up) in the direction indicated by the arrow to unhook the two hooks on the connector side.
   (2) Move the ribbon motor sensor (take-up) in the direction indicated by the arrow to unhook the other hooks.
   (3) Detach the ribbon motor sensor (take-up) from the plate.



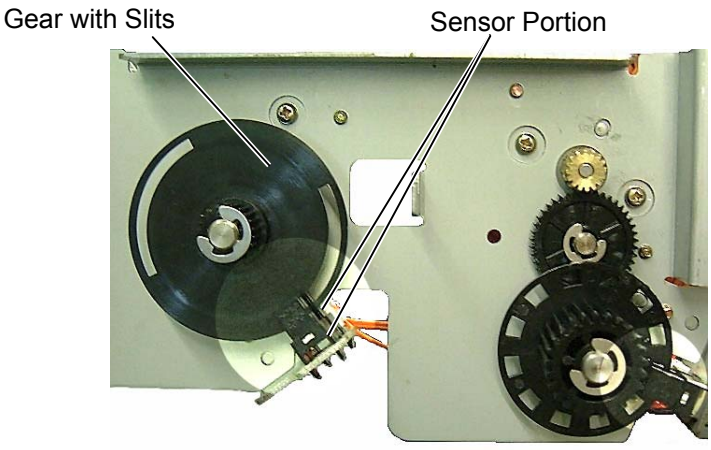


5) Replace the ribbon motor sensor (take-up) with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
   - Attach the ribbon motor sensor (take-up) to the ribbon sensor plate (take-up) in the correct direction.
   - Fit the positioning tabs of the ribbon sensor plate (take-up) into the positioning holes of the ribbon motor block.





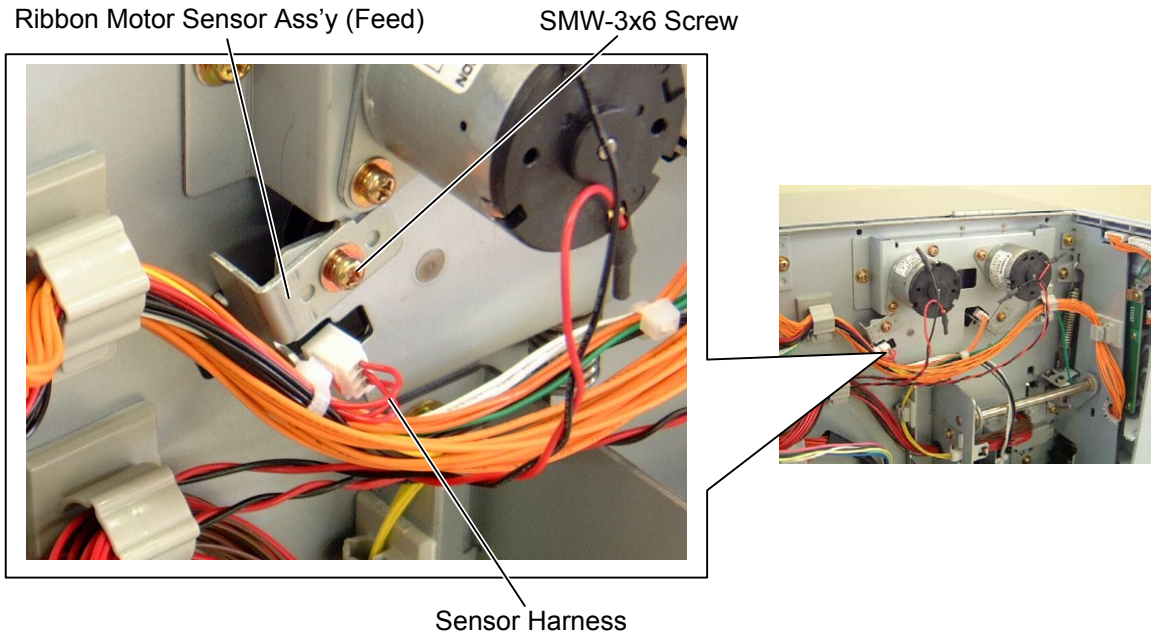
   - Make sure that the gear with slits passes between the sensor portions.



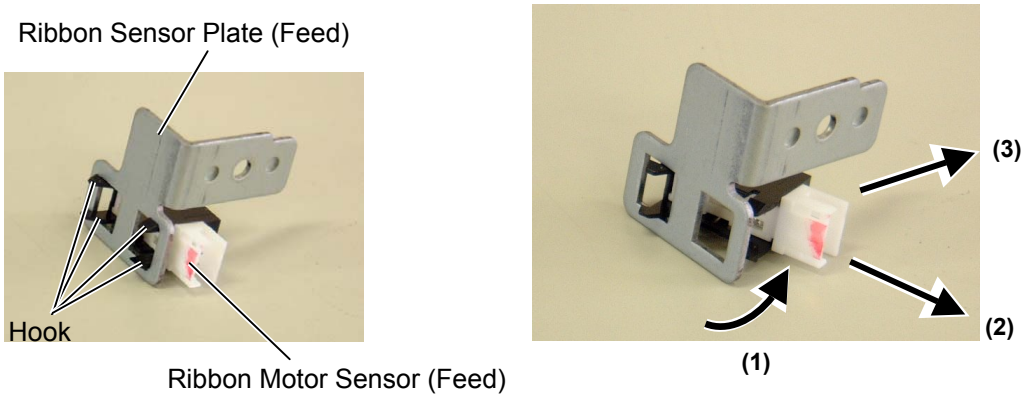
NOTE: *This photo was taken from the gear side for being visible.*

10.6.2 Ribbon Motor Sensor (Feed)

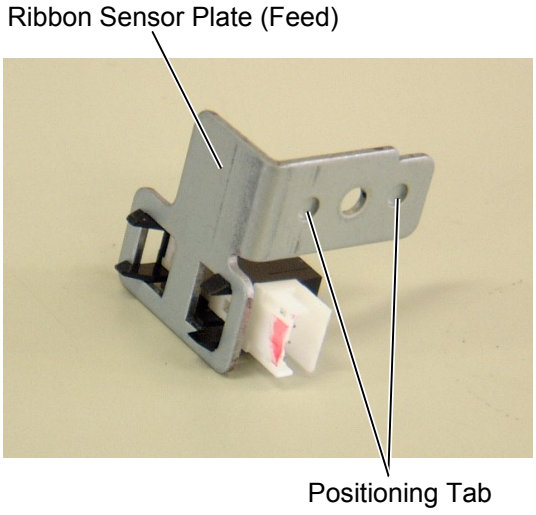
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Disconnect the sensor harness from the ribbon motor sensor ass'y (feed).
   NOTE: *The other end of the sensor harness is connected to CN51 on the Main PC board.*
3) Remove the SMW-3x6 screw to detach the ribbon motor sensor ass'y (feed).

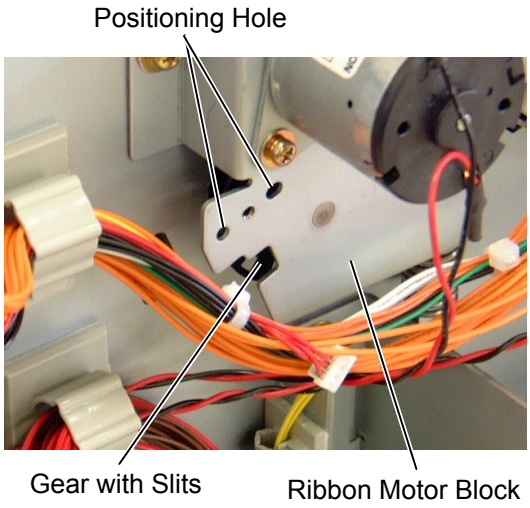


4) Detach the ribbon motor sensor (feed) from the ribbon sensor plate (feed) in the following steps.
   NOTE: *The ribbon motor sensor (feed) is attached to the plate with the four hooks.*
   (1) Pull the ribbon motor sensor (feed) in the direction indicated by the arrow to unhook the two hooks on the connector side.
   (2) Move the ribbon motor sensor (feed) in the direction indicated by the arrow to unhook the other hooks.
   (3) Detach the ribbon motor sensor (feed) from the plate.

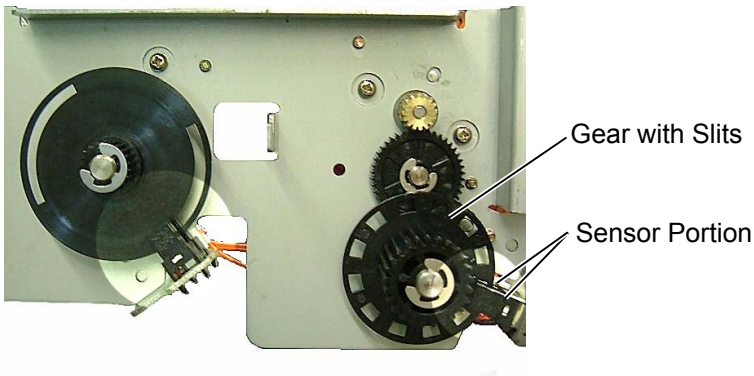


5) Replace the ribbon motor sensor (feed) with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
   - Attach the ribbon motor sensor (feed) to the ribbon sensor plate (feed) in the correct direction.
   - Fit the positioning tabs of the ribbon sensor plate (feed) into the positioning holes of the ribbon motor block.





   - Make sure that the gear with slits passes between the sensor portions.



NOTE: *This photo was taken from the gear side for being visible.*

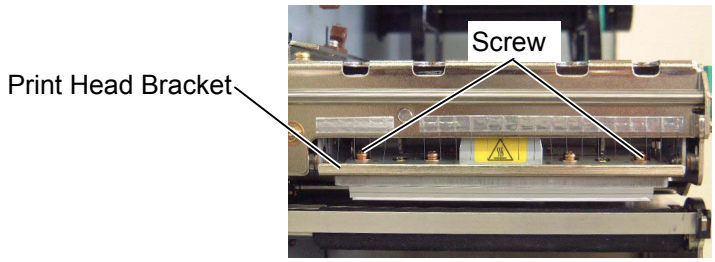
10.7 PRINT HEAD

WARNING!

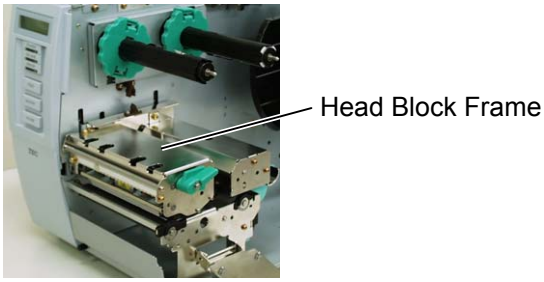
Never perform the replacement just after printing. Doing so may cause you to be injured by the print head being hot.

CAUTION!

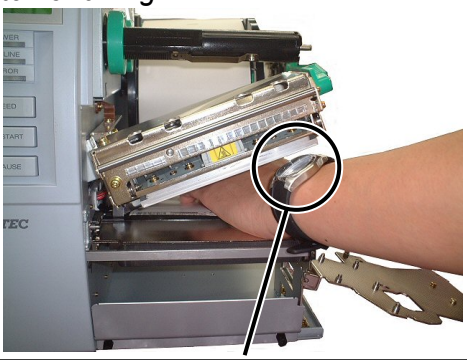
1. *Never touch the element when handling the print head.*
2. *Never touch the connector pins to avoid a breakdown of the print head by static electricity.*
3. *Never remove the screws which secure the print head to the bracket. Doing so may cause improper print quality.*



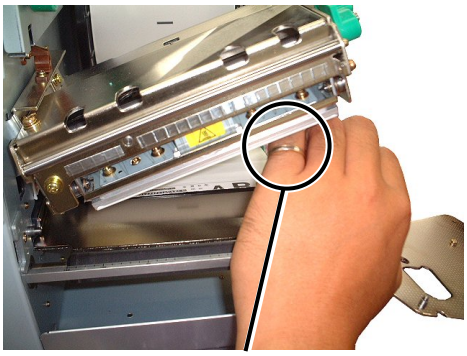
4. *Never disassemble the head block frame. Doing so may cause a print failure, such as ribbon wrinkle, blurred print, etc.*



5. *When replacing the print head, be careful not to damage the print head with a hard object like a watch or a ring.*



Care must be taken not to allow the metal or glass part of a watch to touch the print head edge.



Care must be taken not to allow a metal object like a ring to touch the print head edge.

Since the print head element can be easily damaged by shock, please treat it carefully by not hitting a hard object against it.

NOTE*: *Print head V1 type and V2 type

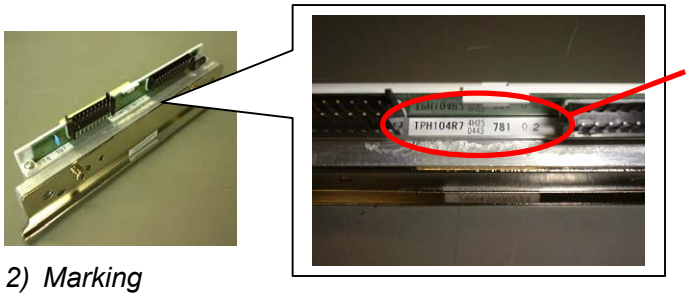
There are two types of print head for the B-SX series: V1 (current type) and V2 (enhanced type).

The V2 print head has been installed in the B-SX4T series with the serial number of 2804Sxxxxxx or later and the B-SX5T series with the serial number of 2804Wxxxxxx or later.

- ***How to identify the print head type:***

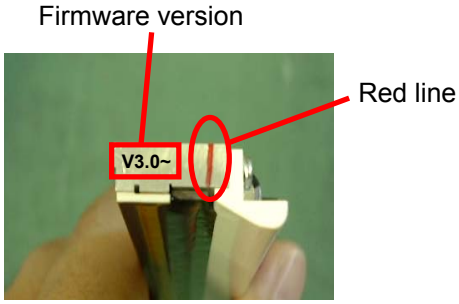
1) Part number and print head type label

	B-SX4T Series		B-SX5T Series	
	Current print head	Enhanced print head	Current print head	Enhanced print head
Part No.	7FM00172000	7FM00706000	7FM00172100	7FM00706100
Print head type	TPH104R2	TPH104R7	TPH128R4	TPH128R5



2) Marking

The enhanced print head has a red line on the side.
Only for the service spare parts, the applicable firmware version is also marked on the side of the enhanced print head.



- ***Applicable program version***

Available print head type depends on the firmware version.

- *The firmware V3.1 or greater supports both print head types, and the print head type to be used should be selected by the parameter setting in the system mode.*
- *The firmware V3.0 of the B-SX4T series supports the enhanced type only.*
- *The firmware V2.1 or older supports the current type only.*
- *To use the enhanced print head, the boot program should be V1.1A (MAIN PC board) or V2.0A (MAIN 2 PC board).*

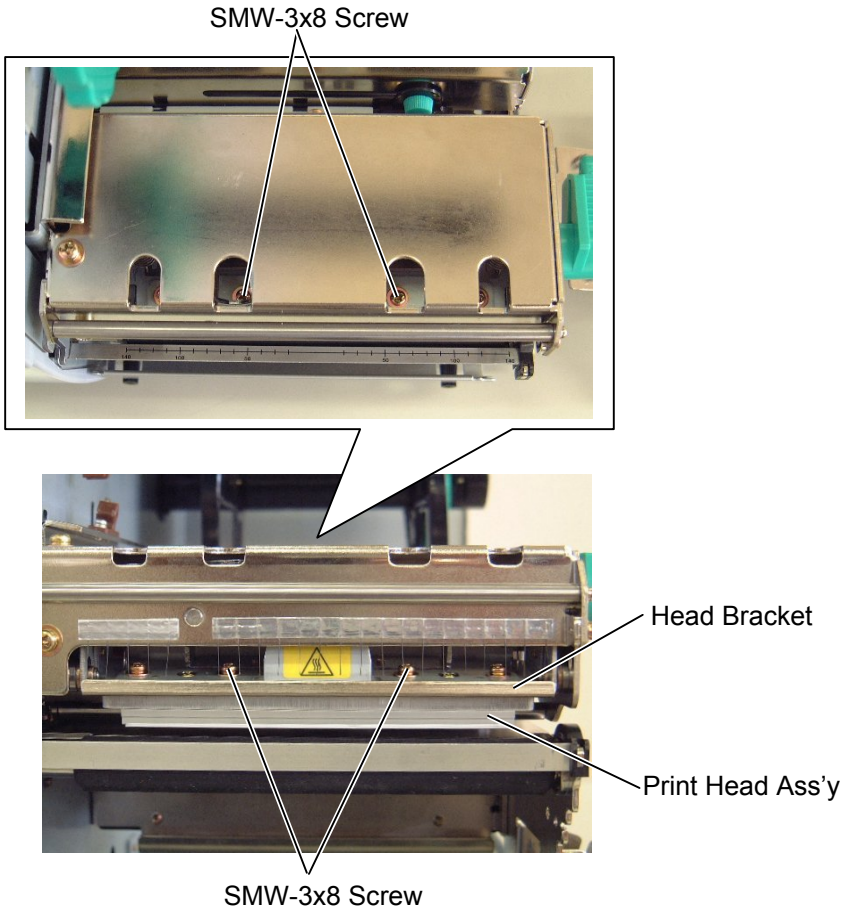
			B-SX4T series		B-SX5T series	
			Current type	Enhanced type	Current type	Enhanced type
Main program	V2.1 or older		O	X	O	X
	V3.0		X	O	---	---
	V3.1		O	O	O	O
Boot program	V1.0	MAIN PC Board	O	X	O	X
	V1.1		O	X	O	X
	V1.1A		O	O	O	O
	V2.0	MAIN2 PC Board	O	X	O	X
	V2.0A		O	O	O	O

Refer to Section 5.3.4 to print the self-diagnostic test result, and confirm the program versions.
If necessary, refer to the Maintenance Manual, Section 7 and upgrade the programs.

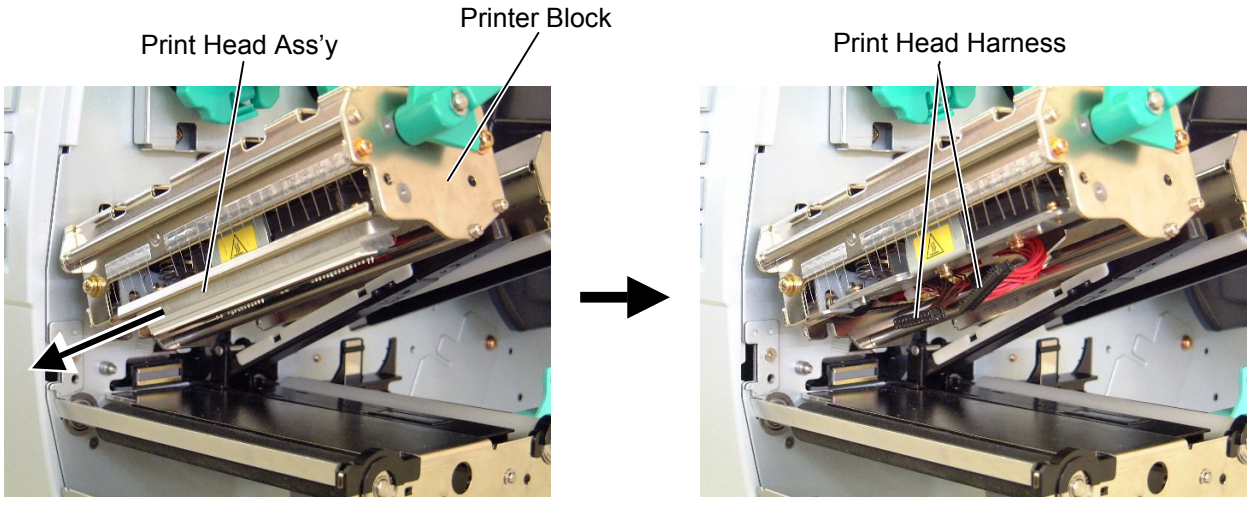
- ***Print head type selection (Parameter setting) (Firmware V3.1 or greater)***

When the installed print head type is changed, the Print Head Type Selection parameter in the system mode (Section 5.4.31) should be also changed accordingly. Failure to do this may affect the print quality or print head life. The default is the enhanced print head.

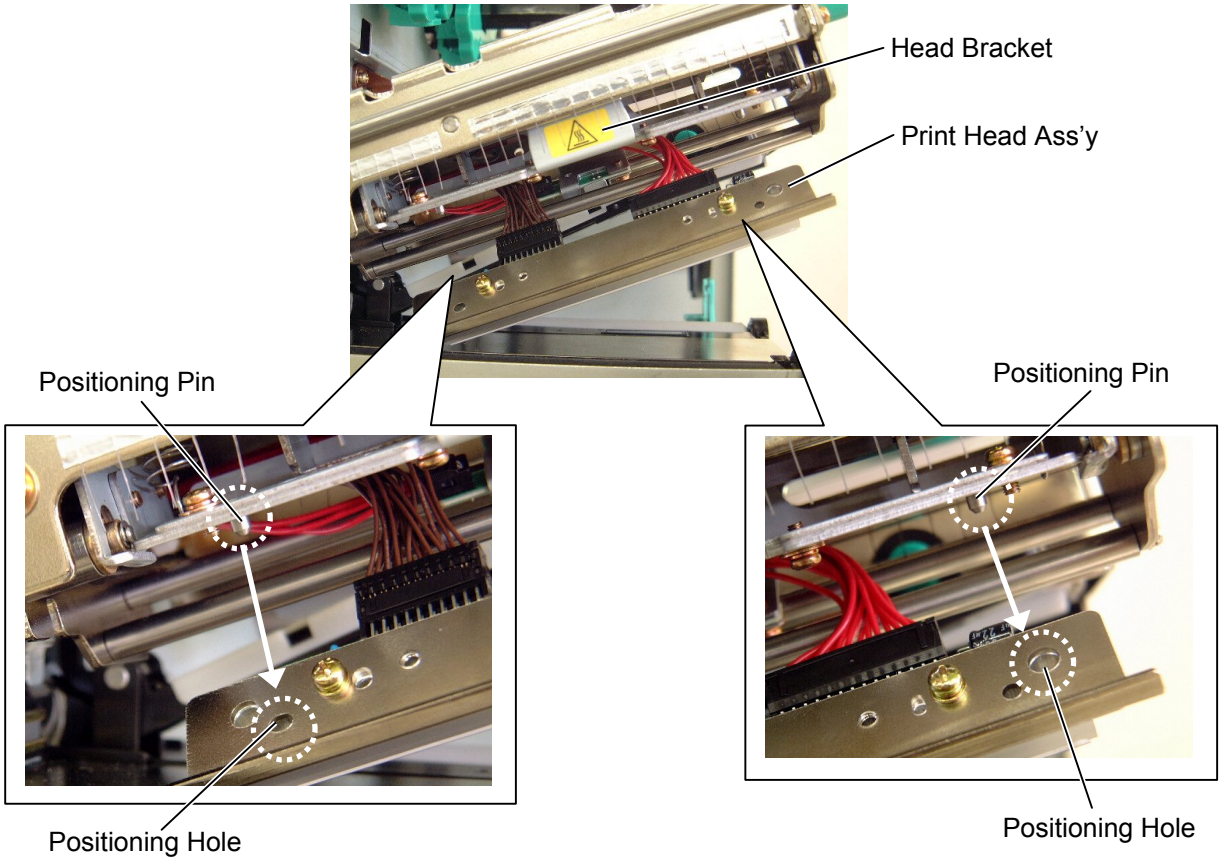
1) Open the top cover. (Refer to Section 3.1.)
2) Turn the head lever to the Free position to open the ribbon shaft holder plate. (Refer to Section 3.3.)
3) Remove the two SMW-3x8 screws to detach the print head ass'y from the head bracket.



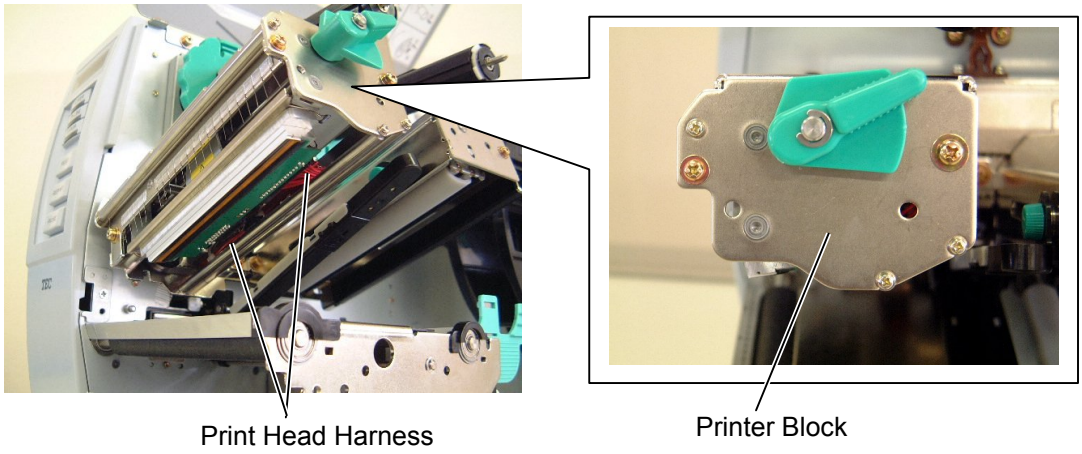
4) Open the printer block. (Refer to Section 3.3.)
   NOTE: *At this time, be sure to support the bottom of the print head so as not to drop onto the platen. Failure to do this may cause the print head and the platen to be damaged.*
5) Pull the print head ass'y in the direction indicated by the arrow. And then disconnect the two harnesses to detach the print head ass'y.



6) Replace the print head ass'y with a new one, then reassemble in the reverse order of removal.
NOTE: *Fit the positioning pins of the head bracket into the positioning holes of the print head ass'y, which doesn't require the position adjustment.*



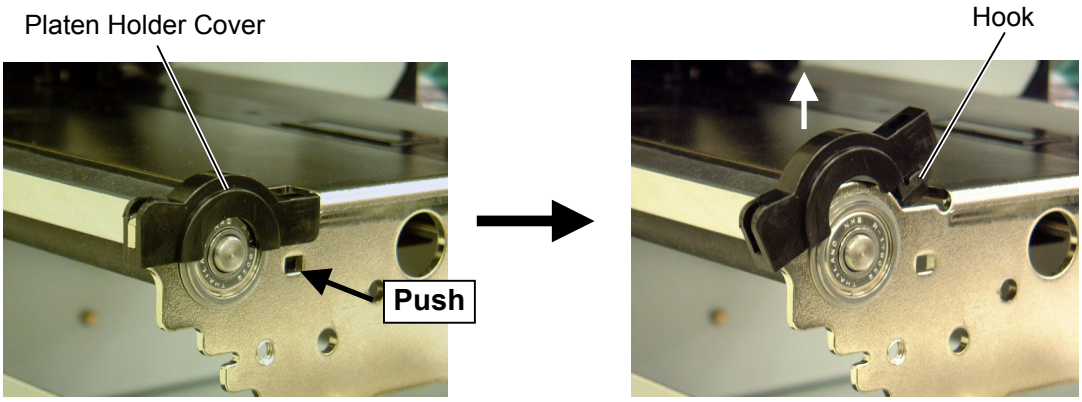
7) Make sure that the print head harness doesn't appear out of the printer block. If so, the print head harness may touch the ribbon and the media causing a print failure.



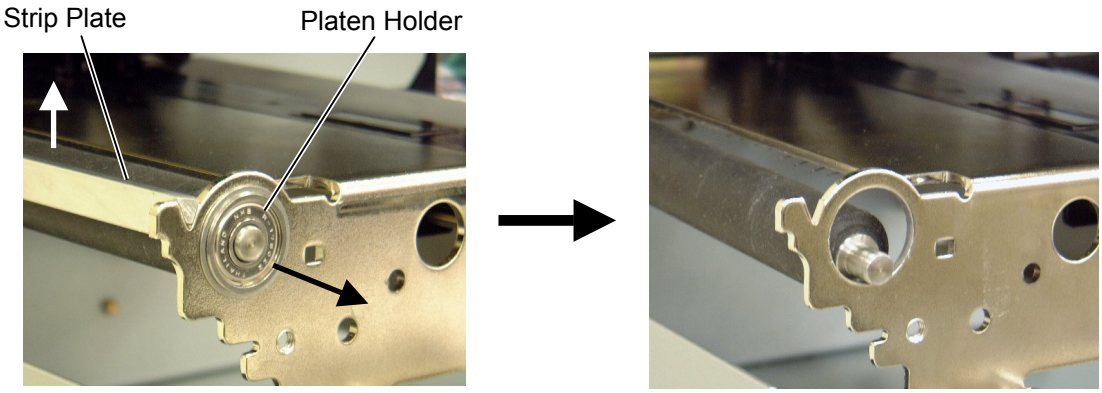
8) Perform a test print. Make sure that printing was performed correctly.
If the print tone is improper, refer to Section 5.5.5 to adjust the print tone.
9) Refer to Section 5.8.3 to perform a maintenance counter clear.

10.8 PLATEN

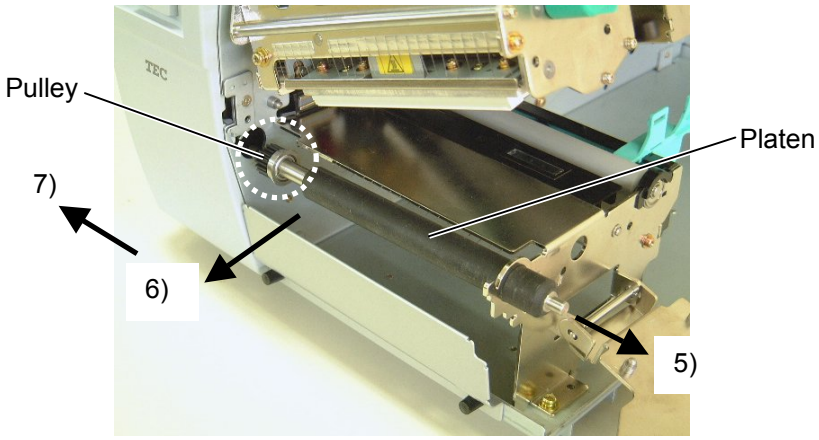
1) Open the top cover. (Refer to Section 3.1.)
2) Open the printer block. (Refer to Section 3.3.)
3) Push the hook through the rectangle hole with a fine tool to remove the platen holder cover.



4) Remove the platen holder and the strip plate.



5) Pull the platen ass'y to the right until the entire pulley appears.
6) Pull the pulley forward.
7) Pull the platen to the left to detach it from the printer.

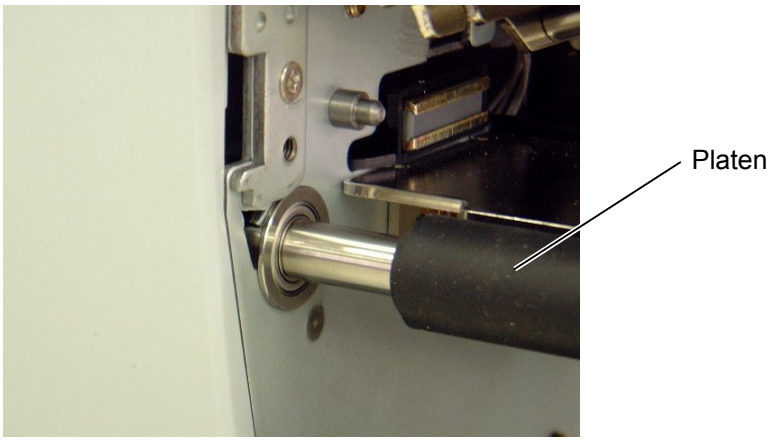


8) Replace the platen with a new one, then reassemble in the reverse order of removal.

NOTES:

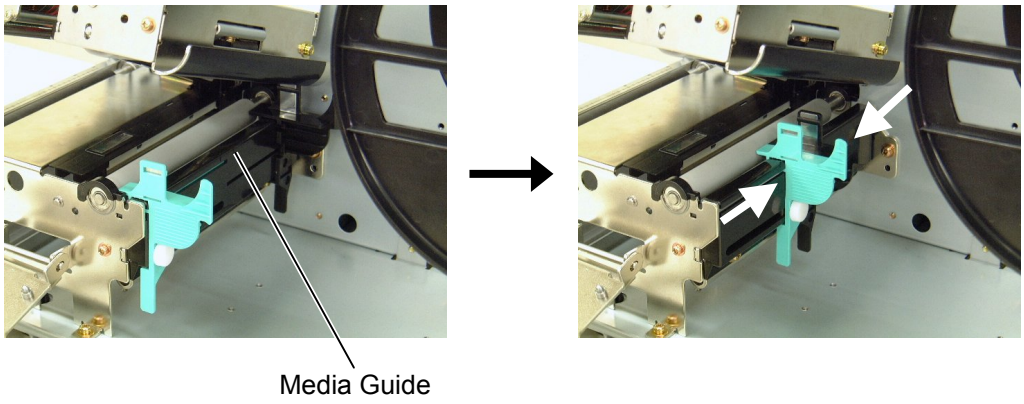
1. Apply FLOIL to the platen pulley before installing the platen.

2. When installing the platen, first fully insert the pulley into the printer. Also make sure that the platen holder cover is fixed with the hook.

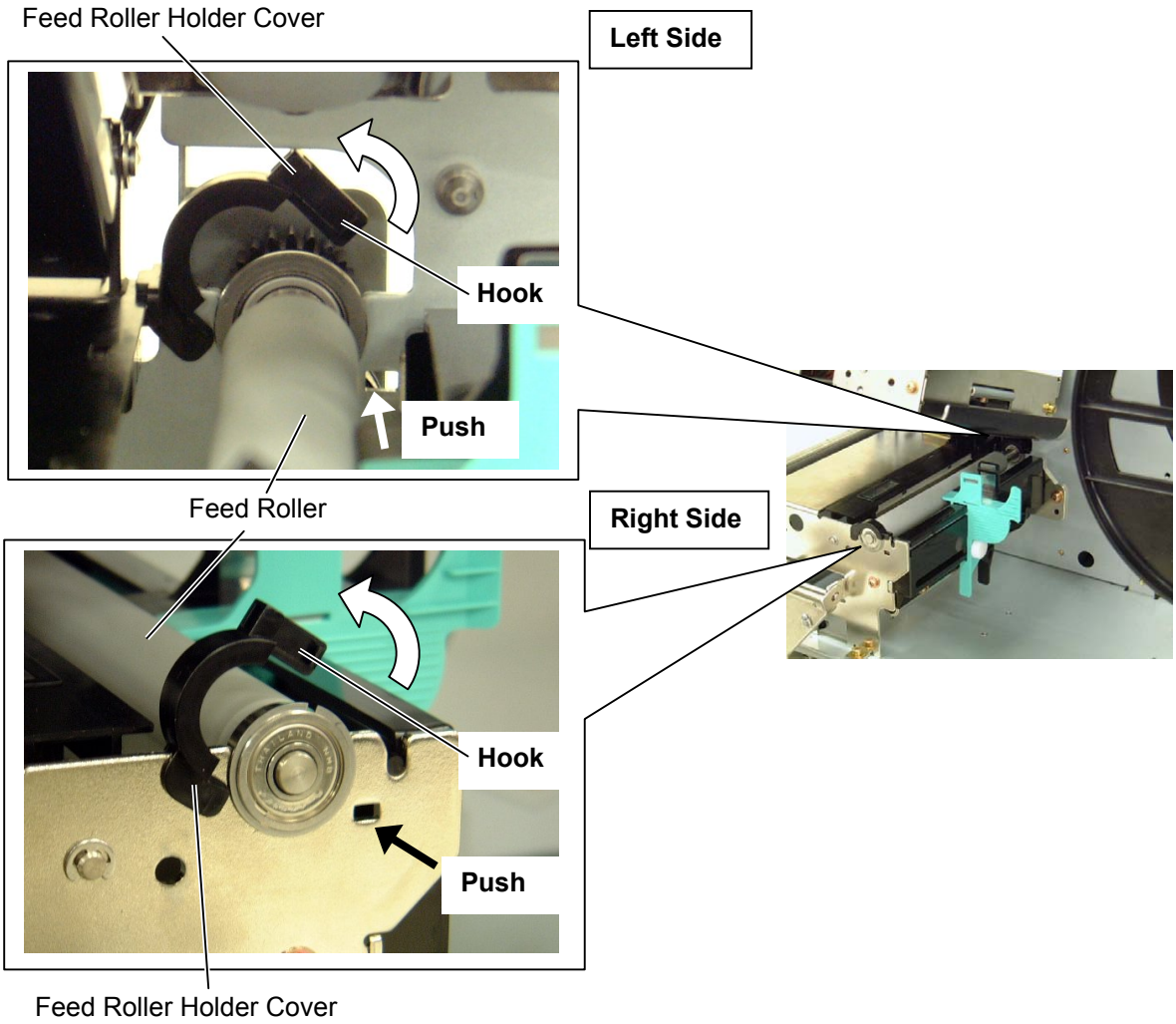


10.9 FEED ROLLER

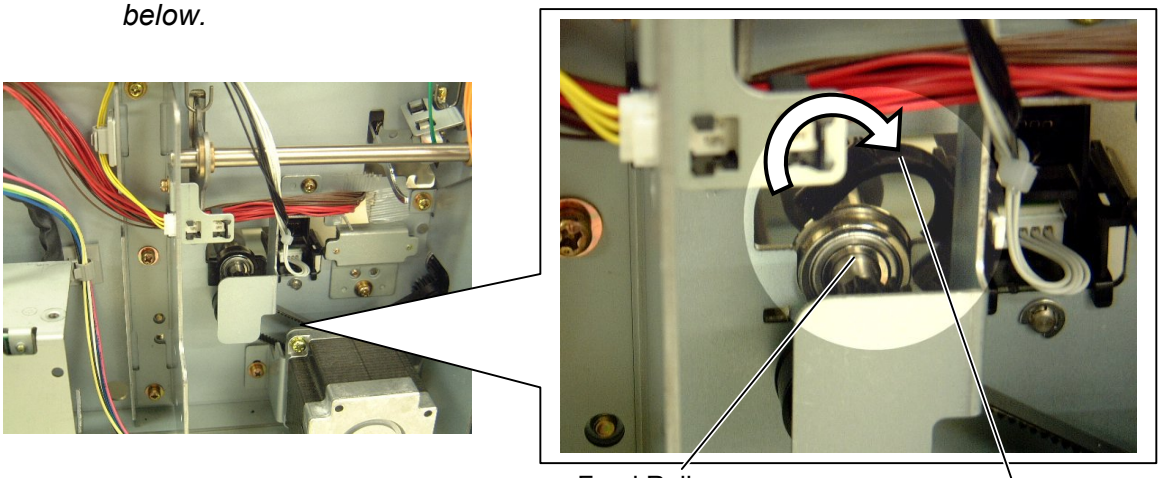
1) Open the top cover. (Refer to Section 3.1.)
2) Open the printer block. (Refer to Section 3.3.)
3) Make sure that the media guide is closed. (In this condition, you can easily remove the feed roller holder cover on the left side of the feed roller.)



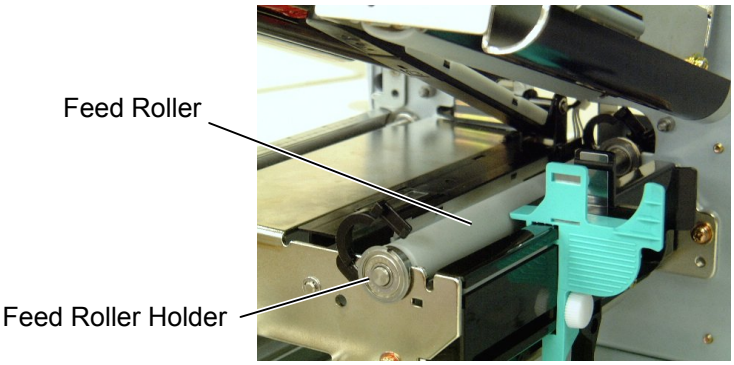
4) Push the hooks through the rectangle holes with a fine tool to open the feed roller holder covers.



NOTE: *If the left feed roller holder cover is hard to open, remove the side panel (L) and open the feed roller holder cover from the opposite side of the printer as shown in the pictures below.*



5) Detach the feed roller holder and the feed roller.

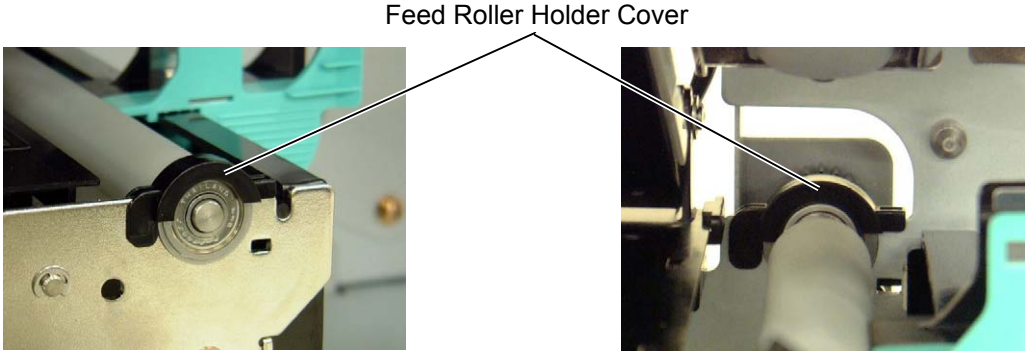


6) Replace the feed roller with a new one, then reassemble in the reverse order of removal.

NOTES:

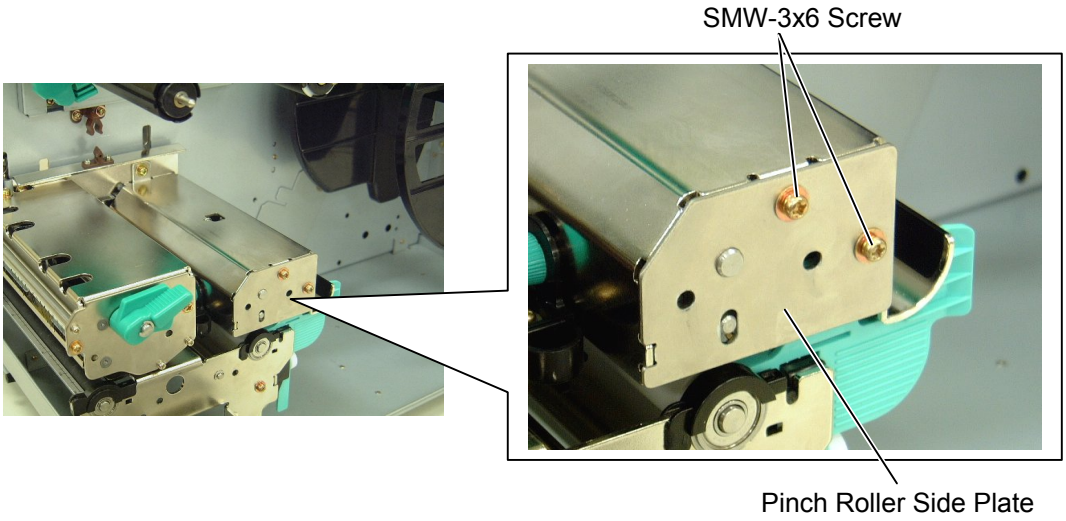
1. *Apply FLOIL to the feed roller gear before installing the feed roller.*

2. *When reassembling, make sure that the feed roller is attached correctly. Also make sure that the feed roller holder covers are fixed with the hooks, respectively.*

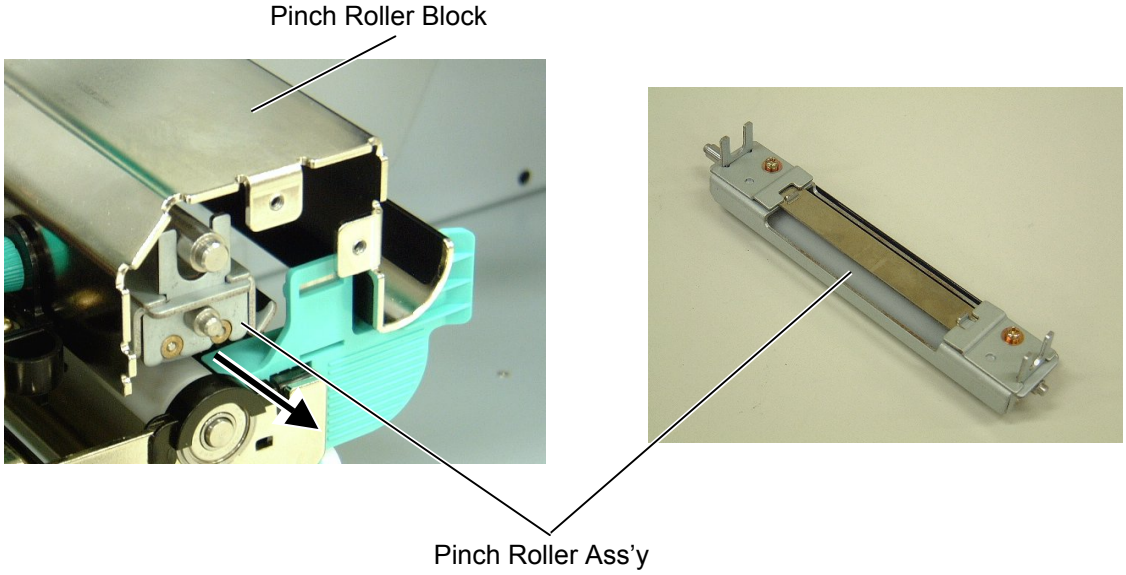


10.10 PINCH ROLLER ASS'Y

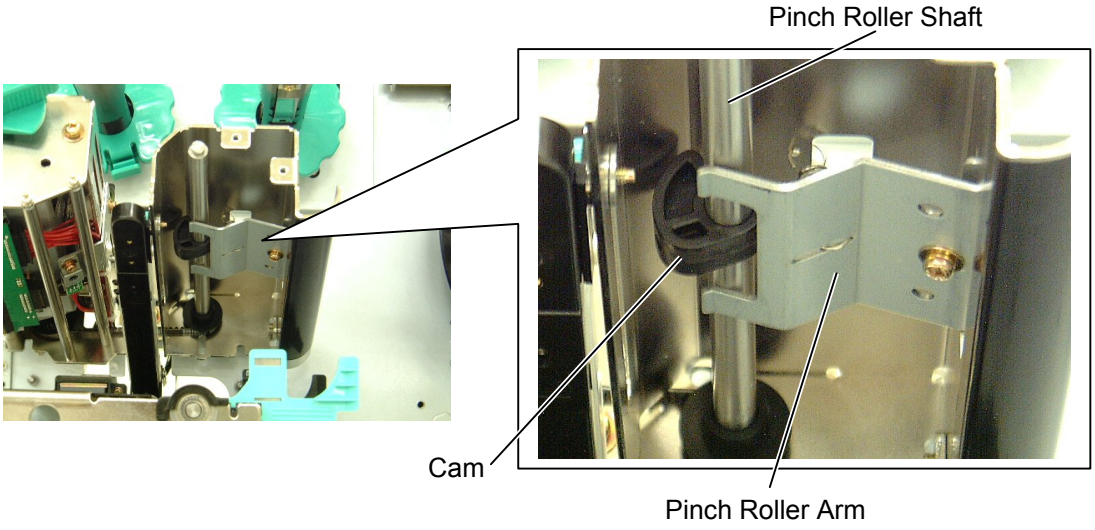
1) Open the top cover. (Refer to Section 3.1.)
2) Open the printer block. (Refer to Section 3.3.)
3) Remove the two SMW-3x6 screws to remove the pinch roller side plate.



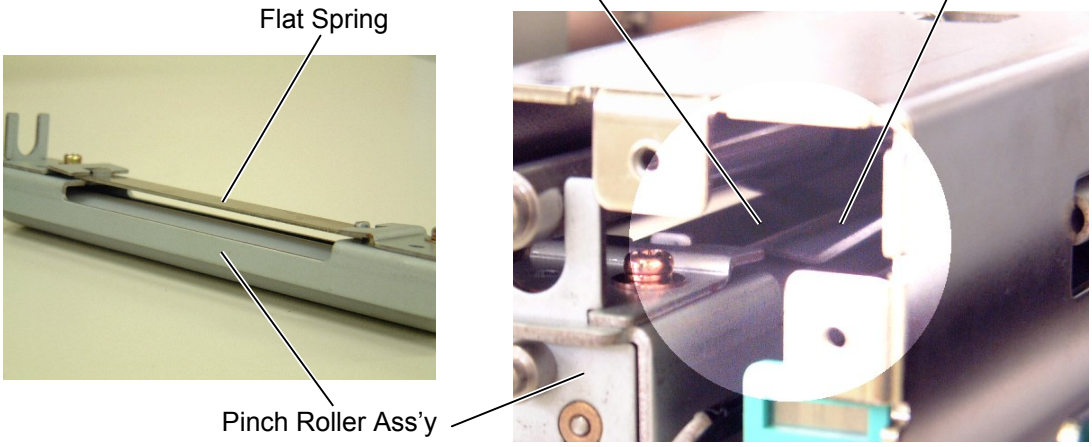
4) Detach the pinch roller ass'y from the pinch roller block.



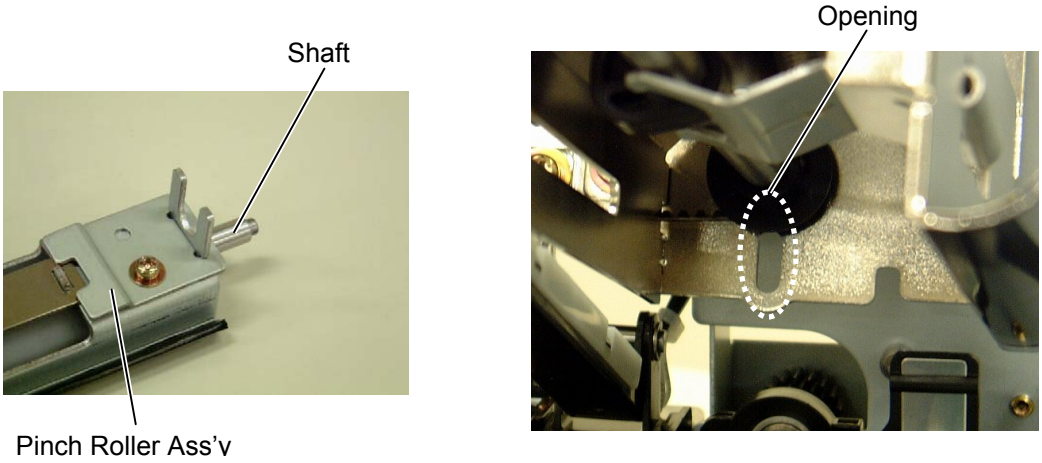
5) Replace the pinch roller ass'y with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
- Tighten the two SMW-3x6 screws with 58.8 to 88.2N cm torque.
- When reassembling the pinch roller ass'y, make sure that the cam is located as the picture below shows.



- When reassembling the pinch roller ass'y, insert the pinch roller arm into the space below the flat spring.



- Fit the shaft into the opening of the pinch roller block.

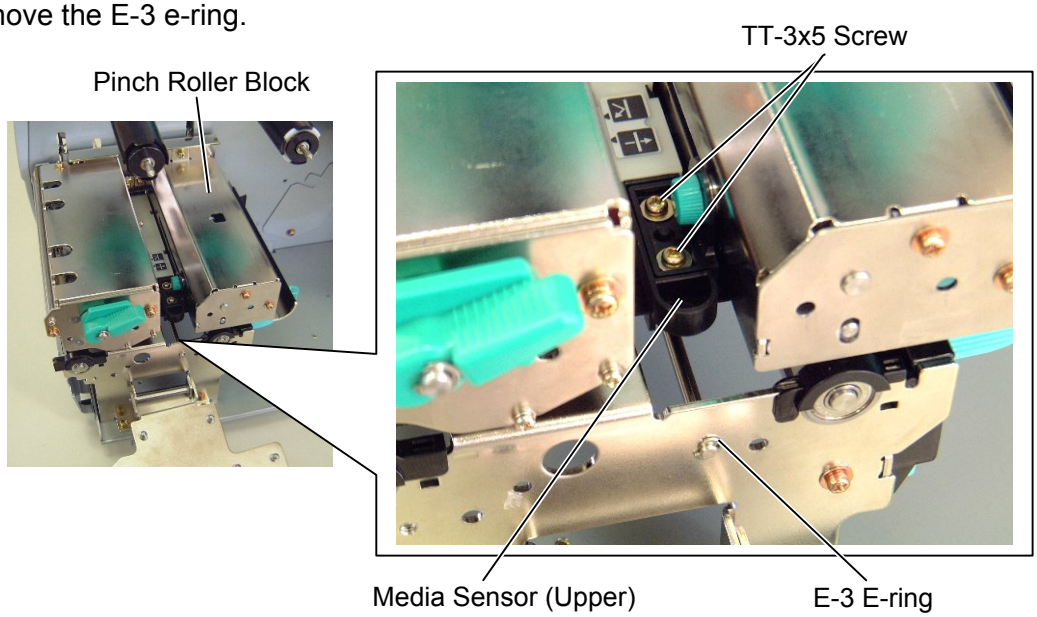


10.11 MEDIA SENSORS (UPPER, LOWER)

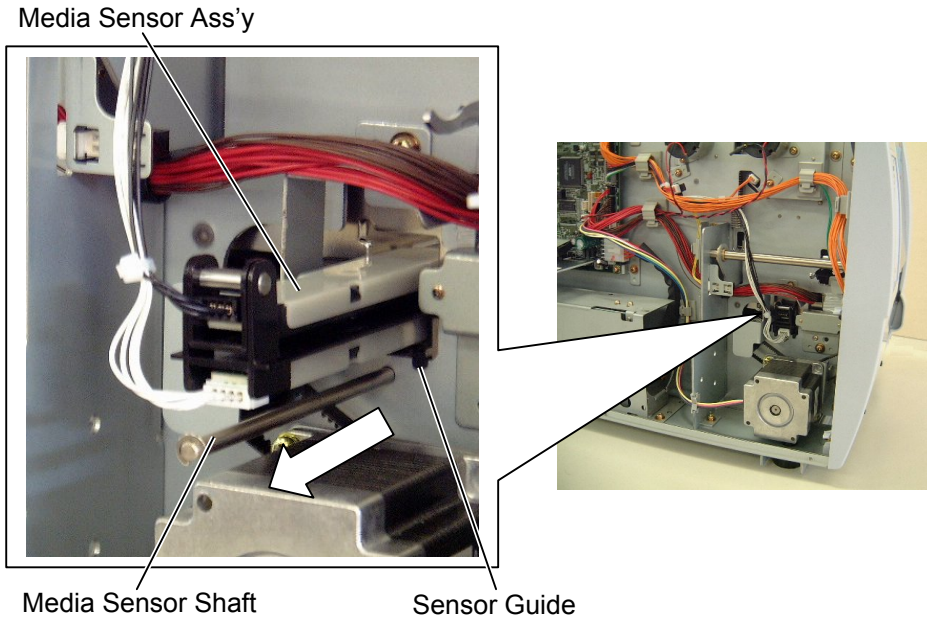
NOTE: *The media sensor ass'y is composed of the media sensor (upper) and the media sensor (lower). The media sensor (upper) contains the thermistor and the feed gap sensor (photo transistor). The media sensor (lower) contains the black mark sensor and the feed gap sensor (photo diode).*

10.11.1 Removing the Media Sensor Ass'y

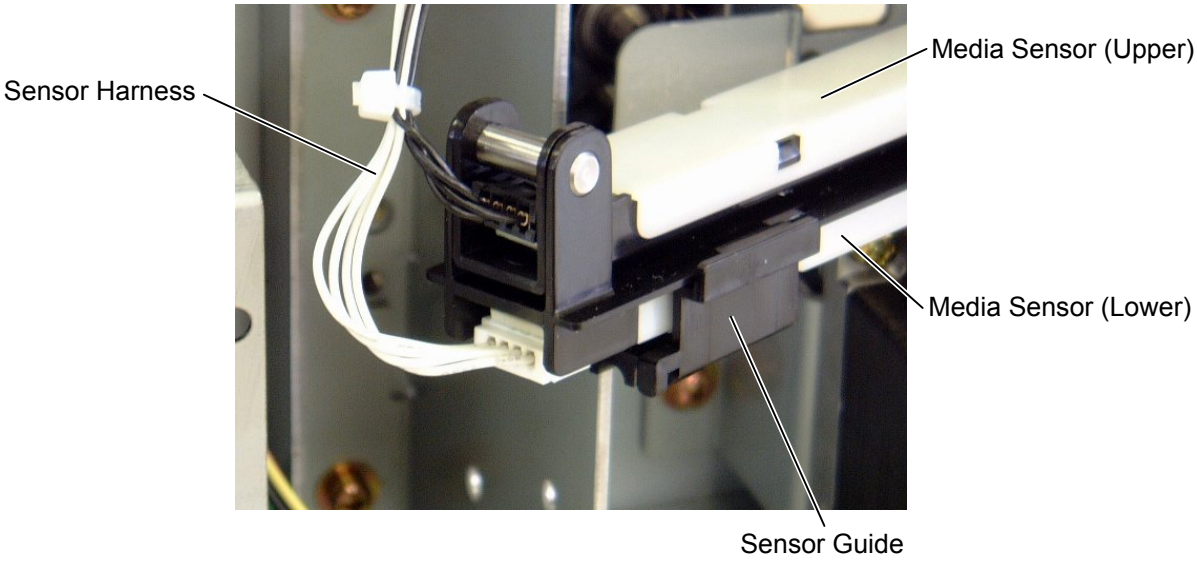
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Open the top cover. (Refer to Section 3.1.)
3) Turn the head lever to the Free position to open the ribbon shaft holder plate. (Refer to Section 3.3.)
4) Remove the two TT-3x5 screws from the media sensor (upper)
5) Remove the E-3 e-ring.



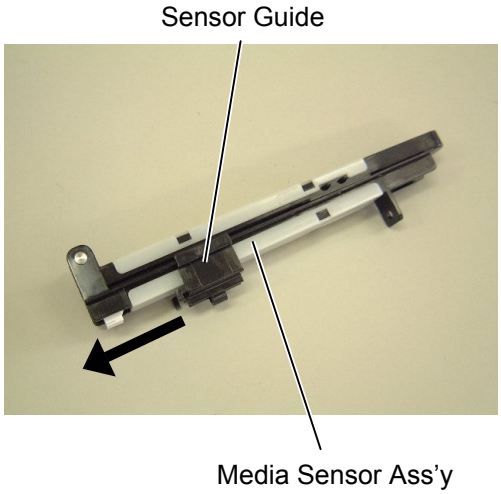
6) Pull the media sensor ass'y and the media sensor shaft to the direction indicated by the arrow. And then, remove the sensor guide from the printer frame.

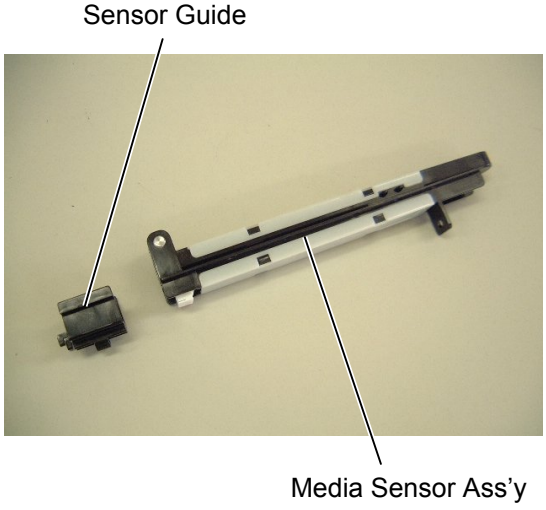


7) Disconnect the black harness from the media sensor (upper) and the white harness from the media sensor (lower), respectively.
NOTE: *The other end of the sensor harness is connected to CN51 on the Main PC board.*



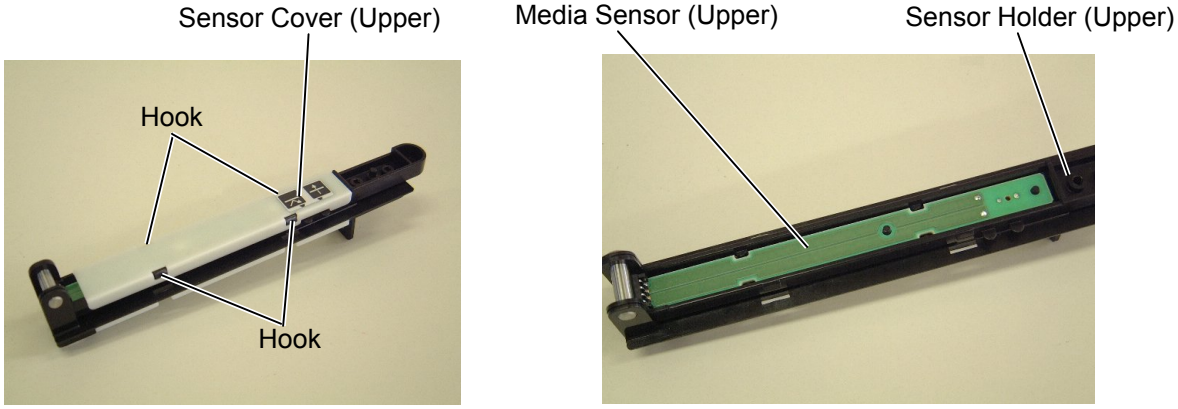
8) Remove the sensor guide from the media sensor ass'y while moving it to the direction indicated by the arrow.



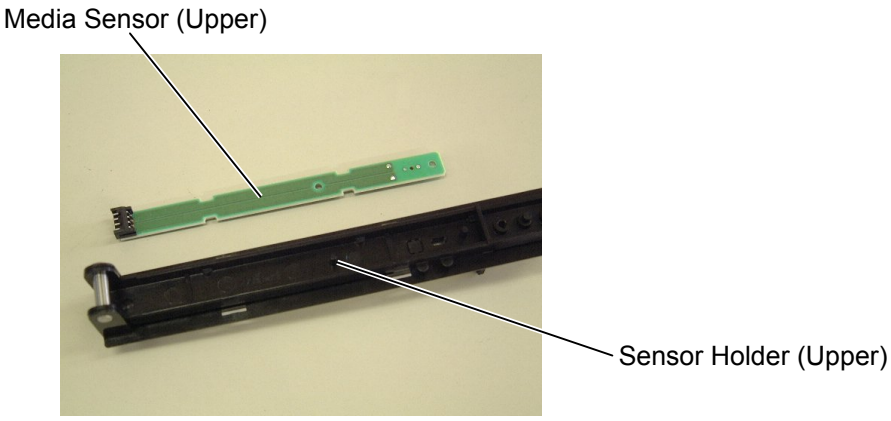


10.11.2 Replacing the Media Sensor (Upper)

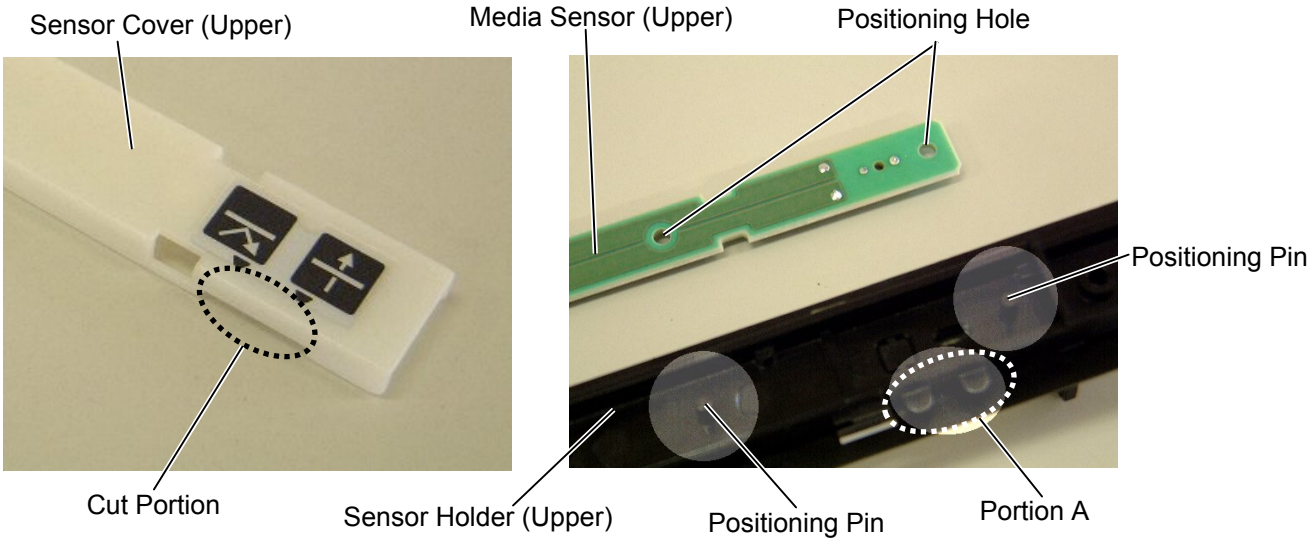
1) Remove the sensor cover (upper) from the sensor holder (upper) while unhooking the two hooks.



2) Detach the media sensor (upper) from the sensor holder (upper).

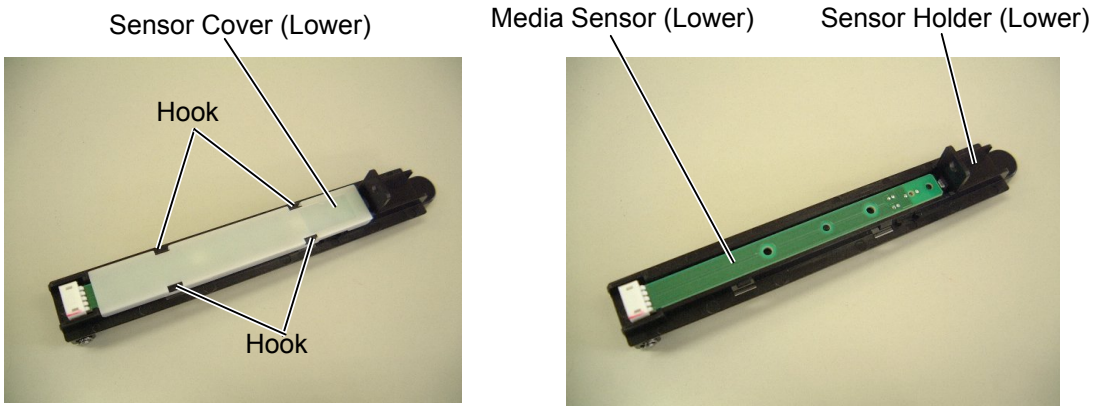


3) Replace the media sensor (upper) with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
   - When reassembling the media sensor (upper), fit the positioning pins of the sensor holder (upper) into the positioning holes.
   - When reassembling the sensor cover (upper), fit the cut portion onto the portion A of the sensor holder (upper).

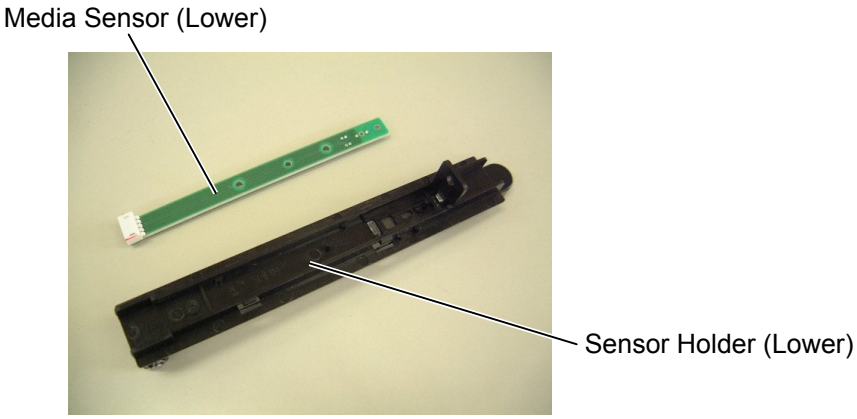


10.11.3 Replacing the Media Sensor (Lower)

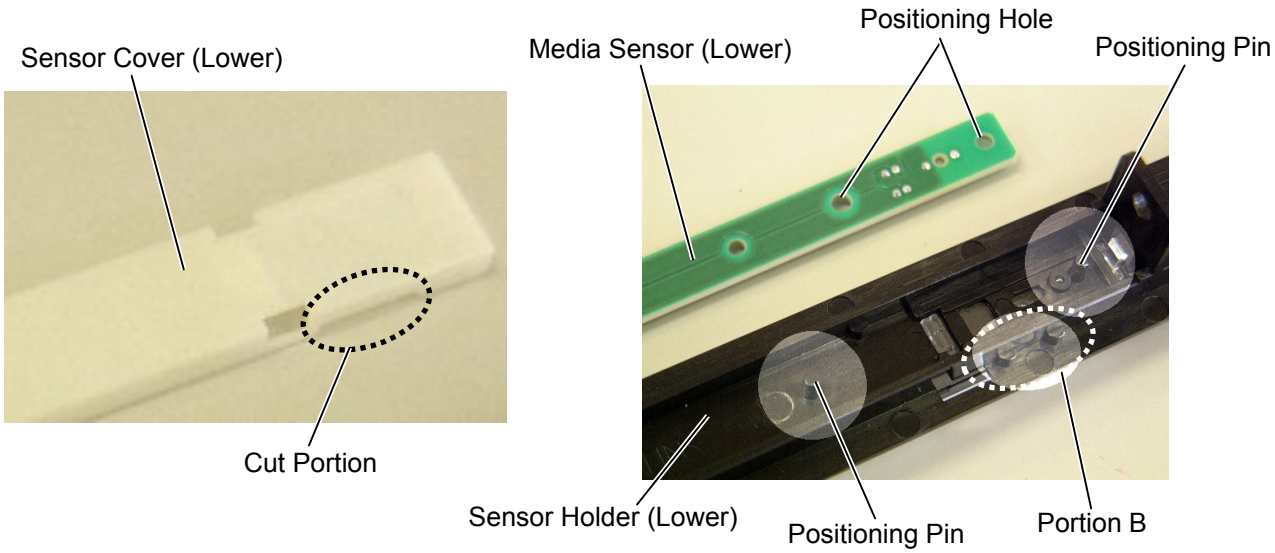
1) Remove the sensor cover (lower) from the sensor holder (lower) while unhooking the two hooks.



2) Detach the media sensor (lower) from the sensor holder (lower).



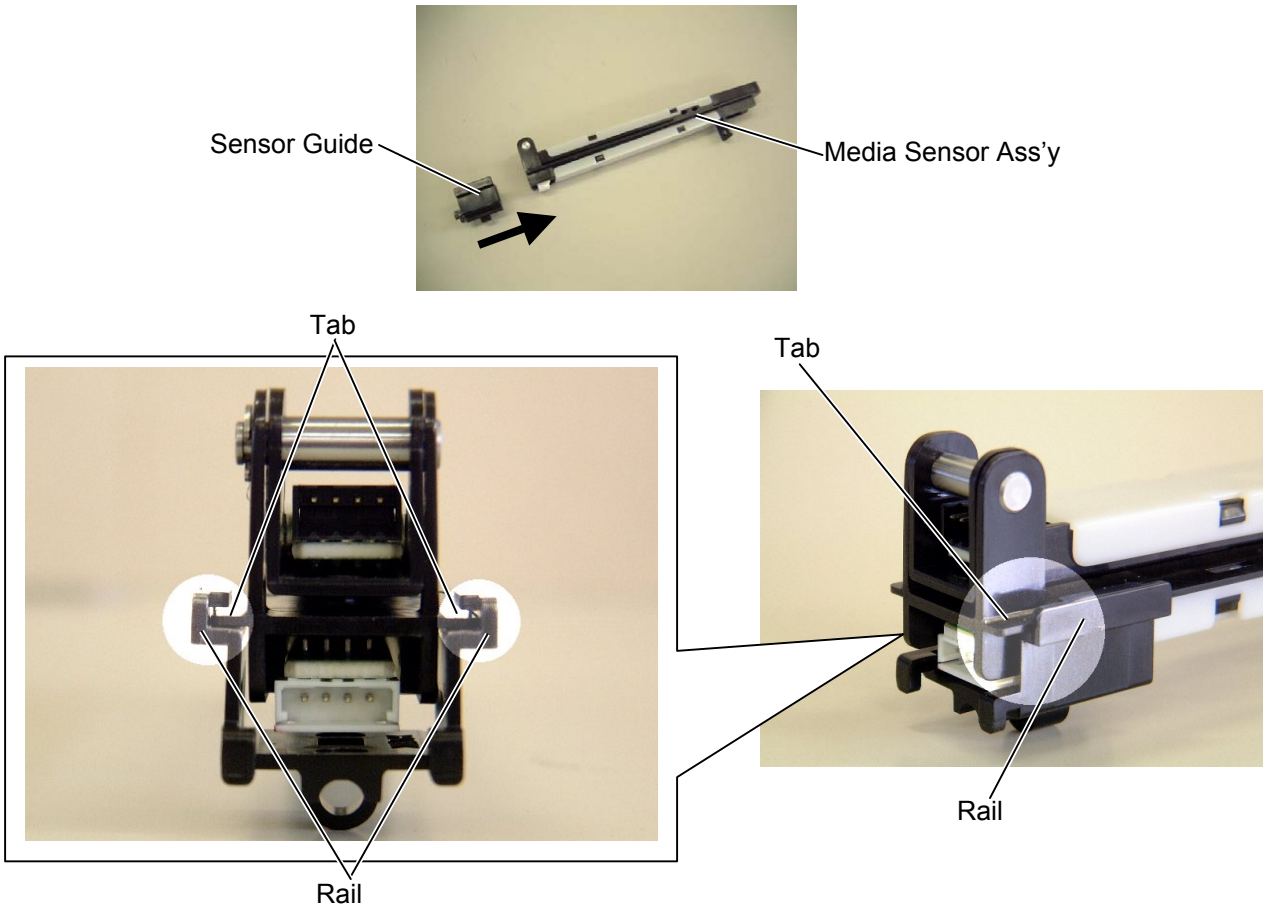
3) Replace the media sensor (lower) with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
   - When reassembling the media sensor (lower), fit the positioning pins of the sensor holder (lower) into the positioning holes.
   - When reassembling the sensor cover (lower), fit the cut portion onto the portion B of the sensor holder (lower).



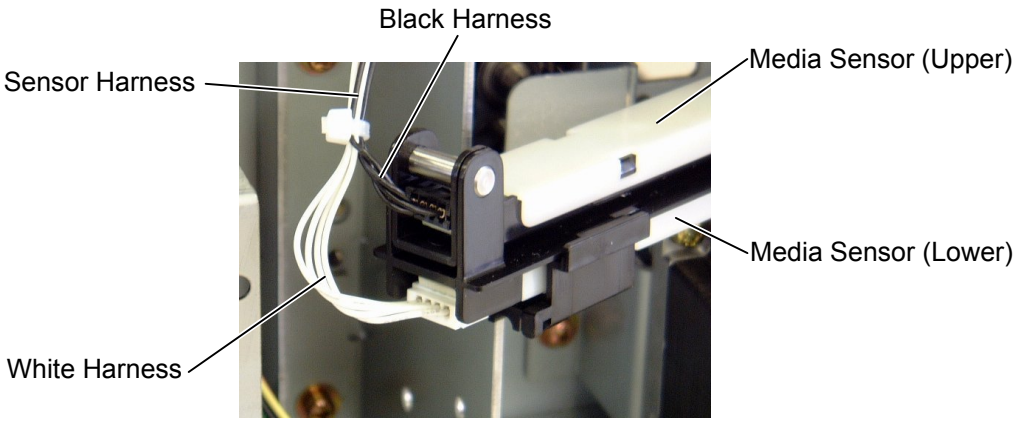
10.11.4 Reassembling the Media Sensor Ass'y

After replacing the media sensors, reassemble the media sensor ass'y into the printer in the following procedure.

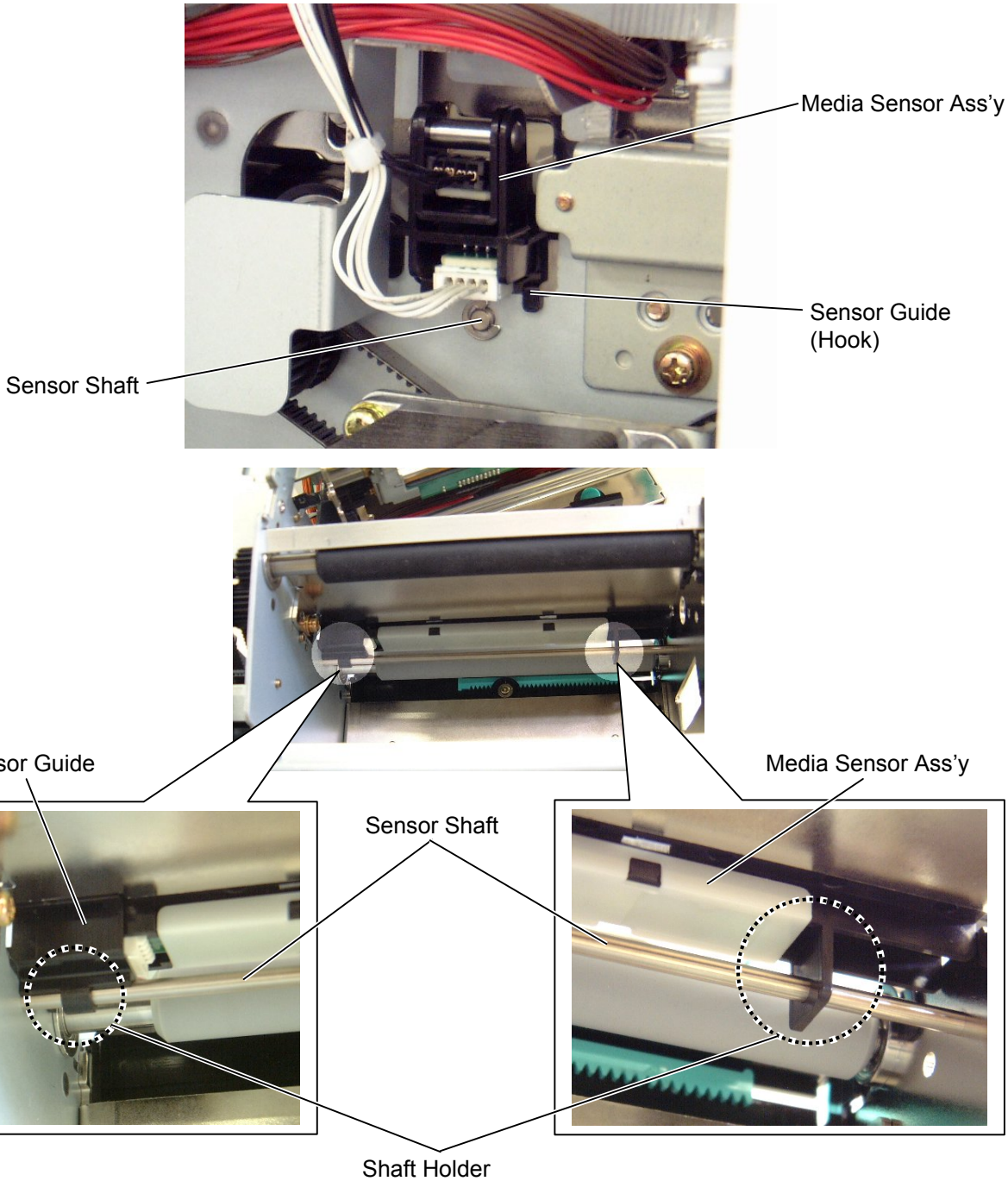
1) Attach the sensor guide to the media sensor ass'y so that the tabs slide along the rails.



2) Connect the black harness to the media sensor (upper) and the white harness to the media sensor (lower), respectively.



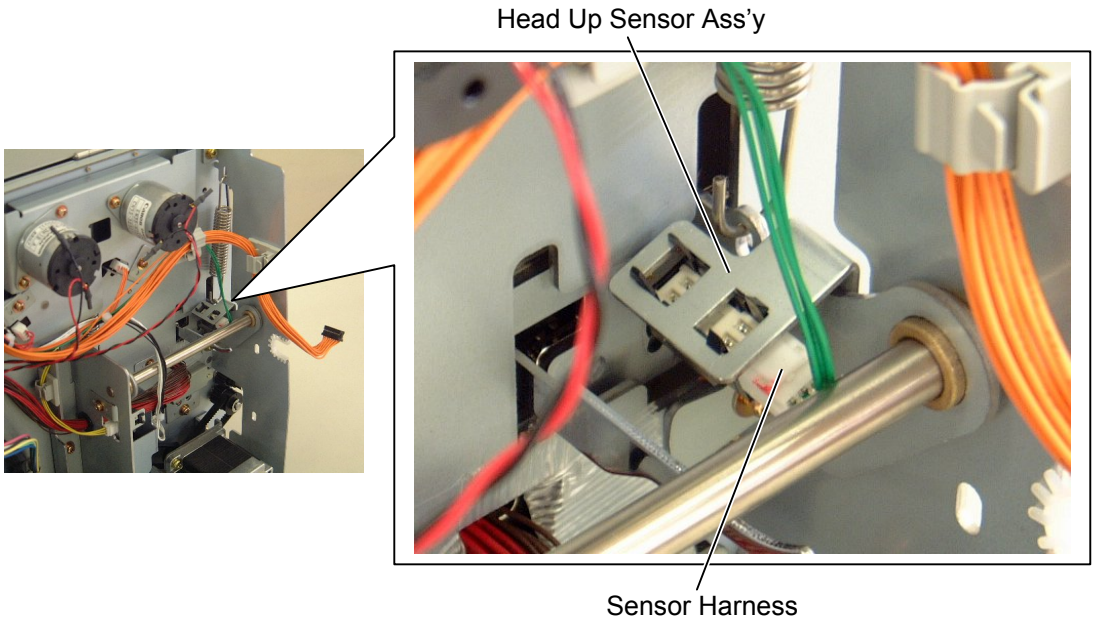
3) Attach the sensor guide to the printer so that the hook fits onto the frame.
Attach the media sensor ass'y.
Also attach the sensor shaft to the printer so that it passes through the two shaft holders.



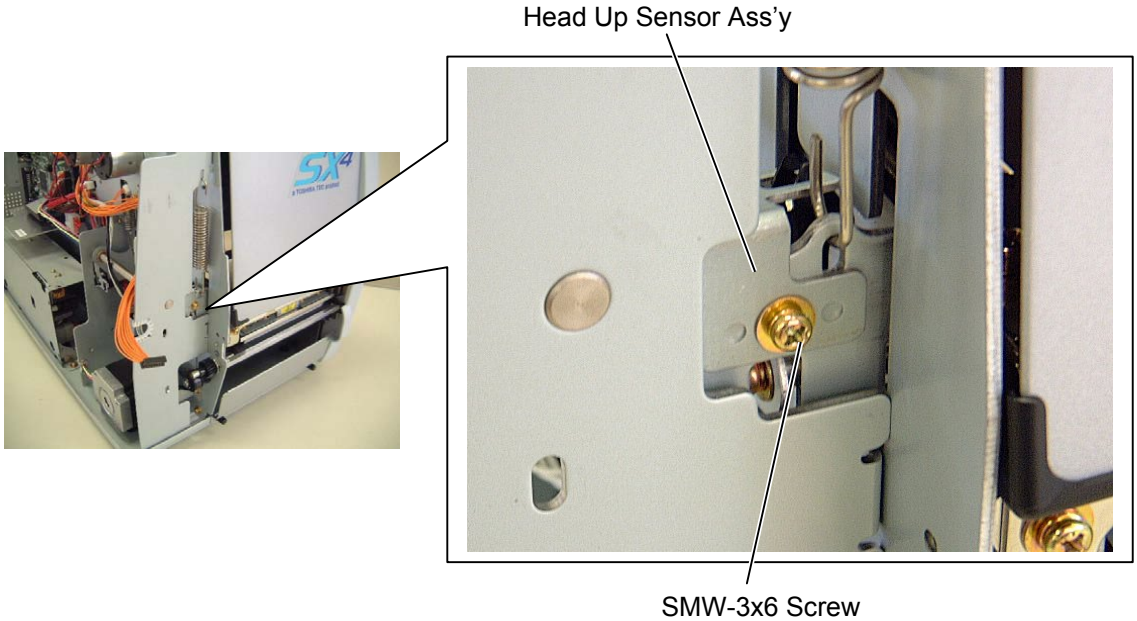
4) Close the printer block.
5) Fix the sensor shaft with the E-3 e-ring. (Refer to Section 10.11.1.)
6) Attach the media sensor (upper) to the pinch roller block with the two TT-3x5 screws. (Refer to Section 10.11.1.)
7) Attach the side panel (L) to the printer.
8) Perform a sensor adjustment in System mode.
9) Perform a test print. Make sure that printing was performed correctly.
10) Refer to Sections 5.5.7 and 6.1 to adjust the feed gap/black mark sensor.

10.12 HEAD UP SENSOR

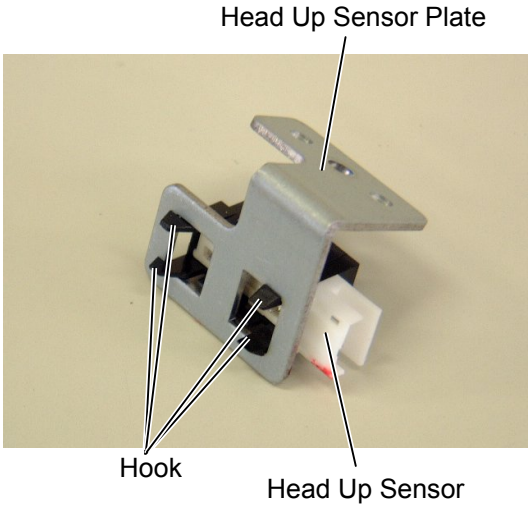
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Remove the operation panel. (Refer to Section 3.4.)
3) Disconnect the sensor harness from the head up sensor ass'y.

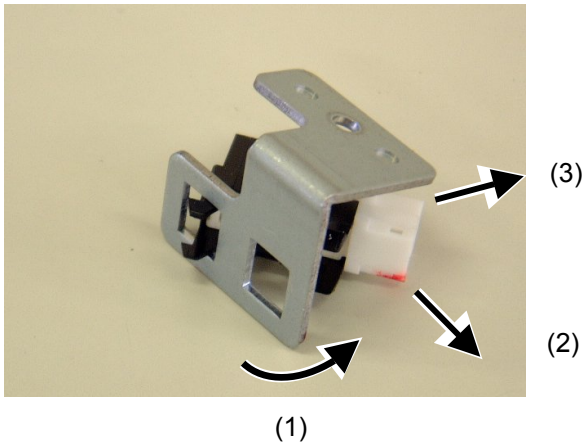


4) Remove the SMW-3x6 screw to detach the head up sensor ass'y from the printer.

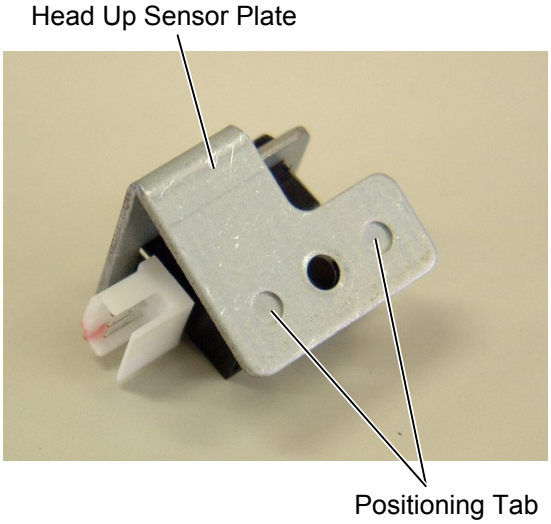


5) Detach the head up sensor from the head up sensor plate in the following steps.
NOTE: *The head up sensor is attached to the plate with the four hooks.*
(1) Pull the head up sensor in the direction indicated by the arrow to unhook the two hooks on the connector side.
(2) Move the head up sensor in the direction indicated by the arrow to unhook the other hooks.
(3) Detach the head up sensor from the plate.



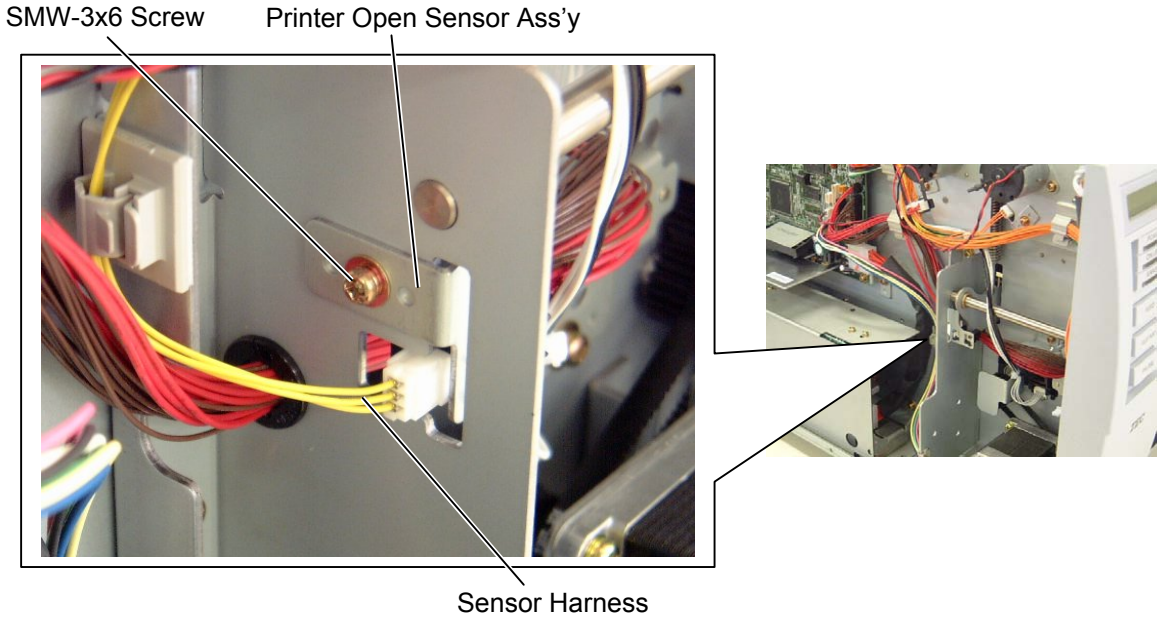


6) Replace the head up sensor with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
- When reassembling, make sure that the head up was attached to the head up sensor plate in the correct direction.
- Fit the positioning tabs of the head up sensor plate into the positioning holes of the printer frame.

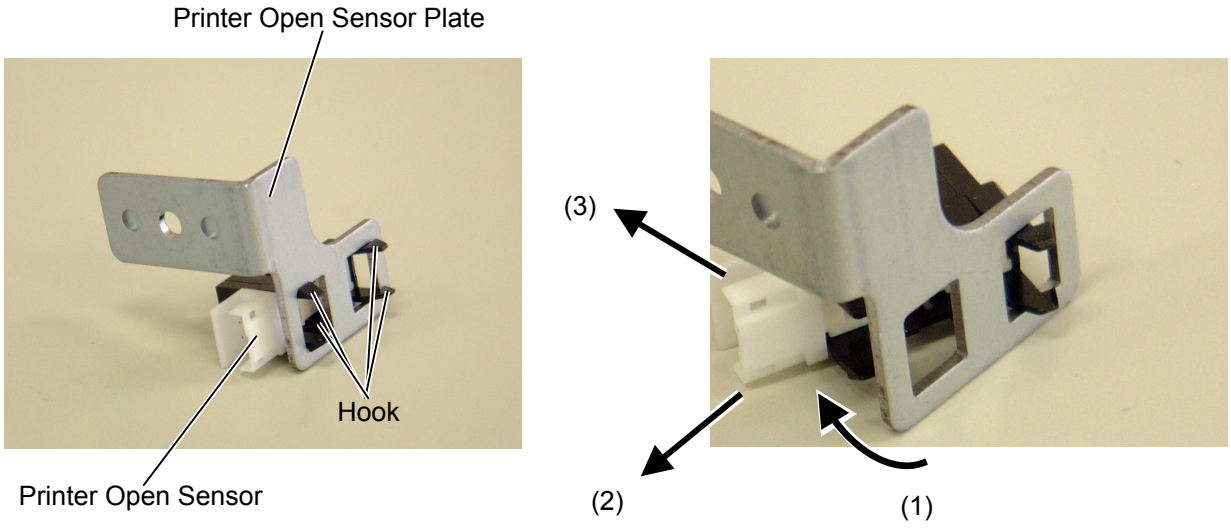


10.13 PRINTER OPEN SENSOR

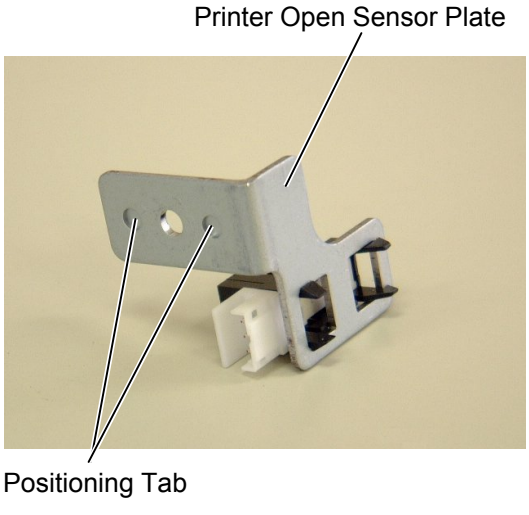
1) Remove the side panel (L). (Refer to Section 3.2.)
2) Disconnect the sensor harness from the printer open sensor ass'y.
3) Remove the SMW-3x6 screw to detach the printer open sensor ass'y from the printer.

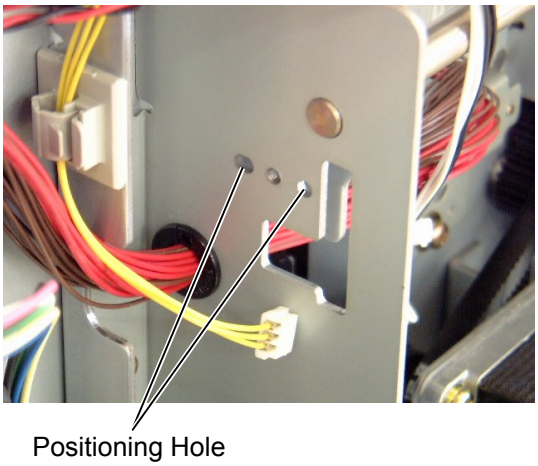


4) Detach the printer open sensor from the printer open sensor plate in the following steps.
NOTE: *The printer open sensor is attached to the plate with the four hooks.*
(1) Pull the printer open sensor in the direction indicated by the arrow to unhook the two hooks on the connector side.
(2) Move the printer open sensor in the direction indicated by the arrow to unhook the other hooks.
(3) Detach the printer open sensor from the plate.



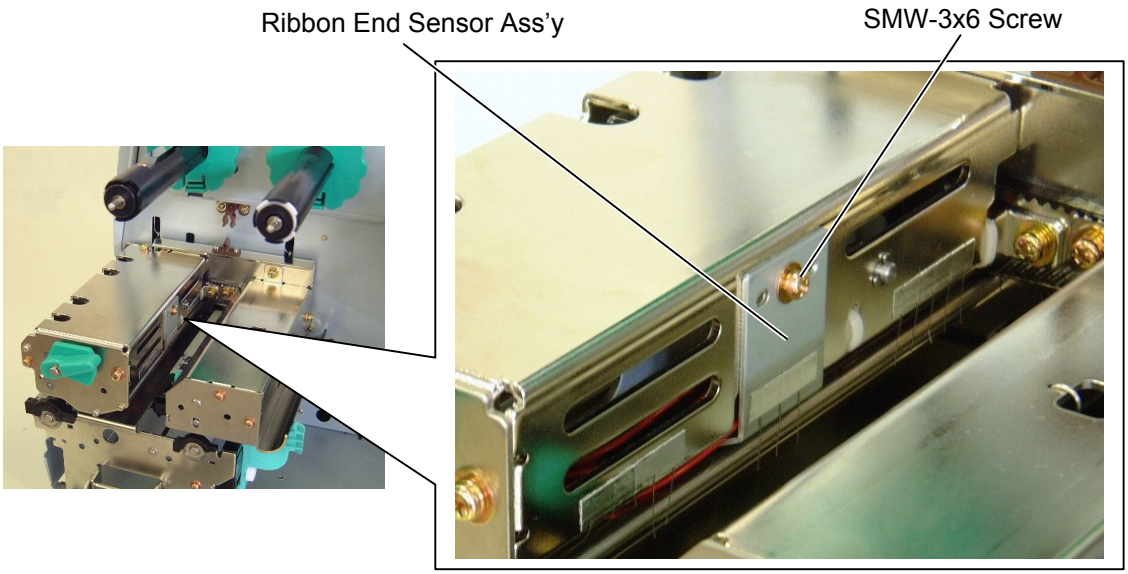
5) Replace the printer open sensor with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
- When reassembling, make sure that the printer open sensor was attached to the printer open sensor plate in the correct direction.
- Fit the positioning tabs into the positioning holes of the printer frame.



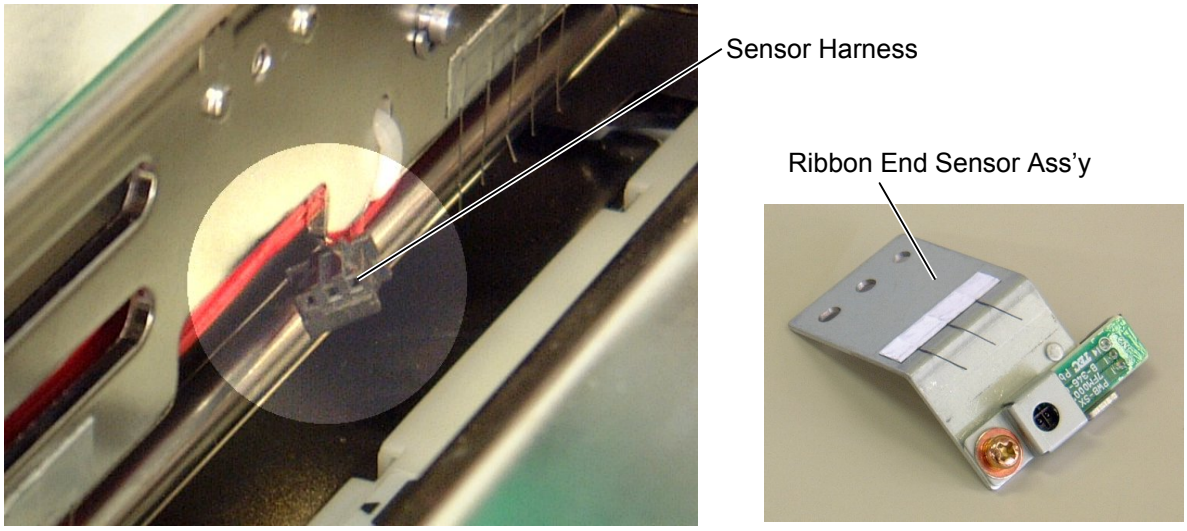


10.14 RIBBON END SENSOR

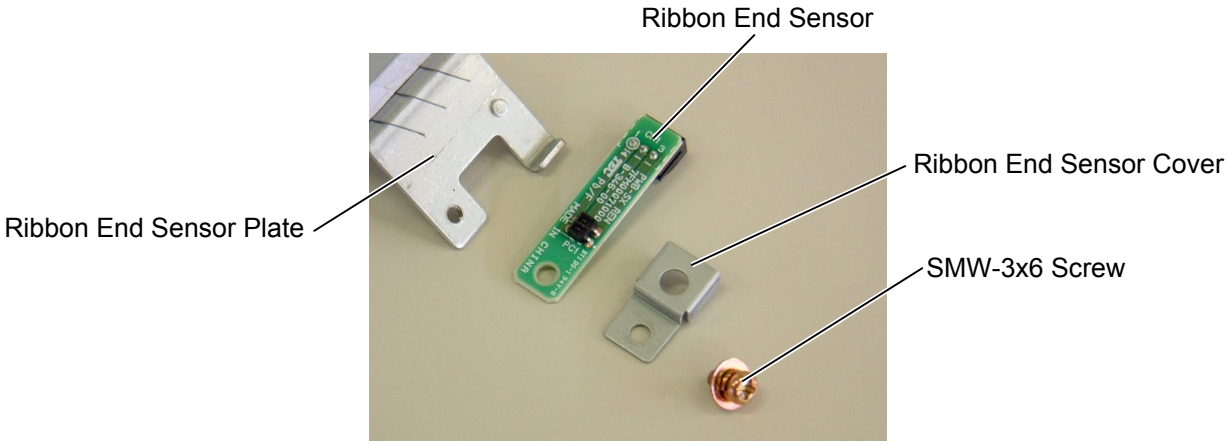
1) Open the top cover. (Refer to Section 3.1.)
2) Open the printer block. (Refer to Section 3.3.)
3) Remove the SMW-3x6 screw to detach the ribbon end sensor ass'y from the printer.



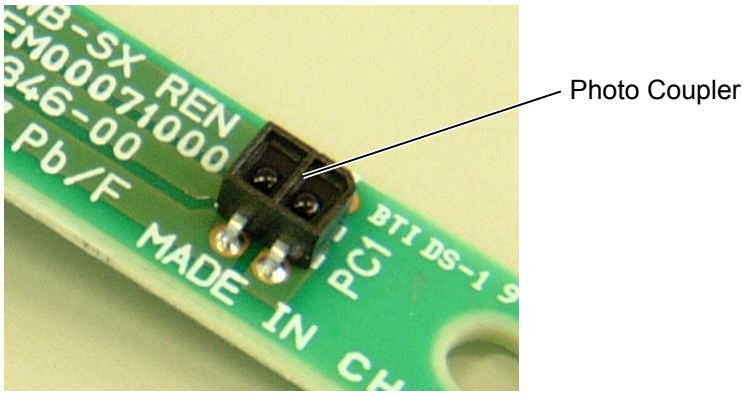
4) Disconnect the sensor harness from the ribbon end sensor ass'y, and then detach the ribbon end sensor ass'y from the printer.



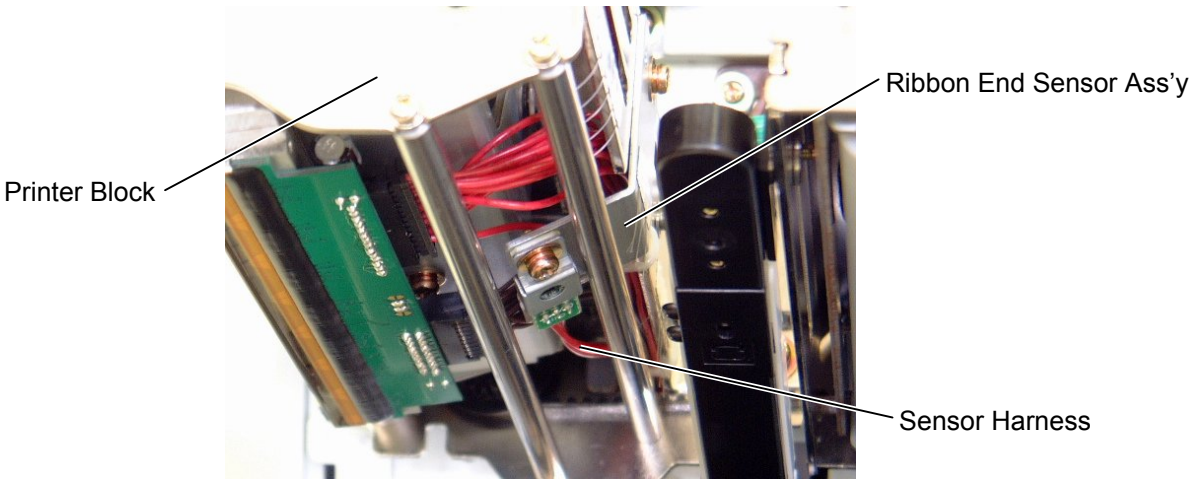
5) Remove the SMW-3x6 screw to detach the ribbon end sensor and the ribbon end sensor cover from the ribbon end sensor plate.



6) Replace the ribbon end sensor with a new one, then reassemble in the reverse order of removal. At this time, take care of the following points.
- When reassembling, make sure that the ribbon end sensor was attached to the ribbon end sensor plate in the correct direction.
- Assemble the ribbon end sensor cover and the ribbon end sensor so that the photo coupler is positioned at the center of the round hole of the cover.
- Be careful not to damage the sensor.

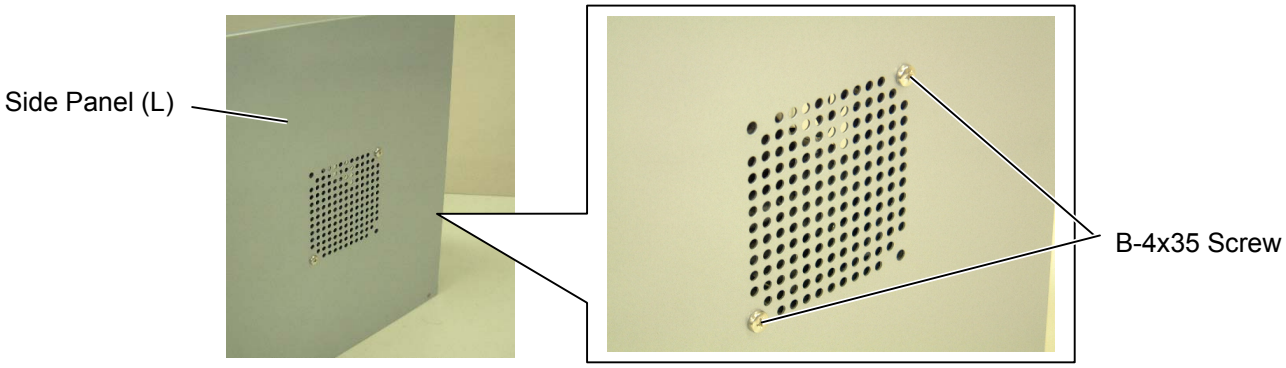


- Make sure that the sensor harness doesn't appear out of the printer block. If so, the sensor harness may touch the ribbon and the media causing a print failure.

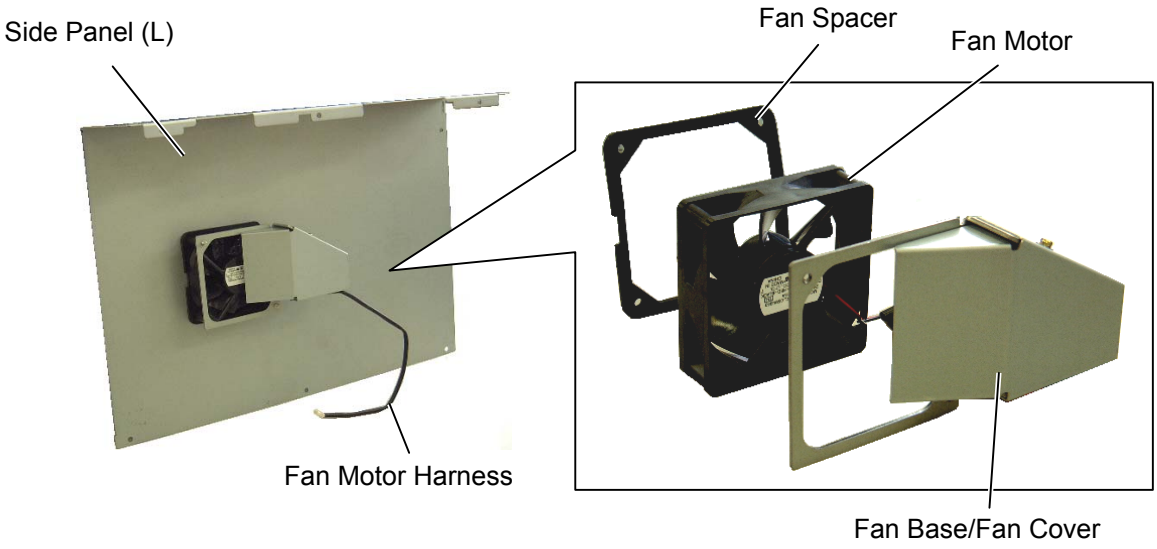


10.15 FAN MOTOR

1) Remove the side panel (L). (Refer to Section 3.2.)
2) Remove the two B-4x35 screws from the side panel (L).



3) Remove the fan motor, fan spacer, and fan base/fan cover from the side panel (L).

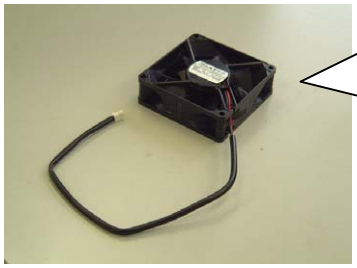


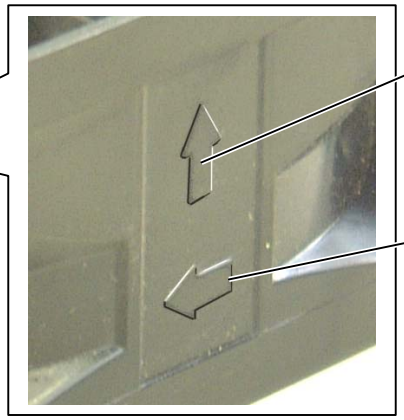
***NOTE**: The fan base/fan cover is not provided on the B-SX4T with the serial number of 3T311411 or later and the B-SX5T with the serial number of 3Wxxxxxx or later. Also, the B-4x35 screws are secured with N-4 nuts.*

4) Replace the fan motor with a new one, and then reassemble in the reverse order of removal.

NOTES:

1. *Tighten the B-4x35 screws with 94.1 – 188.2 N•cm torque.*
2. *Attach the fan motor so that it takes the air into the printer. Refer to the arrows embossed on the fan motor.*





3. *Attach the fan motor, fan base/fan cover in the correct orientation. (Refer to the picture of Step 3.)*

11. RFID ANALYZE TOOL

When an RFID module is installed, the printer will be able to write data on an RFID tag as well as print data on the surface of the RFID-tag embedded label.

To properly issue RFID tags, it may be necessary to adjust the RFID tag position so that it stops just above the antenna of the RFID module.

A proper adjustment value is obtained by using RFID Analyze Tool. It is different depending on the following conditions.

- RFID tag type
- The shape of RFID tag antenna
- Position of RFID tag embedded in RFID tag supply
- Variation of RFID module

The RFID Analyze Tool enables discovering an optimum tag position and output power of the RFID module for data read/write.

An adjustment value is stored in the printer memory by using a PC command or “RFID Adjustment for Retry” parameter in the system mode (Section 5.11.9.)

11.1 System Requirement

System
IBM Compatible PC running Windows 2000 or Windows XP
Installed memory 16MB minimum (32M byte recommended)
Available hard disk space of 10M byte ore more
***NOTE**: Windows 2000 and Windows XP are registered trademarks of Microsoft Corporation.*

Interface
Connect the printer to a PC with an RS-232C (Serial) interface or LAN interface.

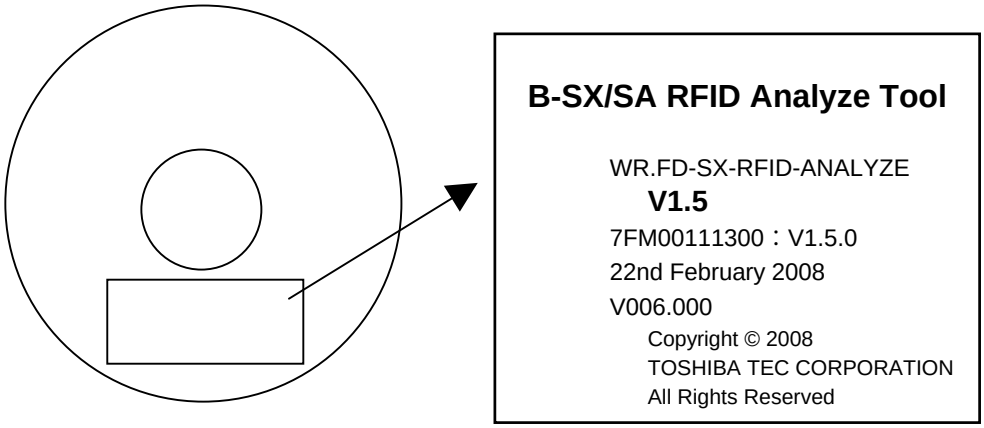
Download
RFID Analyze Tool is downloadable from the following web site.

http://barcode.toshibatec.co.jp/Ris/products/barcode/support/en/index.php

11.2 Set up

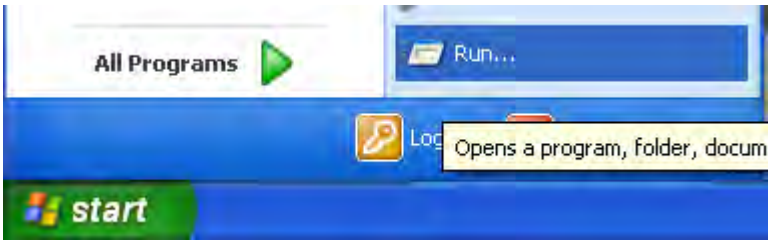
Setup Disk

The Installation Setup Disk consists of one CD-ROM.

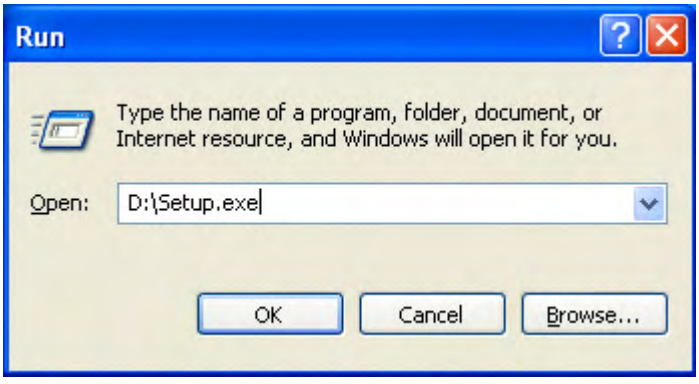


Installation Procedure

1. Start Windows put the CD-ROM in the CD-ROM drive.
2. Click on the “Start” button, then choose “Run”.



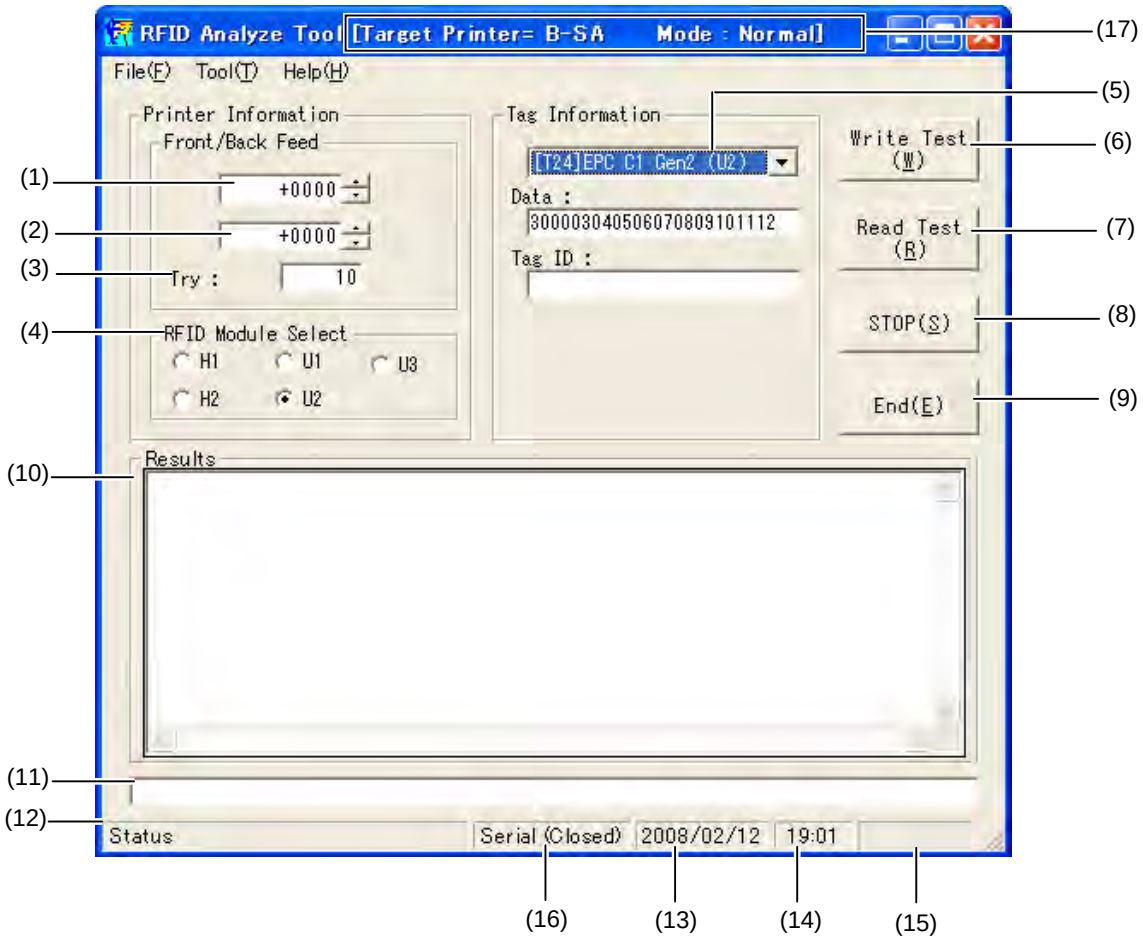
3. When the “Run” screen appears, enter “D:\Setup.exe” in the “Open” entry field, then click on the “OK” button. (When the CD-ROM drive is drive D.)



4. For the subsequent procedures, follow the instructions on the screens to complete the installation.
5. When the installation completes successfully, the screen, which notifies the completion of the installation of the “RFID Analyze Tool” software, appears.

11.3 Application Functions

11.3.1 Main Menu

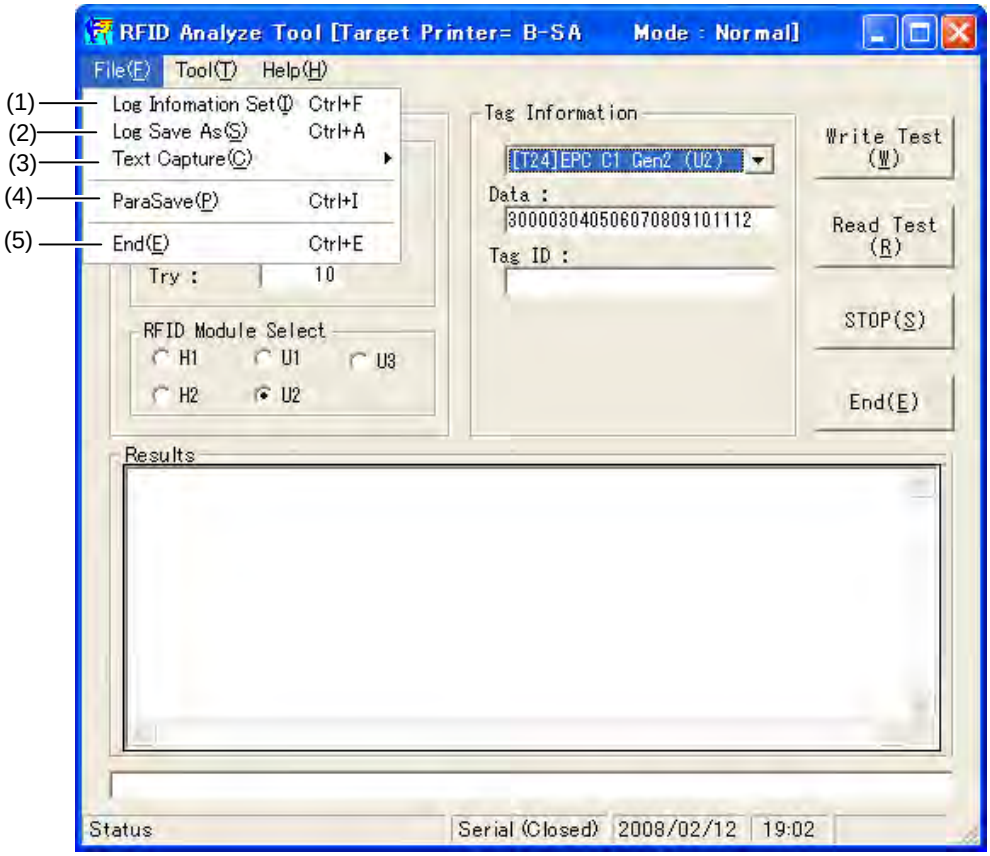


(1) Front Feed amount: +9999 ~ -9999
(2) Back Feed amount: +9999 ~ -9999
(3) Number of test tries: 999 ~ 0
(4) RFID module select
- H1: B-9704-RFID-H1-QM/QM-R
- U1: B-9704-RFID-U1-US/EU/EU-R
- H2: B-SX704-RFID-H2 (Japanese model only)
- U2: B-SX704-RFID-U2-EU/AU/US/CN-R

(5) Tag type select
- H1: C220
  I-Code
  ISO15693
  Tag it
  C320
- U1: ISO18000-6B
  EPC Class1
  EPC C1 Gen2
- H2: ISO15693
- U2: EPC C1 Gen2

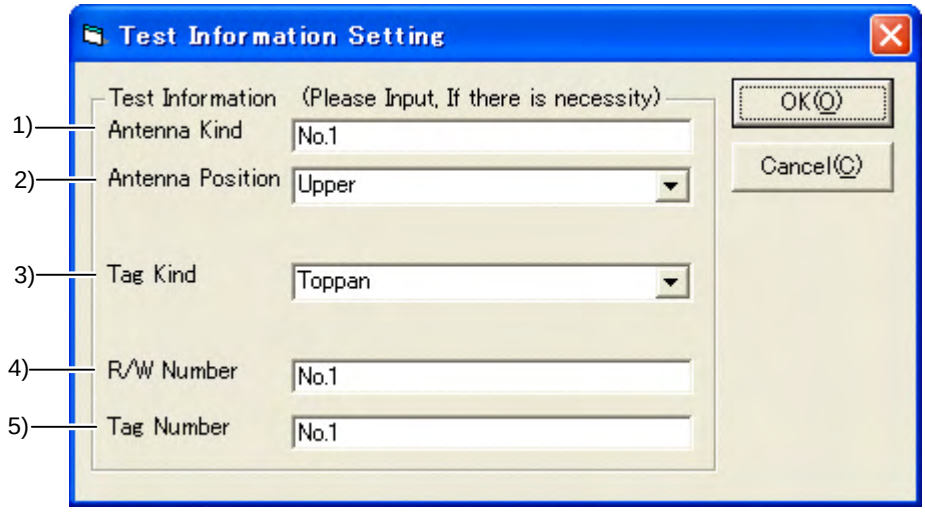
(6) Write Test Button
(7) Read Test Button
(8) Test Stop Button
(9) Application End Button
(10) Test Results Display Area
(11) Response Data Display Area
(12) Test Status Display Area
(13) Date
(14) Time
(15) Capture Display Area
(16) Communication Status Display Area
(17) Printer Model and Test Mode Display Area

11.3.2 File Menu



(1) Log Information Set

Displays the Test Information Setting screen shown below. Make necessary settings and click on the “OK” button.



1) Antenna Kind Information
2) Antenna Position: “Upper”, “Lower”, “In addition to this”
3) Tag Kind Information: “Toppan”, “OMRON”, “Rafsec”, “Impinj”, “In addition to this”
4) R/W Number
5) Tag Number

When a write/read test is executed log information is shown in the “Results” box of the RFID Analyze Tool screen. Log information for each test is saved in a text or CSV file.

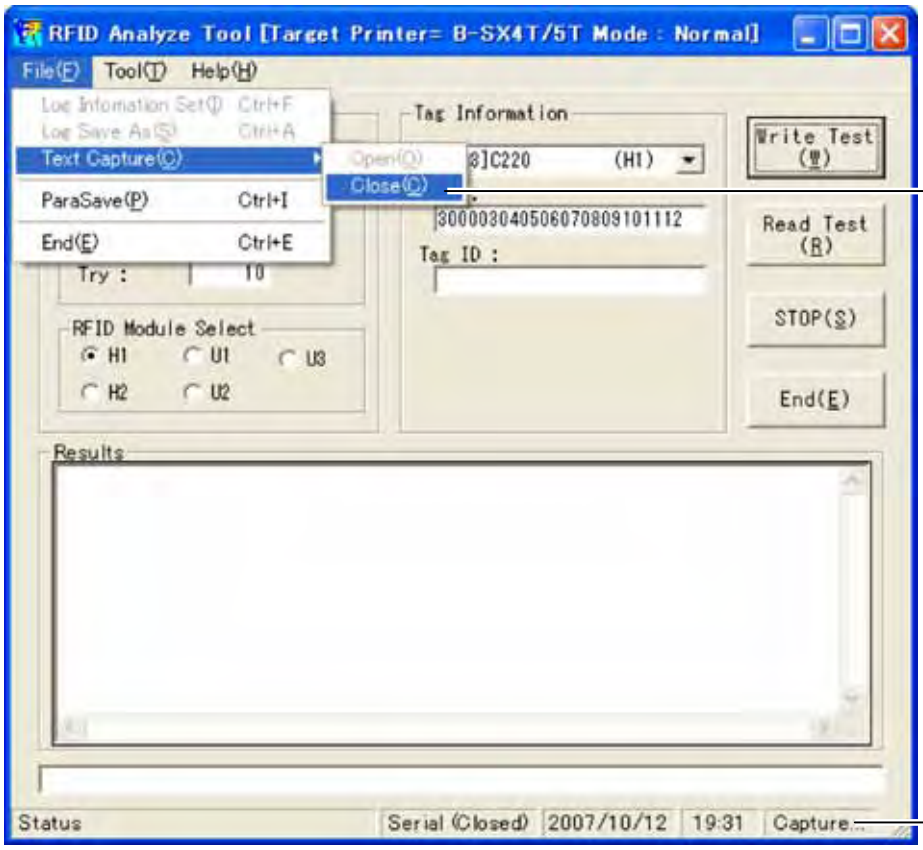
(2) Log Save As

Saves text data in the “Results” box of the RFID Analyze Tool screen into a text file.

(3) Text Capture

Saves the test result into a CSV file.

Selecting “Text Capture” then “Open” shows “Capture” in the area indicated by “2)” in the figure below. When a write/read test is executed with “Capture” shown, the test result is automatically saved in a CSV file specified.

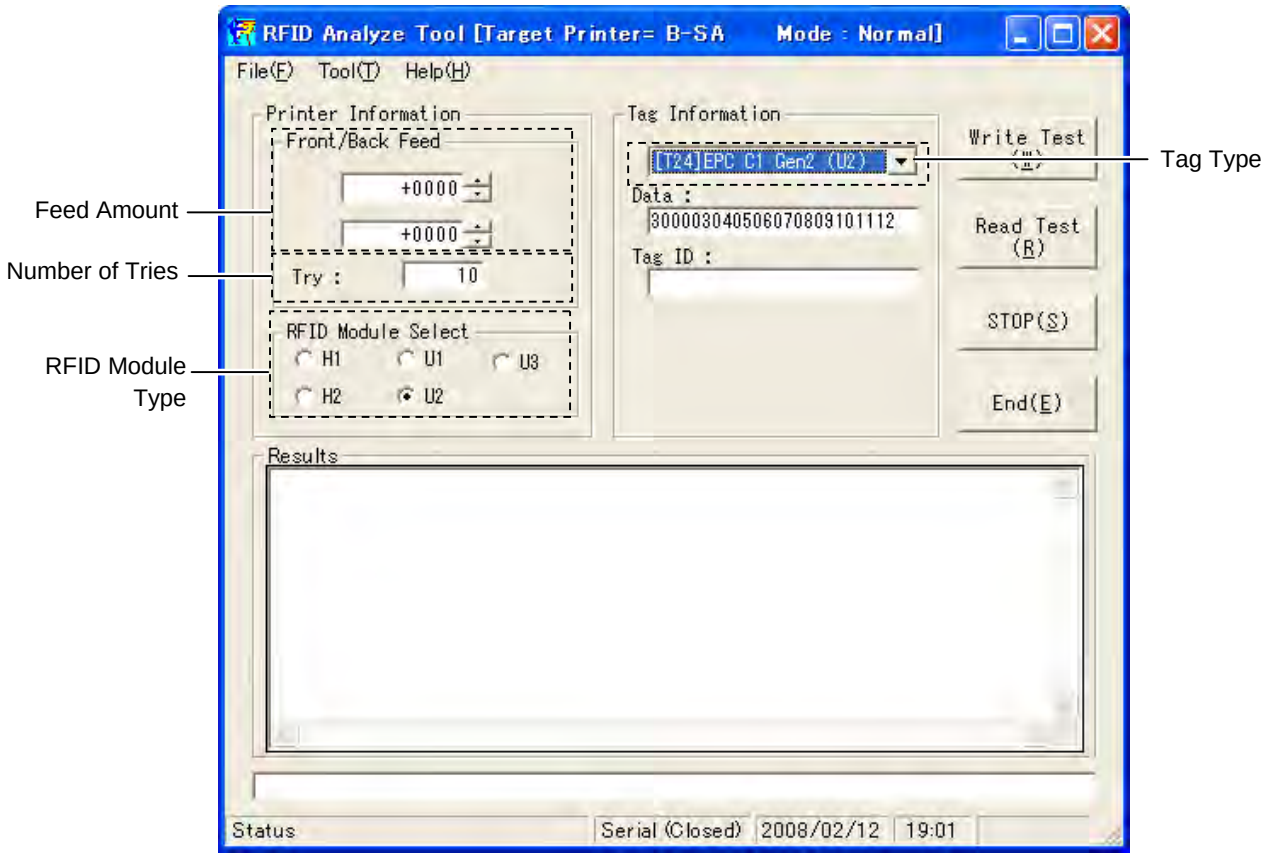


1) After “Text Capture” is selected, the menu adds “Close” under “Open”. Selecting “Close” exits from this function.

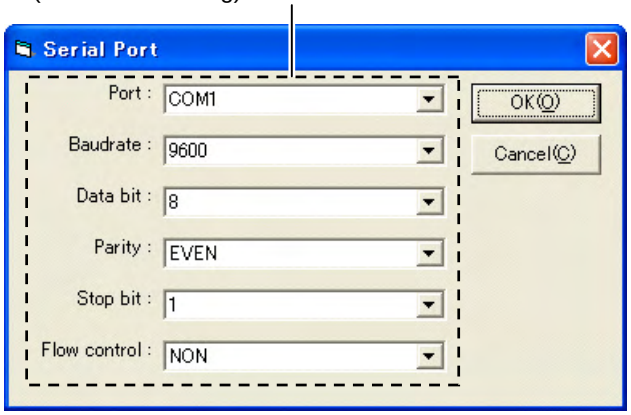
2) When “Text Capture” is selected, ”Capture” is shown.

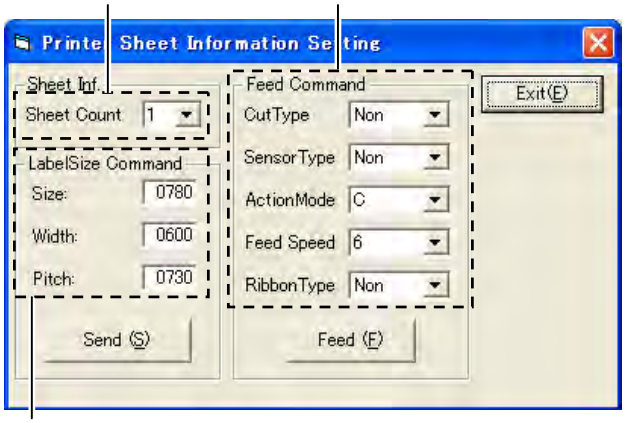
(4) ParaSave (Parameter Save)

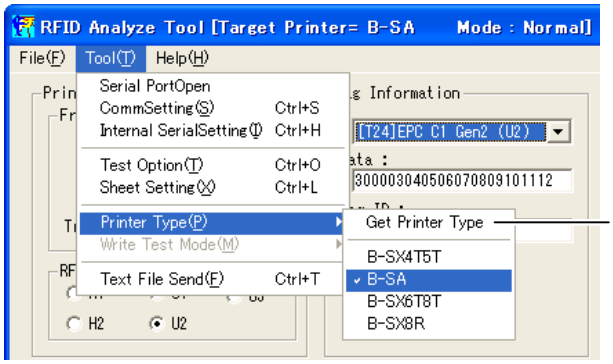
Saves the current test information to facilitate a next test. The saved parameters are invoked at a program boot. Information to be saved are feed amount, number of tries, RFID module type, tag type, communication settings between PC and printer, label size command, Feed command, Sheet count, printer type, and test mode.



Communication Settings between PC and Printer (Serial Port Setting)



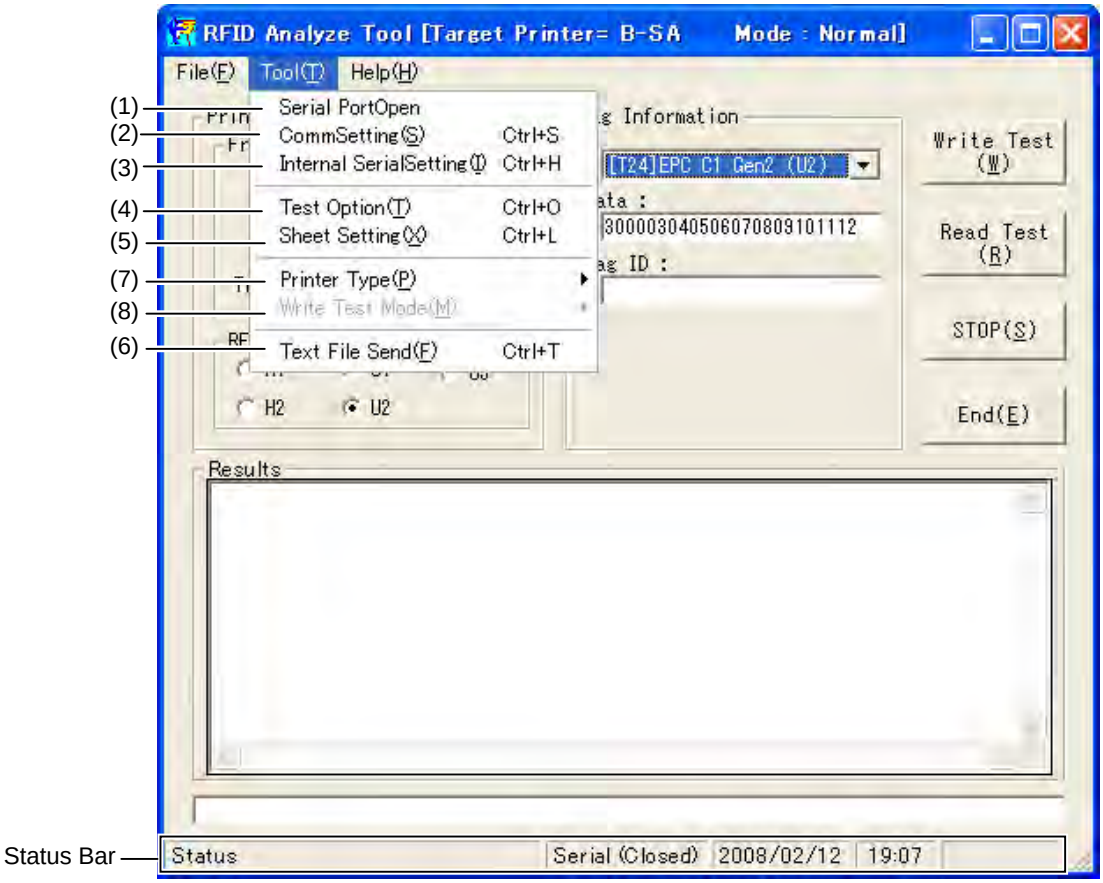




(5) End (Exit)

Exits from the Analyze Tool program.

11.3.3 Tool Menu



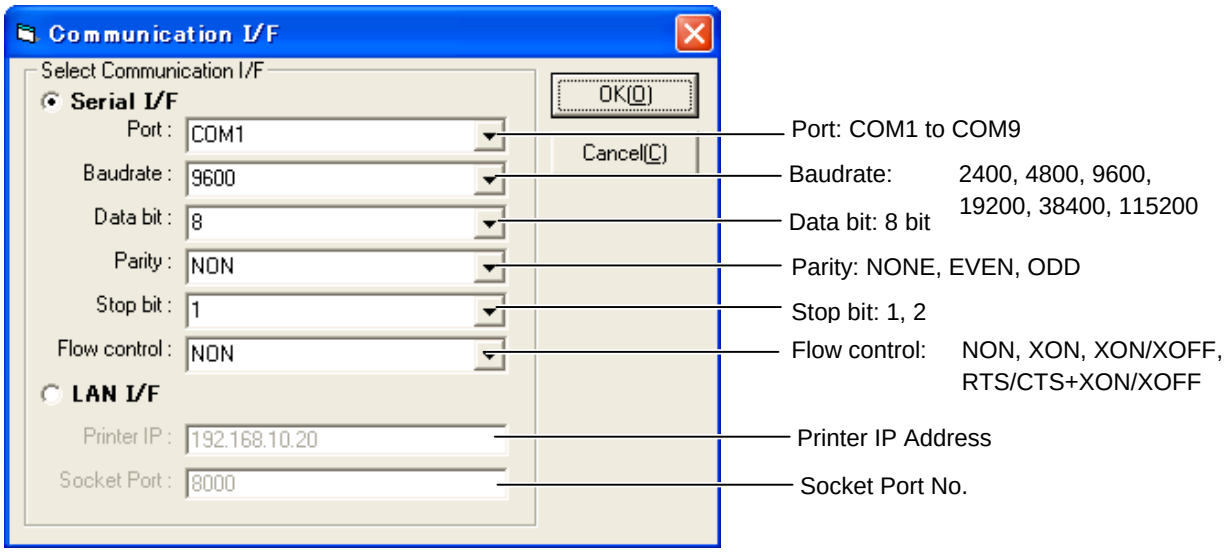
(1) Port Open

Opens/closes a port to communicate with the printer.

- "Serial PortOpen": The printer port is ready to be opened. After the port is opened, "Serial PortClose" will be displayed in the Tool menu and "Serial (Open)" will be displayed on the status bar.
- "Serial PortClose": The printer port is ready to be closed. After the port is closed, "Serial PortOpen" will be displayed in the Tool menu and "Serial (Close) will be displayed on the status bar
- "LAN Connect": The LAN port is ready to be opened. After the LAN port is opened, "LAN DisConnect" will be displayed in the Tool menu and "7:Connect" will be displayed on the status bar.
- "LAN DisConnect": The LAN port is ready to be closed. After the LAN port is closed, "LAN Connect" will be displayed in the Tool menu and "0:Close" will be displayed on the status bar.

(2) CommSetting

Makes settings for communication between the PC and the printer.



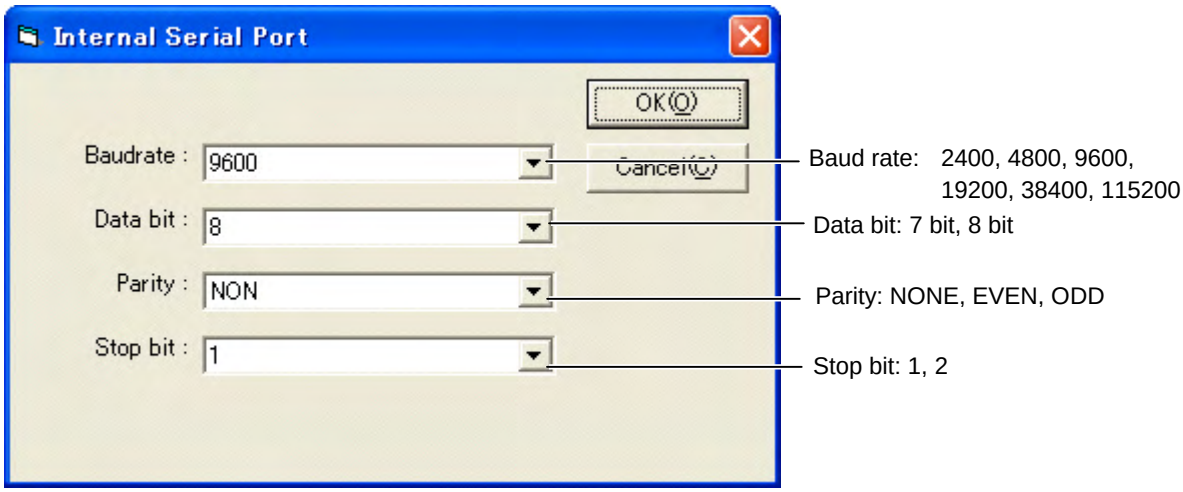
NOTES: *1. In the case of the LAN interface, a socket communication is used.*

2. Serial port may not be selectable depending on the printer types.

3. The above settings can be saved by a parameter save function.

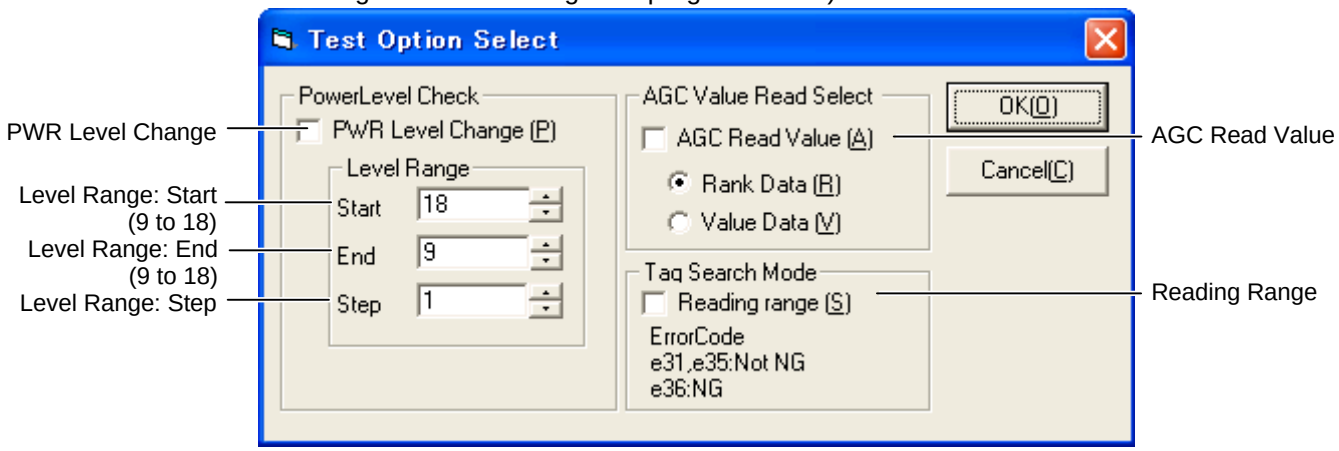
(3) Internal Serial Setting

Makes settings for communication between the RFID module and the printer. Do not change the setting.



(4) Test Option

This menu is available only when the U2 type is selected. (However, when the U1 type is selected, only the Power Level Change and Level Range are programmable.)



PWR Level Change (Power Level Change)

When checked, a write or read test can be performed while changing the output level of the RFID module, without changing the tag position. This enables finding the optimal output level for writing data onto the tag.

Setting range of the power level: B-SX704-RFID-U2-EU/AU/US/CN-R: 9 to 18
B-9704-RFID-U1-US/EU-R: 0 to 255

Start: Enables setting the value for the starting power level.
End: Enables setting the value for the starting power level.
Step: Enables setting the step value.

AGC Read Value:

When checked, the Advanced Gain Control (AGC) data is read every time a tag is written or read.

Rank Data: Rank Data is equal to the AGC threshold value of the printer.
Value Data: Value data is the value sent from the RFID module without any conversion. Usually, the rank data is used.

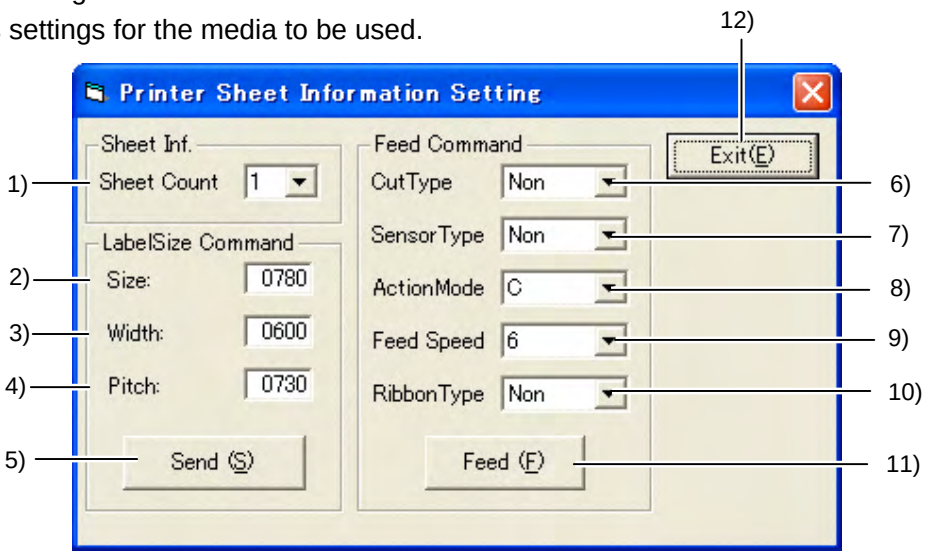
Reading range:

The read range of the tag is searched.
The positions where the error “e36” does not occur are considered as OK (readable).
The positions where no response is returned from the tag are considered as an error.

Error code: “e31”: Timeout (Tag is existing.)
“e35”: Data write failed. (Tag is existing.)
“e36”: Tag is not existing.
“e37”: Communication error (Tag is existing.)

(5) Sheet Setting

Makes settings for the media to be used.



Sheet Inf.

1) Sheet Count: The number of tags to be tested. (1 ~ 5)
After printing on one label, a next tag is automatically fed to continue the test.

LabelSize Command

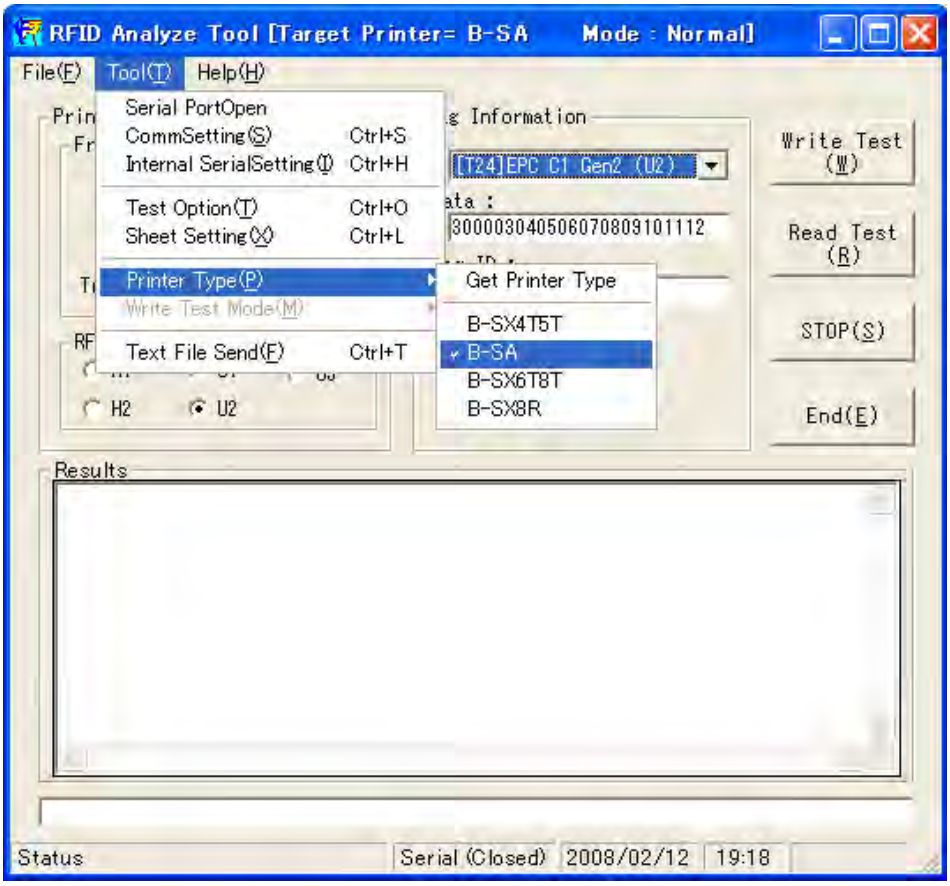
2) Size: Label Length
3) Width: Label Width
4) Pitch: Effective print length
5) Send
Sends the size, width, and pitch information of the tag to be tested. (This does not check a printer status.) Send the LabelSize Command when any of the size, width, or pitch value needs to be changed. These information are stored even after the printer power is turned off.
6) Cut Type: Non, Cut
7) Sensor Type:
Non: No Sensor
Ref.: Black Mark Sensor
Trans.: Feed Gap Sensor
Trans. Pre: Feed Gap Sensor when using preprinted label
Ref. Manual: Black Mark Sensor when using a manual threshold value
8) ActionMode:
C: Batch mode (Cut and feed when “Cut” is selected for Cut Type.)
D: Strip mode (with back feed)
E: Strip mode (with back feed, the strip sensor is ignored, the applicator supports this mode.)
9) Feed Speed (Unit: inch/second): 3, 5, 6, 8, A (10)
B-SX4T: 3, 6, A (10)
B-SX5T: 3, 5, 8
10) Ribbon Type: Non, Ribbon Save, Ribbon
11) Feed
Sends a Feed command to the printer. (Printer status is checked.)
When a printer error occurs, the corresponding error message is displayed.
12) Exit Button

(6) Text File Send

Sends a specified file from the PC to the printer. (This does not check a printer status.)
File data are not checked.
The size of the file to be sent must be 4 KB or less.

(7) Select the printer model

Makes a choice of a printer model from Get Printer Type menu. Choose “B-SX4T/SX5T”.



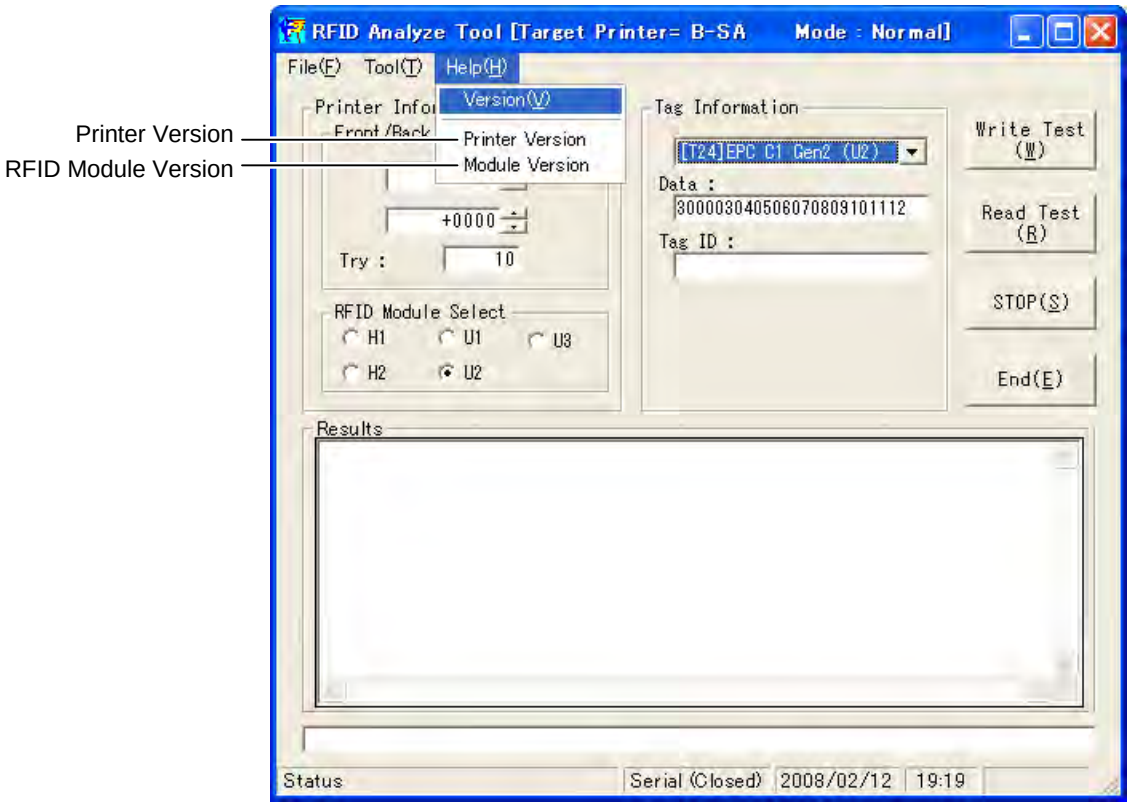
***NOTE**: This information can be saved by a parameter save function.*

(8) Select the test mode

This menu is not available.

11.3.4 Help Menu

Displays Printer Version and RFID Module Version.



Example

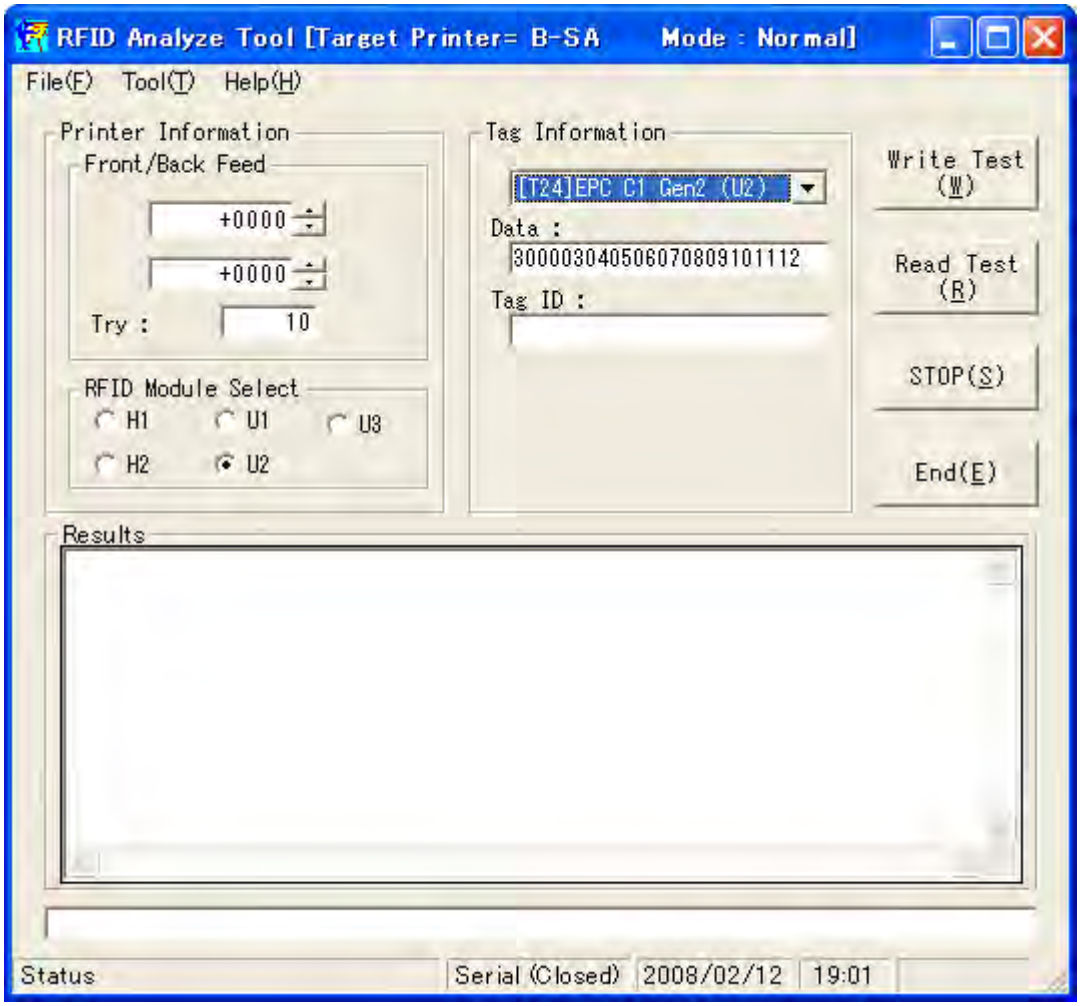
Printer Version

RFID Module Version

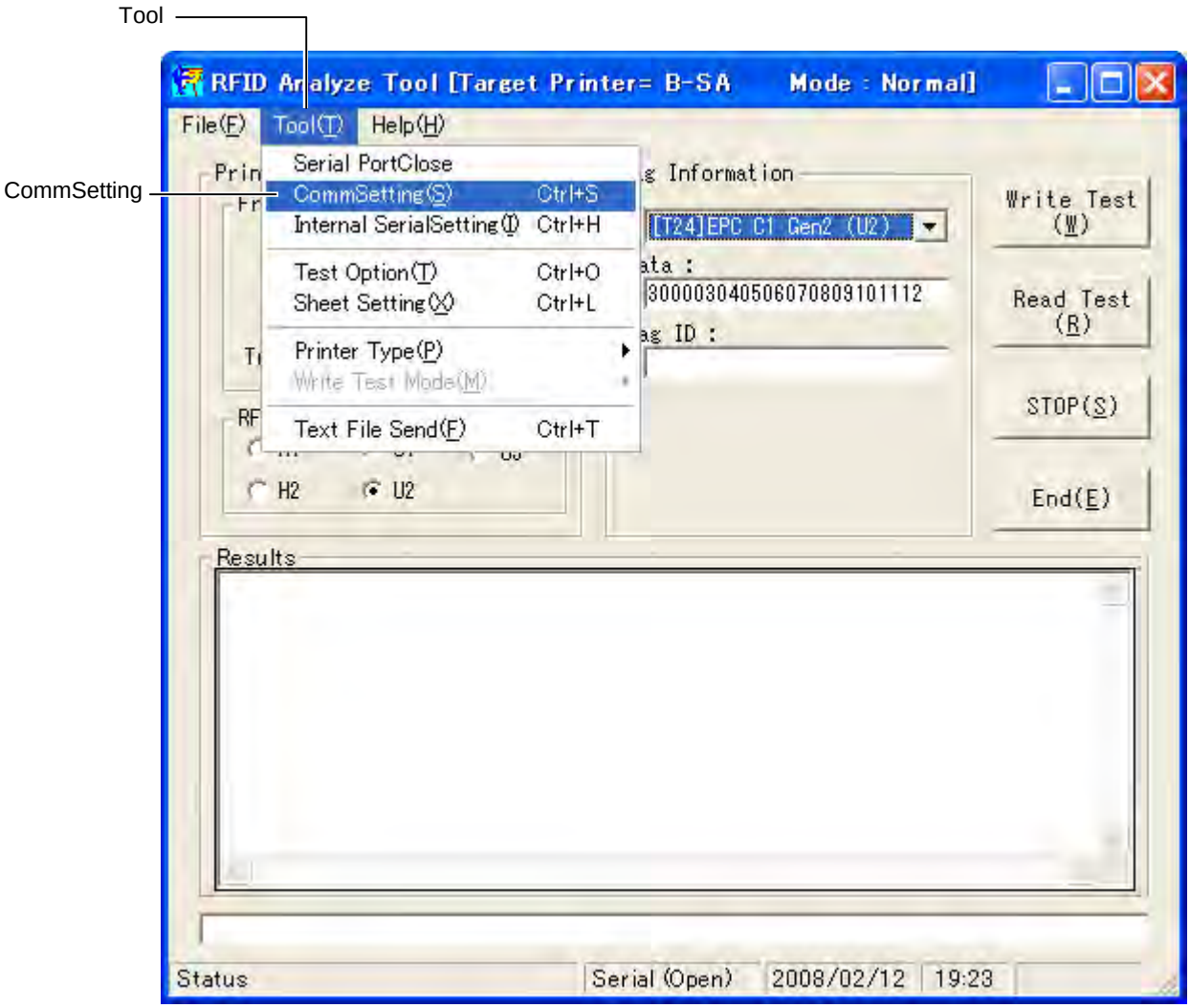
***NOTE**: Printer version and module version are indicated next to the date and time of Log file.*
Example) CSV file information
Date&Time = 07/10/16 09:47:24: Printer Information = B-SX4T Z4.4C 27SEP2007 Module Information = U2 JPN #00PV971

11.4 Operating Procedure

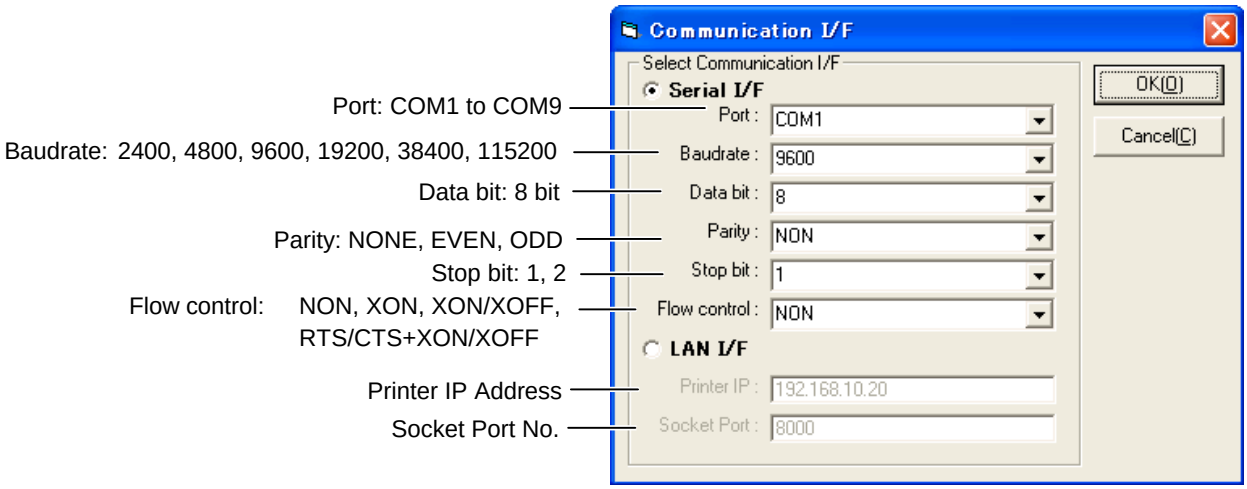
1. Connect the printer to the PC with the serial interface cable or LAN cable.
2. Start the “B-SX RFID Analyze Tool” application.



3. Click on the “Tool” menu, and choose “CommSetting”.



4. When the “CommSetting” screen appears, perform the serial port or LAN setting in accordance with the settings of the B-SX4T/SX5T printer.



NOTES:

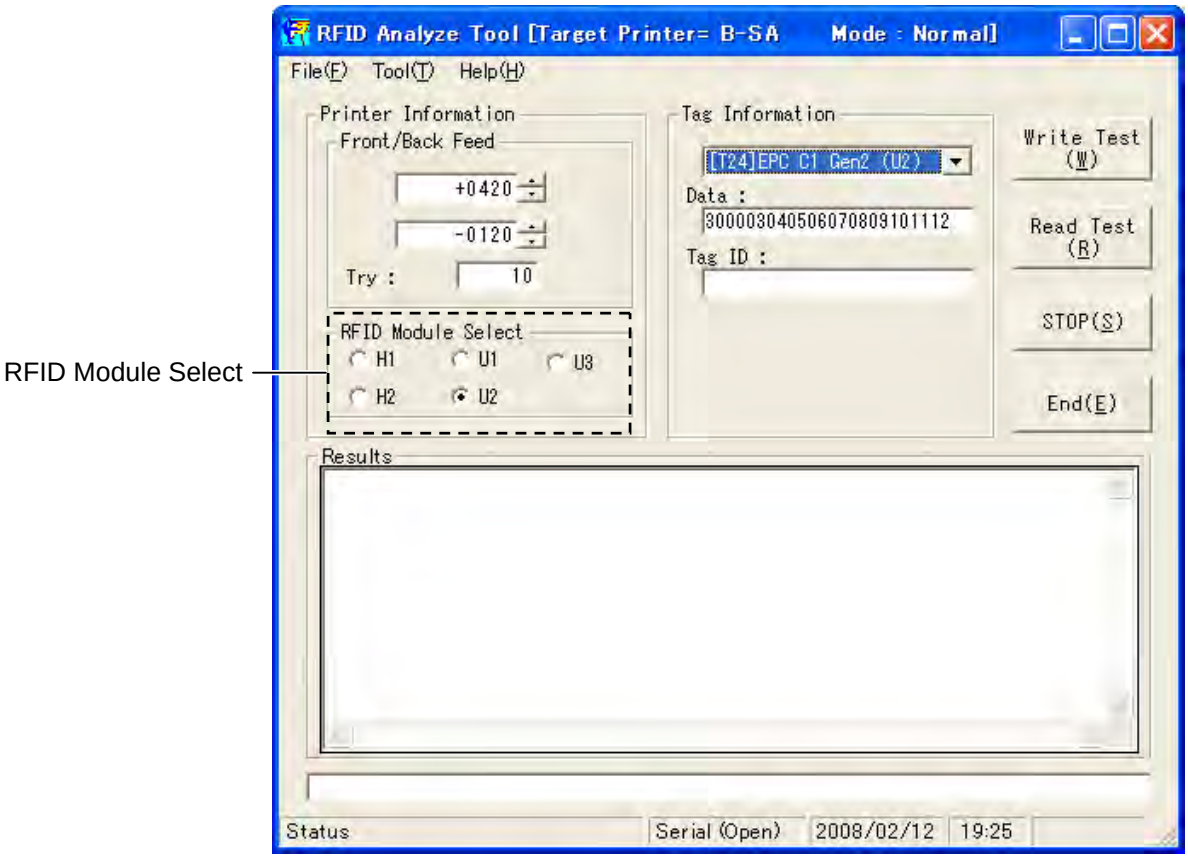
1. *Choose the port to which the printer is connected.*
2. *Choose “NON” for the Flow control of the RFID Analyze Tool. However, any flow control code of the printer is acceptable.*
3. *The data bit for the Analyze Tool is fixed to 8. Make sure the data length for the B-SX4T/SX5T printer is set to 8 bits.*
4. *The command flame for the Analyze Tool is “{ | }”. Make sure the control code for the B-SX4T/SX5T printer is set to “AUTO” or “{ | }”..*
5. *When the printer and the PC are connected via LAN, a printer IP address and socket port number need to be entered.*
   Default Printer IP Address: 192.168.10.20, Socket Port No.: 8000

4. Set the following parameters.

   RFID module type to be analyzed (RFID Module Select)

   Choose the RFID module to be used for the RFID Module Select parameter.

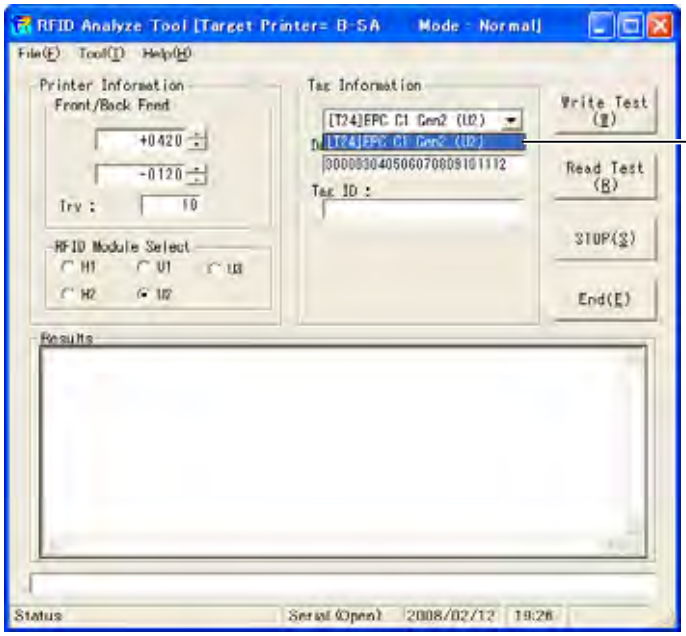
   B-9704-RFID-U1-US/EU: "U1"
   B-9704-RFID-H1-QM: "H1"
   B-SX704-RFID-U2-EU/AU/US/CN-R: "U2"



RFID tag type to be analyzed (Tag type)

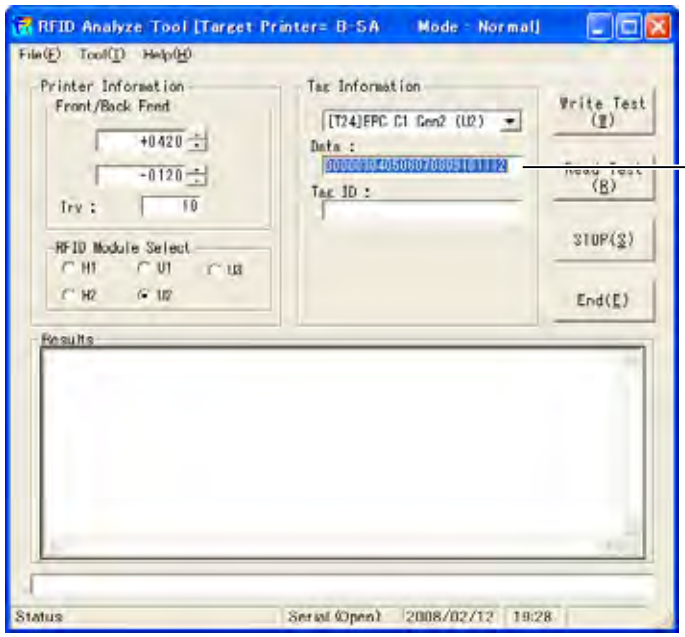
Selectable tag types are different depending on the RFID module types.

RFID module type	Tag type
U1: B-9704-RFID-U1-US/EU	ISO18000-6B (U1), EPC Class1 (U1), EPC C1 Gen2 (U1).
H1: B-9704-RFID-H1-QM	C220 (H1), I-Code (H1), ISO15693 (H1), Tag-it (H1) and C320 (H1)
U2: B-SA704-RFID-U2-EU/AU/US/CN-R	EPC C1 Gen2



Tag Type

Tag Data



Tag Data

Data to be written onto a tag is entered.
Data is different for each tag type. Please note the Analyze Tool program does not check the data to be written on to a tag.

***NOTE**: When the U2 type module tries to write same data that has already been written onto the same tag, a data write operation is not performed and results in OK. To properly perform a write test on the U2 type module, entered data to be written is automatically changed each time of a retry, by rotating the data in units of 2 digits.*
Example) 1st try: 123456789012 → 2nd try: 345678901212 → 3rd try: 567890121234 …

Feed amount range (Front/Back Feed)

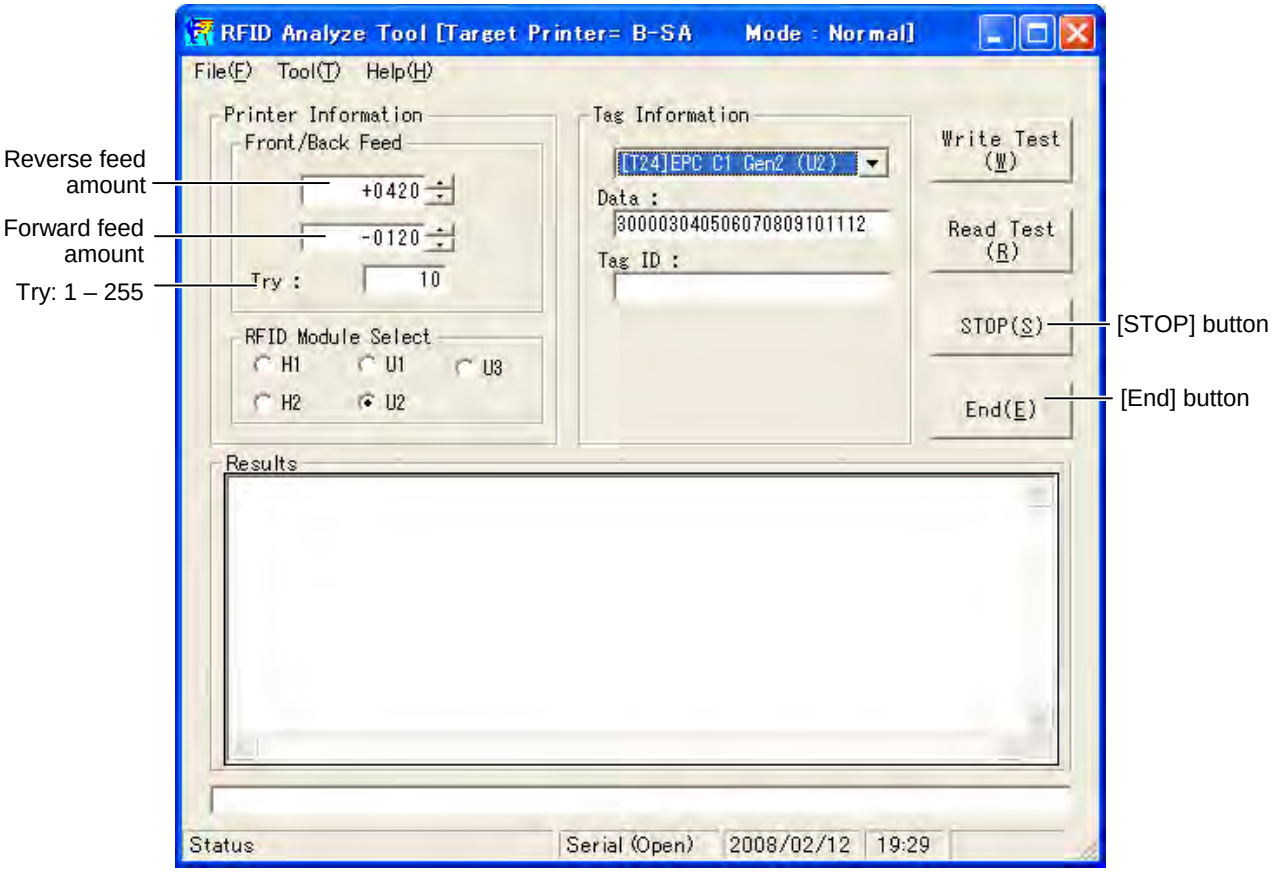
Set the feed amount range where an RFID tag is analyzed.

Upper limit (Reverse feed amount): 0 – 9990 (in units of 0.1 mm)
Lower limit (Forward feed amount): 0 – 9990 (in units of 0.1 mm)

The values can be entered by either pressing the “UP” or “DOWN” button or directly entering a number. While the printer feeds RFID tag media in the specified range, it stops feeding at 3-mm intervals and analyzes the read/write performance of tag.

The number of read/write times (Try)

Enter the number of times a data read/write is performed at each analysis position (1 – 255).



5. Perform a write test or read test.

   Write test

   Click on the “Write Test” button to start a write test.

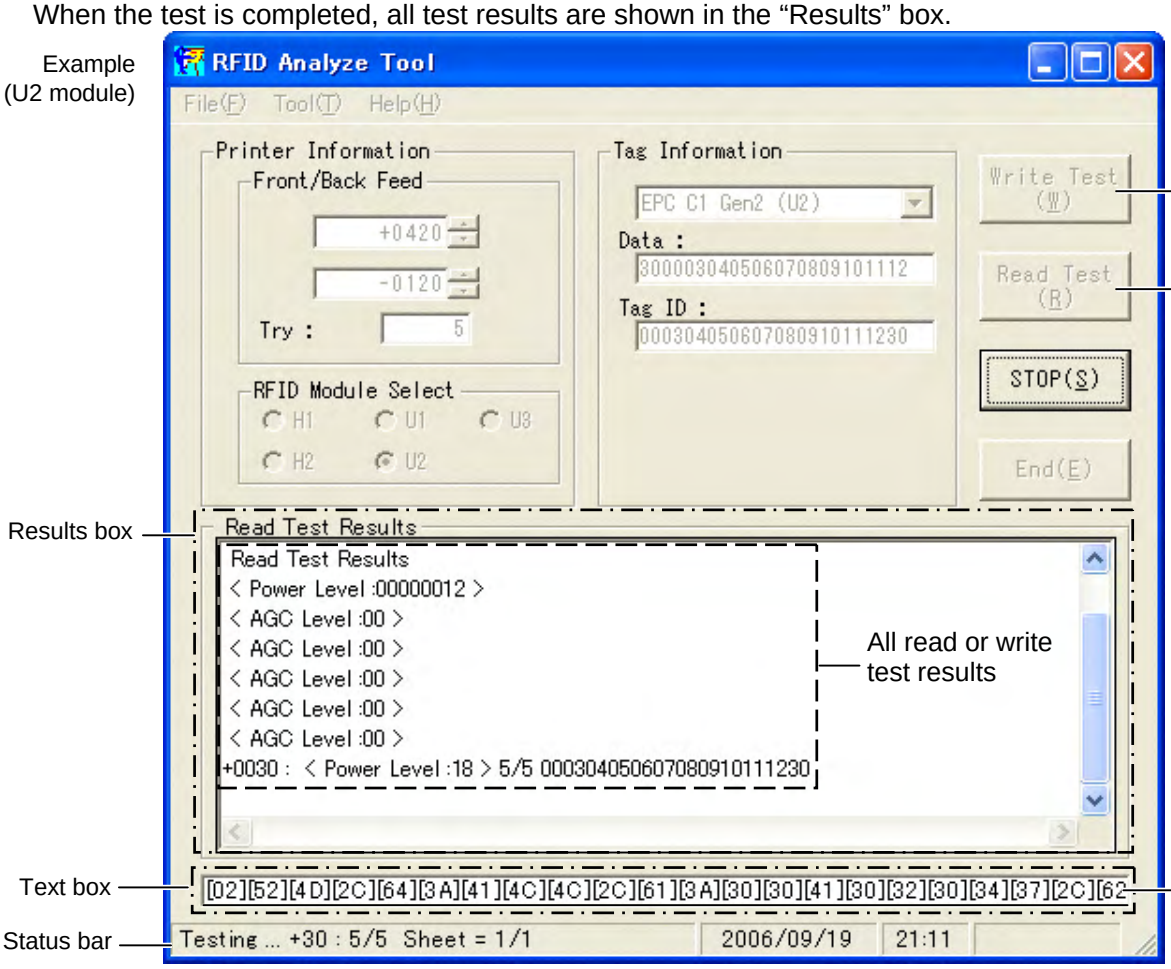
   During the write test, total number of successful write and total number of write performed are shown in the status bar. In the text box above the status bar, status data sent from the RFID module is displayed. When the test is completed, all test results are shown in the “Results” box.

   Read test

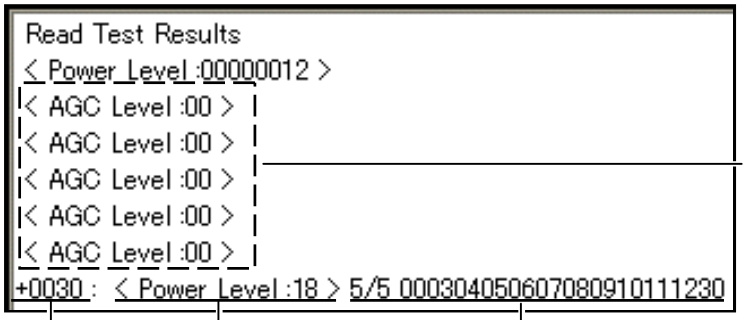
   Click on the “Read Test” button to start a read test.

   During the read test, total number of successful read and total number of read performed are shown in the status bar. In the text box above the status bar, status data sent from the RFID module is displayed. When the test is completed, all test results are shown in the “Results” box.

Example (U2 module)



Write/Read Results Box (When U2 is selected.)



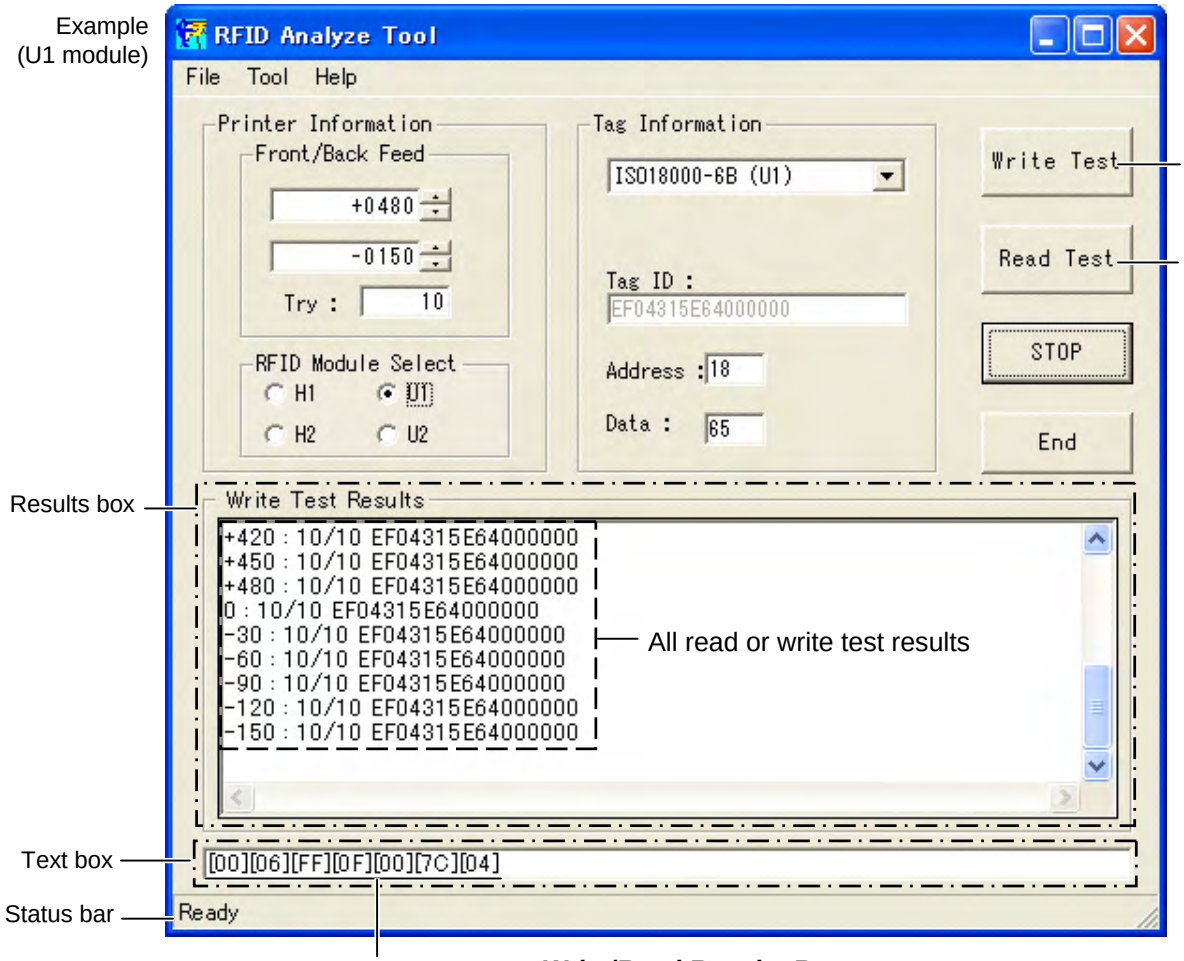
<AGC Level 00> AGC 1st data: Rank 00 level
<AGC Level 00> AGC 2nd data: Rank 00 level
<AGC Level 00> AGC 3rd data: Rank 00 level
<AGC Level 00> AGC 4th data: Rank 00 level
<AGC Level 00> AGC 5th data: Rank 00 level

Feed amount

Power Level

Number of times data read succeeded/Total number of read performed
EPC Code (displayed only when a read test is performed.)

Example
(U1 module)



Write Test button

Read Test button

Results box

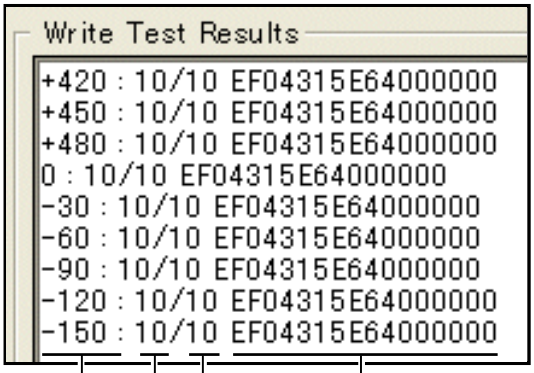
All read or write test results

Text box

Status bar

Status Data

Write/Read Results Box



Feed amount

Total number of succeeded tests

Total number of tests

Tag ID