

# **TOSHIBA**

TOSHIBA Thermal Printer

## **B-SX6T/SX8T SERIES**

### **Maintenance Manual**

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**TOSHIBA TEC CORPORATION**

## TABLE OF CONTENTS

	Page
<b>1. UNPACKING-----</b>	<b>1- 1</b>
1.1 Procedure -----	1- 1
1.2 Checks -----	1- 2
<b>2. MAIN UNIT REPLACEMENT-----</b>	<b>2- 1</b>
2.1 Replacing the MAIN PC Board -----	2- 2
2.2 Replacing the PS Unit-----	2- 3
2.3 Replacing the Stepping Motor -----	2- 5
2.4 Replacing the Ribbon Motors -----	2- 7
2.5 Replacing the Print Head -----	2- 8
2.6 Replacing the Solenoid (Standard on the B-SX8T, Option for the B-SX6T) -----	2- 9
2.7 Replacing the Platen -----	2-11
2.8 Replacing the Roller Belt and Feed Roller-----	2-12
2.9 Replacing the Media Sensor -----	2-14
2.10 Periodic Maintenance Procedure-----	2-15
<b>3. MECHANISM DESCRIPTION-----</b>	<b>3- 1</b>
3.1 Cutter Driver-----	3- 1
3.1.1 Replacing the Cutter Arm and Clutch -----	3- 2
<b>4. TROUBLESHOOTING -----</b>	<b>4- 1</b>

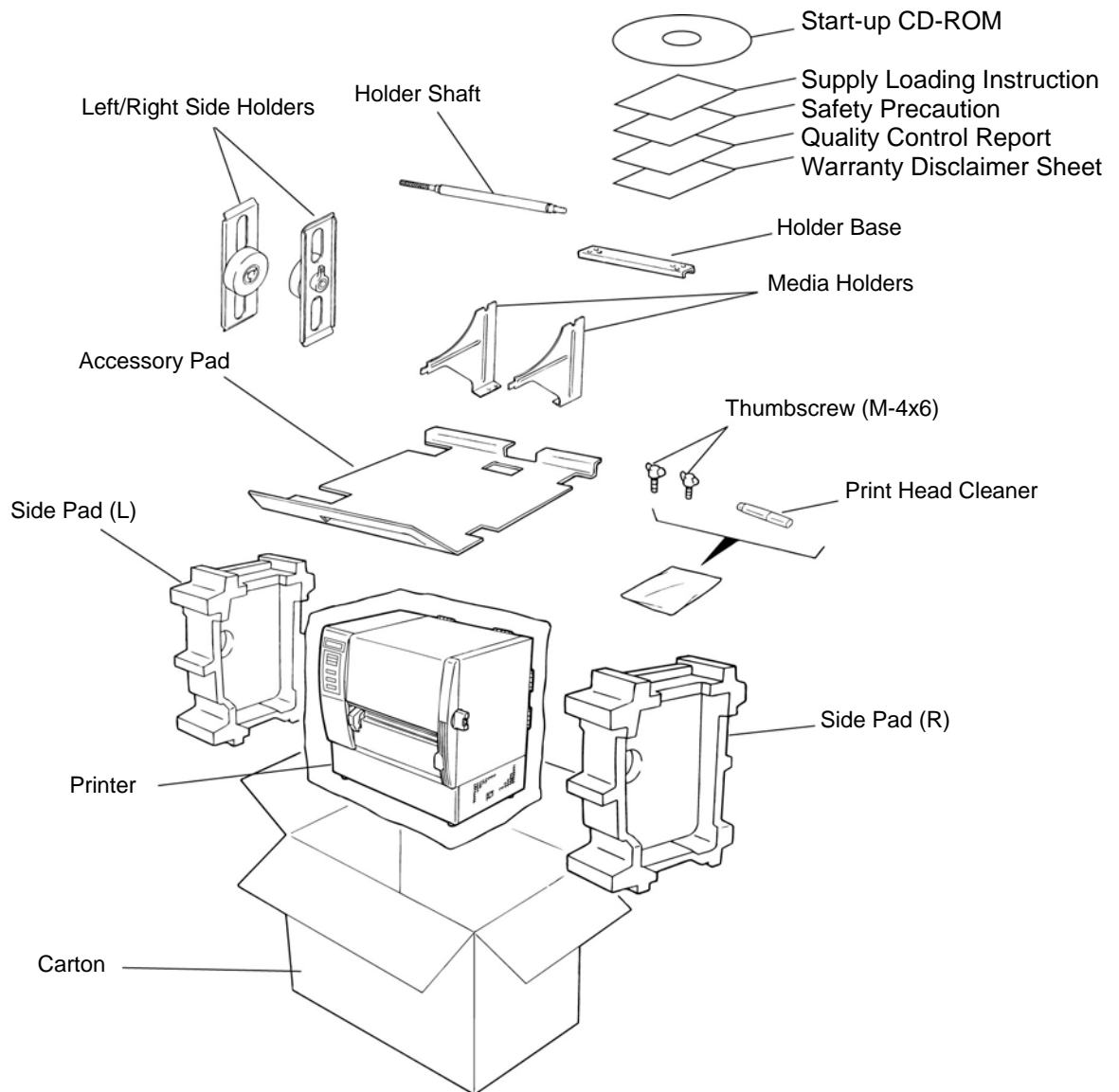
### **CAUTION!**

1. *This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
2. *The contents of this manual may be changed without notification.*
3. *Please refer to your local Authorised Service representative with regard to any queries you may have in this manual.*

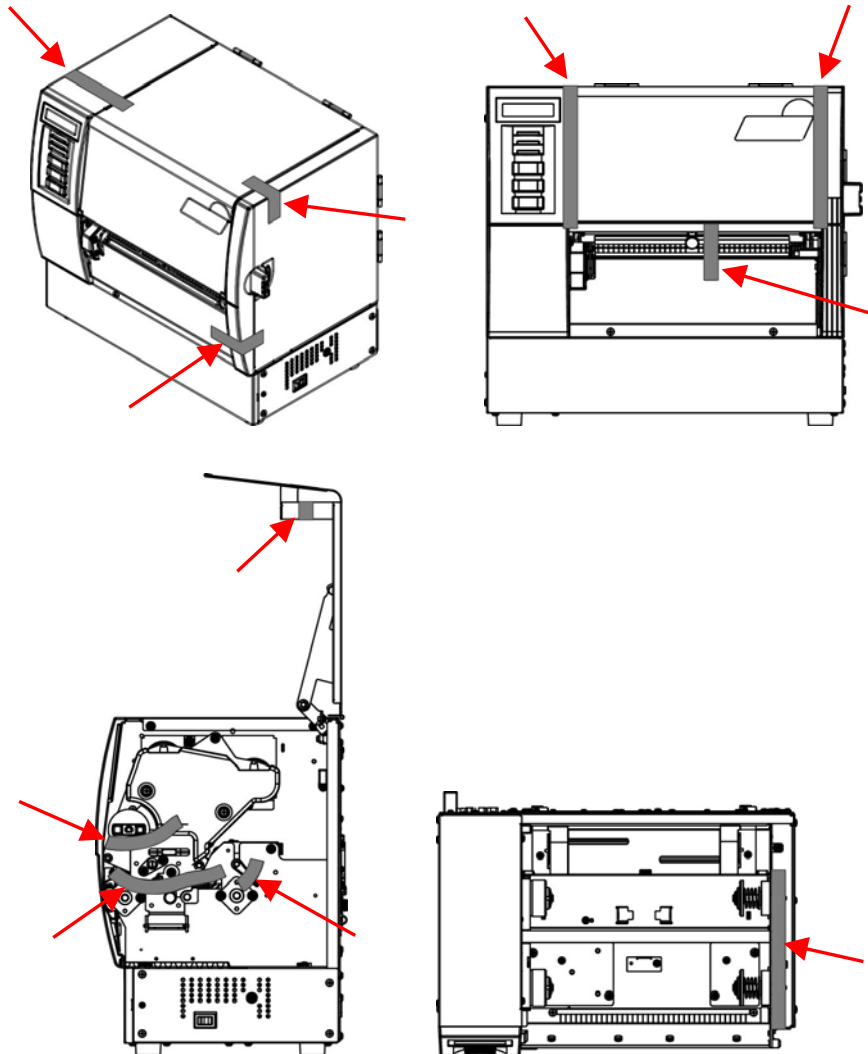
# 1. UNPACKING

## 1.1 Procedure

1. Open the carton.
2. Take out the accessories from the carton.
3. Take out the side pads (L) and (R) and the printer from the carton.
4. Place the printer on a level surface.



5. Remove the tapes from the printer.



## 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.

**NOTE:** Keep the carton and pads for later transport.

## 2. MAIN UNIT REPLACEMENT

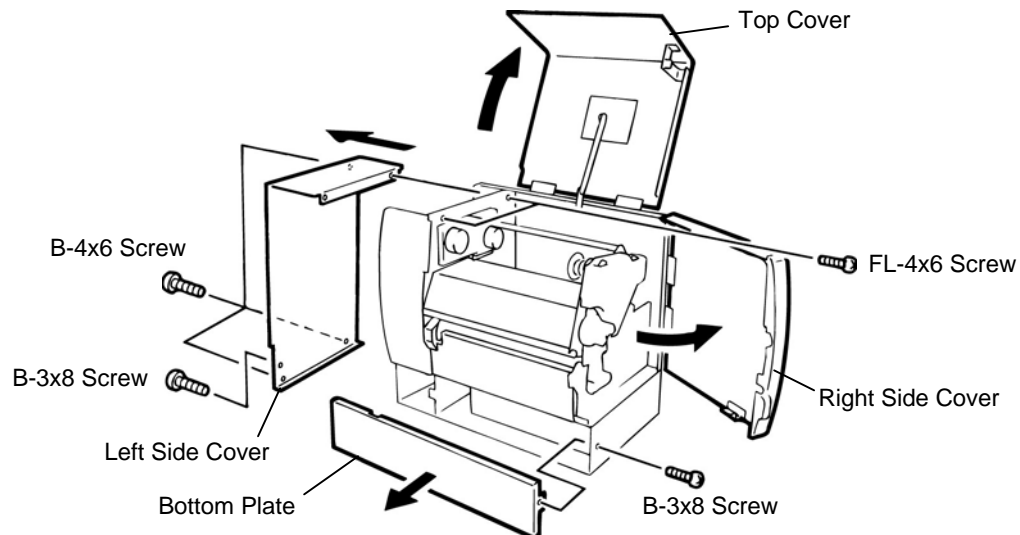
### WARNING!

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

### CAUTION!

1. *DO NOT* separate the ribbon motors from the attachment plate (bracket), as doing so will change their adjustment. (See Section 2.4 REPLACING THE RIBBON MOTORS.)
2. *DO NOT* remove the two screws painted in red on the side of the print block.
3. *DO NOT* remove screws unless directed to do so in this manual. Removing screws may change pre-set adjustments.

1. Turn the power off and disconnect the Power Cord.
2. Open the Right Side Cover and Top Cover.
3. Remove the six screws (FL-4x6, B-4x6, and B-3x8) to detach the Left Side Cover.
4. Remove the B-3x8 screw to remove the Bottom Plate.



**NOTE:** Instructions to open the Top Cover and Right Side Cover and to remove the Left Side Cover are omitted from each removal/installation procedure provided below.

### ■ Lubrication

### CAUTION!

1. *Lubrication:* During parts replacement
2. *Kinds of oil:* FLOIL G-488: 1kg can (Part 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 optimal operating condition, periodically clean the machine and apply the proper kinds of oil to each part in which lubrication is needed.

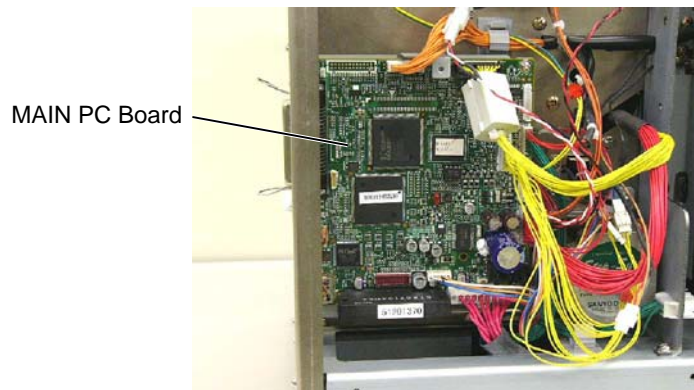
Although the frequency of lubrication varies according to how often the machine is used, as a minimum it is necessary to lubricate before any part becomes dry. It is also necessary to wipe off excessive oil or it will collect dirt.

## 2.1 Replacing the MAIN PC Board

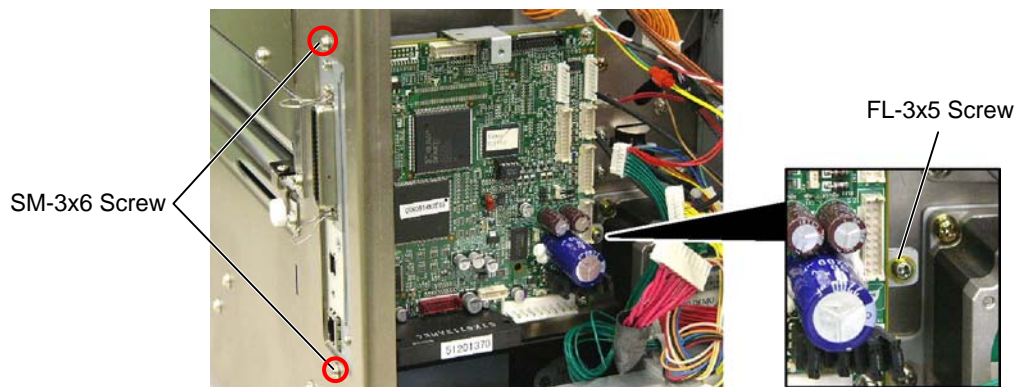
**CAUTION!**

*Replace only with the same type and rated fuse for continued protection against risk of fire.*

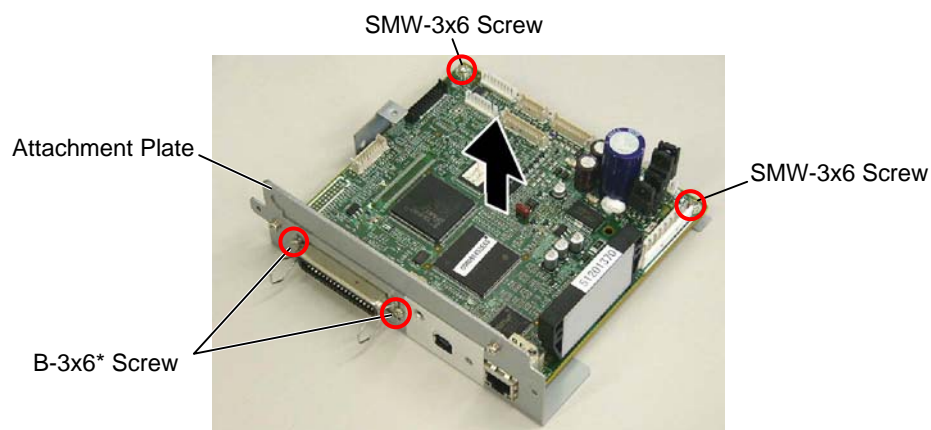
1. Disconnect the all connectors from the MAIN PC Board.



2. Remove the three screws (FL-3x5 and SM-3x6) from the MAIN PC Board.



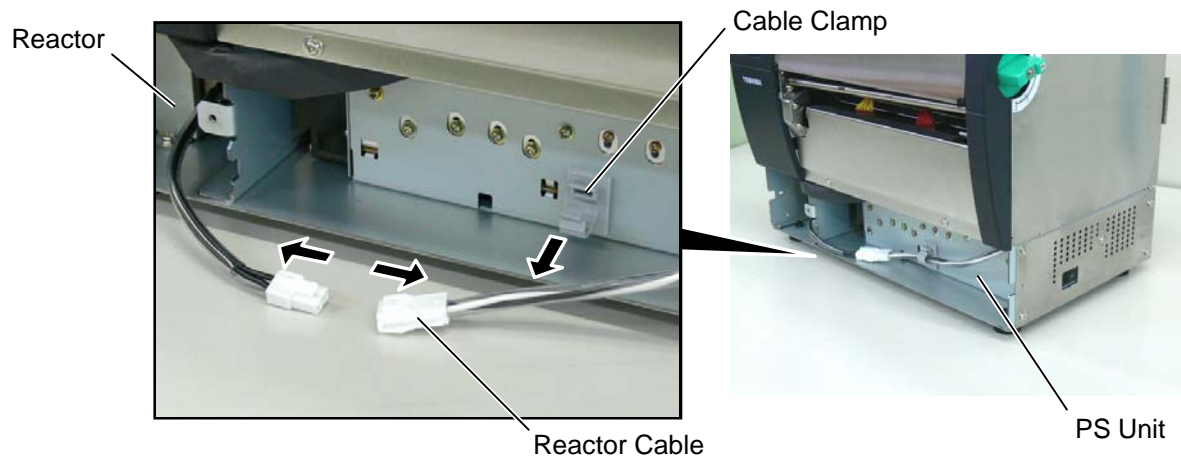
3. Remove the four screws (SMW-3x6 and SMW-3x6\*) to separate the MAIN PC Board from the Attachment Plate.



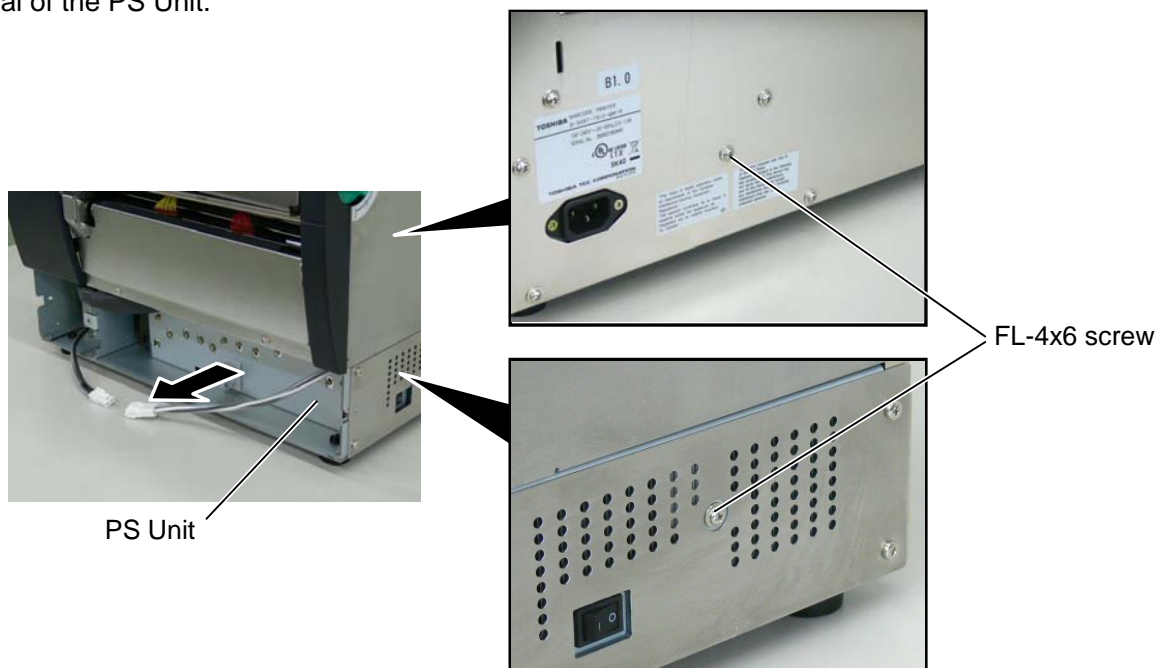
4. Replace the MAIN PC Board with a new one, and reassemble in the reverse order of removal.

## 2.2 Replacing the PS Unit

1. Disconnect the reactor cable from the Reactor and remove it from the cable clamp.



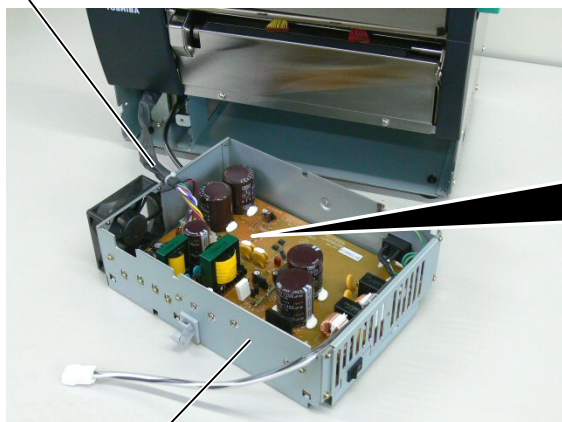
2. Remove the two FL-4x6 screws to detach the PS Unit. Pushing the AC power inlet from behind will ease the removal of the PS Unit.





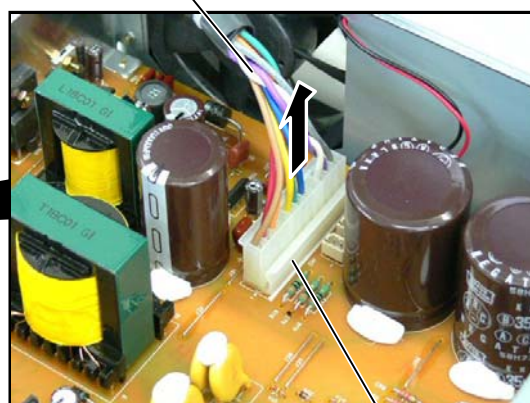
2. Disconnect the PS Cable from CN1 connector of the PS Unit.

PS Cable



PS Unit

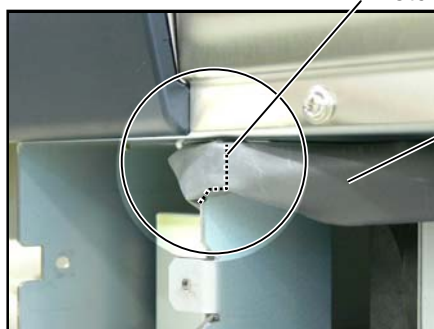
PS Cable



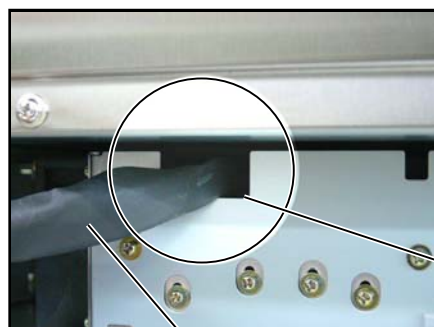
CN1 connector

3. Replace the PS Unit with a new one, and reassemble in the reverse order of removal. When reassembling, place the PS Cable into Notch (A) and Notch (B). Then, pass the Reactor cable through Notch (C).

Notch (A)



PS Cable



PS Cable

Reactor Cable

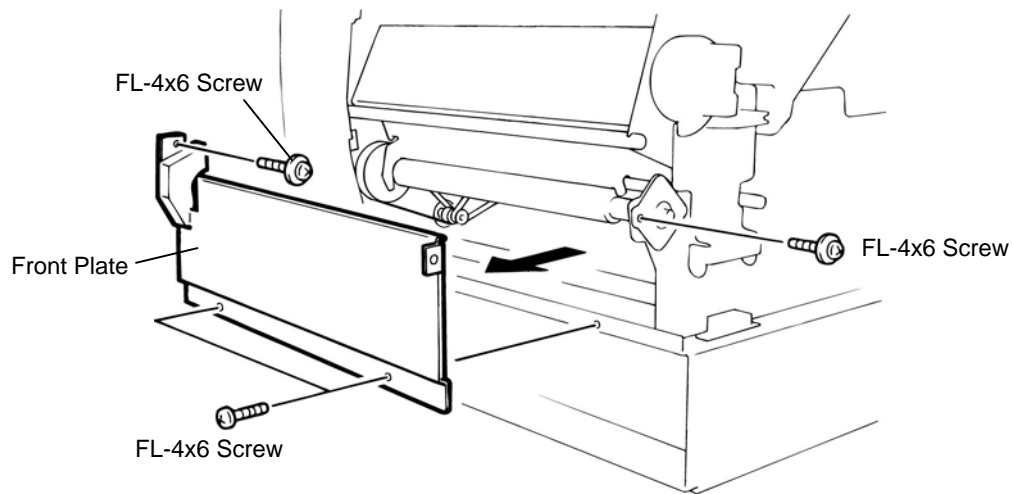


Notch (C)

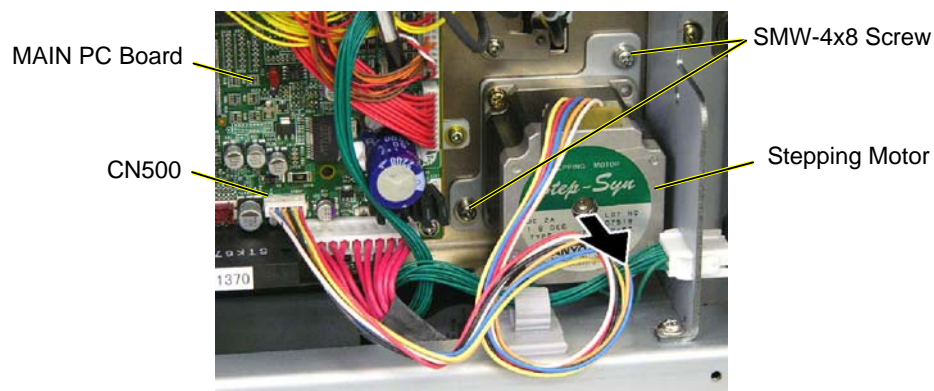


## 2.3 Replacing the Stepping Motor

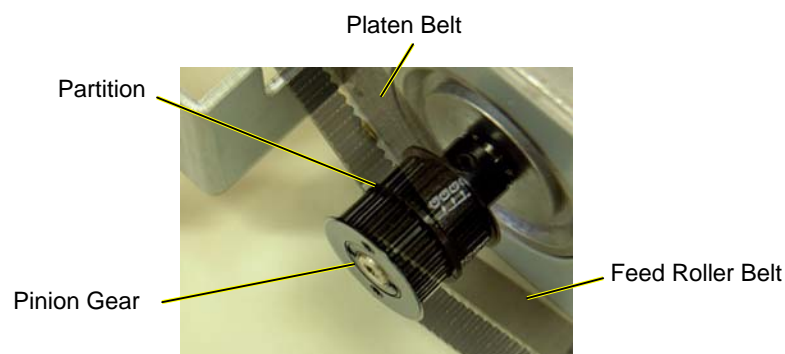
1. Remove the four FL-4x6 screws to detach the Front Plate.



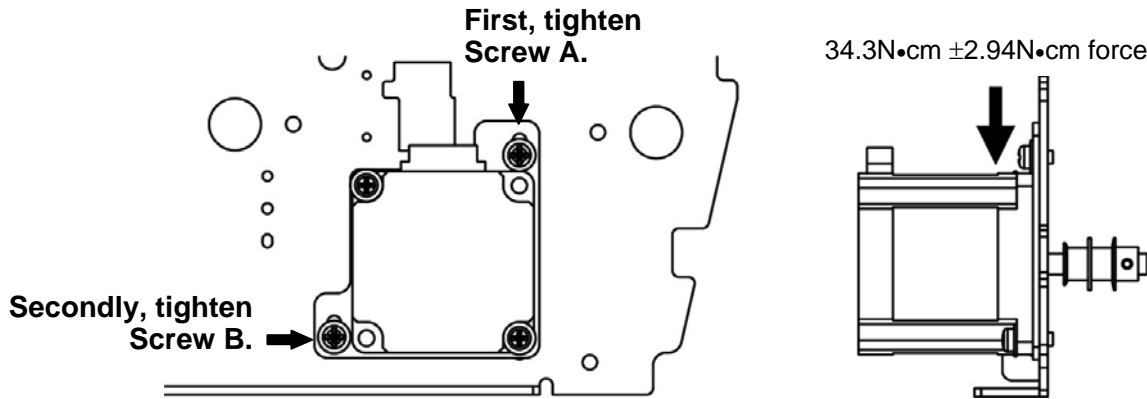
2. Disconnect the cable from CN500 on the MAIN PC Board.
3. Remove the two SM-4x8 screws, take the two belts off the Pinion Gear, and remove the Stepping Motor.



4. Replace the Stepping Motor with a new one.
  - (1) At this time, place the Platen Belt around the Pinion Gear first, then the Feed Roller Belt, so that the partition is positioned between the two belts.



- (2) Temporarily attach the Stepping Motor, by tightening the two screws, in order of A and B.
- (3) Using a tension gauge, press down the Stepping Motor with  $34.3\text{N}\cdot\text{cm} \pm 2.94\text{N}\cdot\text{cm}$  force. While pressing down the Stepping Motor, tighten the screws A and B, in order. Make sure that the Platen Belt and Feed Roller Belt have no slack, are engaged, and evenly tense.



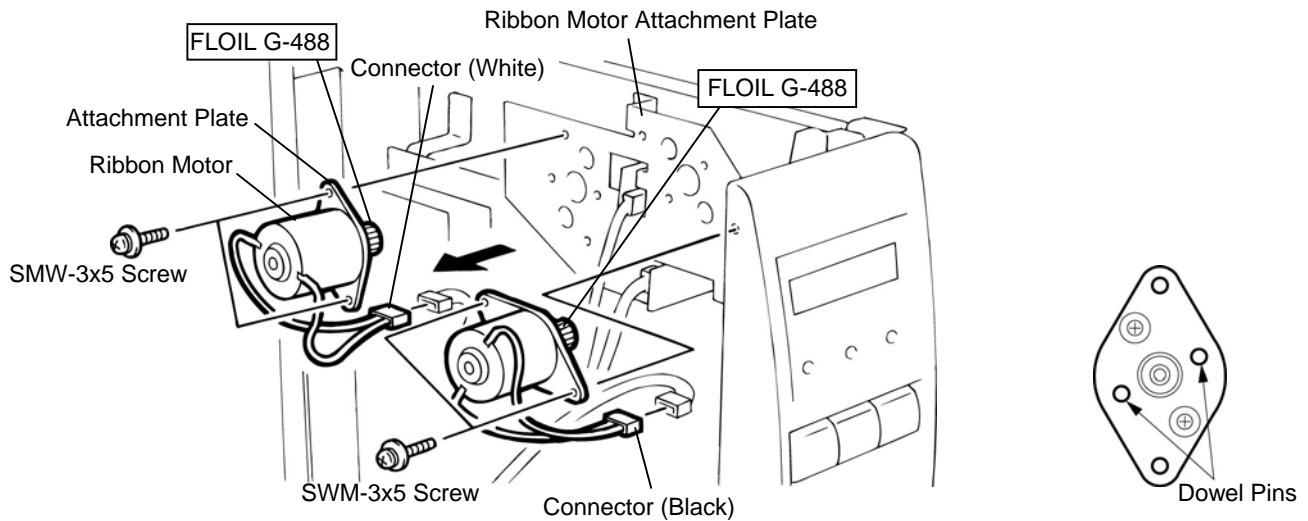
5. Reassemble in the reverse order of removal.

## 2.4 Replacing the Ribbon Motors

**CAUTION!**

*DO NOT separate the Ribbon Motor from the Attachment Plate, as doing so will change their adjustment.*

1. Disconnect the connectors and remove the two SMW-3x5 Screws to detach the Ribbon Motors.



2. Replace the Ribbon Motors with new ones. When installing the Ribbon Motors, align the dowel pins with the dowel holes in the Ribbon Motor Attachment Plate.
3. Reassemble in the reverse order of removal.

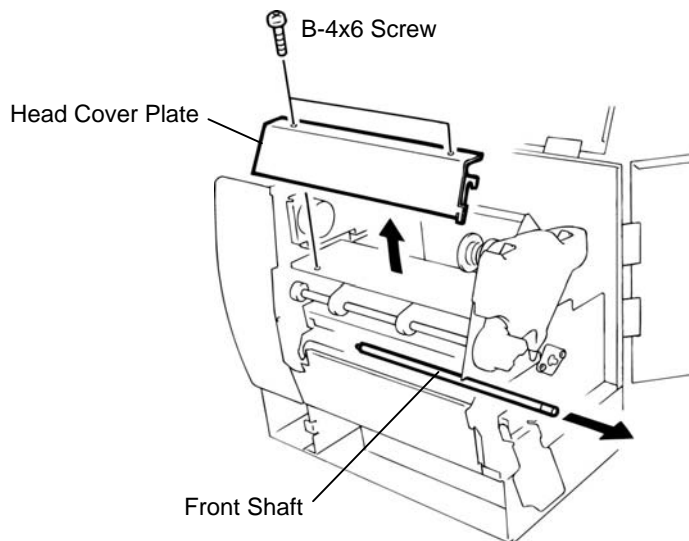
## 2.5 Replacing the Print Head

**CAUTION!**

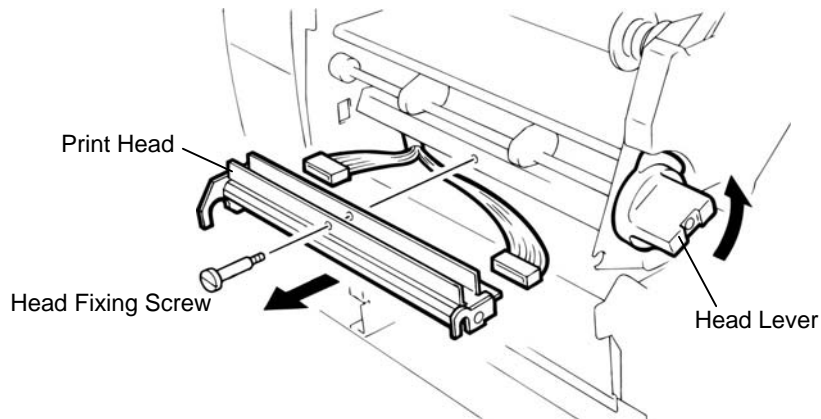
1. DO NOT touch the thermal element when handling the Print Head.
2. DO NOT touch the connector pins to avoid damage to the Print Head by static electricity.
3. DO NOT remove the two screws painted in red on the side of the Print Block.

**NOTE:** The following procedure can be done without removing the Left Side Cover.

1. Remove the two B-4x6 screws to detach the Head Cover Plate.
2. Pull the Front Shaft to the right side to remove it.



3. Turn the Head Lever counterclockwise to raise the Print Head.
4. Remove the Head Fixing Screw and pull out the Print Head.
5. Disconnect the two cables and remove the Print Head.



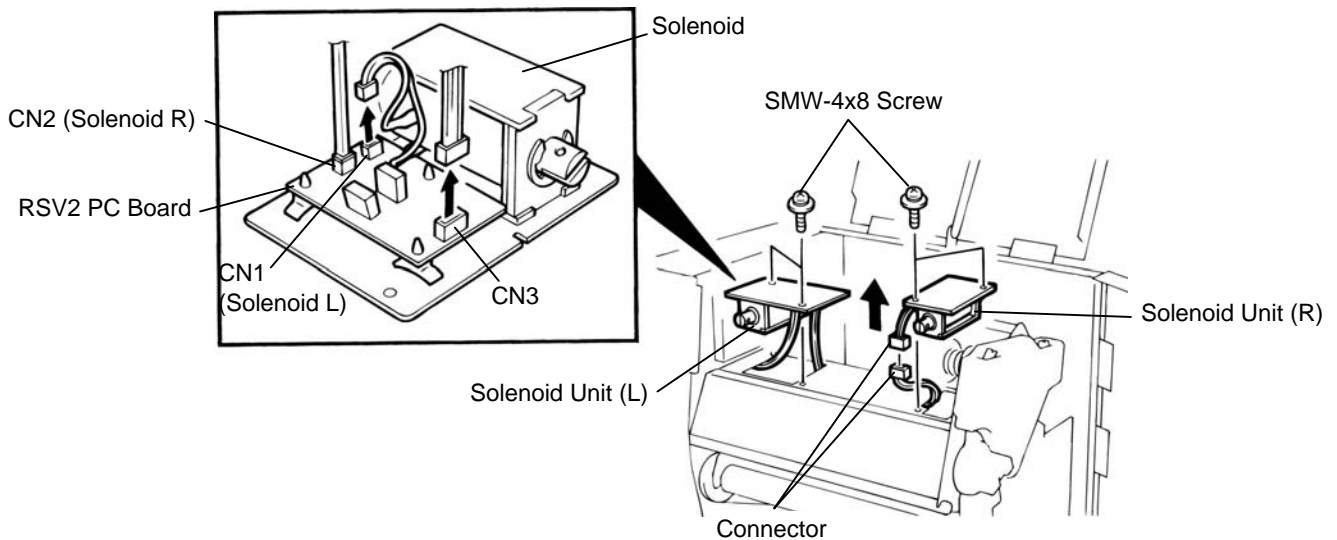
**NOTE:** DO NOT separate the Print Head from the bracket.

6. Replace the Print Head with a new one, and reassemble in the reverse order of removal.
7. Refer to the System Mode Manual to clear the Maintenance Counter and perform a test print.

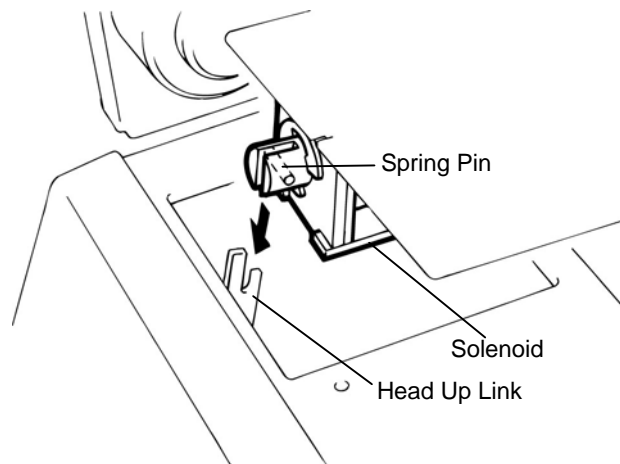
## 2.6 Replacing the Solenoid (Standard on the B-SX8T, Option for the B-SX6T)

**NOTE:** The following procedure can be done without removing the Left Side Cover.

1. Remove the two SMW-4x8 screws, detach the connectors, and remove the Solenoid Unit (R).
2. Remove the two SMW-4x8 screws, disconnect the cables from CN1, CN2, and CN3 on the RSV2 PC Board and detach the Solenoid Unit (L).



3. Remove the two SMW-4x8 screws from each of the Solenoid Units (L) and (R) to detach the Solenoid.
4. Replace the Solenoid and attach it to the Solenoid Attachment Plate. Be careful of the differences in length of the Solenoid Cables when installing the Solenoid.
5. Assemble the Solenoid Unit so that the Head Up Link engages the spring pin.

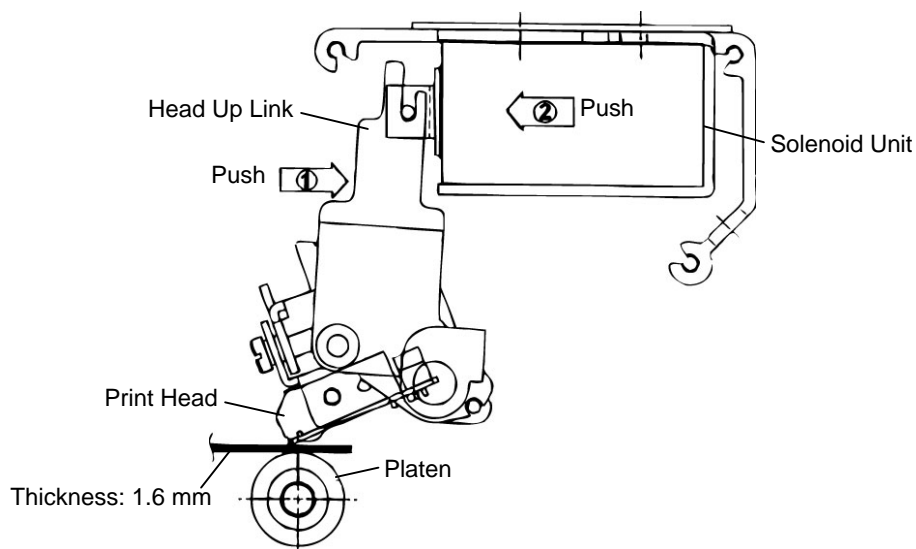


**NOTE:** Be sure to remove any dust that appears during removal or installation because it may affect the print quality.

**CAUTION!**

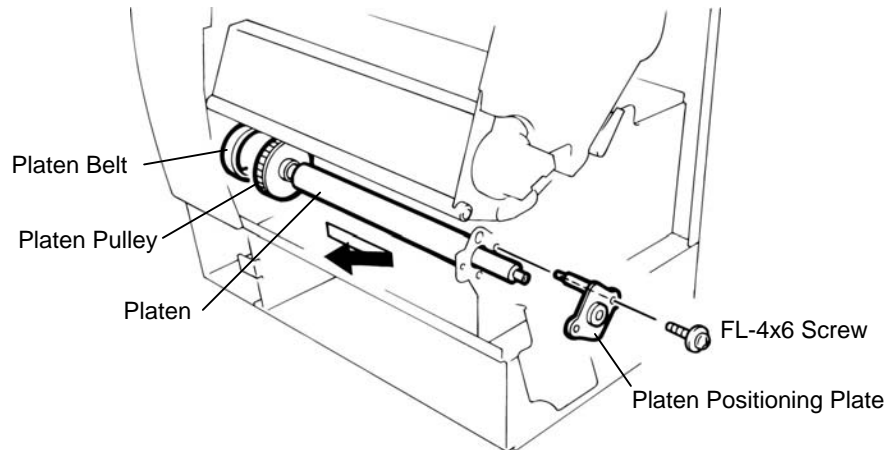
*Orient the screws so that they are vertically aligned with the Solenoid Attachment Plate.*

6. Remove the Head Cover Plate. (Refer to Section 2.5.)
7. Insert piled 10 pieces of tag paper of 8 inches or 6 inches (203.2 mm or 170.6 mm) in width, 0.16 mm in thickness (I-BEST-S is recommended.) between the Print Head and the Platen. Then, turn the Head Lever to the LOCK position.
8. Push and hold the Head Up Link against the Solenoid (①), and then press and fit the Solenoid Unit snugly to the Head Up Link (②). Secure the Solenoid Unit with the screws.
9. Reassemble in the reverse order of removal.



## 2.7 Replacing the Platen

1. Remove the Front Plate. (See Section 2.3.)
2. Loosen the two SMW-4x10 screws securing the Stepping Motor.
3. Remove the FL-4x6 screw to detach the Platen Positioning Plate.
4. Take the Platen Belt off the Platen Pulley, move the Platen fully to the right, and remove it from the left end.

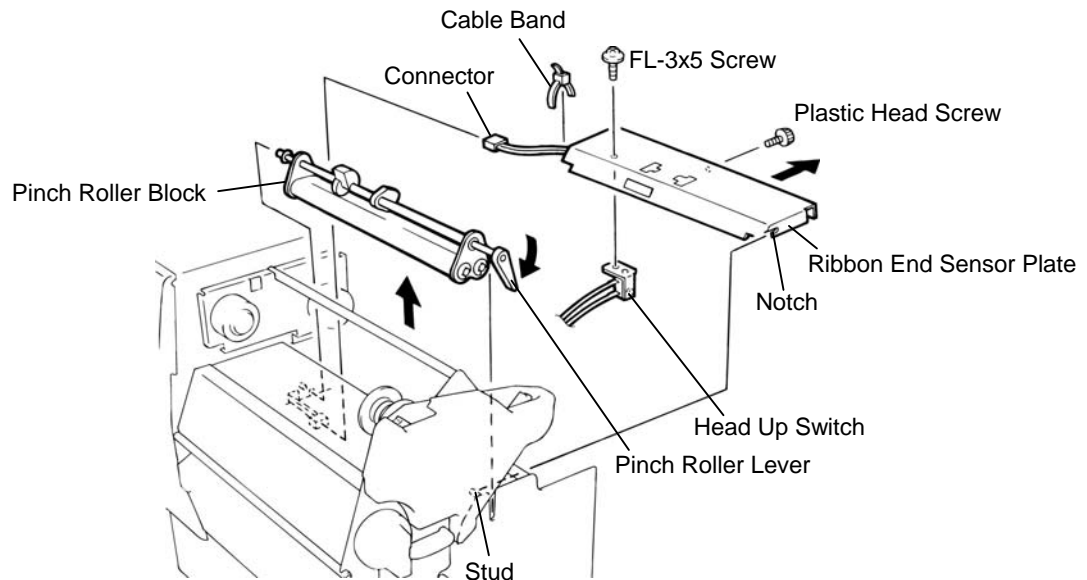


5. Replace the platen with a new one, and then install the Platen and place the Platen Belt around the Platen Pulley.
6. Install the Platen Positioning Plate.
7. Press down on the Stepping Motor with  $34.3\text{N}\cdot\text{cm} \pm 2.94\text{N}\cdot\text{cm}$  force and secure it so the Platen Belt and the Feed Roller Belt have no slack, are engaged and evenly tense. (For details, refer to **Section 2.3.**)
8. Reattach the remaining parts in the reverse order of removal.



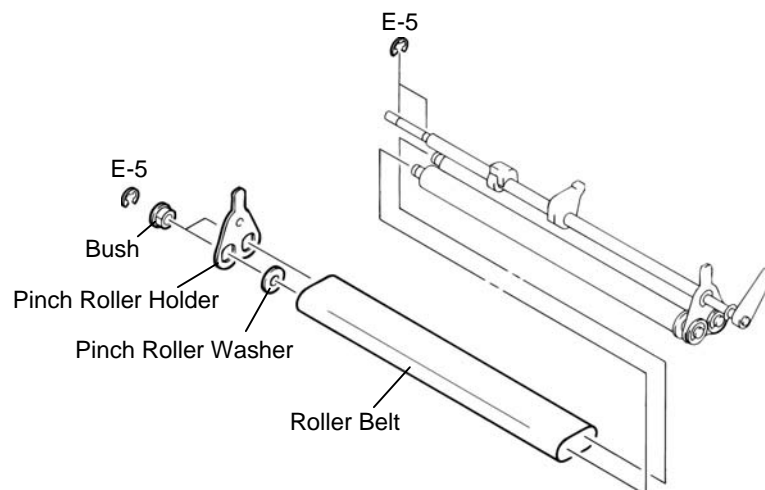
## 2.8 Replacing the Roller Belt and Feed Roller

1. Lower the Pinch Roller Lever.
2. Remove the Plastic Head Screw to detach the Ribbon End Sensor Plate.
3. Remove the FL-3x5 screw, cut the Cable Band, and remove the Head-up Switch.
4. Detach the connector of the Ribbon End Sensor.
5. Remove the Pinch Roller Block.

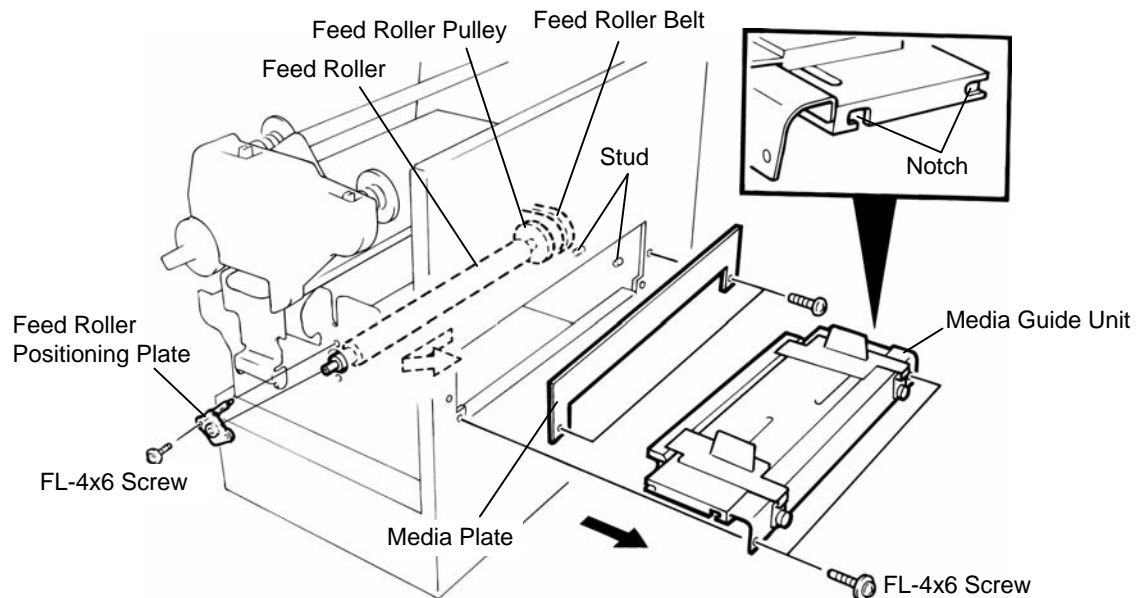


**NOTE:** Fit both sides of the studs into the notches when installing the Ribbon End Sensor Plate.

6. Remove the four E-5 retaining rings, Pinch Roller Holder, Bush, Pinch Roller Washer, and then Roller Belt.



7. Remove the two FL-4x6 screws and detach the Media Plate.
8. Remove the two FL-4x6 screws and detach the Media Guide Unit.
9. Loosen the two SMW-4x10 screws securing the Stepping Motor.
10. Remove the two screws to detach the Feed Roller Positioning Plate.
11. Take the feed Roller Belt off the Feed Roller, move the Feed Roller fully to the left and remove the Feed Roller from the right end.



**NOTE:** Fit both sides of the studs into the notches when installing the Media Guide Unit.

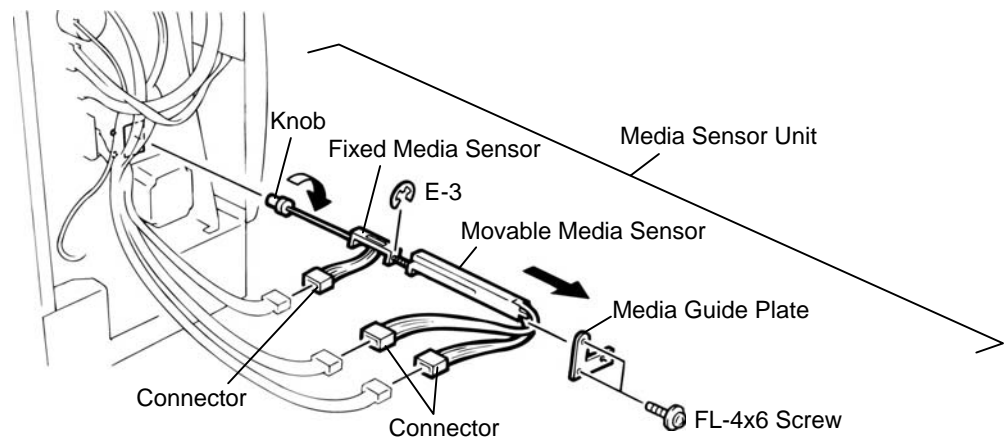
12. After replacing the Feed Roller with a new one, install it and place the Feed Roller Belt around the Feed Roller Pulley.
13. Install the Feed Roller Positioning Plate.
14. Press down on the Stepping Motor with  $34.3\text{N}\cdot\text{cm} \pm 2.94\text{N}\cdot\text{cm}$  force and secure it so the Platen Belt and the Feed Roller Belt have no slack, are engaged and evenly tense. (For details, refer to **Section 2.3.**)
15. Reattach the remaining parts in the reverse order of removal.

## 2.9 Replacing the Media Sensor

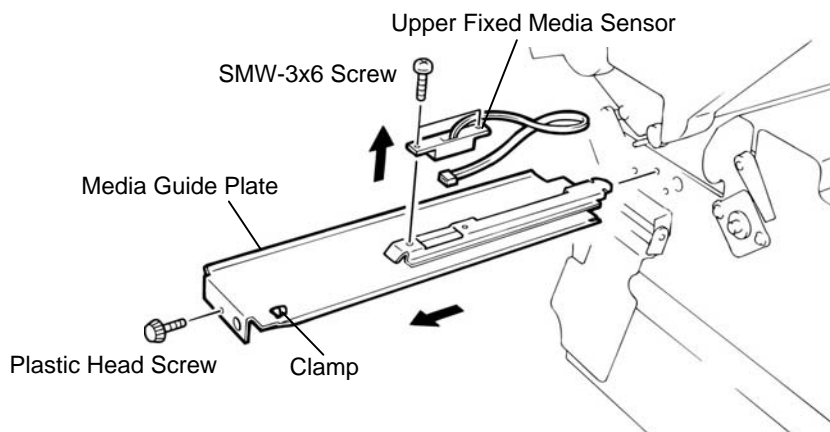
### CAUTION!

1. When using the Fixed Sensor, line up the Feed Gap Sensors between the Upper and Lower sensors.
2. When shipped from the factory, the Black Mark Sensor is positioned at the center of the effective print area and the Feed Gap Sensor is located 10 mm left of the center, as viewed from the front.

1. Disconnect the four connectors from the fixed and movable media sensors.
2. Remove the two FL-4x6 screws and the Sensor Holder to detach the Media Sensor Unit.
3. Turn the knob of the Sensor Shaft clockwise and remove the Movable Media Sensor.
4. Remove the E-3 retaining ring from the Sensor Shaft and detach the Lower Fixed Media Sensor.



5. Remove the Plastic Head Screw to detach the Media Guide Plate.
6. Remove the two SMW-3x6 screws, then release the Upper Fixed Media Sensor from the Clamp, and remove it.



7. Replace the Fixed and Movable Media Sensors, and reassemble in the reverse order of removal.

### NOTE:

After replacing the Media Sensor, a sensor adjustment is required. Refer to the **System Mode Manual, Section 2.5 Sensor Adjustment**.

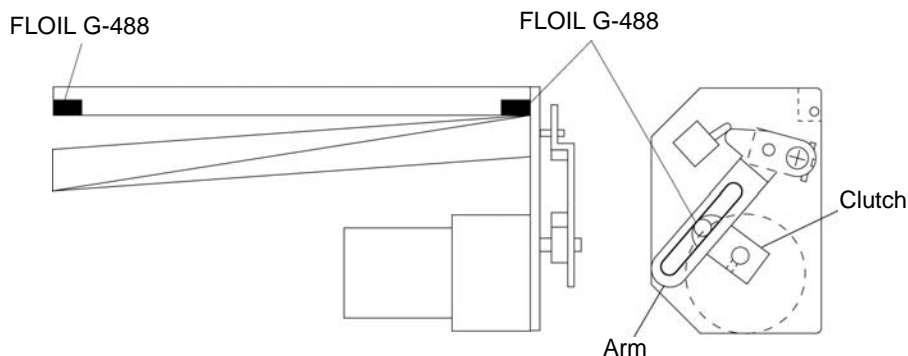
## 2.10 Periodic Maintenance Procedure

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, 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.

**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. Unplug the Power Cord, and then open the Printer Cover.
4. Clean the inside of the printer.
  - 1) The entire inside of the printer should be cleaned.
  - 2) Wipe the Platen and the Feed Roller with a cloth moistened with alcohol.
  - 3) Clean the Print Head Elements with a Print Head Cleaner.  
(Please instruct your customers to clean them daily.)
  - 4) Clean the Sensors.
  - 5) Remove paper debris or label glue from the media path.
5. Apply FLOIL G-488 to the specified parts.
  - 1) Apply grease to the Cutter Unit using a soft cloth.



6. Confirm that the problem occurs as reported, and then take corrective action.
7. Replace the following parts periodically, if necessary. The following table shows approximate product life for each part.

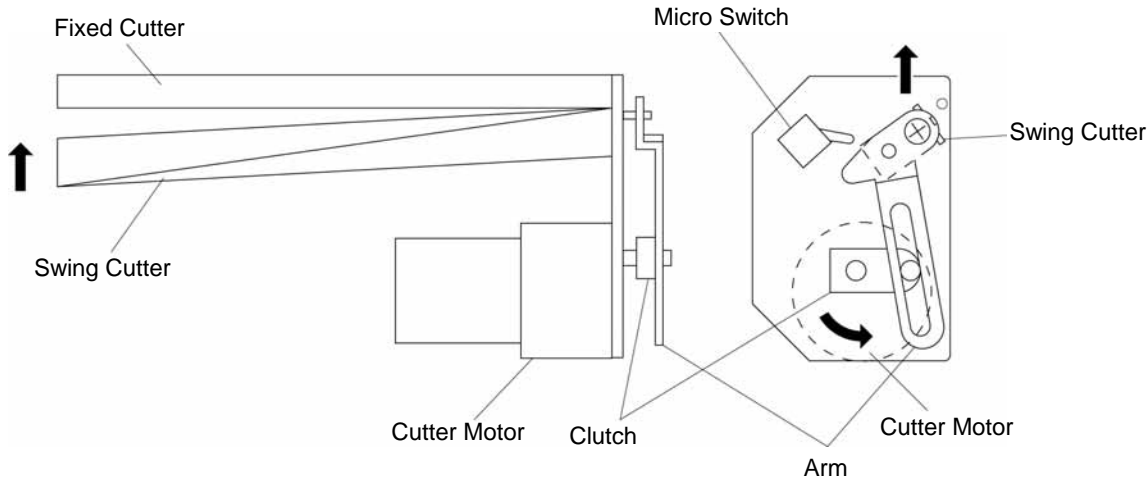
No.	Part Name	Part No.	Standard interval of replacement
1	Ribbon Motor	7FM01600000	730 km
2	Ribbon Saving Module	-----	1,000,000 times
3	Platen	7FM01589000	50 km

8. Confirm each part adjustment. Make any necessary adjustments.
9. Conduct the following tests and make sure that there is no problem.
  - 1) Print test with TOSHIBA TEC specified media and ribbon (Print tone, print head position, etc.)
  - 2) Paper skew
  - 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.
10. Mount the Top Cover.
11. Clean the outside of the printer.
12. Fill out a report form. Hand it to the manager and obtain a signature.

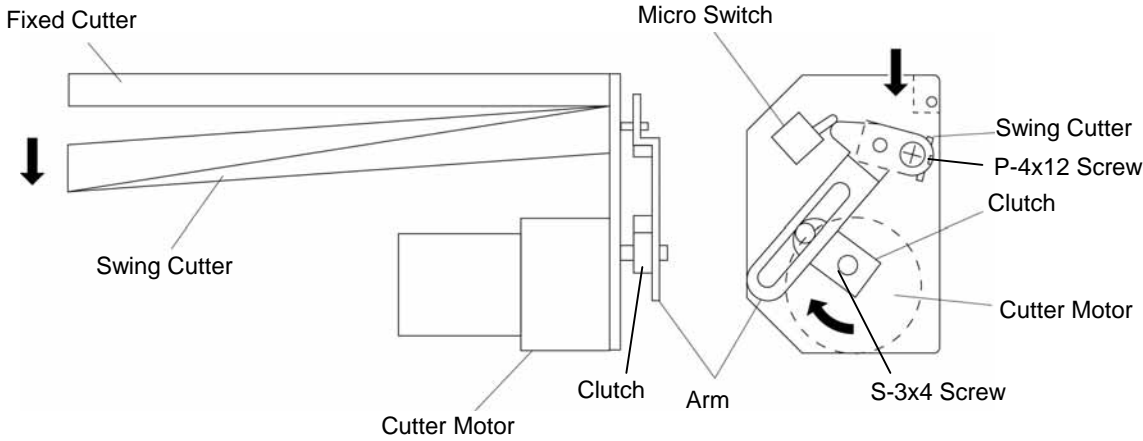
# 3. MECHANISM DESCRIPTION

## 3.1 Cutter Drive

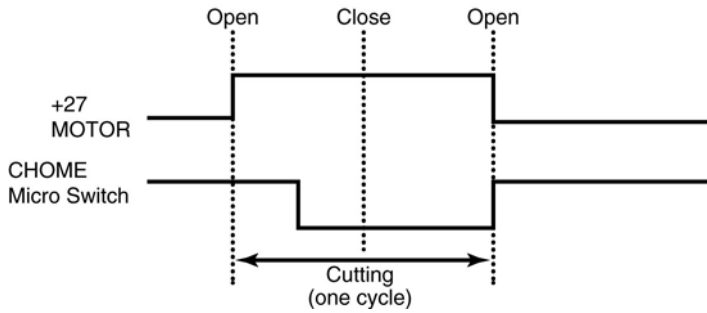
The printer supplies DC +27V to the Cutter Motor to rotate it and the clutch counter clockwise. The arm swings like a pendulum and moves the swing cutter up and down to make a cut.



After making a cut, the arm turns the Micro Switch off and the cutter home position is detected. When the cutter does not return to the home position because of a paper jam, an error occurs and the next piece of paper will not be cut.



Timing Chart



### 3.1.1 Replacing the Cutter Arm and Clutch

If a moving portion of the arm or the clutch is distorted by wear, purchase the Arm and Clutch Kit from TEC Parts Dept. and replace them. Doing so will prolong the cutter life.

**NOTES:**

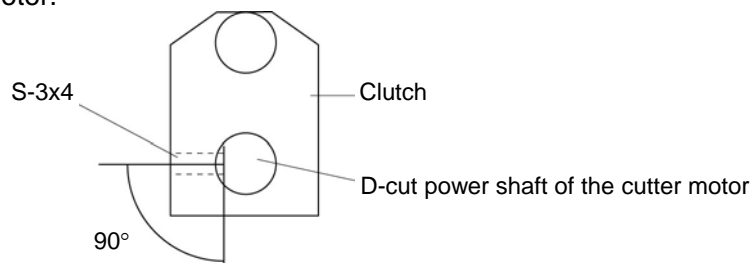
1. Apply grease when replacing the parts.
2. Cutter unit components except above are unavailable.
3. Please purchase 10 sets or more at one order.

#### Replacing procedure

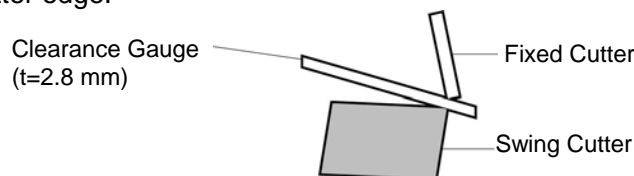
1. Remove the P-4x12 screw to detach the arm.
2. Remove the S-3x4 screw to detach the clutch.

**NOTE:** When removing the S-3x4 screw, use a straight hex. wrench.

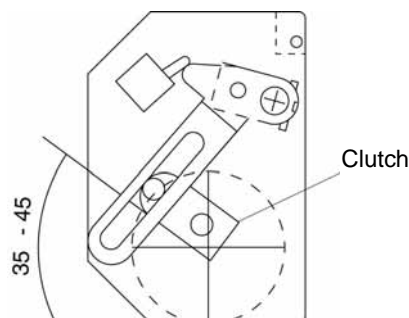
3. Secure the new clutch with the S-3x4 screw so that the screw is perpendicular to the section of the D-cut power shaft of the cutter motor.



4. Turn the power on and move the clutch to the home position.
5. Insert a 2.8-mm thick clearance gauge between the fixed and swing cutters (right end) and secure the new arm with the P-4x12 screw. A clearance gauge must be made of plastic or something which will not damage the cutter edge.



6. Activate the cutter and check that the clutch is in the home position, as shown in the following figure. If it is not, do over from step 3.





## 4. 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).	1. Replace the power cable or power inlet.
	2. Output voltage from the printer is not within the rated voltage. (Check that the voltage between Pin 4 and Pin 6 (GND) Or CN1 on the PS unit is 27V. And check that the voltage between Pin 11 and Pin 6 (GND) is 5V).	2. Replace the PS unit
	3. No voltage to the MAIN PC board. (Check that the voltage between Pin 1 and Pin 5 (GND) of CN2 on the MAIN PC Board is 27V. And check that the voltage between Pin 11 and Pin 10 (GND) is 5V.)	3. Replace the power harness.
	4. Failure of MAIN PC Board.	4. Replace the CPU PC board.
LED or LCD does not light.	1. Failure of the LED board/LCD	1. Replace the LED board/LCD.
	2. Failure of the LCD/LED harness	2. Replace the LCD/LED harness.
	3. Failure of the MAIN PC board.	3. Replace the MAIN PC board.
Poor print quality	1. The print paper is of poor quality.	1. Use the media approved by TOSHIBA TEC.
	2. Dirty print head.	2. Clean the print head.
	3. The head lever fastens the print head incompletely.	3. Fasten the head lever complete.
Printer does not print.	1. Print head failure	1. Replace the print head.
	2. Connection of the print head connector is completed, a bad contact, or broken dots.	2. Connect the harness completely, or replace the harness.
	3. Failure in taking-up or supplying the ribbon.	3. Replace the ribbon take-up motor, ribbon feed motor, or MAIN PC Board.
	4. Failure of the MAIN PC board	4. Replace the MAIN PC board.
	5. Failure of the software	5. Check the program
	6. Failure of the printer cable.	6. Replace the printer cable.
Dot missing	1. Broken print head element	1. Replace the print head.
	2. Broken print head cable wires	2. Replace the print head harness.
	3. Failure of the MAIN PC board.	3. Replace the MAIN PC board.
Blurred print	1. Poor media quality	1. Use only TOSHIBA TEC specified media
	2. Dust is on the media.	2. Clean the print head and remove any dust from the media.
Ribbon wrinkle	1. Poor ribbon quality	1. Use only TOSHIBA TEC specified ribbon
	2. Ribbon is not taken up or supplied smoothly.	2. Replace the ribbon take-up motor or ribbon feed motor.

Problems	Cause	Solution
Ribbon end error	1. Poor ribbon quality	1. Use only TOSHIBA TEC specified ribbon.
	2. Failure of the ribbon end sensor	2. Replace the ribbon end sensor.
	3. Failure of the circuit which controls the ribbon end sensor.	3. Replace the MAIN PC board.
Label feed failure	1. Paper is not set properly.	1. Set the paper properly.
	2. Paper of poor quality	2. Use paper approved by TOSHIBA TEC.
	3. Improper adjustment of the feed gap sensor or black mark sensor.	3. Re-adjust the sensor.
	4. Threshold is improper.	4. Set the threshold. (Refer to
	5. Failure of the feed gap sensor or black mark sensor.	5. Replace the feed gap sensor or black mark sensor.
	6. Labels cannot be stripped off the backing paper or the backing paper with labels cannot be take-	6. Replace the strip feed motor or MAIN PC board.
	7. The cutter mechanism is not installed properly.	7. Install the cutter mechanism properly.
	8. Failure of the stepping motor.	8. Replace the stepping motor or MAIN PC board.
Communication error	1. Failure of the communication cable	1. Replace the cable.
	2. Failure of the RS=232C connector.	2. Replace the connector.
	3. Failure of the communication connector.	3. Replace the connector.
	4. Failure of the PC or application software	4. Modify the program.
	5. Failure of the MAIN PC board	5. Replace the MAIN PC board.