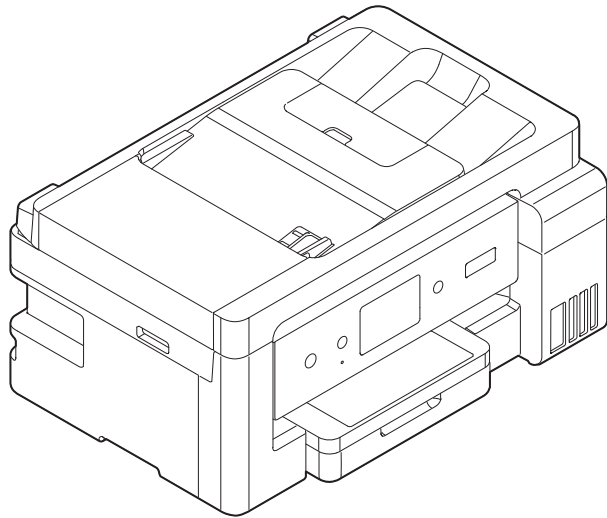


# Service Manual



*Color Inkjet Printer*

**EPSON**  
**ET-1500/L14150 Series**

**EPSON**  
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SEMF19-009

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# Safety Precautions

All safety procedures described here shall be strictly adhered to by all parties servicing and maintaining this product.

## **DANGER**

Strictly observe the following cautions. Failure to comply could result in serious bodily injury or loss of life.

1. Always disconnect the product from the power source and peripheral devices when servicing the product or performing maintenance.
2. When performing works described in this manual, do not connect to a power source until instructed to do so. Connecting to a power source causes high voltage in the power supply unit and some electronic components even if the product power switch is off. If you need to perform the work with the power cable connected to a power source, use extreme caution to avoid electrical shock.

## **WARNING**

Strictly observe the following cautions. Failure to comply may lead to personal injury or loss of life.

1. When using compressed air products; such as air duster, for cleaning during repair and maintenance, the use of such products containing flammable gas is prohibited.

## **PRECAUTIONS**

Strictly observe the following cautions. Failure to comply may lead to personal injury or damage of the product.

1. Repairs on Epson product should be performed only by an Epson certified repair technician.
2. No work should be performed on this product by persons unfamiliar with basic safety knowledge required for electrician.
3. The power rating of this product is indicated on the serial number/rating plate. Never connect this product to the power source whose voltages is different from the rated voltage.
4. Replace malfunctioning components only with those components provided or approved by Epson; introduction of second-source ICs or other non-approved components may damage the product and void any applicable Epson warranty.
5. The capacitors on the Main Board may be electrically charged right after the power turns off or after driving motors which generates counter electromotive force such as when rotating the PF Roller or when moving the CR Unit. There is a risk to damage the Main Board if the FFC is short-circuited with the capacitors on the Main Board electrically charged, therefore, after the power turns off or after motors are driven, leave the printer untouched for approximately 30 seconds to discharge the capacitors before starting disassembly/ reassembly.

6. To prevent the circuit boards from short-circuiting, be careful about the following when handling FFC or cables.
  - When handling FFC, take care not to let the terminal section of FFC touch metal parts.
  - When connecting cables/FFC to the connectors on circuit boards, connect them straight to the connectors to avoid slant insertion.
7. In order to protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.
8. Do not tilt this product immediately after initial ink charge, especially after performing the ink charge several times. Doing so may cause ink to leak from the product because it may take some time for the waste ink pads to completely absorb ink wasted due to the ink charge.
9. Never touch the ink or wasted ink with bare hands. If ink comes into contact with your skin, wash it off with soap and water immediately. If you have a skin irritation, consult a doctor immediately.
10. When disassembling or assembling this product, make sure to wear gloves to avoid injuries from metal parts with sharp edges.
11. Use only recommended tools for disassembling, assembling or adjusting the printer.
12. Observe the specified torque when tightening screws.
13. Be extremely careful not to scratch or contaminate the following parts.
  - Nozzle plate of the printhead
  - CR Scale
  - PF Scale
  - Coated surface of the PF Roller
  - Gears
  - Rollers
  - LCD
  - Scanner Sensor
  - Exterior parts
14. Never use oil or grease other than those specified in this manual. Use of different types of oil or grease may damage the component or give bad influence on the printer function.
15. Apply the specified amount of grease described in this manual.
16. Make the specified adjustments when you disassemble the printer.
17. When cleaning this product, follow the procedure described in this manual.
18. When transporting this product after filling the ink in the printhead, pack the printer without removing the adapters in order to prevent the printhead from drying out.
19. Make sure to install antivirus software in the computers used for the service support activities.
20. Keep the virus pattern file of antivirus software up-to-date.
21. When disassembling/reassembling this product, if you find adhesive power of the double-sided tape which secure the parts or FFC is not enough, replace the tape with new one and attach it correctly to the specified points where the parts or FFC should be secured.
22. Unless otherwise specified in this manual, the labels attached on the returned product should be transferred to the corresponding attachment positions on the new one referring to the labels on the returned product.

# About This Manual

This manual, consists of the following chapters, is intended for repair service personnel and includes information necessary for properly performing maintenance and servicing the product.

## **CHAPTER 1. OPERATING PRINCIPLES**

Describes the electrical and mechanical basic operating principles of the product.

## **CHAPTER 2. TROUBLESHOOTING**

Describes the step-by-step procedures for the troubleshooting.

## **CHAPTER 3. DISASSEMBLY/ASSEMBLY**

Describes the disassembly/reassembly procedures for main parts/units of the product, and provides the standard operation time for servicing the product.

## **CHAPTER 4. ADJUSTMENT**

Describes the required adjustments for servicing the product.

## **CHAPTER 5. MAINTENANCE**

Describes maintenance items and procedures for servicing the product.

## **CHAPTER 6. APPENDIX**

Provides the following additional information for reference:

- Connector Diagram
- Protection for Transportation

## ***Symbols Used in this Manual***

Various symbols are used throughout this manual either to provide additional information on a specific topic or to warn of possible danger present during a procedure or an action. Pay attention to all symbols when they are used, and always read explanation thoroughly and follow the instructions.



Indicates an operating or maintenance procedure, practice or condition that, if not strictly observed, could result in injury or loss of life.



Indicates an operating or maintenance procedure, practice, or condition that, if not strictly observed, could result in damage to, or destruction of, equipment.



May indicate an operating or maintenance procedure, practice or condition that is necessary to accomplish a task efficiently. It may also provide additional information that is related to a specific subject, or comment on the results achieved through a previous action.

For Chapter 3 “Disassembly/Reassembly”, symbols other than indicated above are used to show additional information for disassembly/reassembly. For the details on those symbols, see ["3.3 Disassembly/Reassembly Procedures \(p79\)"](#).

# Revision Status

| Revision | Date of Issue     | Description   |
|----------|-------------------|---------------|
| A        | December, 25 2019 | First release |

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CHAPTER

1

# OPERATING PRINCIPLES

# 1.1 Printer Mechanism Overview

This chapter describes overview of each mechanism inside the printer.



This chapter may describe each mechanism using drawings of the ET-4750/ET-4760/L6190/ST-4000 series in which some portions have the same structure as ET-15000/L14150 Series.

## 1.1.1 Printhead

This product employs the  $\mu$ TFP1S printhead.

Table 1-1. Nozzle Configuration

|                   |   |
|-------------------|---|
| Color             | Four colors: black (Bk), cyan (C), magenta (M), yellow (Y)                  |
| Number of nozzles | 784 nozzles:<br>400 nozzles for Bk, and 128 nozzles for each of Y, M, and C |
| Nozzle pitch      | 300 dpi   |

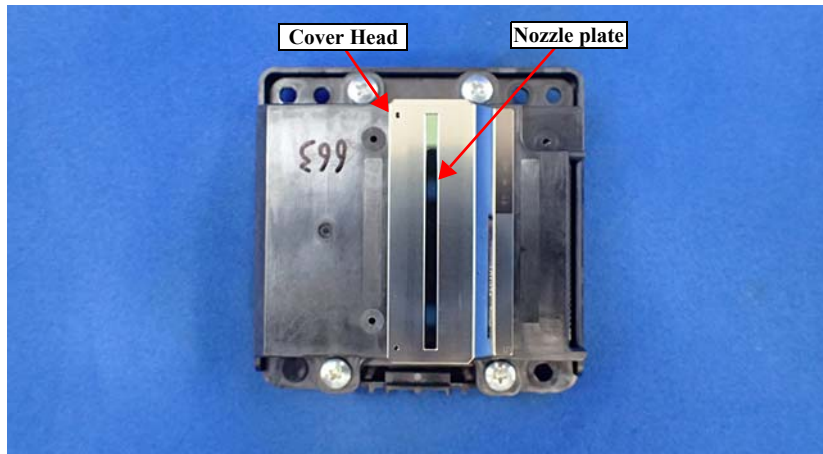
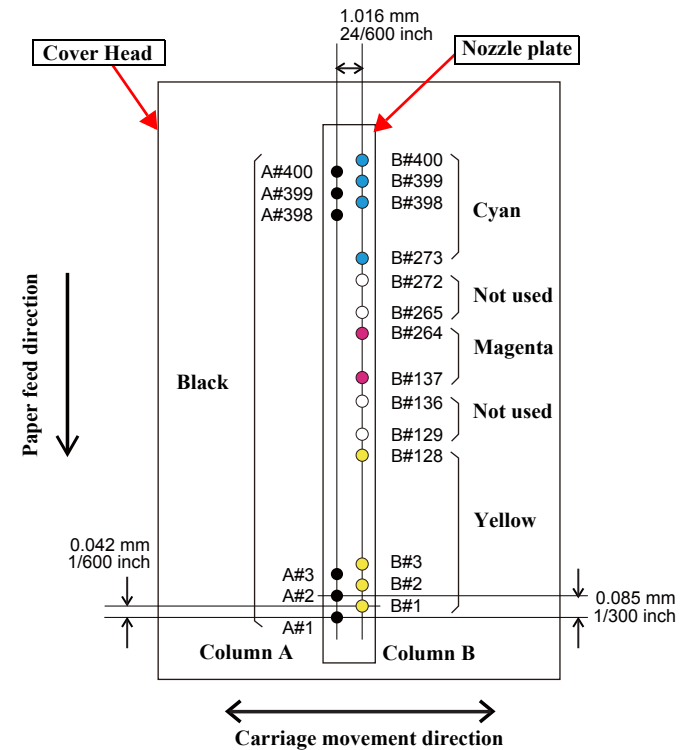


Figure 1-1.  $\mu$ TFP1S Printhead appearance



| Column        | Color |
|---------------|-------|
| A             | Bk    |
| B #1 - #128   | Y     |
| B #137 - #264 | M     |
| B #273 - #400 | C     |

Figure 1-2. Nozzle layout (seen from the rear side)

## 1.1.2 Carriage Mechanism / APG Mechanism

The major components of the carriage (CR) mechanism are the CR Unit, CR Encoder, CR Scale, CR Motor, and CR Timing Belt. The CR mechanism is a key mechanism to ensure stable print quality because printing is performed by moving the CR Unit from side to side.

As shown on the right, Main Frame is holding the upper side and the lower side of the CR Unit. The CR Unit is attached to the CR Timing Belt that is moved by the CR Motor so that the assy can move from side to side to print. The position and speed of the CR Unit are always monitored by the CR Encoder and the CR Scale, and the CR Motor is controlled in accordance with the information acquired by the CR Encoder.

The improved type of the APG mechanism in XP-800 series is employed.\*1

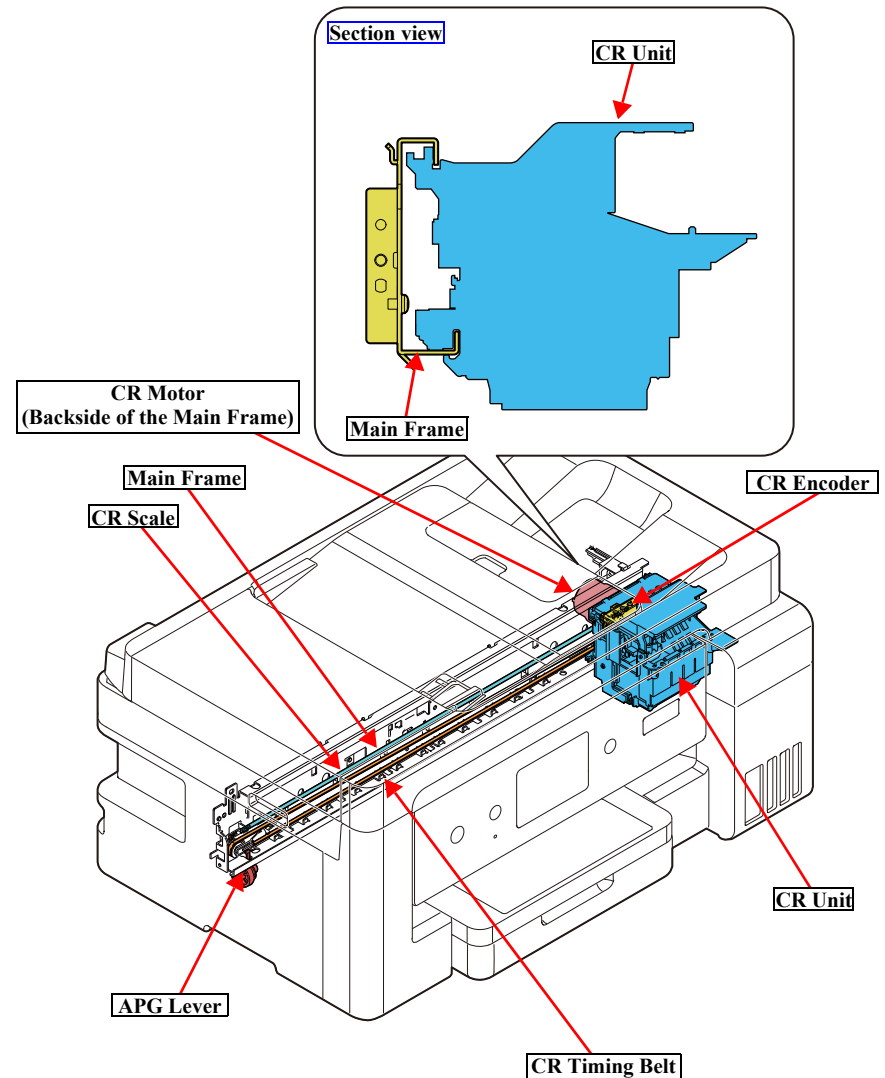


Figure 1-3. Carriage Mechanism / APG Mechanism

\*1. See "1.3 APG Mechanism Operation Principle" (p 19) for more details.

### 1.1.3 Paper Loading/Feed Mechanism

This product has two paper loading mechanisms: front paper loading and rear paper loading. Paper sizes up to A4 can be loaded using the front paper loading mechanism while the rear paper loading mechanism supports paper sizes up to A3+. The PF Motor drives both of these mechanisms. The paper feed mechanisms including the Intermediate Roller, the PF Roller, and the EJ Roller are also driven by the PF Motor.\*1

The Change Slider and Holder Cam Assy control whether the PF Motor drives the Pick Up Roller Assy which implements front paper loading, or the LD Roller which implements rear paper loading.

As with conventional printers, this product supports automatic duplex printing. The printer is equipped with a mechanism that automatically turns the paper over after printing to the front face to print to the back face.

#### □ Front Paper Loading

Paper stacked in the Paper Cassette is loaded by the Pick Up Roller Assy.

Paper loaded by the Pick Up Roller Assy is conveyed by the paper feed mechanism (Intermediate Roller, PF Roller, and EJ Roller).

#### □ Rear Paper Loading

Paper set in the Rear ASF is loaded by the LD Roller.

Loaded paper is conveyed by the paper feed mechanism (PF Roller, and EJ Roller).

#### □ Automatic Duplex Printing

Paper that has been printed is pulled into the printer by the EJ Roller and the PF Roller. The back face of the paper is then printed after the paper is turned over by the Intermediate Roller. The Intermediate Roller always rotates in the paper feed direction regardless of the direction of rotation of the PF Motor with the one-way clutch.

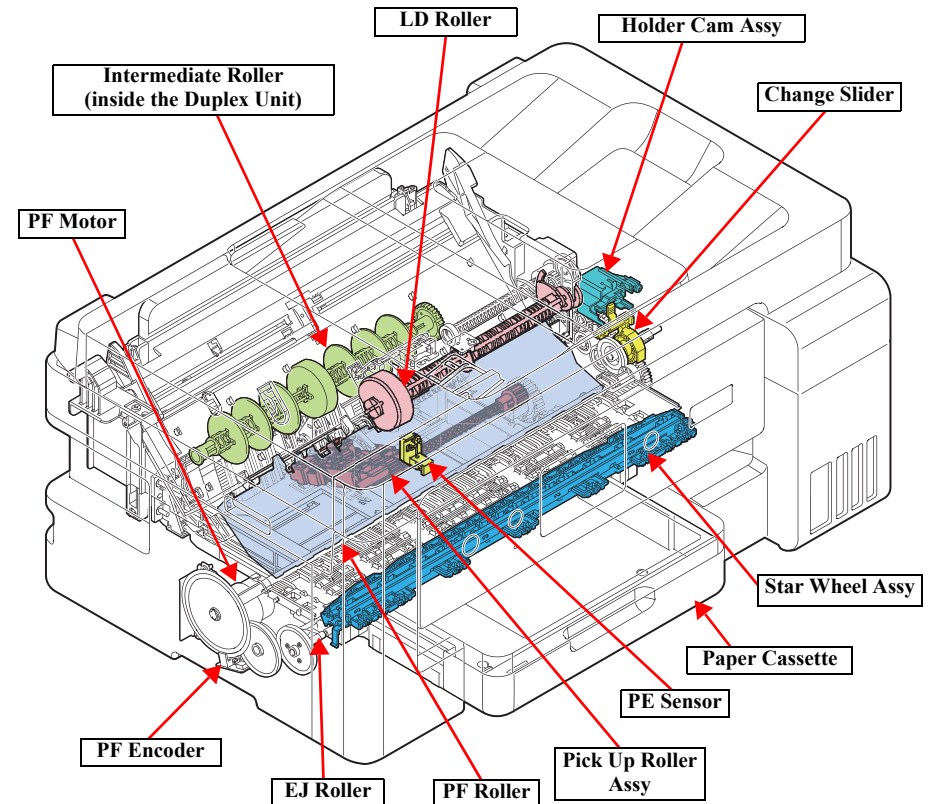


Figure 1-4. Paper loading/feed mechanism

\*1. See "1.4 Paper Loading/Feed Mechanism Operation Principle" (p 21) for more details.

## 1.1.4 Ink Supply Mechanism

The Ink Supply Mechanism plays the role of supplying ink filled in the Ink Tank to the Printhead via the Adapter Tube, Tube Valve Assy, and Adapter.

The Tube Valve Assy is attached on the CR Unit to prevent ink leakage during shipment. Ink leakage is prevented during shipment by flipping the Valve Cam Lever on the Tube Valve Assy over to the front side of the printer, and setting the valve in a closed state by blocking the Adapter Tube.

This state of the valve is not controlled by sensors or the like. However, when the CR Unit is moved while the valve is in a closed state, the Valve Cam Lever and Housing will come into contact with each other, so if printing is implemented without setting the Valve Cam Lever to the valve open state after shipment, the CR Unit will not be able to move and an error will occur because the Valve Cam Lever will touch the Housing when the CR Unit is operated. By checking the position of the CR Unit at this time, it is possible to detect whether an error has occurred because the valve is closed.

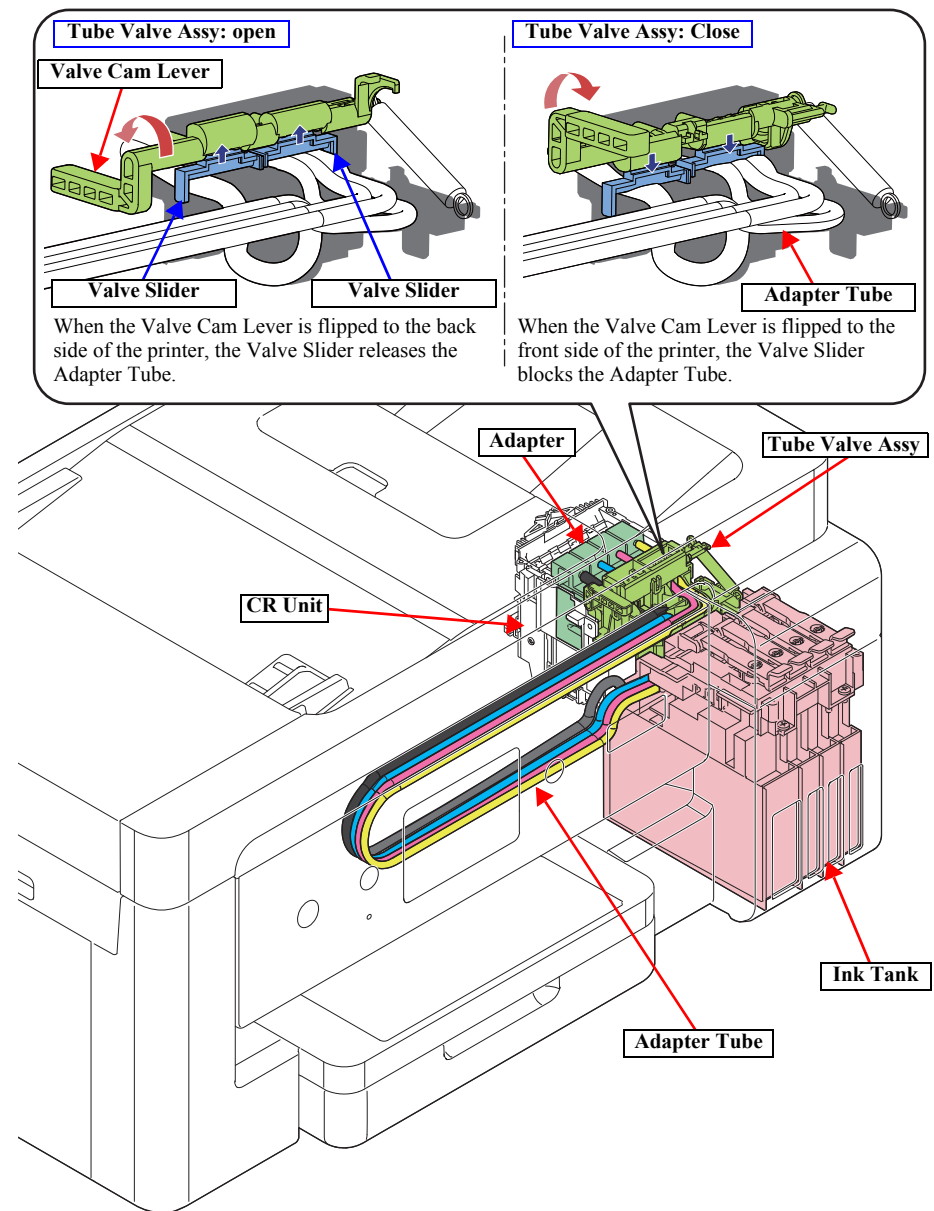


Figure 1-5. Ink Supply Mechanism

## 1.1.5 Ink System Mechanism

The major components of the ink system mechanism\*<sup>1</sup> are a Cap, Pump Unit, and Waste Ink Tube.

The ink system mechanism employs the slide type capping. When the CR Unit returns to its capping position (home position), the Printhead is capped. The pump mechanism, wiper mechanism, and the CR Lock mechanism are driven by the PF Motor to clean the Printhead.

Waste ink sucked when cleaning the Printhead is collected in the Maintenance Box through the pump mechanism. A CSIC mounted on the Maintenance Box keeps track of how much waste ink has been collected.

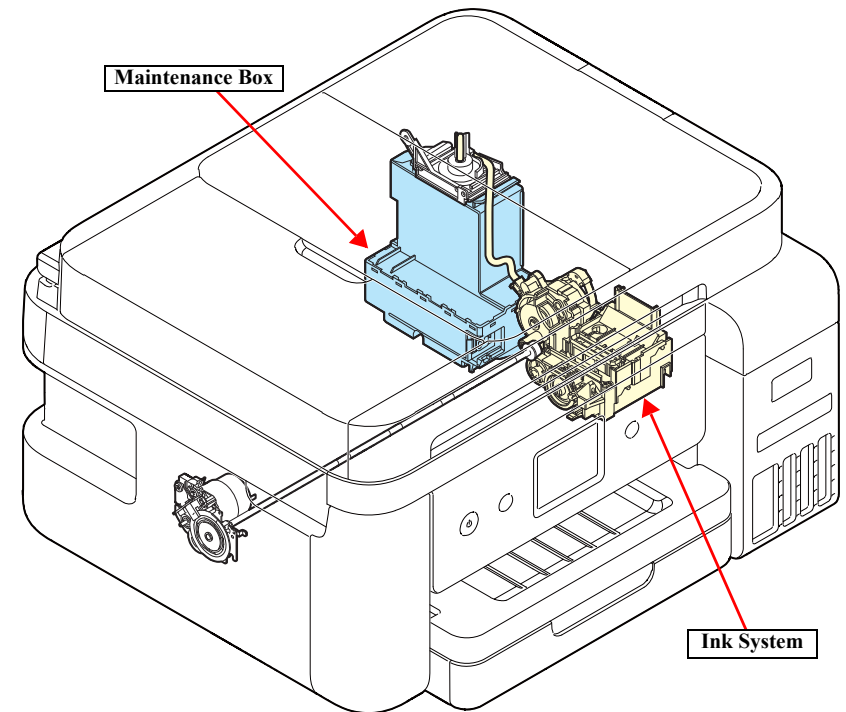


Figure 1-6. Ink System Mechanism

\*1. See "1.5 Ink System Mechanism Operation Principle" (p 27) for more details.

### 1.1.6 List of Motor and Sensor

This section describes the types and positions of the motors and sensors.

Table 1-2. Motor and Sensor List

| Mechanism name               | Motor/sensor name      | Motor/sensor type                   | No. |
|------------------------------|------------------------|-------------------------------------|-----|
| Carriage mechanism           | CR Motor               | DC Motor                            | A   |
|                              | CR Encoder             | Transmission-type photo interrupter | 1   |
|                              | PW Sensor              | Reflection-type photo interrupter   | 2   |
| Paper loading/feed mechanism | PF Motor               | DC Motor                            | B   |
|                              | PF Encoder             | Transmission-type photo interrupter | 3   |
|                              | Cassette Sensor        | Mechanical contact                  | 4   |
|                              | PE Sensor              | Reflection-type photo interrupter   | 5   |
|                              | LD Phase Sensor        | Transmission-type photo interrupter | 6   |
|                              | RASF Paper Sensor      | Transmission-type photo interrupter | 7   |
| Others                       | Tank Cover Open Sensor | Mechanical contact                  | 8   |
| Scanner                      | Scanner Motor          | DC Motor                            | C   |
|                              | Scanner Encoder        | Transmission-type photo interrupter | 9   |
|                              | ADF PE Sensor          | Transmission-type photo interrupter | 10  |

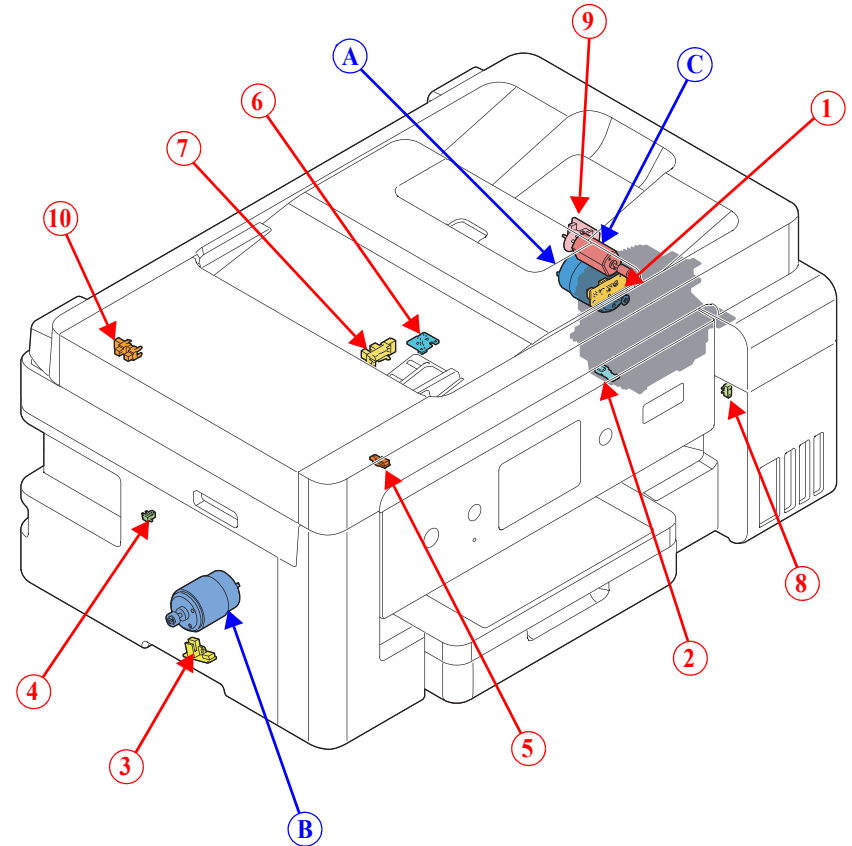


Figure 1-7. List of motor and sensor

## 1.2 Scanner/ADF Overview

### 1.2.1 Scanner Mechanism

The scanner mechanism consists of a CIS Module that scans documents and the Scanner Motor that drives the scanner carriage. The CIS Module and the Scanner Motor are integrated as the scanner carriage, and it moves along the rail on the scanner housing to scan documents.

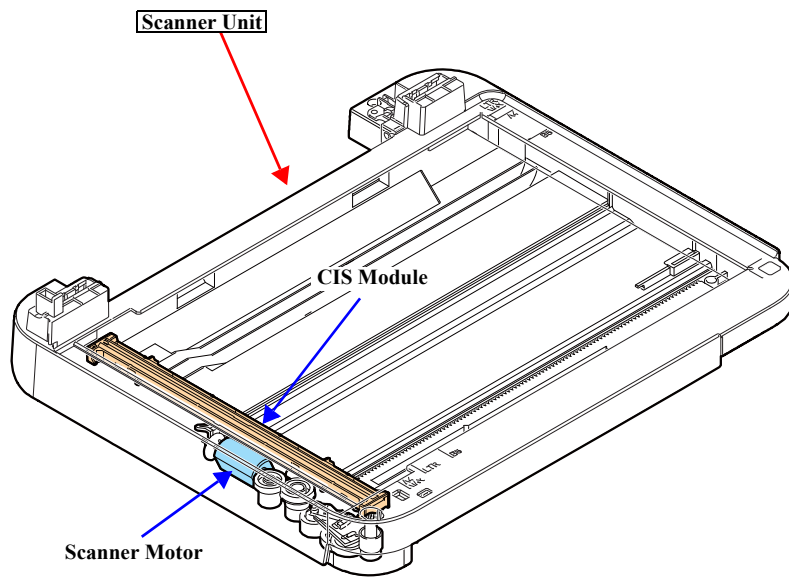


Figure 1-8. Scanner mechanism

### 1.2.2 ADF Mechanism

The PF Roller, EJ Roller, and Pick up Roller of the ADF mechanism are driven by the Scanner Motor. The drive force of the motor is transmitted through the transmission gear. The ADF mechanism does not support auto duplex scanning.

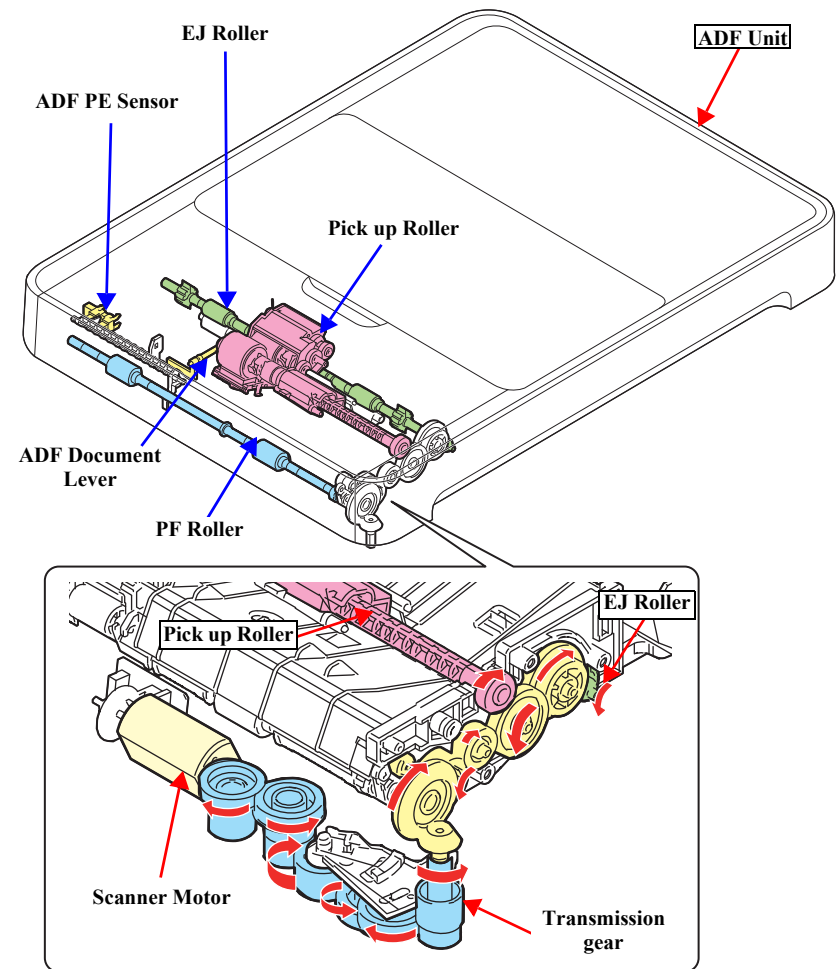


Figure 1-9. ADF mechanism

When scanning document, the document is fed inside the ADF as shown below.

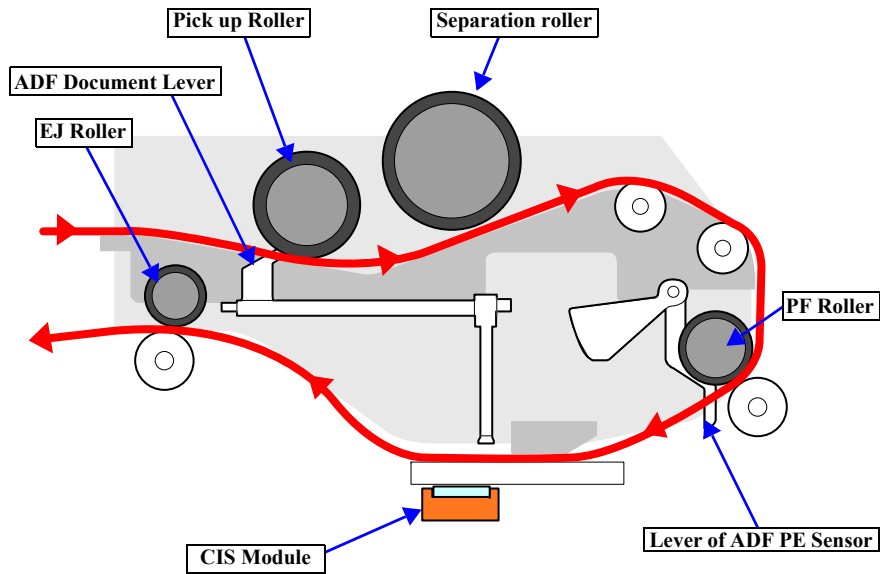


Figure 1-10. Document Feed Path

Presence or absence of document on the ADF is detected by the ADF Document Lever and the scanner CIS Module. The lever moves up or down depending on the presence or absence of document, and the end of the lever is scanned by the CIS Module. According to the scan result, the printer determines whether document is present or not.

Additionally, there is a Sub Document Lever beside the ADF Document Lever. If the CIS Module cannot scan the end of the Sub Document Lever, the printer determines that the Scanner Unit is open or the CIS Module is malfunctioning.

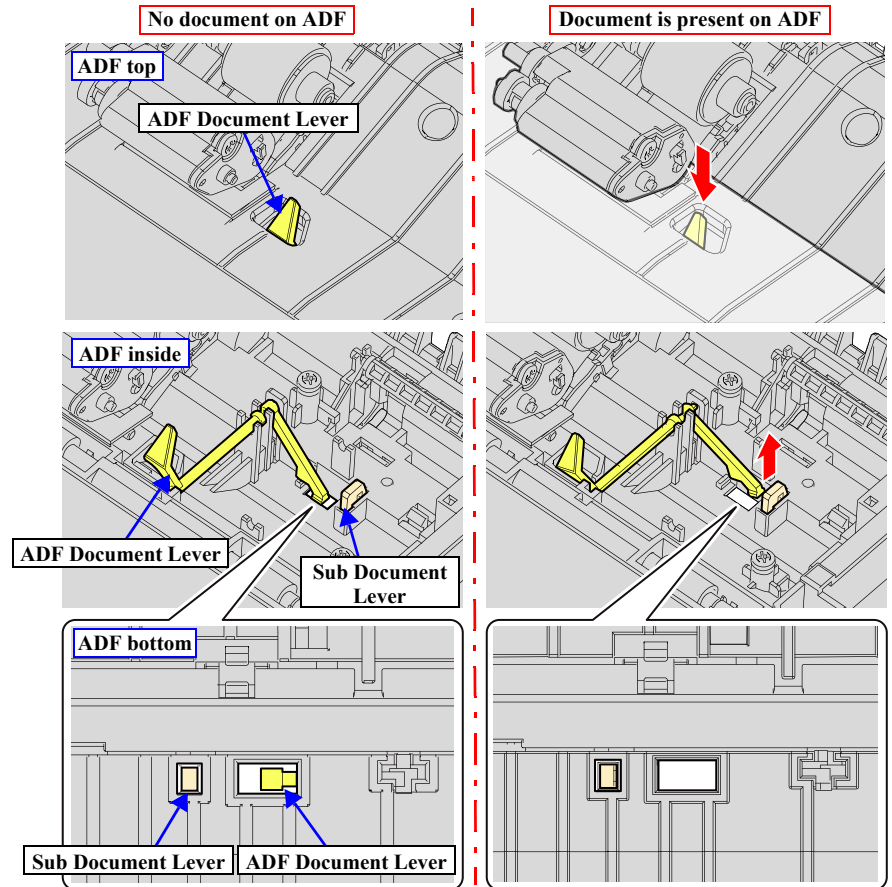


Figure 1-11. ADF Document Lever

## 1.3 APG Mechanism Operation Principle

The improved type of the APG mechanism in XP-800 series is employed.

### 1.3.1 Overview

The APG mechanism includes the APG Lever that controls APG, APG Cam, and APG Slider that are attached on the CR Unit.

Since the Main Frame supports the CR Unit in this product, the APG Cam is attached at the rear side of the printer.

The CR Unit is on the APG Cam. When the APG Cam moves up and down, the CR Unit on the cam also moves up and down, which enables the PG shift.

Pushing the APG Cam to the APG Lever moves the APG Cam up or down. When the APG Cam is moved by the APG Lever, the Cam moves up or down along the stepped part and PG is shifted.

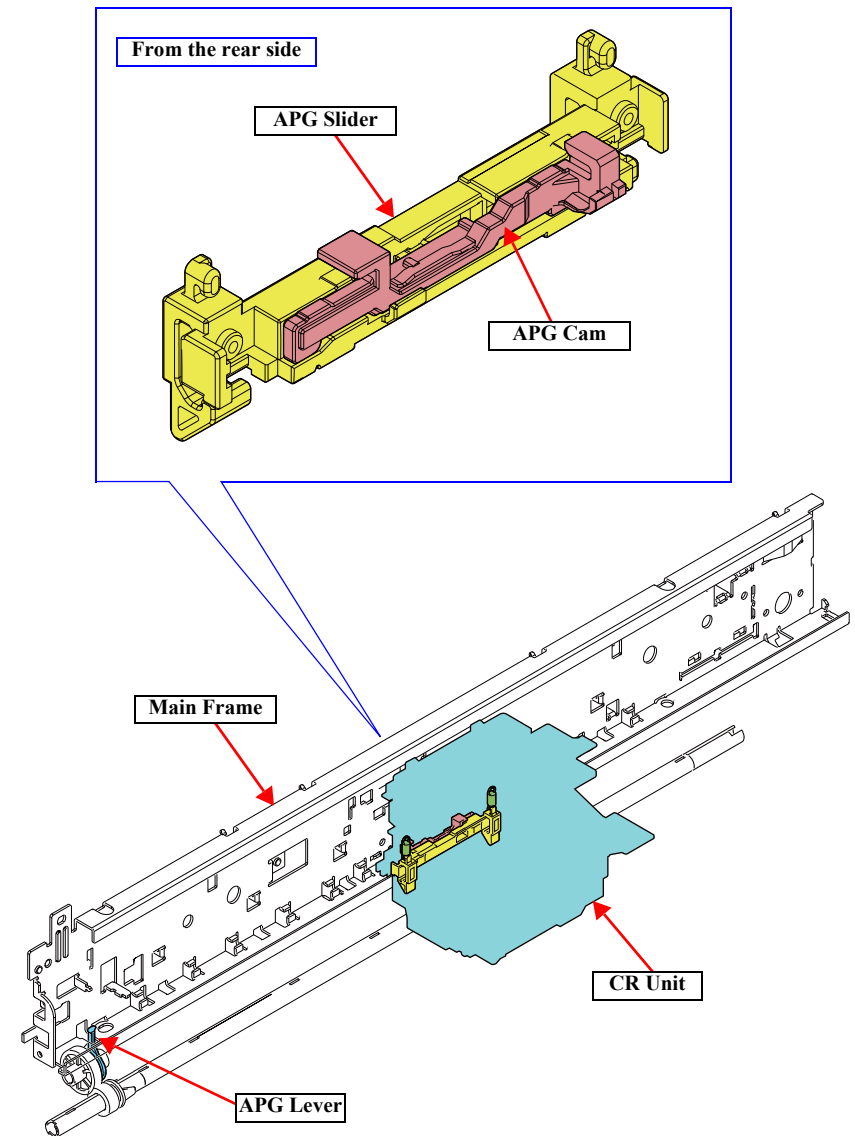
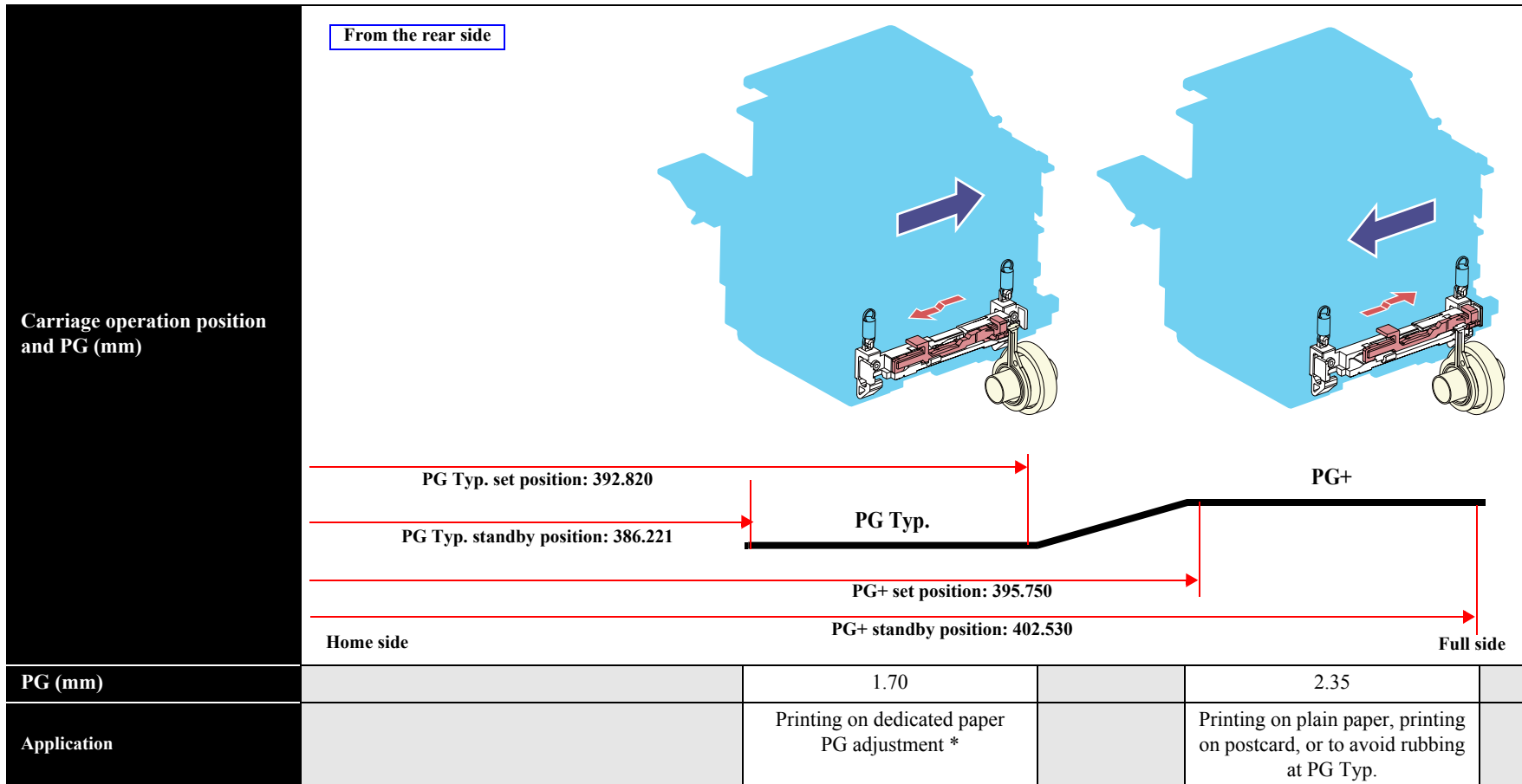


Figure 1-12. APG Mechanism

### 1.3.2 PG Type

This product has two types of PGs. The following describes the details of PGs. The PG depends on the relative position of the CR Unit to the APG Lever. The PG set once is held until the next PG shift operation.

After moving the CR Unit to the standby position with the APG Lever flipped to the back side of the printer, drive the PF Motor and flip the APG Lever to the front side of the printer. With the APG Cam and APG Lever touching, move the CR Unit to the set position to set the PG.



Note "\*": Implement PG adjustments in the PG Typ. state. Printer enters PG Typ. with a normal power off.

# 1.4 Paper Loading/Feed Mechanism Operation Principle

## 1.4.1 Overview

The paper loading mechanism is driven by the PF Motor.

Table 1-3. Paper Loading Method and Drive Force

| Drive force (motor) | Motor control        | Paper loading operation  |   |
|---------------------|----------------------|--|---|
|                     |                      | Front paper loading  | Manual paper loading  |
| PF Motor            | PF encoder/ PF scale | <ul style="list-style-type: none"> <li>Turn the Change Slider to Front ASF mode, drive the Pick Up Roller Assy, and load paper from the Paper Cassette.</li> <li>Paper loaded from the Paper Cassette is fed to the PF Roller by the Intermediate Roller inside the Duplex Unit.</li> <li>Drive the PF Roller/EJ Rollers to convey the paper.</li> </ul> | <ul style="list-style-type: none"> <li>Turn the Change Slider to Rear ASF mode, drive the LD Roller to feed the paper to PF Roller.</li> <li>Drive the PF Roller/EJ Rollers to convey the paper.</li> </ul> |

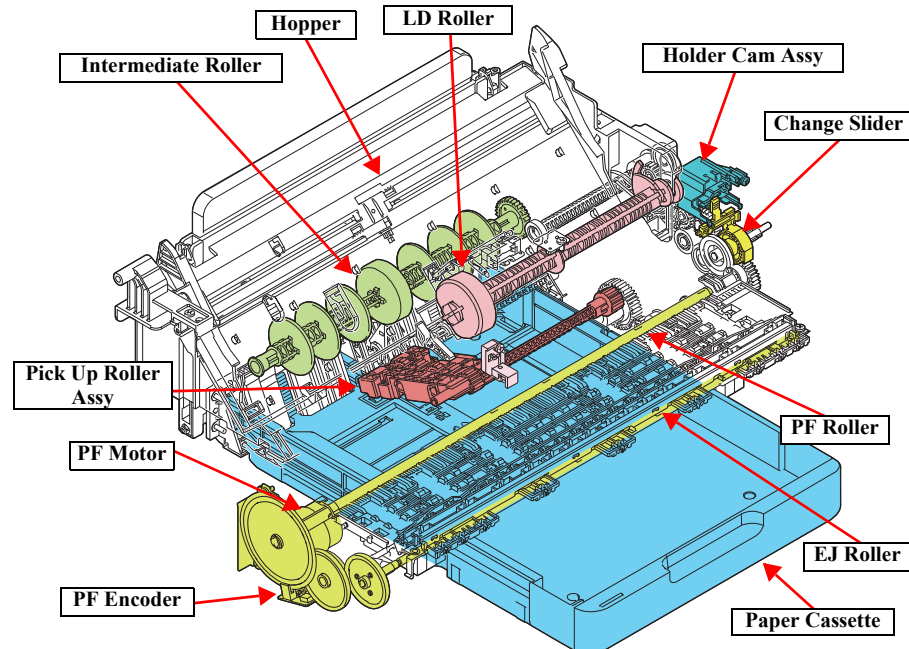


Figure 1-13. Paper loading/feed mechanism

### 1.4.1.1 Paper Feed Path

#### 1.4.1.1.1 Front Paper Loading

Paper loaded into the Paper Cassette is fed to the Intermediate Roller by the Pick Up Roller Assy, and then arrives at the PE Sensor position.

Next, skew is corrected, and printing on the paper is performed while the paper is being fed by the PF Roller and EJ Roller/Star Wheel Assy.

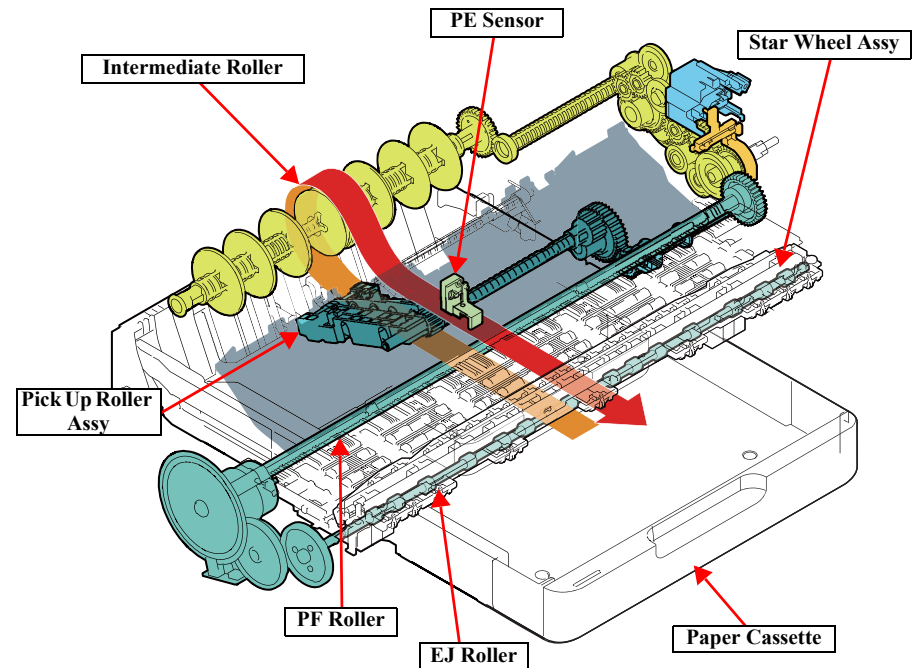


Figure 1-14. Paper feed path of front paper loading

### 1.4.1.1.2 Rear Paper Loading

Paper put on the Hopper is fed by the LD Roller and arrives at the PE Sensor position.

At that time, the Hopper and the Paper Back Lever are both driven simultaneously by the cam mounted to the LD Roller, thereby implementing a reliable paper feed.

Next, skew is corrected, and printing on the paper is performed while the paper is being fed by the PF roller and EJ Roller/Star Wheel Holder Assy.

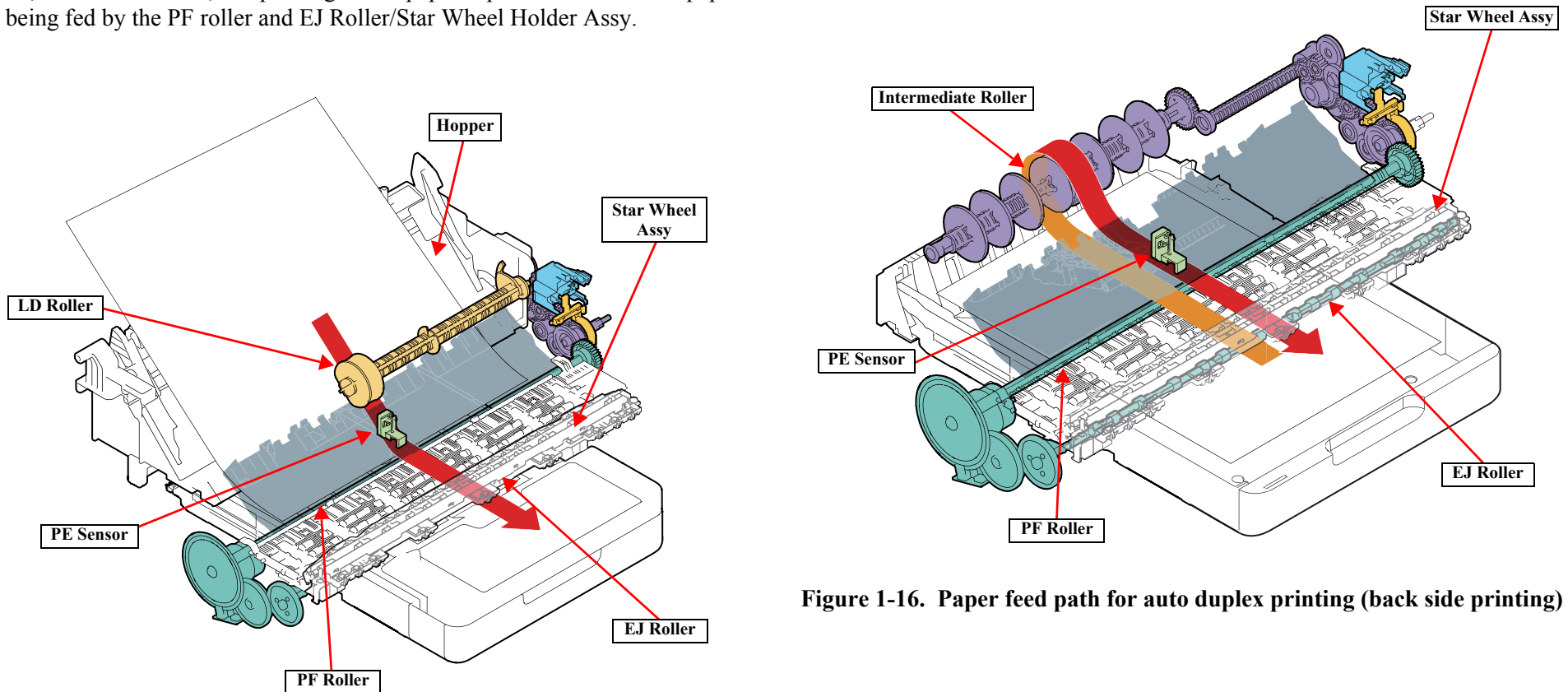


Figure 1-15. Paper feed path of rear paper loading

### 1.4.1.1.3 Paper Loading Path for Duplex Printing

When printing on one side is finished, the printer waits for the ink on the one side to dry keeping the paper nipped between the EJ Roller and Driven Roller. After a predetermined drying time has passed, the PF Roller and EJ Roller are rotated in the reverse direction to pull the paper inside the Duplex unit. When the leading edge of the paper is detected by the PE Sensor, skew is corrected, and then printing on the back side is performed.

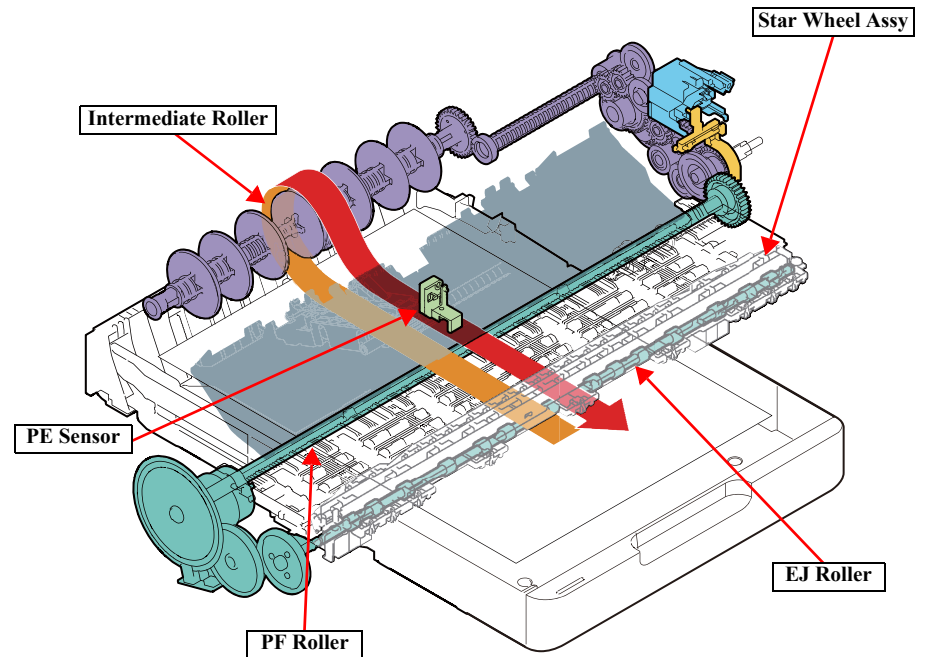


Figure 1-16. Paper feed path for auto duplex printing (back side printing)

## 1.4.2 Operation Principle

### 1.4.2.1 Drive Path

PF Motor drive force is transmitted to the PF Roller and the EJ Roller that compose the paper feed mechanism, and the Intermediate Roller.

Drive force from the PF Roller is transmitted to the paper loading mechanism. The drive path of the paper loading mechanism is divided into two systems: the Pick Up Roller Assy system (p 25) and the LD Roller system (p 26). Drive force transmission to either the Pick Up Roller Assy system or the LD Roller system is switched according to the position of the Change Slider.

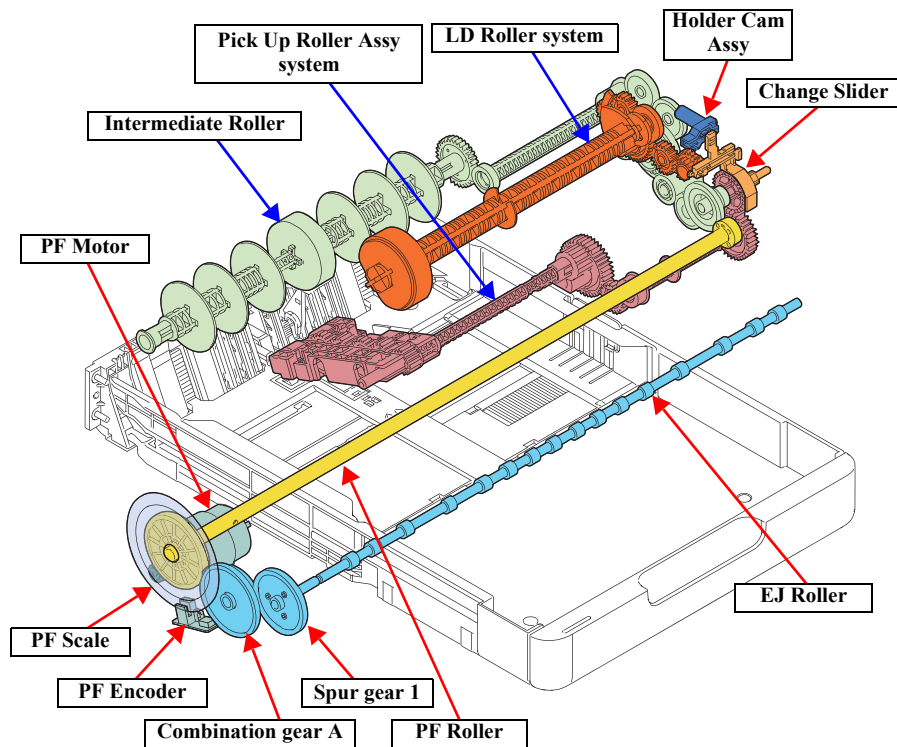


Figure 1-17. Drive path from PF Motor

### PAPER FEED MECHANISM DRIVE PATH

- Drive path from PF Motor to PF Roller/EJ Roller

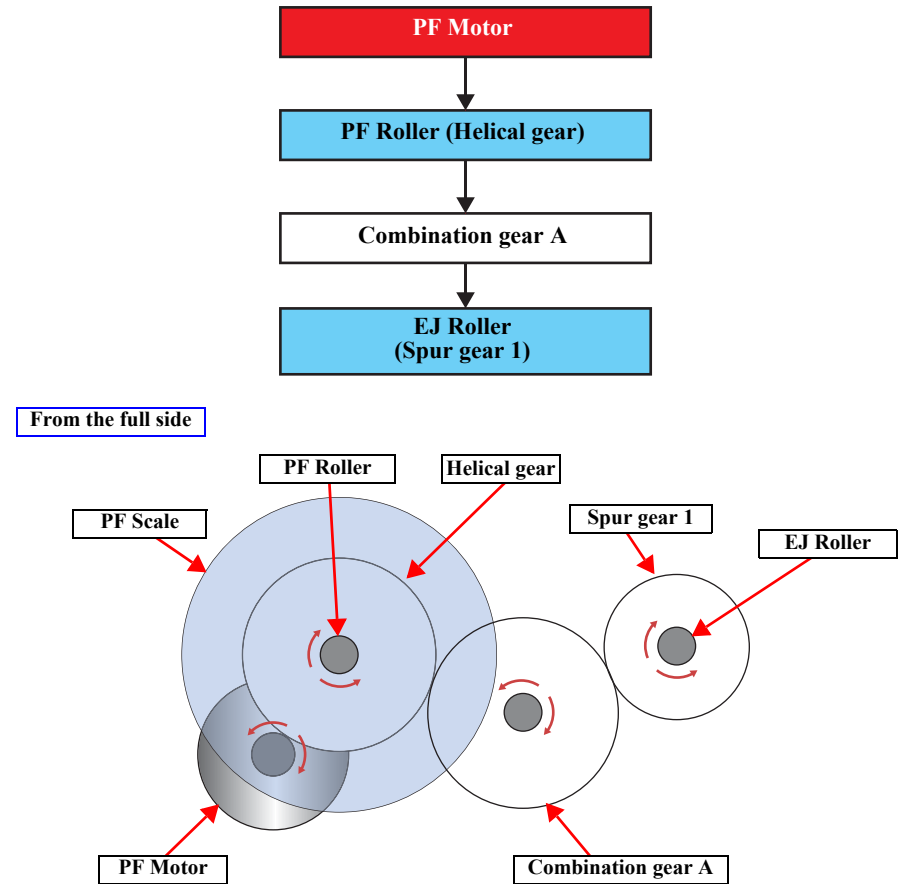


Figure 1-18. Drive path from PF Motor to PF Roller/EJ Roller

□ Drive Path From PF Roller to Intermediate Roller

The Intermediate Roller always rotates in the paper feed direction because of the one way clutch, regardless of the PF Roller rotational direction.

The one way clutch consists of the sun gear, the external gear (x2) on both sides of the sun gear, and the planetary gear inside the external gear. When the sun gear rotates, either one of the external gears idles being disengaged from the planetary gears, while the external gear on the other side rotates being engaged with the planetary gears. In this way, the one way clutch is designed to rotate either one of the two external gears at a time, and which one to rotate depends on the rotational direction of the sun gear.

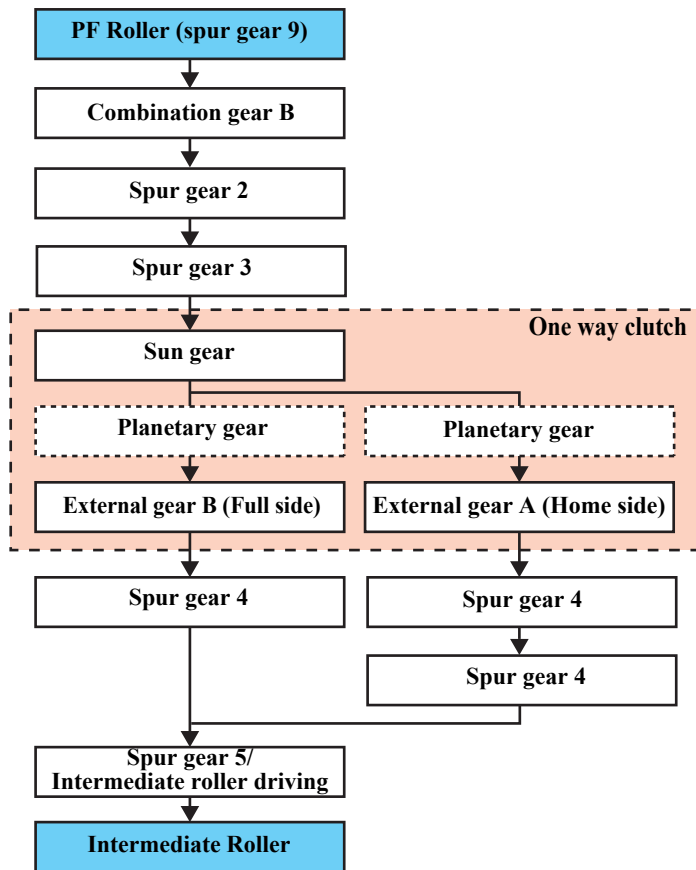


Figure 1-19. Drive Path From PF Roller to Intermediate Roller (1)

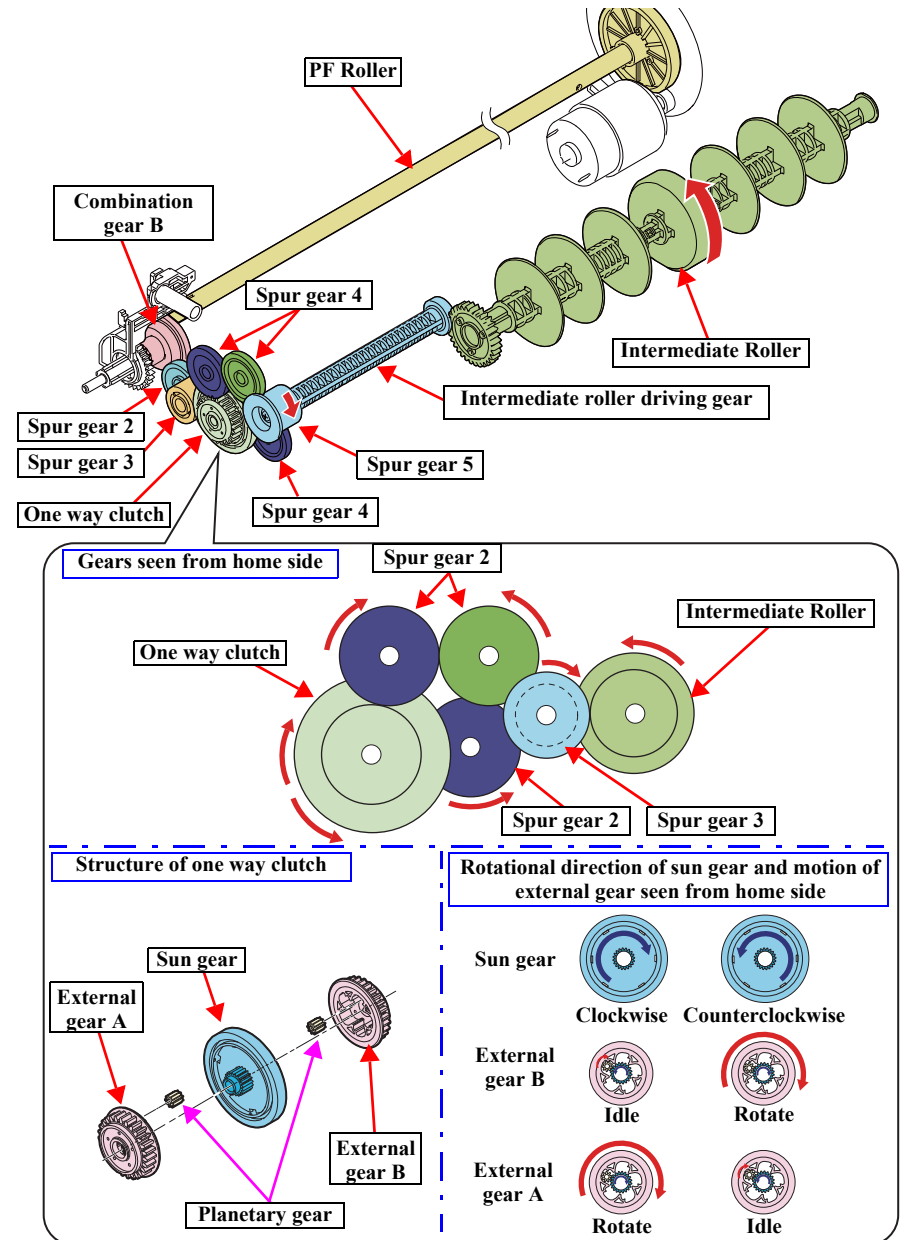


Figure 1-20. Drive Path From PF Roller to Intermediate Roller (2)

**PAPER LOADING MECHANISM DRIVE PATH**

□ Pick Up Roller Assy system (Front paper loading)

When the Change Slider is set in the front ASF mode by moving the CR Unit to the Home side, PF Motor drive force is transmitted to the Pick Up Roller via the PF Roller to implement front paper loading.

The one way clutch implements control so that the Pick Up Roller rotates only in the paper-loading direction. That principle and composition are basically the same as the one way clutch used in the drive path up to the Intermediate Roller (p 24). For that reason, when the PF Motor rotates in the opposite direction to the paper feed, the Pick Up Roller will not rotate even if the drive force is in a state to be transmitted by the Change Slider.

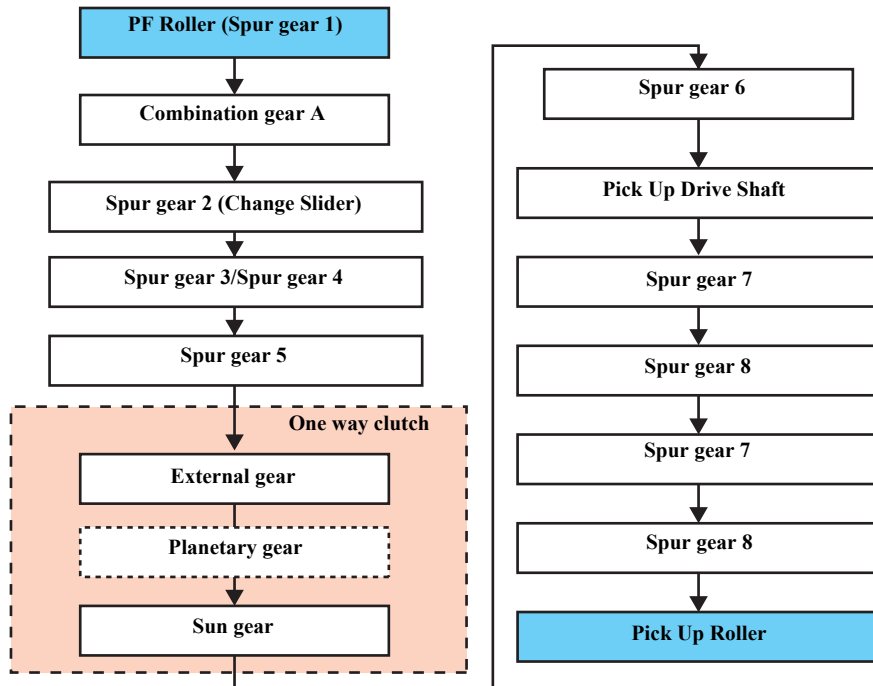


Figure 1-21. Drive path from PF roller to Pick up Roller Assy (1)

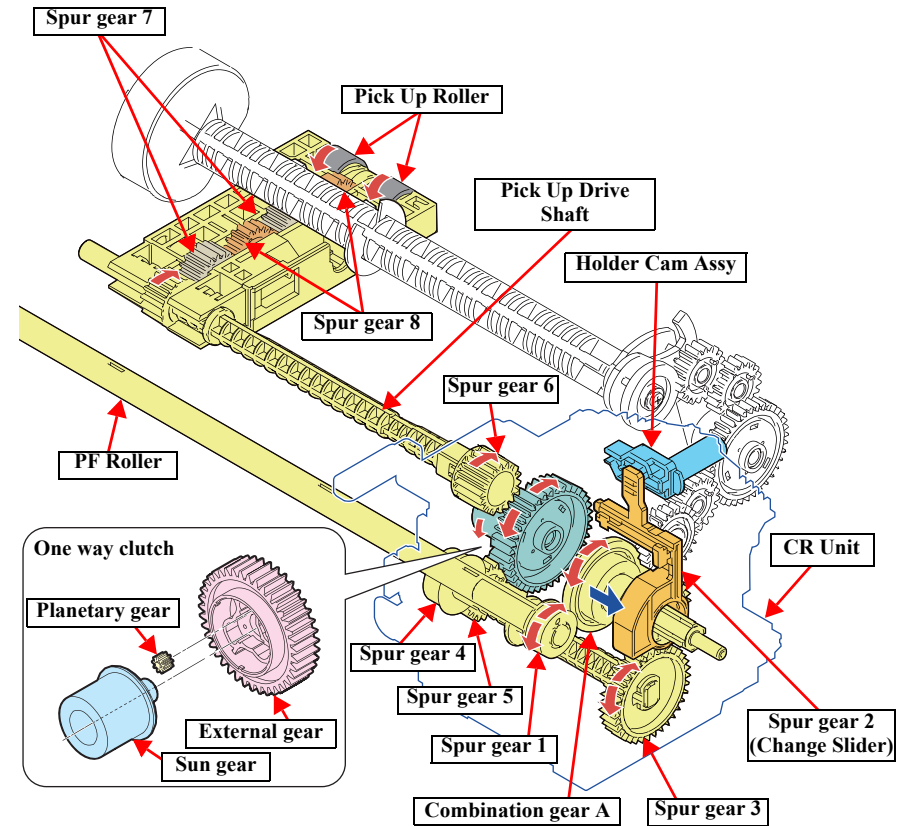


Figure 1-22. Drive path from PF roller to Pick up Roller Assy (2)

□ LD Roller system (Rear paper loading)

When the Change Slider is set in the rear ASF mode by moving the CR Unit, PF Motor drive force is transmitted to the LD Roller via the PF Roller to implement rear paper loading.

The LD Roller always rotates in the paper-loading direction regardless of the direction of rotation of the PF Roller with the one-way clutch (p 24).

The state of the LD Roller is detected by the LD Phase Sensor detecting the notch in the flag on the LD Roller Shaft. The position where the notch in the flag is detected is the home position.

After detecting whether paper has been set in the Hopper by the RASF Paper Sensor, the rear paper loading operation is implemented starting from the LD Roller being at the Home position. While the cam on the LD Roller Shaft operates the Hopper and Paper Back Lever, the LD Roller rotates one time.

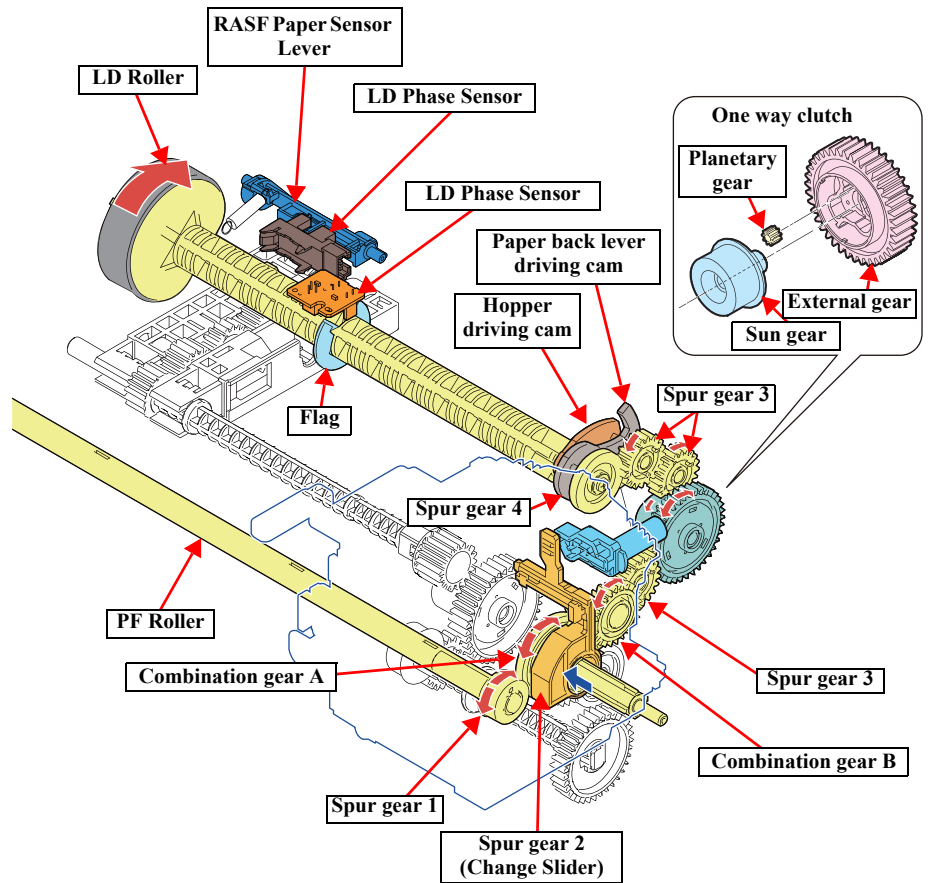


Figure 1-24. Drive Path From PF Roller to LD Roller (2)

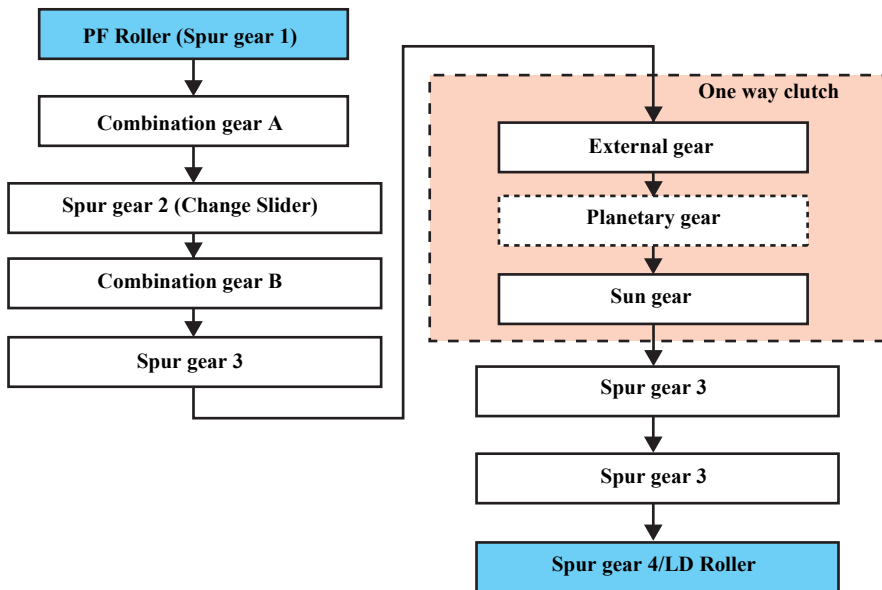


Figure 1-23. Drive Path From PF Roller to LD Roller (1)

## 1.5 Ink System Mechanism Operation Principle

### 1.5.1 Overview

#### 1.5.1.1 Mechanical Configuration

The ink system mechanism of this product employs the sliding type\*<sup>1</sup> and consists of the CR Lock mechanism, wiper mechanism, capping mechanism, and pump mechanism.

All the mechanisms are driven by the PF Motor. The drive force of the PF Motor is transmitted to each mechanism via transmission parts, such as the pump-drive compound gear, clutch gear, and cam.

Additionally, this product utilizes a user-replaceable Maintenance Box (waste ink pad) that retains waste ink from the cap.

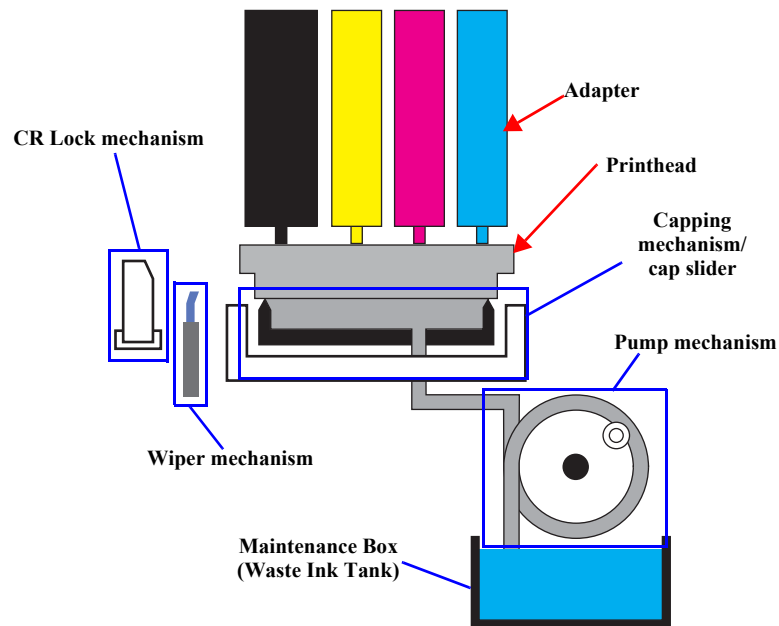


Figure 1-25. Ink system mechanism (simplified model)

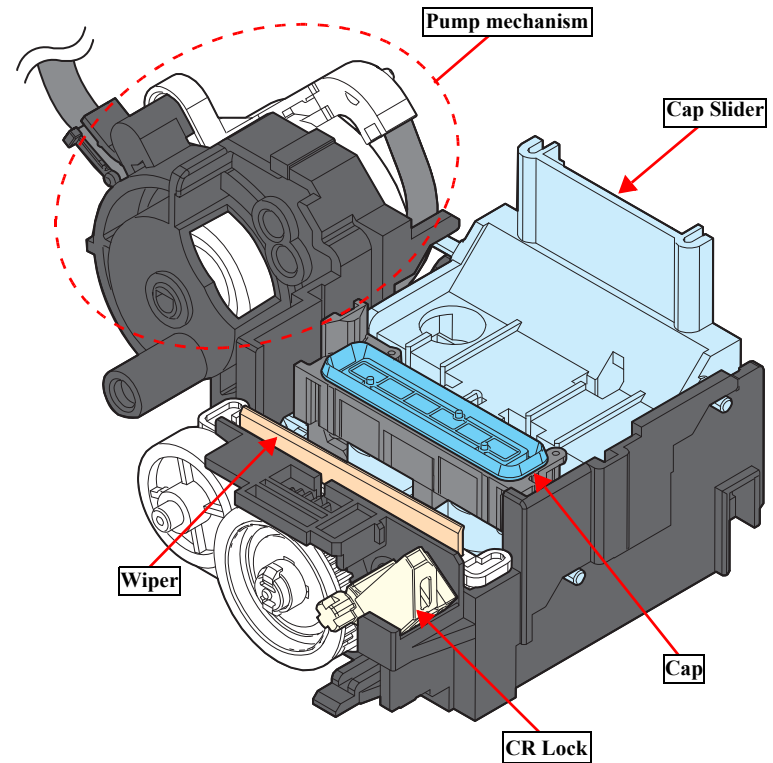


Figure 1-26. Ink system mechanism

\*1. There are two types of the capping: sliding type and direct acting type. In the sliding type, the Printhead is capped (the cap is moved up) when the CR pushes the cap slider. In the direct acting type, the cap moves up and down independently of the CR and caps the Printhead.

### 1.5.1.2 Cleaning

Clogging of nozzles on the Printhead occurs due to air bubbles generated inside the ink path of the Printhead, or an increase in ink viscosity caused by drying of ink. To prevent the clogging or clean the clogged nozzles, various types of cleaning (CL) are performed at different times as described in the table below.

**Table 1-4. Printhead cleanings**

| CL Type                 | Purpose  | Explanation   |
|-------------------------|--|---|
| Initial ink charge      | To fill the head with ink  | Performed after the printer is powered at the first time.   |
| Timer cleaning (TCL)*1  | To eject bigger air bubbles inside the Printhead                     | Performed according to the printing time and time elapsed since the last cleaning.  |
| Manual cleaning (MCL)*2 | CL1  | To restore a proper convex meniscus of ink at the tip of nozzles<br>Main suction*3(short) → Wiping*4 → Cap suction*5 → Small amount suction*6 → Cap suction |
|                         | CL2  | To eject air bubbles inside the Printhead<br>Main suction (middle) → Wiping → Cap suction → Small amount suction → Cap suction                              |
|                         | CL3*7  | To eject air bubbles inside the ink supply nozzles<br>Main suction (long) → Wiping → Cap suction → Small amount suction → Cap suction                       |
| Regular cap suction     | To prevent ink leakage from the cap                                  | Sucks out ink pooling inside the cap due to head flushing operations or the like.   |
| Flushing                | To prevent ink inside non-used nozzles from increasing its viscosity | The Printhead is controlled to fire ink droplets from the nozzles periodically.   |

\*1. To save ink, the time between the timer cleanings is becoming longer on the most newer printers. This is achieved by adopting the plastic that have the function to suppress the growth of air bubbles inside the Printhead and by improving in shape of the ink supply nozzles.

\*2. When carrying out manual cleaning, CL1 → CL2 → CL3 are automatically selected and performed in order. However, in the following conditions, they may not be carried out in this order.

(EX) ·CL3 may change to CL2 depending on the ink remaining quantity and conditions of maintenance counter and others.

·If the interval between cleaning is more than a specified period, then this may not be counted as continuous.

\*3. “Main suction” is a suction operation that sucks up ink from cartridges to the Printhead, and at the same time, sucks out air bubbles inside the Printhead and thick ink inside the nozzles.

\*4. “Wiping” removes ink attached to the Printhead nozzle surface.

\*5. “Cap suction” is a suction operation that sucks ink out of the cap.

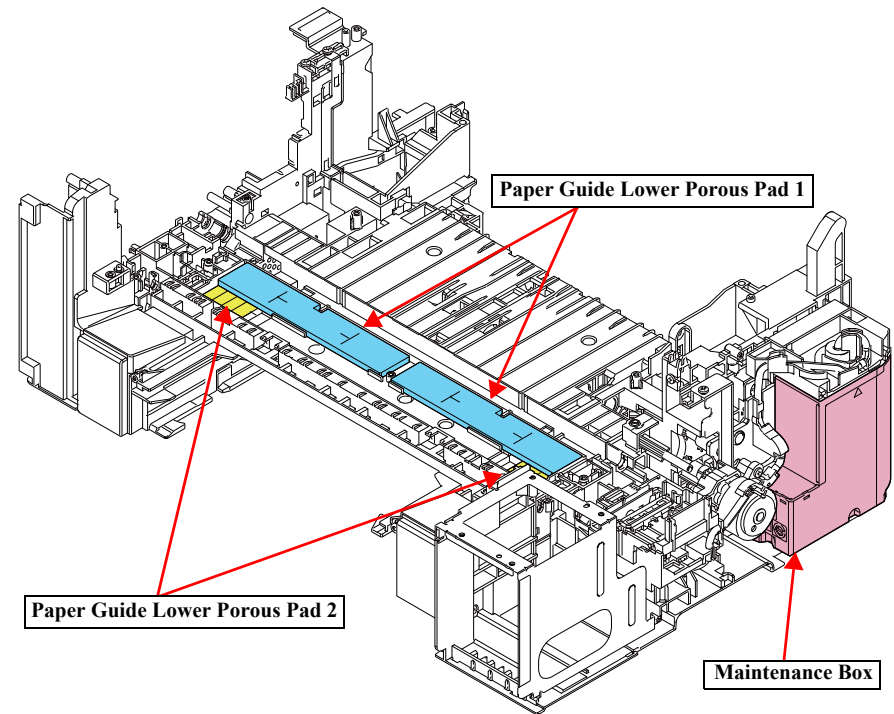
\*6. “Small amount suction” is a suction operation performed to eject tiny air bubbles from the Printhead. Ink amount sucked by this operation is less than that by the “Main suction”.

\*7. Some off-carriage type printers use a choke valve mechanism to perform the cleaning.

### 1.5.1.3 Controlling Waste Ink

Ink used by cleanings (waste ink) is absorbed by the waste ink pad. If the absorbed amount exceeds the limit of the waste ink pad, leakage of the waste ink can occur. To prevent this, the printer firmware has a counter to counts the waste ink amount taking evaporation into account, The count value is retained in the Maintenance Box CSIC and in the EEPROM.

Another waste ink produced by borderless printing is absorbed by absorbers attached on the Paper Guide Front and the rear side of the printer. For the borderless printing, the printer makes an image slightly expand all the way to the edge of the paper, therefore, the image edge portions not printed on paper must be absorbed. the printer also have the counter for this waste ink amount.



**Figure 1-27. Position of Waste Ink Pad for Borderless Printing**

If each counter reaches its limit, a maintenance error occurs and replacement of the maintenance box and counter reset will be required.

## 1.5.2 Operating Principles

### 1.5.2.1 Drive Path

The ink system mechanism is driven by the PF Motor.

To the pump mechanism, the drive force is constantly transmitted via the PF Roller, compound gear, Pump driving gear, and etc.

The drive force is transmitted to the wiper mechanism and CR Lock mechanism via the PF Roller, spur gear, compound gear equipped with a clutch, and cam. The clutch works in accordance with movement of the Cap Slider and cam, and interrupts the drive force upon completion of the movement.

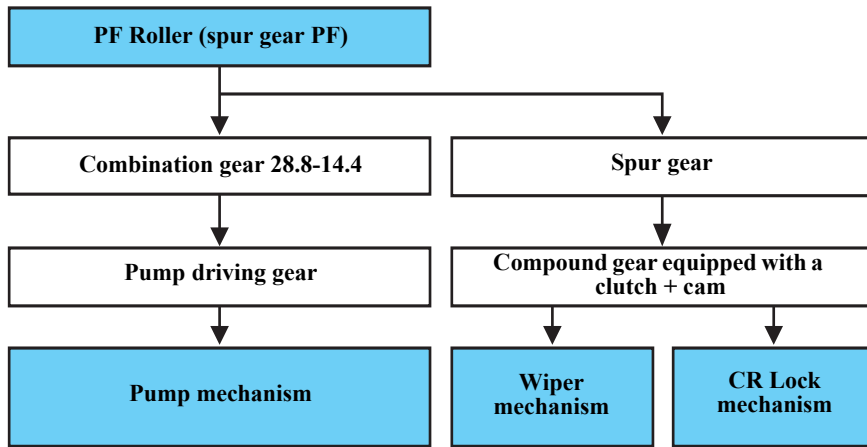


Figure 1-28. Drive path (1)

The table below shows how each mechanism operates according to the rotational direction of the PF Motor.

Table 1-5. PF motor rotational direction and operation of the ink system

| Mechanism | Rotational direction of the PF Motor*1 |                            |
|-----------|--|----------------------------|
|           | CW                                     | CCW                        |
| Wiper     | Moves down                             | Moves up (wiping position) |
| Pump      | Release                                | Suction                    |
| CR Lock   | Unlocks the CR                         | Locks the CR               |

\*1. Rotational direction seen from output shaft

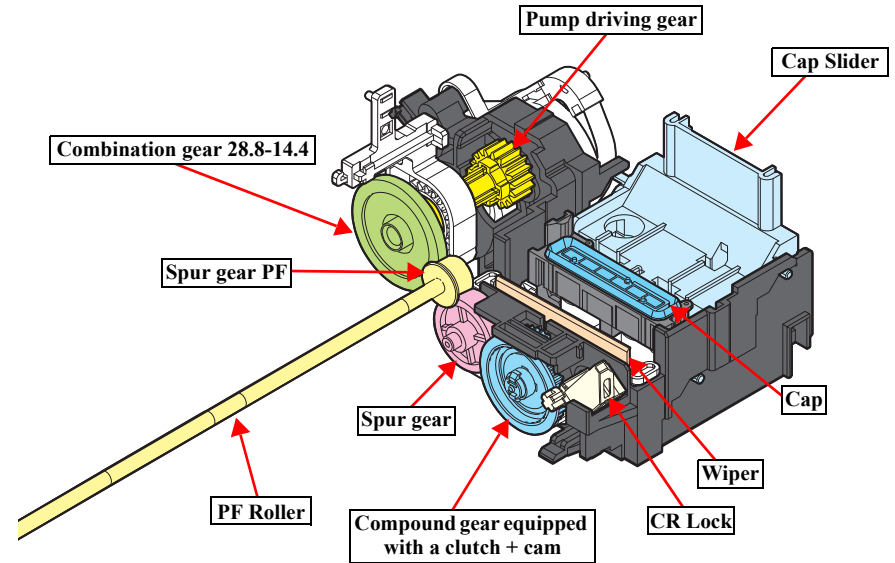


Figure 1-29. Drive path (2)

### 1.5.2.2 Operation of Each Mechanism

#### 1.5.2.2.1 Pump Mechanism

The pump mechanism sucks ink from the Printhead at cleaning.

The drive force from the pump-drive compound gear is transmitted to the Pump Shaft.

When the pump motor rotates counter-clock wise as seen from the output-shaft side of the motor, the drive force via the pump-drive compound gear rotates the Pump Pulley to flatten the tube to suck the air (to generate negative pressure) inside the tube. When the Pump Motor rotates clock wise, the Pump Pulley does not flatten the tube, and the negative pressure is released.

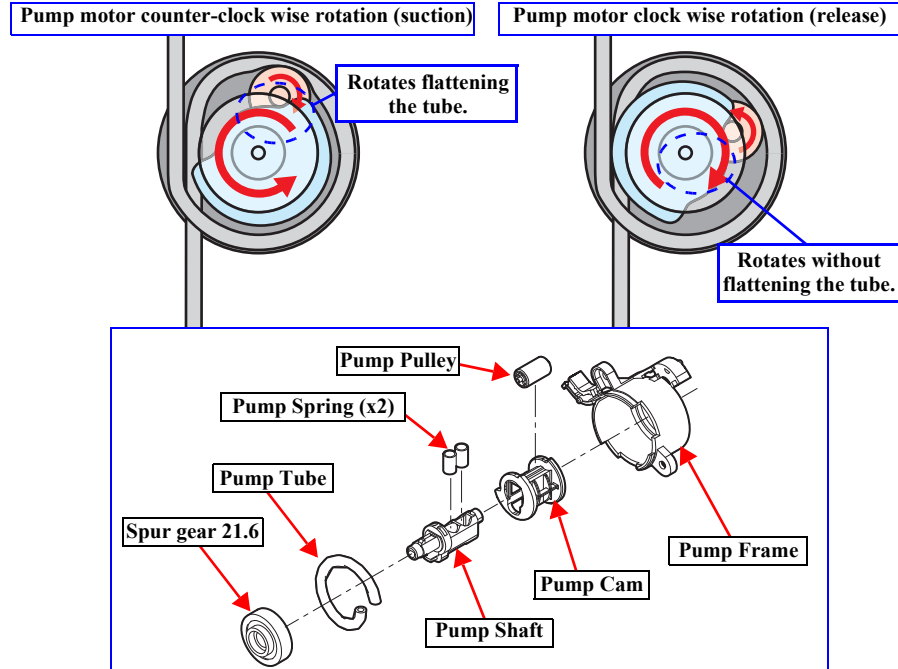


Figure 1-30. Pump mechanism operations

#### 1.5.2.2.2 Capping Mechanism

When the CR Unit returns to its home position, the Cap Slider pressed by the CR Unit moves upward to cap the Printhead. When the CR Unit moves away from the home position, the Cap Slider moves downward and the Printhead is uncapped and released from the vacuum state. The Ink System for this product does not have a valve for canceling the vacuum state, but the cap slider moved by the CR Unit provides the same function as the valve.

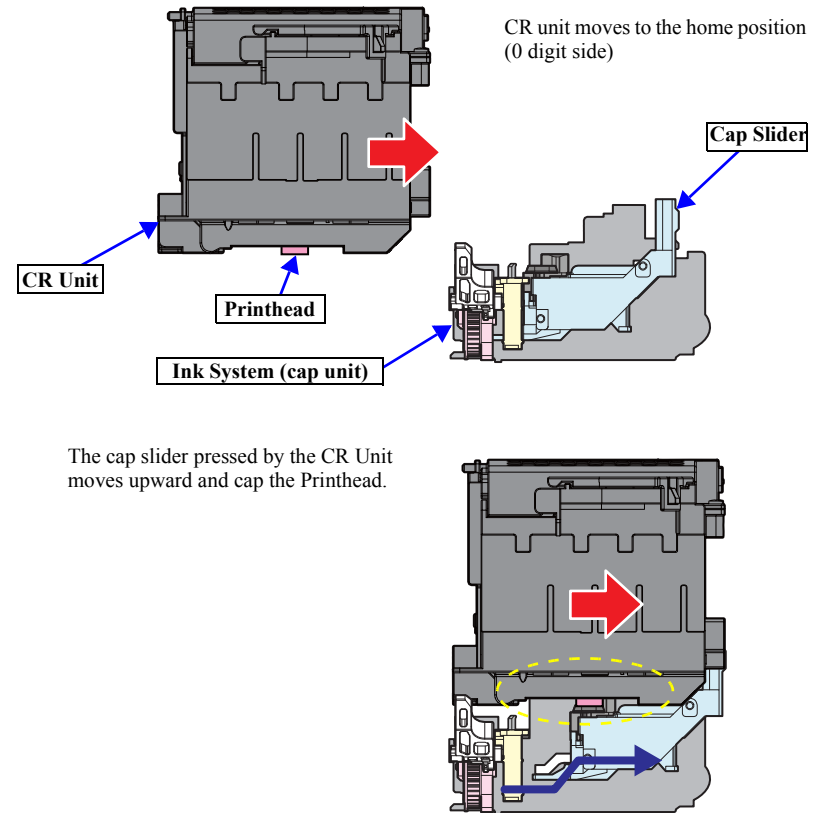


Figure 1-31. Capping mechanism operations

1.5.2.2.3 Wiper Mechanism

The wiper moves in synchronization with the capping operation. The PF motor drive transmitted through the compound gear set and cam equipped with clutch moves the wiper up or down.

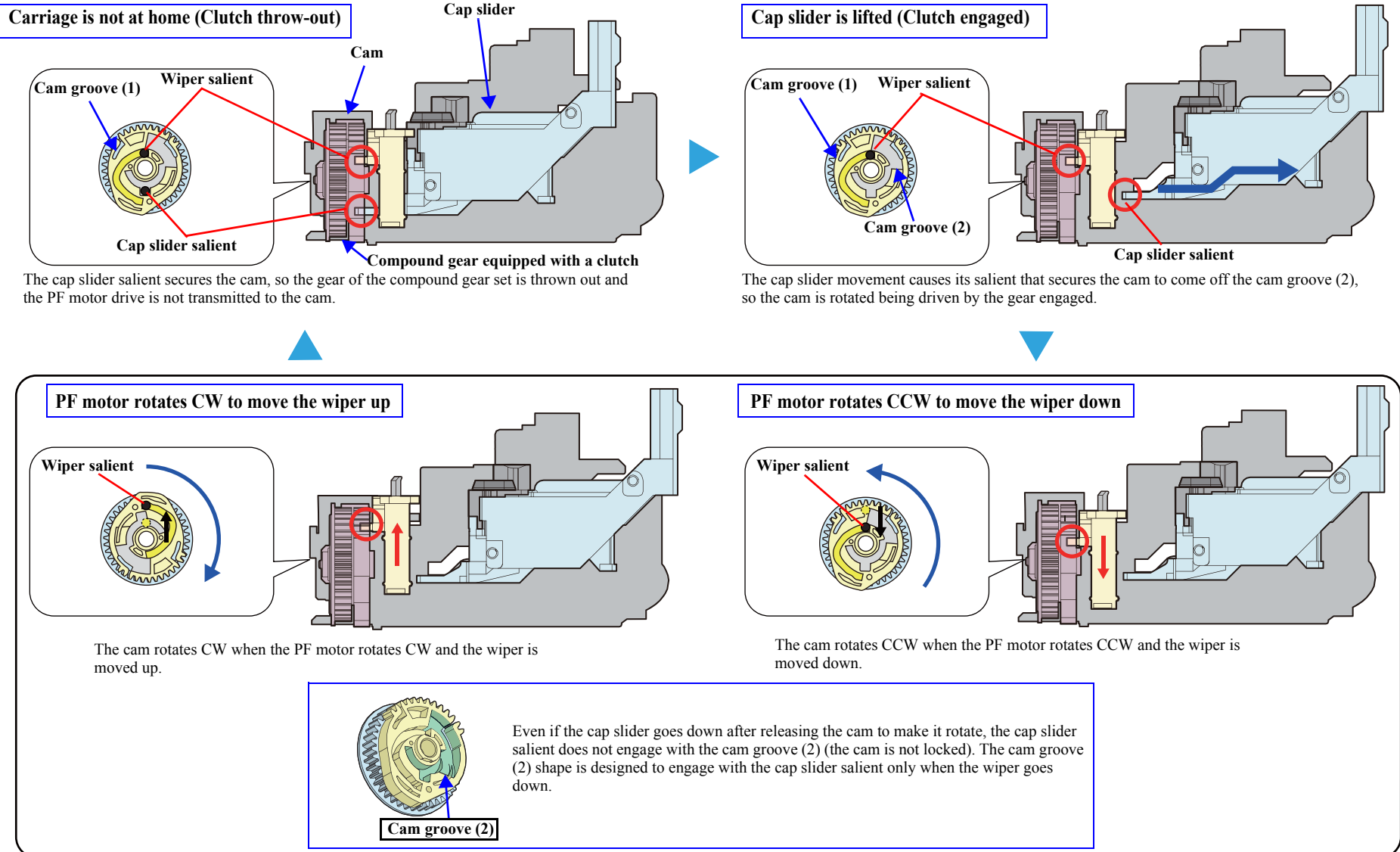


Figure 1-32. Wiper mechanism operation

#### 1.5.2.2.4 CR Lock Mechanism

The CR Lock operates in synchronization with the cap unit. It locks or unlocks the CR Unit using the PF Motor drive force transmitted through the cam of the compound gear set equipped with a clutch. For information on how the Cap Slider and the cam are related to each other, see "1.5.2.2.3 Wiper Mechanism" (p 31).

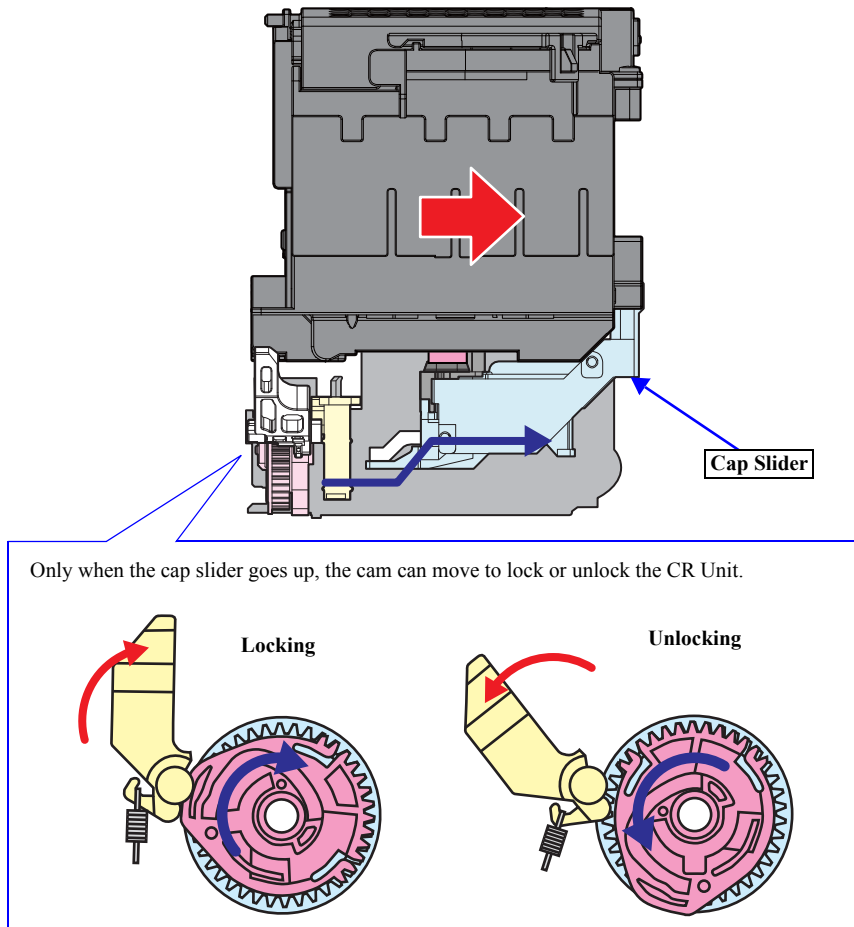


Figure 1-33. CR Lock mechanism operation

CHAPTER

2

# TROUBLESHOOTING

## 2.1 Troubleshooting

---

This section describes the troubleshooting workflow and fatal error information.

### 2.1.1 Troubleshooting Workflow

The following page describes the troubleshooting workflow. Follow the flow when troubleshooting problems.



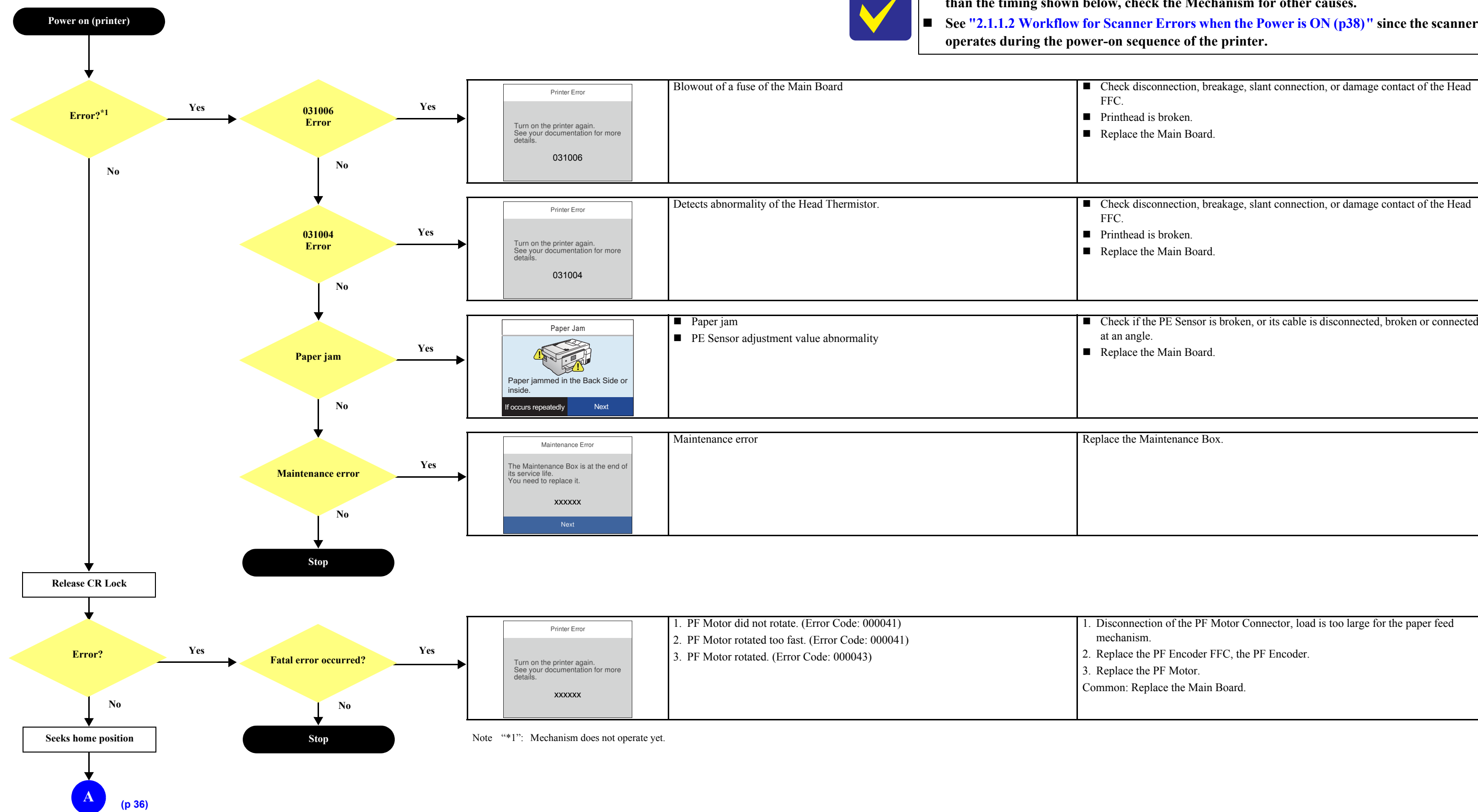
- **This flowchart is compiled based on the following contents.**
  - **Our experience regarding the quality problem.**
  - **ESK's repair data.**
  - **Printer Mechanism specification for the product.**
- **If the reason for the return is evident, first check the phenomenon user claims recurs, then proceed to the troubleshooting.**
- **If the Scanner error is the reason for the return, since the printer may be the cause of the error, check the Fatal Error Code history saved in the EEPROM with the adjustment program before starting the troubleshooting.**

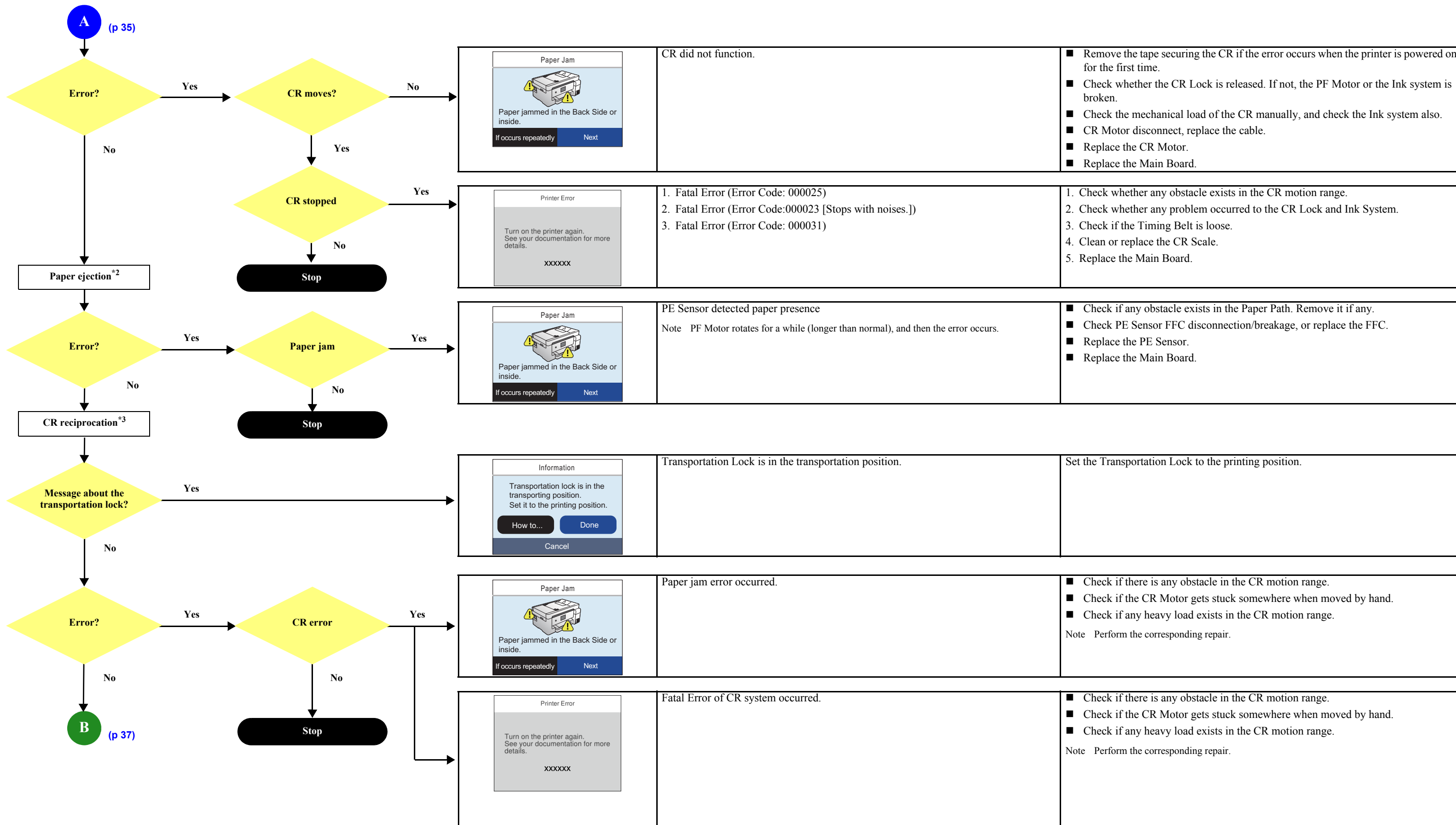
- [" Workflow when the Power is ON \(Printer\) \(p35\)"](#)
- [" Workflow for Scanner Errors when the Power is ON \(p38\)"](#)
- [" Workflow for Errors when Printing Starts \(p39\)"](#)

2.1.1.1 Workflow when the Power is ON (Printer)

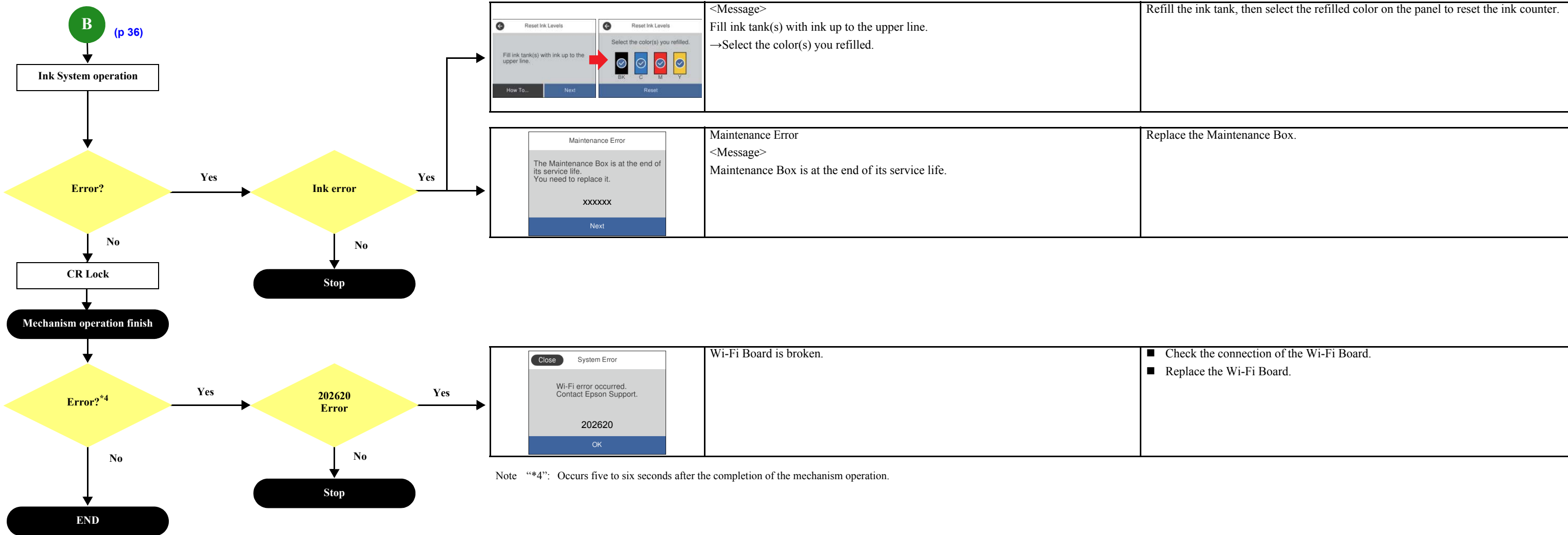


■ Fatal Errors may occur during the Mechanism operation. When an error occurred other than the timing shown below, check the Mechanism for other causes.  
 ■ See "2.1.1.2 Workflow for Scanner Errors when the Power is ON (p38)" since the scanner operates during the power-on sequence of the printer.



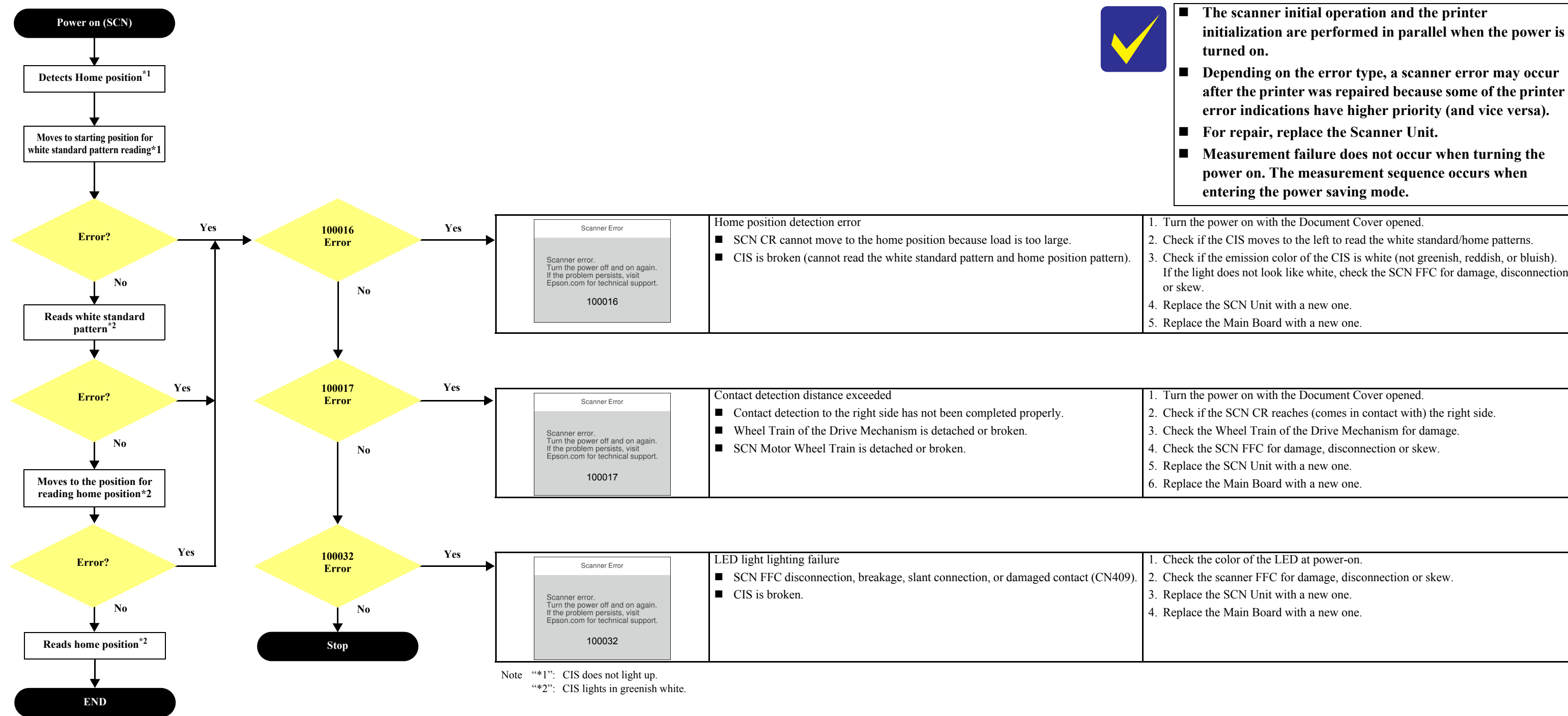


Note “\*2”: Performed if an abnormality occurred the last time the printer was powered off.  
 “\*3”: CR Unit reciprocates two times quickly when environmental temperature is lower than 5°C or when initial charge is not performed yet.



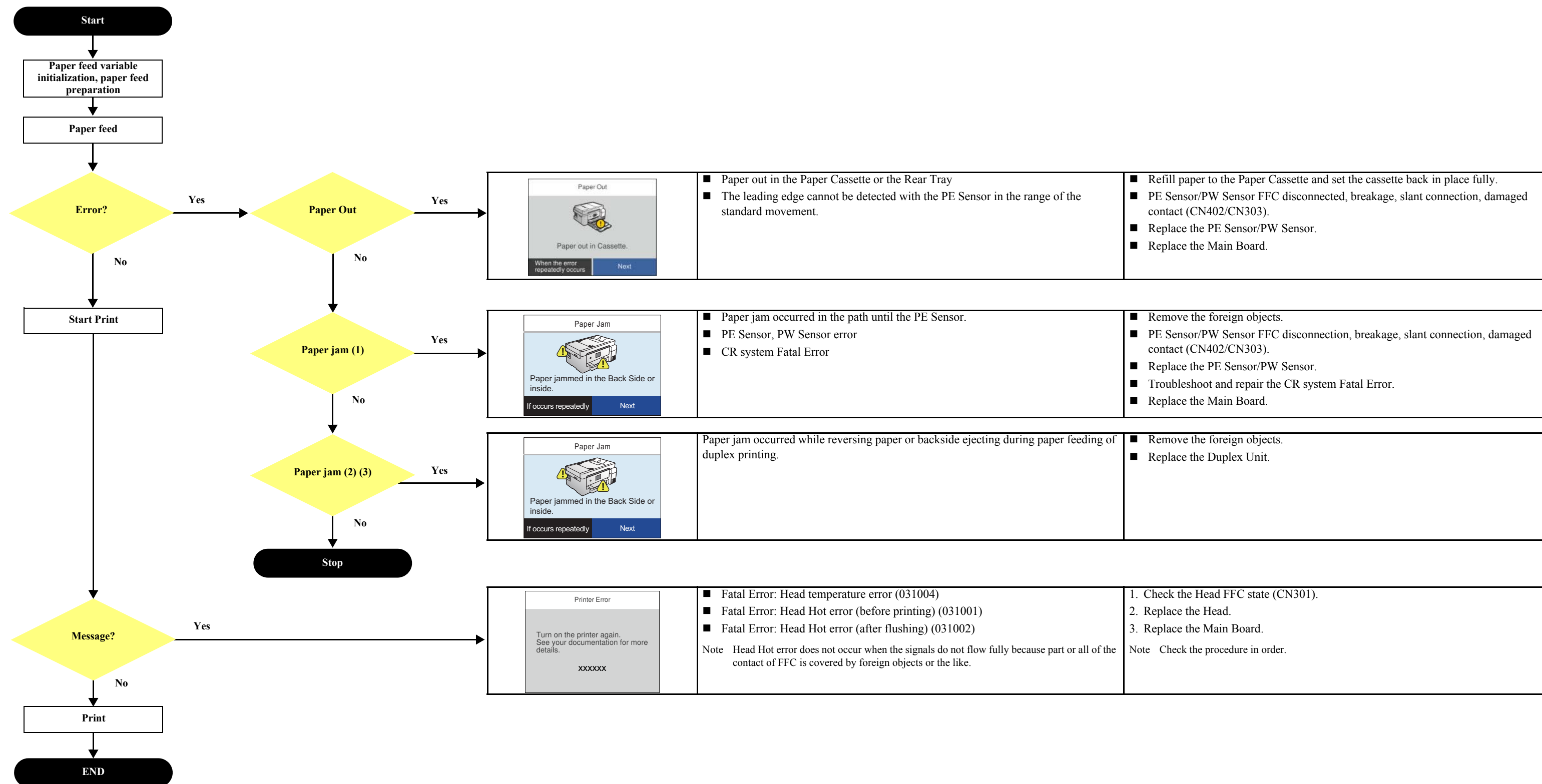
Note “\*4”: Occurs five to six seconds after the completion of the mechanism operation.

2.1.1.2 Workflow for Scanner Errors when the Power is ON



- The scanner initial operation and the printer initialization are performed in parallel when the power is turned on.
- Depending on the error type, a scanner error may occur after the printer was repaired because some of the printer error indications have higher priority (and vice versa).
- For repair, replace the Scanner Unit.
- Measurement failure does not occur when turning the power on. The measurement sequence occurs when entering the power saving mode.

2.1.1.3 Workflow for Errors when Printing Starts



## 2.2 Power-On Sequence

This section describes the power-on sequences as reference for troubleshooting. The preconditions are as follows.

- Condition: Power-on sequence (See Table2-1)
  - No error occurred when you turned on the printer last time and it has been correctly turned off.
  - Initial ink charge was done and every tank has sufficient ink.
  - No paper on the paper path.
  - The Printhead is capped.
  - The Carriage is normally fixed by the CR Lock.
  - Maintenance error recovery has never been performed.

**Table 2-1. Normal Power-on Sequence**

| Operation <sup>*1</sup>   | CR Unit/PF Roller movement and position <sup>*2</sup> |
|---|---|
| <b>1. Checking fuse on the Printhead</b><br>1-1. Checks if the fuse on the Printhead circuit boards is blown. <sup>*3</sup>       |   |
| <b>2. Checking for waste ink overflow</b><br>2-1. Checks the waste ink counter if the waste ink overflow is occurring.            |   |
| <b>3. Releasing the CR Lock</b><br>3-1. The PF Motor rotates clockwise and releases the CR Lock.                                  |   |
| <b>4. Seeking the home position</b><br>4-1. The CR Unit moves to the 0-digit side slowly and confirms it touches the Right Frame. |   |
| 4-2. The CR Unit moves to the full side slowly and confirms it does not touch the foreign material, such as remaining paper.      |   |
| 4-3. The PF Motor rotates clockwise to completely release the CR Lock.  |   |
| 4-4. The CR Unit moves to the 0-digit side slowly and checks it touches the Right Frame.  |   |

| Operation <sup>*1</sup>   | CR Unit/PF Roller movement and position <sup>*2</sup> |
|---|---|
| 4-5. The distance from the position where the CR Unit touched to the Right Frame is regarded as the standard distance from the origin position, and the home position is fixed. From then on, the CR Unit position is monitored according to the signals from the CR Encoder. |   |
| <b>5. Confirming Shipping Valve Operation</b><br>5-1. The CR Unit slowly moves to the Full side up to the portion that touches the Housing when the Ink Tube Valve is in a closed state, then accelerates and moves it up to the Full side.                                   |   |
| <b>6. Low temperature operation sequence<sup>*4</sup></b><br>6-1. The CR Unit moves back and forth quickly to near the left frame two times.  |   |
| <b>7. Resetting the APG</b><br>7-1. The PF Motor rotates counterclockwise to set the APG lever.   |   |
| 7-2. The CR Unit moves slowly and set PG to PG Typ.   |   |
| 7-3. The PF Motor rotates clockwise to reset the APG lever.   |   |
| <b>8. Ink system performance while power on</b><br>8-1. The CR Unit goes back to the home position.   |   |

Note \*1: The rotation directions of the PF Motor are as follows.

- Clockwise: Paper is fed normally
- Counterclockwise: Paper is fed backward

\*2: The conditions of the Lock CR are as follows.

- Red: Lock CR is set
- White: Lock CR is released

\*3: The fatal error occurs if there is a problem such as the fuse blew.

\*4: Executed when the detected temperature is under 5°C (41°F) by the thermistor on the Printhead.

## 2.3 Fatal Error Code List

This section describes how to check the fatal error code, description, and the possible causes.

### 2.3.1 Displaying the Fatal Error Code

The fatal error code is stored in the EEPROM on the Main Board and can be read out using the Adjustment Program. When a fatal error occurs, this product displays the fatal error code automatically on the panel LCD.

LCD display screen

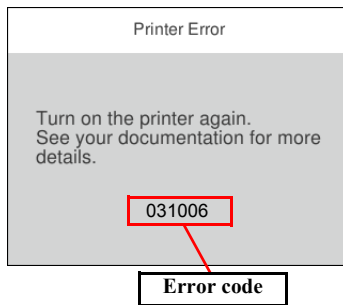


Figure 2-1. Indication of the fatal error code

### 2.3.2 Fatal Error Code

This section describes the fatal error code and the possible cause for this product.

- " ADF/Scanner (p42) "
- " Printer (CR) (p48) "
- " Printer (PF) (p51) "
- " Printer (PW/PE Sensor) (p53) "
- " Printer (Power) (p53) "
- " Printer (Head/CSIC) (p54) "
- " Printer (Others) (p55) "
- " System Error (p55) "



**ADF related errors are included in the scanner fatal error list.**

## 2.3.2.1 ADF/Scanner

| Error code | Error name                 | Possible cause   | Confirmation procedure  | Connector No.       |
|------------|----------------------------|--|---|---------------------|
| 100001     | ADF PID excess speed error | <ul style="list-style-type: none"> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>1. Contamination of the Scanner Scale</li> <li>2. Damage or skew of the Scanner Encoder FFC</li> <li>3. Failure of the Scanner Encoder</li> </ol> </li> <li>■ Failure of the Scanner Motor Driver               <ol style="list-style-type: none"> <li>4. Failure of the Main Board</li> </ol> </li> </ul>  | <ol style="list-style-type: none"> <li>1. Clean the Scanner Scale if it is contaminated.</li> <li>2. Check the cable/FFC of the Scanner Motor/Encoder.</li> <li>3. Replace the Scanner Unit with a new one.</li> <li>4. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN410 |
| 100002     | ADF PID reverse error      | <ul style="list-style-type: none"> <li>■ Paper feed fails, stopped by obstacles               <ol style="list-style-type: none"> <li>1. Paper feed was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the paper feed mechanism</li> <li>• Disengaging or tooth breakage of wheel train of the paper feed mechanism</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Jumping of the scanner drive gears</li> <li>3. Contamination of the Scanner Scale</li> <li>4. Damage or skew of the Scanner Encoder FFC</li> <li>5. Failure of the Scanner Encoder</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the load of the ADF paper feed mechanism.</li> <li>3. Check the ADF/scanner drive gear wheel train.</li> <li>4. Clean the Scanner Scale if it is contaminated.</li> <li>5. Check the cable/FFC of the Scanner Motor/Encoder.</li> <li>6. Replace the Scanner Unit with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>       | Main Board<br>CN410 |
| 100003     | ADF PID lock error         | <ul style="list-style-type: none"> <li>■ The scanner motor did not run or obstacles exist in the paper path               <ol style="list-style-type: none"> <li>1. Overload of the paper feed mechanism</li> <li>2. Disengaging or breakage of the gears</li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>3. Contamination of the Scanner Scale</li> <li>4. Disconnection, break, skew or damage of the Scanner Encoder FFC</li> <li>5. Failure of the Scanner Encoder</li> <li>6. Failure of the Scanner Motor (the lead wire is broken or the connector is disconnected)</li> <li>7. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. Check that no jammed paper exist in the paper path.</li> <li>2. Check the load of the ADF.</li> <li>3. Check the ADF/scanner drive gear wheel train.</li> <li>4. Clean the Scanner Scale if it is contaminated.</li> <li>5. Check the cable/FFC of the Scanner Motor/Encoder.</li> <li>6. Replace the Scanner Unit with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN410 |
| 100005     | ADF PID excess load error  | <ul style="list-style-type: none"> <li>■ The Scanner Motor stopped running in the middle of the operation               <ol style="list-style-type: none"> <li>1. The ADF was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the paper feed mechanism</li> <li>• Disengaging or breakage of the gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Jumping of the scanner drive gears</li> <li>3. Contamination of the Scanner Scale</li> <li>4. Disconnection, break, skew or damage of the Scanner Motor Cable/ Encoder FFC</li> <li>5. Failure of the Scanner Motor (not completely broken)</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the load of the ADF paper feed mechanism.</li> <li>3. Check the ADF/scanner drive gear wheel train.</li> <li>4. Check the Scanner Scale for damage or contamination.</li> <li>5. Check the cable/FFC of the Scanner Motor/Encoder.</li> <li>6. Replace the Scanner Unit with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN410 |

| Error code | Error name                 | Possible cause  | Confirmation procedure  | Connector No.       |
|------------|----------------------------|---|---|---------------------|
| 100006     | ADF PID driving time error | Malfunction or crash of the firmware  | <ol style="list-style-type: none"> <li>1. Turn the printer off and back it on.</li> <li>2. If the error still occurs after the restart, replace the Main Board.</li> </ol>  | ---                 |
| 100009     | ADF BS+ excess speed error | <ul style="list-style-type: none"> <li>■ Failed to read the Scanner Motor Encoder               <ol style="list-style-type: none"> <li>1. Contamination of the Scanner Encoder Scale</li> <li>2. Damage or skew of the Scanner Encoder FFC</li> <li>3. Failure of the Scanner Motor Encoder</li> </ol> </li> <li>■ Failure of the Scanner Motor Driver               <ol style="list-style-type: none"> <li>4. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. Clean the Scanner Encoder Scale if it is contaminated.</li> <li>2. Check the cable/FFC of the Scanner Motor/Encoder.</li> <li>3. Replace the Scanner Unit with a new one.</li> <li>4. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN410 |
| 100010     | ADF BS+ reverse error      | <ul style="list-style-type: none"> <li>■ Paper feed fails, stopped by obstacles               <ol style="list-style-type: none"> <li>1. Paper feed was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the paper feed mechanism</li> <li>• Disengaging or tooth breakage of wheel train of the paper feed mechanism</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Jumping of the scanner drive gears</li> <li>3. Contamination of the Scanner Scale</li> <li>4. Damage or skew of the Scanner Encoder FFC</li> <li>5. Failure of the Scanner Encoder</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul>                              | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the load of the ADF paper feed mechanism.</li> <li>3. Check the ADF/scanner drive gear wheel train.</li> <li>4. Clean the Scanner Scale if it is contaminated.</li> <li>5. Check the cable/FFC of the Scanner Motor/Encoder.</li> <li>6. Replace the ADF Unit.</li> <li>7. Replace the Scanner Unit with a new one.</li> <li>8. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN410 |
| 100011     | ADF BS+ lock error         | <ul style="list-style-type: none"> <li>■ The Scanner Motor did not run               <ol style="list-style-type: none"> <li>1. The ADF was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the mechanism</li> <li>• Disengaging or breakage of the gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the Scanner Scale</li> <li>3. Disconnection, break, skew or damage of the Scanner Motor Cable/ Encoder FFC</li> <li>4. Failure of the Scanner Encoder</li> <li>5. Failure of the Scanner Motor (the lead wire is broken or the connector is disconnected)</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the ADF/scanner drive gear wheel train.</li> <li>3. Clean the Scanner Encoder Scale if it is contaminated.</li> <li>4. Check the cable/FFC of the Scanner Motor/Encoder.</li> <li>5. Replace the ADF Unit with a new one.</li> <li>6. Replace the Scanner Unit with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>                                      | Main Board<br>CN410 |

| Error code | Error name  | Possible cause   | Confirmation procedure   | Connector No.                |
|------------|---|--|--|------------------------------|
| 100013     | ADF BS+ excess load error                               | <ul style="list-style-type: none"> <li>■ The Scanner Motor stopped running in the middle of the operation               <ol style="list-style-type: none"> <li>1. The ADF was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the paper feed mechanism</li> <li>• Disengaging or tooth breakage of wheel train of the Scanner gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Jumping of the scanner drive gears</li> <li>3. Contamination of the Scanner Encoder</li> <li>4. Failure of the Scanner Motor (not completely broken)</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the load of the ADF paper feed mechanism.</li> <li>3. Check the ADF/scanner drive gear wheel train.</li> <li>4. Clean the Scanner Scale if it is contaminated.</li> <li>5. Replace the ADF Unit with a new one.</li> <li>6. Replace the Scanner Unit with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN410          |
| 100014     | ADF BS+ driving time error                              | Malfunction or crash of the firmware   | <ol style="list-style-type: none"> <li>1. Turn the printer off and back it on.</li> <li>2. If the error still occurs after the restart, replace the Main Board.</li> </ol>   | ---                          |
| 100016     | HP detection failure                                    | <ul style="list-style-type: none"> <li>■ The Scanner CR could not return to its home.               <ol style="list-style-type: none"> <li>1. Damage or disengaging of wheel train of the drive mechanism</li> <li>2. Disengaging, fraying, jumping of the timing belt</li> </ol> </li> <li>■ Failed to read the white standard/home patterns.               <ol style="list-style-type: none"> <li>3. Disconnection, break, skew or damage of the Scanner FFC</li> <li>4. Failure of the CIS Module</li> <li>5. Failure of the scanner housing</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. With the ADF Unit or the Document Cover opened, turn the power on.</li> <li>2. Check if the CIS moves to the right to read the white standard/home patterns.</li> <li>3. Check if the CIS's emission color is white (not greenish, reddish, or bluish).<br/>If the light does not look like white, check the Scanner FFC for damage, disconnection or skew.</li> <li>4. Replace the Scanner Unit with a new one.</li> <li>5. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN409<br>CN410 |
| 100017     | Contact detection distance exceeded                     | <ul style="list-style-type: none"> <li>■ The Scanner CR cannot completely reach the home (right side).               <ol style="list-style-type: none"> <li>1. Damage or disengaging of wheel train of the drive mechanism</li> </ol> </li> <li>■ Failed to read the Scanner Motor Encoder               <ol style="list-style-type: none"> <li>2. Damage or skew of the Scanner FFC</li> <li>3. Failure of the CIS Module</li> <li>4. Failure of the scanner housing</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. With the ADF Unit or the Document Cover opened, turn the power on.</li> <li>2. Check if the CIS (Scanner CR) reaches (comes in contact with) the right side.</li> <li>3. Check the wheel train of the drive mechanism for damage.</li> <li>4. Check the Scanner FFC for damage, disconnection or skew.</li> <li>5. Replace the Scanner Unit with a new one.</li> <li>6. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN409<br>CN410 |
| 100018     | Opposite side contact detection distance exceeded error | <ul style="list-style-type: none"> <li>■ The Scanner CR cannot completely reach the opposite side of the home (right side)               <ol style="list-style-type: none"> <li>1. Damage or disengaging of wheel train of the drive mechanism</li> </ol> </li> <li>■ Failed to read the Scanner Motor Encoder               <ol style="list-style-type: none"> <li>2. Damage or skew of the Scanner FFC</li> <li>3. Failure of the CIS Module</li> <li>4. Failure of the scanner housing</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. With the Document Cover opened, turn the power on.</li> <li>2. Check if the CIS (CR) reaches (comes in contact with) the right side.</li> <li>3. Check the wheel train of the drive mechanism for damage.</li> <li>4. Check the Scanner FFC for damage, disconnection or skew.</li> <li>5. Replace the Scanner Unit with a new one.</li> <li>6. Replace the Main Board with a new one.</li> </ol>  | ---                          |

| Error code | Error name                             | Possible cause   | Confirmation procedure  | Connector No.                |
|------------|--|--|---|------------------------------|
| 100019     | Wrong contact detection distance error | <ul style="list-style-type: none"> <li>■ The Scanner CR cannot completely reach the opposite side of the home (right side)               <ol style="list-style-type: none"> <li>1. Damage or disengaging of wheel train of the drive mechanism</li> </ol> </li> <li>■ Failed to read the Scanner Motor Encoder               <ol style="list-style-type: none"> <li>2. Damage or skew of the Scanner FFC</li> <li>3. Failure of the CIS Module</li> <li>4. Failure of the scanner housing</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. With the Document Cover opened, turn the power on.</li> <li>2. Check if the CIS (CR) reaches (comes in contact with) the right side.</li> <li>3. Check the wheel train of the drive mechanism for damage.</li> <li>4. Check the Scanner FFC for damage, disconnection or skew.</li> <li>5. Replace the Scanner Unit with a new one.</li> <li>6. Replace the Main Board with a new one.</li> </ol>                                 | ---                          |
| 100020     | Measurement error                      | <ul style="list-style-type: none"> <li>■ Overload of the Scanner drive mechanism</li> <li>■ Failure of the Scanner Motor</li> </ul>  | <ol style="list-style-type: none"> <li>1. Check if the CIS (Scanner CR) moves or not.               <ol style="list-style-type: none"> <li>1. Check the wheel train of the drive mechanism for damage.</li> </ol> </li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol>   | ---                          |
| 100032     | LED light failure                      | <ul style="list-style-type: none"> <li>■ Failure of the CIS LED light (RGB)               <ol style="list-style-type: none"> <li>1. Disconnection, break, skew or damage of the Scanner FFC</li> <li>2. Failure of the CIS Module</li> <li>3. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. Check the color of the LED at power-on.</li> <li>2. Check the Scanner FFC for damage, disconnection or skew.</li> <li>3. Replace the Scanner Unit with a new one.</li> <li>4. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN409          |
| 100054     | Paper jam error                        | <ul style="list-style-type: none"> <li>■ No jammed paper is remaining but the sensor does not turn off               <ol style="list-style-type: none"> <li>1. Failure of the ADF PE Sensor</li> <li>2. Failure of the cable</li> </ol> </li> <li>■ Jammed paper is remaining</li> <li>■ The Paper Feed Rollers and Paper Conveying Rollers slip too much<br/>*At power-on, during paper feed, during scanning</li> </ul>  | <ol style="list-style-type: none"> <li>1. Open the PGU LD ADF Assy and check if paper exist or not.</li> <li>2. Open the Document Support ADF and check if paper exist or not.</li> <li>3. Open the ADF and check if paper exist or not.</li> <li>4. Check if the Paper Sensor Lever moves up and down.</li> <li>5. Replace the ADF Unit with a new one.</li> <li>6. Replace the Scanner Unit with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN410          |
| 100065     | FB PID excess speed error              | <ul style="list-style-type: none"> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>1. Contamination of the Scanner Scale</li> <li>2. Damage or skew of the Scanner FFC</li> <li>3. Failure of the Scanner Encoder</li> </ol> </li> <li>■ Failure of the Scanner Motor Driver               <ol style="list-style-type: none"> <li>4. Failure of the Main Board</li> </ol> </li> </ul>  | <ol style="list-style-type: none"> <li>1. Check the Scanner FFC for damage, disconnection or skew.</li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN409<br>CN410 |
| 100066     | FB PID reverse error                   | <ul style="list-style-type: none"> <li>■ Operation failure of the Scanner Motor               <ol style="list-style-type: none"> <li>1. The scanning operation was stopped by;                   <ul style="list-style-type: none"> <li>• Disengaging of the Scanner CR</li> <li>• Disengaging of the Scanner Motor Pulley or cracking of the scanner drive gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the Scanner Scale</li> <li>3. Damage or skew of the Scanner FFC</li> <li>4. Failure of the Scanner Encoder</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check the Scanner FFC for damage, disconnection or skew.</li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN409<br>CN410 |

| Error code | Error name                | Possible cause   | Confirmation procedure  | Connector No.                |
|------------|---------------------------|--|---|------------------------------|
| 100067     | FB PID lock error         | <ul style="list-style-type: none"> <li>■ The Scanner Motor did not run               <ol style="list-style-type: none"> <li>1. The scanning operation was stopped by;                   <ul style="list-style-type: none"> <li>• Disengaging of the Scanner CR</li> <li>• Disengaging of the Scanner Motor Pulley or cracking of the scanner drive gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the Scanner Scale</li> <li>3. Damage or skew of the Scanner FFC</li> <li>4. Failure of the Scanner Encoder</li> <li>5. Failure of the Scanner Motor</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. Check the Scanner FFC for damage, disconnection or skew.</li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN409<br>CN410 |
| 100069     | FB PID excess load error  | <ul style="list-style-type: none"> <li>■ The Scanner Motor stopped running in the middle of the operation               <ol style="list-style-type: none"> <li>1. The scanning operation was stopped by;                   <ul style="list-style-type: none"> <li>• Disengaging of the Scanner CR</li> <li>• Disengaging of the Scanner Motor Pulley or cracking of the scanner motor gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the Scanner Scale</li> <li>3. Disconnection, break, skew or damage of the Scanner FFC</li> <li>4. Failure of the Scanner Encoder</li> <li>5. Failure of the Scanner Motor (not completely broken).</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check the Scanner FFC for damage, disconnection or skew.</li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN409<br>CN410 |
| 100070     | FB PID driving time error | Malfunction or crash of the firmware   | <ol style="list-style-type: none"> <li>1. Turn the printer off and back it on.</li> <li>2. If the error still occurs after the restart, replace the Main Board.</li> </ol>  | ---                          |
| 100073     | FB BS+ excess speed error | <ul style="list-style-type: none"> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>1. Contamination of the Scanner Scale</li> <li>2. Damage or skew of the Scanner FFC</li> <li>3. Failure of the Scanner Encoder</li> </ol> </li> <li>■ Failure of the Scanner Motor Driver               <ol style="list-style-type: none"> <li>4. Failure of the Main Board</li> </ol> </li> </ul>  | <ol style="list-style-type: none"> <li>1. Check the Scanner FFC for damage, disconnection or skew.</li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN409<br>CN410 |
| 100074     | FB BS+ reverse error      | <ul style="list-style-type: none"> <li>■ Operation failure of the Scanner Motor               <ol style="list-style-type: none"> <li>1. The scanning operation was stopped by;                   <ul style="list-style-type: none"> <li>• Disengaging of the Scanner CR</li> <li>• Disengaging of the Scanner Motor Pulley or cracking of the scanner drive gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the Scanner Scale</li> <li>3. Damage or skew of the Scanner FFC</li> <li>4. Failure of the Scanner Encoder</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. Check the Scanner FFC for damage, disconnection or skew.</li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN409<br>CN410 |

| Error code | Error name                | Possible cause   | Confirmation procedure  | Connector No.                |
|------------|---------------------------|--|---|------------------------------|
| 100075     | FB BS+ lock error         | <ul style="list-style-type: none"> <li>■ The Scanner Motor did not run               <ol style="list-style-type: none"> <li>1. The scanning operation was stopped by;                   <ul style="list-style-type: none"> <li>• Disengaging of the Scanner CR</li> <li>• Disengaging of the Scanner Motor Pulley or cracking of the scanner drive gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the Scanner Scale</li> <li>3. Damage or skew of the Scanner FFC</li> <li>4. Failure of the Scanner Encoder</li> <li>5. Failure of the Scanner Motor</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check the Scanner FFC for damage, disconnection or skew.</li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN409<br>CN410 |
| 100077     | FB BS+ excess load error  | <ul style="list-style-type: none"> <li>■ The Scanner Motor stopped running in the middle of the operation               <ol style="list-style-type: none"> <li>1. The scanning operation was stopped by;                   <ul style="list-style-type: none"> <li>• Disengaging of the Scanner CR</li> <li>• Disengaging of the Scanner Motor Pulley or cracking of the scanner drive gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the Scanner Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the Scanner Scale</li> <li>3. Failure of the Scanner Motor (not completely broken).</li> <li>4. Failure of the Main Board</li> </ol> </li> </ul>                              | <ol style="list-style-type: none"> <li>1. Check the Scanner FFC for damage, disconnection or skew.</li> <li>2. Replace the Scanner Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN409<br>CN410 |
| 100078     | FB BS+ driving time error | Malfunction or crash of the firmware   | <ol style="list-style-type: none"> <li>1. Turn the printer off and back it on.</li> <li>2. If the error still occurs after the restart, replace the Main Board.</li> </ol>  | ---                          |

## 2.3.2.2 Printer (CR)

| Error code | Error name                | Possible cause   | Confirmation procedure  | Connector No.                |
|------------|---------------------------|--|---|------------------------------|
| 000020     | CR PID driving time error | Malfunction or crash of the firmware   | <ol style="list-style-type: none"> <li>1. Turn the printer off and back it on.</li> <li>2. If the error still occurs after the restart, replace the Main Board.</li> </ol>  | ---                          |
| 000021     | CR PID excess load error  | <ul style="list-style-type: none"> <li>■ The CR Motor stopped running in the middle of the operation               <ol style="list-style-type: none"> <li>1. The CR was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the mechanism</li> <li>• Interfere with the Ink System</li> <li>• Disengaging, fraying, jumping of the timing belt</li> <li>• Crack or disengaging of the gear, or the APG Lever interferes with the CR</li> </ul> </li> </ol> </li> <li>■ Failed to read the CR Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the CR Scale</li> <li>3. Failure of the CR Motor (not completely broken)</li> <li>4. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no obstacle exist in the CR motion range.</li> <li>2. Check the CR lock and Ink System for any abnormality.</li> <li>3. Check the CR Timing Belt for fraying or looseness.</li> <li>4. Check the load applied to the CR by moving it by hand.</li> <li>5. Check if the lubricant on the CR shaft is adequate.</li> <li>6. Check the CR drive mechanism.</li> <li>7. Clean the CR Scale if it is contaminated.</li> <li>8. Replace the CR Motor with a new one.</li> <li>9. Replace the Main Board with a new one.</li> </ol> | ---                          |
| 000022     | CR PID excess speed error | <ul style="list-style-type: none"> <li>■ Failed to read the CR Encoder               <ol style="list-style-type: none"> <li>1. Contamination of the CR Scale</li> <li>2. Damage or skew of the CR Encoder FFC</li> <li>3. Failure of the CR Encoder</li> </ol> </li> <li>■ Failure of the CR Motor Driver               <ol style="list-style-type: none"> <li>4. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. Clean the CR Scale if it is contaminated.</li> <li>2. Check the CR Encoder FFC.</li> <li>3. Replace the CR Encoder with a new one.</li> <li>4. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN303<br>CN305 |
| 000023     | CR PID reverse error      | <ul style="list-style-type: none"> <li>■ Operation failure of the CR Motor, stopped by obstacles               <ol style="list-style-type: none"> <li>1. CR was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Interfere with the Ink System</li> <li>• Disengaging or breakage of the gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the CR Encoder               <ol style="list-style-type: none"> <li>2. Jumping of the CR Timing Belt</li> <li>3. Contamination of the CR Scale</li> <li>4. Damage or skew of the CR Encoder FFC</li> <li>5. Failure of the CR Encoder</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul>  | <ol style="list-style-type: none"> <li>1. Check that no obstacle exist in the CR motion range.</li> <li>2. Check the CR lock and Ink System for any abnormality.</li> <li>3. Check the CR Timing Belt for fraying or looseness.</li> <li>4. Clean the CR Scale if it is contaminated.</li> <li>5. Check the CR Encoder FFC or the connector.</li> <li>6. Replace the CR Encoder with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN303<br>CN305 |

| Error code | Error name                          | Possible cause   | Confirmation procedure   | Connector No.                |
|------------|-------------------------------------|--|--|------------------------------|
| 000024     | CR PID lock error                   | <ul style="list-style-type: none"> <li>■ The CR Motor did not run, or the CR could not move smoothly               <ol style="list-style-type: none"> <li>1. Overload of the CR</li> </ol> </li> <li>■ Failed to read the CR Encoder               <ol style="list-style-type: none"> <li>2. The CR Timing Belt become frayed or jumping</li> <li>3. Contamination of the CR Scale</li> <li>4. Disconnection, break, skew or damage of the CR Encoder FFC</li> <li>5. Failure of the CR Encoder</li> <li>6. Failure of the CR Motor (the lead wire is broken or the connector is disconnected)</li> <li>7. Failure of the Main Board</li> </ol> </li> </ul>                                    | <ol style="list-style-type: none"> <li>1. Check that no obstacle exist in the CR motion range.</li> <li>2. Move the CR by hand to see if it moves smoothly without getting stuck.</li> <li>3. Check the CR Timing Belt for fraying or looseness.</li> <li>4. Clean the CR Scale if it is contaminated.</li> <li>5. Check the connector and the CR Encoder FFC for damage.</li> <li>6. Replace the CR Encoder FFC with a new one.</li> <li>7. Check the connector of the CR Motor.</li> <li>8. Replace the CR Motor with a new one.</li> <li>9. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN303<br>CN305 |
| 000025     | CR PID speed fall error             | <ul style="list-style-type: none"> <li>■ Operation failure of the CR               <ol style="list-style-type: none"> <li>1. The CR was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the mechanism</li> <li>• Interfere with the Ink System</li> </ul> </li> </ol> </li> <li>■ Failed to read the CR Encoder               <ol style="list-style-type: none"> <li>2. The CR Timing Belt become loosened or jumping</li> <li>3. Contamination of the CR Scale</li> <li>4. Damage or skew of the CR Encoder FFC</li> <li>5. Failure of the CR Motor</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no obstacle exist in the CR motion range.</li> <li>2. Check the CR lock and Ink System for any abnormality.</li> <li>3. Check the CR Timing Belt for looseness.</li> <li>4. Clean the CR Scale if it is contaminated.</li> <li>5. Check the connector of the CR Encoder FFC.</li> <li>6. Replace the CR Motor with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN303<br>CN305 |
| 000030     | CR load position driving time error | Malfunction or crash of the firmware   | <ol style="list-style-type: none"> <li>1. Turn the printer off and back it on.</li> <li>2. If the error still occurs after the restart, replace the Main Board.</li> </ol>   | ---                          |

| Error code | Error name                          | Possible cause  | Confirmation procedure  | Connector No.                |
|------------|-------------------------------------|---|---|------------------------------|
| 000031     | CR load position excess load error  | <ul style="list-style-type: none"> <li>■ The CR Motor stopped running in the middle of the operation               <ol style="list-style-type: none"> <li>1. The CR was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the mechanism</li> <li>• Interfere with the Ink System</li> <li>• Disengaging or breakage of the gears</li> <li>• Disengaging, fraying, jumping of the timing belt</li> </ul> </li> </ol> </li> <li>■ Failed to read the CR Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the CR Scale</li> <li>3. Failure of the CR Motor (not completely broken)</li> <li>4. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no obstacle exist in the CR motion range.</li> <li>2. Check the CR lock and Ink System for any abnormality.</li> <li>3. Check the CR Timing Belt for fraying or looseness.</li> <li>4. Check the load applied to the CR by moving it by hand.</li> <li>5. Check if the lubricant on the CR shaft is adequate.</li> <li>6. Check the CR drive mechanism.</li> <li>7. Clean the CR Scale if it is contaminated.</li> <li>8. Replace the CR Motor with a new one.</li> <li>9. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN303<br>CN305 |
| 000032     | CR load position excess speed error | <ul style="list-style-type: none"> <li>■ Failed to read the CR Encoder               <ol style="list-style-type: none"> <li>1. Contamination of the CR Scale</li> <li>2. Damage or skew of the CR Encoder FFC</li> <li>3. Failure of the CR Encoder</li> </ol> </li> <li>■ Failure of the CR Motor Driver               <ol style="list-style-type: none"> <li>4. Failure of the Main Board</li> </ol> </li> </ul>  | <ol style="list-style-type: none"> <li>1. Clean the CR Scale if it is contaminated.</li> <li>2. Check the CR Encoder FFC.</li> <li>3. Replace the CR Encoder with a new one.</li> <li>4. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN303<br>CN305 |
| 000033     | CR load position reverse error      | <ul style="list-style-type: none"> <li>■ Operation failure of the CR Motor, stopped by obstacles               <ol style="list-style-type: none"> <li>1. CR was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the mechanism</li> <li>• Interfere with the Ink System</li> </ul> </li> </ol> </li> <li>■ Failed to read the CR Encoder               <ol style="list-style-type: none"> <li>2. Jumping of the CR Timing Belt</li> <li>3. Contamination of the CR Scale</li> <li>4. Damage or skew of the CR Encoder FFC</li> <li>5. Failure of the CR Encoder</li> <li>6. Failure of the Main Board</li> </ol> </li> </ul>  | <ol style="list-style-type: none"> <li>1. Check that no obstacle exist in the CR motion range.</li> <li>2. Check the CR lock and Ink System for any abnormality.</li> <li>3. Check the CR Timing Belt for fraying or looseness.</li> <li>4. Clean the CR Scale if it is contaminated.</li> <li>5. Check the CR Encoder FFC or the connector.</li> <li>6. Replace the CR Encoder with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN303<br>CN305 |

## 2.3.2.3 Printer (PF)

| Error code | Error name                | Possible cause  | Confirmation procedure  | Connector No.                |
|------------|---------------------------|---|---|------------------------------|
| 000040     | PF PID driving time error | Malfunction or crash of the firmware<br>*: The PE Sensor remains in paper detection status and a paper jam error occurs instead of causing a fatal error.   | <ol style="list-style-type: none"> <li>1. Turn the printer off and back it on.</li> <li>2. If the error still occurs after the restart, replace the Main Board.</li> </ol>  | ---                          |
| 000041     | PF PID excess load error  | <ul style="list-style-type: none"> <li>■ The PF Motor stopped running in the middle of the operation               <ol style="list-style-type: none"> <li>1. The PF was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the paper feed mechanism</li> <li>• Disengaging or breakage of the gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the PF Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the PF Scale</li> <li>3. Disconnection, break, skew or damage of the PF Motor Cable/ Encoder FFC</li> <li>4. Failure of the PF Motor (not completely broken)</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the load of the paper feed mechanism.</li> <li>3. Check the wheel train of the PF drive and the timing belt for fraying or looseness.</li> <li>4. Check the PF Scale for damage or contamination.</li> <li>5. Check the PF Encoder FFC or the connector.</li> <li>6. Replace the PF Motor with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN304<br>CN401 |
| 000042     | PF PID excess speed error | <ul style="list-style-type: none"> <li>■ Failed to read the PF Encoder               <ol style="list-style-type: none"> <li>1. Contamination of the PF Scale</li> <li>2. Skew or damage of the PF Encoder FFC</li> <li>3. Failure of the PF Encoder</li> </ol> </li> <li>■ Failure of the PF Motor Driver               <ol style="list-style-type: none"> <li>4. Failure of the Main Board</li> </ol> </li> </ul>  | <ol style="list-style-type: none"> <li>1. Clean the PF Scale if it is contaminated.</li> <li>2. Check the PF Encoder FFC or the connector.</li> <li>3. Replace the PF Encoder with a new one.</li> <li>4. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN304<br>CN401 |
| 000043     | PF PID reverse error      | <ul style="list-style-type: none"> <li>■ Paper feed fails, stopped by obstacles               <ol style="list-style-type: none"> <li>1. Paper feed was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the paper feed mechanism</li> <li>• Disengaging or tooth breakage of wheel train of the paper feed mechanism</li> </ul> </li> </ol> </li> <li>■ Failed to read the PF Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the PF Scale</li> <li>3. Skew or damage of the PF Encoder FFC</li> <li>4. Failure of the PF Encoder</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul>                                       | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the load of the paper feed mechanism.</li> <li>3. Check the wheel train of the PF drive and the timing belt.</li> <li>4. Clean the PF Scale if it is contaminated.</li> <li>5. Check the PF Encoder FFC or the connector.</li> <li>6. Replace the PF Encoder with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>                              | Main Board<br>CN304<br>CN401 |

| Error code | Error name                          | Possible cause   | Confirmation procedure   | Connector No.                |
|------------|-------------------------------------|--|--|------------------------------|
| 000044     | PF PID lock error                   | <ul style="list-style-type: none"> <li>■ The PF Motor did not run or obstacles exist in the paper path               <ol style="list-style-type: none"> <li>1. Overload of the paper feed mechanism</li> <li>2. The wheel train of paper feed mechanism is disengaged or its tooth is broken</li> </ol> </li> <li>■ Failed to read the PF Encoder               <ol style="list-style-type: none"> <li>3. Contamination of the PF Scale</li> <li>4. Disconnection, break, skew or damage of the PF Encoder FFC</li> <li>5. Failure of the PF Encoder</li> <li>6. Failure of the PF Motor (the lead wire is broken or the connector is disconnected)</li> <li>7. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no jammed paper exist in the paper path.</li> <li>2. Check the load of the PF.</li> <li>3. Check the wheel train of the PF drive and the timing belt for fraying or looseness.</li> <li>4. Clean the PF Scale if it is contaminated.</li> <li>5. Check the PF Encoder FFC or the connector.</li> <li>6. Replace the PF Encoder with a new one.</li> <li>7. Check the connector of the PF Motor.</li> <li>8. Replace the PF Motor with a new one</li> <li>9. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN304<br>CN401 |
| 000050     | PF load position driving time error | Malfunction or crash of the firmware   | <ol style="list-style-type: none"> <li>1. Turn the printer off and back it on.</li> <li>2. If the error still occurs after the restart, replace the Main Board.</li> </ol>   | ---                          |
| 000051     | PF load position excess load error  | <ul style="list-style-type: none"> <li>■ The PF motor stopped running in the middle of the operation               <ol style="list-style-type: none"> <li>1. The PF was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the paper feed mechanism</li> <li>• Disengaging or breakage of the gears</li> </ul> </li> </ol> </li> <li>■ Failed to read the PF Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the PF Scale</li> <li>3. Failure of the PF Motor (not completely broken)</li> <li>4. Failure of the Main Board</li> </ol> </li> </ul>  | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the load of the paper feed mechanism.</li> <li>3. Check the wheel train of the PF drive and the timing belt for fraying or looseness.</li> <li>4. Clean the PF Scale if it is contaminated.</li> <li>5. Replace the PF Motor with a new one</li> <li>6. Replace the Main Board with a new one.</li> </ol>  | ---                          |
| 000052     | PF load position excess speed error | <ul style="list-style-type: none"> <li>■ Failed to read the PF Encoder               <ol style="list-style-type: none"> <li>1. Contamination of the PF Scale</li> <li>2. Skew or damage of the PF Encoder FFC</li> <li>3. Failure of the PF Encoder</li> </ol> </li> <li>■ Failure of the PF Motor Driver               <ol style="list-style-type: none"> <li>4. Failure of the Main Board</li> </ol> </li> </ul>   | <ol style="list-style-type: none"> <li>1. Clean the PF Scale if it is contaminated.</li> <li>2. Check the PF Encoder FFC or the connector.</li> <li>3. Replace the PF Encoder with a new one.</li> <li>4. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN304<br>CN401 |
| 000053     | PF load position reverse error      | <ul style="list-style-type: none"> <li>■ Paper feed fails, stopped by obstacles               <ol style="list-style-type: none"> <li>1. Paper feed was stopped by;                   <ul style="list-style-type: none"> <li>• Obstacles such as jammed paper</li> <li>• Overload of the paper feed mechanism</li> <li>• Disengaging or tooth breakage of wheel train of the paper feed mechanism</li> </ul> </li> </ol> </li> <li>■ Failed to read the PF Encoder               <ol style="list-style-type: none"> <li>2. Contamination of the PF Scale</li> <li>3. Skew or damage of the PF Encoder FFC</li> <li>4. Failure of the PF Encoder</li> <li>5. Failure of the Main Board</li> </ol> </li> </ul>      | <ol style="list-style-type: none"> <li>1. Check that no pieces of paper or foreign objects exist in the paper path.</li> <li>2. Check the load of the paper feed mechanism.</li> <li>3. Check the wheel train of the PF drive and the timing belt for fraying or looseness.</li> <li>4. Clean the PF Scale if it is contaminated.</li> <li>5. Check the PF Encoder FFC or the connector.</li> <li>6. Replace the PF Encoder with a new one.</li> <li>7. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN304<br>CN401 |

## 2.3.2.4 Printer (PW/PE Sensor)

| Error code | Error name                         | Possible cause   | Confirmation procedure   | Connector No.       |
|------------|------------------------------------|--|--|---------------------|
| 030001     | PE detector error                  | <ul style="list-style-type: none"> <li>■ PE Sensor damage</li> <li>■ Failure of the Main Board<br/>(Occurs when the light value became lower than the threshold value in light value adjustment.)</li> </ul> | <ol style="list-style-type: none"> <li>1. Check the PE Sensor for broken cable or unconnected connector.</li> <li>2. Replace the PE Sensor with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN402 |
| 030002     | PW detector Error                  | <ul style="list-style-type: none"> <li>■ PW Sensor damage</li> <li>■ Failure of the Main Board<br/>(Occurs when the light value became lower than the threshold value in light value adjustment.)</li> </ul> | <ol style="list-style-type: none"> <li>1. Check the PW Sensor for broken cable or unconnected connector.</li> <li>2. Replace the PW Sensor with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN303 |
| 030003     | PE sensor light value adjust error | <ul style="list-style-type: none"> <li>■ PE Sensor damage</li> <li>■ Failure of the Main Board<br/>(Cannot detect paper even the light value was raised to maximum in light value adjustment.)</li> </ul>    | <ol style="list-style-type: none"> <li>1. Check the PE Sensor for broken cable or unconnected connector.</li> <li>2. Replace the PE Sensor with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN402 |

## 2.3.2.5 Printer (Power)

| Error code | Error name  | Possible cause  | Confirmation procedure   | Connector No.       |
|------------|---|---|--|---------------------|
| 030005     | Abnormal temperature of internal power supply unit (less than lower limit value)* | <ul style="list-style-type: none"> <li>■ Break or damage of the power supply cable</li> <li>■ Failure of the power supply unit (Thermistor open failure)</li> <li>■ Failure of the Main Board (Failure of circuit to detect temperature)</li> </ul>   | <ol style="list-style-type: none"> <li>1. Replace the Power Supply Cable with a new one.</li> <li>2. Replace the PS Unit with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol> | Main Board<br>CN604 |
| 030006     | Abnormal power supply internal temperature (above the upper limit value)*         | <ul style="list-style-type: none"> <li>■ Failure of the power supply unit (Overtemperature rise) <ol style="list-style-type: none"> <li>1. Commingling of foreign object with power supply unit (Thermistor short, Overtemperature rise by leakage)</li> </ol> </li> <li>■ Failure of the Main Board <ol style="list-style-type: none"> <li>2. Foreign object attached to Main Board or connector</li> <li>3. Failure of circuit to detect temperature</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Replace the PS Unit with a new one.</li> <li>2. Replace the Main Board with a new one.</li> </ol>  | ---                 |

Note "※": Occurs after paper feed, before start printing

## 2.3.2.6 Printer (Head/CSIC)

| Error code | Error name                            | Possible cause  | Confirmation procedure  | Connector No.       |
|------------|---------------------------------------|---|---|---------------------|
| 031001     | HeadHot detect error (pre printing)   | <ul style="list-style-type: none"> <li>■ Disconnection, break, skew or damage of the Head FFC</li> <li>■ Overheat of the Printhead               <ol style="list-style-type: none"> <li>1. Failure of the Printhead</li> <li>2. Failure of the Main Board</li> </ol> </li> </ul> <p>*Occurs in-between print passes (after printing one pass and before printing the next pass)</p>   | <ol style="list-style-type: none"> <li>1. Check the Head FFC for disconnection, break, skew or damage.</li> <li>2. Replace the Printhead with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN301 |
| 031002     | HeadHot detect error (after flushing) | <ul style="list-style-type: none"> <li>■ Disconnection, break, skew or damage of the Head FFC</li> <li>■ Overheat of the Printhead               <ol style="list-style-type: none"> <li>1. Failure of the Printhead</li> <li>2. Failure of the Main Board</li> </ol> </li> </ul> <p>*Occurs every after ink flushing operation<br/>(Flushing before starting printing, flushing after manual cleaning and etc.)</p>                                   | <ol style="list-style-type: none"> <li>1. Check the Head FFC for disconnection, break, skew or damage.</li> <li>2. Replace the Printhead with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN301 |
| 031003     | Transistor temperature error          | <ul style="list-style-type: none"> <li>■ Protect function of head driving circuit operated when Continuing high load printing under high temperature environment.</li> <li>■ Failure of the Main Board</li> </ul> <p>*Occurs after receiving a print job and starting printing</p>  | Replace the Main Board with a new one.  | ---                 |
| 031004     | Head temperature error                | <ul style="list-style-type: none"> <li>■ Disconnection, break, skew or damage of the Head FFC</li> </ul> <p>*Occurs after receiving a print job and starting printing</p> <ul style="list-style-type: none"> <li>■ Failure of the thermistor inside the Printhead</li> </ul> <p>Temperature around the Printhead is out of the range from -20 to 80 degrees C.</p>  | <ol style="list-style-type: none"> <li>1. Check the Head FFC for disconnection, break, skew or damage.</li> <li>2. Replace the Printhead with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol>  | Main Board<br>CN301 |
| 031006     | Blowout of a fuse error (Head)        | <ul style="list-style-type: none"> <li>■ Failure of the power source for the Printhead               <ol style="list-style-type: none"> <li>1. Failure of the circuit<br/>Disconnection, break, skew, or damage of the Head FFC</li> <li>2. Blowout of fuse on the Main Board<br/>Failure of the Printhead</li> </ol> </li> </ul> <p>*Occurs at power-on, when replacing the ink cartridge, in-between print passes, and after flushing operation</p> | <ol style="list-style-type: none"> <li>1. If the fuse has not blown out<br/>Check the Head FFC for disconnection, break, skew or damage.</li> <li>2. If the fuse has blown out<br/>Replace the Main Board with a new one.</li> <li>3. In the other cases<br/>Replace the Printhead with a new one.</li> </ol> | Main Board<br>CN301 |
| 031008     | VBS overvoltage error                 | <ol style="list-style-type: none"> <li>1. Head FFC failure (skew, foreign object attached)</li> <li>2. Failure of the Printhead</li> <li>3. Failure of the Main Board</li> </ol> <p>*Occurrence frequency based on past record is 1. &gt; 2. &gt; 3.</p>  | <ol style="list-style-type: none"> <li>1. Check the Head FFC.</li> <li>2. Replace the Printhead with a new one.</li> <li>3. Replace the Main Board with a new one.</li> </ol>   | Main Board<br>CN301 |

## 2.3.2.7 Printer (Others)

| Error code | Error name            | Possible cause  | Confirmation procedure   | Connector No. |
|------------|-----------------------|---|--|---------------|
| 034001     | Home position error   | This error code is not displayed but the error history is saved.<br><ul style="list-style-type: none"> <li>■ The carriage does not move           <ol style="list-style-type: none"> <li>1. Overload of the Carriage Drive Mechanism (paper jam, foreign object)</li> <li>2. Failure of the Ink system</li> <li>3. Failure of the CR Motor</li> <li>4. Failure of the Main Board</li> </ol> </li> </ul> | <ol style="list-style-type: none"> <li>1. Check that no obstacles exist in the carriage motion range.</li> <li>2. Manually unlock the carriage. (If unlocking is impossible, the problem caused by failure of the Ink system.)</li> <li>3. Check the load applied to the CR by moving it by hand.</li> <li>4. Turn the printer on and check if the carriage moves. If it still does not move, the motor is broken or failure of the Main Board.</li> </ol> | ---           |
| 060002     | Driver mismatch error | <ul style="list-style-type: none"> <li>■ Non-supported printer driver</li> <li>■ Mismatch between custom printer driver and custom printer</li> </ul>   | Check the OS and the version of the printer driver.  | ---           |

## 2.3.2.8 System Error

| Error code | Error name                                | Possible cause   | Confirmation procedure   | Connector No. |
|------------|---|--|--|---------------|
| 202620     | Wi-Fi Board failure                       | Failure or disconnection of the wireless network board                       | <ol style="list-style-type: none"> <li>1. Check the Wi-Fi Board.</li> <li>2. Check the FFC.</li> </ol> | ---           |
| 202623     | Failure or disconnection of the NFC board | Failure or disconnection of the NFC board                                    | <ol style="list-style-type: none"> <li>1. Check the NFC board.</li> <li>2. Check the FFC.</li> </ol>   | ---           |
| 203004     | Panel Unit Failure                        | Failure or disconnection of the Panel Unit                                   | <ol style="list-style-type: none"> <li>1. Check the Panel Unit.</li> <li>2. Check the FFC.</li> </ol>  | ---           |
| 205102     | Card Board failure                        | Failure or disconnection of the Card Board                                   | <ol style="list-style-type: none"> <li>1. Check the Card board.</li> <li>2. Check the FFC.</li> </ol>  | ---           |
| 3xxxxx     | Firmware bug                              | An error code will be assigned to each firmware internal error as necessary. | <ol style="list-style-type: none"> <li>1. Firmware version</li> <li>2. Main Board</li> </ol>           | ---           |

## 2.4 Service Support Mode

### □ Overview

Service support mode is a service dedicated special mode that can be started by a special operation from the control panel, and allows you to execute functions including printer mode, service status sheet, and touch panel adjustment.



**If you select the service status sheet print, normal startup screen will be opened.**  
**Select status sheet print in that state, you can print service status sheets.**

### □ Structure of service support mode menu

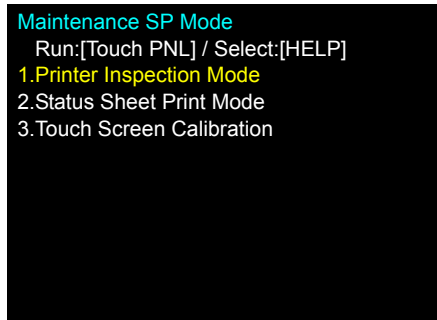


Figure 2-2. Service support mode: top menu

| Item                              | Display                  | Explanation   | When to use     |
|-----------------------------------|--------------------------|---|-----------------|
| Printer mode                      | Printer Inspection Mode  | Allows you to perform adjustment with the ADF/SCN Unit removed.                                     | When repairing  |
| Service status sheet print (p.58) | Status Sheet Print Mode  | In addition to the normal status sheet information, you can check information needed for servicing. | Troubleshooting |
| Touch panel adjustment (p.134)    | Touch Screen Calibration | Perform the home position adjustment of the touch panel.  | When repairing  |

### 2.4.1 Service Support Mode startup and operating procedures

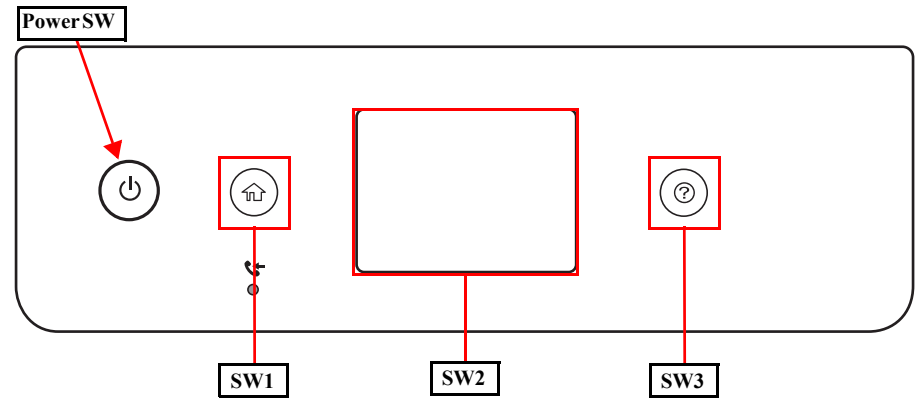


Figure 2-3. Panel operation in service support mode

1. Press the [SW1] and [Power SW] button until the screen switches, starting the printer.

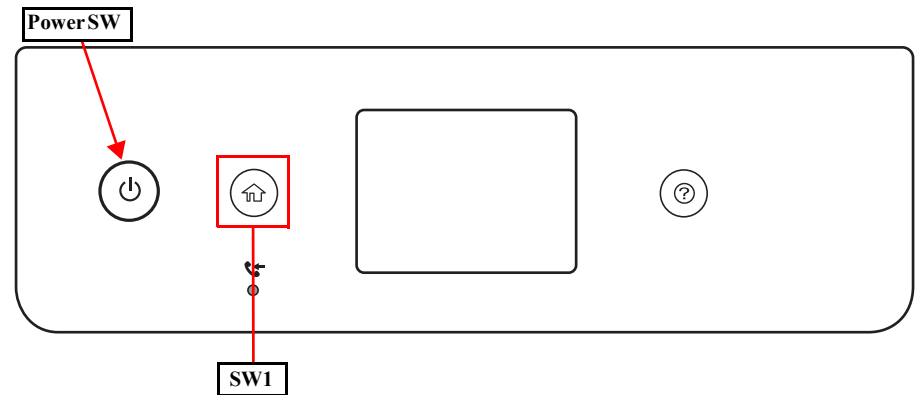


Figure 2-4. Service Support Mode startup and operating procedures

2. Operate the Touch Panel, and enter the ID.  
ID to enter: 98308

- Operating procedure
  1. Tap [SW3] until the value necessary for this digit is displayed.
  2. Tap [SW1] to enter the value. The value will change to “\*”, and the cursor goes to the next digit.
  3. Repeat steps 1 and 2 to enter the 5 digit ID.
  4. When entry is completed, tap [SW2] to confirm.

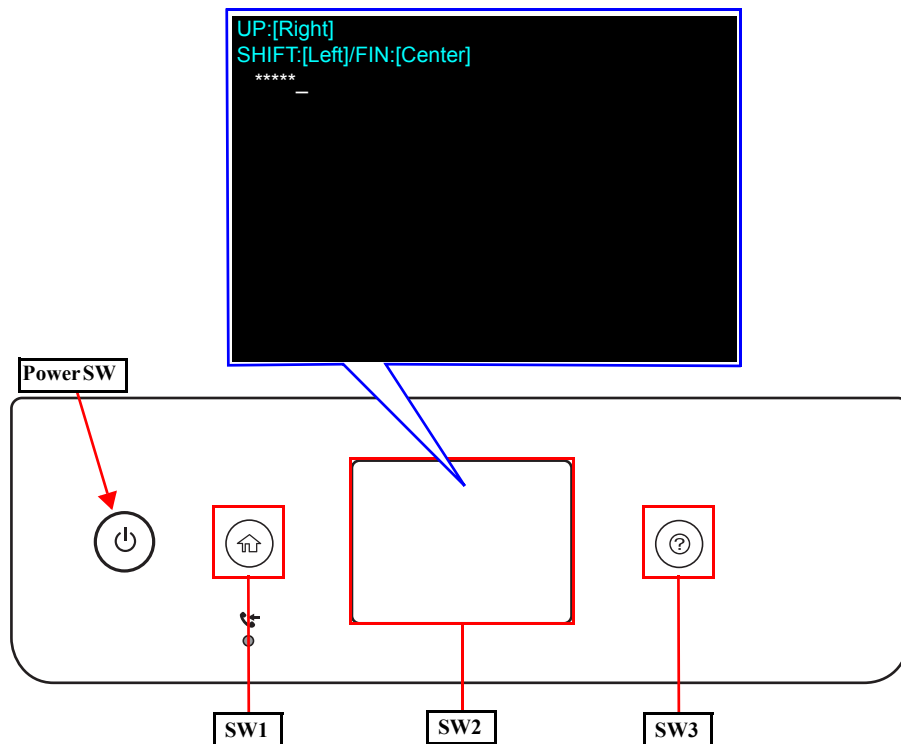


Figure 2-5. Service support mode operation method



#### Solution if enter and execute the wrong ID

- When a different mode starts:  
If you enter the wrong ID and a different mode starts, there is the possibility of changing important settings of the unit, so press the power button to turn off the power immediately and then perform the process again to enter the correct ID number.
- When non-existent ID number:  
The following panel LCD display appears and the power is turned off automatically.

Input ID is not found!!  
Please wait Poweroff...

## 2.4.2 Status Sheet Information

This section explains about each item printed on the status sheets.  
The following status sheets can be printed from the printer.

Overview of Status Sheets

- Configuration Status Sheet: printer settings information
- Supply Status Sheet: supported model numbers of consumables or periodic replacement parts, and the total number of sheets fed into the printer.
- Usage History Sheet: usage history such as the total number of printed pages per function.
- Service Status Sheet: in addition to the information included in the above three sheets, information required for servicing is also provided. However, the status sheet can be printed only in service support mode. (p.56)

Status Sheet Items

- Configuration Status Sheet (total pages: 1 sheet)

| Item                   |                  | Explanation                                    |   |   |
|------------------------|------------------|--|---|---|
| Hardware Configuration | Device ID        | Device ID (product name) is displayed.         |   |   |
|                        | Serial Number    | The serial number of the product is displayed. |   |   |
|                        | MAC Address      | MAC address of the product is displayed.       |   |   |
|                        | <Hardware>       | Memory Capacity                                | Capacity of the memory inside the product is displayed. |   |
|                        | <Version>        | Firmware                                       | Version of the firmware is displayed.                   |   |
|                        |                  | Main Firmware                                  | Version of the main firmware is displayed.              |   |
|                        |                  | Network Firmware                               | Version of the NW firmware is displayed.                |   |
| QPIT                   |                  | Version of the QPIT is displayed.              |   |   |
| Basic settings         | Language         | The current language setting is displayed.     |   |   |
|                        | <Sound settings> | Mute   | The setting of mute (on/off) is displayed.              |   |
|                        |                  | Normal   | Button Press  | Sound level setting (0 to 10) is displayed. |
|                        |                  |  | ADF set sound   |   |
|                        |                  |  | Error Notice  |   |
|                        |                  |  | Receive Completion Notice                               |   |
|                        |                  |  | Send Completion Notice                                  |   |
|                        |                  |  | Print Completion Notice                                 |   |
|                        |                  |  | Ring Tone   |   |
|                        |                  |  | Receiver  |   |

| Item                     |                          |            | Explanation  |   |
|--------------------------|--------------------------|------------|--|---|
| Basic settings           | Sleep timer              |            | Whether the sleep timer is enabled or not is displayed. When enabled, the time period before the product enters sleep mode is also displayed.                  |   |
|                          | Power Off Settings       |            | Whether the auto power off setting is enabled or not is displayed. When enabled, the time period before the printer automatically turns off is also displayed. |   |
| Printer settings         | Auto Error Solver        |            | Whether the auto error resolver options are enabled or not is displayed.   |   |
|                          | Ink Drying Time          |            | The Ink Drying Time when duplex printing is displayed.   |   |
|                          | PC connection via USB    |            | Whether the setting is enabled or not is displayed.  |   |
|                          | Thick Paper              |            | Whether the setting is enabled or not is displayed.  |   |
|                          | Quiet Mode               |            | Whether the setting is enabled or not is displayed.  |   |
| Paper source settings    | Paper cassette           | Cassette 1 | Paper Size   | Paper size settings for each of the paper sources.  |
|                          |                          |            | Paper Type   | Paper type settings for each of the paper sources.  |
|                          |                          | MP tray    | Paper Size   | Paper size settings of the rear tray is displayed.  |
|                          |                          |            | Paper Type   | Paper type settings of the rear tray is displayed.  |
|                          | Auto Selection           | Copy       | Cassette 1   | Whether the setting is enabled or not is displayed. |
|                          |                          |            | MP tray  | Whether the setting is enabled or not is displayed. |
|                          |                          | Fax        | Cassette 1   | Whether the setting is enabled or not is displayed. |
|                          |                          |            | MP tray  | Whether the setting is enabled or not is displayed. |
|                          |                          | Other      | Cassette 1   | Whether the setting is enabled or not is displayed. |
|                          |                          |            | MP tray  | Whether the setting is enabled or not is displayed. |
|                          | A4/Letter Auto Switching |            | Whether the auto switching function is enabled or not is displayed.  |   |
|                          | Rear Paper Feed Priority |            | Whether the setting is enabled or not is displayed.  |   |
|                          | Paper Size Notice        |            | Whether the setting is enabled or not is displayed.  |   |
|                          | Paper Type Notice        |            | Whether the setting is enabled or not is displayed.  |   |
| Universal Print Settings | Top Offset               |            | The offset setting (-30 to 30) is displayed.   |   |
|                          | Left Offset              |            |  |   |
|                          | Top Offset in Back       |            |  |   |
|                          | Left Offset in Back      |            |  |   |
|                          | Check Paper Width        |            | Whether the setting is enabled or not is displayed.  |   |
|                          | Skip Blank Page          |            | Whether the setting is enabled or not is displayed.  |   |

|               |                   | Item               |   | Explanation   |
|---------------|-------------------|--------------------|---|---|
| Scan settings | <Common settings> | Color              |   | The color setting (Color or Mono) is displayed.   |
|               |                   | Remove shadow      | Surround                                    | The frame width setting (0 to 40 mm/---(in case of the shadow remove setting is disabled)) is displayed.                                  |
|               |                   |                    | Center                                      | The center width setting (0 to 40 mm/---(in case of the shadow remove setting is disabled)) is displayed.                                 |
|               |                   | Remove Punch Holes | Erasing Position                            | The erasing setting (left edge/right edge/top edge/bottom edge/--- (in case of the remove punch holes setting is disabled)) is displayed. |
|               |                   |                    | Erase Amount                                | The erasing amount (0 to 20 mm/--- (in case of the remove punch holes setting is disabled)) is displayed.                                 |
|               |                   | Orientation        |   | The document orientation setting (portrait or landscape) is displayed.  |
|               |                   | Document Type      |   | The quality setting (Text/Text & Image/Photo) is displayed.   |
|               | Density           |                    | The density setting (-4 to 4) is displayed. |   |
|               | Scan to Cloud     | File Format        |   | File format setting is displayed.   |
|               |                   | Scan area          |   | Original document size setting is displayed.  |

■ Supply Status Sheet (total pages: 1 sheet)

|                        |                 | Item                              |  | Explanation   |
|------------------------|-----------------|-----------------------------------|--|---|
| Hardware Configuration | Device ID       |                                   | Device ID (product name) is displayed.         |   |
|                        | Serial Number   |                                   | The serial number of the product is displayed. |   |
|                        | MAC Address     |                                   | MAC address of the product is displayed.       |   |
|                        | <Hardware>      | Memory Capacity                   |  | Capacity of the memory inside the product is displayed. |
|                        | <Version>       | Firmware                          |  | Version of the firmware is displayed.                   |
|                        |                 | Main Firmware                     |  | Version of the main firmware is displayed.              |
|                        |                 | Network Firmware                  |  | Version of the NW firmware is displayed.                |
| QPIT                   |                 | Version of the QPIT is displayed. |  |   |
| Supply Status          | Ink Bottle      | Black                             | Product number                                 | Product number of the ink bottle is displayed.          |
|                        |                 | Cyan                              | Product number                                 |   |
|                        |                 | Magenta                           | Product number                                 |   |
|                        |                 | Yellow                            | Product number                                 |   |
|                        | Maintenance Box |                                   | Product number                                 | Product number of the Maintenance Box is displayed.     |

■ Usage History Sheet (total pages: 1 sheet)

| Item  |  | Explanation   |  |
|---|--|---|--|
| Hardware Configuration                            | Device ID  | Device ID (product name) is displayed.                                      |  |
|   | Serial Number  | The serial number of the product is displayed.                              |  |
|   | MAC Address  | MAC address of the product is displayed.                                    |  |
|   | <Hardware>   | Memory Capacity   | Capacity of the memory inside the product is displayed.  |
|   | <Version>  | Firmware  | Version of the firmware is displayed.  |
|   |  | Main Firmware   | Version of the main firmware is displayed.   |
| Network Firmware                                  |  | Version of the NW firmware is displayed.                                    |  |
| QPIT  |  | Version of the QPIT is displayed.   |  |
| Usage History                                     | First Time Printing                                    | The date and time when the printer printed for the first time is displayed. |  |
| Number of Pages                                   | <Sorted by Function>                                   | Total Number of Pages   | The total number of printed pages is displayed.  |
|   |  | Total Number of B&W Pages   | The total number of pages printed in monochrome is displayed.  |
|   |  | Total Number of Color Pages   | The total number of pages printed in color is displayed.   |
|   |  | Total Number of 2-Sided Printing Pages                                      | The total number of printed 2-sided pages is displayed.  |
|   |  | Total Number of 1-Sided Printing Pages                                      | The total number of printed one-sided pages is displayed.  |
|   | <Sorted by Paper Size><br>(1-sided/2-sided, B&W/Color) | A3/Ledger   | The total number of printed pages per paper size is displayed.<br>Detailed count per function (one-sided/2-sided, monochrome/color) is also displayed for each paper size. |
|   |  | A4/Letter   |  |
|   |  | A5  |  |
|   |  | A6  |  |
|   |  | B4/Legal  |  |
|   |  | B5  |  |
|   |  | Envelope  |  |
|   |  | Others  |  |
|   | <Sorted by Usage>                                      | B&W Copy  | The total number of printed pages for each of the purposes is displayed.   |
|   |  | Color Copy  |  |
|   |  | B&W Fax   |  |
|   |  | Color Fax   |  |
|   |  | B&W Print from Computer or Mobile Device                                    |  |
| Color Print from Computer or Mobile Device        |  |   |  |
| B&W Print from Memory Device or Other Functions   |  |   |  |
| Color Print from Memory Device or Other Functions |  |   |  |

| Item                 |                              | Explanation |
|----------------------|------------------------------|-------------|
| Number of Pages      | <Sorted by Printer Language> | ESC/P-R     |
|                      |                              | Other       |
| Number of Scan Pages | B&W Scan                     |             |
|                      | Color Scan                   |             |

The version of each of the printer language is displayed.

Number of sheets scanned in monochrome.

Number of sheets scanned in color.

■ Service Status Sheet (total pages: 8 sheets)

| Item                   |                  | Explanation      |                           |
|------------------------|------------------|------------------|---------------------------|
| Hardware Configuration | Device ID        |                  |                           |
|                        | Serial Number    |                  |                           |
|                        | MAC Address      |                  |                           |
|                        | <Hardware>       | Memory Capacity  |                           |
|                        | <Version>        | Firmware         |                           |
|                        |                  | Main Firmware    |                           |
|                        |                  | Network Firmware |                           |
| QPIT                   |                  |                  |                           |
| Basic Settings         | Language         |                  |                           |
|                        | <Sound settings> | Mute             |                           |
|                        |                  | Normal           | Button Press              |
|                        |                  |                  | ADF set sound             |
|                        |                  |                  | Error Notice              |
|                        |                  |                  | Receive Completion Notice |
|                        |                  |                  | Send Completion Notice    |
|                        |                  |                  | Print Completion Notice   |
|                        |                  |                  | Ring Tone                 |
|                        |                  | Receiver         |                           |
| Sleep timer            |                  |                  |                           |
| Power Off Settings     |                  |                  |                           |

Device ID (product name) is displayed.

The serial number of the product is displayed.

MAC address of the product is displayed.

Capacity of the memory inside the product is displayed.

Version of the firmware is displayed.

Version of the main firmware is displayed.

Version of the NW firmware is displayed.

Version of the QPIT is displayed.

The current language setting is displayed.

The setting of mute (on/off) is displayed.

Sound level setting (0 to 10) is displayed.

Whether the sleep timer is enabled or not is displayed. When enabled, the time period before the product enters sleep mode is also displayed.

Whether the auto power off setting is enabled or not is displayed. When enabled, the time period before the printer automatically turns off is also displayed.

| Item                  |                          |            | Explanation  |   |
|-----------------------|--------------------------|------------|--|---|
| Printer settings      | Auto Error Solver        |            | Whether the auto error resolver options are enabled or not is displayed. |   |
|                       | Ink Drying Time          |            | The Ink Drying Time when duplex printing is displayed.                   |   |
|                       | PC connection via USB    |            | Whether the setting is enabled or not is displayed.                      |   |
|                       | Thick Paper              |            | Whether the setting is enabled or not is displayed.                      |   |
|                       | Quiet Mode               |            | Whether the setting is enabled or not is displayed.                      |   |
| Paper source settings | Paper cassette           | Cassette 1 | Paper Size   | Paper size settings for each of the paper sources.                  |
|                       |                          |            | Paper Type   | Paper type settings for each of the paper sources.                  |
|                       |                          | MP tray    | Paper Size   | Paper size settings of the rear tray is displayed.                  |
|                       |                          |            | Paper Type   | Paper type settings of the rear tray is displayed.                  |
|                       | Auto Selection           | Copy       | Cassette 1   | Whether the setting is enabled or not is displayed.                 |
|                       |                          |            | MP tray  | Whether the setting is enabled or not is displayed.                 |
|                       |                          | Fax        | Cassette 1   | Whether the setting is enabled or not is displayed.                 |
|                       |                          |            | MP tray  | Whether the setting is enabled or not is displayed.                 |
|                       |                          | Other      | Cassette 1   | Whether the setting is enabled or not is displayed.                 |
|                       |                          |            | MP tray  | Whether the setting is enabled or not is displayed.                 |
|                       | A4/Letter Auto Switching |            |  | Whether the auto switching function is enabled or not is displayed. |
|                       | Rear Paper Feed Priority |            |  | Whether the setting is enabled or not is displayed.                 |
|                       | Paper Size Notice        |            |  | Whether the setting is enabled or not is displayed.                 |
|                       | Paper Type Notice        |            |  | Whether the setting is enabled or not is displayed.                 |

| Item                     |                          | Explanation   |  |   |
|--------------------------|--------------------------|---|--|---|
| Universal Print Settings | Top Offset               | The offset setting (-30 to 30) is displayed.            |  |   |
|                          | Left Offset              |   |  |   |
|                          | Top Offset in Back       |   |  |   |
|                          | Left Offset in Back      |   |  |   |
|                          | Check Paper Width        | Whether the setting is enabled or not is displayed.     |  |   |
|                          | Skip Blank Page          | Whether the setting is enabled or not is displayed.     |  |   |
| Network Settings         | IP Address               | The network settings are displayed.                     |  |   |
|                          | Subnet Mask              |   |  |   |
|                          | Default Gateway          |   |  |   |
|                          | Primary DNS Server       |   |  |   |
|                          | Secondary DNS Server     |   |  |   |
|                          | Proxy Server Settings    |   |  |   |
|                          | Proxy Server             |   |  |   |
|                          | Proxy Server Port Number |   |  |   |
|                          | DNS Domain Name          |   |  |   |
| Scan settings            | <Common settings>        | Color   | The color setting (Color or Mono) is displayed.                        |   |
|                          |                          | Remove shadow   | Surround   | The frame width setting (0 to 40 mm/---(in case of the shadow remove setting is disabled)) is displayed.                                  |
|                          |                          |   | Center   | The center width setting (0 to 40 mm/---(in case of the shadow remove setting is disabled)) is displayed.                                 |
|                          |                          | Remove Punch Holes                                      | Erasing Position   | The erasing setting (left edge/right edge/top edge/bottom edge/--- (in case of the remove punch holes setting is disabled)) is displayed. |
|                          |                          |   | Erase Amount   | The erasing amount (0 to 20 mm/--- (in case of the remove punch holes setting is disabled)) is displayed.                                 |
|                          |                          | Orientation   | The document orientation setting (portrait or landscape) is displayed. |   |
|                          |                          | Document Type   | The quality setting (Text/Text & Image/Photo) is displayed.            |   |
|                          |                          | Density   | The density setting (-4 to 4) is displayed.                            |   |
|                          |                          | Scan to Cloud   | File Format  | File format setting is displayed.   |
|                          |                          |   | Scan area  | Original document size setting is displayed.  |
| Option Settings          | Fax Function             | Whether the fax feature is enabled or not is displayed. |  |   |

|   |  | Item                                       |  | Explanation  |
|---|--|--|--|--|
| Supply Status                                     | Ink Bottle   | Black                                      | Product number   | Product number of the ink bottle is displayed.   |
|   |  | Cyan                                       | Product number   |  |
|   |  | Magenta                                    | Product number   |  |
|   |  | Yellow                                     | Product number   |  |
|   | Maintenance Box  | Maintenance Box                            | Product number   | Product number of the Maintenance Box is displayed.  |
| Usage History                                     | First Time Printing                                    |  |  | The date and time when the printer printed for the first time is displayed.  |
|   | <Sorted by Function>                                   | Total Number of Pages                      |  | The total number of printed pages is displayed.  |
|   |  | Total Number of B&W Pages                  |  | The total number of pages printed in monochrome is displayed.  |
|   |  | Total Number of Color Pages                |  | The total number of pages printed in color is displayed.   |
|   |  | Total Number of 2-Sided Printing Pages     |  | The total number of printed 2-sided pages is displayed.  |
|   |  | Total Number of 1-Sided Printing Pages     |  | The total number of printed one-sided pages is displayed.  |
|   | <Sorted by Paper Size><br>(1-sided/2-sided, B&W/Color) | A3/Ledger                                  |  | The total number of printed pages per paper size is displayed.<br>Detailed count per function (one-sided/2-sided, monochrome/color) is also displayed for each paper size. |
|   |  | A4/Letter                                  |  |  |
|   |  | A5   |  |  |
|   |  | A6   |  |  |
|   |  | B4/Legal                                   |  |  |
|   |  | B5   |  |  |
|   |  | Envelope                                   |  |  |
|   |  | Others                                     |  |  |
|   | <Sorted by Usage>                                      | B&W Copy                                   |  | The total number of printed pages for each of the purposes is displayed.   |
|   |  | Color Copy                                 |  |  |
|   |  | B&W Fax                                    |  |  |
|   |  | Color Fax                                  |  |  |
|   |  | B&W Print from Computer or Mobile Device   |  |  |
|   |  | Color Print from Computer or Mobile Device |  |  |
| B&W Print from Memory Device or Other Functions   |  |  |  |  |
| Color Print from Memory Device or Other Functions |  |  |  |  |
| <Sorted by Printer Language>                      | ESC/P-R  |  | The version of each of the printer language is displayed.        |  |
|   | Other  |  |  |  |
| Other   | The Cumulative number of paper jam                     |  | The total number of times a paper jam error occurs is displayed. |  |

| Item          |                           | Explanation  |   |
|---------------|---------------------------|--|---|
| Usage History | Number of Sheets Scanned  | B&W Scan   | Number of sheets scanned in monochrome.   |
|               |                           | Color Scan   | Number of sheets scanned in color.  |
|               | Number of Sheets Loaded   | Cassette 1   | The total number of printed pages per paper source is displayed.  |
|               |                           | MP tray  |   |
| Error History | Printer Error             | For each of the errors, the following information is displayed. <ul style="list-style-type: none"> <li>• Error code</li> <li>• Sub code</li> <li>• Date and time of occurrence</li> <li>• Number of pages to be printed</li> <li>• Internal temperature</li> <li>• Internal humidity</li> <li>• Paper feed path</li> </ul> |   |
|               | Paper Jam Error           |  |   |
|               | Fatal Error When Printing |  |   |
|               | Scanner Error             |  | For each of the errors, the following information is displayed <ul style="list-style-type: none"> <li>• Error code</li> <li>• Date and time of occurrence</li> <li>• Number of pages to be scanned</li> </ul> |
|               | Fatal Error When Scanning |  |   |
|               | Fax Error                 | For each of the errors, the following information is displayed <ul style="list-style-type: none"> <li>• Error code</li> <li>• Date and time of occurrence</li> </ul>   |   |
|               | Network Error             |  |   |
|               | System Error              |  |   |
| Other Error   |                           |  |   |
| Status        | Printer Error             | Status of the product (error occurring state) is displayed.  |   |
|               | Scanner Error             | Always “---” is displayed.   |   |
|               | Fax Error                 | Always “---” is displayed.   |   |
|               | Network Error             | Status of the product (error occurring state) is displayed.  |   |
|               | Other Error               |  |   |

CHAPTER

3

# DISASSEMBLY/ASSEMBLY

## 3.1 Overview

This chapter describes procedures for disassembling the main parts/units of EPSON ET-15000/L14150 Series. Unless otherwise specified, disassembled parts/units can be reassembled by reversing the disassembly procedure. Disassembly/reassembly precautions and tips are give in “[3.3.3 Repairing Major Components Disassembly/Assembly Procedure](#)” (p86) and “[3.4 Detailed Disassembly/Reassembly Procedure for each Part/Unit](#)” (p108). See the sections as necessary.

Make sure to read “[Safety Precautions](#)” (p3) before starting work.

When you have to remove units or parts that are not described in this chapter, see the exploded diagrams of SPI (Service Parts Information).

### 3.1.1 Tools

Use only specified tools to avoid damaging the printer.

**Table 3-1. Tools**

| Name                              | Availability | EPSON Part Code |
|-----------------------------------|--------------|-----------------|
| (+) Phillips screwdriver #1       | ✓            | 1080530         |
| (+) Phillips screwdriver #2       | ✓            | ---             |
| Flathead screwdriver              | ✓            | ---             |
| Flathead Precision screwdriver #1 | ✓            | ---             |
| Tweezers                          | ✓            | ---             |
| Longnose pliers                   | ✓            | ---             |
| Acetate tape                      | ---          | 1003963         |

Note 1: “Availability” means that use of a commercially available one is permitted.

2: EPSON provides the tools listed with EPSON part code.

### 3.1.2 Jigs

**Table 3-2. Jigs**

| Name                      | Quantity | EPSON Part Code        |
|---------------------------|----------|------------------------|
| Teflon tape (t = 0.08 mm) | 1        | 1706715                |
| Thickness gauge (1.37 mm) | 1        | Commercially available |
| Thickness gauge (1.87 mm) | 1        |                        |
| Tube clip                 | 2        |                        |
| Syringe                   | 1        |                        |
| Case for extruding ink    | 1        |                        |

### 3.1.3 Locations of the Parts/Units

This section shows the locations of the main parts/units.



The parts/units which can not be seen in the following pictures are indicated in dotted lines ( - - -> ).

Exterior parts

| No. | Name                     | No. | Name                  |
|-----|--------------------------|-----|-----------------------|
| 1   | ADF/SCN Unit (p83)       | 7   | Duplex Unit (p81)     |
| 2   | Panel Unit (p82)         | 8   | Housing Right (p81)   |
| 3   | Stacker Assy (p81)       | 9   | Maintenance Box (p81) |
| 4   | Paper Cassette (p81)     | 10  | Ink Eject Cover (p81) |
| 5   | Tank Cover (p81)         | 11  | Housing Left (p82)    |
| 6   | Paper Support Rear (p81) |     |                       |

Printer mechanism

| No. | Name   | No. | Name   |
|-----|--|-----|--|
| 1   | Main Frame Assy (p83)  | 14  | Main Board (p84)                             |
| 2   | CR Scale & Spring (p81)  | 15  | Adapter Tube Assy (w/Valve) (p82)            |
| 3   | Paper Guide Lower Porous Pad 1 (p81)/<br>Paper Guide Lower Porous Pad 2 (x6) (p81) | 16  | LD Phase Sensor (p84)                        |
| 4   | Paper Guide Front Assy (p81)   | 17  | PW Sensor (p83)                              |
| 5   | Printhead (p82)  | 18  | Ink Tank BK (p82)/<br>Ink Tank CL (x3) (p82) |
| 6   | CR Cover (p82)   | 19  | Ink System (p81)                             |
| 7   | Paper Guide Upper Right (p84)  | 20  | CR Unit (p83)                                |
| 8   | CR Motor (p83)   | 21  | Fax Box (p82)                                |
| 9   | ASF Bank Assy (p84)  | 22  | PS Unit (p82)                                |
| 10  | Paper Guide Upper Center (p84)   | 23  | PF Motor Assy (p85)                          |
| 11  | RASF Paper Sensor (p84)  | 24  | PF Encoder (p82)                             |
| 12  | LD Roller Rubber (p84)   | 25  | PF Scale (p82)                               |
| 13  | Paper Guide Upper Left (p84)   |     |  |

### 3.1.4 Standard Operation Time for Servicing the Product

The following are the standard operation time for servicing the product. This standard operation time was determined based on the MTTR result measured using the prototype of EPSON ET-15000/L14150 Series.

The underlined parts/units are supplied as After Service Parts.

**Table 3-3. Standard Operation Time**

| Parts/Unit                            | Time (in units of seconds) |                           |       |
|---------------------------------------|----------------------------|---------------------------|-------|
|                                       | Replacement                | Adjustment/<br>inspection | Total |
| <u>Duplex Unit</u>                    | 0:04                       | 3:54                      | 3:58  |
| Housing Upper Front                   | 1:05                       |                           | 1:05  |
| <u>Ink Eject Cover</u>                | 0:27                       |                           | 0:27  |
| Maintenance Box                       | 0:33                       |                           | 0:33  |
| <u>Pick Up Roller Assy</u>            | 0:21                       |                           | 0:21  |
| <u>Paper Cassette</u>                 | 0:07                       | 2:14                      | 2:21  |
| <u>Stacker Assy</u>                   | 0:19                       |                           | 0:19  |
| Stacker 1                             | 0:31                       |                           | 0:31  |
| Stacker 2                             | 0:43                       |                           | 0:43  |
| <u>Head Cable Cover</u>               | 0:16                       |                           | 0:16  |
| Tank Cap Hinge                        | 0:04                       |                           | 0:04  |
| <u>Tank Cap</u>                       | 0:08                       |                           | 0:08  |
| <u>Paper Guide Front Assy</u>         | 0:49                       | 1:40                      | 2:29  |
| <u>Paper Guide Lower Porous Pad 1</u> | 0:58                       | 0:02                      | 1:00  |
| <u>Paper Guide Lower Porous Pad 2</u> | 1:52                       |                           | 1:52  |
| <u>Document Mat</u>                   | 0:16                       |                           | 0:16  |
| <u>CR Cover</u>                       | 0:33                       |                           | 0:33  |
| <u>Adapter Tube Assy (w/Valve)</u>    | 1:43                       |                           | 1:43  |
| Adapter Tube                          | 3:29                       |                           | 3:29  |

**Table 3-3. Standard Operation Time**

| Parts/Unit                           | Time (in units of seconds) |                           |       |
|--------------------------------------|----------------------------|---------------------------|-------|
|                                      | Replacement                | Adjustment/<br>inspection | Total |
| <u>Adapter (CL) (x3)</u>             | 2:47                       |                           | 2:47  |
| <u>Adapter (BK)</u>                  | 2:06                       |                           | 2:06  |
| Holder Adapter                       | 3:25                       |                           | 3:25  |
| <u>Printhead</u>                     | 4:33                       | 17:04                     | 21:37 |
| <u>Tube Guide Sheet</u>              | 0:43                       |                           | 0:43  |
| <u>Tank Cover</u>                    | 1:11                       |                           | 1:11  |
| Tube Pressing Plate                  | 1:15                       |                           | 1:15  |
| <u>Ink Supply Tube Guide 2nd</u>     | 3:08                       |                           | 3:08  |
| Star Wheel Assy                      | 3:34                       | 1:40                      | 5:14  |
| <u>Housing Left</u>                  | 1:33                       |                           | 1:33  |
| <u>PF Scale</u>                      | 1:48                       |                           | 1:48  |
| <u>PF Encoder</u>                    | 2:19                       |                           | 2:19  |
| <u>PF Encoder FFC</u>                | 2:25                       |                           | 2:25  |
| Main Frame Support                   | 2:30                       |                           | 2:30  |
| Holder Core Fax                      | 6:34                       |                           | 6:34  |
| <u>Fax Box</u>                       | 7:11                       |                           | 7:11  |
| <u>PS Unit</u>                       | 7:45                       | 1:18                      | 9:03  |
| <u>Panel Unit</u>                    | 11:13                      | 0:12                      | 11:25 |
| <u>Housing Right</u>                 | 2:04                       |                           | 2:04  |
| <u>Ink System</u>                    | 3:04                       |                           | 3:04  |
| <u>Paper Support Rear</u>            | 2:08                       |                           | 2:08  |
| <u>IS CSIC Connector Holder Assy</u> | 3:51                       |                           | 3:51  |
| Ink Eject CSIC Cable Holder          | 3:51                       |                           | 3:51  |
| Ink Eject Tube Holder Housing        | 4:09                       |                           | 4:09  |
| IS Transmission Gear                 | 3:08                       |                           | 3:08  |

Table 3-3. Standard Operation Time

| Parts/Unit                    | Time (in units of seconds) |                           |       |
|-------------------------------|----------------------------|---------------------------|-------|
|                               | Replacement                | Adjustment/<br>inspection | Total |
| <u>CR Scale &amp; Spring</u>  | 2:56                       |                           | 2:56  |
| CR Scale Holder               | 3:16                       |                           | 3:16  |
| <u>Housing Front</u>          | 3:38                       |                           | 3:38  |
| Housing Front Plate           | 3:38                       |                           | 3:38  |
| <u>Key Slot Assy</u>          | 4:30                       |                           | 4:30  |
| Tank Cover Open Sensor        | 5:02                       |                           | 5:02  |
| Right Base Support            | 5:05                       |                           | 5:05  |
| <u>Tank Upper Porous Pad</u>  | 5:09                       |                           | 5:09  |
| <u>Ink Tank BK</u>            | 6:09                       |                           | 6:09  |
| <u>Ink Tank CL</u>            | 7:49                       |                           | 7:49  |
| Housing Upper Rear            | 2:34                       |                           | 2:34  |
| ADF/SCN Unit                  | 4:07                       |                           | 4:07  |
| <u>ADF Unit</u>               | 4:52                       |                           | 4:52  |
| <u>Scanner Unit</u>           | 4:52                       | 0:49                      | 5:41  |
| <u>SCN Stand</u>              | 4:37                       |                           | 4:37  |
| <u>Main Board</u>             | 7:36                       | 11:11                     | 18:47 |
| <u>Wi-Fi Board</u>            | 4:19                       |                           | 4:19  |
| Main Board Frame              | 8:46                       |                           | 8:46  |
| <u>Paper Guide Upper Left</u> | 10:01                      |                           | 10:01 |
| <u>ASF Hopper Assy</u>        | 5:00                       |                           | 5:00  |
| <u>PE Sensor Assy</u>         | 5:49                       | 3:04                      | 8:53  |
| PE Sensor                     | 6:15                       | 3:04                      | 9:19  |
| PE Sensor Holder              | 6:15                       |                           | 6:15  |
| <u>Ink Eject CSIC FFC</u>     | 4:48                       |                           | 4:48  |
| Ink Eject CSIC FFC Plate      | 6:06                       |                           | 6:06  |

Table 3-3. Standard Operation Time

| Parts/Unit                                  | Time (in units of seconds) |                           |       |
|---|----------------------------|---------------------------|-------|
|   | Replacement                | Adjustment/<br>inspection | Total |
| <u>LD Phase Sensor FFC</u>                  | 5:18                       |                           | 5:18  |
| <u>Holder LD Assy</u>                       | 5:13                       |                           | 5:13  |
| <u>RASF Paper Sensor Lever &amp; Spring</u> | 6:13                       |                           | 6:13  |
| <u>RASF Paper Sensor</u>                    | 5:32                       |                           | 5:32  |
| <u>LD Phase Sensor</u>                      | 5:53                       |                           | 5:53  |
| <u>LD Roller Rubber</u>                     | 5:52                       |                           | 5:52  |
| RASF Base Assy                              | 11:58                      |                           | 11:58 |
| <u>ASF Bank Assy</u>                        | 9:48                       | 2:14                      | 12:02 |
| <u>Paper Guide Upper Center</u>             | 6:28                       |                           | 6:28  |
| <u>Paper Guide Upper Right</u>              | 6:28                       |                           | 6:28  |
| CR Driven Pulley & Spring                   | 14:53                      |                           | 14:53 |
| Main Frame Assy                             | 15:56                      | 8:56                      | 24:52 |
| <u>CR Motor</u>                             | 16:43                      | 3:25                      | 20:08 |
| Holder Cam Assy                             | 16:29                      |                           | 16:29 |
| Change Slider & Spring                      | 16:08                      |                           | 16:08 |
| Spur Gear 17.6                              | 16:00                      |                           | 16:00 |
| Change Compression Spring                   | 16:00                      |                           | 16:00 |
| <u>CR Unit</u>                              | 17:13                      | 6:28                      | 23:41 |
| <u>PW Sensor</u>                            | 17:41                      | 2:34                      | 20:15 |
| CR Encoder                                  | 17:52                      |                           | 17:52 |
| CR Timing Belt                              | 17:26                      |                           | 17:26 |
| <u>Head FFC</u>                             | 17:43                      |                           | 17:43 |
| <u>Head FFC Lumirror</u>                    | 17:50                      |                           | 17:50 |

Table 3-3. Standard Operation Time

| Parts/Unit                  | Time (in units of seconds) |                           |       |
|-----------------------------|----------------------------|---------------------------|-------|
|                             | Replacement                | Adjustment/<br>inspection | Total |
| <u>Head Grounding Plate</u> | 17:45                      | 2:14                      | 19:59 |
| Main Frame                  | 17:45                      |                           | 17:45 |
| Frame Base Assy             | 15:56                      |                           | 15:56 |
| EJ Roller Assy              | 16:54                      | 1:40                      | 18:34 |
| PF Motor Assy               | 17:25                      | 0:13                      | 17:38 |
| Frame Center Support        | 16:49                      |                           | 16:49 |
| Center Support              | 16:49                      |                           | 16:49 |
| Square Nut                  | 16:03                      |                           | 16:03 |
| <u>PF Roller</u>            | 17:02                      |                           | 17:02 |

### 3.1.5 Checks and Precautions before Disassembling

#### 3.1.5.1 Factors which Affect the Print Quality

##### WETTING OF VENTILATION FILM

The film under sealing film attached on the Ink Tank is breathable film. The air in the ink tank is released to outside through this film and then the air hole to keep ink supply to the Printhead stable. If the film gets wet with ink, the air in the tank is not properly released outside and may cause degradation in print quality.

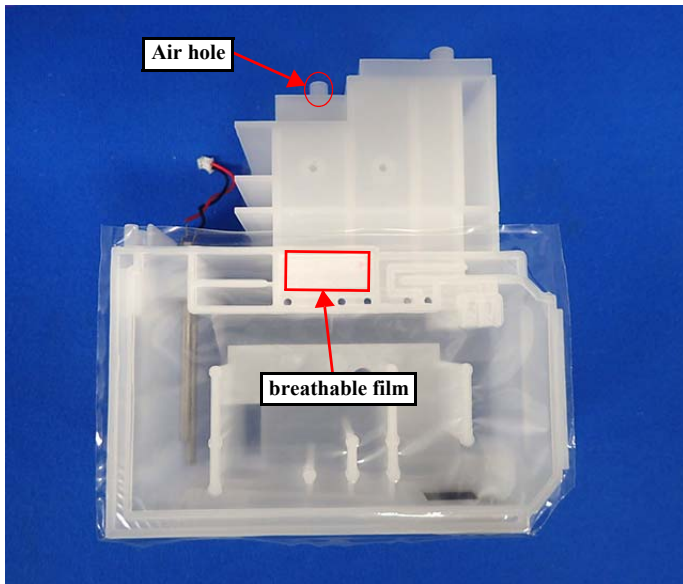
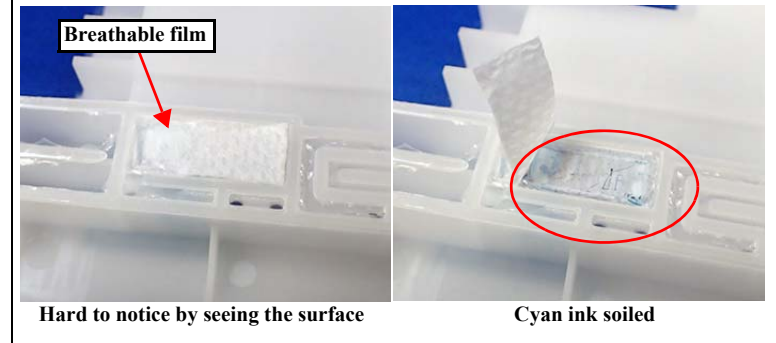


Figure 3-1. Breathable film/air hole

- Determining whether the breathable film is wet or not



When the breathable film is wet, tank replacement is necessary. Because it is hard to notice that the film is wet just by visually checking its surface, determine that according to whether the ink has reached to a certain portion of the air chamber.



When the ink has reached the red squared part of the air chamber shown below, breathable film is probably wet. In this case, replace the Ink Tank.

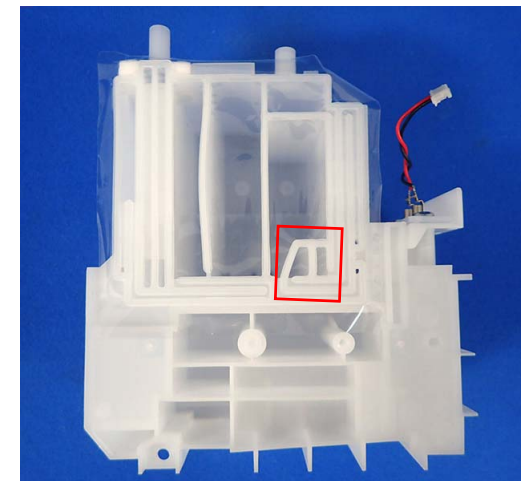


Figure 3-2. Wetting of breathable film




### 3.1.5.2 Minimizing Ink Leakage during Disassembly for Your Safety

Ink leakage may occur when removing ink-related parts from the printer. This section describes the parts that may cause ink leakage and how to prevent or minimize the leakage.



**When the printer get soiled by the ink leakage, wipe the ink with a cloth wet with CR02. Do not use alcohol to the parts that touch the ink such as tube connecting part and adapter.**

#### THE PARTS THAT MAY CAUSE INK LEAKAGE WHEN REMOVING

| Parts name*  | When ink leakage may occur  | Location |
|--|---|----------|
|  Ink Tank | Removing the Ink Tube from the Ink Tank.  | A        |
|  Adapter  | Removing the Ink Tube from the adapter.   | B        |
|  Ink Tube | <ul style="list-style-type: none"> <li>Removing the Ink Tube from the Ink Tank.</li> <li>Removing the Ink Tube from the adapter.</li> </ul> | A, B     |

Note " "\*: These parts are indicated with the  icon in disassembly/reassembly flowchart. (see " 3.3.2 Disassembly Flowchart (p80)" )

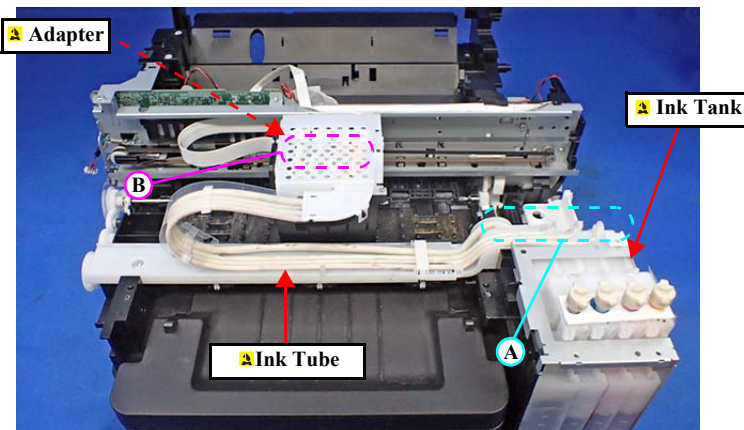


Figure 3-3. The Parts That May Cause Ink Leakage

#### HOW TO MINIMIZE THE INK LEAKAGE

Before disassembling, check the following methods.

##### Removing adapter from the carriage

Before disconnecting the joint parts of the ink path, make sure to remove the Adapter from the Carriage.

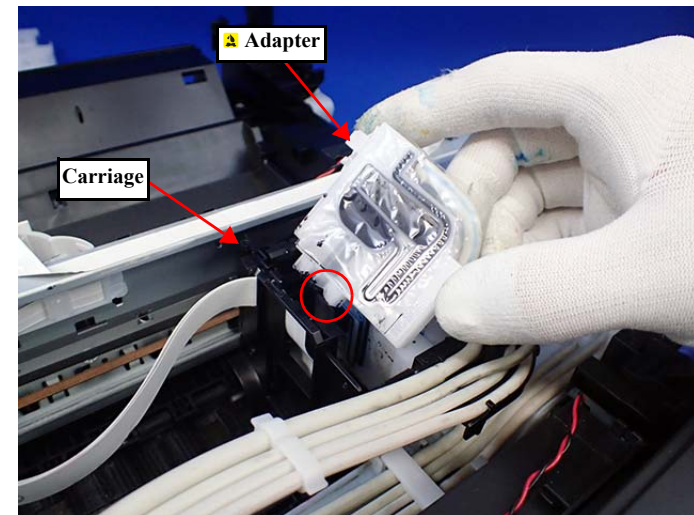


Figure 3-4. Ink leakage from adapter

### ❑ Disconnecting the Adapter and the Ink Tube

Be careful not to press the film portion of the Adapter since doing so may cause ink to leak. Hold the Adapter by its plastic portion when disconnecting the Ink Tube.

In addition, before disconnecting the tube, pinch it with the tube clip and cover the tube end with a cloth to minimize ink leakage.

### ❑ Tools needed

- Tube clip
- Cloth

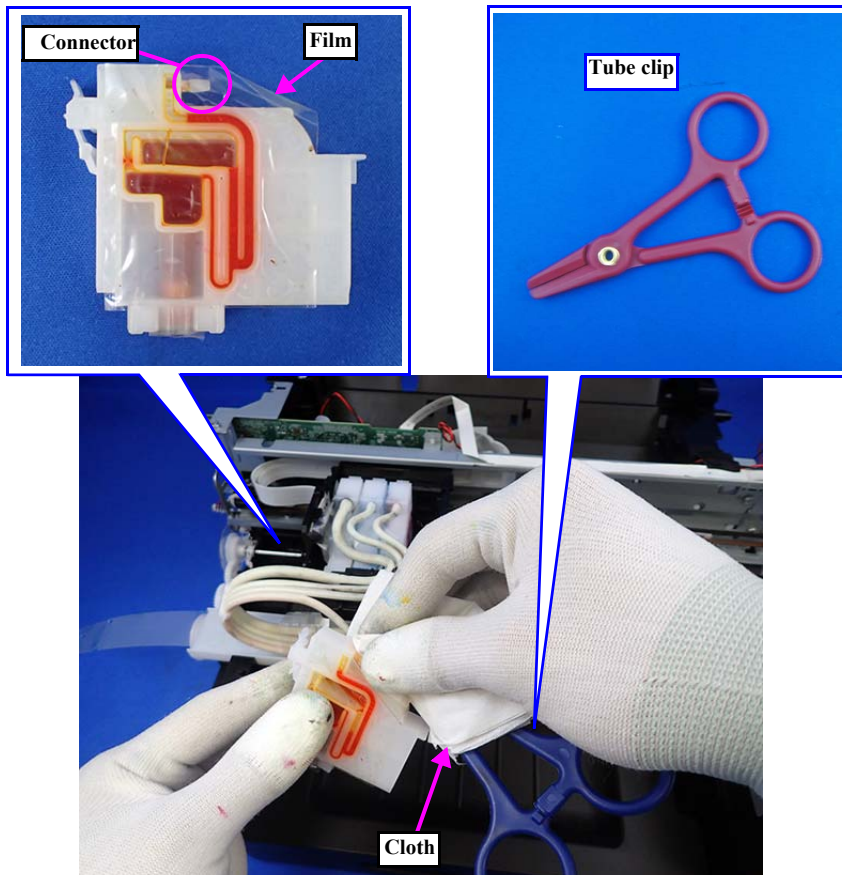


Figure 3-5. Disconnecting adapter and Ink Tube (1)



**When removing the Ink Tube from the adapter in the procedure given below, ink may leak from the Ink Tube. Perform disconnection off the printer and be careful not to soil printer and things around.**

1. Pinch the Ink Tube with a tube clip and remove it from the adapter.
2. To prevent ink leakage, plug a cotton swab into the tip of the Ink Tube.
3. Remove the tube clip from the Ink Tube.
4. Repeat [Step 1](#) to [Step 3](#) until all four Ink Tubes are removed.

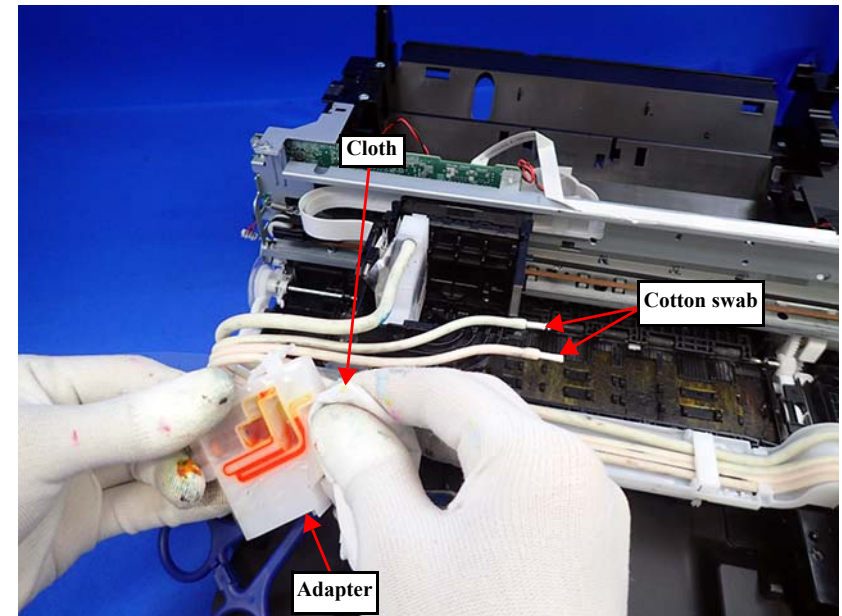
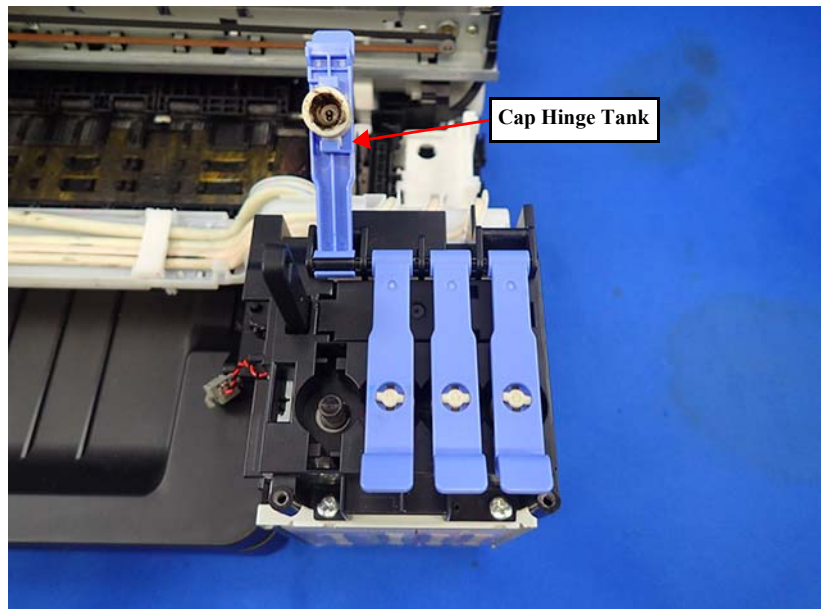


Figure 3-6. Disconnecting adapter and Ink Tube (2)

### 3.1.5.3 Ink Discharging Procedure

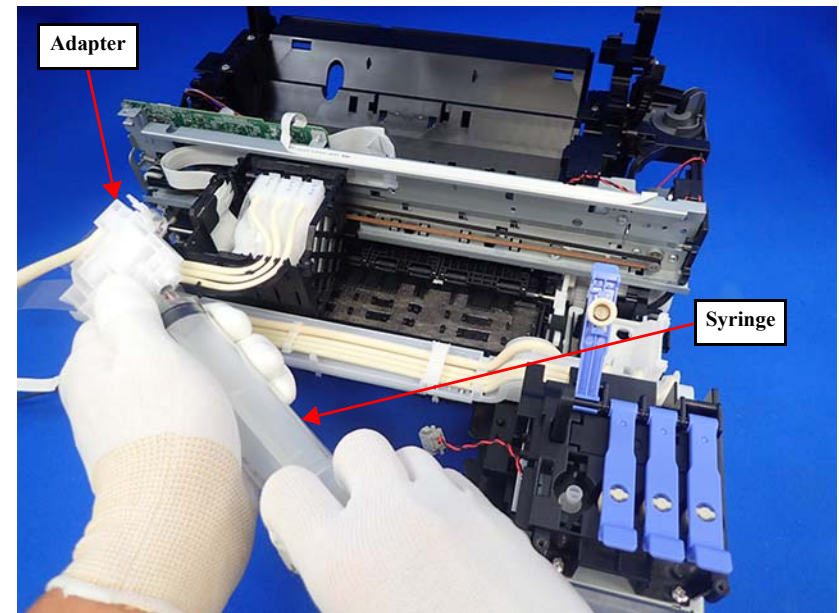
Before removing the Ink Tank, discharge the ink in the procedure given below if necessary.

1. Disconnect the adapter from the printhead. (p 74)
2. Connect any syringe (standard: tip of the syringe =  $\Phi 3.2\text{mm}$ , capacity = 50 mL) to the disconnected adapter.
3. Open the Cap Hinge Tank.



**Figure 3-7. Ink discharging (1)**

4. Suck out the ink inside the Ink Tank with the connected syringe.




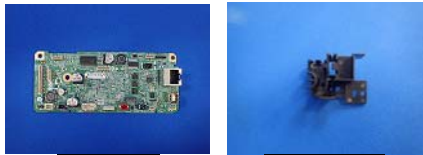
**Figure 3-8. Ink discharging (2)**

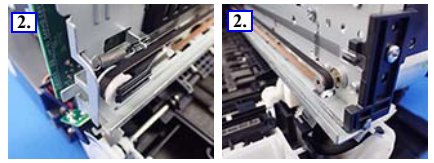
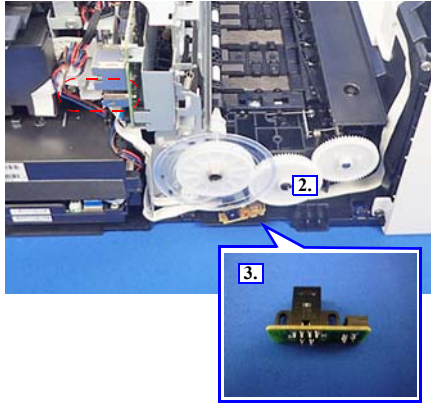
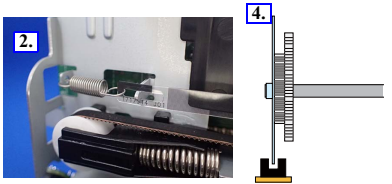
5. Repeat Step 1 to Step 4 for each color.

### 3.2 Common Cautions on Disassembly/Reassembly

This section describes common cautions when disassembling/reassembling the product.

Before disassembling/reassembling a printer including this product, be sure to read [Safety Precautions\(P3\)](#) and this section.

| Item                 | Content   | Photo/Illustration   |
|----------------------|---|--|
| When handling parts  | <ol style="list-style-type: none"> <li>When handling new parts for replacement, take care not to contaminate or damage them.</li> <li>Take care not to damage the FFCs/cables/Ink tube if there is a possibility of coming into contact with them.</li> <li>When reassembling the product, take care not to let components of the unit come off.</li> </ol> |  <p style="text-align: center;"> <span style="border: 1px solid black; padding: 2px;">Housing Top Assy</span>     <span style="border: 1px solid black; padding: 2px;">Main Frame Assy</span> </p> |
| When reassembling    | Take care not to damage them when securing them by tightening screws.   |  <p style="text-align: center;"> <span style="border: 1px solid black; padding: 2px;">Main Board</span>     <span style="border: 1px solid black; padding: 2px;">Holder Core</span> </p>          |
| When applying grease | Do not lubricate any part other than those specified. If grease is applied on such a part, wipe it off completely.  | ---  |
| External parts       | Confirm visually that there are no scratches, dirt, and gaps.   | ---  |
| Moving parts         | After reassembling, confirm that there are no abnormal noises and they work smoothly.   | ---  |

| Item         | Content   | Photo/Illustration   |
|--------------|---|--|
| Timing belts | <ol style="list-style-type: none"> <li>Take care not to break them.</li> <li>Confirm that it is installed properly onto the transmissive sections of the pinion gear/driven roller.</li> </ol>  |   |
| Motors       | Take care not to damage the pinion gears.   | ---  |
| Sensors      | <ol style="list-style-type: none"> <li>Take care not to touch the detector sections.</li> <li>As for the encoder Sensor used with a circular scale, the photo sensor section should be set over the encoded area of the circular scale.</li> <li>Take care not to get injured by the sharp ends of the board terminal on the back of the circuit boards when handling the sensors or the peripheral parts.</li> </ol> |   |
| Scales       | <ol style="list-style-type: none"> <li>Take care not to touch the encoded area.</li> <li>Install it with the black section up. (CR Scale only)</li> <li>Wipe the scale with alcohol before installing. (CR Scale only)</li> <li>Confirm that they do not touch the photo sensors after installation.</li> </ol>   |  |

| Item           | Content  | Photo/Illustration |
|----------------|--|--------------------|
| Waste ink pads | <ol style="list-style-type: none"> <li>1. Take care not to stain your hands with the waste ink soaked in the ink pads. If ink comes into contact with your hands, wash it off with water immediately.</li> <li>2. Take care not to stain the printer's parts with the waste ink soaked in the ink pads. If ink comes into contact with the parts, wash it off. (Especially, pay attention to Paper Guide Front/Lower Porous Pad)</li> </ol>  |                    |
| FFCs           | <ol style="list-style-type: none"> <li>1. Be sure to insert them to their connectors on the boards as far as they will go without any loose connection such as a half-way or slant connection.</li> <li>2. Route them along their routing paths.</li> <li>3. If the double-sided tape that secures the FFCs is not strong enough to secure them, make sure to replace the tape and secure the FFCs firmly.</li> <li>4. When connecting to the connector, be careful not to break the strengthen plate on the backside of the terminal of the FFC.</li> </ol> |                    |
| Gears          | <p>When installing gears, pay attention to the following:</p> <ul style="list-style-type: none"> <li>• The gear section should not be damaged.</li> <li>• No foreign material is attached.</li> <li>• No grease is attached on any parts other than those specified.</li> </ul>  | ---                |

| Item               | Content   | Photo/Illustration     |
|--------------------|---|------------------------|
| Paper feed rollers | Do not touch rollers for paper feeding when handling them.  |                        |
| One Time parts     | After removing One Time parts specified in this manual, do not reuse them, but be sure to replace them with new ones.   | <p>One Time icon: </p> |
| Holder Cam Assy    | Align the dowel on the Slider Trans with the groove on the Holder Cam Assy and attach them.   |                        |
| Ink System         | <ol style="list-style-type: none"> <li>1. Take care not to stain your hands with ink.</li> <li>2. When you connect the ink tube to another part, insert the ink tube up to the root of the joint to prevent ink leakage and secure the tube with the tube clamp.</li> <li>3. If it's hard to insert the ink tube to the joint, apply CR02 to the inserting part of the ink tube.</li> </ol> | ---                    |
| MAC Address Label* | <ol style="list-style-type: none"> <li>1. Take care not to stain or damage it.</li> <li>2. When replacing the printer mechanism, make sure to install the existing Main Board and the part with the MAC address label (Cover Cassette) to the new printer mechanism.</li> </ol>   |                        |

## 3.3 Disassembly/Reassembly Procedures

### 3.3.1 Parts/Components Need to be Removed Before Disassembly/Reassembly

In "3.3.2 Disassembly Flowchart (p80)", the procedures are indicated on the premise that some parts/units are removed in advance. Make sure to remove the following parts/units before starting disassembly.

□ Duplex Unit

1. Pull out the Paper Support Rear.
2. While pressing the levers of the Duplex Unit, remove the Duplex Unit in the direction of the arrow.

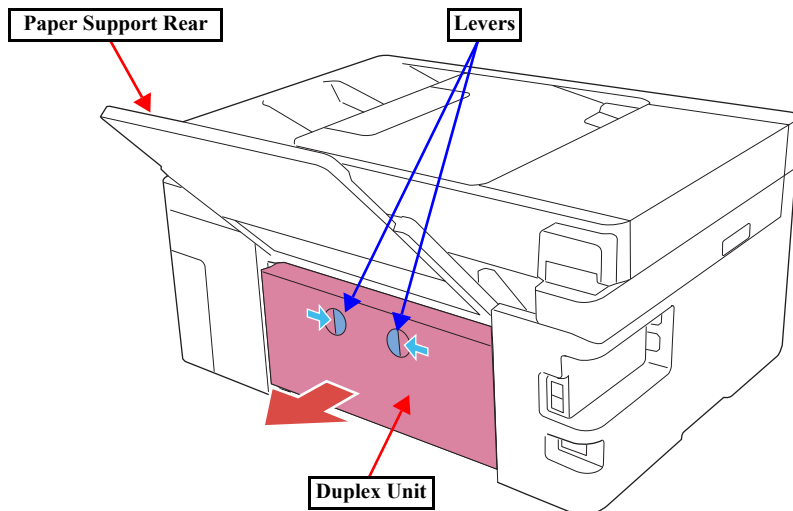


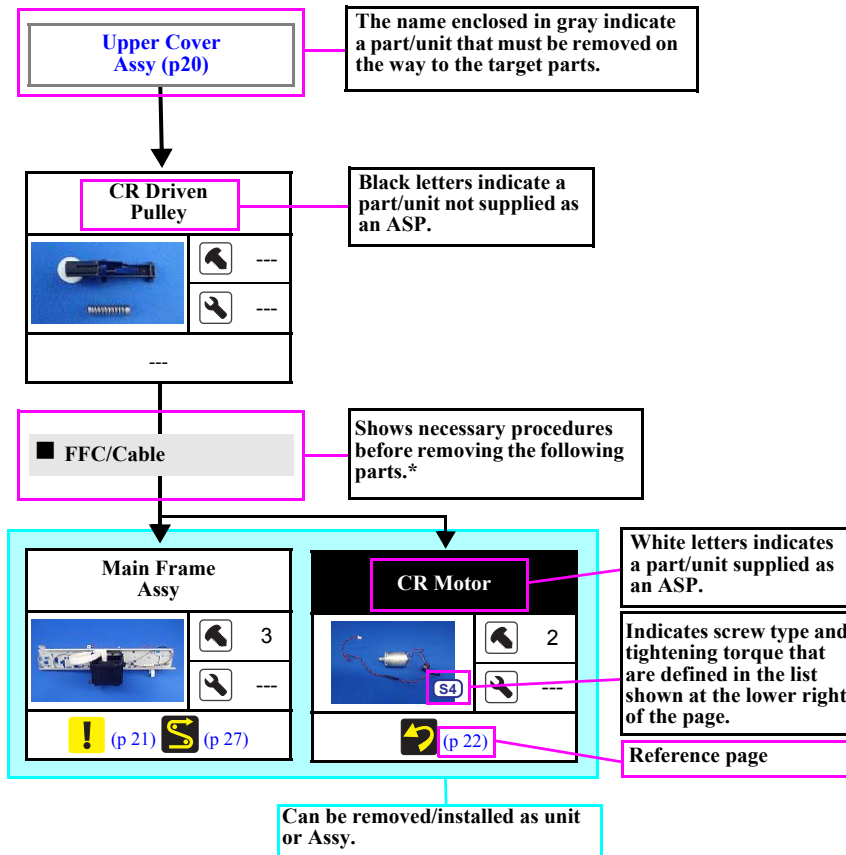
Figure 3-9. Removing the Duplex Unit

### 3.3.2 Disassembly Flowchart

This section describes procedures for disassembling the parts/units in a flowchart format. For some parts/units, detailed procedures or precautions are provided (accordingly indicated by icons and cell's color). Refer to the explanations in the example chart below and perform an appropriate disassembling and assembling procedure. (see "3.3.3 Repairing Major Components Disassembly/Assembly Procedure" (p86) and "3.4 Detailed Disassembly/Reassembly Procedure for each Part/Unit" (p108)) For routing cables, see "3.5 Routing FFCs/cables" (p111)



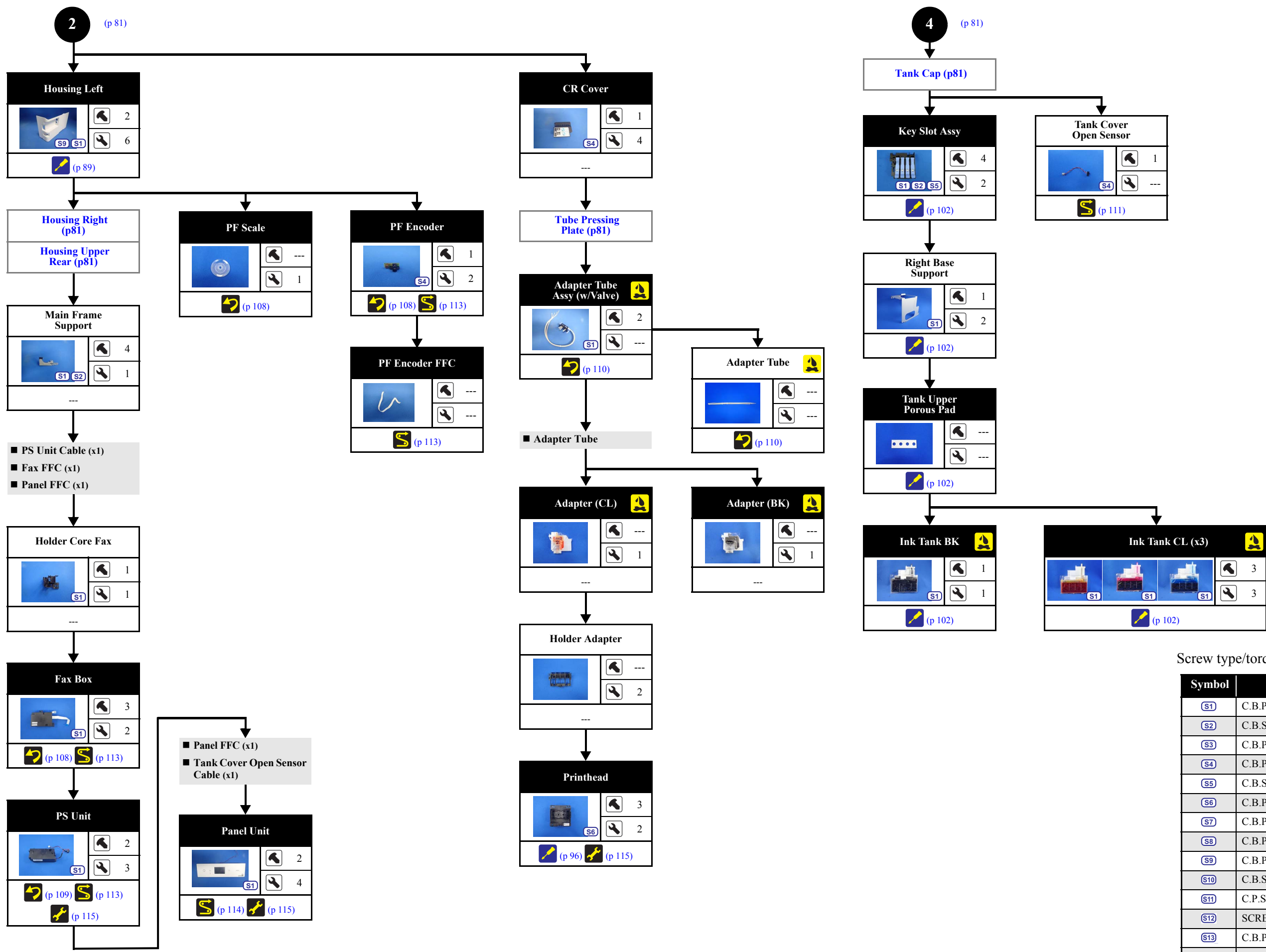
■ The example below shows how to see the charts on the following pages.



Note "※": The boxes with only part names indicates the removal of such parts. If the names of FFCs or cables are shown, disconnect the FFCs or cables from their connectors.

| Item            | Description  |  | Reference                                   |
|-----------------|--------------|--|---|
| Parts/unit name | White-letter | Part/unit supplied as an ASP   | ---   |
|                 | Black-letter | Part/unit not supplied as an ASP   | ---   |
| Icon            |              | Indicates a practice or condition that could result in injury or loss of life if not strictly observed.                              | Indicates the reference page in blue-letter |
|                 |              | Indicates a practice or condition that could result in damage to, or destruction of equipment if not strictly observed.              | Indicates the reference page in blue-letter |
|                 |              | Indicates the parts that are inevitably broken in the disassembling procedure, and should be replaced with a new one for reassembly. | ---   |
|                 |              | Indicates necessary check items in the disassembling/assembling procedure.   | Indicates the reference page in blue-letter |
|                 |              | Indicates supplementary explanation for disassembly is given.  | Indicates the reference page in blue-letter |
|                 |              | Indicates particular tasks to keep quality of the units are required.  | Indicates the reference page in blue-letter |
|                 |              | Indicates particular routing of cables is required.  | Indicates the reference page in blue-letter |
|                 |              | Indicates particular adjustment(s) is/are required.  | Chapter 4 " Adjustment (p115)"              |
|                 |              | Indicates lubrication is required.   | Chapter 5 " Maintenance (p136)"             |
|                 |              | Indicates the number of screws securing the parts/units.   | ---   |
|                 |              | Indicates the points secured with other than a screw such as a hook, rib, dowel or the like.   | ---   |

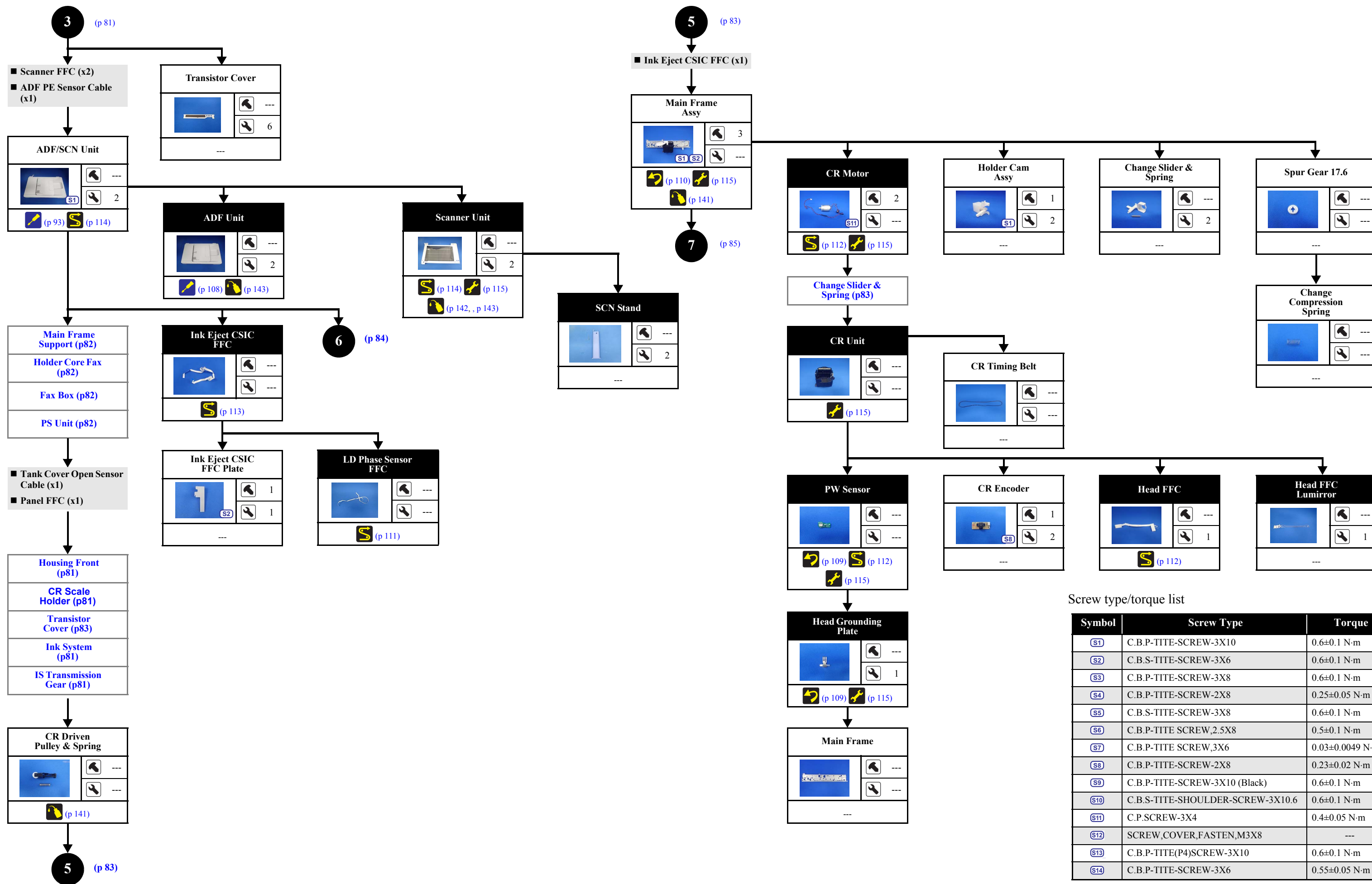




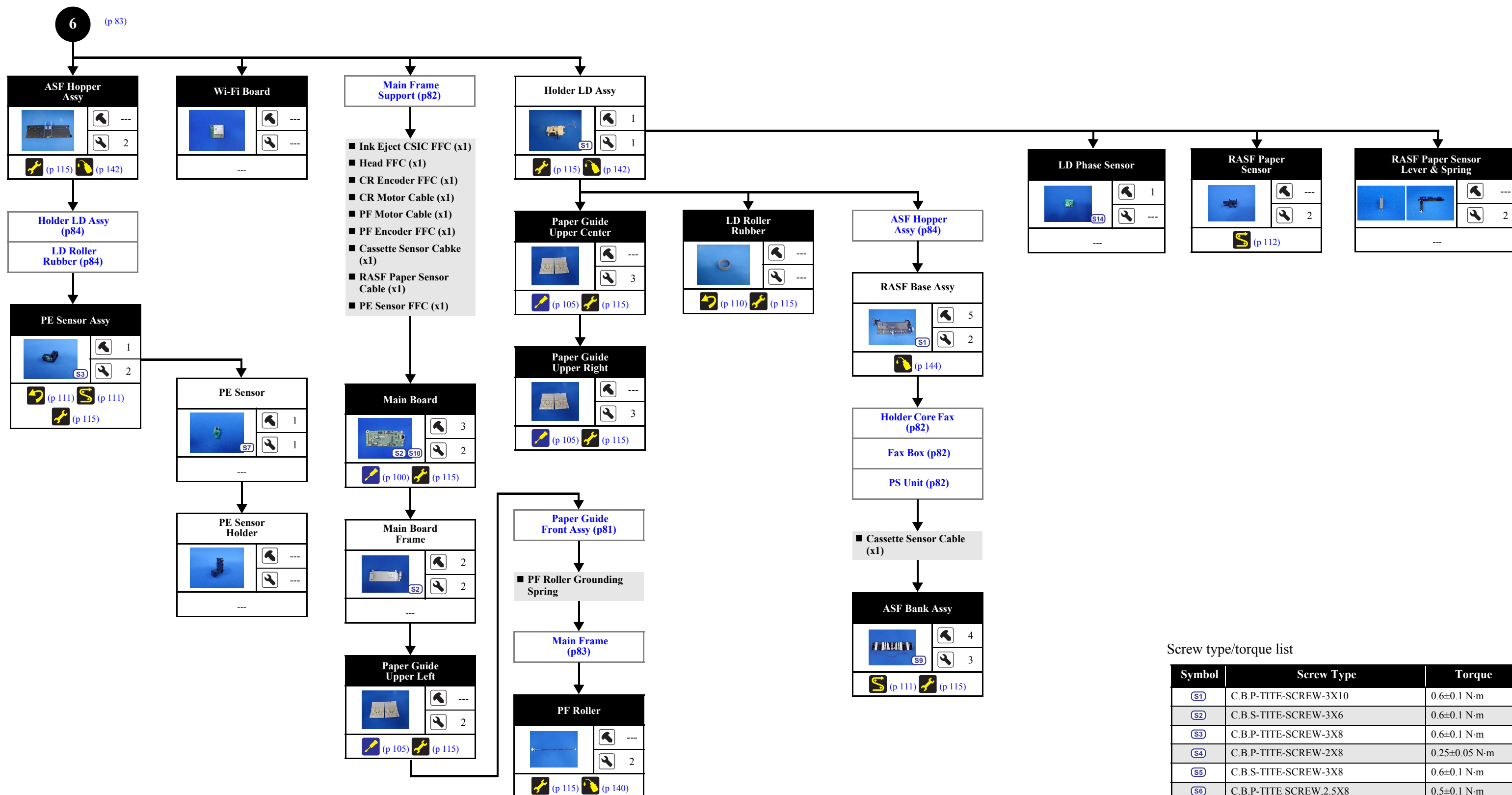
Screw type/torque list

| Symbol | Screw Type                       | Torque          |
|--------|----------------------------------|-----------------|
| (S1)   | C.B.P-TITE-SCREW-3X10            | 0.6±0.1 N·m     |
| (S2)   | C.B.S-TITE-SCREW-3X6             | 0.6±0.1 N·m     |
| (S3)   | C.B.P-TITE-SCREW-3X8             | 0.6±0.1 N·m     |
| (S4)   | C.B.P-TITE-SCREW-2X8             | 0.25±0.05 N·m   |
| (S5)   | C.B.S-TITE-SCREW-3X8             | 0.6±0.1 N·m     |
| (S6)   | C.B.P-TITE SCREW,2.5X8           | 0.5±0.1 N·m     |
| (S7)   | C.B.P-TITE SCREW,3X6             | 0.03±0.0049 N·m |
| (S8)   | C.B.P-TITE-SCREW-2X8             | 0.23±0.02 N·m   |
| (S9)   | C.B.P-TITE-SCREW-3X10 (Black)    | 0.6±0.1 N·m     |
| (S10)  | C.B.S-TITE-SHOULDER-SCREW-3X10.6 | 0.6±0.1 N·m     |
| (S11)  | C.P.SCREW-3X4                    | 0.4±0.05 N·m    |
| (S12)  | SCREW_COVER_FASTEN,M3X8          | ---             |
| (S13)  | C.B.P-TITE(P4)SCREW-3X10         | 0.6±0.1 N·m     |
| (S14)  | C.B.P-TITE-SCREW-3X6             | 0.55±0.05 N·m   |

Flowchart 3-2. Disassembly/Reassembly Flowchart (2)



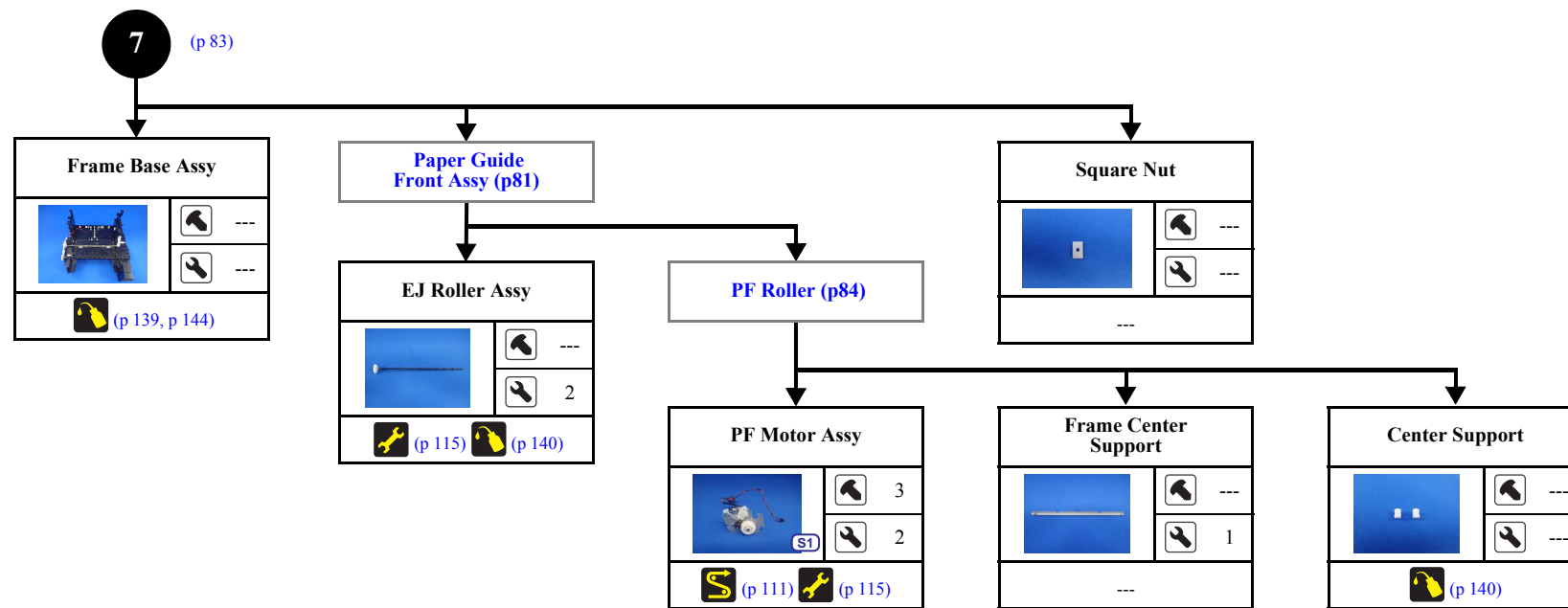
Flowchart 3-3. Disassembly/Reassembly Flowchart (3)



Screw type/torque list

| Symbol | Screw Type                       | Torque          |
|--------|----------------------------------|-----------------|
| (S1)   | C.B.P-TITE-SCREW-3X10            | 0.6±0.1 N·m     |
| (S2)   | C.B.S-TITE-SCREW-3X6             | 0.6±0.1 N·m     |
| (S3)   | C.B.P-TITE-SCREW-3X8             | 0.6±0.1 N·m     |
| (S4)   | C.B.P-TITE-SCREW-2X8             | 0.25±0.05 N·m   |
| (S5)   | C.B.S-TITE-SCREW-3X8             | 0.6±0.1 N·m     |
| (S6)   | C.B.P-TITE SCREW,2.5X8           | 0.5±0.1 N·m     |
| (S7)   | C.B.P-TITE SCREW,3X6             | 0.03±0.0049 N·m |
| (S8)   | C.B.P-TITE-SCREW-2X8             | 0.23±0.02 N·m   |
| (S9)   | C.B.P-TITE-SCREW-3X10 (Black)    | 0.6±0.1 N·m     |
| (S10)  | C.B.S-TITE-SHOULDER-SCREW-3X10.6 | 0.6±0.1 N·m     |
| (S11)  | C.P.SCREW-3X4                    | 0.4±0.05 N·m    |
| (S12)  | SCREW,COVER,FASTEN,M3X8          | ---             |
| (S13)  | C.B.P-TITE(P4)SCREW-3X10         | 0.6±0.1 N·m     |
| (S14)  | C.B.P-TITE-SCREW-3X6             | 0.55±0.05 N·m   |

Flowchart 3-4. Disassembly/Reassembly Flowchart (4)



Screw type/torque list

| Symbol | Screw Type                       | Torque          |
|--------|----------------------------------|-----------------|
| (S1)   | C.B.P-TITE-SCREW-3X10            | 0.6±0.1 N·m     |
| (S2)   | C.B.S-TITE-SCREW-3X6             | 0.6±0.1 N·m     |
| (S3)   | C.B.P-TITE-SCREW-3X8             | 0.6±0.1 N·m     |
| (S4)   | C.B.P-TITE-SCREW-2X8             | 0.25±0.05 N·m   |
| (S5)   | C.B.S-TITE-SCREW-3X8             | 0.6±0.1 N·m     |
| (S6)   | C.B.P-TITE SCREW,2.5X8           | 0.5±0.1 N·m     |
| (S7)   | C.B.P-TITE SCREW,3X6             | 0.03±0.0049 N·m |
| (S8)   | C.B.P-TITE-SCREW-2X8             | 0.23±0.02 N·m   |
| (S9)   | C.B.P-TITE-SCREW-3X10 (Black)    | 0.6±0.1 N·m     |
| (S10)  | C.B.S-TITE-SHOULDER-SCREW-3X10.6 | 0.6±0.1 N·m     |
| (S11)  | C.P.SCREW-3X4                    | 0.4±0.05 N·m    |
| (S12)  | SCREW,COVER,FASTEN,M3X8          | ---             |
| (S13)  | C.B.P-TITE(P4)SCREW-3X10         | 0.6±0.1 N·m     |
| (S14)  | C.B.P-TITE-SCREW-3X6             | 0.55±0.05 N·m   |

Flowchart 3-5. Disassembly/Reassembly Flowchart (5)

### 3.3.3 Repairing Major Components Disassembly/ Assembly Procedure



Underlined items in this section describe the disassembly procedure of parts/unit supplied as ASP.



Repeatedly placing this product on its side will cause ink to spread around the air holes which can hinder printing, or it can cause ink leakage when shipping. For that reason, try not to place the printer on its side when working whenever possible.

#### 3.3.3.1 Maintenance Box



The screw which is securing the Ink Eject Cover cannot be removed because the fastener is attached.

1. Loosen the screw fixing the Ink Eject Cover.
2. Remove the Ink Eject Cover in the direction of the arrow.

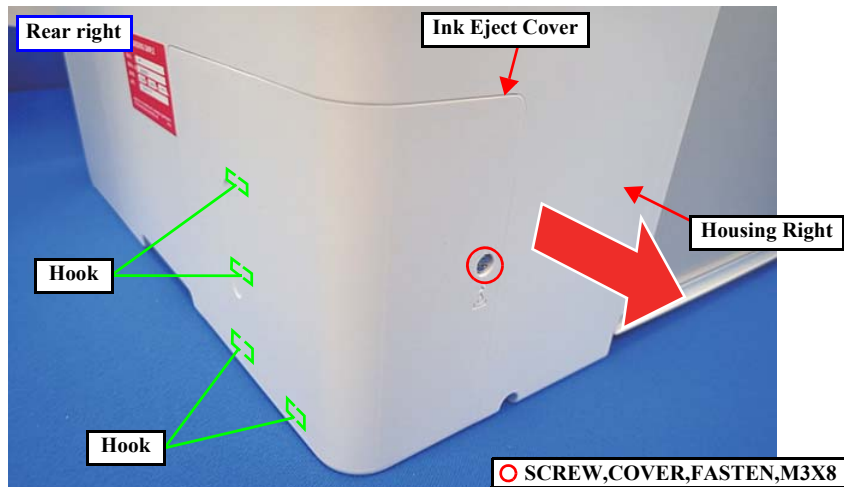


Figure 3-10.

3. Remove the Maintenance Box in the direction of the arrow.



Figure 3-11.



When reassembling the Ink Eject Cover, engage the four hooks on the cover with the Housing Right. (Figure 3-10)

**3.3.3.2 Exterior Parts**

**3.3.3.2.1 Housing Upper Front**

1. Open the ADF/SCN Unit and secure using the SCN Stand.

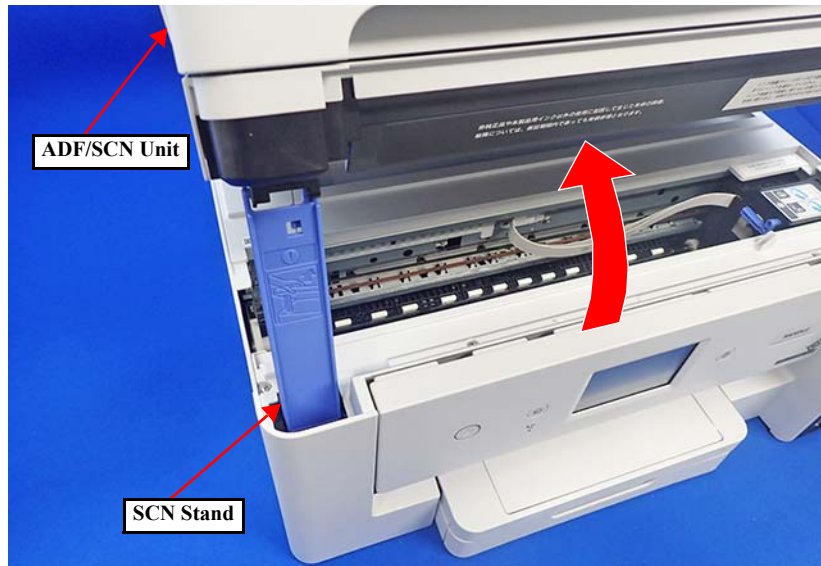


Figure 3-12.

2. Remove the SCN Stand from the printer while twisting it.

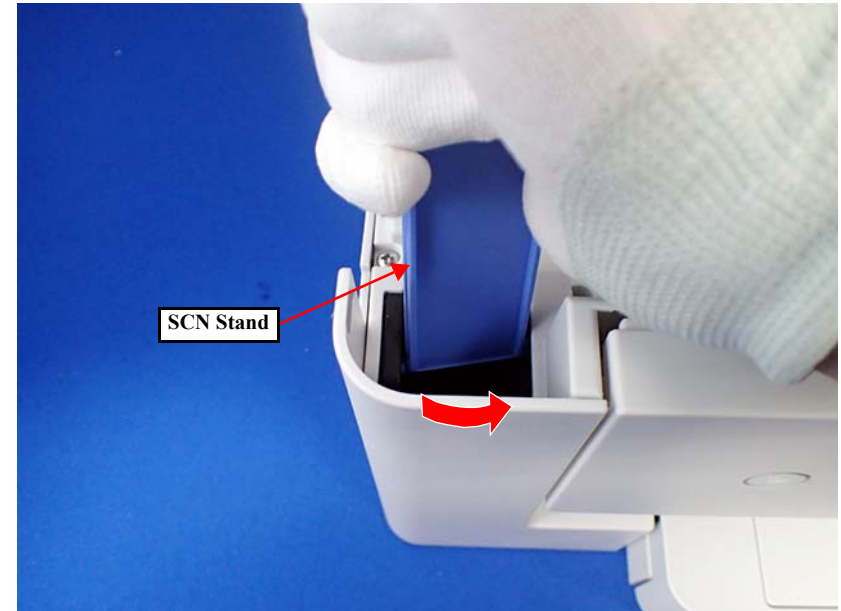


Figure 3-14.



**When implementing the following procedures, the mounting portion to the Scanner Unit can be bent if the SCN Stand is forcibly twisted. Be careful not to forcibly twist the stand.**

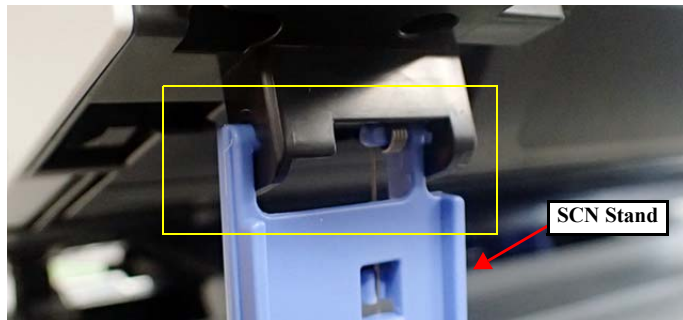


Figure 3-13.

- Remove the seven screws, and remove the Housing Upper Front.

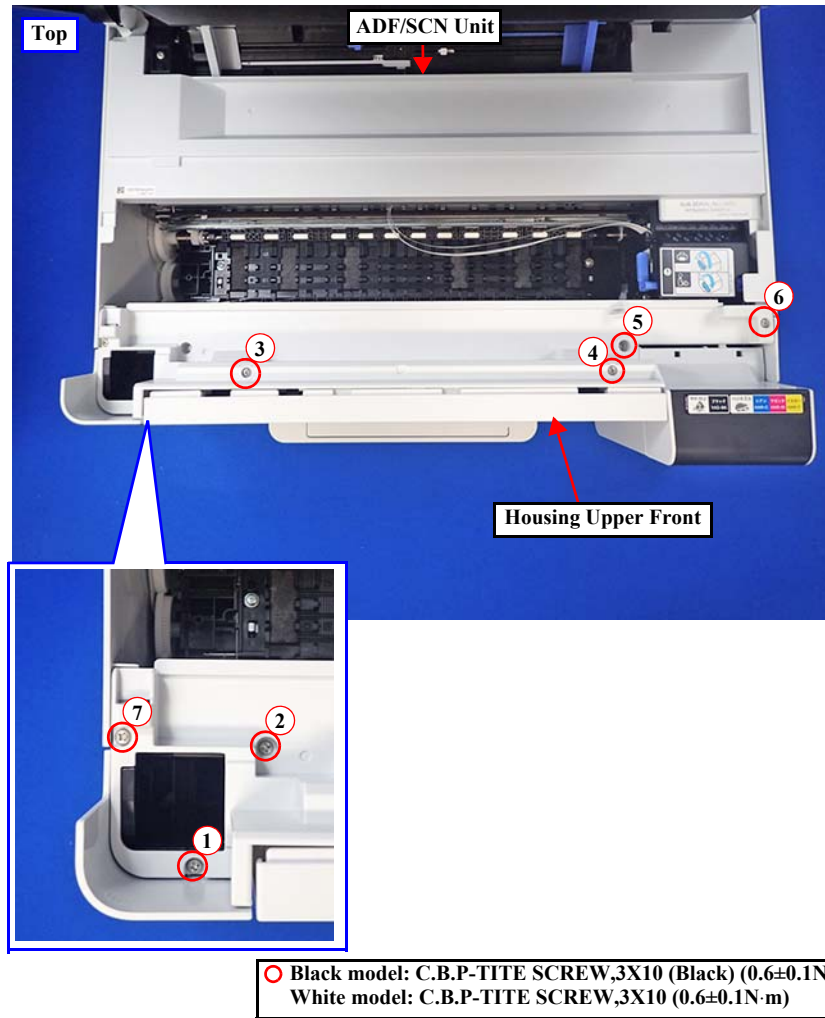


Figure 3-15.



Screw in the order given in [Figure 3-15](#).

### 3.3.3.2.2 Housing Right

- Remove the Housing Upper Front. (p87)
- Remove the Maintenance Box. (p86)
- Remove one screw from the top of the back face and one from the bottom of the back face.

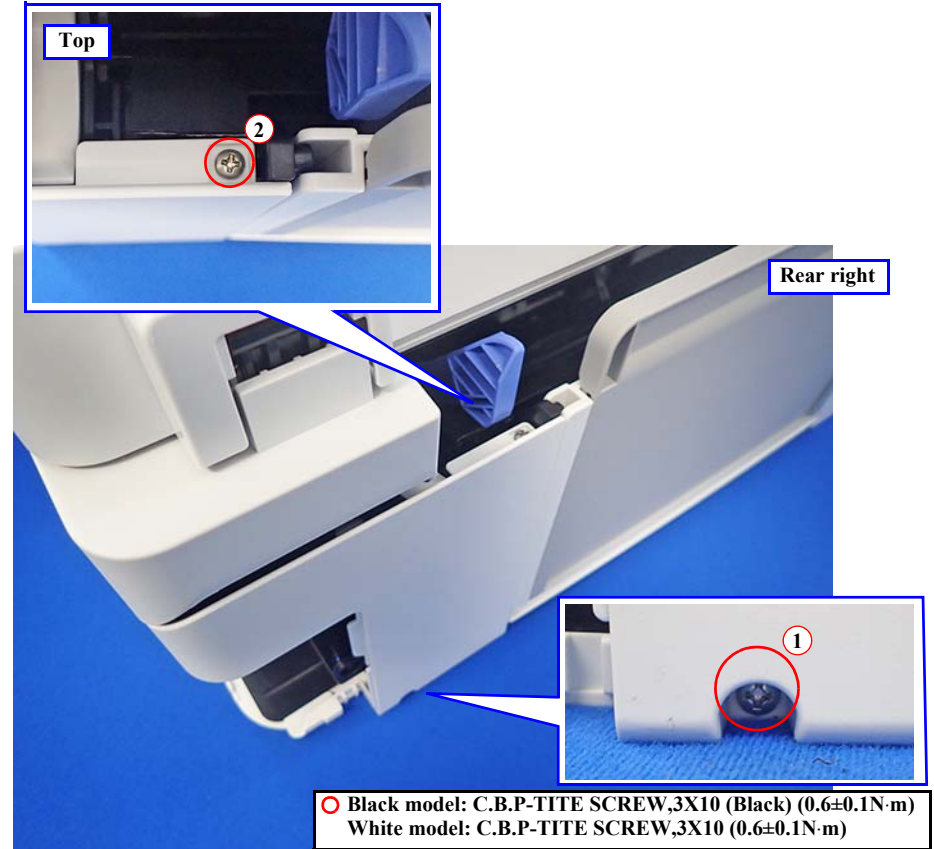


Figure 3-16.



Screw in the order given in [Figure 3-16](#).

4. While disengaging the hook, remove the Housing Right in the direction of the arrow.

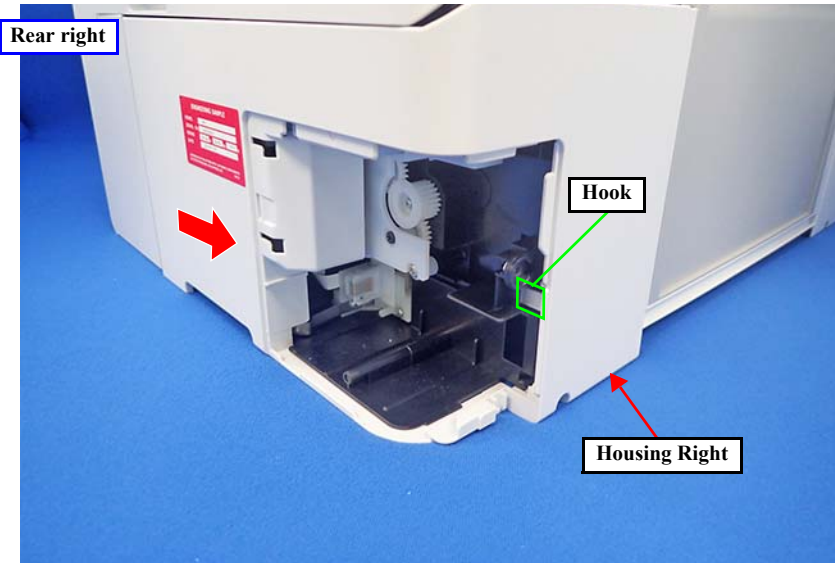


Figure 3-17.

### 3.3.3.2.3 Housing Left

1. Remove the Housing Upper Front. (p87)
2. Remove one screw from the top of the back face and one from the bottom of the back face.
3. Remove the Housing Left in the direction of the arrow shown below.

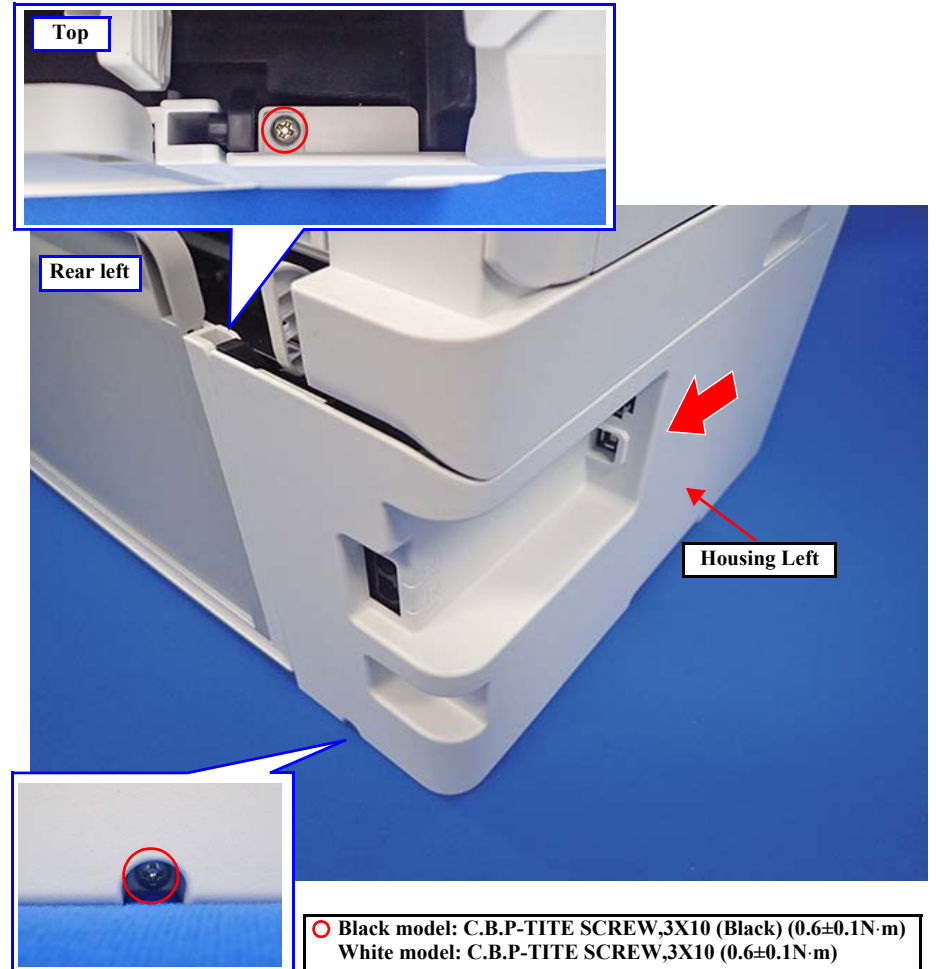


Figure 3-18.

**3.3.3.2.4 Housing Upper Rear**

1. Remove the Housing Upper Front. (p87)
2. Remove the Maintenance Box. (p86)
3. Remove the Housing Right. (p88)
4. Remove the Housing Left. (p89)

5. Remove the screw.
6. Slide the Housing Upper Rear in the direction of the arrow to release the hook, then remove it toward the front while lifting the Housing Upper Rear.



**When removing the Housing Upper Rear, be careful not to touch with the Main Board.**

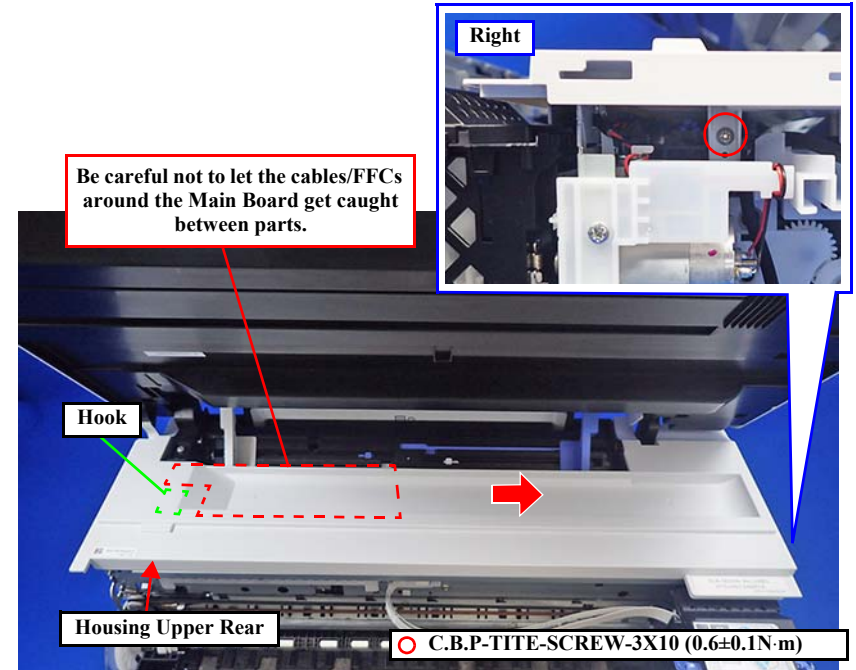
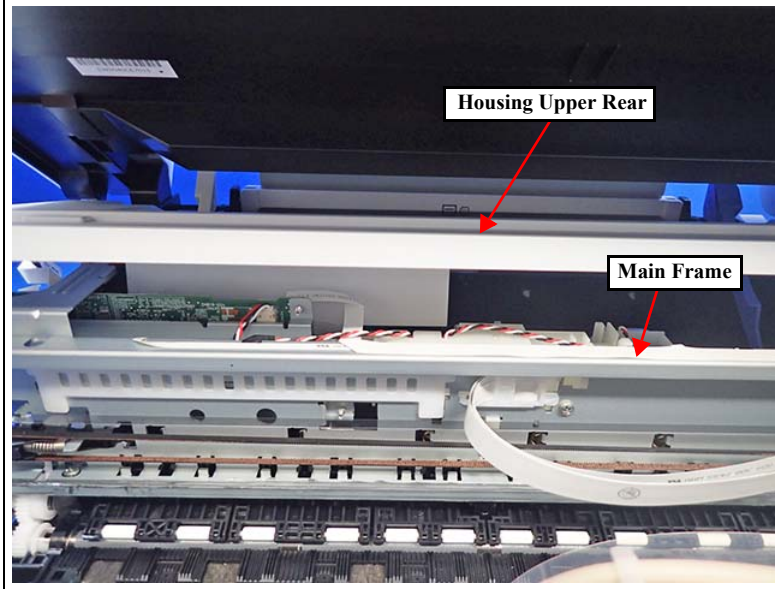


Figure 3-19.



**When reassembling the Housing Upper Rear, be careful not to let the cables get caught between parts.**

**3.3.3.2.5 Housing Front**

1. Remove the Housing Upper Front. (p87)
2. Remove the Maintenance Box. (p86)
3. Remove the Housing Right. (p88)
4. Remove the Housing Left. (p89)
5. Disconnect the relay cable from the Tank Cover Open Sensor Cable.

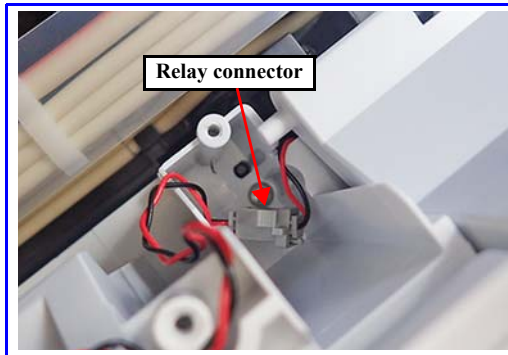
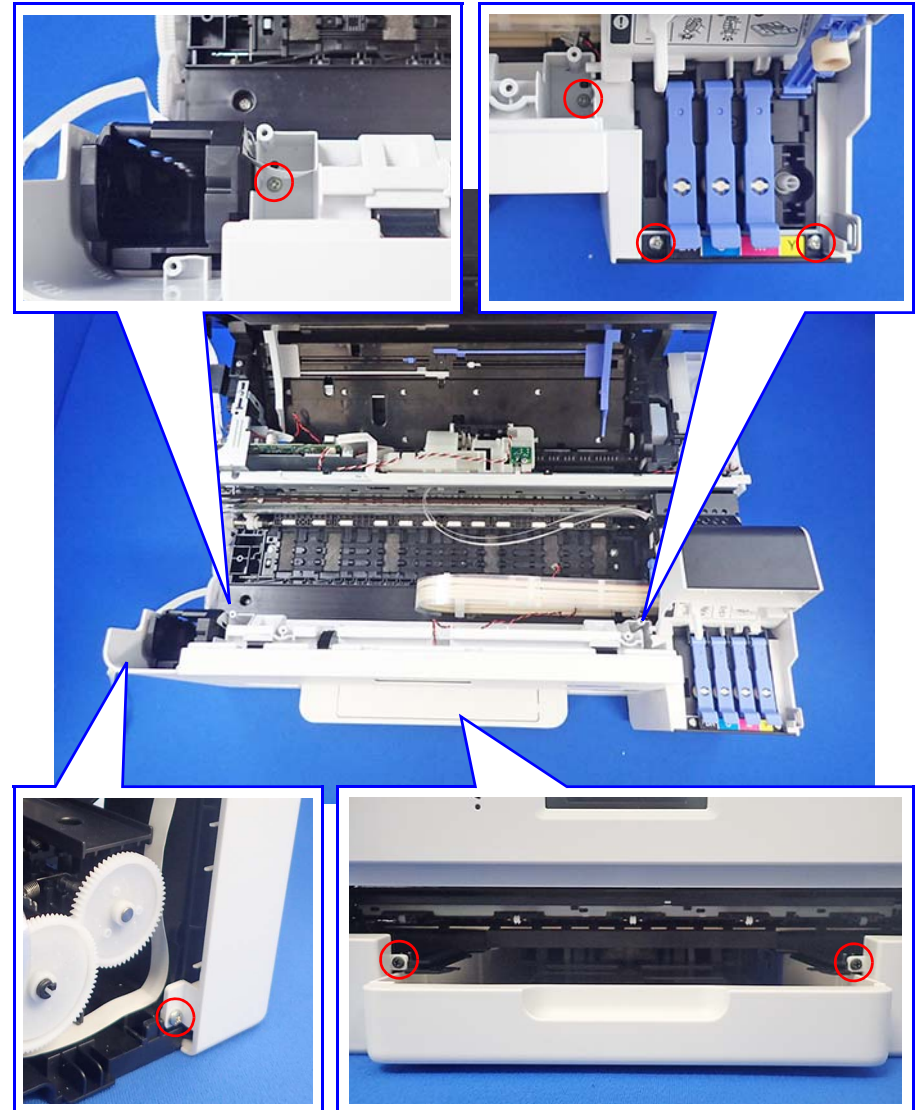


Figure 3-20.

6. Remove the seven screws.



○ Black model: C.B.P-TITE SCREW,3X10 (Black) (0.6±0.1N·m)  
 White model: C.B.P-TITE SCREW,3X10 (0.6±0.1N·m)

Figure 3-21.



**In the next step, Housing Front cannot be removed completely because the Panel FFC is connected to the Main Board.**

7. Remove the Tank Cover.
8. Remove the Stacker Assy. (p108)
9. Remove the Housing Front from the Dowels (x2) on both sides of the Panel Unit.

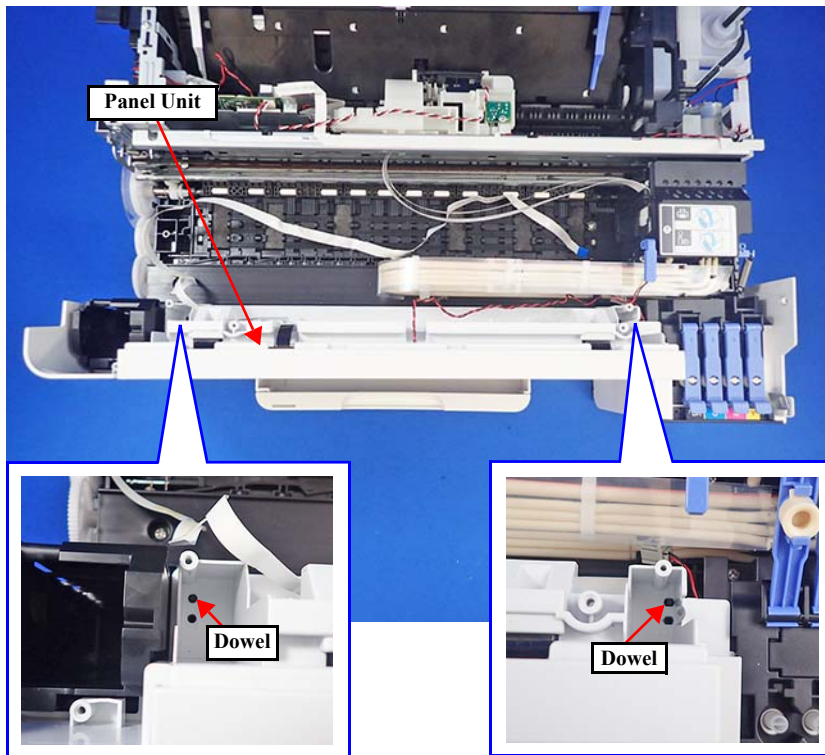


Figure 3-22.

10. Remove the two screws.
11. Remove the Panel Unit From the Housing Front Assy and remove the Housing Front.

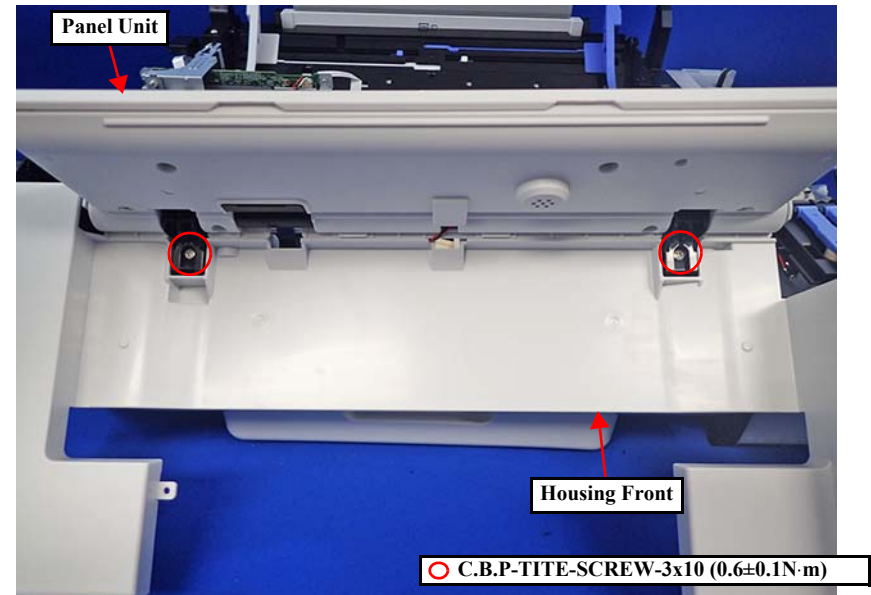
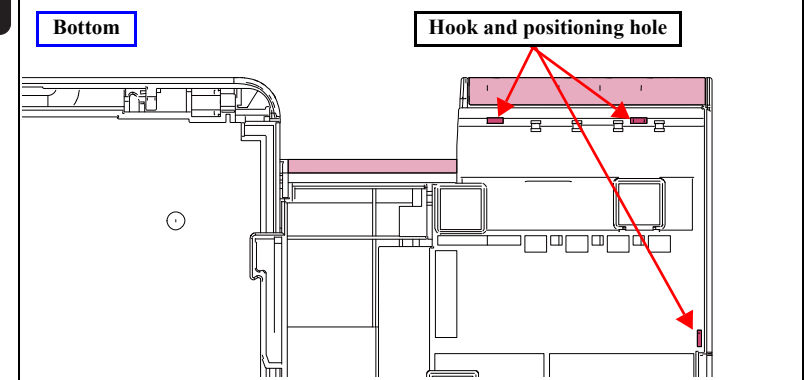


Figure 3-23.



**On the bottom, make sure to insert the three positioning holes of the Housing Front over the hooks of the Frame Base Assy.**



### 3.3.3.3 ADF/SCN Unit

1. Remove the Housing Upper Front. (p87)
2. Remove the Maintenance Box. (p86)
3. Remove the Housing Right. (p88)
4. Remove the Housing Left. (p89)
5. Remove the Housing Upper Rear. (p90)



**Keep the ADF/SCN Unit slightly open during the following steps.**

6. Disconnect the ADF PE Sensor Cable from CN411 connector on the Main Board and release the cable from the two hooks on the Frame Base Assy.
7. Disconnect the Scanner FFC from the CN409 and CN410 connectors on the Main Board and peel the FFC off from the Frame Base Assy.

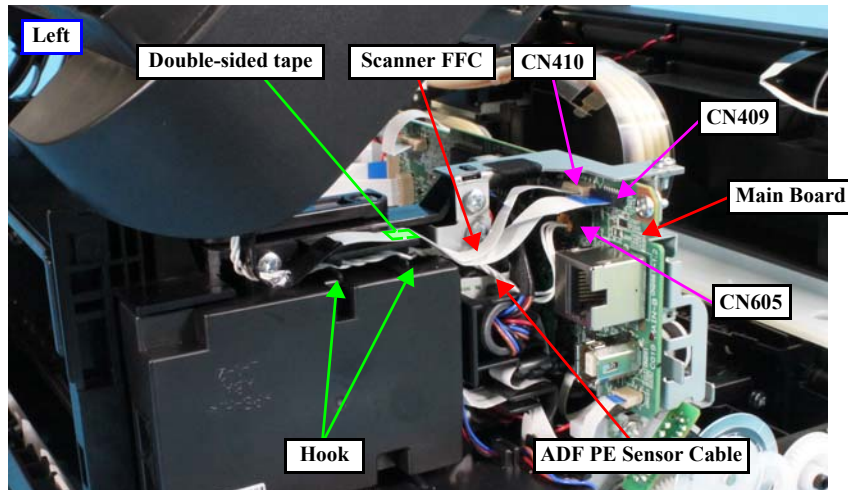


Figure 3-24.

8. Slide the ADF/SCN Unit in the direction of the arrow and remove it from the two hinge shafts on the Frame Base Assy.

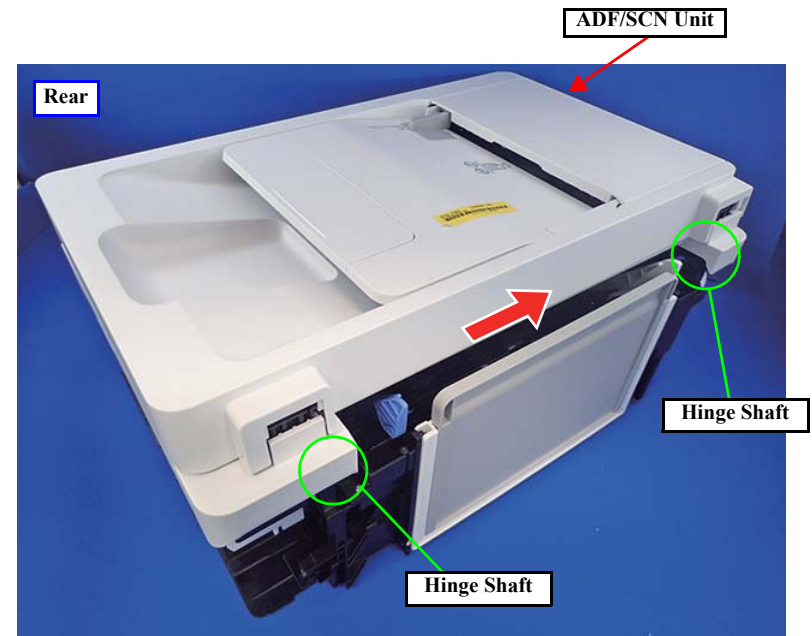


Figure 3-25.

**3.3.3.4 Paper Guide Front Assy**

1. Remove the two screws securing the Paper Guide Front Assy.

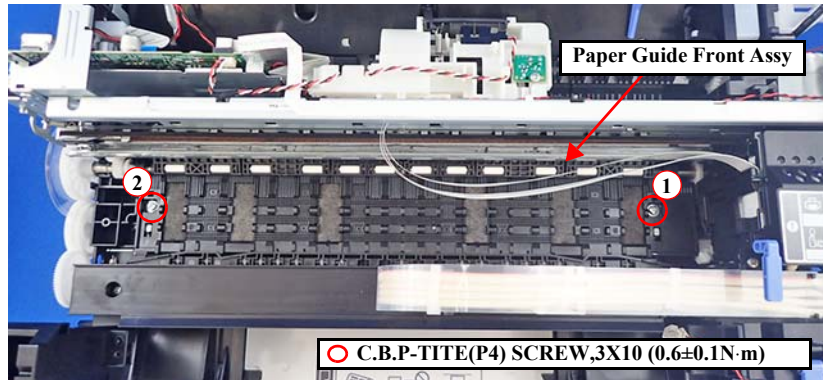


Figure 3-26.



Screw in the order given in [Figure 3-26](#).

2. Remove the spring from the hook and the EJ Roller.

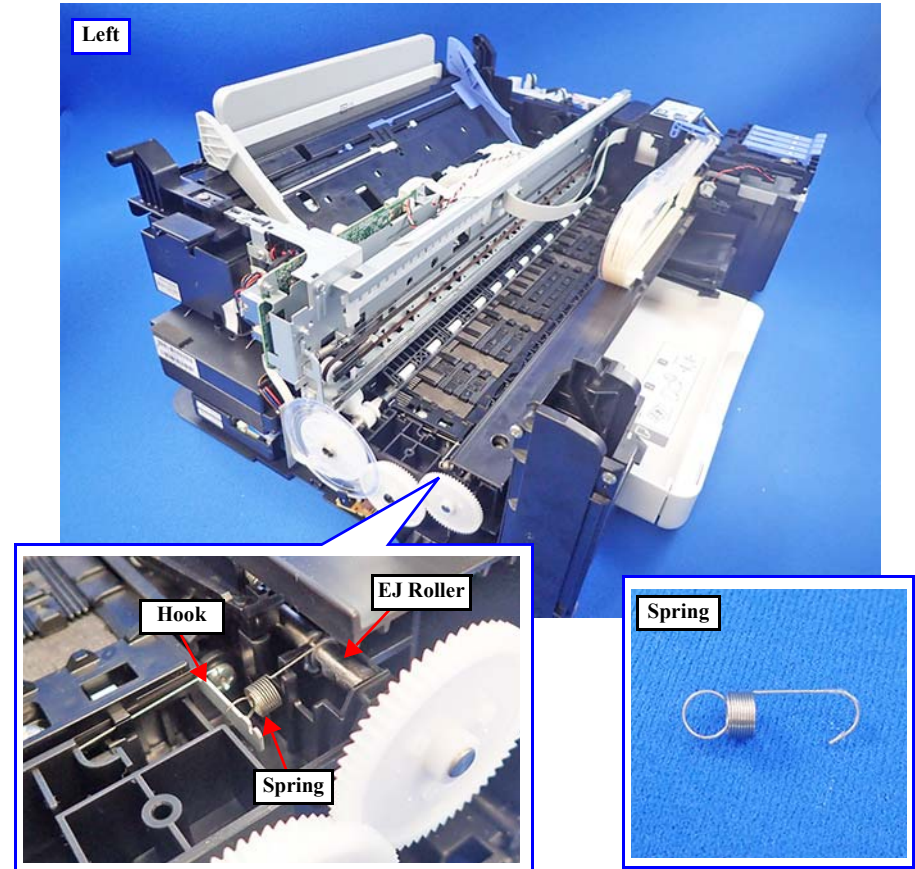


Figure 3-27.

3. Slightly lift the Paper Guide Front Assy and remove it from the dowel on the Frame Base Assy.
4. Slide the Paper Guide Front Assy toward the front side to release the interfering section A.
5. Release the interfering section B on the Paper Guide Front Assy while pushing the CR Unit slightly toward the home side and remove the Paper Guide Front Assy.

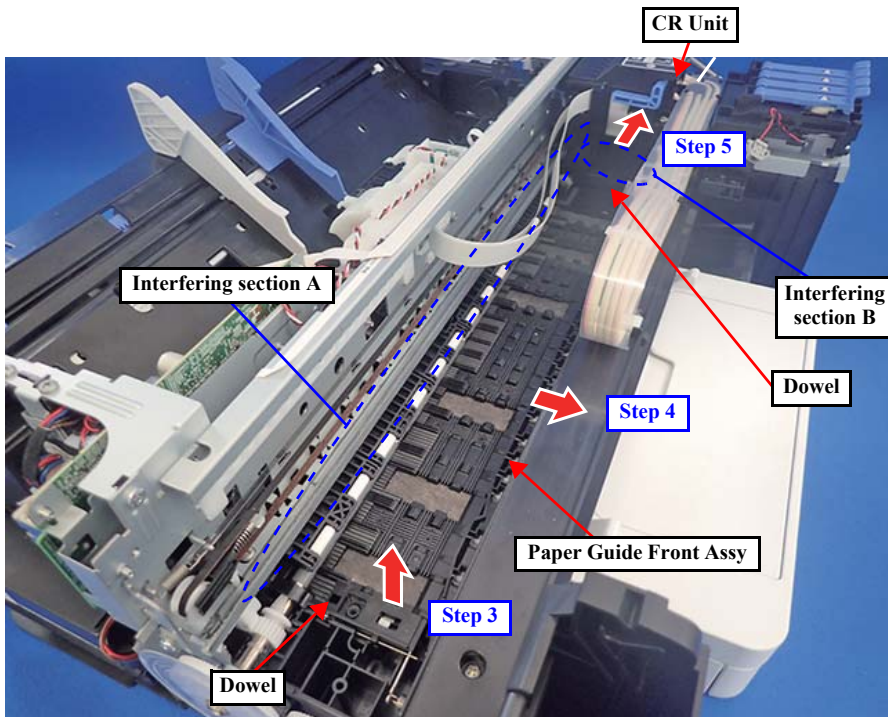


Figure 3-28.

### 3.3.3.5 Paper Guide Lower Porous Pad 1/2

1. Remove the Paper Guide Front Assy. (p94)
2. Remove the two Paper Guide Lower Porous Pad 1.

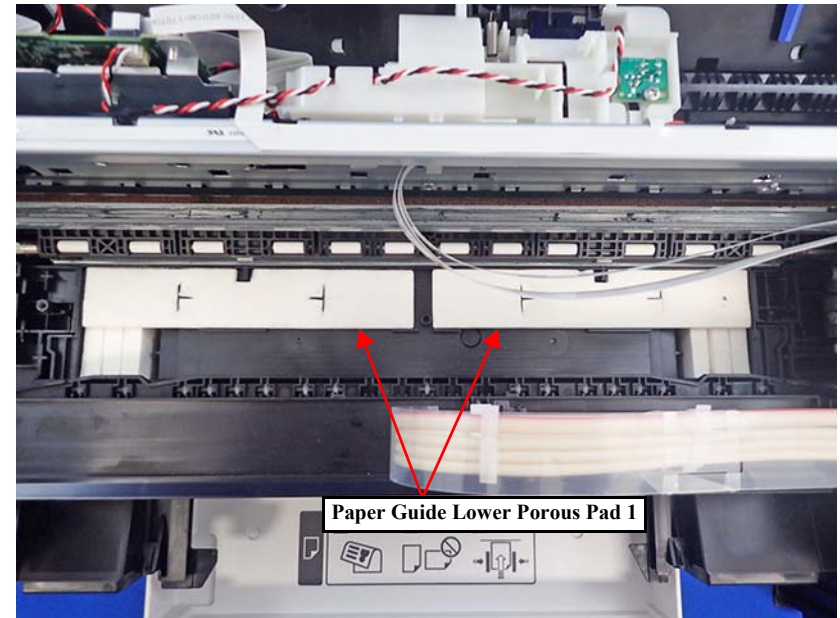


Figure 3-29.

3. Remove the six Paper Guide Lower Porous Pad 2.

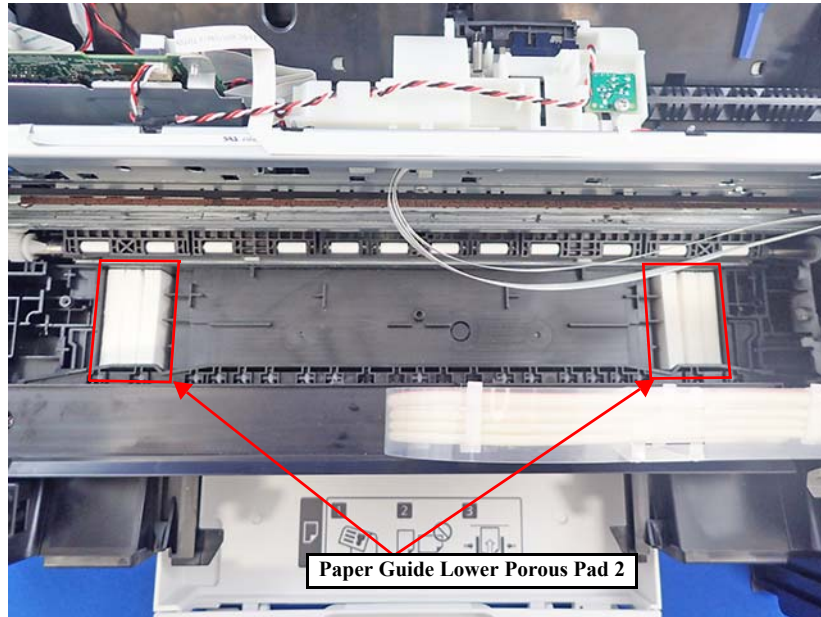


Figure 3-30.



When assembling, check to make sure that the Paper Guide Lower Porous Pad is securely set.

### 3.3.3.6 Printhead

1. Rotate the gear toward yourself to release the CR Lock.
2. Move the CR Unit to the point shown below.

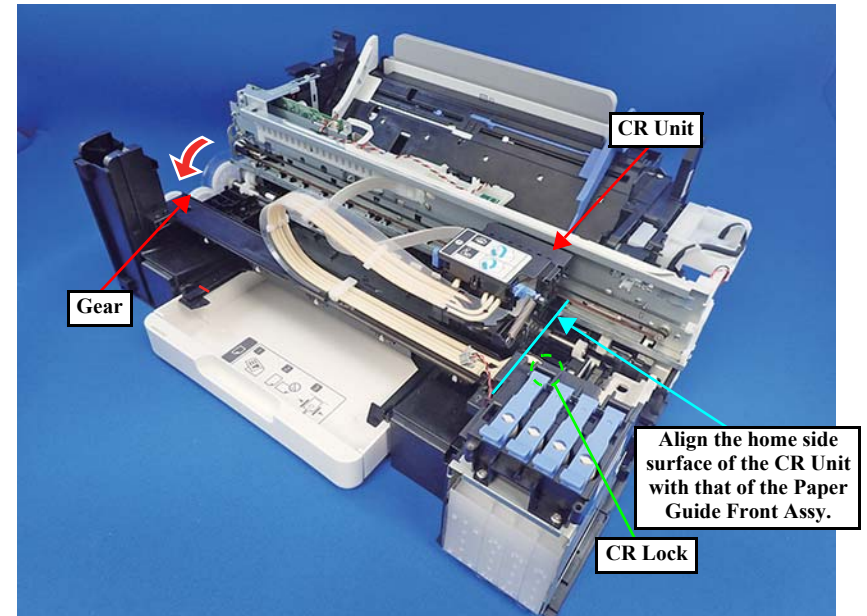


Figure 3-31.



To prevent effect to the PG and deformation of the Main Frame, be careful to the points below when disassembling/reassembling the parts attached to the CR Unit.

- Make sure to work with the CR Unit positioned as shown in [Figure 3-31](#)
- Do not apply the strong force vertically.

3. Remove the screw.
4. Release the hook and remove the CR Cover while pulling out the two pins from the holes on the CR Unit.

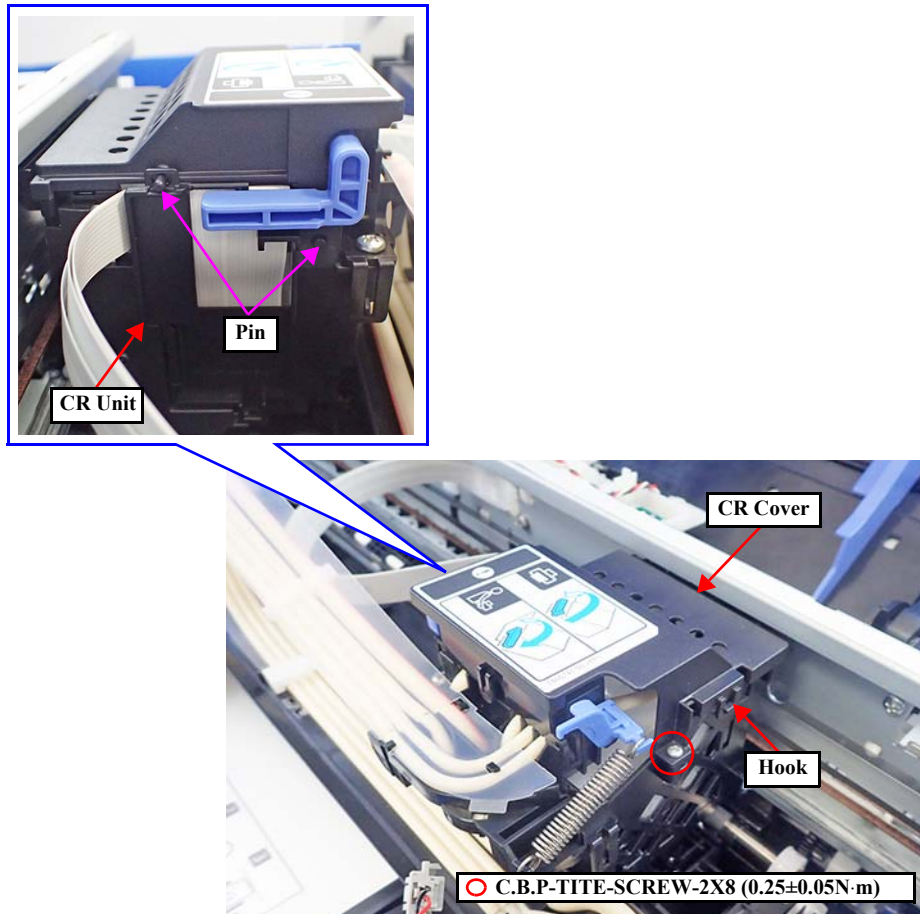


Figure 3-32.

5. Release the Tube Guide Sheet from the three hooks.

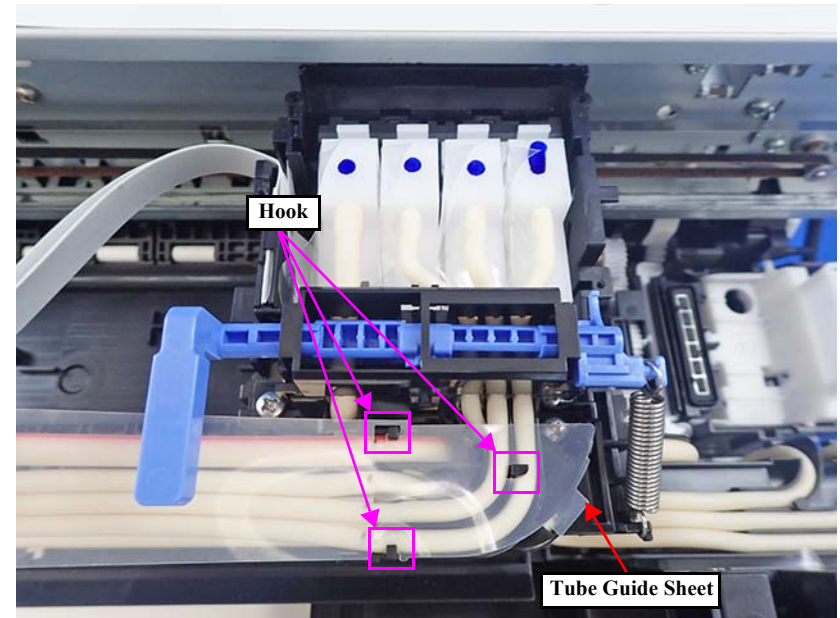


Figure 3-33.

6. Remove the two screws.
7. Release the four hooks on the Adapters.
8. Release the hooks (x2) on both sides of the Adapter Tube Assy, and remove the Adapter Tube Assy and the Adapter from the CR Unit at the same time.

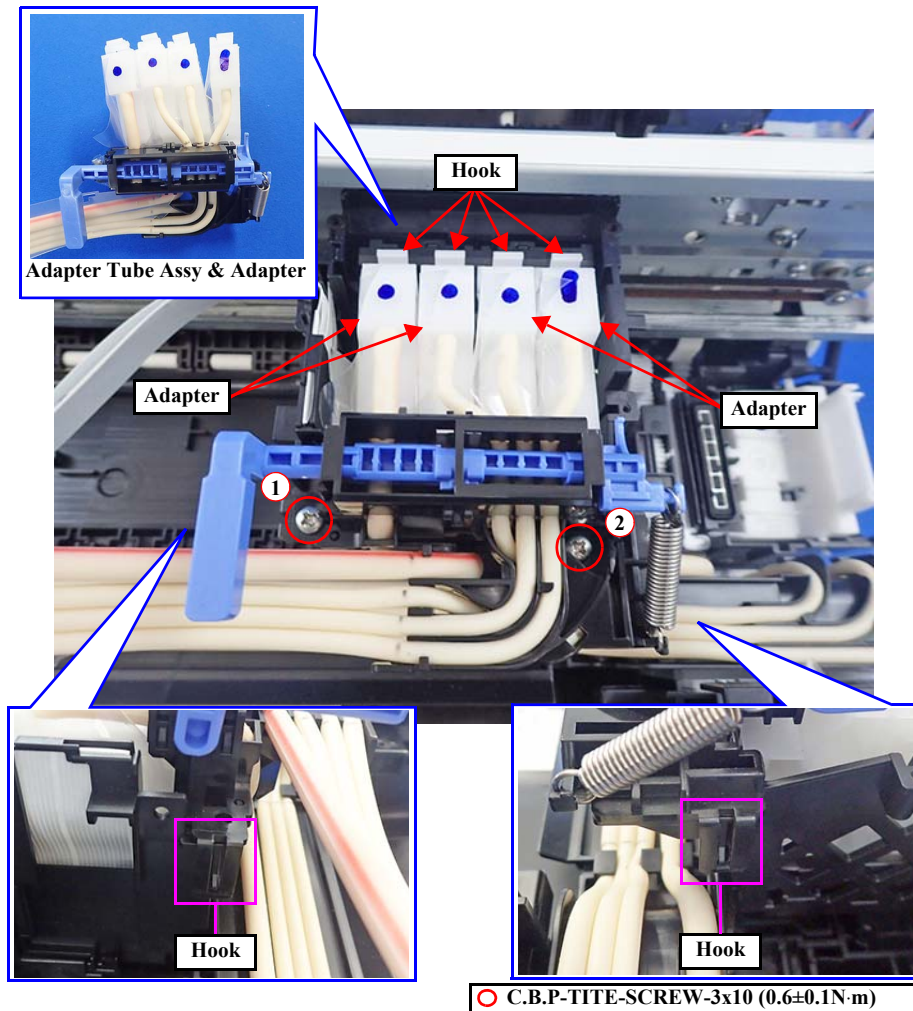


Figure 3-34.

9. Release the two hooks on the Holder Adapter with a flathead screwdriver or the like and remove the Holder Adapter in the direction of the arrow.

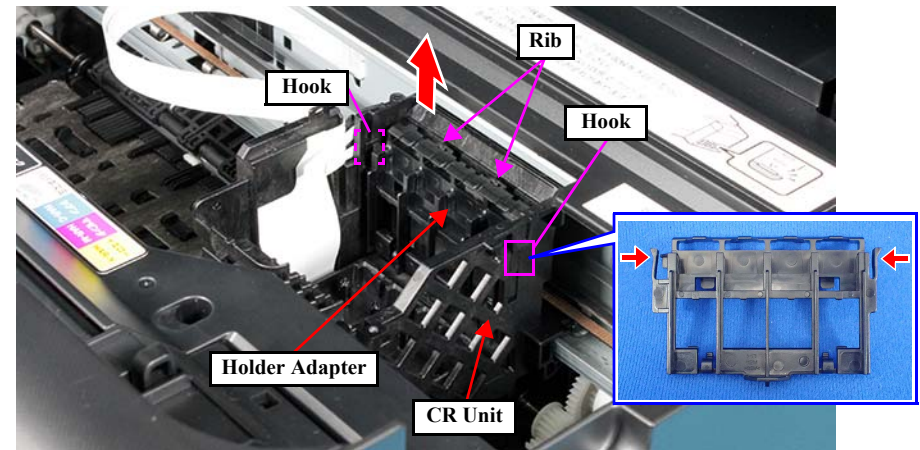


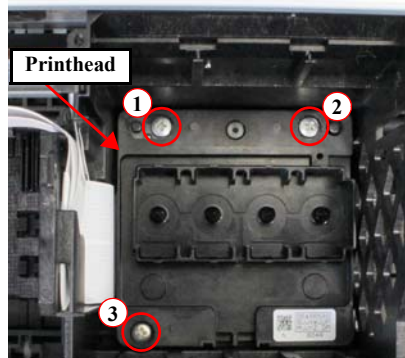
Figure 3-35.



Observe the precautions below during the following procedure.

- Do not touch the nozzle surface and the ink supply hole of the Printhead.
- When disassembling/assembling the Printhead, prepare a waste cloth or the like not to soil surroundings with ink.

10. Remove the three screws and lift the Printhead.
11. Remove the Head FFC from the connector on the Printhead and remove the Printhead.



○ C.B.P-TITE SCREW, 2.5X8 (0.5±0.1N·m)

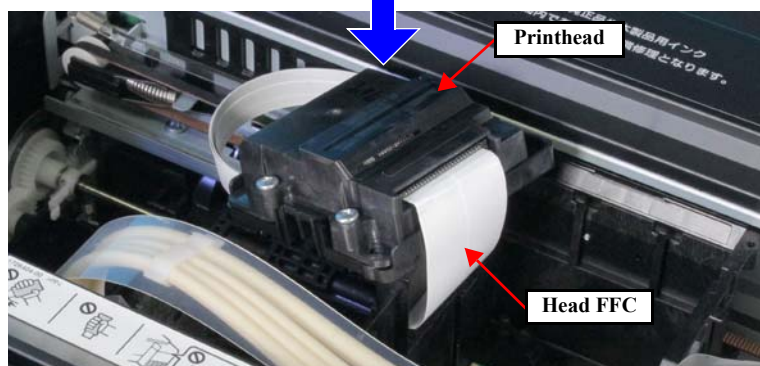
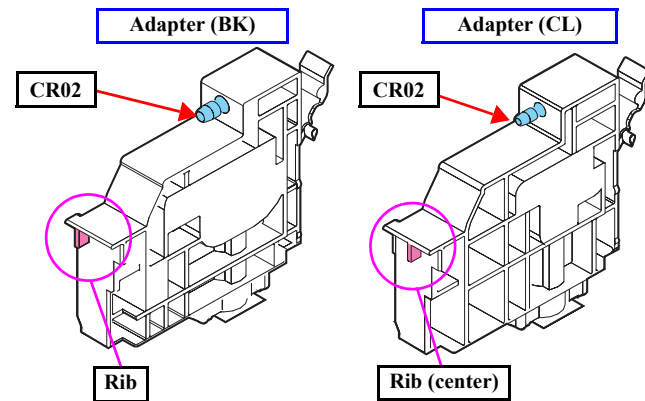


Figure 3-36.



- Secure the Printhead by screwing it in the order shown in [Figure 3-36](#).
- Align the positioning holes on the Holder Adapter with the two ribs on the rear side of the CR Unit. ([Figure 3-35](#))
- To make it easier to connect the Adapter Tube, apply CR02 to the edge of the tube.
- Distinguish the adapter (BK) and the adapter (CL) by confirming the position of the rib.
  - Adapter (BK): for black ink
  - Adapter (CL): for color ink

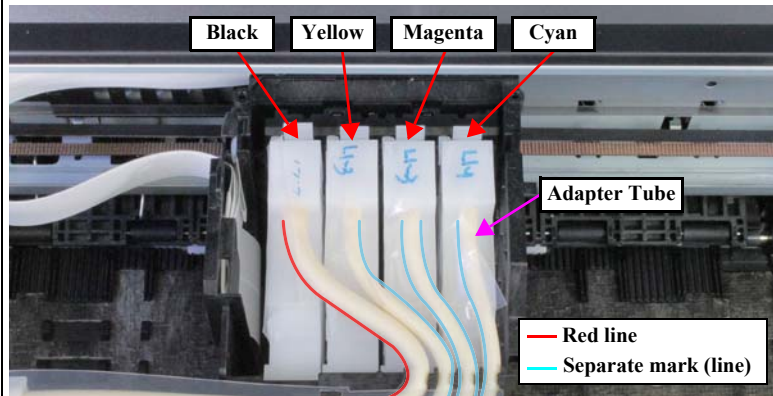


When replacing the Printhead, it is not necessary to peel the porous pad attached to the side of the Printhead from the Printhead to be replaced, and attach it.





- Red line is written on the tube for black ink (the tube is thicker than the one for the other colors) and lines made when separated the tip are on the tubes for color ink. When connecting the Adapter Tube to the adapter, direct each line in the correct direction referring to the figure below.



- Firmly connect the Adapter Tube to the adapter. (A gap should be 0.5 mm or less)
- Make sure to secure the adapter with the hook.

### 3.3.3.7 Main Board

1. Remove the Housing Upper Front. (p87)
2. Remove the Maintenance Box. (p86)
3. Remove the Housing Right. (p88)
4. Remove the Housing Left. (p89)
5. Remove the Housing Upper Rear. (p90)
6. Remove the ADF/SCN Unit. (p93)
7. Remove the four screws, and remove the Main Frame Support.
8. Disconnect all cables/FFCs from the Main Board.
9. Remove the three screws, and remove the Main Board in the direction of the arrow.

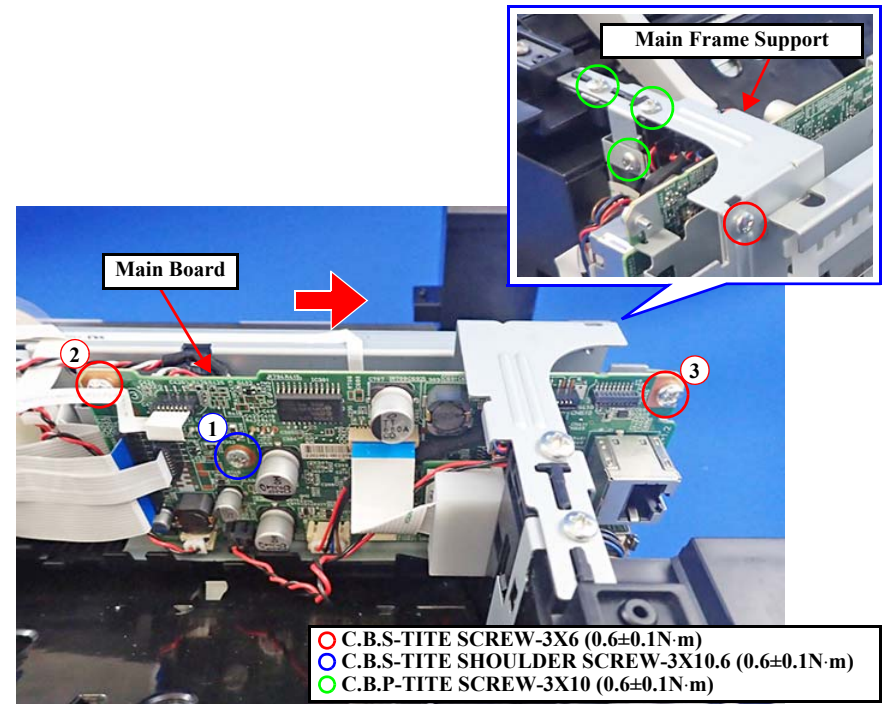
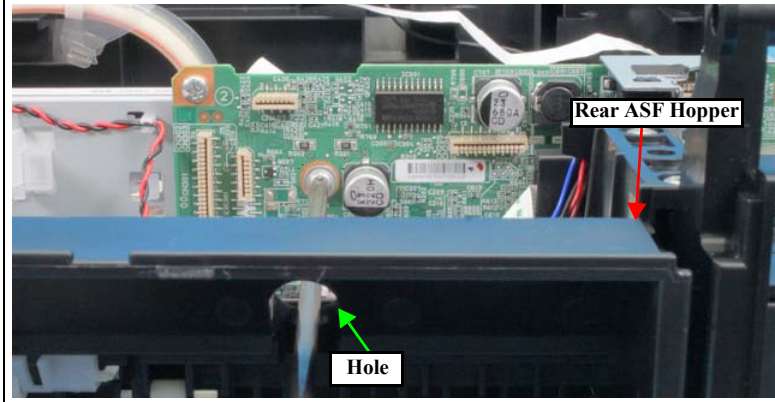


Figure 3-37.



- Screw in the order shown in [Figure 3-37](#).
- When tightening the screw 1, insert the screwdriver through the hole on the Rear ASF Hopper.



### 3.3.3.8 Ink Tank

1. Remove the Housing Upper Front. (p87)
2. Remove the Maintenance Box. (p86)
3. Remove the Housing Right. (p88)
4. Remove the Housing Front. (p91)
5. Remove the Tank Cover. (p92)
6. Remove the four screws and remove the Key Slot Assy.

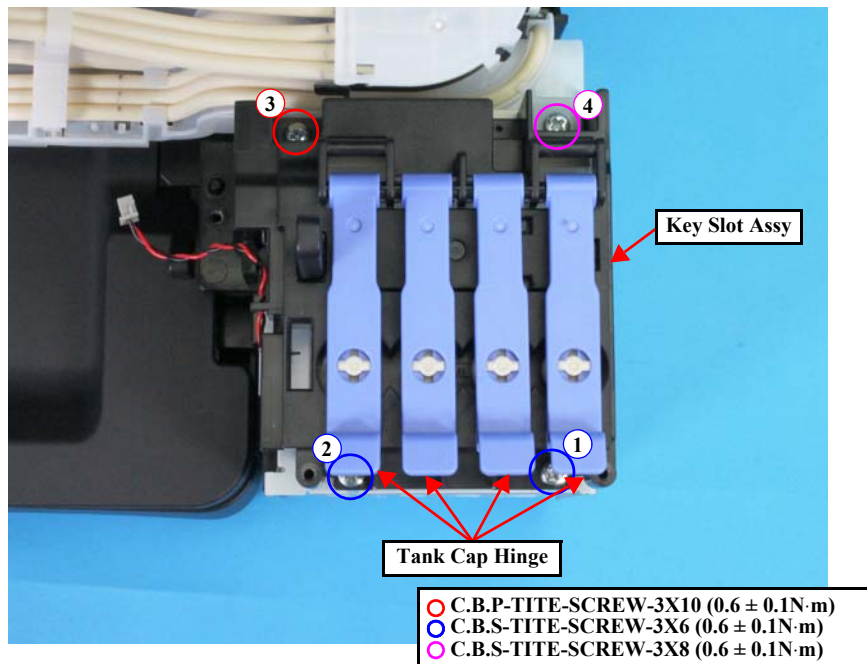


Figure 3-38.

7. Remove the Screw.
8. Release the two hooks and remove the Right Base Support.
9. Remove the Tank Upper Porous Pad.

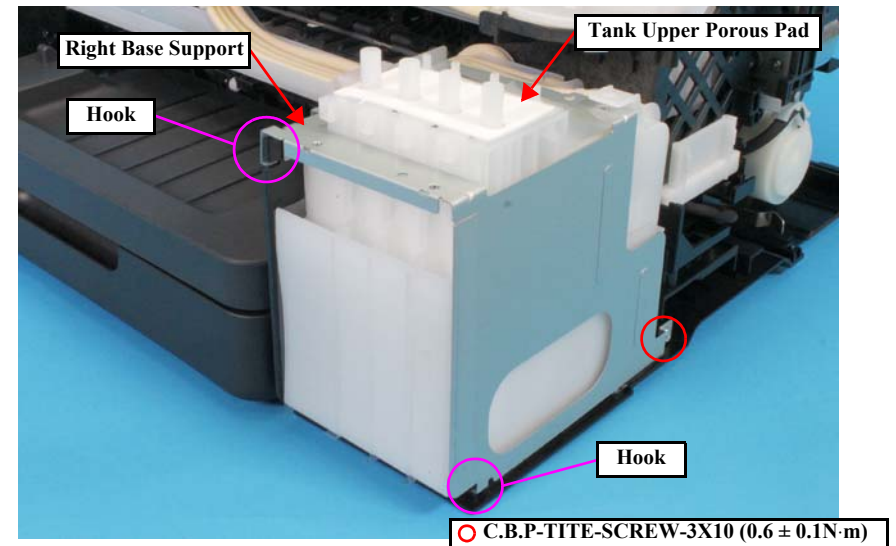
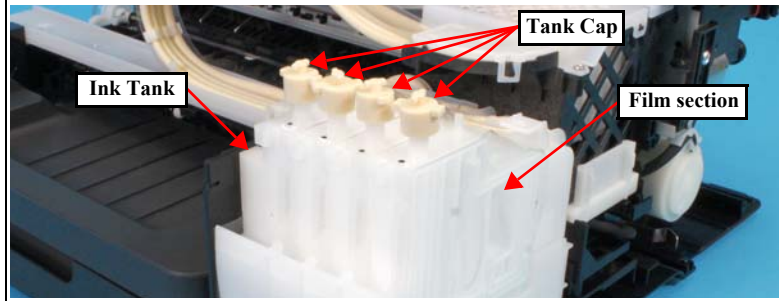


Figure 3-39.

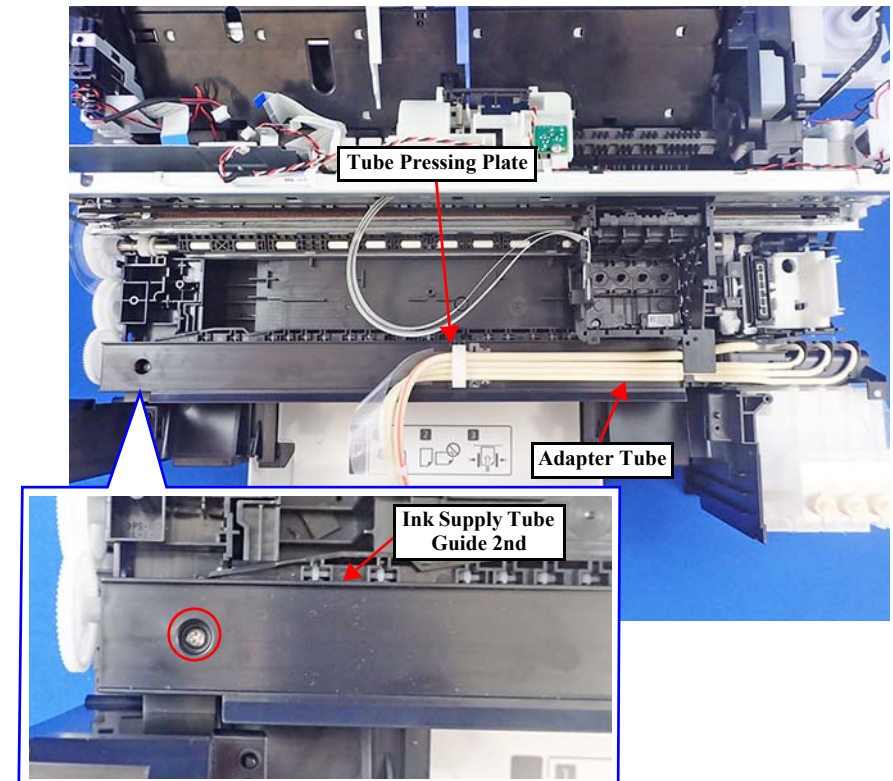


Observe the precautions below during the following procedure.

- When disassembling/assembling the Ink Tank, prepare a waste cloth or the like not to soil surroundings with ink.
- Do not hold the film section of the Ink Tank.
- To prevent ink leakage, replace the Cap Tank from the Cap Hinge Tank on the Key Slot Assy (Figure 3-38) to the ink supply hole of the Ink Tank.



10. Release the CR Lock and move the CR Unit to the center. (Figure 3-31)
11. Remove the Tube Pressing Plate and release the Adapter Tube from the Ink Supply Tube Guide 2nd.
12. Remove the screw securing the Ink Supply Tube Guide 2nd.



○ C.B.P-TITE SCREW 3X10 (0.6 ± 0.1N·m)

Figure 3-40.

13. Remove the screw that securing each of the Ink Tanks.
14. Slide the Ink Tank backward to release the hook on the bottom and remove it from the Frame Base Assy.

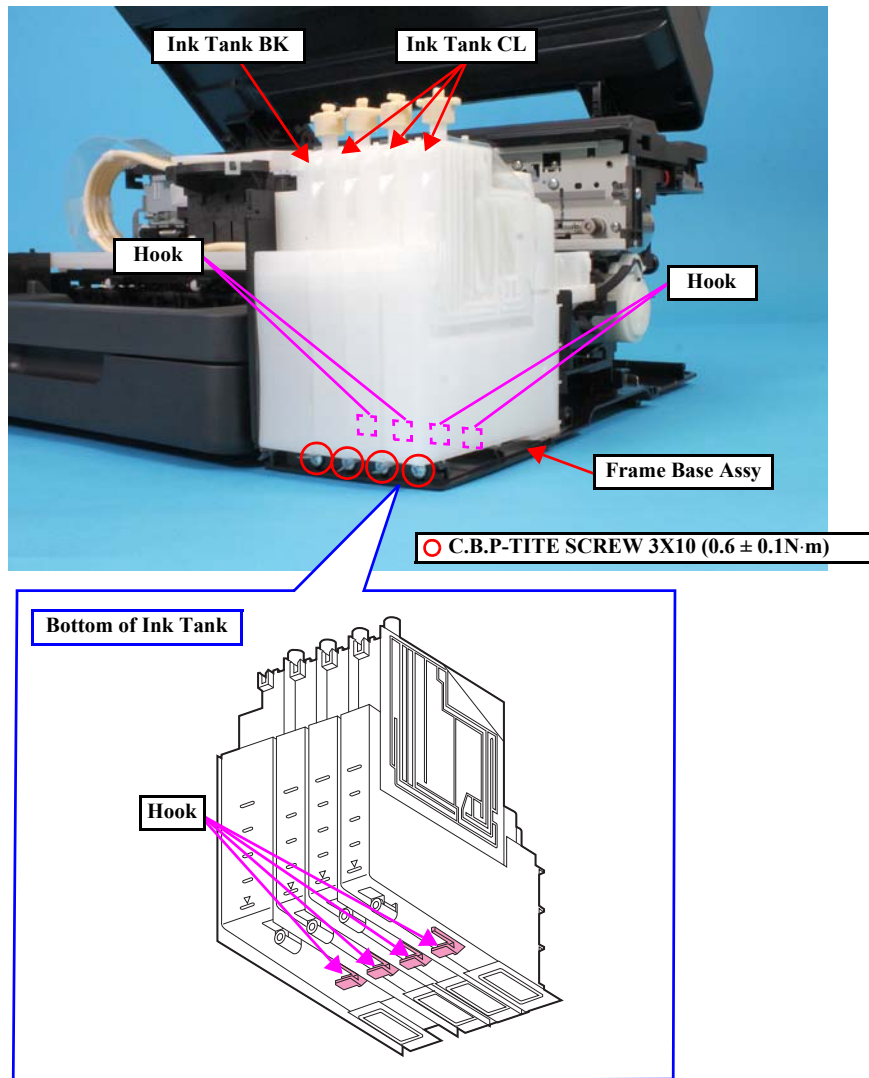


Figure 3-41.

15. Remove the Adapter Tube from the Ink Tank.

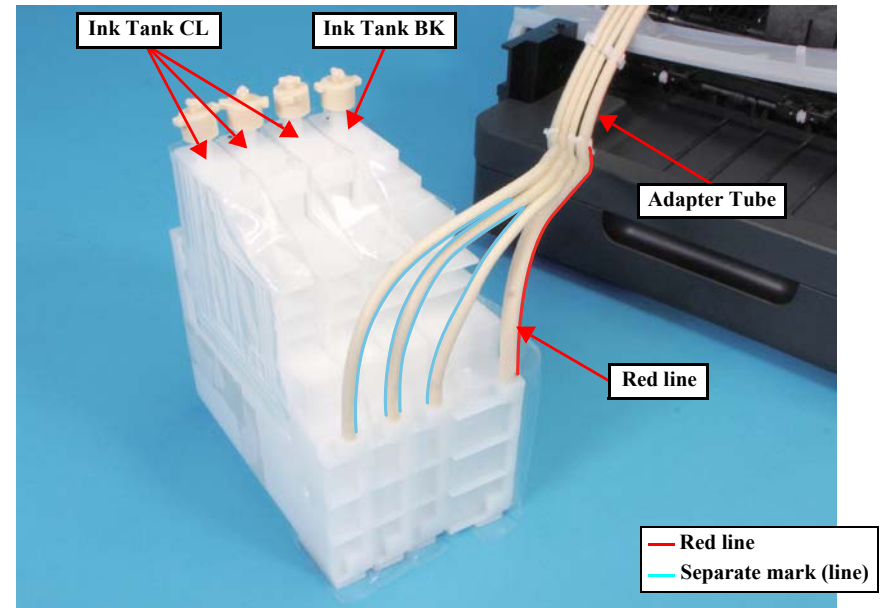


Figure 3-42.



- Red line is written on the tube for black ink (the tube is thicker than the one for the other colors) and lines made when separated the tip are on the tubes for color ink. When connecting the Adapter Tube to the adapter, direct each line in the correct direction referring to [Figure 3-42](#).
- Firmly connect the Adapter Tube to the adapter. (A gap should be 0.5 mm or less)
- Attach the Ink Tank BK (Black) on the Full side.
- Make sure to secure the adapter to the Frame Base Assy with the hook.
- When attaching the Key Slot Assy, screw in the order shown in [Figure 3-38](#).

### 3.3.3.9 Paper Guide Upper



The Paper Guide Upper is composed of the Paper Guide Upper Left, Paper Guide Upper Center, and the Paper Guide Upper Right.

1. Remove the Housing Upper Front. (p87)
2. Remove the Maintenance Box. (p86)
3. Remove the Housing Right. (p88)
4. Remove the Housing Left. (p89)
5. Remove the Housing Upper Rear. (p90)
6. Remove the ADF/SCN Unit. (p93)



Implement Step 7 and Step 8 only when removing the Paper Guide Upper Left.

7. Remove the Main Board. (p100)
8. Remove the two screws, and remove the Main Board Frame.

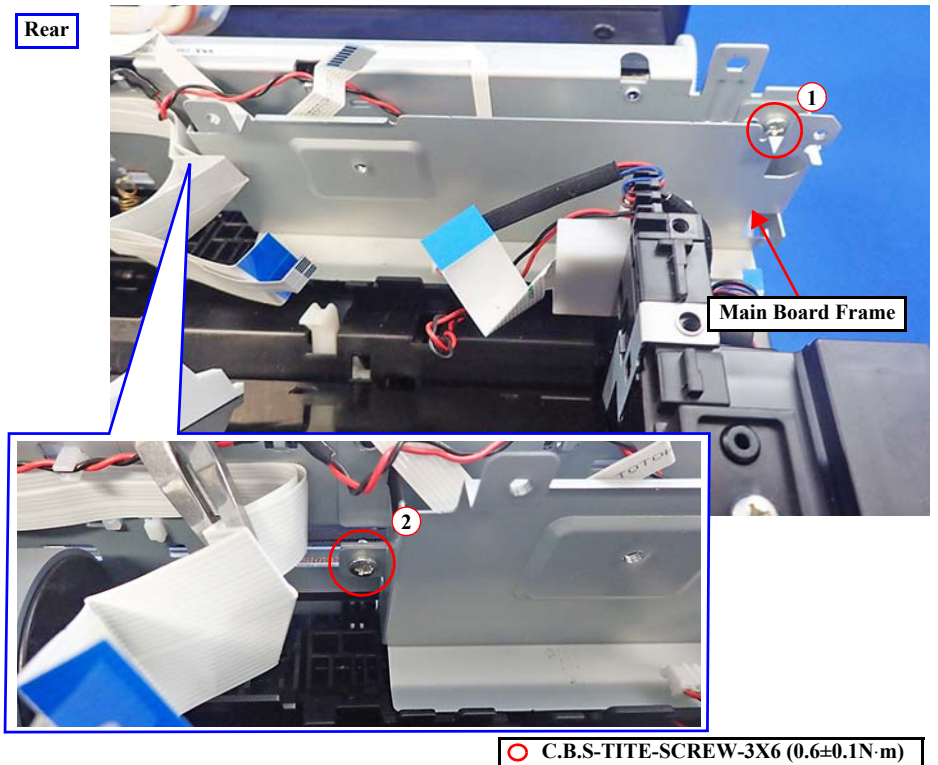


Figure 3-43.



Screw in the order given in Figure 3-43.



Implement from **Step 9** to **Step 11** only when removing the Paper Guide Upper Center/Paper Guide Upper Right.

9. Disconnect the LD Phase Sensor FFC from the connector on the LD Phase Sensor, and peel off the Double-sided tape to release the FFC.
10. Remove the screw securing the Holder LD Assy.
11. Slide the Holder LD Assy in the direction of the arrow while pressing the tab and remove it.

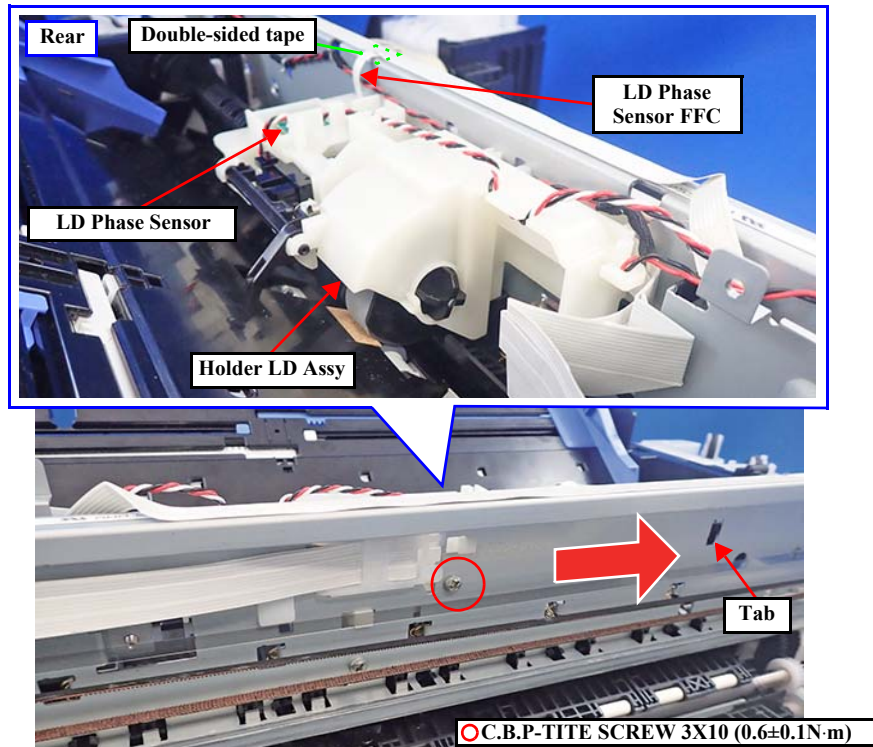


Figure 3-44.

12. Release the two dowel and remove the Rear ASF Hopper.

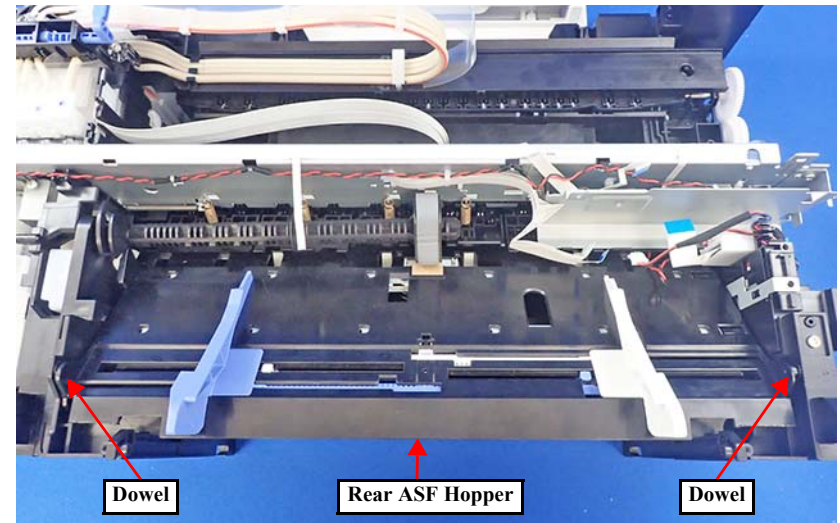


Figure 3-45.

13. Remove the springs from the Paper Guide Upper and the Main Frame.

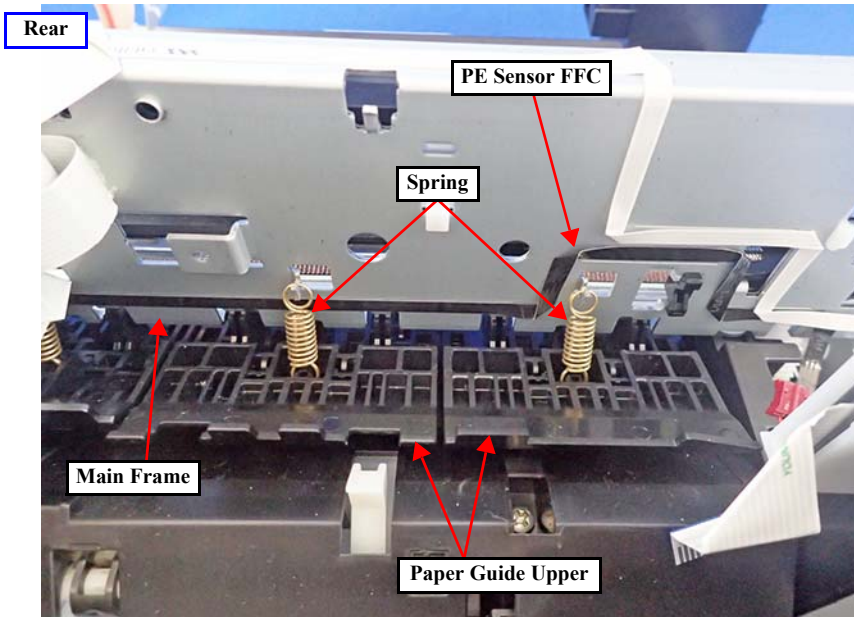
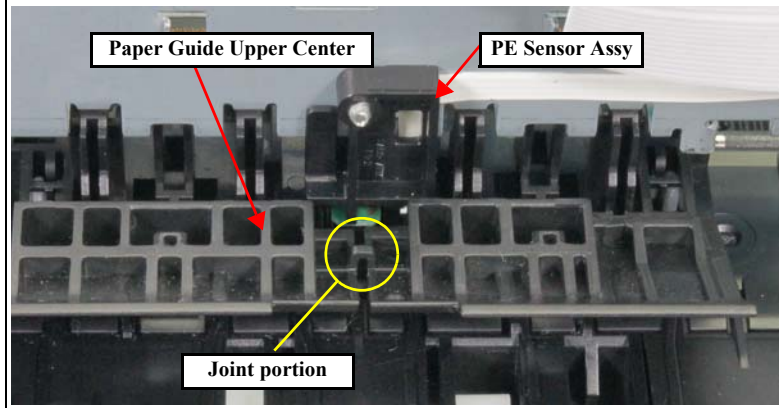


Figure 3-46.



When removing the Paper Guide Upper Center, be careful not to damage the PE Sensor Assy, and the joint portion of the Paper Guide Upper Center.



14. Disengage the hooks from the six holes on the Main Frame, and remove the Paper Guide Upper in the direction of the arrow.

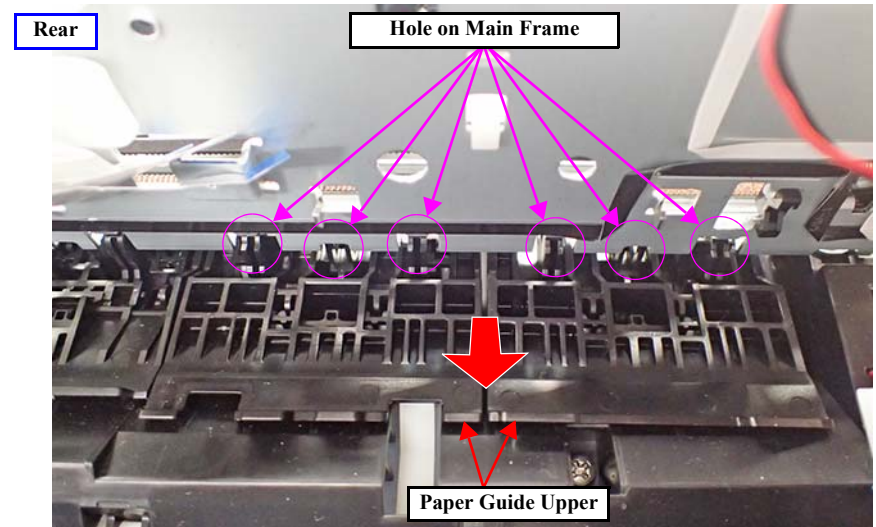
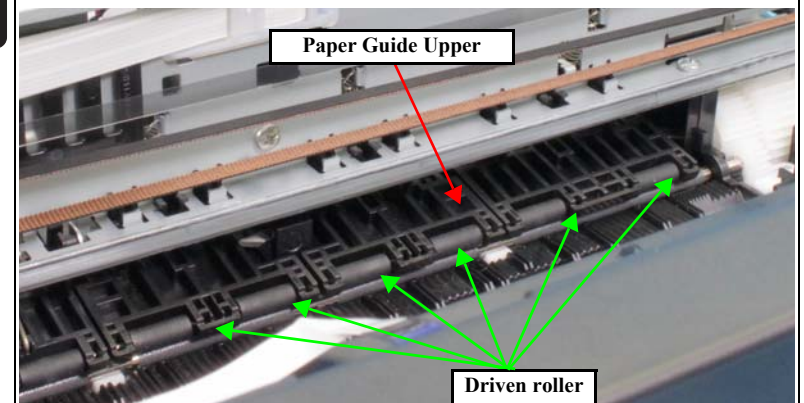


Figure 3-47.



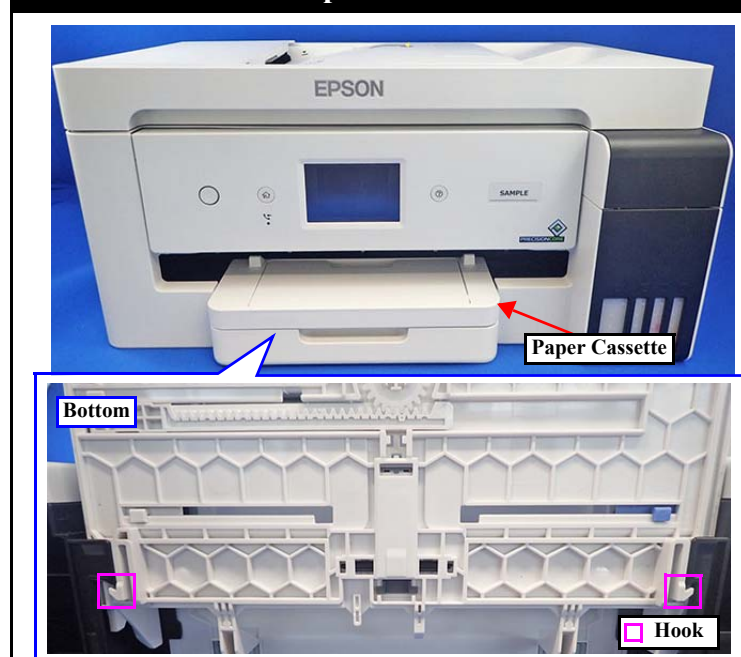
■ Be careful not to let the driven rollers on the Paper Guide Upper



■ Be careful not to let the PE Sensor FFC on the back side of the Main Frame get caught between parts. (See Figure 3-46.)

### 3.4 Detailed Disassembly/Reassembly Procedure for each Part/Unit

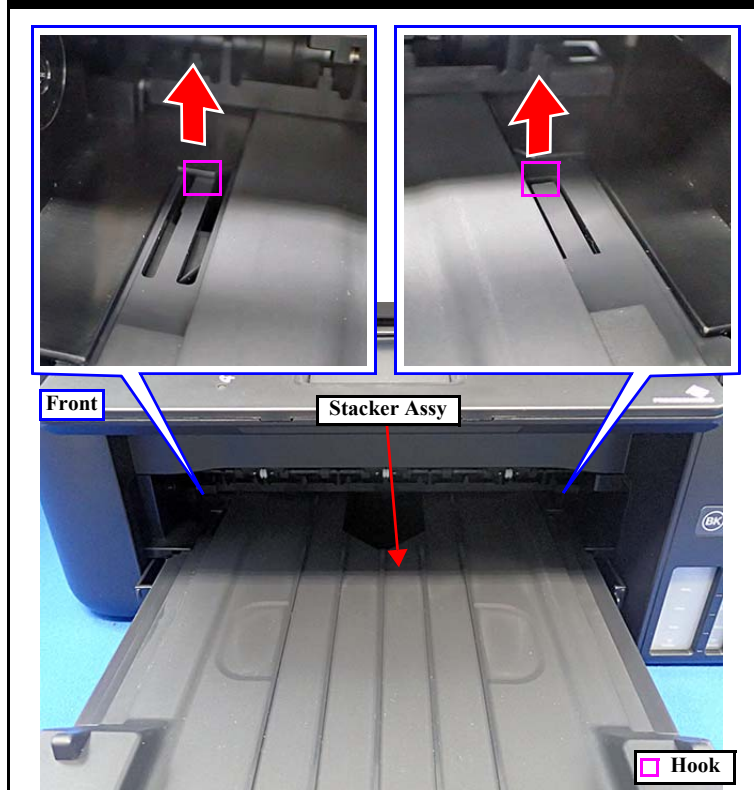
#### Paper Cassette



**!** Even if you need to access the bottom side of printer, avoid tilting printer as far as possible because ink may leak. If tilting the printer is necessary for your work, complete the work in the short time without tilting printer many times.

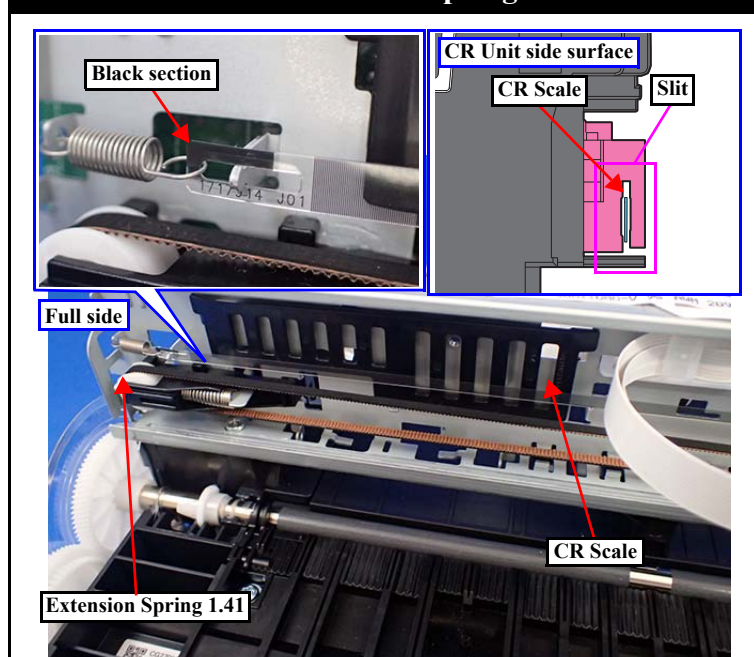
**🔧** When removing the Paper Cassette, release the two hooks on the bottom of the printer.

#### Stacker Assy



**🔧** When removing the Stacker Assy, pull it out to the front side of the printer and release the two hooks shown above.

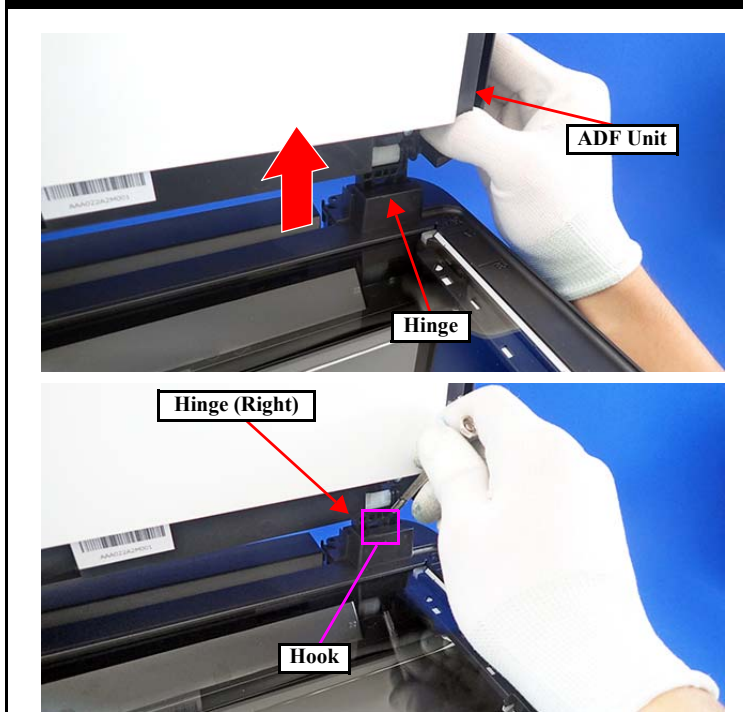
#### CR Scale & Spring



**🔄**

- Attach the CR Scale with its black section facing to the upside of full side and insert it through the slit on the CR Encoder.
- Hook the longer leg of the Extension Spring 1.41 to the CR Scale and the other leg to the Main Frame.
- After attaching the CR Scale, move the CR Unit by pressing its side to confirm that the scale does not contact with the FFC or other components.

#### ADF Unit



**🔧** Remove the ADF Unit in the procedure given below

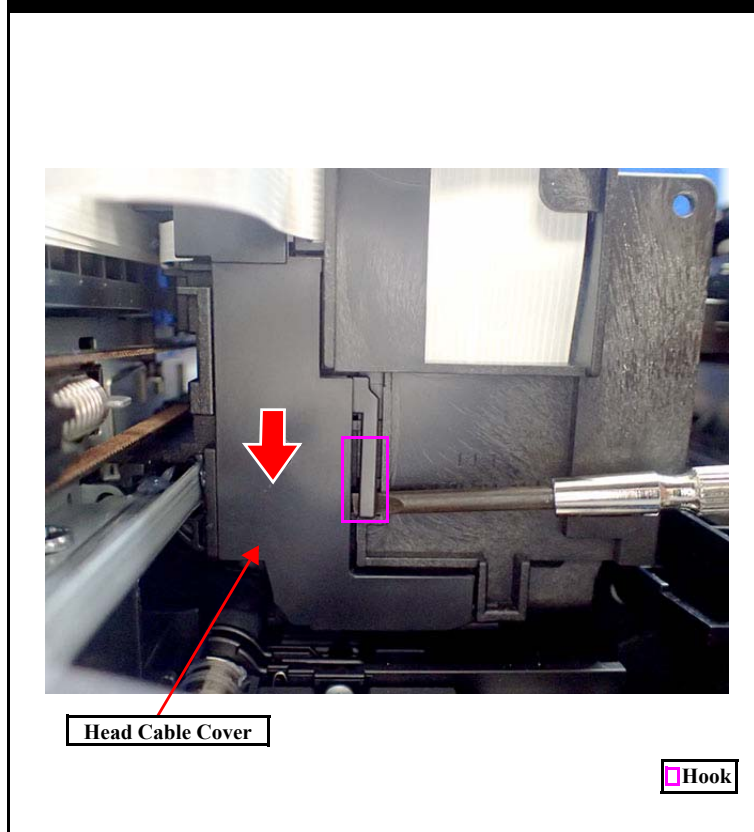
- Lift the ADF Unit slightly and pull out hinge.
- Release hinge on the right side using flathead screwdriver or the like and remove the ADF Unit.

#### PGU LD ADF Assy



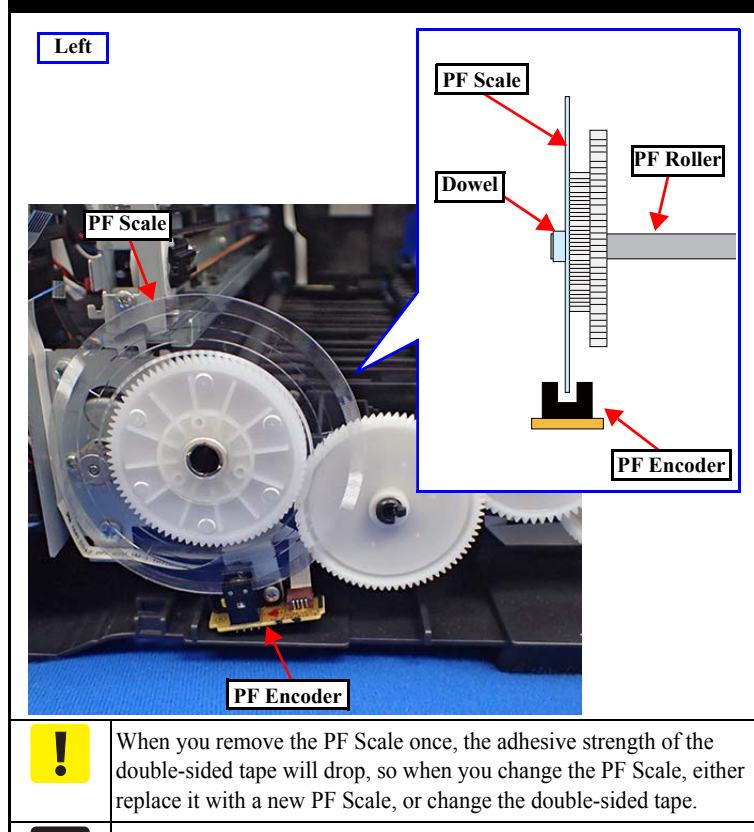
**🔧** When removing the PGU LD ADF Assy, release the two hooks. Since the hooks are sensitive, be careful not to damage them.

#### Head Cable Cover



**🔧** While releasing the hook, slide down the Head Cable Cover and remove it.

#### PF Encoder/PF Scale

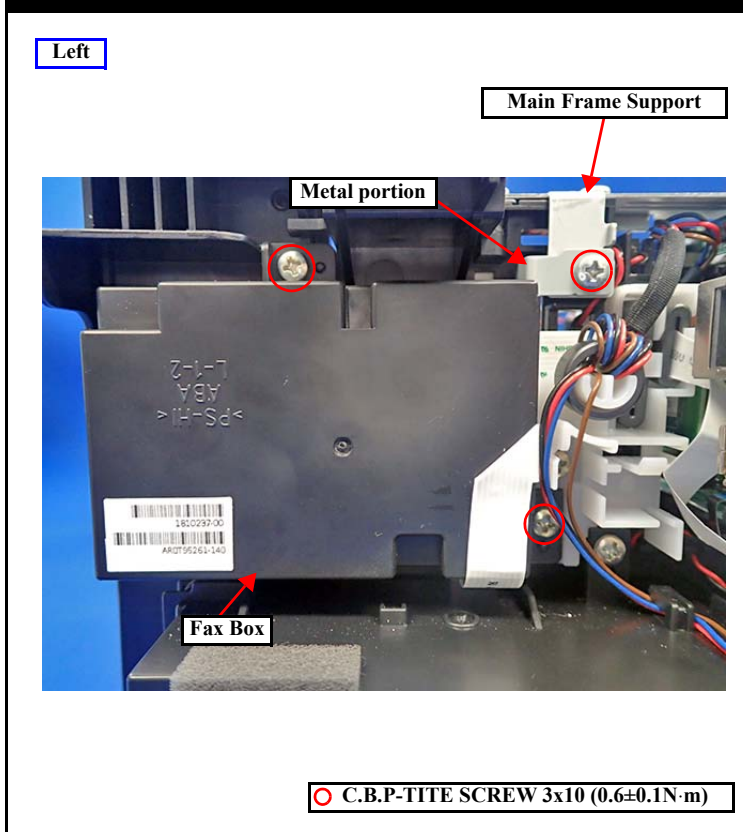


**!** When you remove the PF Scale once, the adhesive strength of the double-sided tape will drop, so when you change the PF Scale, either replace it with a new PF Scale, or change the double-sided tape.

**🔄**

- Attach the PF Scale with its dowel facing outward.
- After attaching the PF Encoder, confirm that the PF Scale and the PF Encoder is not touching each other.

#### Fax Box

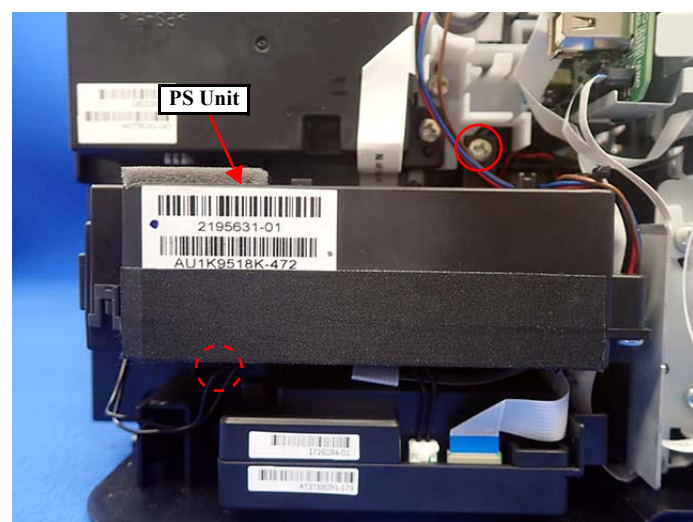


**🔄** Attach the Fax Box so that its metal portion attaches to the outer side of the Main Frame Support, and then screw it.

**⊙ C.B.P-TITE SCREW 3x10 (0.6±0.1N·m)**

PS Unit

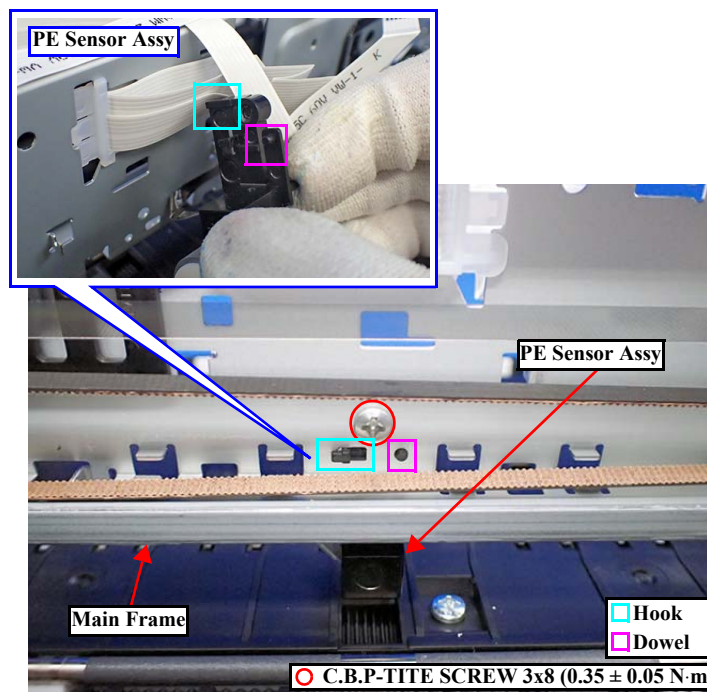
Left



C.B.P-TITE SCREW 3x10 (0.6±0.1N·m)

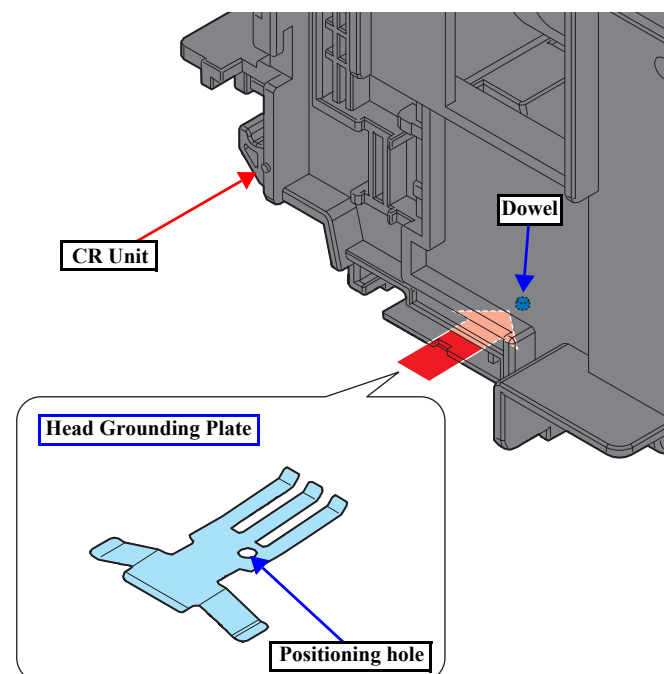
Remove the screws shown above to remove the PS Unit.

PE Sensor Assy



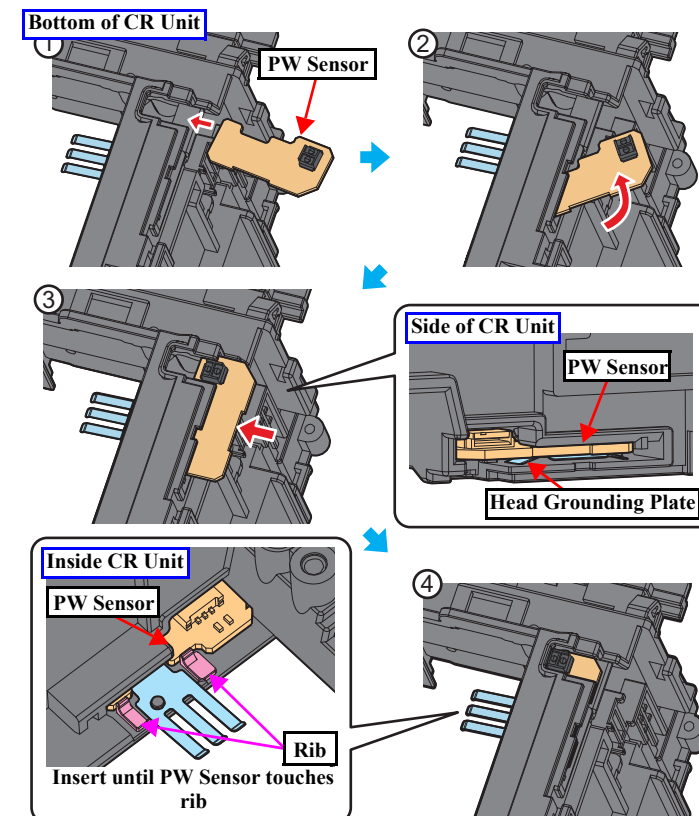
- Attach the PE Sensor Assy in the procedure given below.
1. Insert the hook on the PE Sensor Assy into the hole on Main Frame.
  2. Slide the PE Sensor Assy in the direction of the arrow and secure it with dowel.
  3. Screw the assy.

Head Grounding Plate



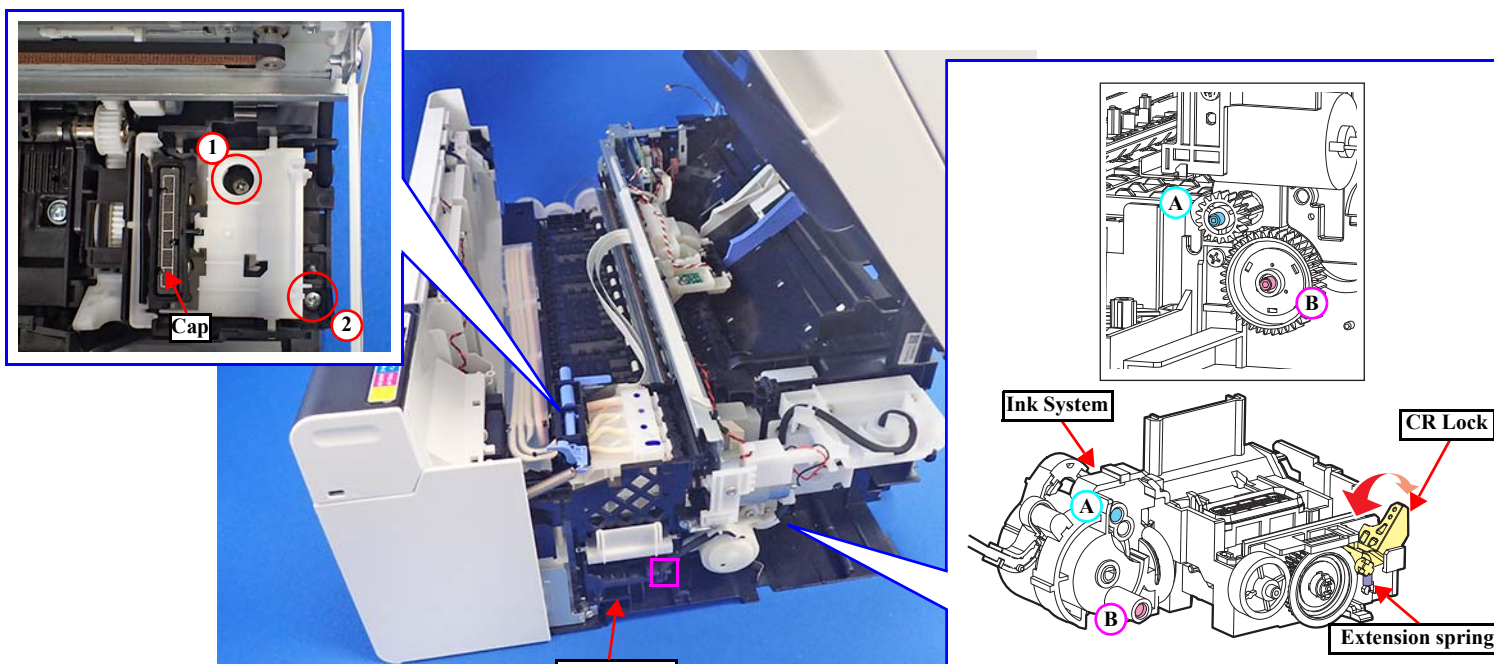
Insert the Head Grounding Plate in the orientation shown above. Take care not to deform it. Insert the positioning hole over the dowel on the CR Unit to secure the plate.

PW Sensor



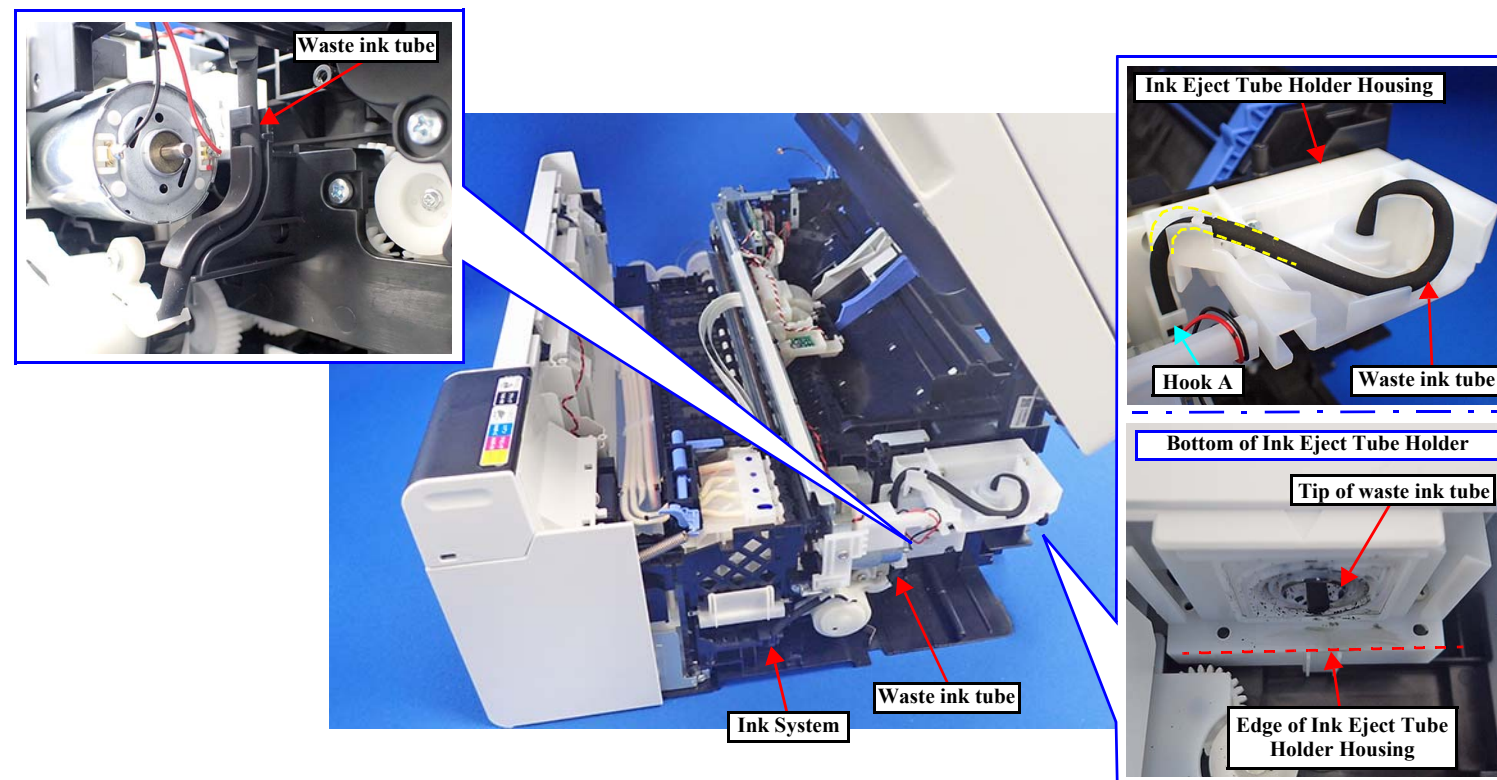
When attaching the PW Sensor, attach it in the procedure given above while paying attention not to drop the Head Grounding Plate.

Ink System (1)



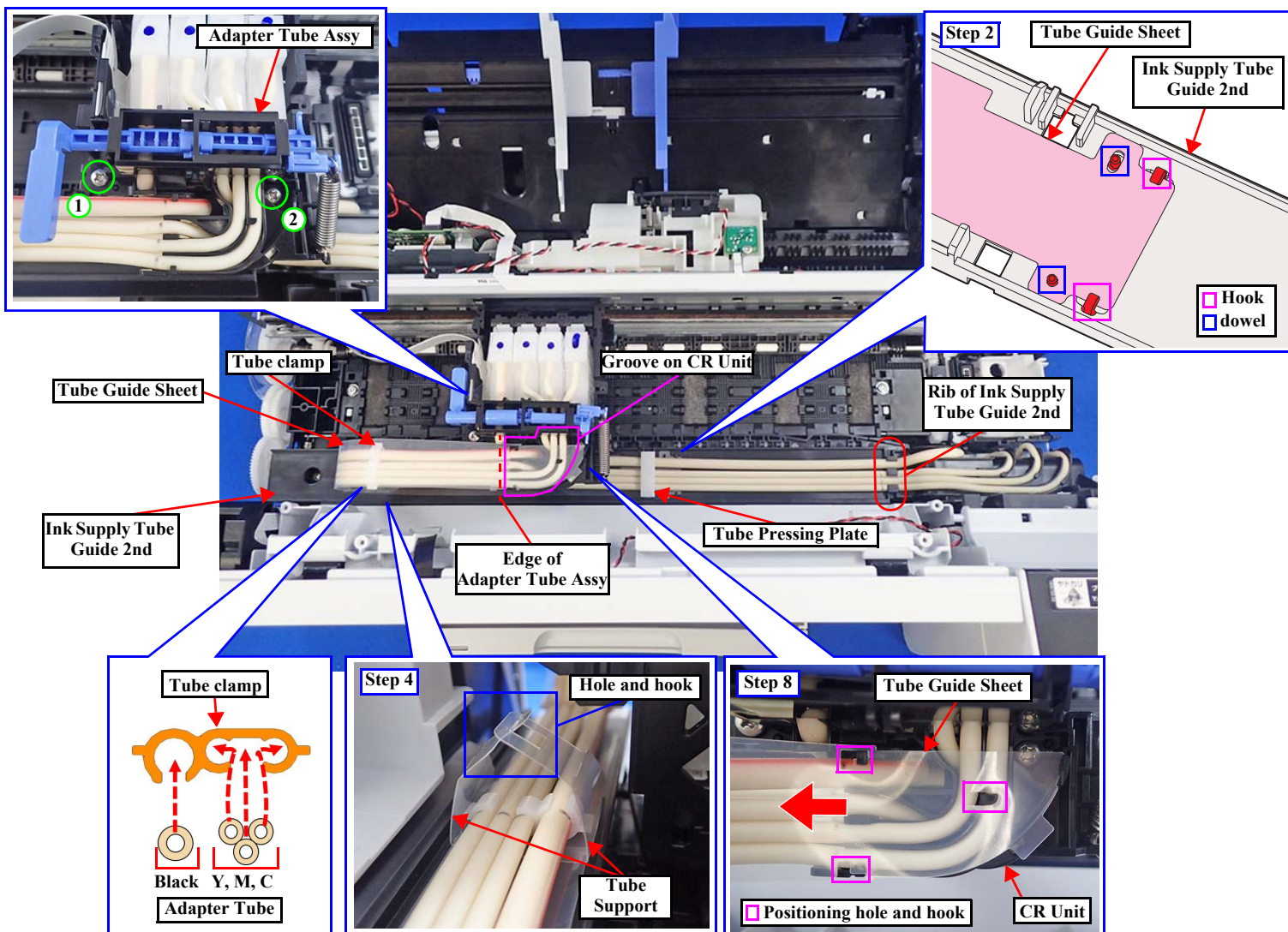
- Attach the Ink System aligning the holes and shafts of (A)/(B) shown above, and secure it with the hook, then screw it in the order given above.
- After attaching the Ink System, move the CR Lock in the direction of the arrow to confirm extension spring is hooked.

Ink System (2)

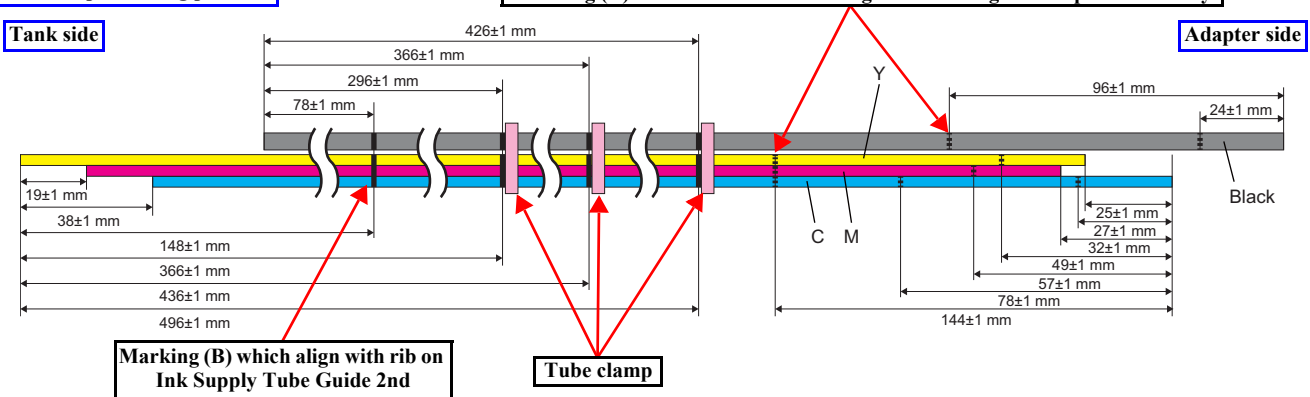


- Route the waste ink tube as shown above.
- Be careful not to let the tip of the waste ink tube go lower than the bottom edge of the Ink Eject Tube Holder Housing.

Adapter Tube/Tube Guide Sheet

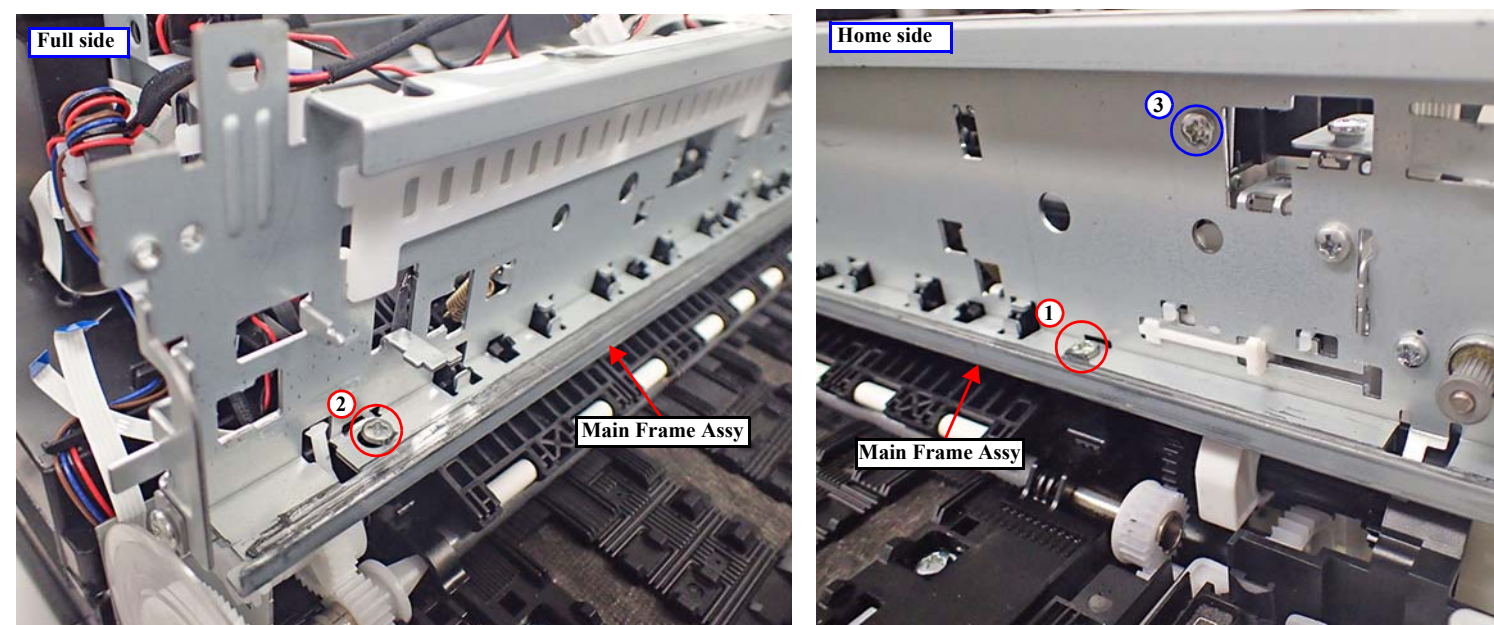


Step 1: Tube clamp attaching position



- Attach the Adapter Tube, Tube clamp, Tube Guide Sheet in the procedure given below.
1. Attach the Tube clamps aligning with the three markings on the Adapter Tube as shown above.
  2. Align the positioning hole on the Tube Guide Sheet with two dowels on the Ink Supply Tube Guide 2nd and secure them with two hooks.
  3. Attach Adapter Tube to Ink Supply Tube Guide 2nd while directing the opening section of tube clamp to the Tube Guide Sheet.
  4. Bind the Adapter Tube with the Tube Support on the Tube Guide Sheet and secure it by inserting the hook on the end of the Tube Support to the hole on the Tube Support.
  5. Connect the tube of the Adapter Tube Assy to the Adapter.
  6. After mounting the Adapter Tube Assy and securing it to the hooks (x2), secure it with screws (x2).
  7. Engage three positioning holes on the Tube Guide Sheet with three hooks on the CR Unit, slide it in the direction of the arrow and secure them.

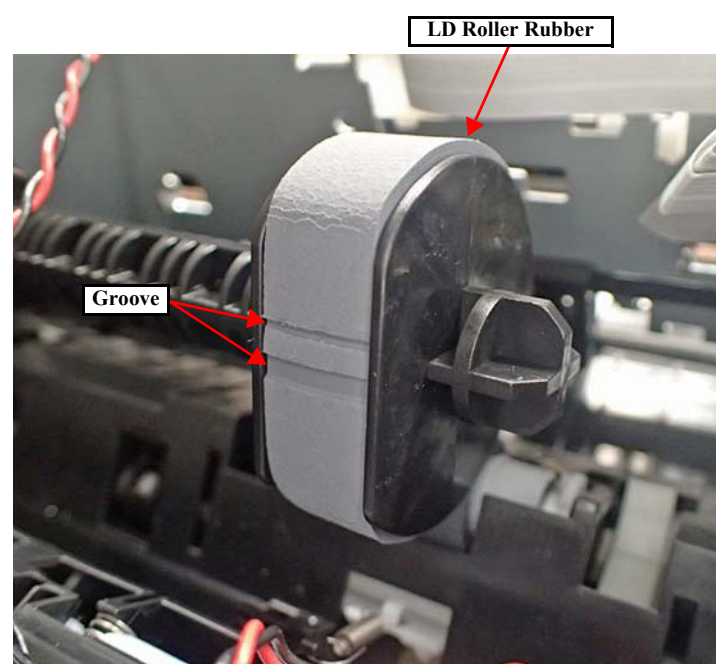
Main Frame Assy



- C.B.P-TITE SCREW 3x10 (0.6±0.1N·m)
- C.B.S-TITE SCREW 3x6 (0.6±0.1N·m)

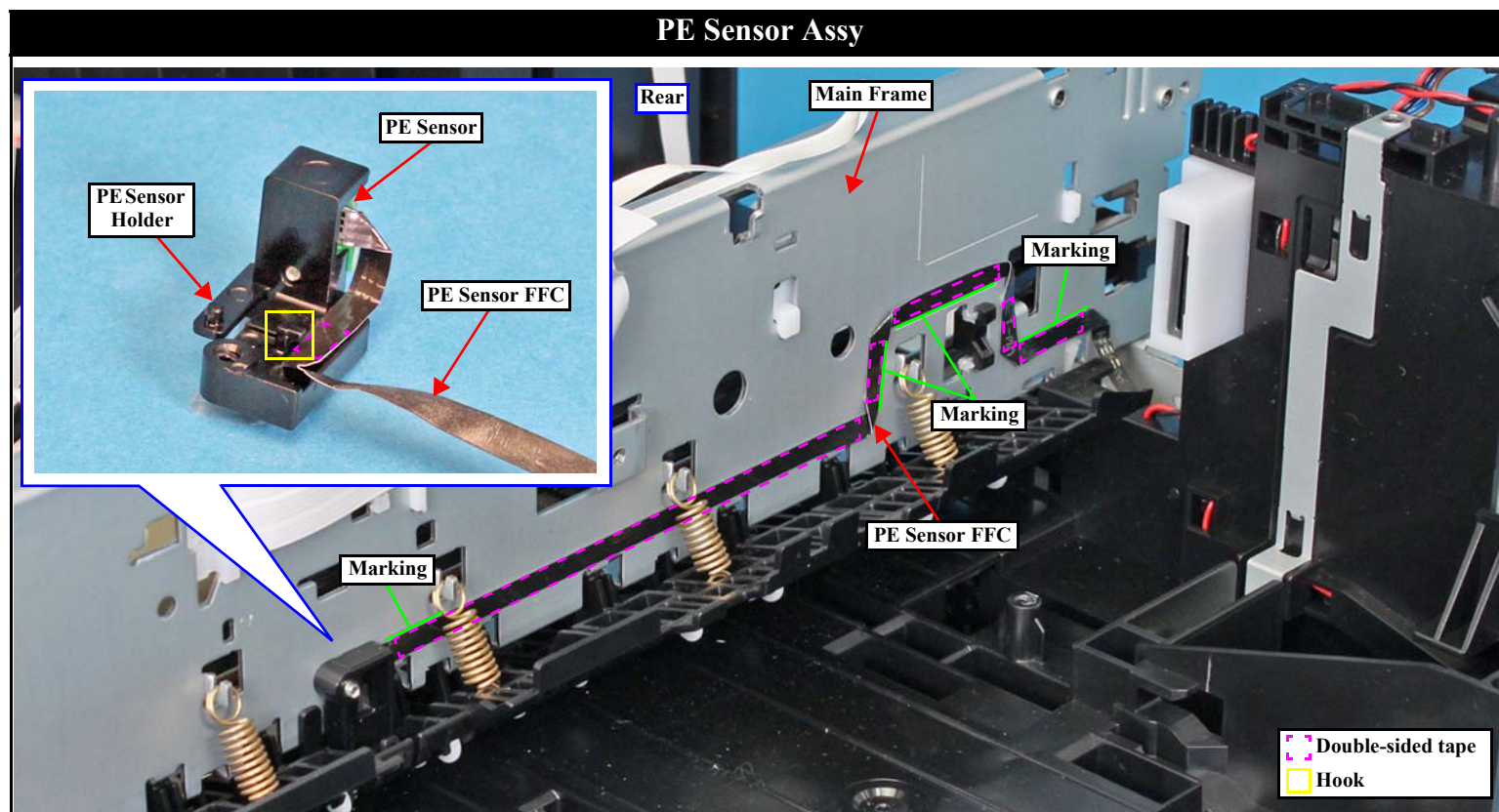
- Screw in the order given above.
- Since Main Frame Assy may deform, do not screw it while holding it.

LD Roller Rubber

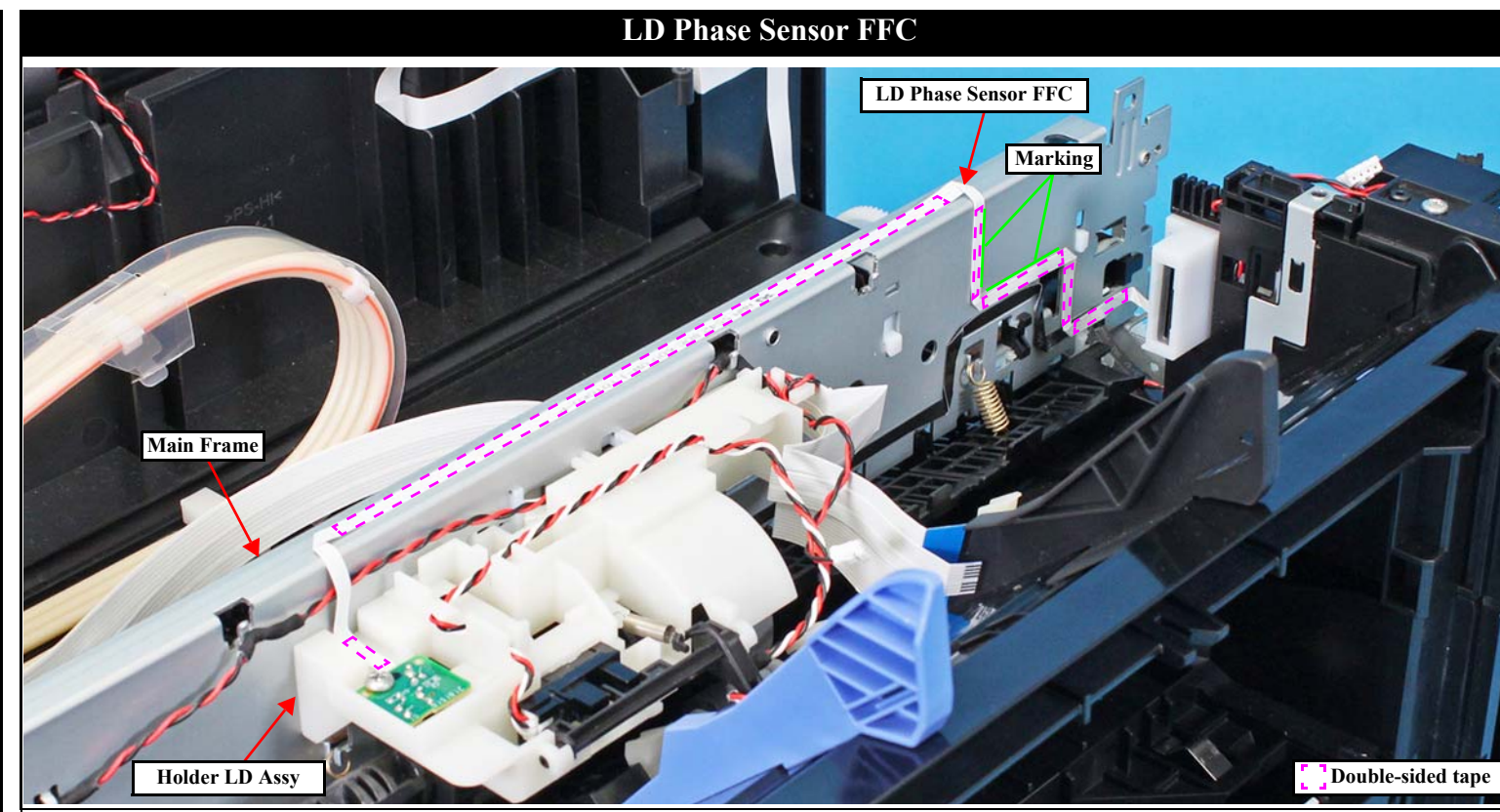


- Be careful of the following when mounting the LD Roller Rubber.
- It must not be turned up.
  - There are two grooves in the LD Roller Rubber. When facing the flat face of the LD Roller toward the back side of the printer as shown above, mount the narrow groove above the thick groove.

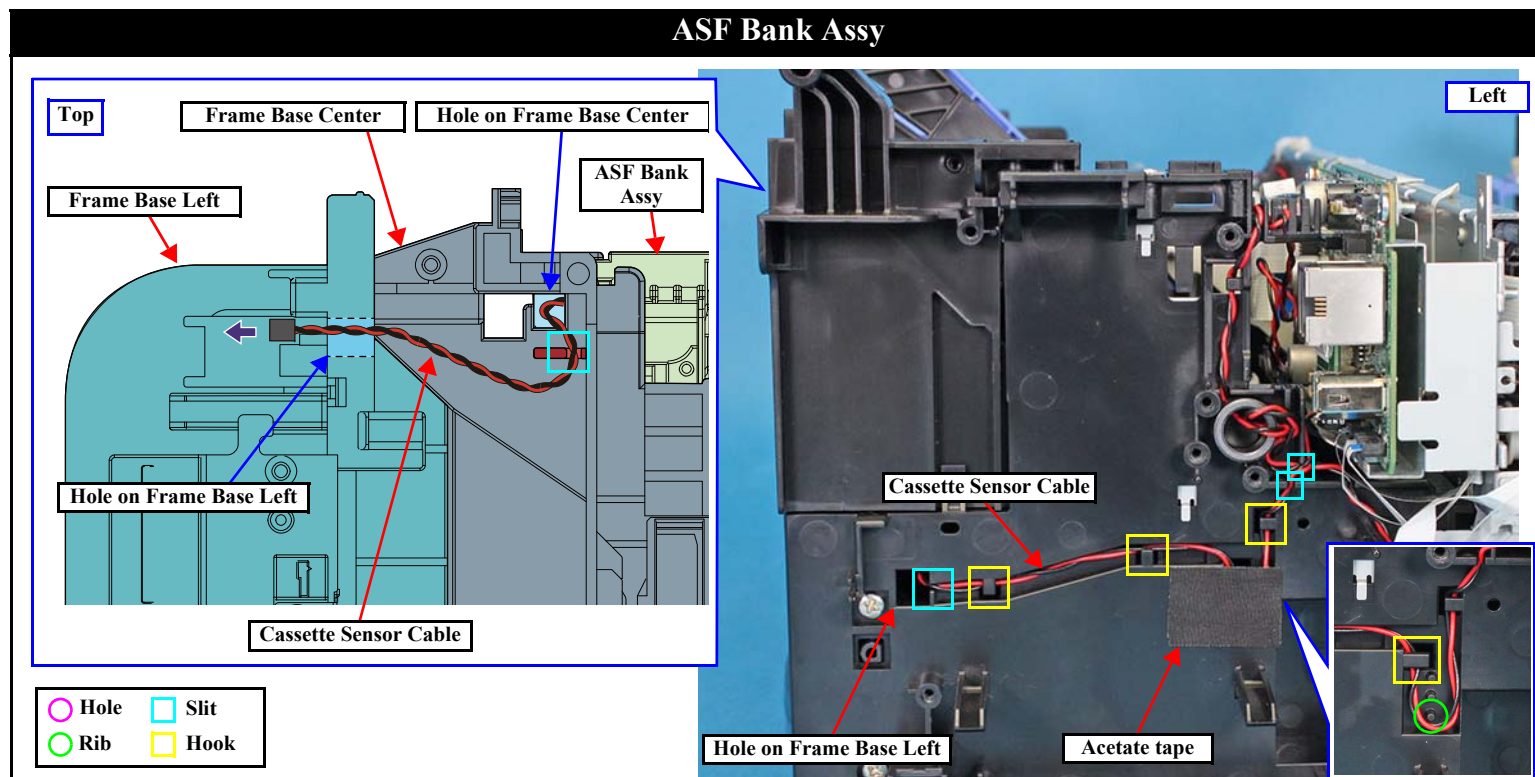
### 3.5 Routing FFCs/cables



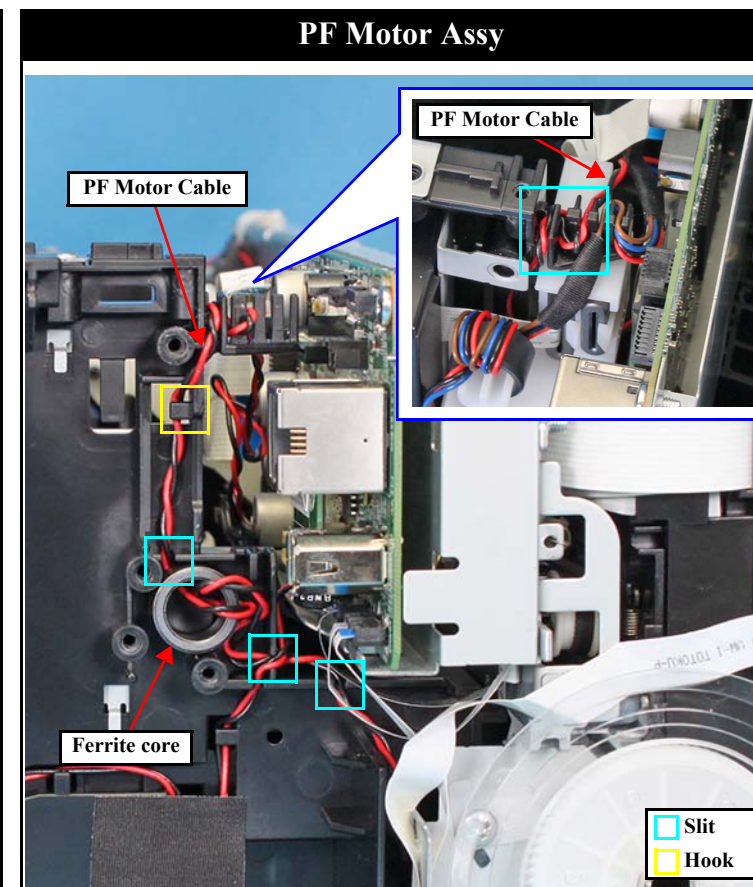
- Route the PE Sensor FFC under the hook on the PE Sensor Holder and secure it with double-sided tape.
- Route the PE Sensor FFC along the four markings on the Main Frame and secure it with double-sided tape (x5).



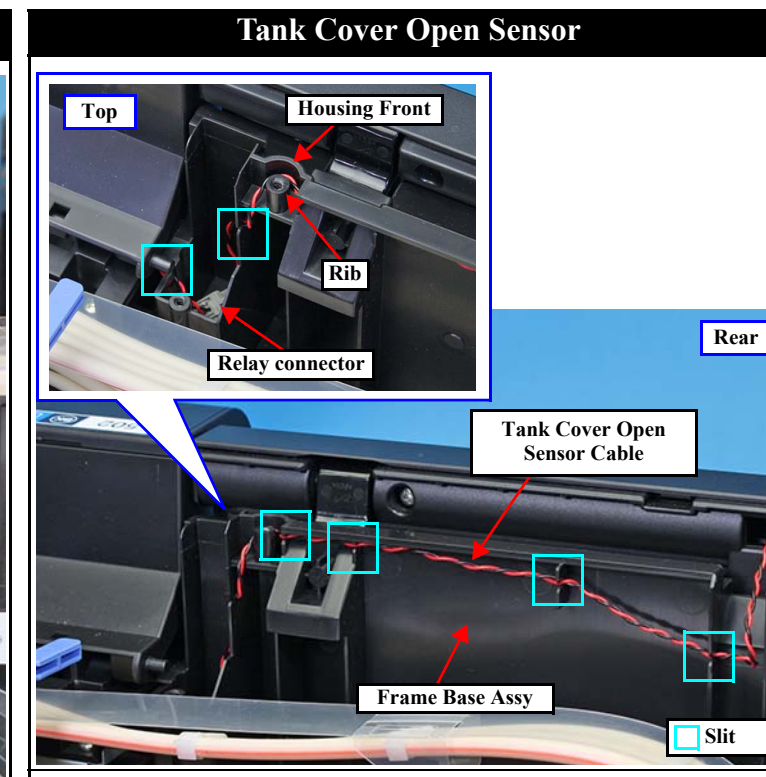
1. Secure the LD Phase Sensor FFC to the Holder LD Assy with double-sided tape.
2. Route the LD Phase Sensor FFC along the two markings on the Main Frame and secure it with double-sided tape (x5).



1. Route the Cassette Sensor Cable through the hole on the Frame Base Center and the slit.
2. Pull out the Cassette Sensor Cable from the hole on the Frame Base Left.
3. Route the Cassette Sensor Cable through the slits (x3), hooks (x4) and rib of the Frame Base Assy.
4. Route the Cassette Sensor Cable through the gap between the Main Board and the Frame Base Assy, and then connect the CN304 connector on the Main Board.
5. Paste the piece of acetate tape to the point shown above.

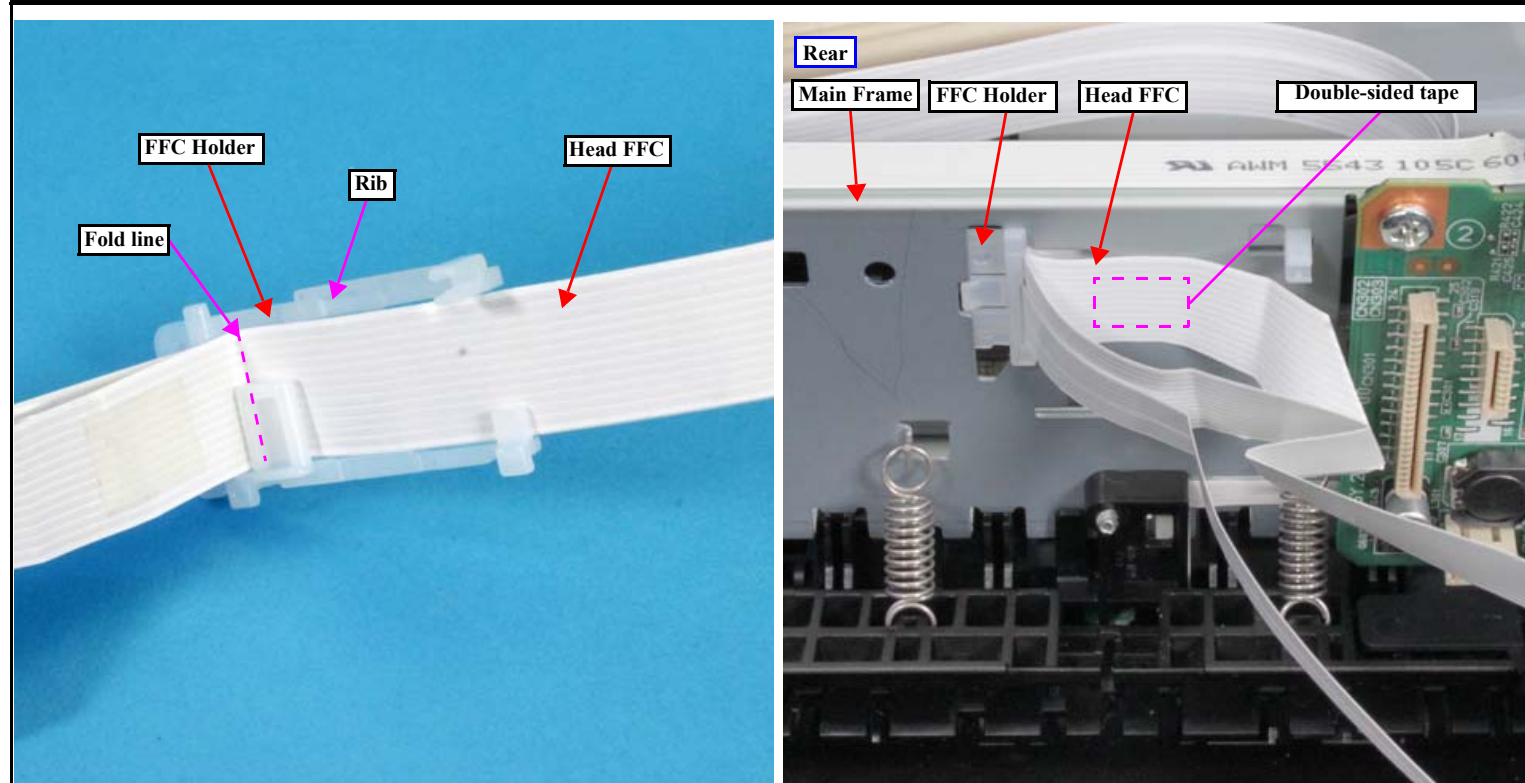


Route the PF Motor Cable through the slits (x6) and the hook on the Frame Base Assy and set the ferrite core into the position shown above.



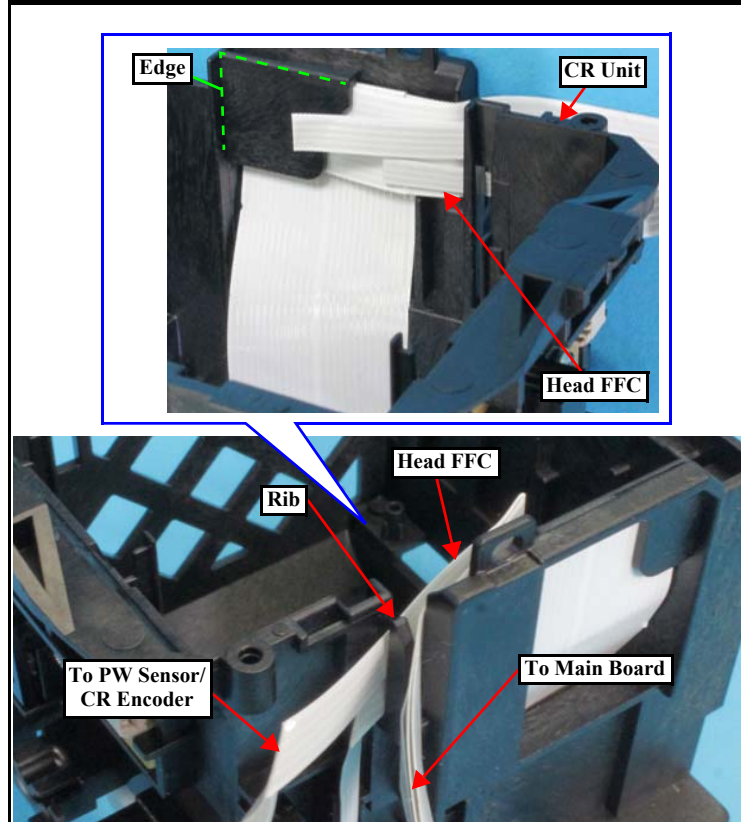
1. Route the Tank Cover Open Sensor Cable through the slits (x6) and the rib on the Frame Base Assy.
  2. Set the relay connector of the Tank Cover Open Sensor Cable into the position shown above.
- Make sure that the Tank Cover Open Sensor Cable is set into the groove between the rib and the Housing Front.

### Head FFC (1)



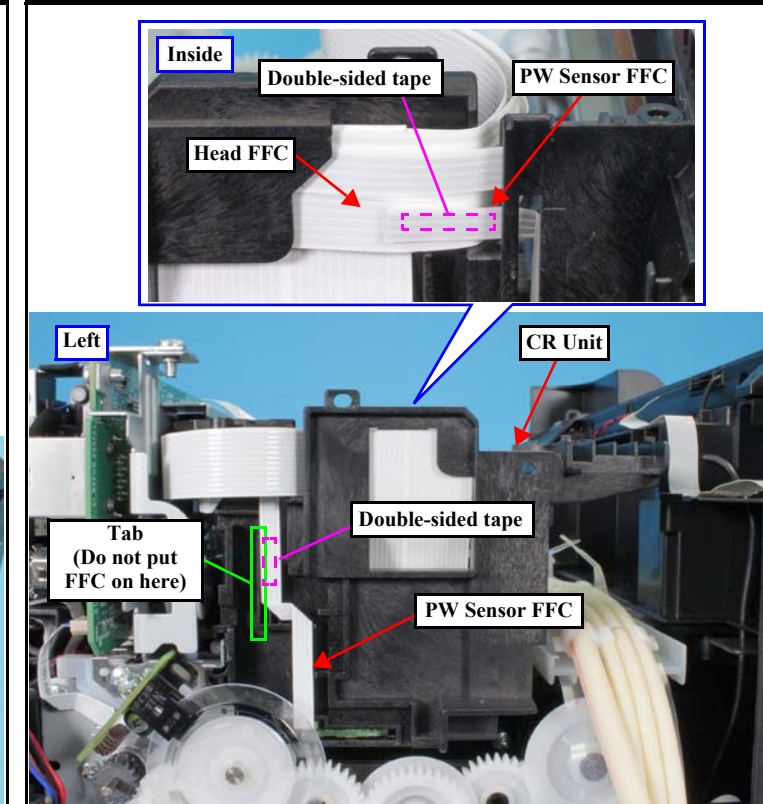
- Align the fold line of the Head FFC with the edge of the FFC Holder and route the FFC.
- Insert the Head FFC into inside of the rib on the FFC Holder.
- Secure the Head FFC to the point shown above with double-sided tape.

### Head FFC (2)



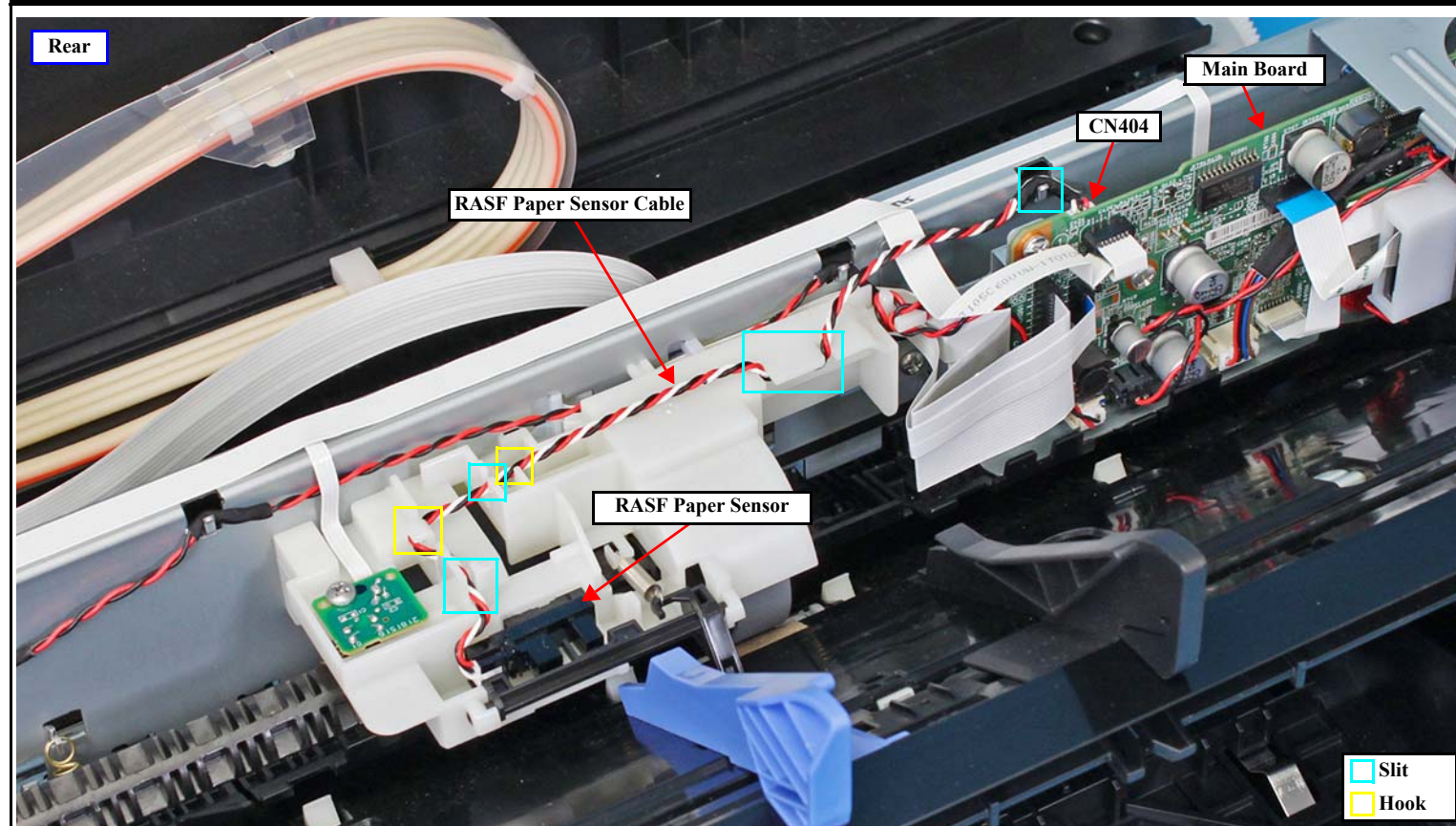
- Route the Head FFC along the edge of the CR Unit shown above.
- Branch the Head FFC at the rib on CR Unit referring as shown above.

### PW Sensor



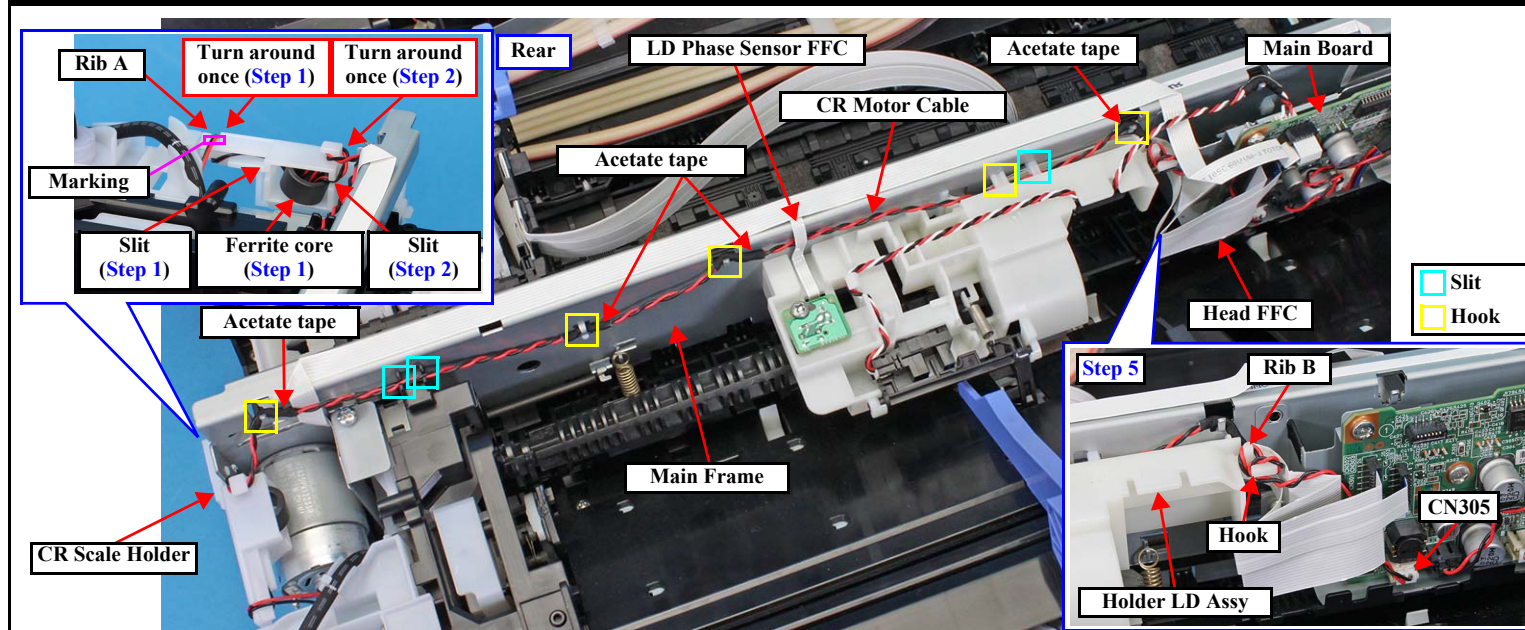
- Secure the PW Sensor FFC on the Head FFC with double-sided tape.
- Route the PW Sensor FFC along the tab on CR Unit and secure the FFC with double sided tape.

### RASF Paper Sensor



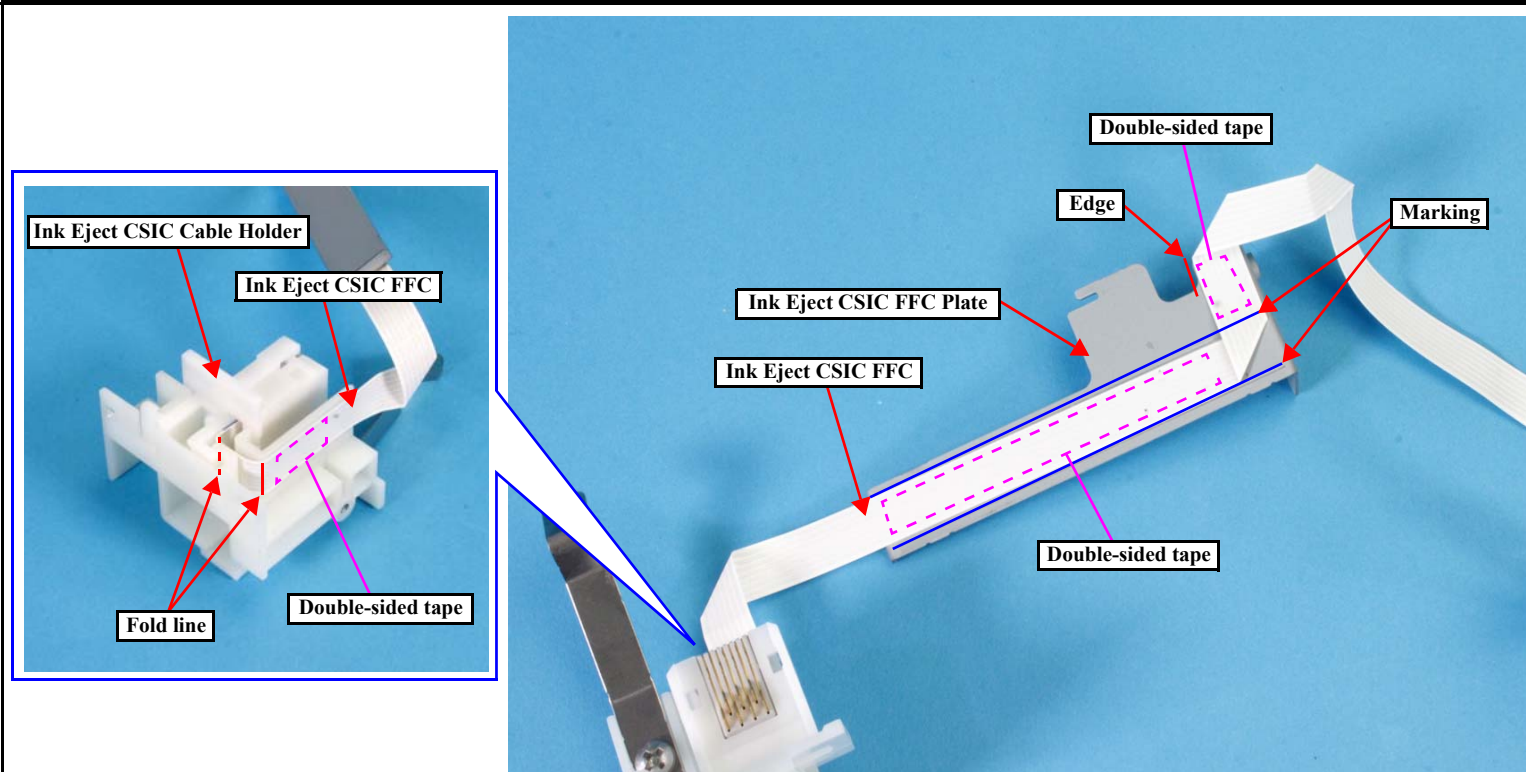
Route the RASF Paper Sensor Cable through the hooks (x4) and the slits (x2), and then connect the cable to the CN404 connector on the Main Board.

### CR Motor



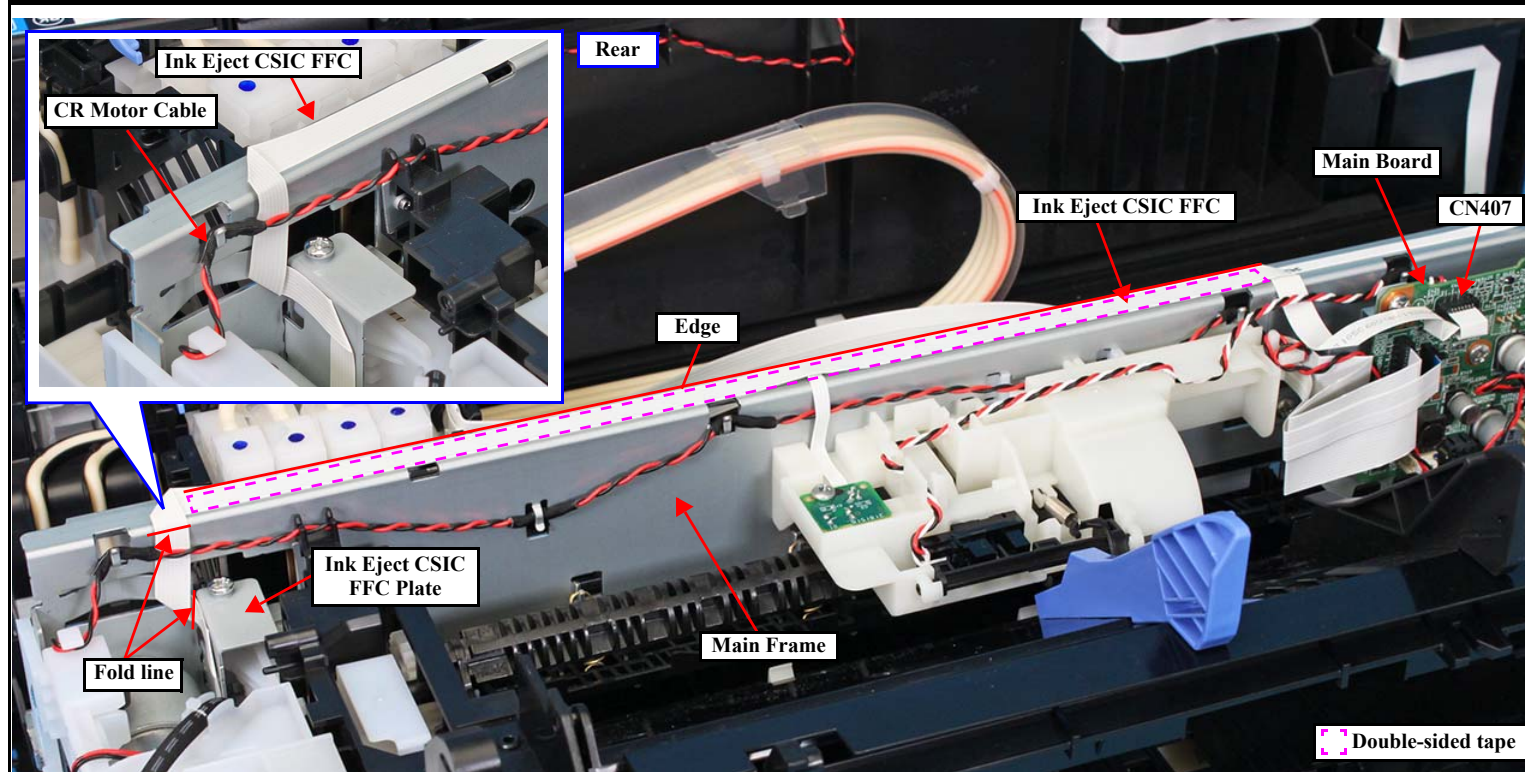
- Route the CR Motor Cable in the procedure given below.
1. After turning the CR Motor Cable around the CR Scale Holder once with aligning the marking on the CR Motor Cable with the rib A, route it through the slit and insert the ferrite core in the point shown above.
  2. After routing the CR Motor Cable through the slit on the CR Scale Holder, turn the cable around the hook once.
  3. Route the CR Motor Cable under the LD Phase Sensor FFC, and then route the cable through the slits (x3) and the hooks (x5).
  4. Route the CR Motor Cable through the rib B and the hook on the Holder LD Assy as shown above.
  5. Route the CR Motor Cable through the Head FFC and then connect the cable to the CN305 connector on the Main Board.
- Hook the acetate tape portions of the CR Motor Cable on the four hooks on the Main Frame.

### Ink Eject CSIC FFC (1)



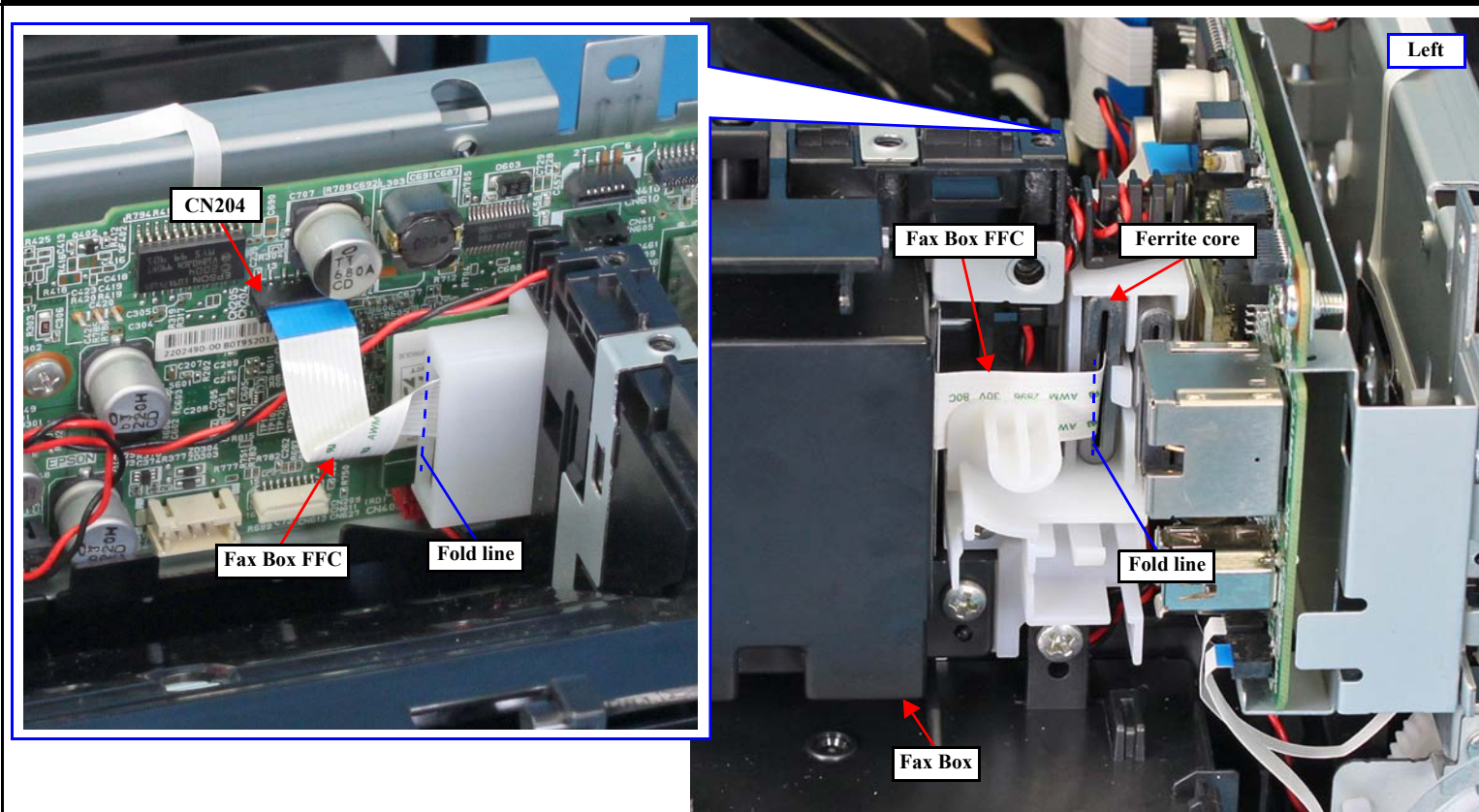
- Route the two fold line of the Ink Eject CSIC FFC along the edge of the Ink Eject CSIC Cable Holder shown above and secure the FFC with double-sided tape.
- Route the Ink Eject CSIC FFC along the edge of the Ink Eject CSIC FFC Plate.
- Route the Ink Eject CSIC FFC along the marking on the Ink Eject CSIC FFC Plate and secure the FFC with double-sided tape (x2).

### Ink Eject CSIC FFC (2)



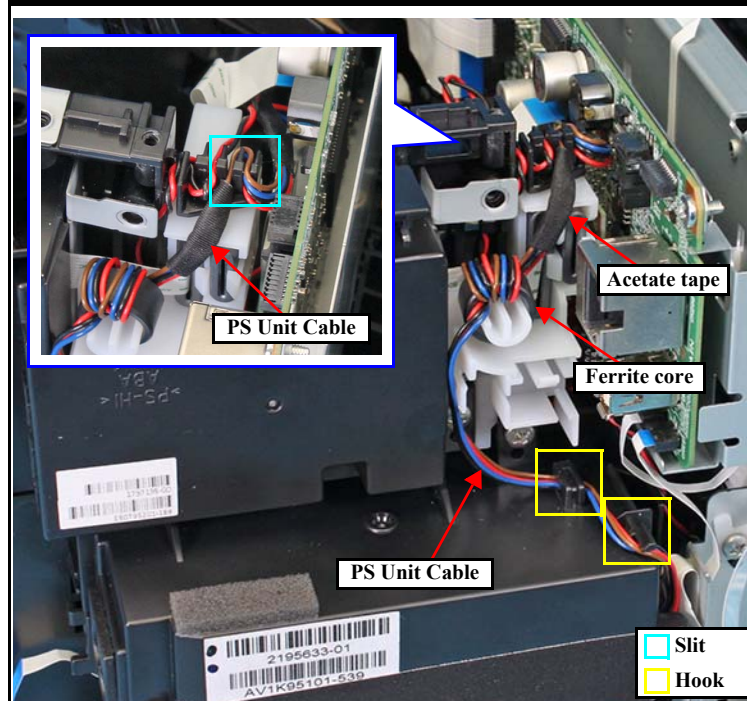
1. Route the Ink Eject CSIC FFC under the CR Motor Cable, and align the two fold lines on the Ink Eject CSIC FFC with the edge of the Ink Eject CSIC FFC Plate.
2. Route the FFC along the edge of the Main Frame, and secure it with double-sided tape.
3. Connect the Ink Eject CSIC FFC to the CN407 connector of the Main Board.

### Fax Box



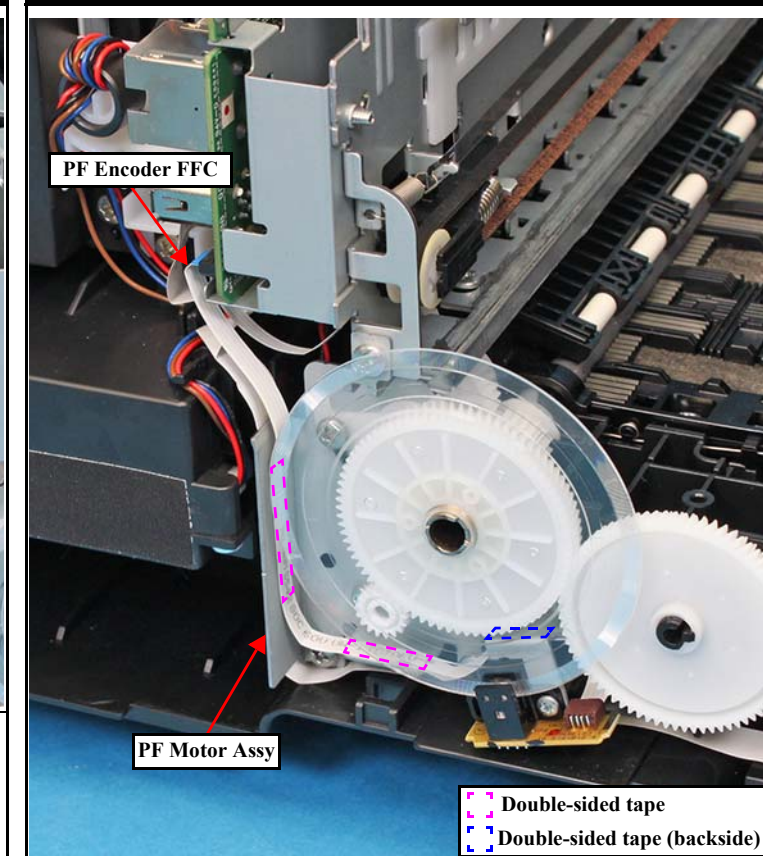
- Align the fold line of the Fax Box FFC to the point shown above and insert the FFC through the ferrite core.
- Fold the Fax Box FFC along the fold line and connect it to the CN204 connector of the Main Board.

### PS Unit



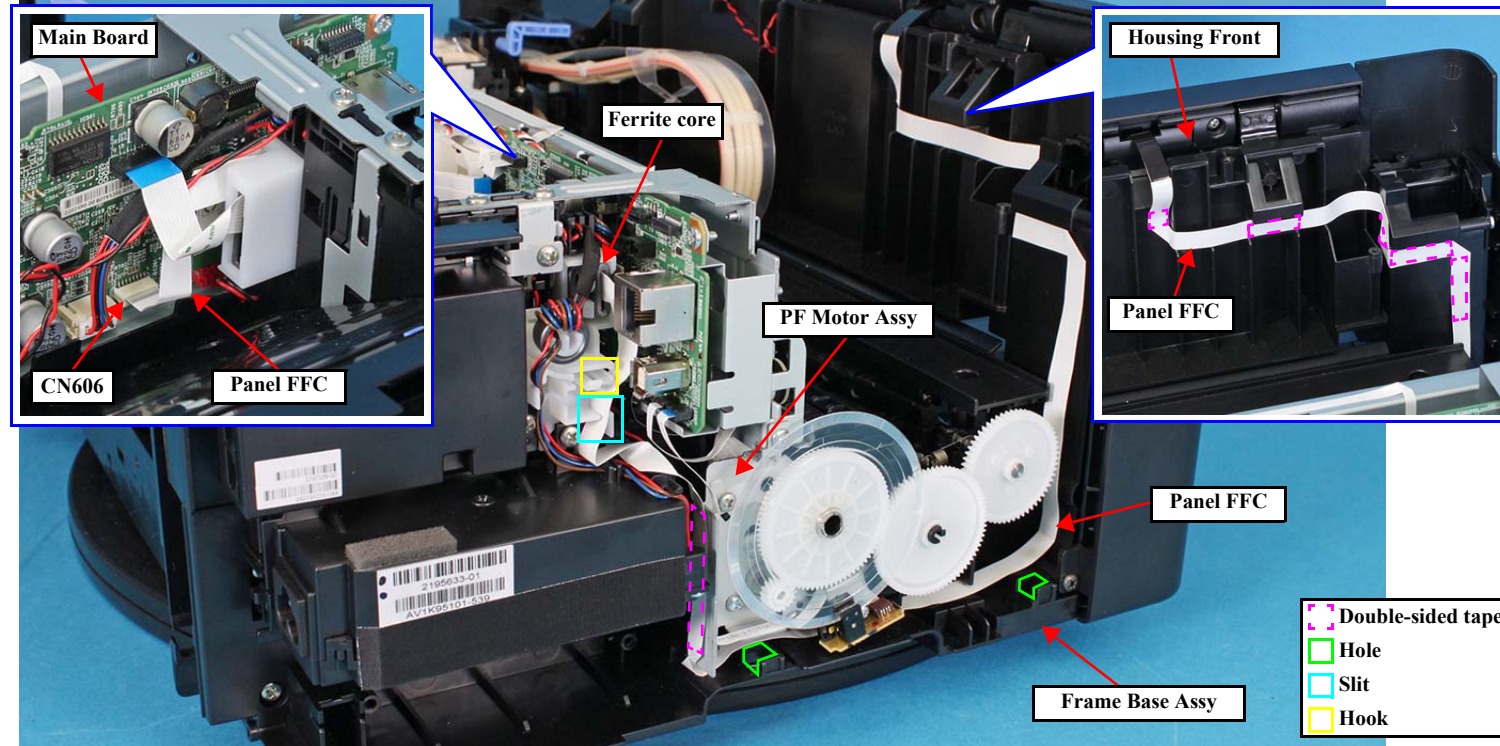
1. Route the PS Unit Cable through the two hooks, and then set the ferrite core into the position shown above.
  2. Route the PS Unit Cable through the two slits on the Frame Base Assy.
- The ferrite core must face correctly.
  - Place the acetate tape part of the PS Unit Cable to the position shown above.

### PF Encoder FFC



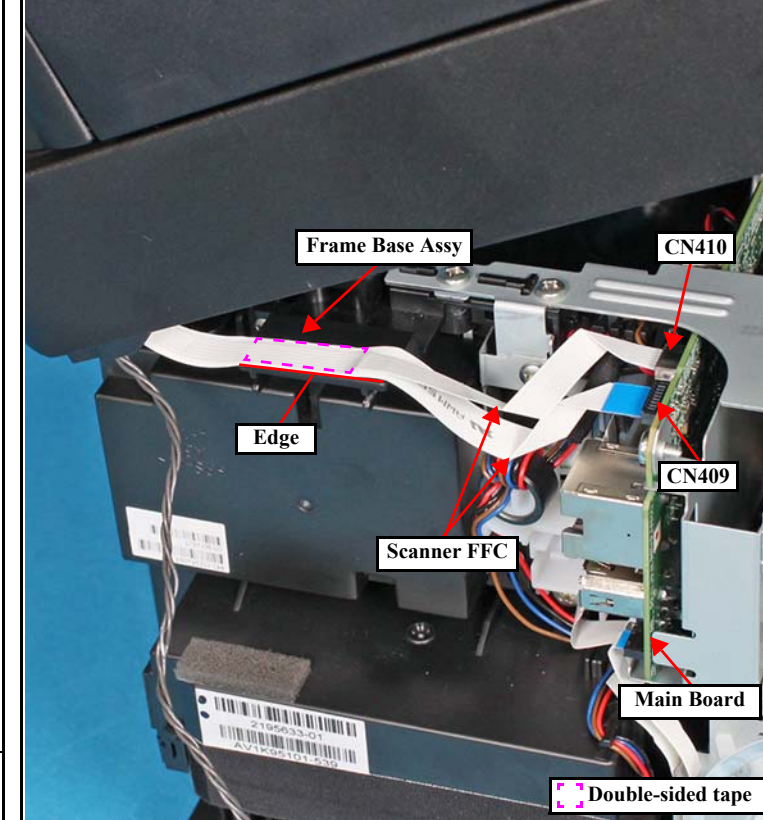
Secure the PF Encoder FFC to the PF Motor Assy with double-sided tape (x3).

Panel FFC



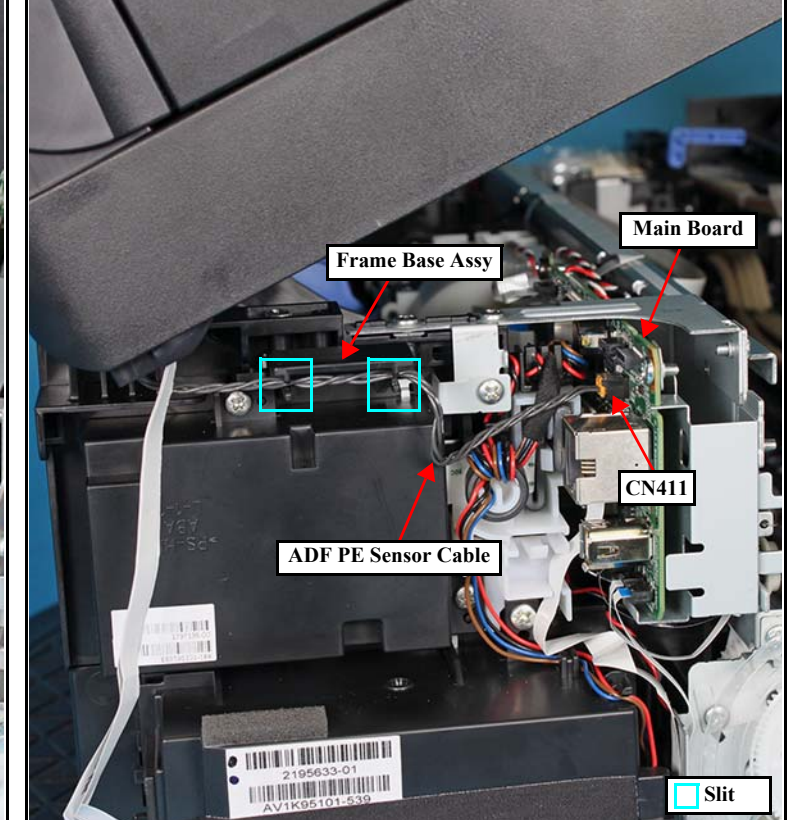
1. Secure the Panel FFC to the Housing Front with double-sided tape (×5).
2. Route the Panel FFC inner than the holes on the Frame Base Assy as shown above.
3. Secure the Panel FFC to the PF Motor Assy with double-sided tape, and then route it through the slit and hook.
4. Insert the Panel FFC through the ferrite core, and connect it to the CN606 connector on the Main Board.

Scanner FFC



Secure the Scanner FFC to the rib on the Frame Base Assy with double-sided tape, and connect it to the CN409/CN410 connector.

ADF PE Sensor



Route the ADF PE Sensor Cable through the two slits on the Frame Base Assy, and connect it to the CN411 connector on the Main Board.

CHAPTER

4

# ADJUSTMENT

## 4.1 Required Adjustments

---

The table from the following page lists the required adjustments depending upon the parts being repaired or replaced. Find the part(s) you removed or replaced, and check which adjustment(s) must be carried out.



- After all required adjustments are complete, use the “Final check pattern print” function to print all adjustment patterns for final check. If you find a problem with the printout patterns, carry out the adjustment again.
- When replacing the Main Board and the Printer Mechanism at the same time, the adjustment should be made after performing the initial setting.



- Meaning of the marks used in the tables on the next pages are as follows.
  - ○ : Required only when replacing
  - ⊙ : Required when removing and/or replacing
  - - : No adjustment is required
- If there are multiple adjustment items for a replaced part, be sure to carry them out in the priority order indicated in the table.



Table 4-1. Adjustment Correspondence Table

| Priority order | Adjustment item                       | Relevant parts |             |                        |                                   |           |                 |         |               |            |              |                             |                             |                 |                |                |                  |                 |          |         |           |                      |                |               |                        |                         |                          |           |
|----------------|---------------------------------------|----------------|-------------|------------------------|-----------------------------------|-----------|-----------------|---------|---------------|------------|--------------|-----------------------------|-----------------------------|-----------------|----------------|----------------|------------------|-----------------|----------|---------|-----------|----------------------|----------------|---------------|------------------------|-------------------------|--------------------------|-----------|
|                |                                       | Paper Cassette | Duplex Unit | Paper Guide Front Assy | Paper Guide Lower Porous Pa d 1/2 | Printhead | Star Wheel Assy | PS Unit | ASF Bank Assy | Panel Unit | Scanner Unit | Main Board (EEPROM Copy OK) | Main Board (EEPROM Copy NG) | ASF Hopper Assy | PE Sensor Assy | Holder LD Assy | LD Roller Rubber | Main Frame Assy | CR Motor | CR Unit | PW Sensor | Head Grounding Plate | EJ Roller Assy | PF Motor Assy | Paper Guide Upper Left | Paper Guide Upper Right | Paper Guide Upper Center | PF Roller |
| 21             | Scanner motor heat protection control | -              | -           | -                      | -                                 | -         | -               | ○       | -             | -          | ○            | -                           | ○                           | -               | -              | -              | -                | -               | -        | -       | -         | -                    | -              | -             | -                      | -                       | -                        | -         |
| 22             | Final check pattern print             | ⊙              | ⊙           | ⊙                      | ⊙                                 | ⊙         | ⊙               | ⊙       | ⊙             | ⊙          | ⊙            | ⊙                           | ⊙                           | ⊙               | ⊙              | ⊙              | ⊙                | ⊙               | ⊙        | ⊙       | ⊙         | ⊙                    | ⊙              | ⊙             | ⊙                      | ⊙                       | ⊙                        |           |
| 23             | Preparation for shipment              | ⊙              | ⊙           | ⊙                      | ⊙                                 | ⊙         | ⊙               | ⊙       | ⊙             | ⊙          | ⊙            | ⊙                           | ⊙                           | ⊙               | ⊙              | ⊙              | ⊙                | ⊙               | ⊙        | ⊙       | ⊙         | ⊙                    | ⊙              | ⊙             | ⊙                      | ⊙                       | ⊙                        |           |

## 4.2 Adjustment Program

This section provides the operating environment, functions related to safety and privacy policy, and the adjustment item newly added of the Adjustment Program. See " [4.1 Required Adjustments \(p116\)](#)" for the adjustments not explained here.

### 4.2.1 Operating Environment

The operating environment for the Adjustment Program is as follows.

- OS: Windows 7, Windows 8.1, Windows 10
- Interface:USB

### 4.2.2 Adjustment and Inspection List

- Mechanical adjustments and inspections

| Adjustment name |                         | Purpose   | Adjustment procedure overview  | Tools   | Reference             |
|-----------------|-------------------------|---|--|---|-----------------------|
| Check           | Checking the Platen Gap | Set the clearance of the gap between the nozzle surface of the printhead and the platen to an appropriate amount. | Place a thickness gauge in the specified location and then move the CR Unit over the thickness gauge and check the clearance.                        | <ul style="list-style-type: none"> <li>• Thickness gauge.</li> <li>• Teflon tape</li> </ul> | <a href="#">P.131</a> |
|                 | Touch panel adjustment  | Adjust the position relationship between LCD screen and touch panel detection coordinate.                         | Execute "Touch Screen Calibration" in service support mode, press "+" displayed on the screen with a touch pen following the on-screen instructions. | Touch pen (without a sharp end such as a plastic stick)                                     | <a href="#">P.134</a> |

□ Software adjustments and inspections

| Adjustment Item         |  | Purpose  | Adjustment /<br>inspection paper /<br>feed tray | Adjustment procedure overview   | Tools                | Reference |
|-------------------------|--|--|---|---|----------------------|-----------|
| Category                | Name   |  |   |   |                      |           |
| Initial settings        | EEPROM Data Copy                             | When the Main Board needs to be replaced, use this to copy adjustment values stored on the old Main Board to the new board. If this copy is completed successfully, all the other adjustments required after replacing the Main Board are no longer necessary. | ---   | With the old Board installed, use the adjustment program to read out the EEPROM data, and after exchanging with the new Board, load the read out data.                              | • Adjustment Program | ---       |
|                         | Initial Setting                              | This must be carried out after replacing the Main Board to apply settings for the target market, etc. Perform MAC address Setting if necessary.  | ---   | Enter the product serial number of the printer using the adjustment program, and write the initial setting information onto the Main Board.   | • Adjustment Program | ---       |
|                         | Head ID Input                                | Input the ID incorporating the correction values for Printhead production variations.  | ---   | Select “Head ID Input” from the Adjustment Program and execute the item. (Auto input) After the ID is input, check that the correct printhead ID has been written in the same menu. | • Adjustment Program | ---       |
|                         | Initialize PF deterioration offset           | Reset the deterioration correction counter.  | ---   | Select “Initialize PF deterioration offset” or “Initialize PW sensor deterioration counter” from the Adjustment Program and execute the counter reset.                              | • Adjustment Program | ---       |
|                         | Initialize PW detector deterioration counter |  | ---   |   | • Adjustment Program | ---       |
| Adjustment (Mechanical) | PF motor heat protection control             | Measure product variations to set the appropriate correction values. Also, make a pass/fail judgment by calculating whether or not the operation load is within the expected range from the motor current value.   | ---   | Automatically measure the correction value and perform the operation load check by selecting “XX heat protection control” from the Adjustment Program menu and executing the item.  | • Adjustment Program | ---       |
|                         | CR motor heat protection control             |  | ---   |   |                      | ---       |
|                         | Scanner motor heat protection control        |  | ---   |   |                      | ---       |

| Adjustment Item                                   |                            | Purpose   | Adjustment /<br>inspection paper /<br>feed tray | Adjustment procedure overview   | Tools                           | Reference             |
|---|----------------------------|---|---|---|---------------------------------|-----------------------|
| Category  | Name                       |   |   |   |                                 |                       |
| Adjustment<br>(Print<br>adjustment by<br>program) | PF/EJ<br>adjustment        | Use software to correct the offset due to mechanical variations and media transportation characteristics.   | Paper type: Photo matte paper<br>Size: A4       | Select “PF/EJ adjustment” from the Adjustment Program and execute the item to print the adjustment pattern. Determine the adjustment value from the adjustment pattern based on the judgment criteria and then enter the adjustment value from the PF/EJ adjustment menu.               | • Adjustment Program            | <a href="#">P.124</a> |
|   | PF Band<br>adjustment      | Use software to correct the offset of when band printing due to mechanical variations and media transportation characteristics.   | Paper type: Plain Paper<br>Size: A4             | Select “PF Band adjustment” from the Adjustment Program and execute the item to print the adjustment pattern. Determine the adjustment value from the adjustment pattern based on the judgment criteria and then enter the adjustment value from the PF Band adjustment menu.           | • Adjustment Program            | <a href="#">P.125</a> |
|   | PW / 1st Dot<br>adjustment | PW Adjustment:<br>Use software to correct the offset due to sensor characteristics and attachment variations.<br>1st Dot Adjustment:<br>Use software to correct the print timing so that the main scanning direction print start position becomes the target value. | Paper type: Photo matte paper<br>Size: A4       | Select “PW / 1st Dot adjustment” from the Adjustment Program and execute the item to print the adjustment pattern. Determine the adjustment value from the adjustment pattern based on the judgment criteria and then enter the adjustment value from the PW / 1st Dot adjustment menu. | • Adjustment Program<br>• Ruler | <a href="#">P.126</a> |
|   | PTS delay<br>adjustment    | Correct the impact offset caused by a difference in the speed of the low speed part and acceleration/ deceleration part of the CR.  | Paper type: Plain Paper<br>Size: A4             | Select “PTS delay adjustment” from the Adjustment Program and execute the item to print the adjustment pattern. Determine the adjustment value from the adjustment pattern based on the judgment criteria and then enter the adjustment value from the PTS delay adjustment menu.       | • Adjustment Program            | <a href="#">P.127</a> |
|   | Head angular<br>adjustment | Use software to correct the vertical/horizontal tilt occurs when installing the head.   | Paper type: Plain Paper<br>Size: A4             | Select “head angular adjustment” from the Adjustment Program and execute the item to print the adjustment pattern. Determine the adjustment value from the adjustment pattern based on the judgment criteria and then enter the adjustment value from the head angular adjustment menu. | • Adjustment Program            | <a href="#">P.128</a> |

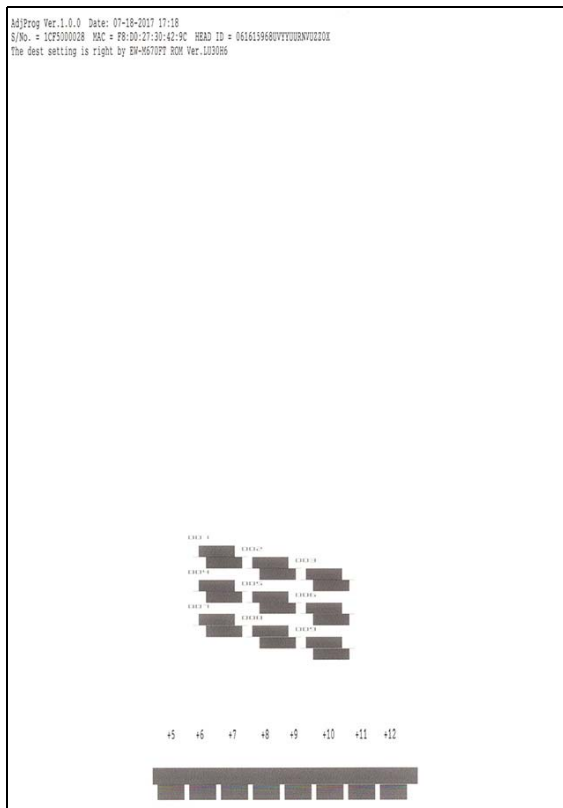
| Adjustment Item                                   |   | Purpose  | Adjustment /<br>inspection paper /<br>feed tray | Adjustment procedure overview  | Tools                | Reference             |
|---|---|--|---|--|----------------------|-----------------------|
| Category  | Name  |  |   |  |                      |                       |
| Adjustment<br>(Print<br>adjustment by<br>program) | Bi-d adjustment                               | Use software to correct the print timing for aligning the print position between the outward path and return path when bidirectional printing.                   | Paper type: Plain Paper<br>Size: A4             | Select “Bi-d adjustment” from the Adjustment Program and execute the item to print the adjustment pattern. Determine the adjustment value from the adjustment pattern based on the judgment criteria and then enter the adjustment value from the Bi-d adjustment menu.                  | • Adjustment Program | <a href="#">P.129</a> |
|   | Paper Skew adjustment                         | Use software to correct the print timing for aligning the print position between the outward path and return path when bidirectional printing in band feed mode. | Paper type: Plain Paper<br>Size: A4             | Select “Paper Skew adjustment” from the Adjustment Program menu and execute the item to print the adjustment pattern. Determine the adjustment value from the adjustment pattern based on the judgment criteria and then enter the adjustment value from the Paper Skew adjustment menu. | • Adjustment Program | <a href="#">P.130</a> |
|   | PE adjustment                                 | Use software to correct the paper detection position offset caused by variations in the PE sensor attachment position and printhead position.                    | Paper type: Plain Paper<br>Size: A4             | Select “PE adjustment” from the Adjustment Program menu and execute, and run plain paper through. Correct in software paper errors in detected position.   | • Adjustment Program | ---                   |
|   | Photo sensor light emission amount adjustment | Adjust the current value supplied to the sensor to optimize the PE/PW Sensor light intensity.  | Paper type: Plain Paper<br>Size: A4             | Select “Photo sensor light emission amount adjustment” from the Adjustment Program Menu. Select the sensor to adjust and execute. The adjustment value is calculated by passing through plain paper and written to the Main Board.   | • Adjustment Program | ---                   |

| Adjustment Item |                           | Purpose   | Adjustment /<br>inspection paper /<br>feed tray        | Adjustment procedure overview   | Tools                | Reference |
|-----------------|---------------------------|---|--|---|----------------------|-----------|
| Category        | Name                      |   |  |   |                      |           |
| Maintenance     | Head Cleaning             | Run this cleaning when dots missing is observed on an adjustment pattern printed by the adjustment program.   | ---  | Perform a head cleaning using the adjustment program, and print a nozzle check pattern to see if all the nozzles fire ink properly.   | • Adjustment Program | ---       |
|                 | Ink Charge                | This must be carried out after replacing the Printhead in order to fill ink inside the all nozzles of the new ASP Printhead.  | ---  | After installing the Waste Ink Tray Assy, perform an ink charge using the adjustment program, and print a nozzle check pattern to see if all the nozzles fire ink properly. The auto cleaning is also settable. | • Adjustment Program | ---       |
|                 | Maintenance Counter       | When a maintenance error occurs, replace the waste ink pad and reset the counter for the pad using this menu. When the counter is nearly full, but the error has not occurred yet, you can do the same to prevent the user from ordering repair service again in the near future. | ---  | After exchanging the Paper Guide Lower Porous Pad, initialize the counter by the adjustment program.  | • Adjustment Program | ---       |
|                 | Final check pattern print | Use this to check if the all adjustments have been properly made.   | Paper type: Plain Paper, Photo Matte paper<br>Size: A4 | The all adjustment patterns are printed automatically.  | • Adjustment Program | ---       |
|                 | Preparation for shipment  | After repairs, reset the error history, and as necessary select cleaning when the printer is next turned on.  | ---  | Select “Preparation for shipment” from the Adjustment Program menu and execute it.  | • Adjustment Program | ---       |

## 4.2.3 Details of the Adjustment Program

### PF/EJ ADJUSTMENT

- Paper and feed tray
  - Paper size: A4
  - Paper type: Photo matte paper
- Adjustment pattern



- Judgment
 

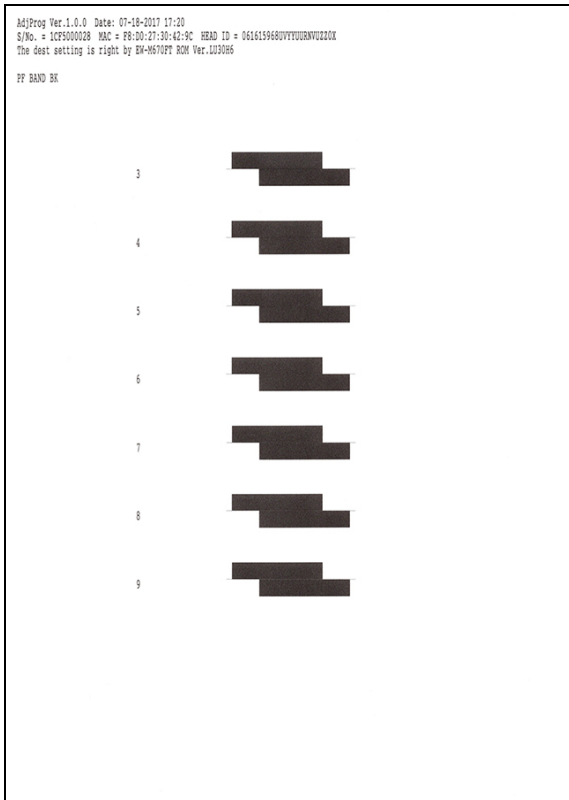
Select the numerical value of the pattern that has no overlapping of the upper and lower blocks and the least white bands.
- Adjustment procedure
  1. Start the Adjustment Program.
  2. Select “PF/EJ adjustment”.
  3. The PF/EJ adjustment menu appears.
  4. Load paper into the paper feed tray.
  5. Press the [Print] button to print the adjustment pattern.
  6. Check the adjustment pattern.
  7. Check the adjustment pattern and determine the adjustment value based on the judgment procedure.
  8. Enter the adjustment value.
  9. Check that an adjustment value is entered and then press the [Finish] button to end adjustment.

---

**PF BAND ADJUSTMENT**


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- Paper and feed tray
  - Paper size: A4
  - Paper type: Plain paper
- Adjustment pattern



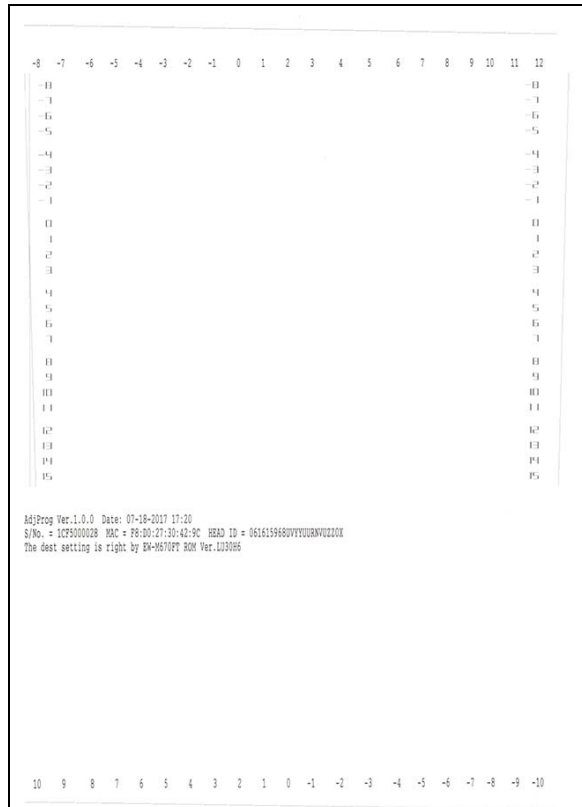
- Judgment
  - Select the numerical value of the pattern that has no overlapping of the upper and lower blocks and the least white bands.
- Adjustment procedure
  1. Start the Adjustment Program.
  2. Select “PF Band adjustment”.
  3. The PF Band adjustment menu appears
  4. Load paper into the paper feed tray.
  5. Press the [Print] button to print the adjustment pattern.
  6. Check the adjustment pattern.
  7. Check the adjustment pattern and determine the adjustment value based on the judgment procedure.
  8. Enter the adjustment value.
  9. Check that an adjustment value is entered and then press the [Finish] button to end adjustment.

---

**PW / 1ST DOT ADJUSTMENT**


---

- Paper and feed tray
  - Paper size: A4
  - Paper type: Photo matte paper
- Adjustment pattern



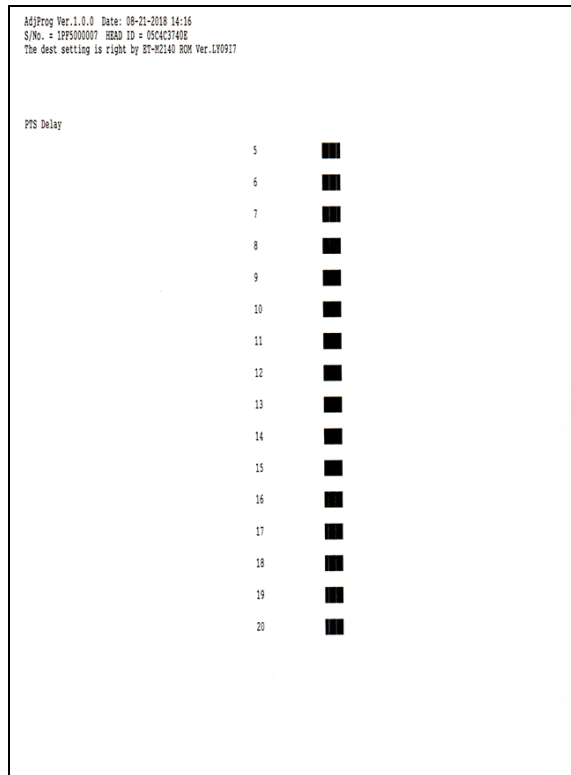
- Judgment
  - PW adjustment:  
From the stepped patterns printed on the bottom, top, left, and right edges of the paper, select the numerical value that is 5 mm from the edge of the paper for each of them.
  - 1st Dot adjustment:  
Select the value at the location of the misaligned pattern and straight lines printed on the left of the paper.
- Adjustment procedure
  1. Start the Adjustment Program.
  2. Select “PW / 1st Dot adjustment”.
  3. The PW / 1st Dot adjustment menu appears.
  4. Load paper into the paper feed tray.
  5. Press the [Print] button to print the adjustment pattern.
  6. Check the adjustment pattern.
  7. Check the adjustment pattern and determine the adjustment value based on the judgment procedure.
  8. Enter the adjustment value.
  9. Check that an adjustment value is entered and then press the [Finish] button to end adjustment.

---

**PTS DELAY ADJUSTMENT**


---

- Paper and feed tray
  - Paper size: A4
  - Paper type: Plain paper
- Adjustment pattern



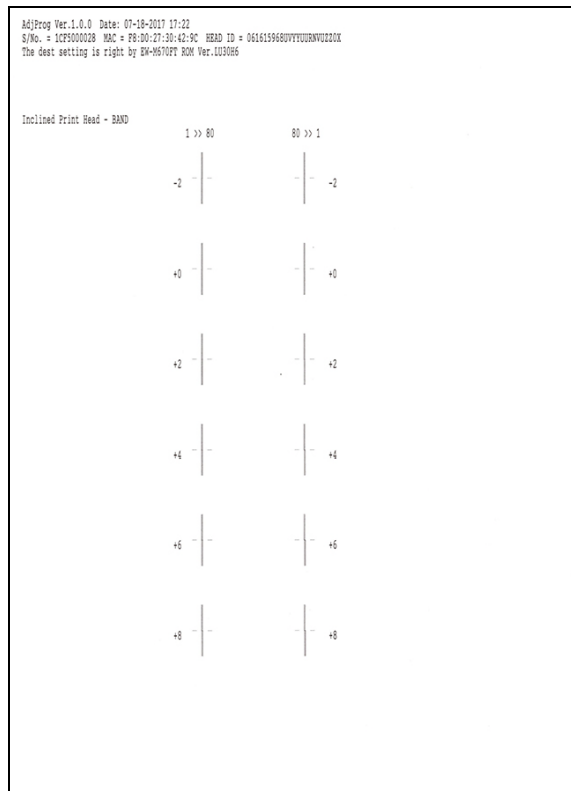
- Judgment
  - Select the pattern for which there is no gap and overlapping of the left and right patterns.
- Adjustment procedure
  1. Start the Adjustment Program.
  2. Select “PTS delay adjustment”.
  3. The PTS delay adjustment menu appears.
  4. Load paper into the paper feed tray.
  5. Press the [Print] button to print the adjustment pattern.
  6. Check the adjustment pattern.
  7. Check the adjustment pattern and determine the adjustment value based on the judgment procedure.
  8. Enter the adjustment value.
  9. Check that an adjustment value is entered and then press the [Finish] button to end adjustment.

---

**HEAD ANGULAR ADJUSTMENT**


---

- Paper and feed tray
  - Paper size: A4
  - Paper type: Plain paper
- Adjustment pattern

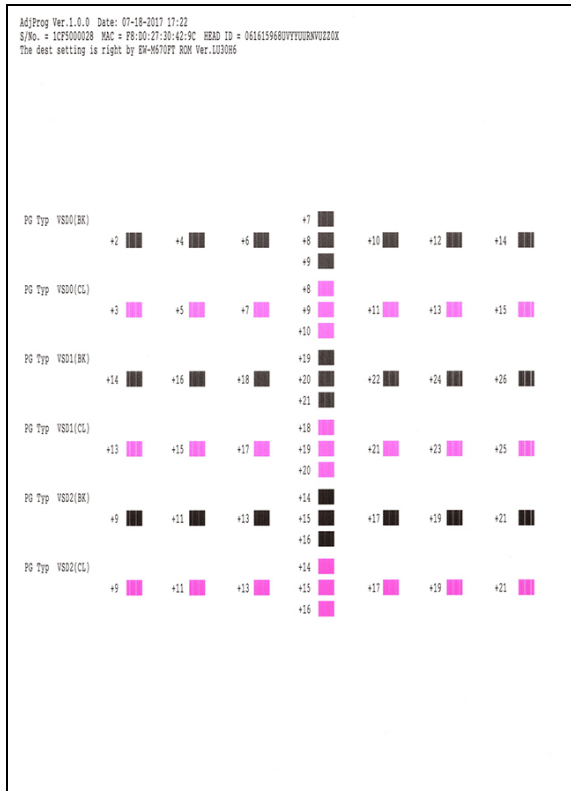


- Judgment
 

From among the printed patterns, select the pattern where the above and below lines are the straightest.
- Adjustment procedure
  1. Start the Adjustment Program.
  2. Select “Head angular adjustment”.
  3. The Head angular adjustment menu appears.
  4. Load paper into the paper feed tray.
  5. Press the [Print] button to print the adjustment pattern.
  6. Check the adjustment pattern.
  7. Check the adjustment pattern and determine the adjustment value based on the judgment procedure.
  8. Enter the adjustment value.
  9. Check that an adjustment value is entered and then press the [Finish] button to end adjustment.

**BI-D ADJUSTMENT**

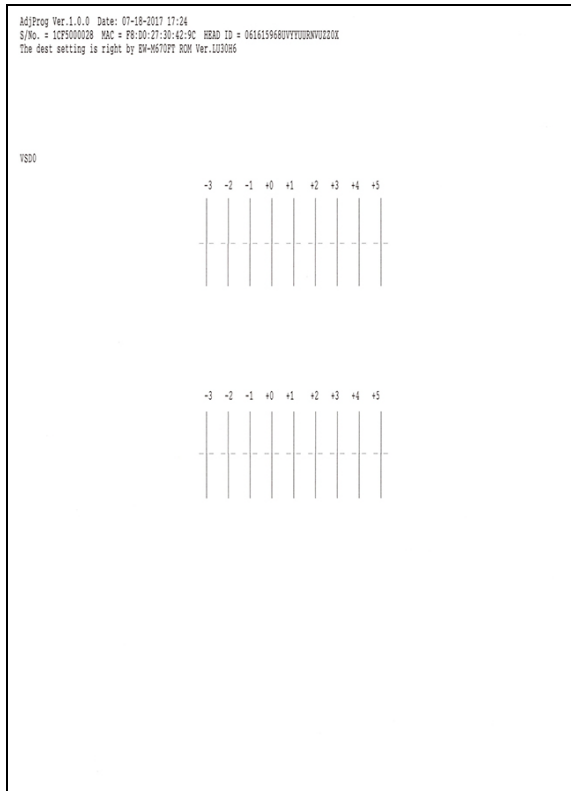
- Paper and feed tray
  - Paper size: A4
  - Paper type: Plain paper
- Adjustment pattern



- Judgment
  - Select the pattern for which there is no gap and overlapping of the left and right patterns.
- Adjustment procedure
  1. Start the Adjustment Program.
  2. Select “Bi-d adjustment”.
  3. The Bi-d adjustment menu appears.
  4. Load paper into the paper feed tray.
  5. Press the [Print] button to print the adjustment pattern.
  6. Check the adjustment pattern.
  7. Check the adjustment pattern and determine the adjustment value based on the judgment procedure.
  8. Enter the adjustment value.
  9. Check that an adjustment value is entered and then press the [Finish] button to end adjustment.

## PAPER SKEW ADJUSTMENT

- Paper and feed tray
  - Paper size: A4
  - Paper type: Plain paper
- Adjustment pattern



- Judgment
 

From among the printed patterns, select the pattern where the above and below lines are the straightest.
- Adjustment procedure
  1. Start the Adjustment Program.
  2. Select “Paper Skew adjustment”.
  3. The Paper Skew adjustment menu appears.
  4. Load paper into the paper feed tray.
  5. Press the [Print] button to print the adjustment pattern.
  6. Check the adjustment pattern.
  7. Check the adjustment pattern and determine the adjustment value based on the judgment procedure.
  8. Enter the adjustment value.
  9. Check that an adjustment value is entered and then press the [Finish] button to end adjustment.

## 4.3 Mechanism Adjustment / Check

### 4.3.1 Checking the Platen Gap

This section describes the procedure for checking the platen gap (PG).



- The standard range of the PG is as follows:
  - Standard: 1.70 +/- 0.3 mm
- Check the platen gap before installing the CR Scale, after attaching the Adapter.

#### □ Tools

- Thickness gauges for PG check: 1.32 mm gauge, 1.82 mm gauge
- Teflon tape: Commercially available product (thickness: 0.08 mm)

#### 4.3.1.1 Preparation

This section describes how and what to prepare for the preparation before starting the PG check.

#### □ PG position check

The APG Mechanism is installed in this product. It is necessary to check the PG with the PG Typ. It is set to the PG Typ. by a normal power ON or power OFF, so turn the power ON/OFF in advance.

#### □ Modification of the thickness gauges



- The  $\mu$ TFP1S Head of this printer has an integral structure of the Printhead Cover and Printhead nozzle surface. Therefore, if the thickness gauge touches the nozzle surface in the same way as performed in the traditional procedure, the nozzle surface may be damaged. When checking the platen gap, make sure to apply Teflon tape (thickness: 0.08 mm) on all the thickness gauges used for checking the Platen Gap in advance.
- Use commercially available Teflon tape of 0.08 mm in thickness.
- When applying Teflon tape on the thickness gauges, make sure no bubbles or foreign material remain under the tape.



Bubbles



Foreign materials

- Application procedure of Teflon tape.
  1. Clean the surfaces of the thickness gauge by using alcohol, and make sure no dirt or contamination remains on the surfaces.
  2. Apply Teflon tape on the thickness gauge as shown below.

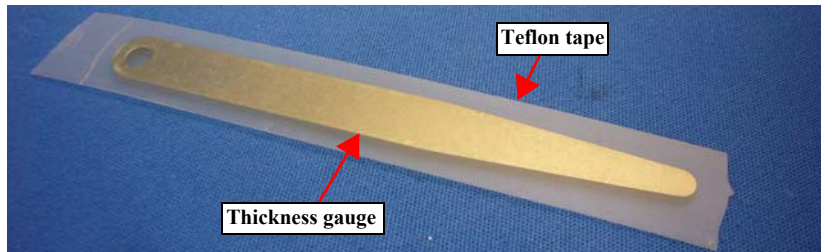
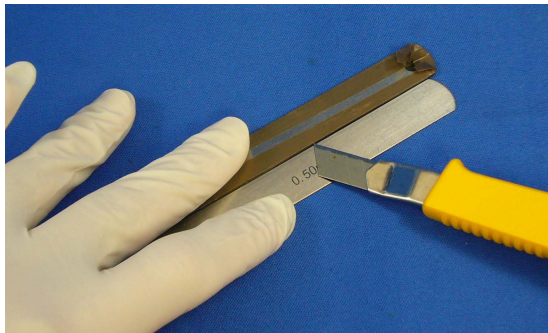


Figure 4-1. Modification of Thickness Gauge (1)

3. Fold the excess portions of Teflon tape along the edges of the thickness gauge, and trim the portions at about the center in the thickness direction of the sides.



**When trimming the Teflon tape, the Teflon tape can be easily cut out by guiding the half thickness gauge.**



- Make sure to wear the heavy gloves to prevent the cutter from When trimming, cut in the opposite direction, away from the hand holding the gauge. cutting the hand when trimming the Teflon tape.
- When trimming, cut in the opposite direction, away from the hand holding the gauge.

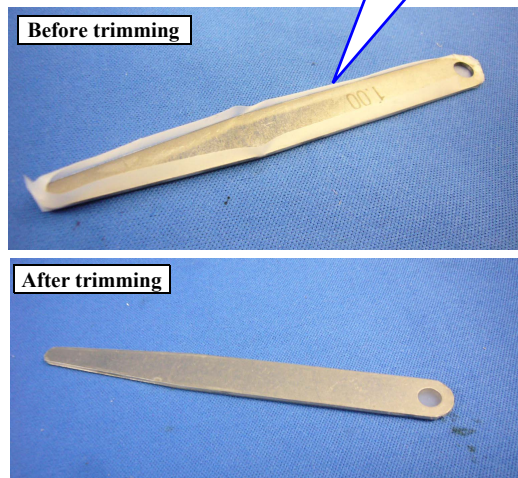
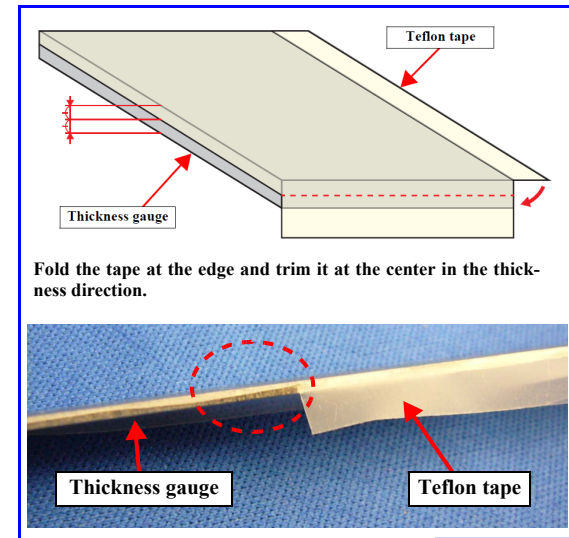


Figure 4-2. Modification of Thickness Gauge (2)

4. Make sure any tears or burrs on the applied Teflon tape, then the modification of thickness gauges is complete.

### 4.3.1.2 Confirmation procedure



When performing the PG adjustment, make sure of the following.

- Move the CR Unit by pulling the CR timing belt.
- Be careful not to damage the nozzle surface of the Printhead with the thickness gauge.
- When make the Printhead touch the thickness gauge, be careful not to let the Printhead run onto the gauge.

1. Move the CR Unit in the middle of the printer.
2. Place the 1.40 mm (1.32 mm + 0.08 mm) thickness gauges protected with Teflon tape on the points shown below.
3. Move the CR Unit to the right and to the left to make sure that the CR Unit does not touch the gauges. If it touches a gauge, the PG is narrower than the standard. In such a case, reassemble the Printer Mechanism.
4. Move the CR Unit back in the middle of the printer and place the 1.90 mm (1.82 mm+0.08 mm) thickness gauges protected with Teflon tape on the same points as in Step 2.
5. Move the CR Unit to the right and to the left to make sure that the CR Unit touches the gauges. If it does not touch any gauge, the PG is wider than the standard. In such a case, reassemble the Printer Mechanism.

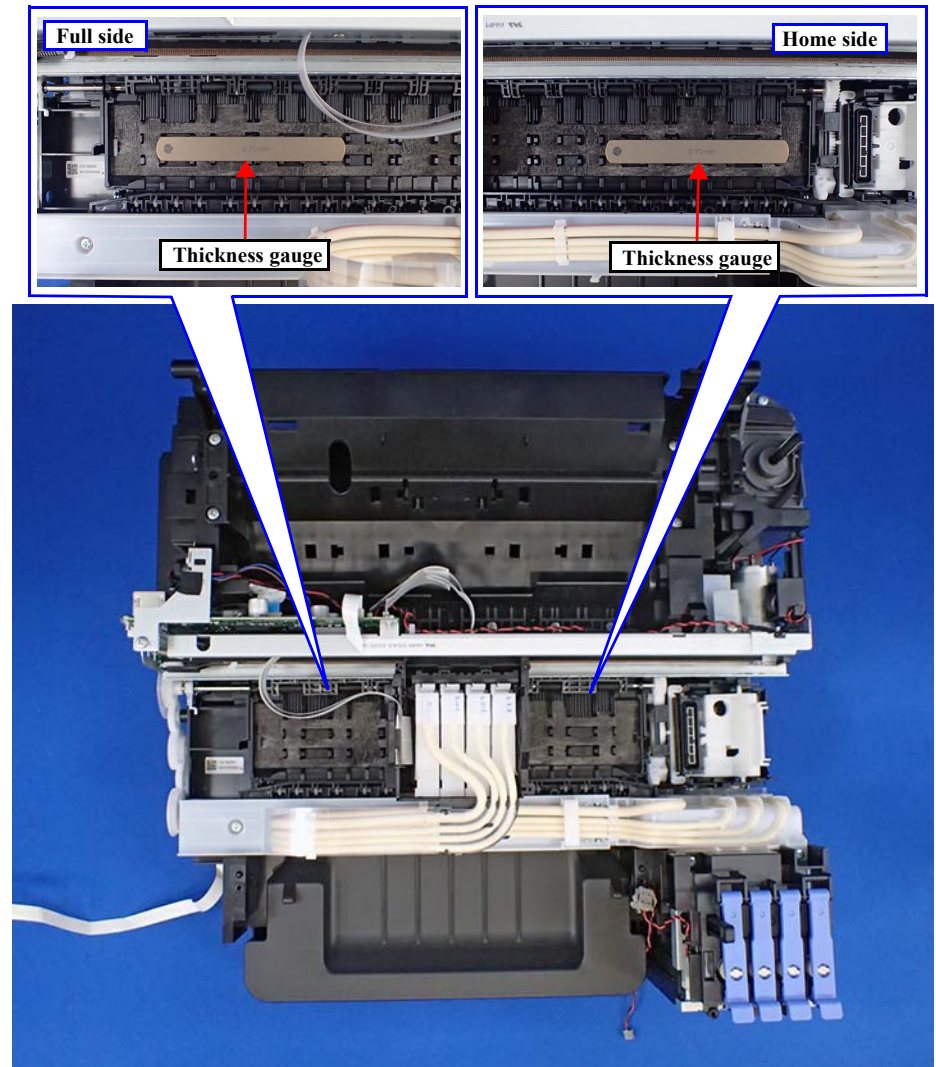


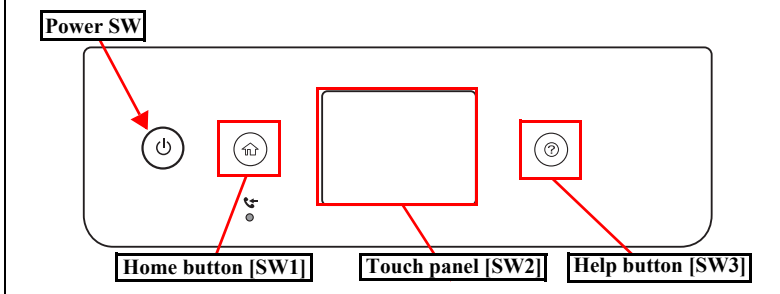
Figure 4-3. Position of the Thickness Gauge

### 4.3.2 Touch Panel Adjustment

- Purpose  
This adjustment is made to adjust the relative positions between the LCD screen and the touch panel detection coordinates.
- Tools  
Touch pen (without a sharp end such as a plastic stick)



**You can operate selection of each menu, etc. by pressing the following buttons while in the service support mode**



- Adjustment Procedure
  1. Start the printer in the service support mode referring to "[Service Support Mode startup and operating procedures \(p56\)](#)"
  2. Press the help button, select "Touch Screen Calibration" in the screen displayed, and tap the touch panel [SW2].

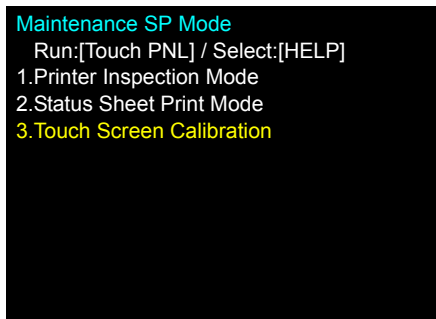


Figure 4-4. Touch panel adjustment (1)

3. Tap the touch panel [SW2] and display the adjustment screen. To cancel, press the help button [SW3].

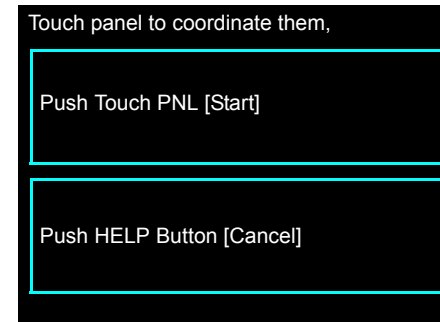


Figure 4-5. Touch panel adjustment (2)

4. Press "+" indicated on the four corners of the touch panel one by one with a touch pen.



Figure 4-6. Touch panel adjustment (3)

5. If you retry the adjustment, press the help button [SW3] and repeat this procedure from [Step 3](#). When saving the result of the adjustment, tap the touch panel [SW2].

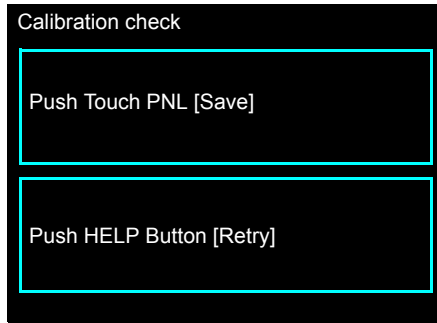


Figure 4-7. Touch panel adjustment (4)

6. Press four “+” symbols indicated with the touch pen.



Figure 4-8. Touch panel adjustment (5)

7. When “Complete!” appears on the LCD, end the adjustment by tapping the touch panel [SW2].

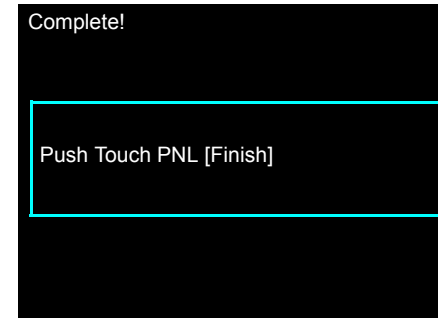


Figure 4-9. Touch panel adjustment (6)

8. When “Retry Check” appears on the LCD, retry from [Step 6](#) by tapping the touch panel [SW2].

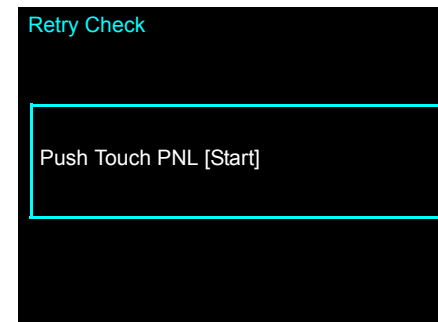


Figure 4-10. Touch panel adjustment (7)

CHAPTER

5

**MAINTENANCE**

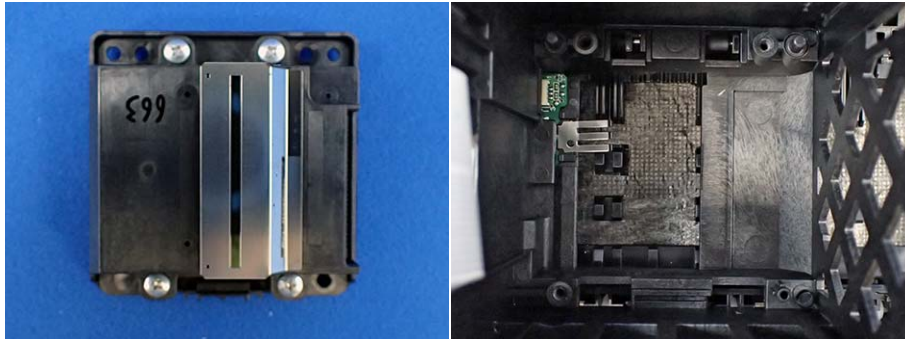
## 5.1 Cleaning

### 5.1.1 Cleaning the CR Unit

Ink may be attached on the CR Unit by structure of Printhead ( $\mu$ TFP head) and CR Unit.

So, head short circuit may arise due to ink attachment on the terminal of the Head FFC when replacing the Printhead.

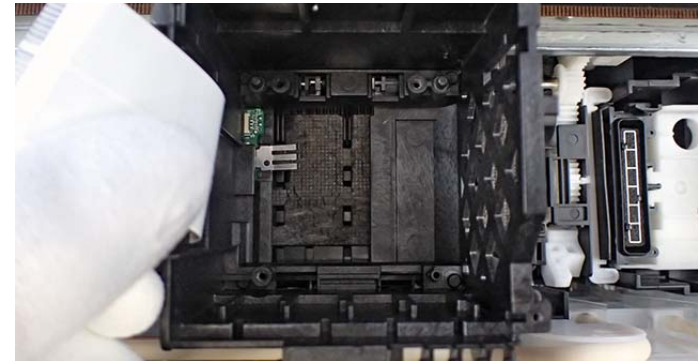
To prevent this phenomenon, cleaning procedure of the CR Unit is described below.



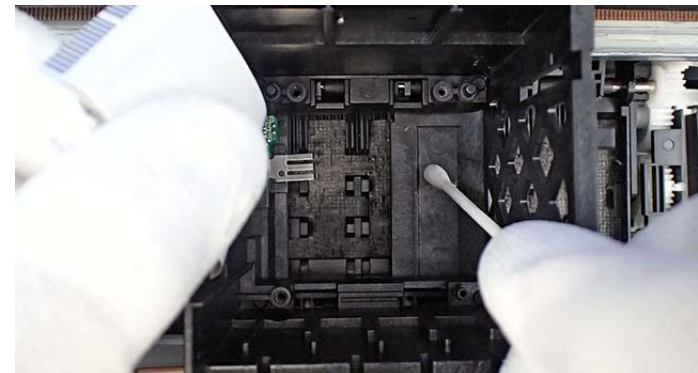
- This cleaning should be carried out only when replacing the Printhead.
- When installing the Printhead, make sure the Head FFC is not contaminated with ink beforehand.

- Tool: Cotton swab or soft dry dust-free cloth
- Cleaning procedure

1. After pulling out the Head FFC while holding the Printhead from the carriage, confirm the ink attachment on the CR Unit.



2. If ink attached on the CR Unit, wipe it off with a cotton swab (or a soft dry dust-free cloth).



## 5.1.2 Cleaning the Exterior Parts/inside of the printer

This section describes how to clean the sections other than the carriage.

- Instructions for cleaning
  - Exterior parts such as housing  
Wipe dirt off with a soft clean cloth moistened with water. For glossy or transparent parts, use of unwoven cloth is recommended to avoid scratching those parts.
  - Inside of the printer  
Remove paper dust with a vacuum cleaner.
  - Rubber or plastic rollers such as an LD Roller used to feed paper  
If paper dust or the like adhered to the rollers decreases the frictional force of the rollers and causes paper feed problems, moisten a cloth with water or diluted alcohol and wring the water out, then wipe the dust off the roller using the cloth.
- Instructions for cleaning ink stains  
Wipe the stains off with a cloth wrung out of diluted alcohol.



- **Do not use alcohol for cleaning the transparent parts. Doing so may cause them to get cloudy.**
- **When wiping paper dust off the Pick Up Roller / Intermediate Roller/LD Roller, be careful not to rub against the surface asperity.**
- **To minimize the effect on the parts, use diluted alcohol such as 70% diluted ether.**
- **After using alcohol for cleaning, make sure to wipe the part off with a soft dry dust-free cloth to remove alcohol traces fully.**

## 5.2 Lubrication

The type and amount of the grease used to lubricate the printer parts are determined based on the results of the internal evaluations. Therefore, refer to "[5.2.1 Lubrication Points and Instructions \(p139\)](#)" for the repairing procedures below, and apply the specified type and amount of the grease to the specified part of the printer mechanism.

"[5.2.1 Lubrication Points and Instructions \(p139\)](#)" also provides information about whether or not the parts which require lubrication are supplied as ASP and the lubrication status when supplied as ASP. For the parts which are not supplied as ASP, if their movement is not smooth enough, check their lubrication status and lubricate them if necessary.

- Grease

| Type   | Name | EPSON Part Code | Supplier |
|--------|------|-----------------|----------|
| Grease | G-45 | 1033657         | EPSON    |
| Grease | G-96 | 1590700         | EPSON    |
| Grease | G-97 | 1635441         | EPSON    |

- Tools

| Name           | Availability | EPSON Part Code |
|----------------|--------------|-----------------|
| Injector       | O *          | ---             |
| Brush          | O *          | ---             |
| Flux dispenser | O *          | ---             |

Note "O\*": Use tools whose specifications are specified in "[5.2.1 Lubrication Points and Instructions \(p139\)](#)"

### 5.2.1 Lubrication Points and Instructions

|   |  |
|---|--|
| <b>&lt;Part supply as ASP&gt;</b><br>None   | <b>&lt;Lubrication status when supplied as ASP&gt;</b><br>Not lubricated |
| <b>&lt;Lubrication Point&gt;</b><br>Cassette sliding parts of Frame Base Center   |  |
| <b>&lt;Type&gt;</b><br>G-96   |  |
| <b>&lt;Application Amount&gt;</b><br>Appropriate amount   |  |
| <b>&lt;Remarks&gt;</b><br><input type="checkbox"/> Apply with flux dispenser.<br><input type="checkbox"/> Stir G-96 before use. |  |

Figure 5-1. Lubricating Frame Base Assy (1)

|   |  |
|---|--|
| <b>&lt;Part supply as ASP&gt;</b><br>None   | <b>&lt;Lubrication status when supplied as ASP&gt;</b><br>Not lubricated |
| <b>&lt;Lubrication Point&gt;</b><br>Stacker sliding parts of Frame Base Center  |  |
| <b>&lt;Type&gt;</b><br>G-96   |  |
| <b>&lt;Application Amount&gt;</b><br>Appropriate amount   |  |
| <b>&lt;Remarks&gt;</b><br><input type="checkbox"/> Apply with flux dispenser.<br><input type="checkbox"/> Stir G-96 before use. |  |

Figure 5-2. Lubricating Frame Base Assy (2)

|  |  |
|--|--|
| <b>&lt;Part supply as ASP&gt;</b><br>None  | <b>&lt;Lubrication status when supplied as ASP&gt;</b><br>Not lubricated |
| <b>&lt;Lubrication Point&gt;</b><br>Around the hole to which Pick up Release Lever of Frame Base Right is attached (two points)  |  |
| <b>&lt;Type&gt;</b><br>G-97  |  |
| <b>&lt;Application Amount&gt;</b><br>0.1 g<br>(Size of a grain of rice)  |  |
| <b>&lt;Remarks&gt;</b><br><input type="checkbox"/> After applying with injector, spread it with a brush.<br><input type="checkbox"/> No excess lubrication on other parts. |  |

Figure 5-3. Lubricating Frame Base Assy (3)

|   |  |
|---|--|
| <b>&lt;Part supply as ASP&gt;</b><br>None   | <b>&lt;Lubrication status when supplied as ASP&gt;</b><br>Not lubricated |
| <b>&lt;Lubrication Point&gt;</b><br>1. Contact points between PF Roller and Frame Base Left/Right (four points)<br>2. Contact points between EJ Roller and Frame Base Left/Right (six points) |  |
| <b>&lt;Type&gt;</b><br>G-97   |  |
| <b>&lt;Application Amount&gt;</b><br>0.05 g each  |  |
| <b>&lt;Remarks&gt;</b><br><input type="checkbox"/> Apply with injector.<br><input type="checkbox"/> No excess lubrication on other parts.   |  |

Figure 5-4. Lubricating Frame Base Assy (4)

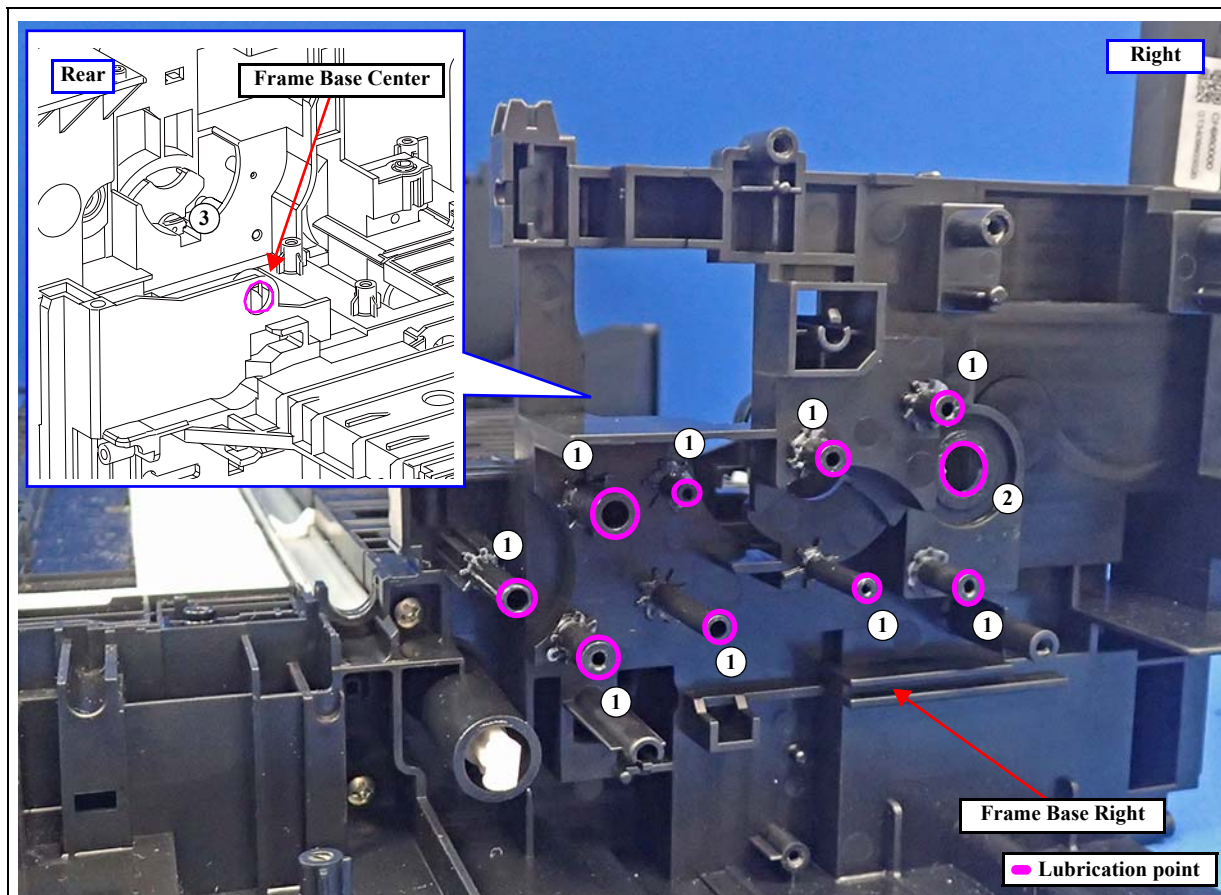


Figure 5-5. Lubricating Frame Base Assy (5)

|  |
|--|
| <Part supply as ASP><br>None   |
| <Lubrication status when supplied as ASP><br>Not lubricated  |
| <Lubrication Point><br>1. Nine shafts on Frame Base Right (one round to each shaft)<br>2. Hole on Frame Base Right (one round inside of each hole)<br>3. Hole on Frame Base Center (one round inside of each hole) |
| <Type><br>G-97   |
| <Application Amount><br>0.05 g each  |
| <Remarks><br><input type="checkbox"/> Apply with injector.<br><input type="checkbox"/> No excess lubrication on other parts.   |

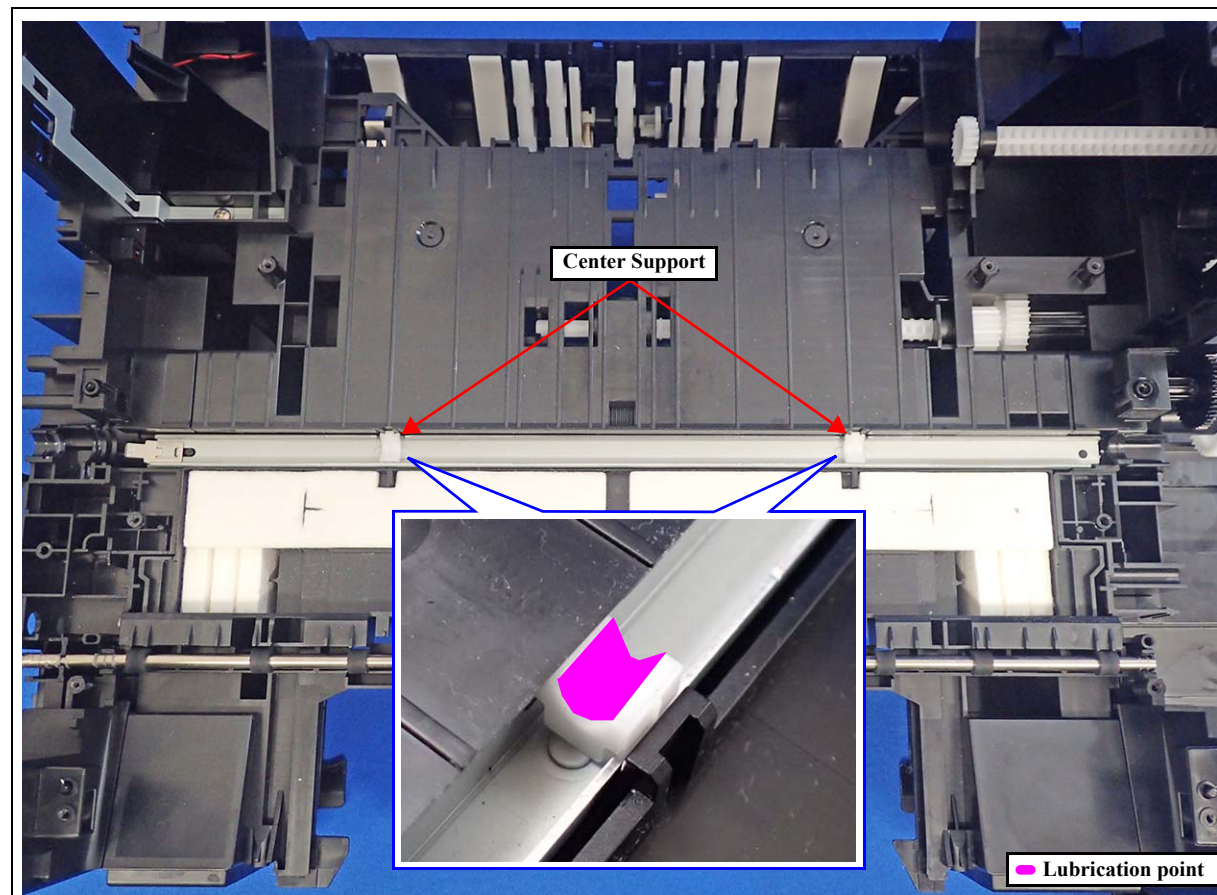


Figure 5-6. Lubricating Center Support

|  |
|--|
| <Part supply as ASP><br>None   |
| <Lubrication status when supplied as ASP><br>Not lubricated  |
| <Lubrication Point><br>Contact points between PF Roller and Center Support (two points)                            |
| <Type><br>G-96   |
| <Application Amount><br>Appropriate amount   |
| <Remarks><br><input type="checkbox"/> Apply with flux dispenser.<br><input type="checkbox"/> Stir G-96 before use. |

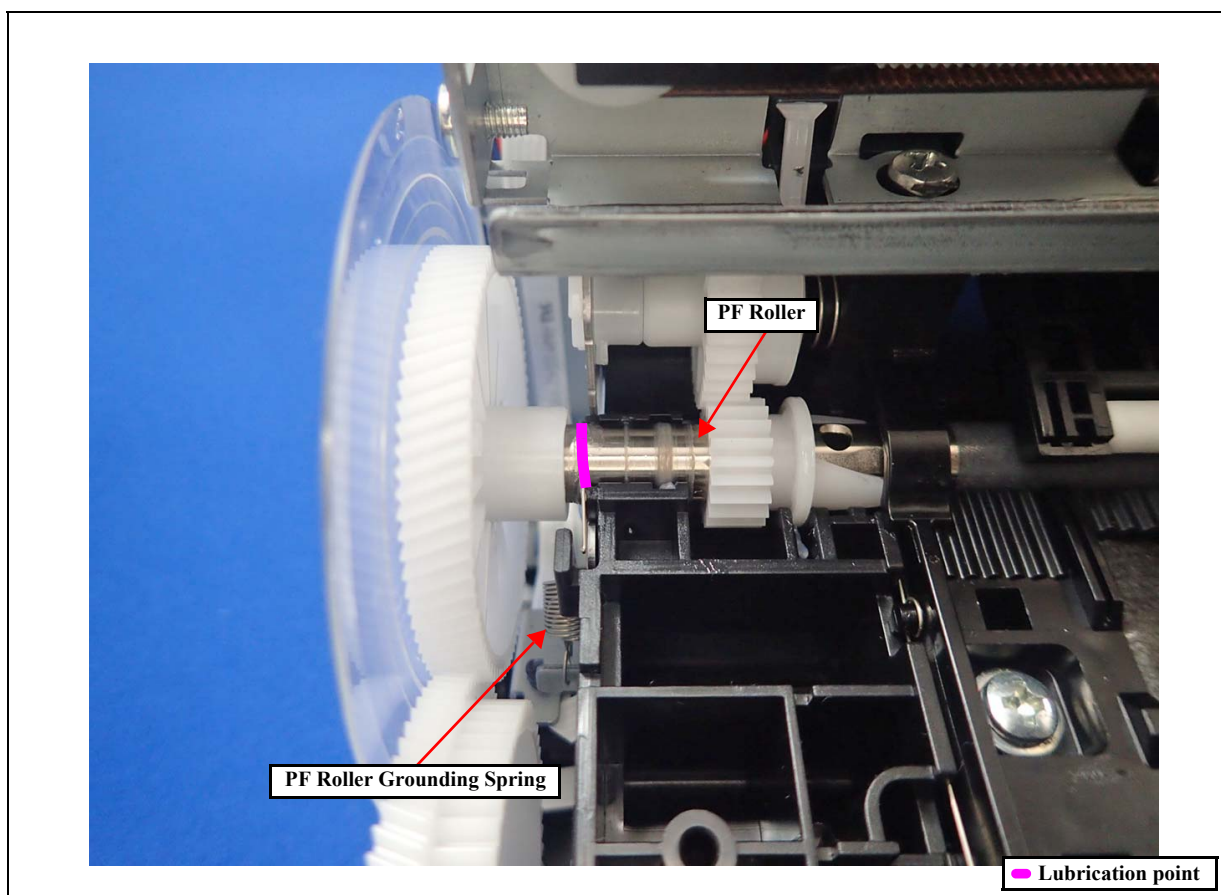


Figure 5-7. Lubricating PF Roller

|  |
|--|
| <Part supply as ASP><br>None   |
| <Lubrication status when supplied as ASP><br>Not lubricated  |
| <Lubrication Point><br>Contact point of PF Roller and PF Roller Grounding Spring   |
| <Type><br>G-97   |
| <Application Amount><br>0.05 g   |
| <Remarks><br><input type="checkbox"/> Apply with injector.<br><input type="checkbox"/> No excess lubrication on other parts. |

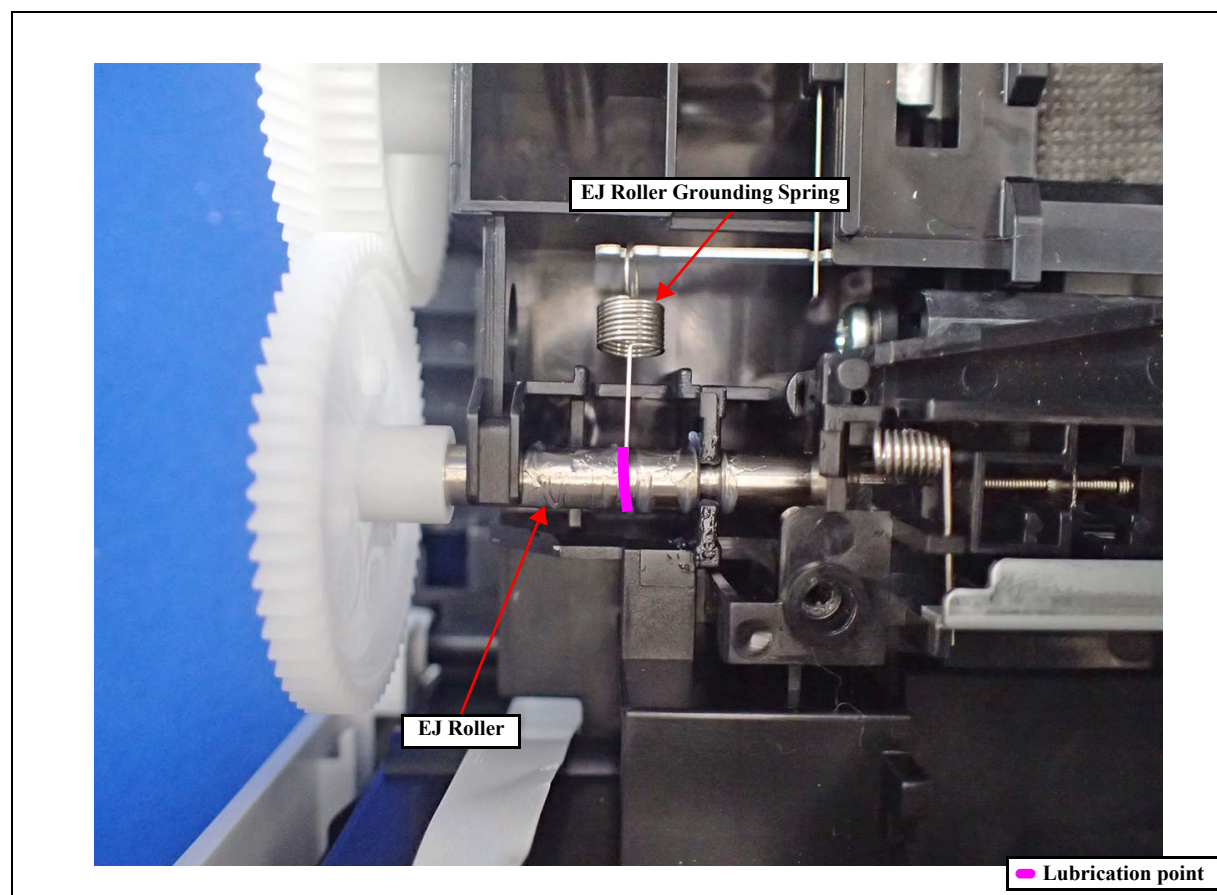


Figure 5-8. Lubricating EJ Roller

|  |
|--|
| <Part supply as ASP><br>None   |
| <Lubrication status when supplied as ASP><br>Not lubricated  |
| <Lubrication Point><br>Contact point of EJ Roller and Grounding Spring   |
| <Type><br>G-97   |
| <Application Amount><br>0.05 g   |
| <Remarks><br><input type="checkbox"/> Apply with injector.<br><input type="checkbox"/> No excess lubrication on other parts. |

|   |
|---|
| <p>&lt;Part supply as ASP&gt;<br/>None</p> <p>&lt;Lubrication status when supplied as ASP&gt;<br/>Not lubricated</p> <p>&lt;Lubrication Point&gt;</p> <ol style="list-style-type: none"> <li>1. Contact points between Driven Pulley Holder and Main Frame (eight points)</li> <li>2. Shaft hole of Driven Pulley</li> <li>3. Bush on Driven Pulley Holder</li> </ol> <p>&lt;Type&gt;<br/>G-97</p> <p>&lt;Application Amount&gt;<br/>0.002 g</p> <p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Apply with injector.</li> <li><input type="checkbox"/> No excess lubrication on other parts.</li> </ul> |
|---|

Figure 5-9. Lubricating CR Driven Pulley

|   |
|---|
| <p>&lt;Part supply as ASP&gt;<br/>None</p> <p>&lt;Lubrication status when supplied as ASP&gt;<br/>Not lubricated</p> <p>&lt;Lubrication Point&gt;<br/>Contact points with Main Frame and Change Slider (four points)</p> <p>&lt;Type&gt;<br/>G-97</p> <p>&lt;Application Amount&gt;<br/>Appropriate amount</p> <p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Apply with injector.</li> <li><input type="checkbox"/> No excess lubrication on other parts.</li> </ul> |
|---|

Figure 5-10. Lubricating Main Frame (1)

|   |
|---|
| <p>&lt;Part supply as ASP&gt;<br/>None</p> <p>&lt;Lubrication status when supplied as ASP&gt;<br/>Not lubricated</p> <p>&lt;Lubrication Point&gt;<br/>Contact points with the Main Frame and the CR Unit (four points)</p> <p>&lt;Type&gt;<br/>G-97</p> <p>&lt;Application Amount&gt;<br/>0.20 g - 0.25 g</p> <p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> After applying with injector in the procedure given below, rub off excess grease.</li> <li>1. Lubricate the part indicated by (1).</li> <li>2. Move CR Unit to the center and lubricate Full side of (2)(3)(4).</li> <li>3. Move CR Unit to the edge of full side</li> <li>4. Lubricate home side of (2)(3)(4).</li> </ul> |
|---|

Figure 5-11. Lubricating Main Frame (2)

|  |
|--|
| <p>&lt;Part supply as ASP&gt;<br/>None</p> <p>&lt;Lubrication status when supplied as ASP&gt;<br/>Not lubricated</p> <p>&lt;Lubrication Point&gt;<br/>Main Frame</p> <p>&lt;Type&gt;<br/>G-97</p> <p>&lt;Application Amount&gt;<br/>0.05 g</p> <p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> After applying with injector, spread it with a brush.</li> <li><input type="checkbox"/> No excess lubrication on other parts.</li> </ul> |
|--|

Figure 5-12. Lubricating Main Frame (3)

|  |  |
|--|--|
|  | <p>&lt;Part supply as ASP&gt;<br/>None</p> <p>&lt;Lubrication status when supplied as ASP&gt;<br/>Not lubricated</p>   |
|  | <p>&lt;Lubrication Point&gt;<br/>Contact points between Pick up Roller Assy and roller shaft (15 points)</p>   |
|  | <p>&lt;Type&gt;<br/>G-96</p>   |
|  | <p>&lt;Application Amount&gt;<br/>Appropriate amount</p>   |
|  | <p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Apply with flux dispenser.</li> <li><input type="checkbox"/> Stir G-96 before use.</li> </ul> |

Figure 5-13. Lubricating Pick Up Roller Assy

|  |  |
|--|--|
|  | <p>&lt;Part supply as ASP&gt;<br/>None</p> <p>&lt;Lubrication status when supplied as ASP&gt;<br/>Not lubricated</p>   |
|  | <p>&lt;Lubrication Point&gt;</p> <ol style="list-style-type: none"> <li>1. Contact point between ASF Hopper Assy and LD Roller Shaft (one point)</li> <li>2. Contact point between LD Roller Shaft and Paper Back Lever (one point)</li> </ol>               |
|  | <p>&lt;Type&gt;<br/>G-97</p>   |
|  | <p>&lt;Application Amount&gt;</p> <ol style="list-style-type: none"> <li>1. Range of 7 mm from the edge shown in the left figure (0.05 g)</li> <li>2. Tip part shown in the left figure (0.05 g)</li> </ol>  |
|  | <p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> After applying with injector, spread grease by rotating LD Roller Shaft clockwise.</li> <li><input type="checkbox"/> No excess lubrication on other parts.</li> </ul> |

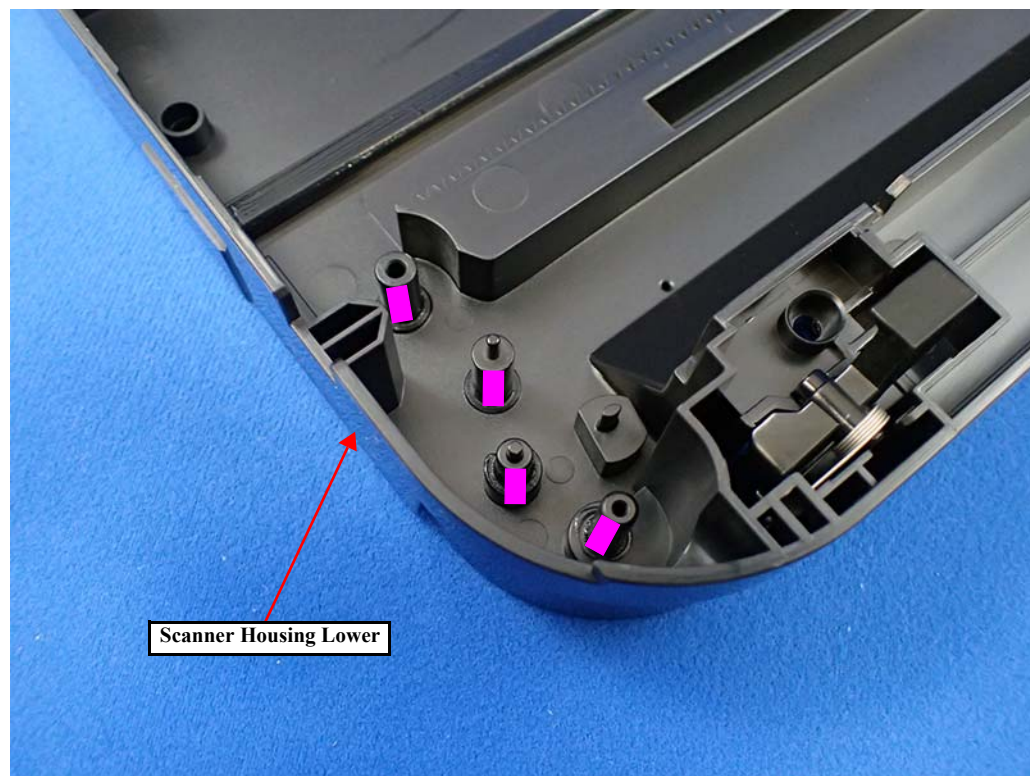
Figure 5-14. Lubricating ASF Hopper Assy/Paper Back Lever

|  |  |
|--|--|
|  | <p>&lt;Part supply as ASP&gt;<br/>None</p> <p>&lt;Lubrication status when supplied as ASP&gt;<br/>Not lubricated</p>   |
|  | <p>&lt;Lubrication Point&gt;</p> <ol style="list-style-type: none"> <li>1. Bush of LD Holder (three points)</li> <li>2. Contact points between Holder LD Assy and LD Roller Shaft (one point)</li> </ol> |
|  | <p>&lt;Type&gt;<br/>G-96</p>   |
|  | <p>&lt;Application Amount&gt;<br/>Appropriate amount</p>   |
|  | <p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Apply with flux dispenser.</li> <li><input type="checkbox"/> Stir G-96 before use.</li> </ul>                     |

Figure 5-15. Lubricating Holder LD Assy

|  |  |
|--|--|
|  | <p>&lt;Part supply as ASP&gt;<br/>Supplied as the Scanner Unit</p> <p>&lt;Lubrication status when supplied as ASP&gt;<br/>Lubricated</p>   |
|  | <p>&lt;Lubrication Point&gt;<br/>Guide rail section of SCN Housing Lower (six points)</p>  |
|  | <p>&lt;Type&gt;<br/>G-45</p>   |
|  | <p>&lt;Application Amount&gt;<br/>0.03 g each</p>  |
|  | <p>&lt;Remarks&gt;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Lubricate in the procedure given below</li> <li>1. Apply grease with injector to six points shown in the left figure.</li> <li>2. Using a brush, spread grease side to side three times as shown by the arrows.</li> <li><input type="checkbox"/> Be careful not to lubricate parts other than specified part and rub off excess grease.</li> </ul> |

Figure 5-16. Lubricating Scanner Housing Lower (1)

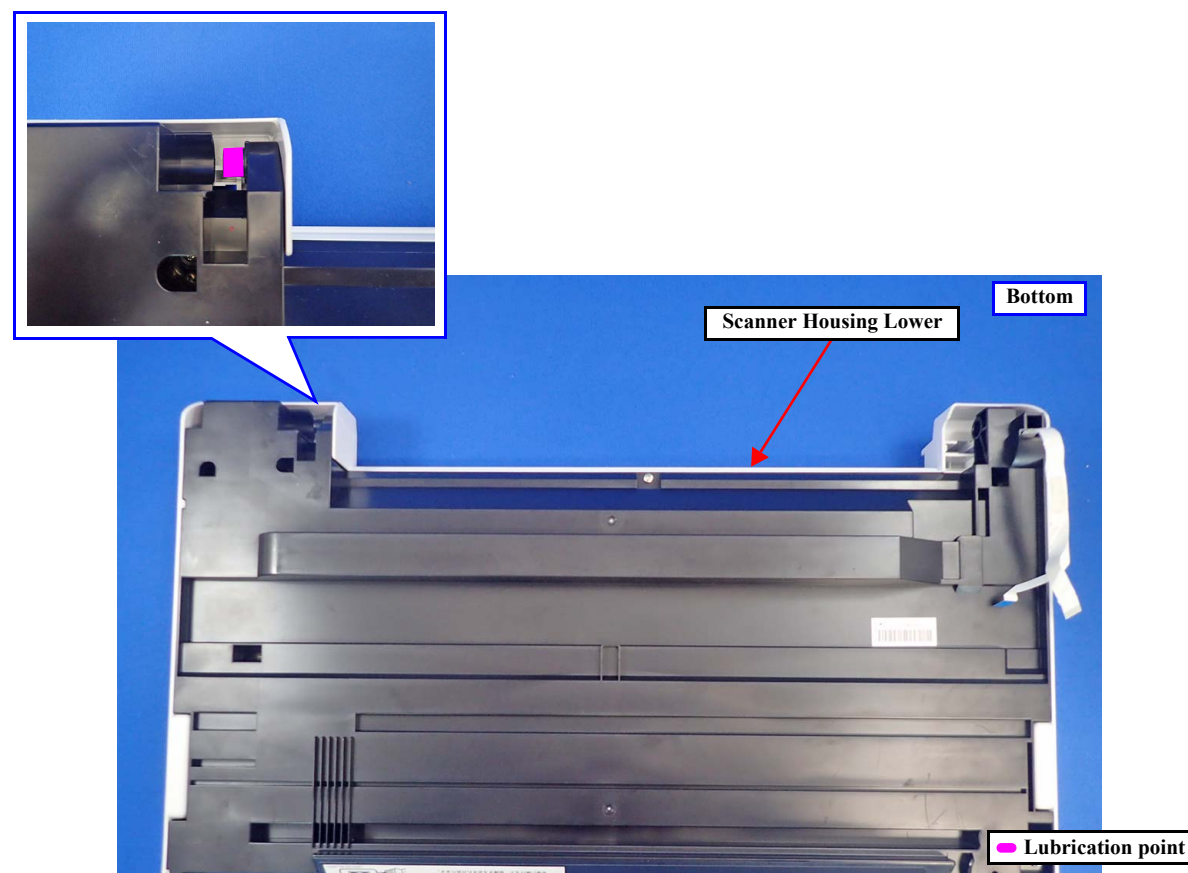


Scanner Housing Lower

● Lubrication point

<Part supply as ASP>  
Supplied as the Scanner Unit  
<Lubrication status when supplied as ASP>  
Lubricated  
<Lubrication Point>  
Shaft part of Scanner Housing Lower (four points)  
<Type>  
G-45  
<Application Amount>  
Φ1 mm x 5 mm  
<Remarks>  
 Apply with injector.  
 Be careful not to lubricate parts other than specified part and rub off excess grease.

Figure 5-17. Lubricating Scanner Housing Lower (2)



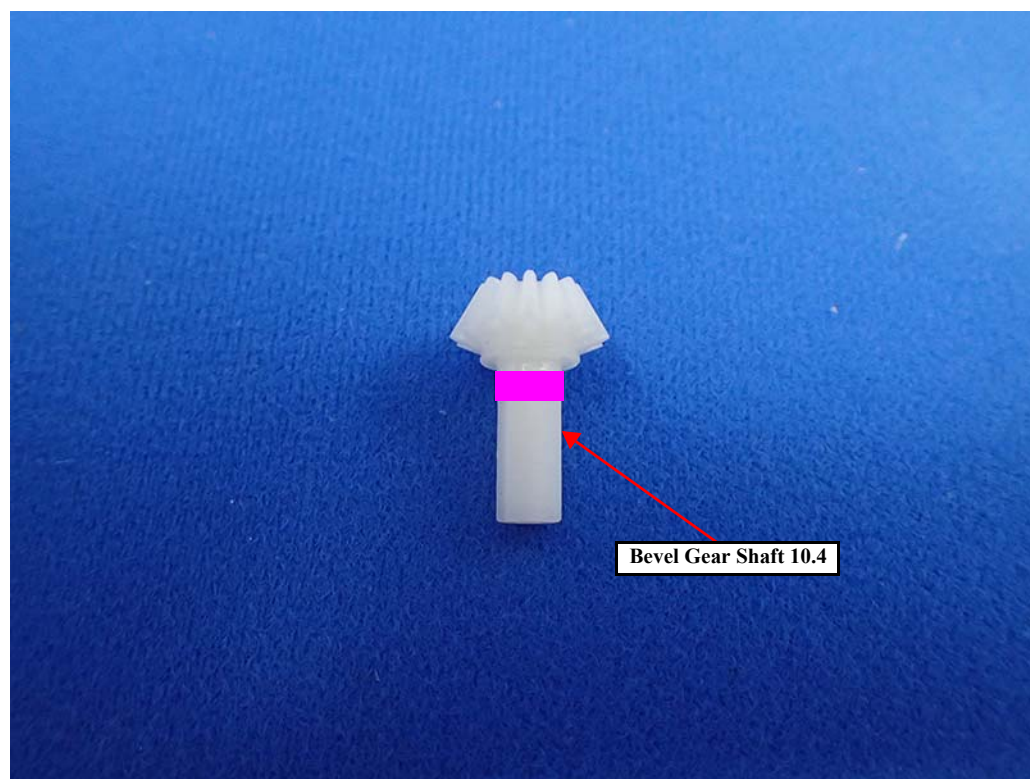
Scanner Housing Lower

Bottom

● Lubrication point

<Part supply as ASP>  
Supplied as the Scanner Unit  
<Lubrication status when supplied as ASP>  
Lubricated  
<Lubrication Point>  
Dowel on the right side of the Scanner Housing Lower  
<Type>  
G-97  
<Application Amount>  
0.02 g  
<Remarks>  
 After applying with injector, spread it with a brush.  
 No excess lubrication on other parts.

Figure 5-18. Lubricating Scanner Housing Lower (3)

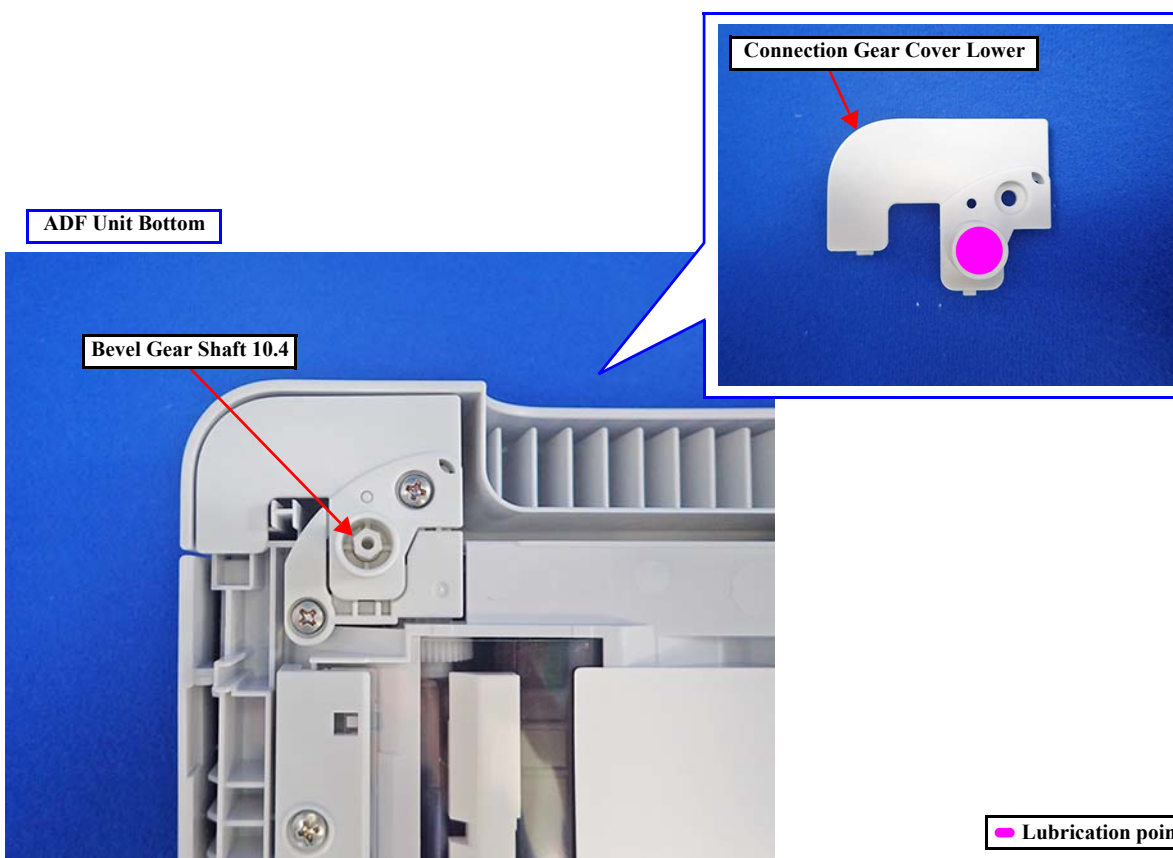


Bevel Gear Shaft 10.4

● Lubrication point

<Part supply as ASP>  
Supplied as the ADF Unit  
<Lubrication status when supplied as ASP>  
Lubricated  
<Lubrication Point>  
Shaft part of Bevel Gear Shaft 10.4  
<Type>  
G-97  
<Application Amount>  
0.03 g  
<Remarks>  
Be careful not to lubricate parts other than specified part and rub off excess grease.

Figure 5-19. Lubricating ADF Unit (1)



ADF Unit Bottom

Bevel Gear Shaft 10.4

Connection Gear Cover Lower

● Lubrication point

<Part supply as ASP>  
Supplied as the ADF Unit  
<Lubrication status when supplied as ASP>  
Lubricated  
<Lubrication Point>  
Inside shaft hole of Connection Gear Cover Lower  
<Type>  
G-96  
<Application Amount>  
Appropriate amount  
<Remarks>  
 Apply with flux dispenser.  
 Stir G-96 before use.

Figure 5-20. Lubricating ADF Unit (2)

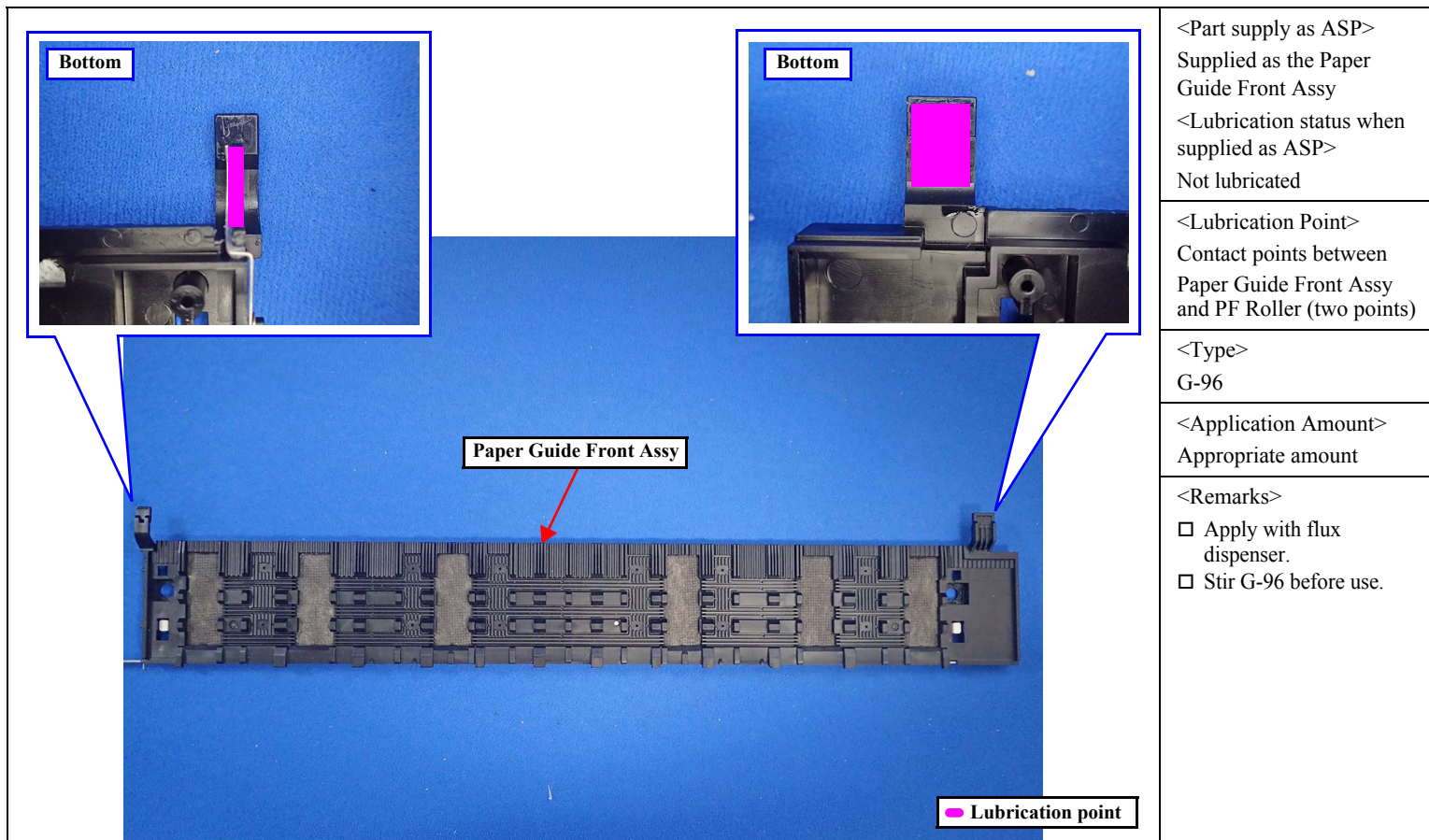


Figure 5-21. Lubricating Paper Guide Front Assy

<Part supply as ASP>  
Supplied as the Paper Guide Front Assy  
<Lubrication status when supplied as ASP>  
Not lubricated

<Lubrication Point>  
Contact points between Paper Guide Front Assy and PF Roller (two points)

<Type>  
G-96

<Application Amount>  
Appropriate amount

<Remarks>  
 Apply with flux dispenser.  
 Stir G-96 before use.

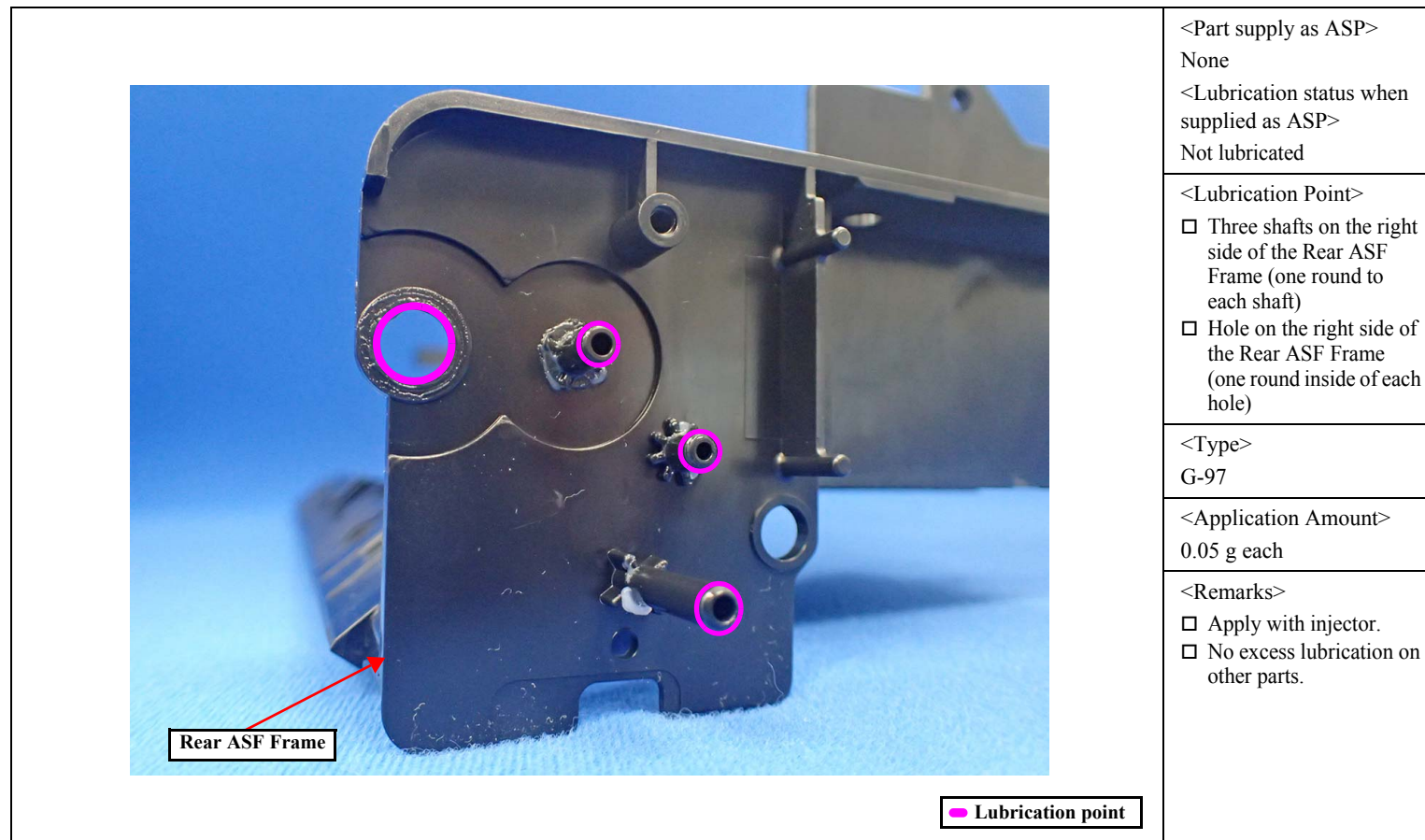


Figure 5-22. Lubricating Rear ASF Frame (1)

<Part supply as ASP>  
None  
<Lubrication status when supplied as ASP>  
Not lubricated

<Lubrication Point>  
 Three shafts on the right side of the Rear ASF Frame (one round to each shaft)  
 Hole on the right side of the Rear ASF Frame (one round inside of each hole)

<Type>  
G-97

<Application Amount>  
0.05 g each

<Remarks>  
 Apply with injector.  
 No excess lubrication on other parts.

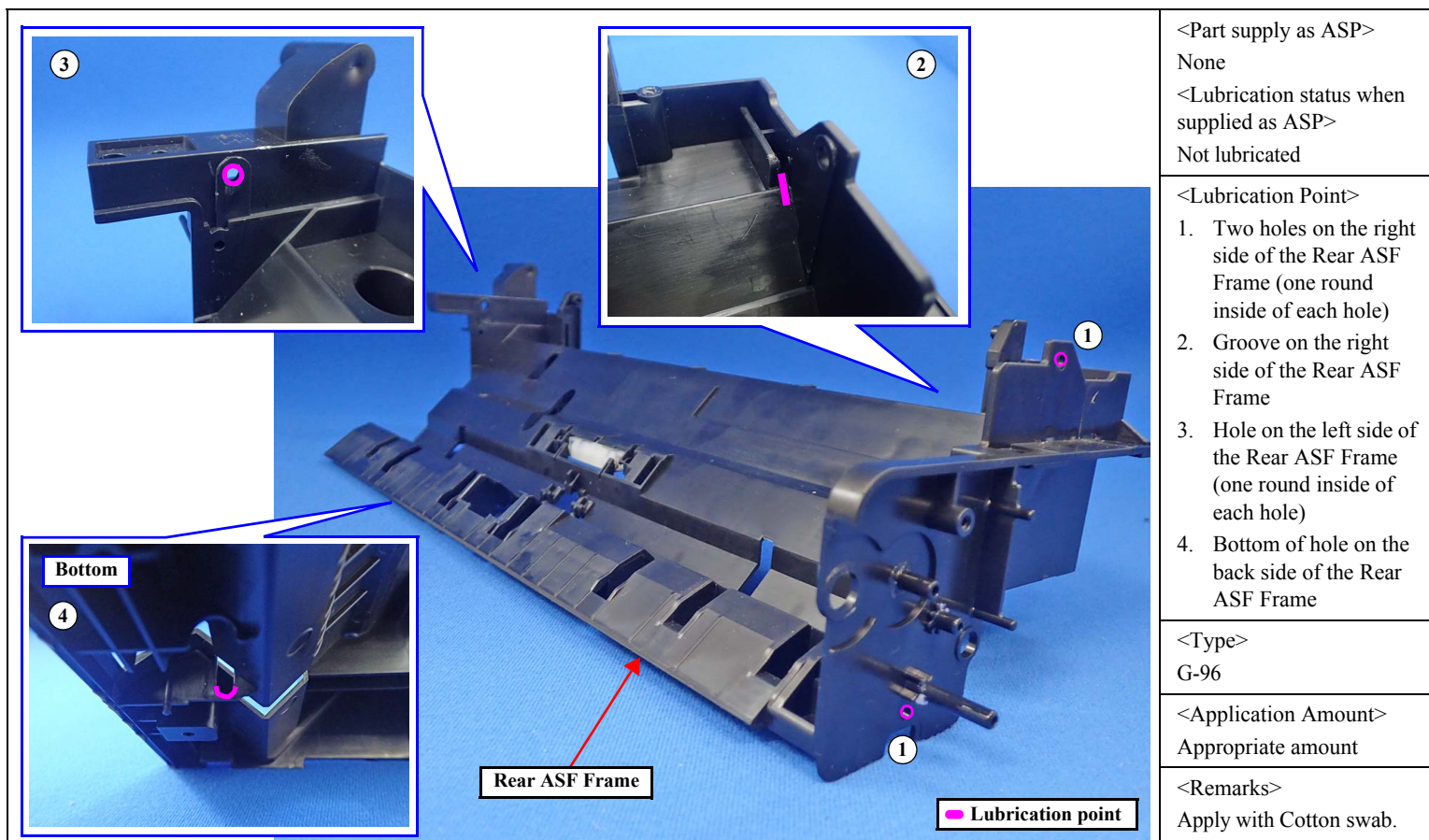


Figure 5-23. Lubricating Rear ASF Frame (2)

<Part supply as ASP>  
None  
<Lubrication status when supplied as ASP>  
Not lubricated

<Lubrication Point>  
1. Two holes on the right side of the Rear ASF Frame (one round inside of each hole)  
2. Groove on the right side of the Rear ASF Frame  
3. Hole on the left side of the Rear ASF Frame (one round inside of each hole)  
4. Bottom of hole on the back side of the Rear ASF Frame

<Type>  
G-96

<Application Amount>  
Appropriate amount

<Remarks>  
Apply with Cotton swab.

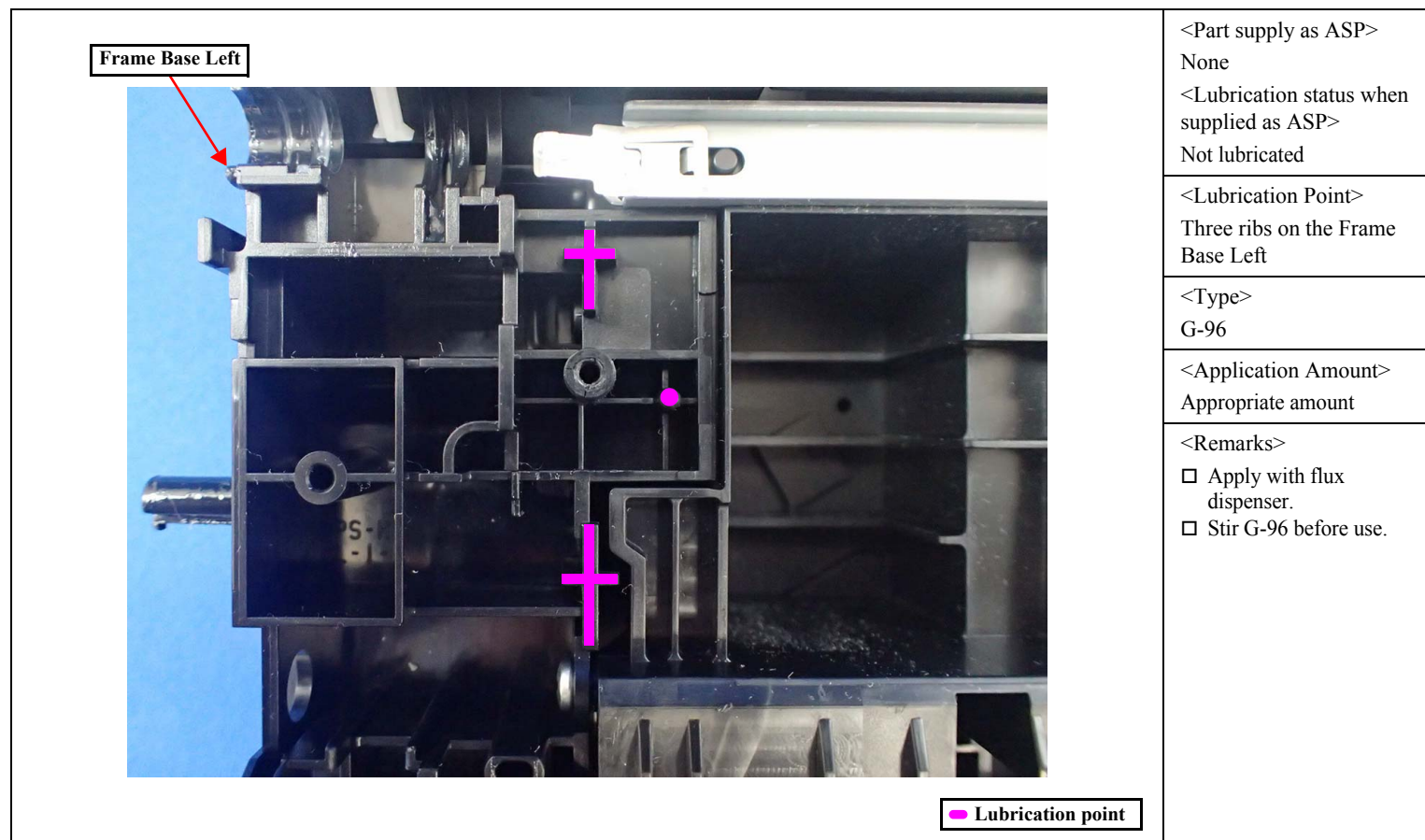


Figure 5-24. Lubricating Frame Base Left (1)

<Part supply as ASP>  
None  
<Lubrication status when supplied as ASP>  
Not lubricated

<Lubrication Point>  
Three ribs on the Frame Base Left

<Type>  
G-96

<Application Amount>  
Appropriate amount

<Remarks>  
 Apply with flux dispenser.  
 Stir G-96 before use.

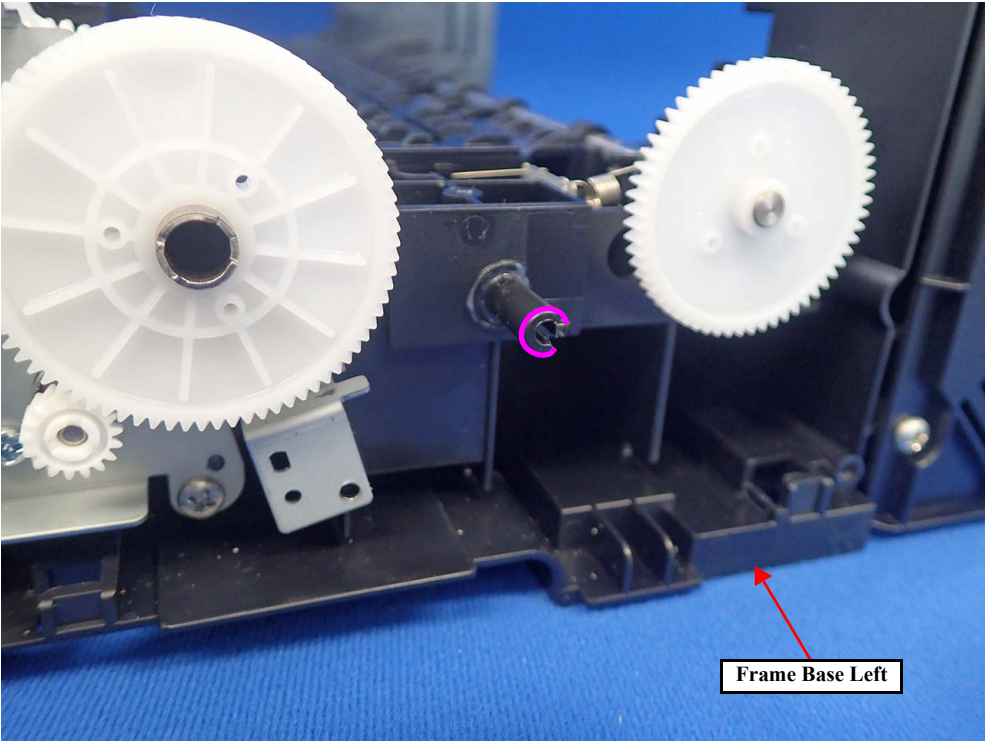

|  |  |   |
|--|--|---|
| Left   |  | <Part supply as ASP><br>None<br><Lubrication status when supplied as ASP><br>Not lubricated |
| <Lubrication Point><br>Shaft on the Frame Base Left (one round to the shaft)   |  |   |
| <Type><br>G-97   |  |   |
| <Application Amount><br>0.05g  |  |   |
| <Remarks><br><input type="checkbox"/> Apply with injector.<br><input type="checkbox"/> No excess lubrication on other parts. |  |   |
|  Lubrication point                         |  |   |

Figure 5-25. Lubricating Frame Base Left (2)

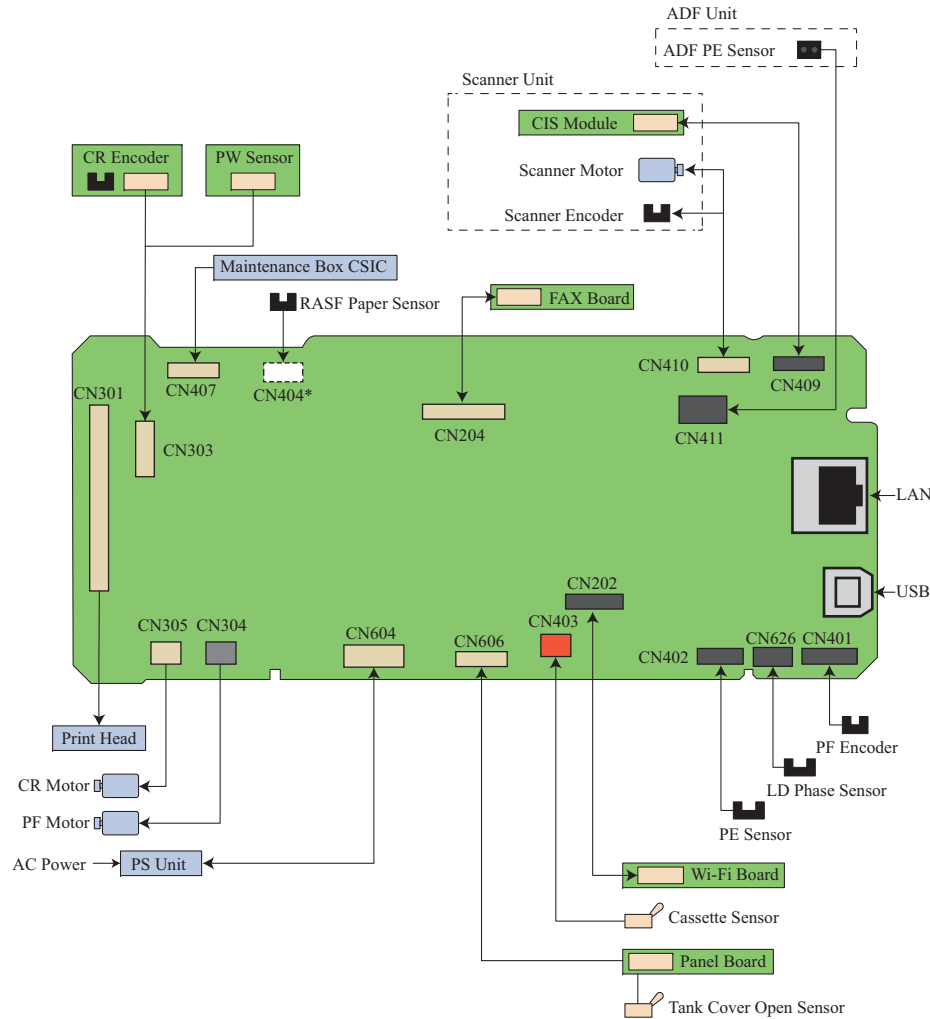
CHAPTER

6

APPENDIX

## 6.1 Connector Diagram

Cable connections of this printer are shown below.



Note "\*": CN404 is on the back face.

Figure 6-1. Connector Diagram

## 6.2 Head Fuse

Head fuse of this printer is shown below.

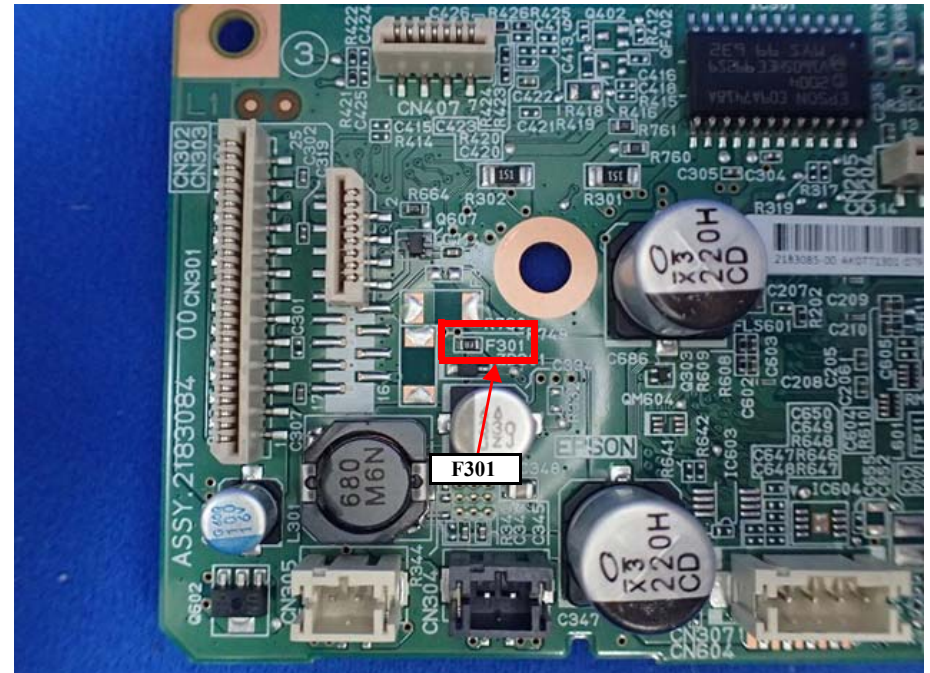


Figure 6-2. Head Fuse

## 6.3 Protection for Transportation

This section explains specific points of note regarding packaging after repairs are completed.



- The Transportation Lock is installed on this product, so when it is returned to the customer, flip the Valve Cam Lever on the Tube Valve Assy over to the printer's front side to set the valve in a closed state.
- In order to prevent the user from forgetting to open the valve, enclose the materials to explain how to open the valve.

### 6.3.1 Securing the Paper Support Rear

- Purpose  
To prevent damaging the Paper Support Rear by shock during transportation.
- Risk if it is not performed  
Damage to the Paper Support Rear due to vibration during transport.
- Preparation
  - A) Prepare a piece of packing tape.  
(Length: 110 mm, width: 14 mm, fold on the end: 5 mm)
  - B) Prepare two pieces of packing tape.  
(Length: 60 mm, width: 14 mm, fold on the end: 5 mm)
- Method
  1. Pull out the Paper Support Rear, and attach the packing tape A as shown on the right.
  2. Retract the Paper Support Rear, and attach the packing tape B as shown on the right.



**Be careful that the packing tape does not overlap product printed portions.**

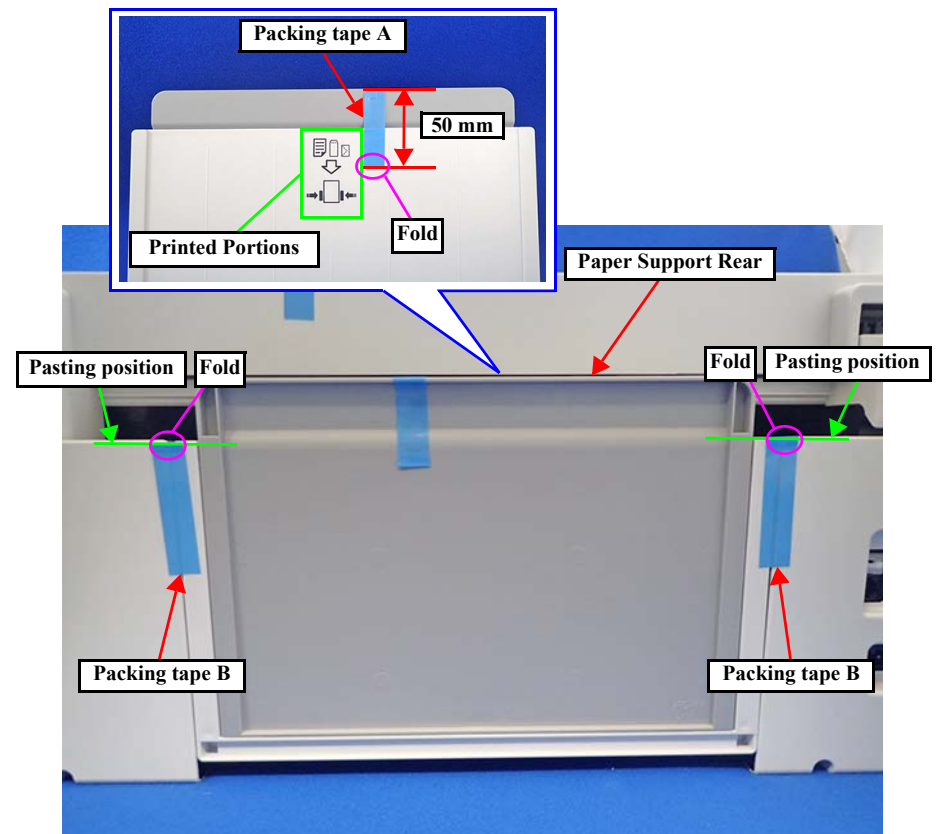


Figure 6-3. Securing the Paper Support Rear

### 6.3.2 Securing the CR Unit

- Purpose  
To prevent damaging the CR Unit by shock during transportation.
- Risk if it is not performed  
Fatal error caused by the damage of the CR Unit.
- Preparation  
Prepare the CR Unit securing tape in the procedure given below.
  1. Prepare two pieces of tape.
    - A) Prepare a piece of packing tape.  
(Length: 250 mm, width: 14 mm, fold on the end: 5 mm)
    - B) Prepare a piece of packing tape.  
(Length: 65 mm, width: 14 mm, fold on the end: 5 mm)
  2. Fold the packaging tape A 90 degrees at the point 70 mm from the unfolded end as shown in the figure.
  3. Fold 90 degrees again as shown in the figure.
  4. Align the unfolded end of the packing tape B with the edge of the packaging tape A shown in the figure, and paste the packaging tape B to the adhesive side of the packaging tape A.

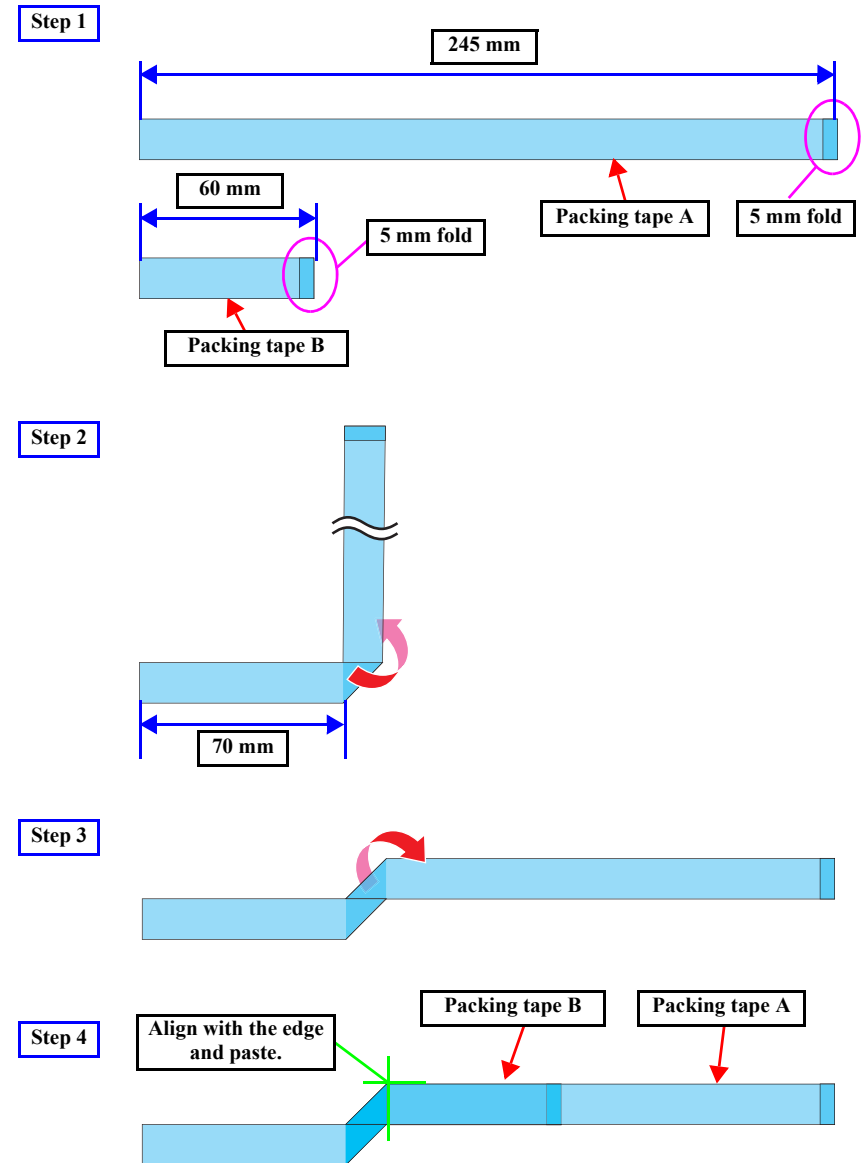


Figure 6-4. Preparing the CR Unit Securing Tape

### ■ Method

1. Align the unfolded end of the CR Unit securing tape with the lower end of the CR Unit and paste the tape.
2. Paste the CR Unit securing tape along the edge of the CR Unit shown in the figure.
3. Set the CR Unit securing tape along the CR Unit and CR Cover, then paste the folded end of the CR Unit securing tape on the side surface of the Housing Right.



- When the product is shipped from user, the label on the CR Cover may be peeled off. Make sure to check the state of the label.
- If the CR Unit is not secured in the method described in this section, the label on the CR Cover may be peeled off and the CR Unit may be damaged. Make sure to follow the given procedure and secure the CR Unit with the CR Unit securing tape.

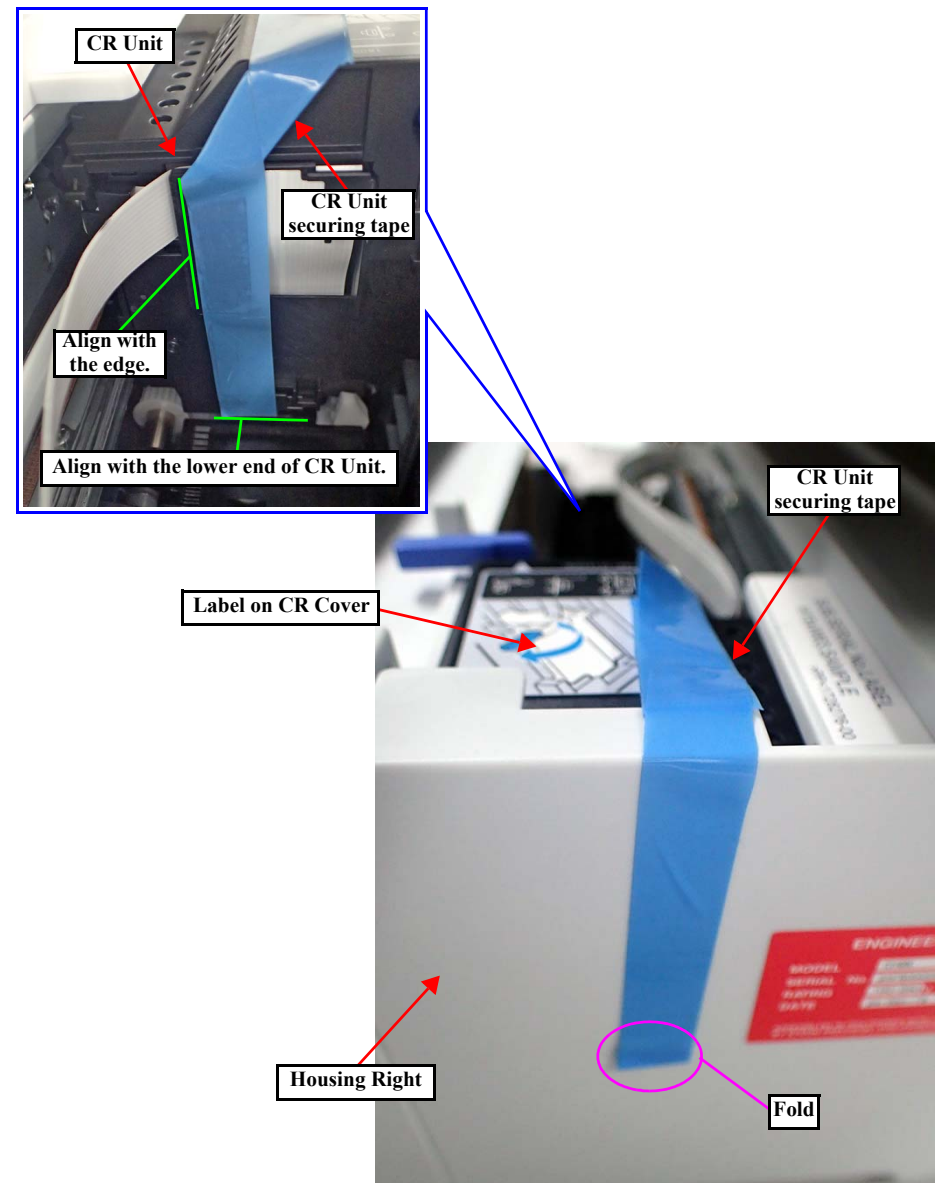


Figure 6-5. Securing the CR Unit

### 6.3.3 Securing the ADF/SCN Unit

- Purpose  
To prevent damaging the ADF/SCN Unit by shock during transportation.
- Risk if it is not performed  
Scanner fatal error caused by the damage of the ADF/SCN Unit.
- Preparation
  - A) Prepare two pieces of packing tape.  
(Length: 60 mm, width: 14 mm, fold on the end: 5 mm)
  - B) Prepare two pieces of packing tape.  
(Length: 140 mm, width: 14 mm, fold on the end: 5 mm)
  - C) Prepare a piece of packing tape.  
(Length: 350 mm, width: 14 mm, fold on the end: 5 mm)
- Method  
Attach the packing tape as shown on the right. Align the packing tape B with the edge of the handle hole.



**Be careful that the packing tape does not overlap the label attached to the product.**

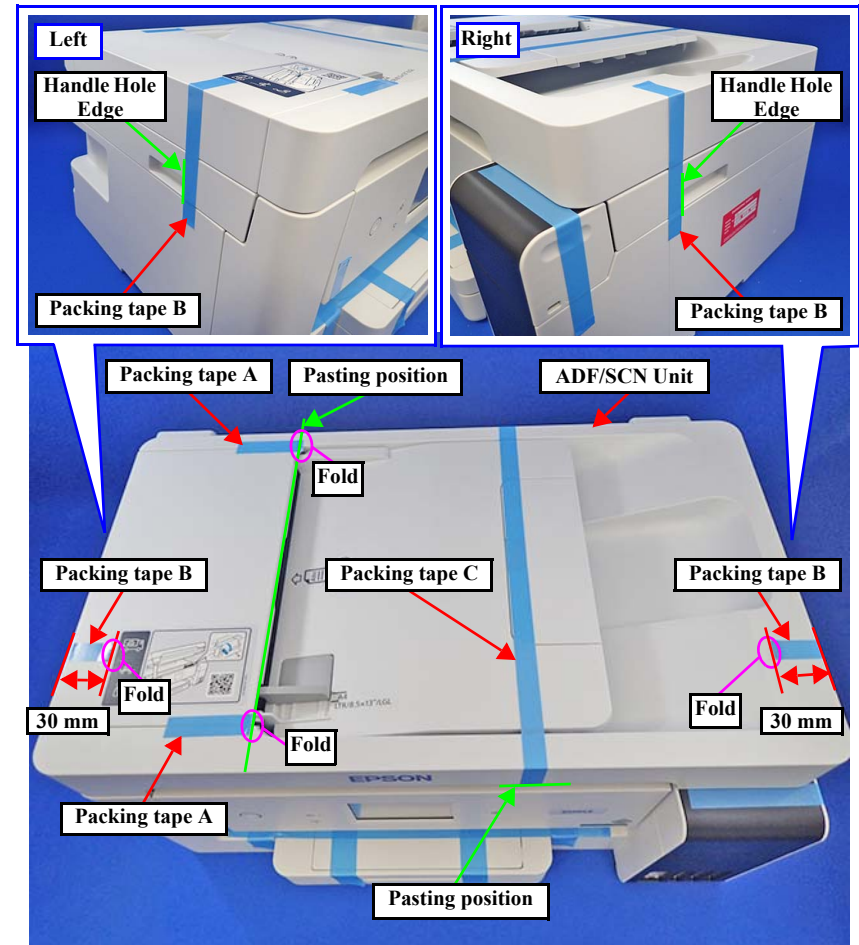


Figure 6-6. Securing the ADF/SCN Unit

### 6.3.4 Securing the Stacker Assy

- Purpose  
To prevent damaging the Stacker Assy by shock during transportation.
- Risk if it is not performed  
Damage to the Stacker Assy due to vibration during transport.
- Preparation
  - A) Prepare two pieces of packing tape.  
(Length: 100 mm, width: 14 mm, fold on the end: 5 mm)
  - B) Prepare two pieces of packing tape.  
(Length: 350 mm, width: 14 mm, fold on the end: 5 mm)
  - C) Prepare two pieces of packing tape.  
(Length: 80 mm, width: 14 mm, fold on the end: 5 mm)
- Method
  1. Pull out the Stacker Assy.
  2. Align the packing tape A with Section A, then attach it.
  3. Align the packing tape B with Section B, then attach it.
  4. Attach the packing tape C as shown on the right.

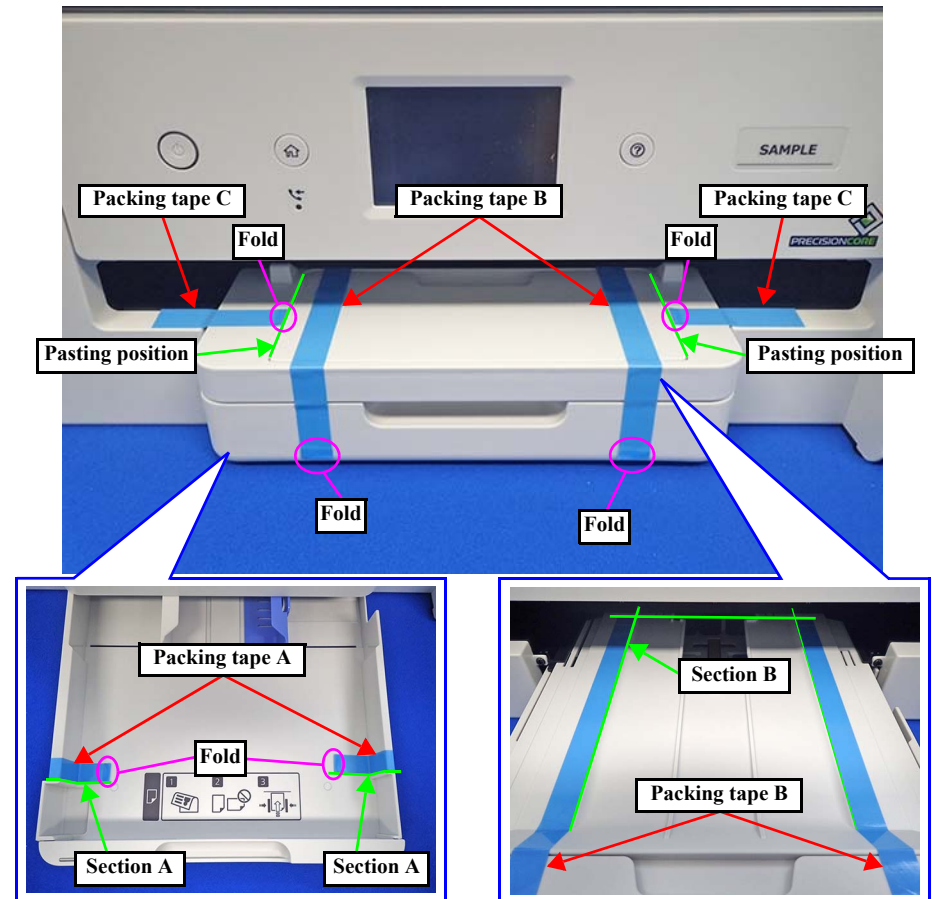


Figure 6-7. Securing the Stacker Assy

### 6.3.5 Securing the Panel Unit

- Purpose  
To prevent damaging the Panel Unit by shock during transportation.
- Risk if it is not performed  
Damage to the Panel Unit due to vibration during transport.
- Preparation  
Prepare a piece of packing tape.  
(Length: 100 mm, width: 14 mm, fold on the end: 5 mm)
- Method  
Align the packing tape A with Section A, then attach it.

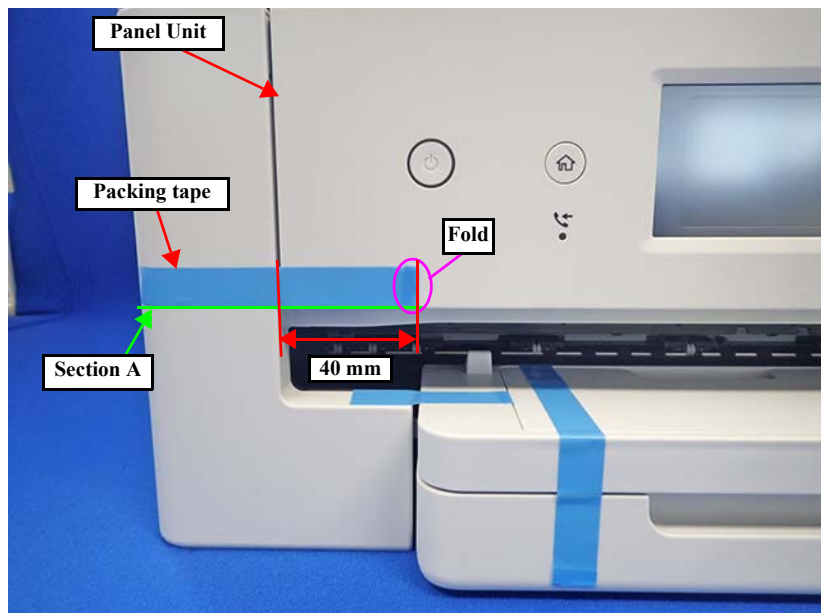


Figure 6-8. Securing the Panel Unit

### 6.3.6 Securing the Tank Cover

- Purpose  
To prevent damaging the Tank Cover by shock during transportation.
- Risk if it is not performed  
Damage to the Tank Cover due to vibration during transport.
- Preparation  
Prepare a piece of packing tape.  
(Length: 170 mm, width: 14 mm, fold on the end: 5 mm)
- Method
  1. Open the ADF/SCN Unit.
  2. Align the packing tape A with Section A, then attach it.

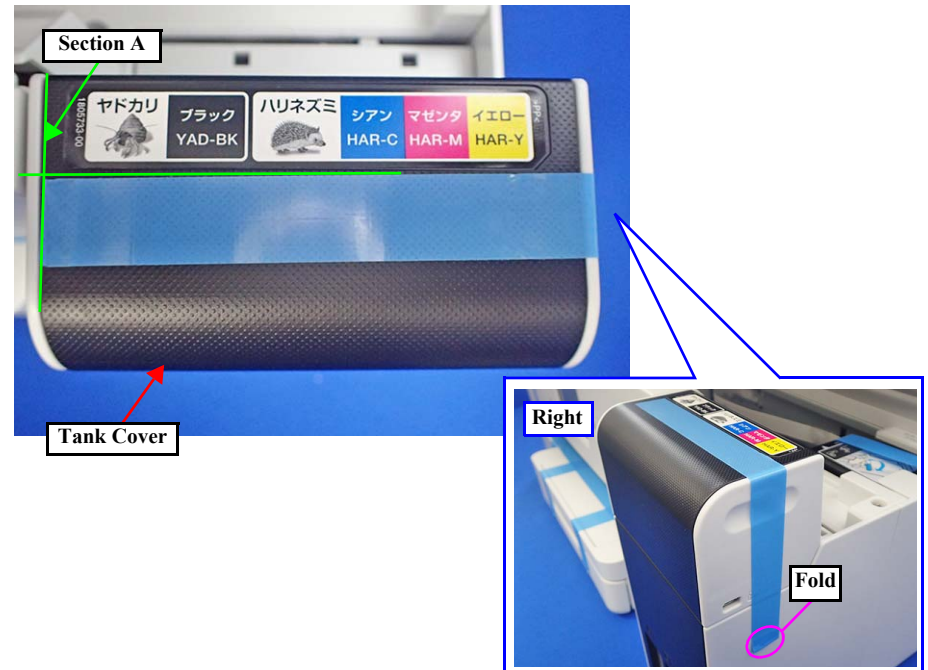


Figure 6-9. Securing the Tank Cover

### 6.3.7 Protection of Housing Upper Rear

- Purpose  
To prevent damaging the Housing Upper Rear by shock during transportation.
- Risk if it is not performed  
Damage to the Housing Upper Rear due to vibration during transport.
- Preparation  
Prepare a piece of packing tape.  
(Length: 55 mm, width: 22 mm, fold on the end: 5 mm)
- Method  
Align the packing tape A with Section A, then attach it.

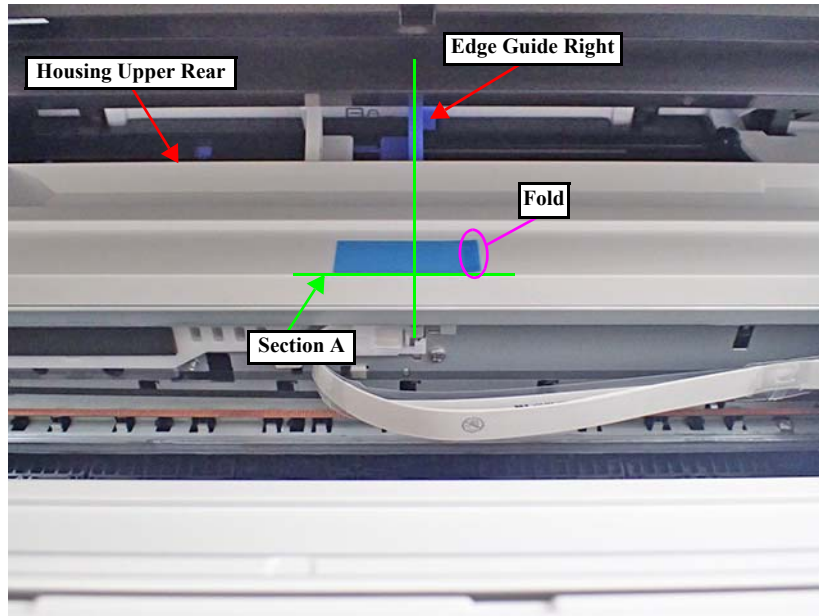


Figure 6-10. Protection of Housing Upper Rear