

Confidential

Technical manual

Thermal printer unit EU-T532/T542

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Notes on Head Control

- ❑ The conditions setting forth the maximum time power can be applied (and the maximum voltage that can be applied) to electronic components such as the head, motor, and magnets must be observed.

If the maximum time power can be applied (or the maximum voltage that can be applied) is exceeded, the components mentioned above could overheat and start a fire or begin to smoke.

- ❑ Always include protective circuitry governing the length of time power is applied and the amount of current that is applied when designing the drive and control circuits for the head, motor, magnets, etc.

If protective circuitry is not included, misoperation of the printer control circuits could cause the components mentioned above to overheat and begin to smoke or burn.

Notes on Handling

- ❑ The case must be designed so that movable parts such as gears, etc., are not exposed.

Touching moving parts could cause a laceration or other injury.

About This Manual

This manual is consisted of the following chapters.

Chapter 1 Features and Specifications	This chapter contains features, general specifications for the EU-T532 / T542.
Chapter 2 Operation Principle	This chapter contains the outline and principles of mechanisms.
Chapter 3 Handling	This chapter contains precautions on handling, paper loading / unloading paper and removing jammed paper.
Chapter 4 Maintenance	This chapter contains cleaning, inspection, lubrication and tools.
Chapter 5 Repair	This chapter contains repair levels, repair procedure and troubleshooting.
Chapter 6 Assembly and Disassembly	This chapter contains assembly and disassembly for the units and the modules of the EU-T532 / T542.
Appendix	Appendix contains the exploded, and the lubrication diagrams of the EU-T532 / T542.

Symbols

Notes in this manual are identified by their level of importance, as defined below.

CAUTION:

Observe cautions to avoid minor injury to yourself, damage to your equipment, or loss of data.

Note:

Notes have important information and useful tips on the operation of your equipment.

Contents

About This Manual	iii
Symbols	iii
Contents	iv

Chapter 1 **Features and Specifications**

Features	1-1
System Configuration and Module Names	1-2
Specifications	1-3
Module Combinations and Specifications	1-4

Chapter 2 **Operation Principles**

Outline of Mechanism	2-1
Paper Roll Supply Module	2-1
Paper Holding Section	2-2
Paper Load-absorbing Mechanism	2-2
Paper NE Detector	2-2
Printer Module	2-3
Drive Force Transmission Mechanism	2-3
Paper Feed Mechanism	2-4
Printing Mechanism	2-6
Paper Guide Mechanism	2-8
Detector Mechanism	2-8
Autocutter Mechanism	2-11
Cut Sheet Presenter Module	2-15
Paper Carrying Operation (With Loop)	2-15
Paper Carrying Operation (Without Loop)	2-17
Retract Function	2-17
Detector Mechanism	2-18
Control Circuit Module	2-19
DIP Switches	2-19
Memory Switches	2-21

Chapter 3 **Handling**

Precautions	3-1
Transport Precautions	3-1
Carrying Precautions	3-1
Installation Precautions	3-2
Handling Precautions	3-2
Storage Precautions	3-4
Opening/Closing Units and Modules	3-4
Paper Roll Supply Module	3-4
Printer Module	3-4
Cut Sheet Presenter Module	3-5
Loading/Removing Paper	3-6
Loading Paper	3-6
Removing Paper	3-8
Removing Jammed Paper	3-8
Removing Jammed Paper in the Cut Sheet Presenter Module	3-8
Removing Jammed Paper in the Printer Module	3-8
Paper NE Detector Setting	3-9

Self Test	3-10
Performing the Self Test	3-10
Self Test End	3-10
Errors	3-11
LED Display	3-11
POWER LED (Power Supply Error): Green	3-11
PAPER OUT LED (Paper-End Error): Red	3-12
ERROR LED (Error): Red	3-12
 Chapter 4 Maintenance	
Cleaning	4-1
Thermal Head Cleaning	4-1
Removing Stains (Except for the Thermal Head)	4-2
Removing Dirt and Dust	4-2
Removing Foreign Matter When the Cutter Locks	4-2
Inspection	4-3
Daily Checks	4-3
Periodic Checks	4-3
Lubrication	4-4
Lubricant	4-4
Lubrication Standards	4-4
Lubrication Point	4-4
Lubricant List	4-5
Tools	4-5
 Chapter 5 Repair	
Repair Levels	5-1
Repair Procedure	5-1
Troubleshooting	5-2
 Chapter 6 Assembly, Disassembly	
Small Parts Abbreviation	6-1
Assembly	6-1
Disassembly	6-27
Component Configurations Overview	6-27
Unit Disassembly	6-27
Module Disassembly	6-28
Unit Disassembly	6-30
Cover, circuit board A/B and Control circuit board module	6-30
Paper Exit	6-33
Cut sheet presenter module, Holding plate, printer, Plate, lower paper guide, Plate, paper guide holder, and Holder, paper roll	6-34
Module Disassembly	6-38
Paper roll supply module	6-38
Cut sheet presenter module	3-43
 Appendix	
EU-T532/T542 Exploded Diagram (Type 1 and 2)	A-1
EU-T532/T542 Exploded Diagram (Type 3 and 4)	A-2
Paper Roll Supply Module Exploded Diagram	A-3
Printer Module Exploded Diagram	A-4
Cut Sheet Presenter Module Exploded Diagram	A-5
Paper Roll Supply Module Lubrication Diagram	A-6
Printer Module Lubrication Diagram	A-7
Cut Sheet Presenter Module Lubrication Diagram	A-8

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Chapter 1

Features and Specifications

Features

The EU-T532/T542 (EU-T532 for 79.5 mm {3.13"} paper width/ EU-T542 for 82.5 mm {3.25"} paper width) is designed to be used for issuing tickets and receipts at banks, kiosks and other similar locations. The features of the EU-T532/T542 are as follows:

- ❑ High speed receipt issuing: 150 mm / s {5.9" / s} maximum
- ❑ High reliability: 600,000 receipt issue
- ❑ Length of receipt: 228.4 mm {9"} maximum
- ❑ Available for large paper roll core dimensions: 254 mm {10"} diameter maximum
- ❑ Supports ESC / POS[®] equivalent commands
- ❑ Able to print bar codes (fence and ladder) and graphics
- ❑ Options available for all models:
 - Japanese Kanji model: Supports JIS Level 1 and 2
 - Simple Chinese model: Supports GB50007-85
 - Traditional Chinese model: Supports BIG5 Level 1 and 2
- ❑ Optional cut sheet retracting mechanism can be used for the EU-T532/T542 Type 2 and 4
- ❑ Able to perform the remote monitoring using a status monitor

System Configuration and Module Names

The whole systems is called the “EU-T532/T542,” and each unit is called a “module” which can be separated from the others. The EU-T532/T542 has four types, type 1 to 4, depending on the combination of the modules. (See “Module Combinations and Specifications” on page 1-4.) The configurations of the modules are as follows:

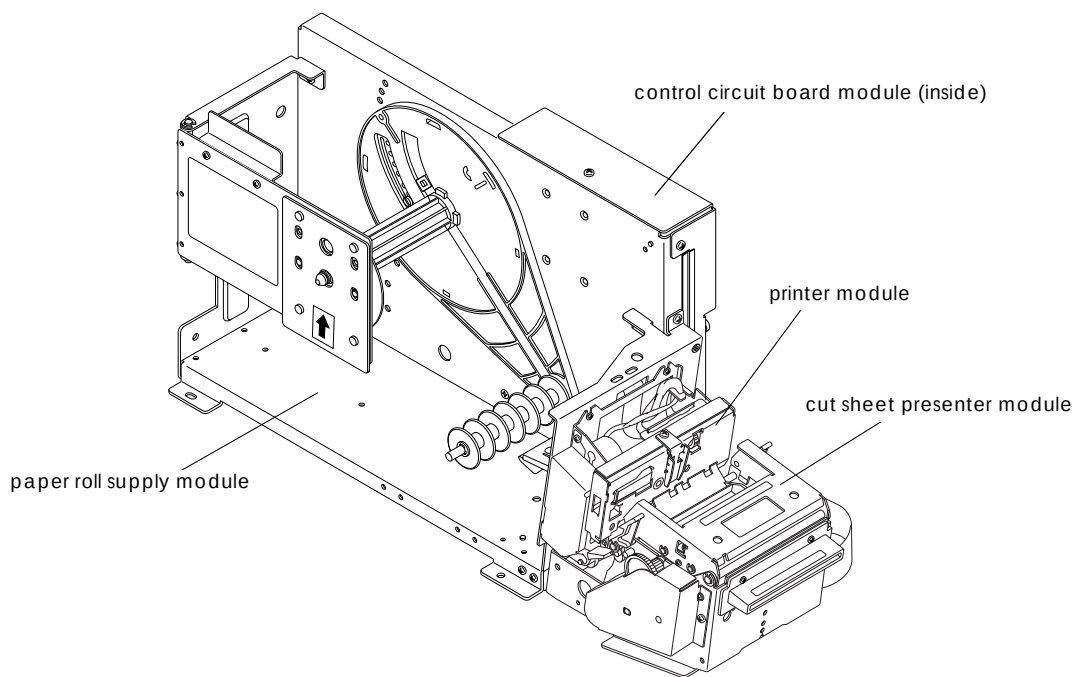


Figure 1-1 EU-T532/T542 appearance (Type 1 and 2)

*The mounting place for the control circuit module will differ depending on users.

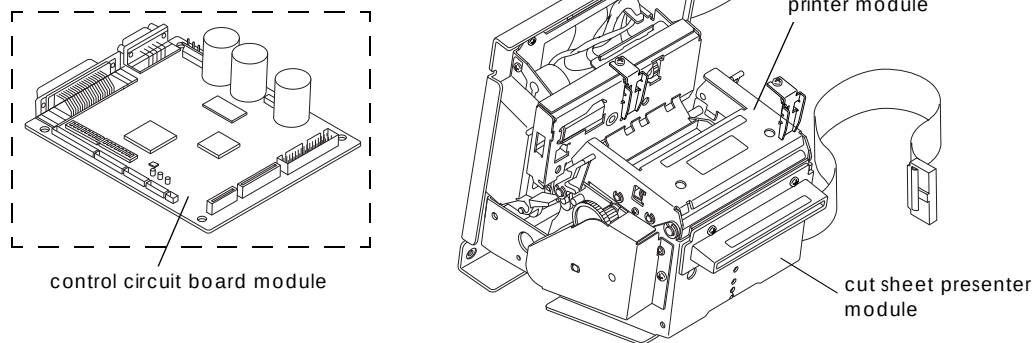


Figure 1-2 EU-T532/T542 appearance (Type 3 and 4)

Specifications

The specifications of the EU-T532 / T542 are shown below. Refer to specifications for the EU-T532 and the EU-T542 issued by Seiko Epson Corporation for details.

Table 1.1 Specifications

Item		Specification
Paper roll	Outside diameter	254 mm {10"}
	Paper width	EU-T532: 79.5 ± 0.5 mm {3.13 ± 0.02"} EU-T542: 82.5 ± 0.5 mm {3.25 ± 0.02"}
Paper carrying speed		150 mm/s {5.9"/s} maximum
Paper length to be presented and retracted	Issuing the cut sheet (Receipt printing)	76.2 to 228.6 mm {3" to 9"} (When the cut sheet is looped) 76.2 to 3000 mm {3" to 118.1"} (When the cut sheet is not looped)
	Retracting the cut sheet	76.2 to 228.6 mm {3" to 9"} (When the cut sheet is ejected downward of the cut sheet presenter module: Type 2 and 4)
Print speed		150 mm/s {5.9"/s} maximum
Print width		72 mm {2.84"} maximum (recommended)
Reliability	Receipt printing	600,000 times
	Cut sheet retracting	60,000 times
	Printer	Mechanism: 15,000,000 lines Thermal head: 100 km {62.14 miles}
Paper roll	Specified thermal paper	Original paper No.: P350 KSP Original paper No.: TF50KS-E NIPPON PAPER INDUSTRIES CO.,LTD Original paper No.: KF50 KANZAN Original paper No.: PD160R OJI PAPER MFG.CO., LTD Original paper No.: TF11KS-ET NIPPON PAPER INDUSTRIES CO.,LTD Original paper No.: TF51KS-X1 NIPPON PAPER INDUSTRIES CO.,LTD Original paper No.: PD200N OJI PAPER MFG.CO., LTD Original paper No.: AFP234 MITSUBISHI PAPER MILLS CO., LTD A different paper type may give a different print quality.
	Paper thickness	60 to 150 μm

Table 1.1 Specifications

Item		Specification
Environmental condition	Operating temperature	0 to 50°C
	Operating humidity	10 to 80% RH

Print quality is guaranteed.

Operation is guaranteed.

Module Combinations and Specifications

The EU-T532/T542 can be used as four different types by the module combinations. The module combinations, functions and specifications are as follows:

Item		Type 1	Type 2	Type 3	Type 4
Functions	Paper roll is held by a fixed shaft.	Yes	Yes	—	—
	Cut paper is advanced by a cut sheet presenter.	Yes	Yes	Yes	Yes
	Cut sheet is retracted if the user forgets to remove the paper.	—	Yes (*)	—	Yes (*)
Module combination	Paper roll supply module	Yes	Yes	—	—
	Printer module	Yes	Yes	Yes	Yes
	Control circuit board module	Yes	Yes	Yes	Yes
	Cut sheet presenter module	Yes	Yes (with a retracting function)	Yes	Yes (with a retracting function)
Mass		Approximately 5.5 kg {12.13 lb}	Approximately 5.5 kg {12.13 lb}	Approximately 2 kg {4.41 lb}	Approximately 2 kg {4.41 lb}
External dimensions (W × D × H): mm {inch}		176 × 520.7 × 231.4 {6.93 × 20.5 × 9.11"}	176 × 520.7 × 231.4 {6.93 × 20.5 × 9.11"}	139.3 × 174.6 × 165 {5.48 × 6.85 × 6.5"}	139.3 × 174.6 × 165 {5.75 × 6.85 × 6.5"}

(*): The printer pulls a cut sheet that has been forgotten in the printer and ejects it to the lower part of the cut sheet presenter module.

Chapter 2

Operation Principles

Outline of Mechanism

The EU-T532 / T542 consists of four modules: the paper roll supply module, the printer module, the cut sheet presenter module, and the control circuit board module.

Paper Roll Supply Module

The paper roll supply module holds a large diameter paper roll and guides the paper to the printer module. This module consists of the paper holding part, the paper load-absorbing mechanism, and the paper nearend detector. The appearance of this module is shown below.

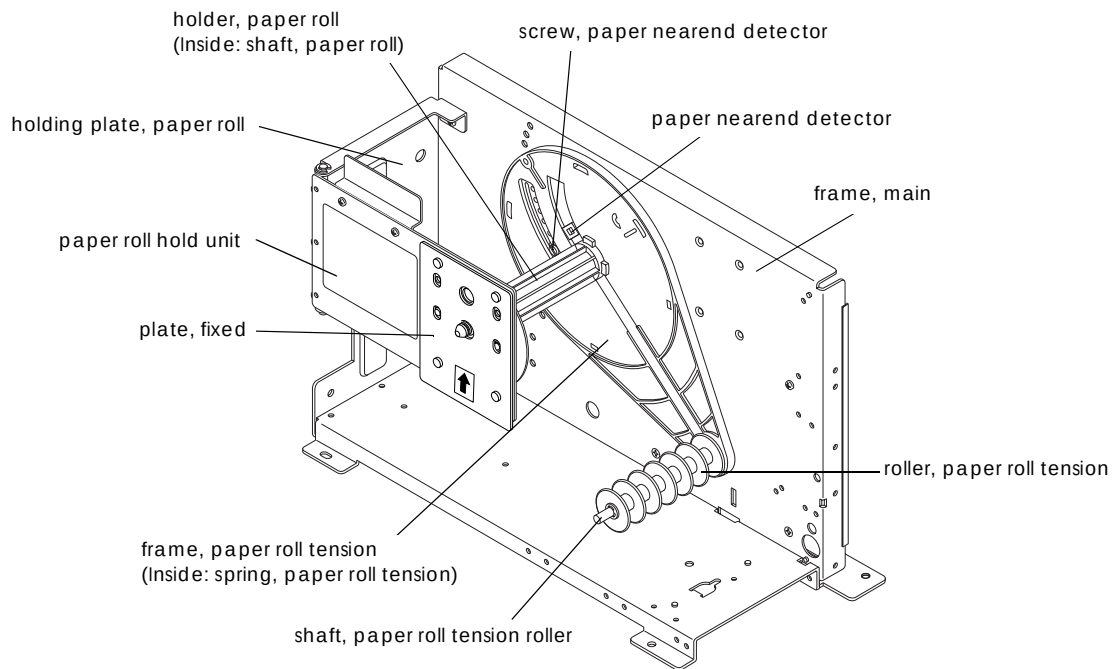


Figure 2-1 Paper roll supply module appearance

Paper Holding Section

The paper roll holding mechanism is a shaft support type. The paper roll holding section consists of the **shaft, paper roll** fixed to the **frame, main assembly**, the **holder, paper roll A** (for the inner diameter of the paper core: 25.4 mm {1 inch}) that fits the size of the paper roll core used, and **paper roll hold unit** that holds the sides of the paper roll.

The **paper roll hold unit** is supported by the **holding plate, paper roll** so that it can open / close. The **plate, fixed** slides into the groove of the **shaft, paper roll** and is automatically locked when the **paper roll hold unit** pushes against the **shaft, paper roll**. To open the **paper roll hold unit**, see the illustration (a sticker) on the **plate, fixed**: slightly lift the bottom of the **plate, fixed** in the direction of the arrow (upwards) to release the lock, and then pull it toward the near side to open the unit. (For the illustration of the sticker, see page 3-6.)



Note:

*If the paper inner core dimension differs from the **holder, paper roll A** due to the paper thickness, you can replace it with the **holder, paper roll B** (for the inner diameter of the paper core: 50.8 mm {2 inch}) or the **holder, paper roll C** (for the inner diameter of the paper core: 76.2 mm {3 inch}) packed in the box. (See page 6-37, "Assembly and Disassembly." for replacement.)*

Paper Load-absorbing Mechanism

The paper load-absorbing mechanism consists of four parts: the **roller, paper roll tension**, the **shaft, paper roll tension roller**, the **frame, paper roll tension**, and the **spring, paper roll tension**. The **roller, paper roll tension** receives the paper tension. The **shaft, paper roll tension roller** supports the **roller, paper roll tension** so that the **roller, paper roll tension** can rotate. The **frame, paper roll tension** fixes the previous two parts and is mounted on the **shaft, paper roll**. The **spring, paper roll tension** is hooked on one end to the **frame, main assembly**, and on the other end to the **frame, paper roll tension**.

Using the paper tensile force generated when feeding the paper, this mechanism oscillates the **roller, paper roll tension** around the **shaft, paper roll**, and reduces the paper feeding load due to inertia of the paper roll.



Note:

*In order to use the function of this mechanism properly, paper must be fed along the paper route indicated in the illustration on the **paper roll hold unit**. Feeding paper along the paper route other than the route in the illustration may cause improper operation or printing disorders.*

Paper NE Detector

The **paper NE detector** has two kind of detections, the primary NE detection and the secondary NE detection. The primary NE detection can detect the amount remaining on the paper roll using a reflecting photo sensor. After the primary NE detection, the secondary detection can be used to return the status when the paper is fed to the length specified by the memory switch setting. (See SW No. 2, 3 in Table 2-8 [page 2-22])

The **paper NE detector** is mounted on the **frame, paper roll tension**, and is secured with the **screw, NE detector**. The position of the **paper NE detector** can be altered to adjust the setting for the amount remaining on the paper roll. (See "Paper NE detector setting method" on page 3-9.)

Printer Module

The printer module has a printing mechanism with the paper feeding and a cutting mechanism to cut the paper.

The printer consists of the following six mechanisms: the drive force transmission mechanism, the paper feed mechanism, the printing mechanism, the paper guide mechanism, the detector mechanism, and the autocutter mechanism.

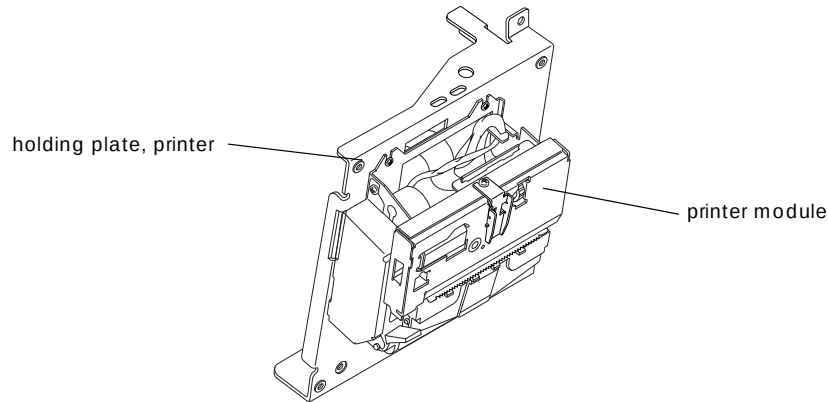


Figure 2-2 Printer module appearance

Drive Force Transmission Mechanism

This mechanism consists of the **motor, paper feed, receipt, B** (fixed to pinion), the **gear, reduction**, the **gear, idler**, and the **gear, platen**. The printer uses a stepping motor, the rotation force of which is reduced in sequence by the **gear, reduction** and the **gear, idler** before being transmitted to the **gear, platen**. (The arrows in the figure below indicate the direction of the gear rotation.) The **gear, platen** is mounted to the frame platen unit and separates from the **gear, idler** when the **platen** is open.

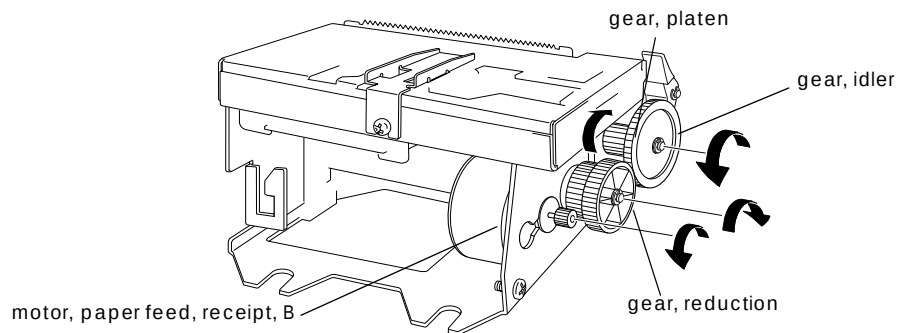


Figure 2-3 Drive force transmission mechanism

This printer uses a 4-phase bi-polar stepping motor driven by 24 V voltage controlled 2-2 phase excitation. The maximum drive frequency of 2-2 phase excitation is 1200 pps. [pps: pulses per second]

Paper Feed Mechanism

This mechanism consists of the paper feed mechanism and the platen-open mechanism.

Paper feed mechanism

The paper feed mechanism consists of the **platen** (paper feed roller) and the **thermal head**. When the **motor, paper feed, receipt, B** rotates counterclockwise as viewed from the shaft, the gear train transmits the motion to the **platen** which rotates in direction A.

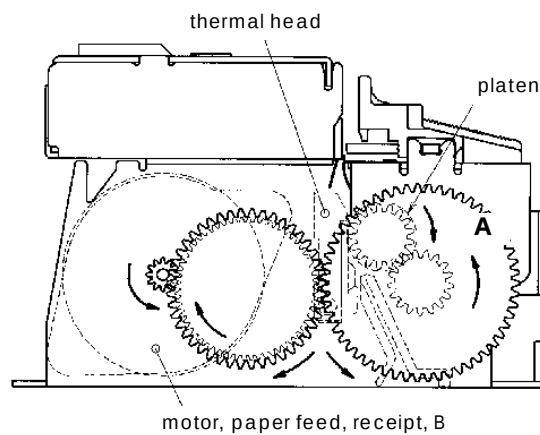


Figure 2-4 Paper feed mechanism

Paper feed operation during printing

The **platen** presses the thermal paper against the **thermal head** with a constant force. When the **platen** rotates in direction A, the thermal paper advances in direction B.

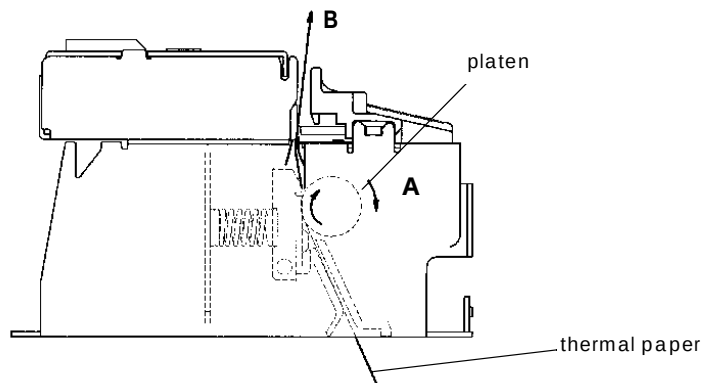


Figure 2-5 Paper feed operation during printing

Platen-open mechanism

The platen-open mechanism is used for the following purposes:

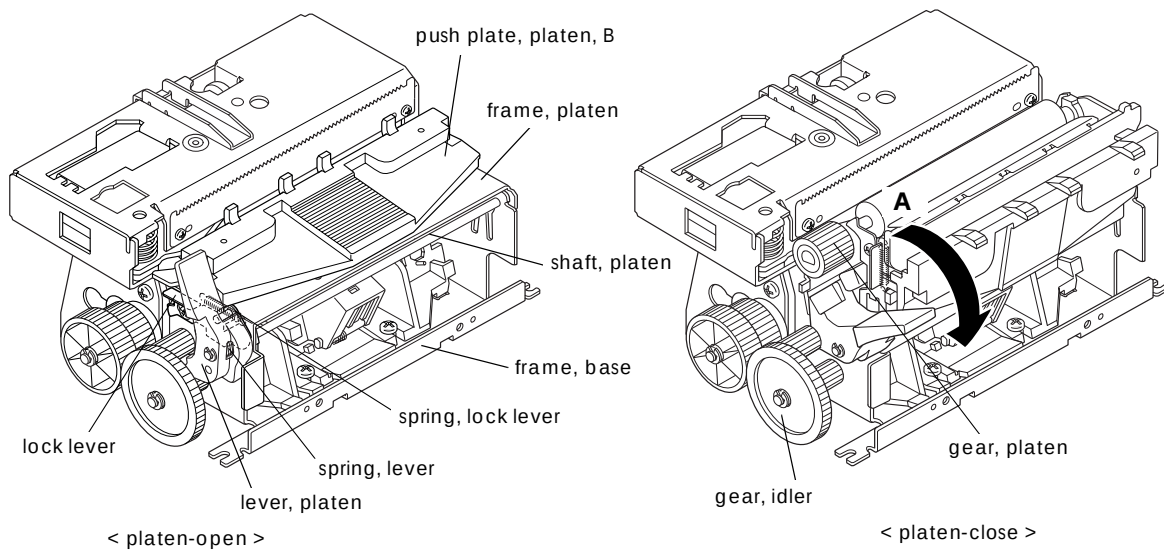
- Paper loading when using the printer with the curved path type. (Excluding when using semi-autoloading mode.)
- Removing a paper jam when the paper jam has occurred
- The **thermal head** and the **platen** cleaning

The mechanism consists of the **frame, platen**, the **lever, platen**, the **shaft, platen**, the **spring, lever**, the **lock lever**, the **spring, lock lever**, and the **pushplate, platen, B**.

In the **frame, platen**, the **platen** is mounted. The **lever, platen** is operated by hand to open the frame platen unit. The **shaft, platen** connects the **lever, platen** and the **frame, platen** to the **frame, base** in a manner which allows them to rotate. The **spring, lever** pulls the **lever, platen** in the opposite direction of arrow A when the **platen** is open. The **lock lever** is located on the gear train side of the **frame, platen** and locks the frame platen unit to the **frame, base**. The **spring, lock lever** (inside the **lock lever**) pushes the **lock lever** back. The **pushplate, platen, B** is secured on top of the **frame, platen** and covers the **fixed blade**.

When the frame platen unit is closed, the **platen** is in the print-ready position where the **gear, platen** and the **gear, idler** are engaged and the power can be transmitted readily. Also, the **lock lever** is locked at a part of the **frame, base** to prevent the gears from disengaging.

To open the **platen**, turn the **lever, platen** in the direction of arrow A as shown in Figure 2-6. Simultaneously, the **lock lever** is released and the frame platen unit is opened. To close the **platen**, turn the **lever, platen** in the opposite direction of arrow A until the lever stops.



*The cover, gear is removed in these figures.

Figure 2-6 Platen-open mechanism

Printing Mechanism

This mechanism consists of the **thermal head** which has the head heating elements arranged in a series and has a driver IC for controlling voltage to the head heating elements, the **platen** which is also used for the paper feed mechanism as well as this mechanism (the **thermal head** is also used for both mechanisms), and the **spring, press head**. The **platen** presses the thermal paper wrapped around the **platen** against the head heating elements pressed by the **spring, press head**. When the elements are activated, the paper will be heated at the designated points, resulting in the printing action.

Printing operation principles

The cross-sections of the **thermal head** and the thermal paper are shown below. Printing is performed in the following steps:

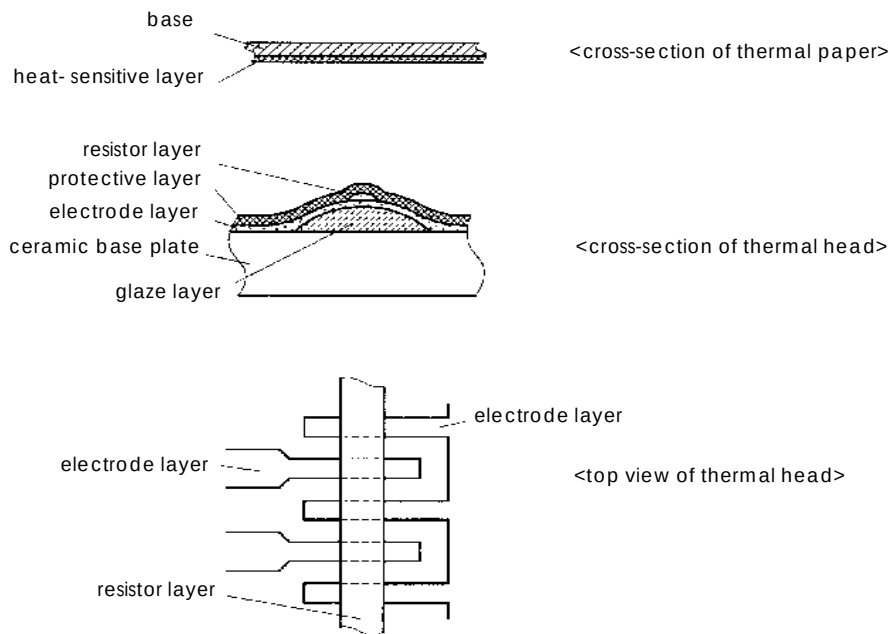


Figure 2-7 Cross-section of thermal head and thermal paper

1. Drive pulses are sent to the designated dot electrodes in accordance with the print signal.
2. Since the resistor layers are formed at the top of each electrode inside of the **thermal head**, the resistor layers are heated up when the drive pulses are sent to the electrodes.
3. The thermal energy of the heated resistors is transferred via the protective layer of the **thermal head** to the surface of the thermal paper, and the heat-sensitive layer of the paper changes color, thus forming the printed character.

Data input and printing

The **thermal head** consists of the head heating elements, the head driver, which controls or drives the head heating elements, and the **thermistor**, which detects the temperature of the **thermal head**. The serial print data input from Data In (DI1) is synchronized to the CLOCK (CLK) input, and temporarily placed in the SHIFT REGISTER. Using the LATCH (/LAT) signal timing, these data are then stored in the LATCH REGISTER. Activated by the STROBE signals (/STR1, /STR2), the stored print data is used to control the gate ON condition for the head heating element drive pulse.

This printer is equipped with two strobes, and can print using a maximum of four divisions. The drive pulse width is controlled by the control circuit board module.

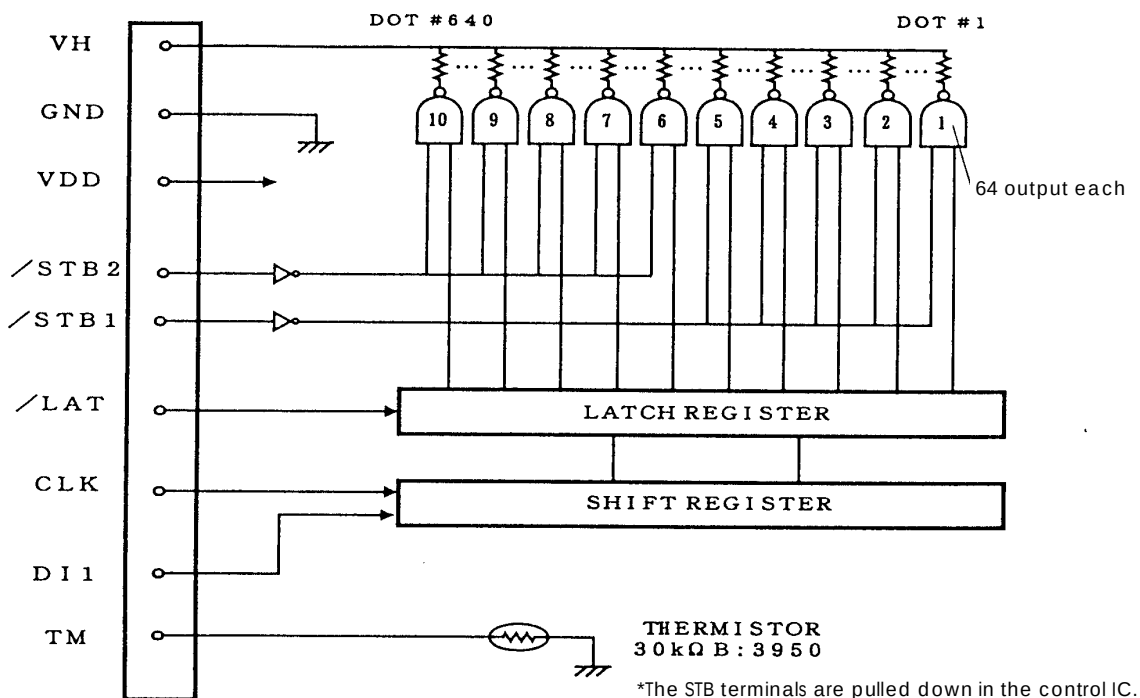


Figure 2-8 Thermal head block diagram

Table 2-3 Strobe and Dot Number

STROBE No.	Dot No.	Dots/STROBE
1	1 to 320	320
2	321 to 640	320

Paper Guide Mechanism

This mechanism consists of the paper guide mechanism. The paper path consists of the **paper guide, straight, front** and the **paper guide, straight, back**. The paper path is shown below.

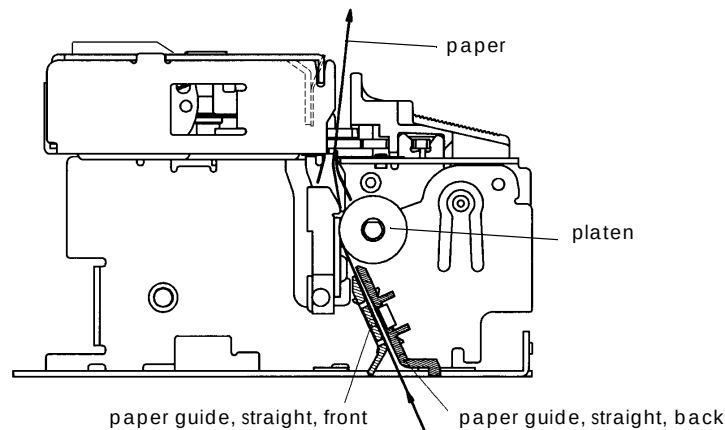


Figure 2-9 Paper path

Detector Mechanism

This mechanism consists of the paper-end mechanism, the platen-open detector mechanism, the head temperature detector mechanism, and the black mark detector mechanism.

Paper-end detector mechanism

The paper-end detector mechanism is located inside the paper guide mechanism to detect the end of the thermal paper and the paper insertion state in the semi-autoloading mode. This mechanism consists of the **transparent photo sensor**, the **lever, paper detector** which presses against the thermal paper and the **spring, paper detector** which pulls the **lever, paper detector**.

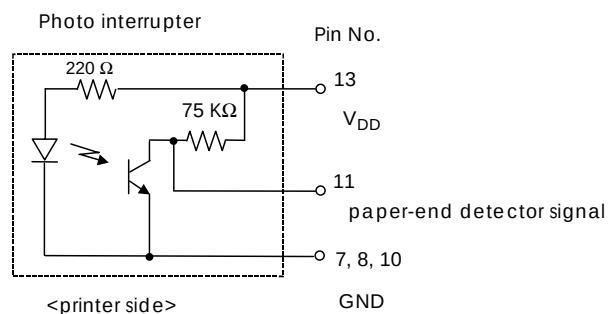


Figure 2-10 Paper -end detector circuit

The **transparent photo** sensor is in a high state (HI) when the paper is present, and in a low state (LOW) when the paper is not present because the **lever, paper detector** blocks light to the sensor. When the end of the thermal paper passes through the paper guide, the **lever, paper detector** operates as shown in Figure 2-11. At this time, the output level from the **transparent photo sensor** varies as shown in Figure 2-12, then the absence of paper is detected. When the semi-autoloading function is used, the insertion of paper changes the status from “no paper” to “paper.” Since the output level changes from LOW to HI, the status changes to “paper”; then the semi-autoloading function is initiated.

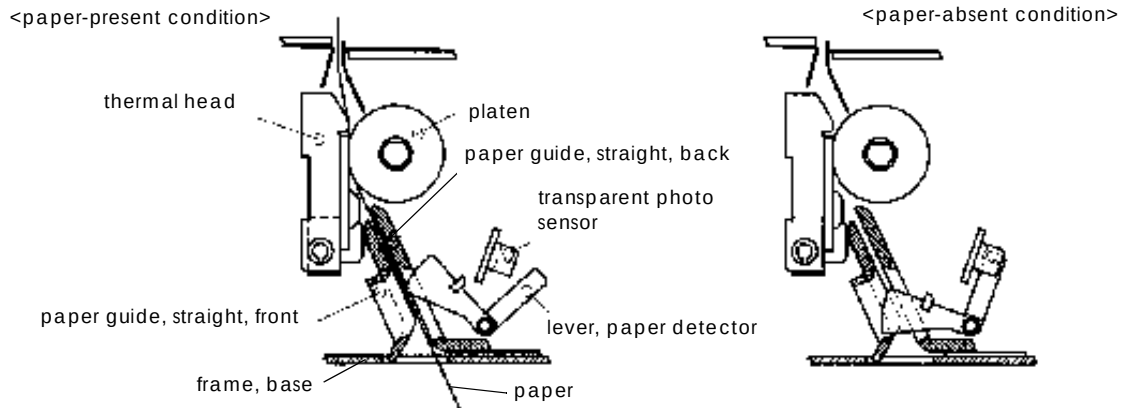


Figure 2-11 Paper-end detector mechanism



Figure 2-12 Paper-end detector operation

Platen-open detector mechanism

The platen-open detector mechanism has a **microswitch** which detects whether the **platen** is open (printing impossible because the **thermal head** is away from the **platen**) or closed (printing possible). The **microswitch** can be OFF only when the **frame, platen** is perfectly closed, and at all other times is ON.

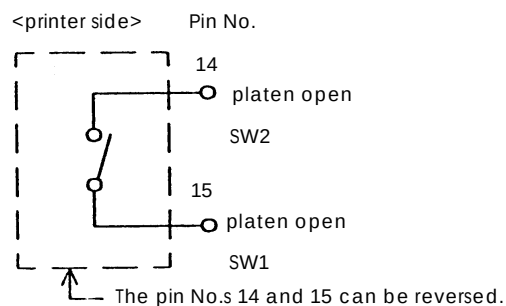


Figure 2-13 Platen-open detector circuit

Head temperature detector mechanism

The **thermal head** has a **thermistor** to detect the temperature of the **thermal head**.

Black mark detector mechanism

The black mark mechanism is a device which can be attached inside the paper guide mechanism to determine the printing position when using pre-printed thermal paper. This mechanism uses the reflective photo sensor.

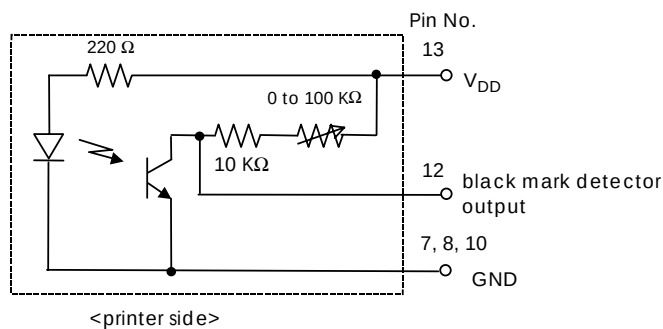


Figure 2-14 Black mark detector circuit

Black marks are detected through changes in output level from the reflective photo sensor. The changes in reflectivity between the pre-printed black marks and blank areas of the thermal paper cause the amount of light returning to the sensor to vary; then the sensor output level is also varied as shown in Figure 2-15. These variations are used to detect the black mark. Since the relationship between the black mark and the print position can be specified in the printer set up, detecting the black mark permits the correct positioning of the paper.

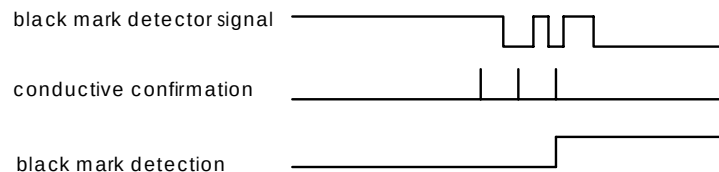


Figure 2-15 Black mark detecting operation

Autocutter Mechanism

This mechanism consists of the fixed blade mechanism, the movable cutter blade mechanism and the emergency cutter mechanism.

The basic principle of the autocutter mechanism is an application of the scissors principle, where the paper is cut by two crossing blades. A configuration which allows the two blades to separate has been adopted so that the **fixed blade, H** separates from the **movable cutter blade, full, H** when the **platen** is open.

Fixed blade mechanism

This mechanism is mounted on the frame platen unit. This configuration consists of the **fixed blade, H** which cuts the paper directly, the **spring, fixed blade** which stabilizes the vertical positioning of the **fixed blade, H**, and the **cover, fixed blade** which covers the **fixed blade, H** and is a paper guide as well as makes the operation to open the **platen** safe.

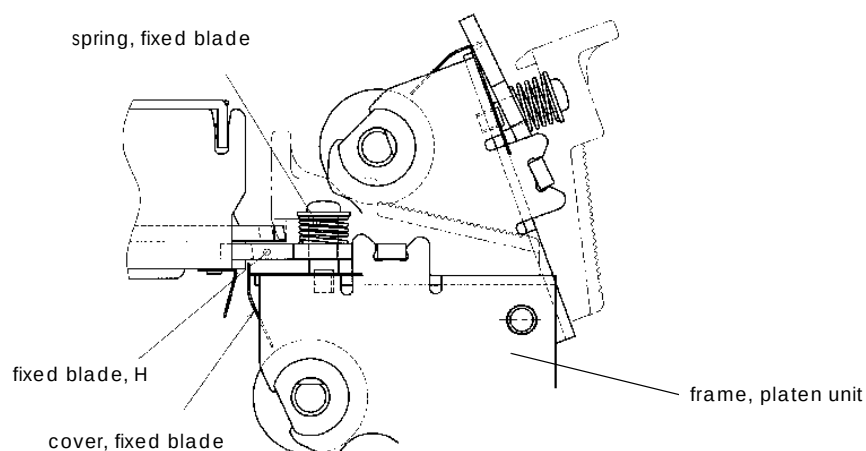


Figure 2-16 Fixed blade mechanism

Movable cutter blade mechanism

This mechanism is mounted on the **frame, base**. The drive force transmission mechanism is on the **cover, cutter, H** side. The **motor, cutter, H**, which is a DC brush motor attached the **gear, cutter motor**. It supplies the power and is attached on the **cover, cutter, H** with screws. The **gear, cutter worm, H** is supported by the **shaft, reduction A/C**, and the **gear, cutter drive, H** is attached with push nuts to the **shaft, cutter drive gear** fixed on the **cover, cutter, H**. After being transmitted through the **gear, cutter worm, H**, the power is transmitted to the **gear, cutter drive, H**.

The rotational movement of the **gear, cutter drive, H** is translated to the back and forth movement of the **movable cutter blade, full, H** by being engaged the **shaft, movable cutter blade drive** with the oval hole of the **movable cutter blade, full, H** on the **frame, cutter**. Also, the **microswitch** attached to the **cover, cutter, H** is connected to the **gear, cutter drive, H**, enabling it to detect the position of the **movable cutter blade, full, H**. The lead wires of the **motor, cutter, H** and the **microswitch** are bound together and connect to the **circuit board**.

The **shaft, movable cutter blade** is on the **frame, cutter** side. The **receiver, movable cutter blade**, the **spacer, movable cutter blade**, the **spring, movable cutter blade** and the **washer, movable cutter blade spring** are mounted on the **shaft, movable cutter blade** in a group with a push nut.

When putting the **cover, cutter, H** and the **frame, cutter** together, engage the **shaft, movable cutter blade drive** with the oval hole of the **movable cutter blade, full, H**, and secure the **cover, cutter, H** and the **frame, cutter** with screws.

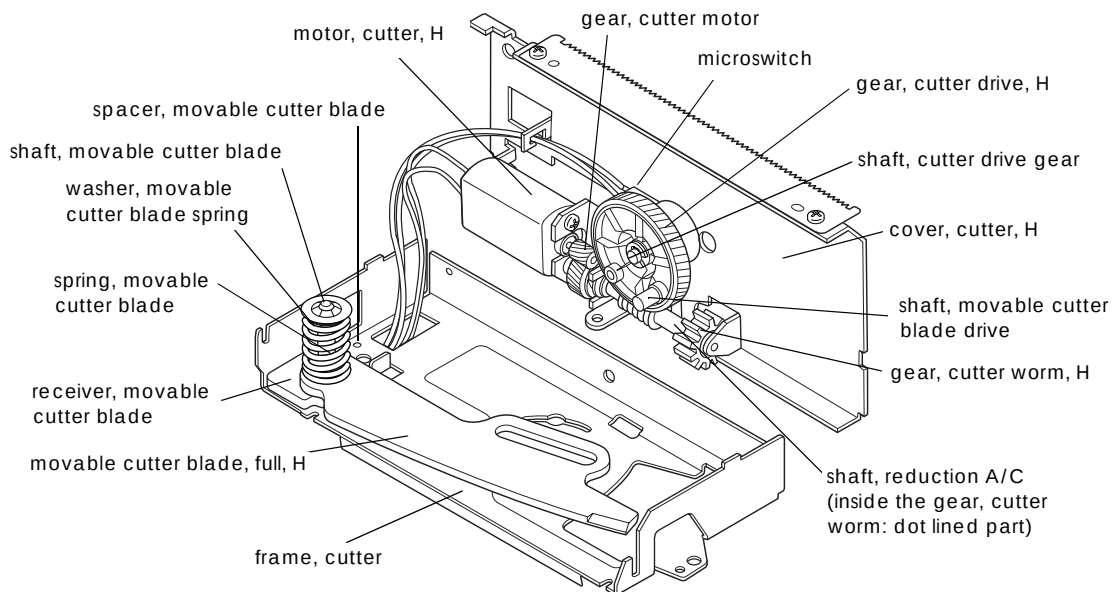


Figure 2-17 Movable cutter blade mechanism

Auto cutting operation

The **autocutter** will operate when the frame platen unit is closed and a paper is loaded. (The frame platen unit can be closed when the **movable cutter blade, full, H** is in the standby position. The auto cutting operation is performed in the following steps:

1. Drive the **motor, cutter, H** in the forward rotation.
2. The **microswitch** is switched from OFF (open) to ON (closed), while the **motor, cutter, H** continues to rotate in the forward rotation. The **movable cutter blade, full, H** intersects with the **fixed cutter blade, H** and cuts the paper from the right to the left, to the direction of the first column.
3. After cutting the paper, the **movable cutter blade, full, H** starts to return to the home position.
4. As the **movable cutter blade, full, H** approaches the home position, the **microswitch** is switched from ON (close) to OFF (open); then the **motor, cutter, H** stops rotating and the brake is applied.

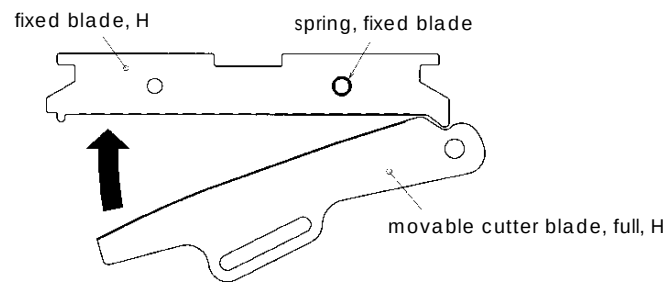


Figure 2-18 Auto cutting operation

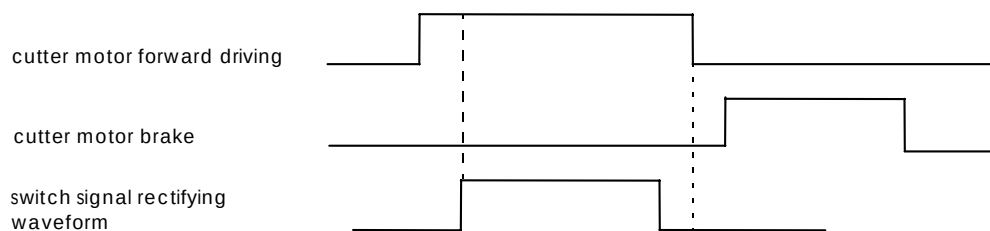


Figure 2-19 Auto cutting control example

 Note:

If the **movable cutter blade, full, H** can not be returned to the home position because of a foreign matter locking the blade when powered by the **motor**, rotate the knob on the **gear, cutter worm, H** with a tool such as a ball-point pen or tweezers to move the **movable cutter blade, full, H** to the home position. The window on the **cover, cutter, H** can be used to check if the **movable cutter blade, full, H** has returned to the home position.

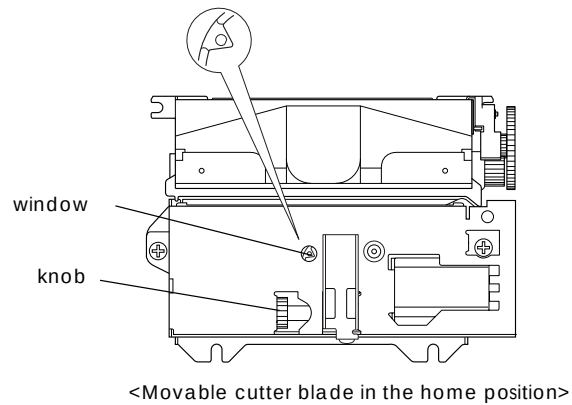


Figure 2-20 Home position check

Cut Sheet Presenter Module

The cut sheet presenter module has a mechanism to carry the paper printed and cut by the printer module to the paper exit. Also, it has an optional cut sheet retracting function to retract a cut sheet when the cut sheet is not removed.

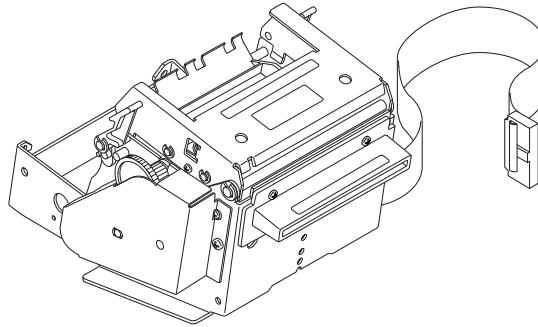


Figure 2-21 Appearance of cut sheet presenter module

Paper Carrying Operation (With Loop)

A paper carrying operation is performed at the same time with the start of the paper feeding of the printer module. The **motor, paper feed receipt, B** rotates in the clockwise direction as seen from the shaft direction, and the **roller, cut sheet presenter** rotates in the clockwise direction via the gears. The **roller, cut sheet hold** is pressed to the **roller, cut sheet presenter** by a spring. The first **roller, cut sheet presenter** and the **roller, cut sheet hold**, and the second **roller, cut sheet presenter** and the **roller, cut sheet hold** are connected with the **belt, cut paper presenter transmission** (not shown) and rotate in the same direction.

The paper sent from the printer module is fed along the paper guiding part, and carried between the first **roller, cut sheet presenter** and the **roller, cut sheet hold**. When the tip of the paper reaches the detection position, the **motor, paper feed receipt, B** stops temporarily.

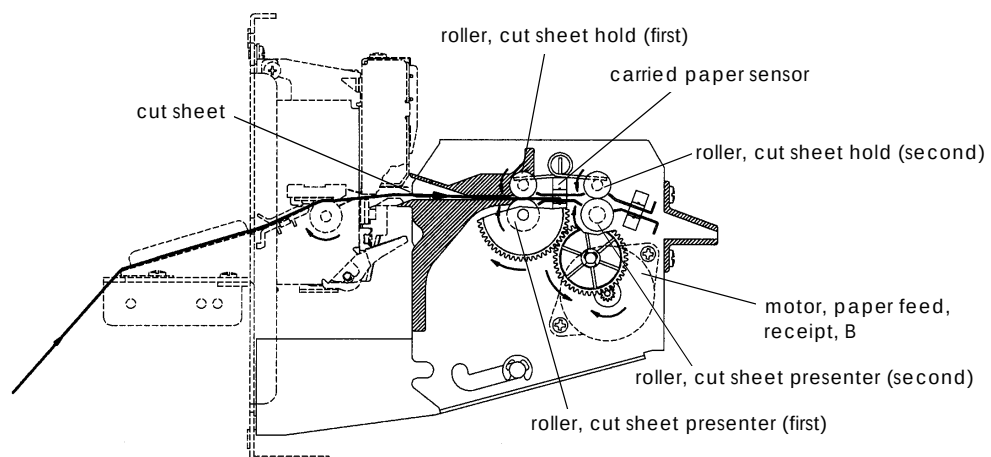


Figure 2-22 Start of the cut sheet carrying

The tip of the paper sent from the printer module is in the standby state between the first **roller, cut sheet presenter** and the **roller, cut sheet hold**, and the paper is continuously fed from the printer module. The paper pushes up the **paper guide, upper** and temporarily forms a loop.

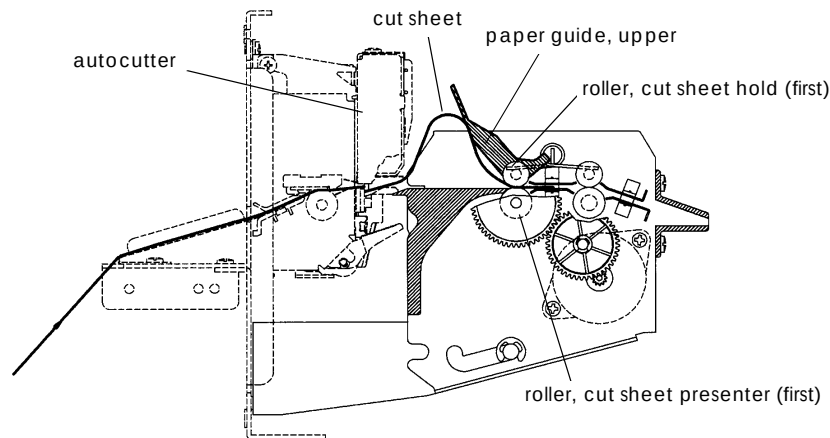


Figure 2-23 Cut Sheet with Loop

When the paper feed from the printer module is finished, the **motor, paper feed receipt, B** resumes rotating. At this time, the cutter on the printer module cuts the paper. The cut sheet is passed from the first **roller, cut sheet presenter** to the second **roller, cut sheet presenter**, and is carried to the **paper exit**.

When the **carried paper sensor** detects the end of the cut sheet, the **motor, paper feed receipt, B** will stop. With the cut sheet between the second **roller, cut sheet presenter** and the second **roller, cut sheet hold**, a series of operations is completed and the cut sheet is ejected from the **paper exit**.

A **cut sheet presence sensor** is provided near the **paper exit** to detect whether or not the cut paper is removed by a recipient.

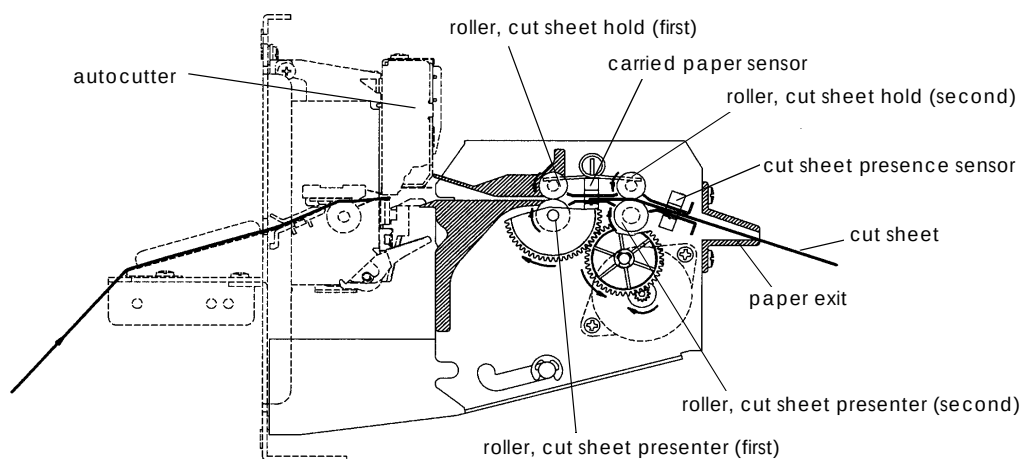


Figure 2-24 End of the Cut Sheet Carrying Operation

Paper Carrying Operation (Without Loop)

The cut sheet can be carried without forming a loop.

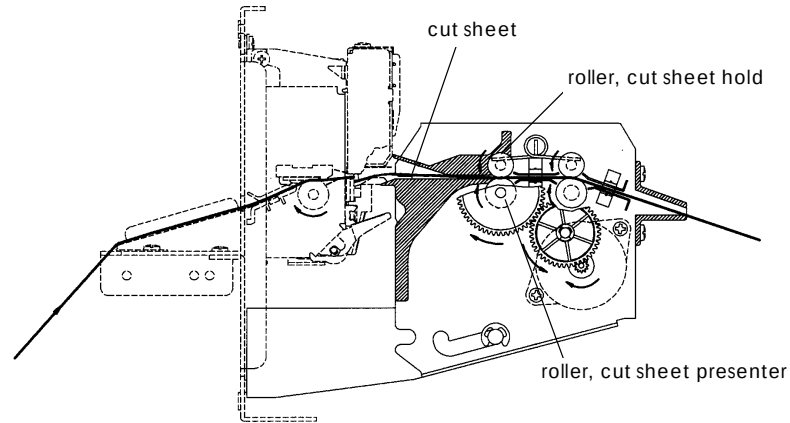


Figure 2-25 Cut Sheet Operation without Loop

**Note:**

During paper carrying operations without a loop, do not pull out the paper.

Retract Function

The retract function retracts the cut sheet inside the unit if the recipient does not take the cut sheet. The retract mechanism consists of the **frame, paper route change**, the **plate, route change guide**, the **roller, retract**, the **solenoid**, and the **paper path change sensor**.

The retracting operation is started by a command signal for the retraction. At first, the **paper route change** performs the paper path change operation to retract the cut sheet. When the **solenoid** linked with the **frame, paper route change** is energized, the **frame, paper route change** and the **plate, route change guide** move in direction A. After the **paper route change sensor** detects the end of the paper route change operation, the **motor, paper feed receipt, B** begins to rotate in the counterclockwise direction; then through the gears, the **roller, cut sheet presenter** and the **roller, retract** inside the retracting paper route rotate and the cut sheet is retracted into the unit through the retracting paper route. The retracted cut sheet will fall to the bottom of the cut sheet presenter module.

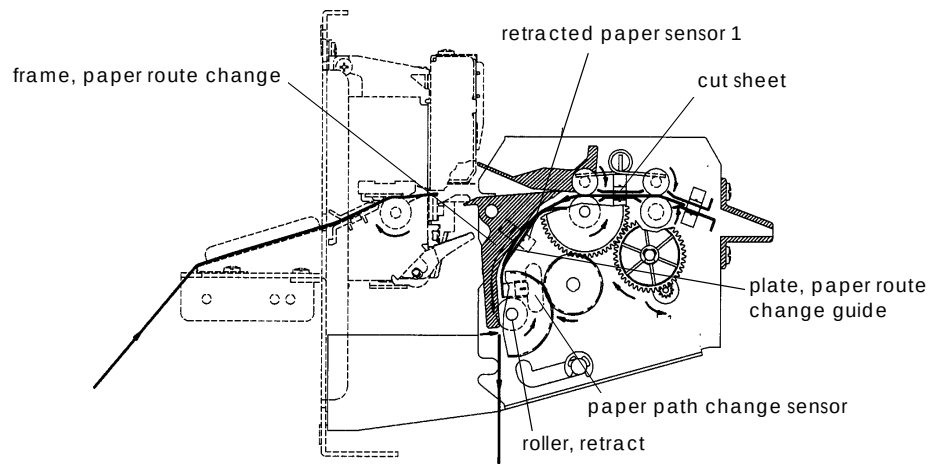


Figure 2-26 Retract Function

Detector Mechanism

The detector mechanism consists of the **cover, open sensor**, the **carried paper sensor**, the **cut sheet presence sensor**, the **paper path change sensor**, and the **retracted paper sensor 1**.

Cover open sensor

This sensor detects whether the **upper frame, cut sheet presenter unit** is open or not.

Carried paper sensor

This sensor detects the paper presence in the paper carrying route.

Cut sheet presence sensor

This sensor detects whether or not a recipient has taken the cut sheet.

Paper path change sensor

This sensor detects the retracted paper route change when the cut sheet is not taken.

Retracted paper sensor 1

This sensor detects the paper presence in the retracted paper route.

Control Circuit Board Module

The control circuit board module controls all functions of each module and has the interface connectors and the power supply terminals. Each function can be set by using the DIP switches and the memory switches.

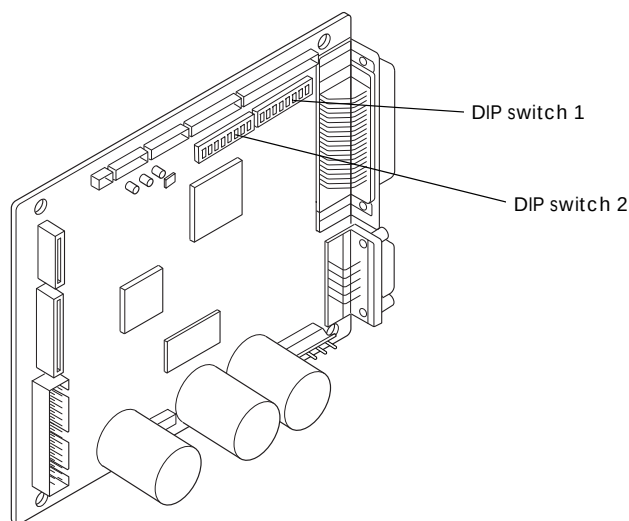


Figure 2-27 Appearance of the control circuit board module

DIP Switches

The circuit board has two DIP switches (DSW 1/2). Each setting is as follows:

DIP Switch 1

Table 2-1 DSW 1

SW No.	Function	ON	OFF	Default Setting
1	Black mark sensor	Enabled	Disabled	OFF
2	Interface selection	Refer to Table 2-2		
3				
4	Serial interface handshaking	XON/XOFF	DTR/DSR or CTS/RTS	OFF*
5	Serial interface parity check	Yes	No	
6	Serial interface parity selection	Even	Odd	
7	Serial interface baud rate selection	Refer to Table 2-3		
8				

*: Effective only when the serial interface is selected.

Table 2-2 Interface Selection

Interface	Switch No. 2	Switch No.3
Parallel interface (IEEE1284)	OFF	OFF
Serial interface (RS232)	OFF	ON
Optional interface	ON	ON or OFF

Table 2-3 Baud Rate Selection

Transmission speed (bps)	Switch No.7	Switch No.8
4800	ON	ON
9600	OFF	ON
19200	ON	OFF
38400	OFF	OFF

bps: bits per second

DIP Switch 2

Table 2-4 DSW 2

SW No.	Function	ON	OFF	Default setting
1	Model type selection	Refer to Table 2-5		ON
2				OFF
3	Print density selection	Refer to Table 2-6		
4				
5	Operation mode selection	Refer to Table 2-7		
6	Factory use			OFF (*1)
7	I/F pin 6 reset signal-1	Enabled	Disabled	OFF (*2)
8	I/F pin 6 reset signal-2	Enabled	Disabled	

(*1): Fixed to OFF

(*2): Effective only when the serial interface is selected.

Table 2-5 Model Type Selection

Model	Switch No.1	Switch No.2
EU-T532 (79.5 mm {3.15"} paper-width model: 576 dots)	ON	OFF
EU-T542 (82.5 mm {3.25"} paper-width model: 640 dots)	OFF	OFF

Table 2-6 Print Density Selection

Level	Print Density	Switch No.3	Switch No.4
1	Slightly light	ON	ON
2	Normal	OFF	OFF
3	Slightly dark	ON	OFF
4	Dark	OFF	ON

Table 2-7 Operation Mode Selection

Operation mode	Switch No.5
Hexadecimal dump	ON
Normal	OFF

Notes:

- Changes in DIP switch settings (excluding switches 2-7 and 2-8 interface reset signals) are recognized only when the printer power is turned on or when the printer is reset by using the interface.
- If you turn on DIP SWs 2-7 and 2-8 while the printer power is turned on, the printer may be reset, depending on the signal state. DIP switches should not be changed while the printer power is on.

Memory Switches

Other settings except DIP switches 1 and 2 are set by the memory switches. (The settings are changed with a **GS (E** command, and also can be changed by using the MEMSW.exe included with an EPSON Advanced Windows Driver.) The settings of the memory switches are as follows:

Table 2-8 Memory Switch 1

SW No.	Function	ON (1)	OFF (0)	Default setting
1	Reserved	—	Fixed to OFF	OFF(0)
2				
3	BUSY condition	Receive buffer full	Receive buffer full or offline	ON(1)
4	Receive error	Ignored	Prints "?"	OFF(0) (*1)
5	Auto line feed	Always enabled	Always disabled	OFF(0) (*2)
6 to 8	Reserved	—	Fixed to OFF	OFF(0)

(*1): Effective only in the serial interface model.

(*2): Effective only in the parallel interface model.

Table 2-9 Memory Switches 2 to 6

SW No.	Function	ON (1)	OFF (0)	Default setting
1 to 8	Reserved	—	Fixed to OFF	OFF(0)

Table 2-10 Memory Switch 7

SW No.	Function	ON (1)	OFF (0)	Default setting
1	Reserved	—	Fixed to OFF	OFF(0)
2	Setting for the secondary paper near-end position	Refer to Table 2-11		OFF(0) (*1)
3				
4	Operation after cutting	Complete ejection	Clamp	OFF(0) (*2)
5	Paper initializing operation when the power is turned on	Paper edge is always cut.	Paper edge is detected.	
6 to 8	Reserved	—	Fixed to OFF	OFF(0)

(*1): •Effective only for the model type with the paper roll supply module

- This setting lets the printer tell the paper nearend by sending the secondary paper nearend status when the specified length of paper is fed after the primary paper nearend sensor in the paper roll supply module detects the paper nearend.

(*2): Effective only when using with the cut sheet presenter module.

Table 2-11 Setting for Paper Nearend Detecting Position

Paper length (for the time between detecting the primary paper nearend with the nearend sensor and sending the status of the secondary paper near-end)	Memory SW No.7-2	Memory SW No.7-3
Approximately 5 m {196.85"}	OFF	OFF
Approximately 10 m {393.70"}	ON	OFF
Approximately 20 m {787.40"}	OFF	ON
Approximately 30 m {1181.10"}	ON	ON

Definition of the primary paper nearend and the secondary paper nearend:

- The primary paper nearend is defined as when the paper nearend sensor in the paper roll supply module detects the paper roll nearend.
- The secondary paper nearend is defined as when the paper is fed for the specific length after the primary paper nearend is detected.

When the primary and the secondary paper nearends are detected, the status from the printer changes. However, printer controls, such as the printing stop are not affected.

Table 2-12 Memory Switch 8

SW No.	Function	ON (1)	OFF (0)	Default setting
1 to 2	Print control mode	Refer to 2-13		OFF(0)
3	Backward paper feeding	Enabled	Disabled	OFF(0) (*1)
4	Autocutter installation	Not installed	Installed	OFF(0)
5	Specific offline operation	Discards receive data	Keeps receive data	OFF(0) (*2)
6	Backward paper feeding amount	88 steps	108 steps	OFF(0)
7	Test print when the paper is loaded	Enabled	Disabled	
8	Black mark position	Initializes the BM position	Not initialize the BM position	

(*1): Do not set SW 3 to ON in the following condition:

- The partial cutter is used when the cut sheet presenter module is not used.

When backward paper feeding is enabled, the following process is executed.

- After cutting the paper with a **GS V** command, backward paper feeding is executed. (When the Black mark sensor is disabled.)
- The print starting position adjustment with a **GS (F** command can be set to the backward direction relative to the cutting position. In this case, the maximum backward correction value is 14 mm {0.55"} (112 step × 0.125 mm {0.005"} per step).

(*2): Specific offline means the following states.

- Error state except an automatic recovery error state
- Platen open
- Cut sheet presenter module or cover open
- Paper empty

If this switch is turned on, the printer clears the receive buffer when the offline status shown above occurs. Then the printer executes any real-time command (**DLE ENQ**, **DLE EOT**) if it is there, and discards all other data. When the receive buffer is cleared, if this switch is turned on, three bytes of data, 37H, 24H, and 00H, are transmitted.

Table 2-13 Print Control Mode Selection

Default for the print control mode	SW 1	SW 2
Non-divided energizing mode	OFF	OFF
Two-part energizing mode	ON	OFF
Four-part energizing mode	Either ON or OFF	ON

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Chapter 3

Handling

Precautions

Transport Precautions

- ❑ When shipping the printer, use anti-static packing materials.
- ❑ Remove a paper roll when transporting the EU-T532 / T542.
- ❑ Make sure to close the **paper roll hold unit** of the paper roll supply module, the **platen unit** of the printer module, and the main unit and the **upper frame, cut sheet presenter unit** of the cut sheet presenter module when transporting.

Carrying Precautions

- ❑ Hold the **frame, main** and the holding the **plate, printer** of the paper roll supply module when carrying.

**Note:**

*Do not hold parts other than above such as the **holder, paper roll** (or **shaft, paper roll**) or the **roller, paper roll tension**; otherwise the functions may be affected because of damage or deformation of parts.*

- ❑ When you put this unit on a place such as a desk, be sure to put it on a flat place; otherwise, the unit may fall down or a malfunction may occur because of deformation of parts.

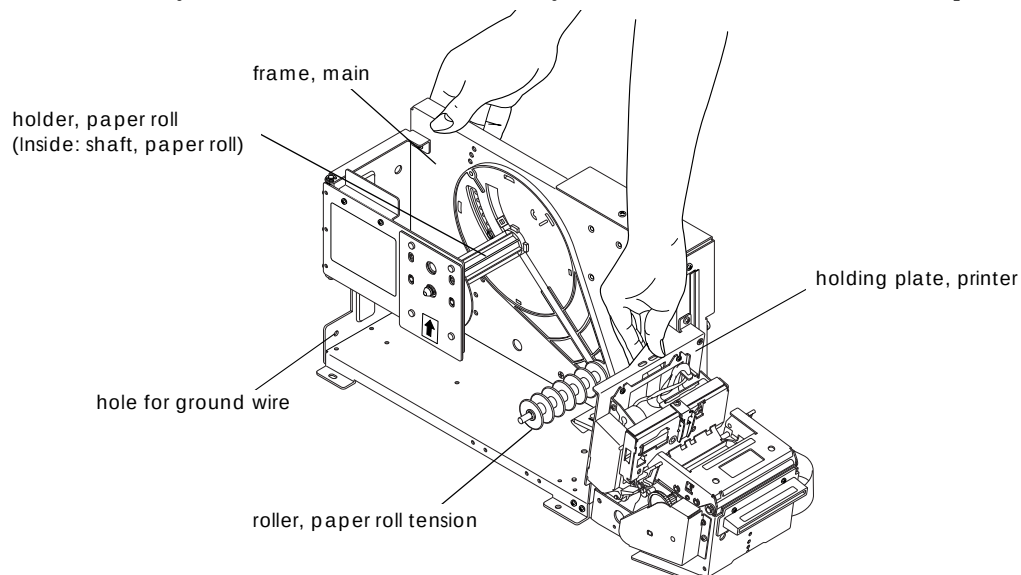


Figure 3-1 Correct way of holding the EU-T532/T542

Installation Precautions

- ❑ When installing the unit, secure firmly four mounting parts at the bottom of the paper roll supply module to the system side with screws.
- ❑ Make sure to ground the unit by using the hole for a ground wire. (See Figure 3-1 for the position.)



Note:

If the system side where the unit is installed is not flat, that could cause deformation of parts and malfunction. (It is recommended the difference in level is 0.3 mm {0.012"} or less.)

Handling Precautions

Paper roll supply module

- ❑ Do not apply excessive pressure to the **paper roll hold unit** when opening or closing it; otherwise, the unit may not open / close properly because of deformation of parts.
- ❑ Do not touch the light emission or receiving surfaces of the **paper NE detector**, as dirt may stick to them, or cause damage by static electricity.

Printer module



CAUTION:

Since the thermal head area and the motor surface can become hot right after or during printing, never touch them with your bare hands; allow about 15 minutes for them to cool.

- ❑ Since the EU-T532/T542 contain permanent magnets (in the motor) as well as electromagnets, they should not be used in an environment with excessive dirt, dust or metallic dust.
- ❑ Never print without paper installed or with the head away from the **platen**, because the life of the **thermal head** may be shortened.
- ❑ Never pull out the paper (forward or backward) with the head down (against the **platen**).
- ❑ Do not turn off the power during operations, especially during a cutting operation; otherwise the cutter blade could be exposed, leaving the **platen unit** difficult to open.
- ❑ Since the head heating elements and the driver IC are very delicate, avoid touching them with any metal objects such as tweezers or screwdrivers.
- ❑ Open the **platen unit** only when required.
- ❑ Never touch the surface of the head heating elements and the driver IC, as dirt may stick to them, affecting the head heating elements or causing damage from static electricity.

- ☐ Before handling the **thermal head**, use proper body grounding procedures to avoid damage from static electricity.
- ☐ Make sure no dust collects on the thermal paper.
- ☐ Since the printer uses a line thermal print head, condensation must be avoided. If condensation occurs, do not turn on the printer until it has disappeared.
- ☐ Do not apply excessive pressure to the **thermal head** connectors.
- ☐ An FFC can be replaced only ten times; then you must use a new one.
- ☐ Do not apply excessive pressure to the **lever, platen** when opening or closing the **platen unit** with the lever.

Cut sheet presenter module

CAUTION:

Since the paper feed motor and the solenoid surface can become hot after printing for a long period of time, never touch them with your bare hands; allow about 15 minutes for them to cool.

- ☐ Since the EU-T532/T542 contain permanent magnets as well as electromagnets in the motor and the solenoid part, they should not be used in an environment with excessive dirt, dust and metallic dust.
- ☐ Operate the cut sheet presenter module or the **upper frame, cut sheet presenter unit** only when required.
- ☐ Do not turn off the power during operations, since that could cause a paper jam.

Control circuit module

Serial interface is secured with inch-type hexagonal lock screws for the default setting. If you use millimeter-type screws, replace the inch-type screws with the millimeter-type screws attached to the **frame, main** for type 1 and 2. (For type 3 and 4, millimeter-type screws are enclosed in the box.)

Paper roll

- ☐ Use only the recommended thermal paper because thermal paper contains a high ion content such as Na, K and Cl may damage the head heating elements.
- ☐ Avoid heat, humidity, sunlight and solvents, regardless of whether or not the paper has been used. (Thermal paper gradually darkens at about 70°C {158°F}.)
- ☐ Remove the installed paper roll when the unit is not used for a long time in a high temperature, or high humidity condition; otherwise the thermal sensitive materials contained in the thermal paper may stick to the thermal head area, affecting the printing quality.
- ☐ Label sheets are not available for the EU-T532/T542.

Storage Precautions

- ❑ Do not store the printer in environments with excessive dust, high temperature, high humidity, or in direct sunlight.
- ❑ Before storing the EU-T532/T542 for an extended time, remove the paper and wipe off dirt and dust; then clean parts such as the **platen** and the **thermal head** of the printer module, rollers of the cut sheet presenter module with alcohol. After the alcohol evaporates, close each module and store the unit.



Note:

*If you leave the printer with the paper installed, discoloration of the paper and stickiness between the paper and the **platen** may occur. In this case, replace the paper.*

- ❑ Storing the printer for an extended period with the **platen** closed could cause the platen rubber to deform and result in defective printing. If the platen rubber is deformed, it can be restored to its proper shape by feeding paper through the printer. Just feed paper through the printer until the **platen** works properly; then resume printing.

Opening/Closing Units and Modules



Note:

- ❑ Do not apply excessive pressure to any operation part; otherwise its function may be damaged because of deformation or damage of the part.
- ❑ Apply pressure to each operation part only in the specified direction; otherwise its function may be damaged because of deformation or damage of the part.

Paper Roll Supply Module

Opening/closing the paper roll hold unit (See Figure 3-2.)

1. Lift the **plate, fixed** upward (in the direction of arrow B) to release the lock with the **shaft, paper roll**.
2. Pull the **plate, fixed** in the direction of arrow A to open the unit.
3. To close the unit, push it to the **shaft, paper roll** until it stops. At this time, make sure that the **plate, fixed** is securely engaged with the groove on the **shaft, paper roll**. (Make sure the unit is not open when it is pulled in the direction of arrow A.)

Printer Module

Opening/closing the platen unit (See Figure 3-2.)

1. Turn the **lever, platen** (green lever) of the printer module in the direction of arrow C to open the unit.
2. To close the unit, turn the **lever, platen** in the direction of arrow D.

Cut Sheet Presenter Module

Opening/closing the cut sheet presenter module (See Figure 3-2.)

1. Remove the white screw on the opposite side of the mounting dowels.
2. Put your fingers on / around the **seal, paper exit guides** (green stickers) on the **upper frame, cut sheet presenter unit** and on the **paper exit**; then pull the cut sheet presenter module in the direction of arrow E to slide it in direction E.

**Note:**

Be careful with your hand, as the module is pulled in the direction of arrow F with spring.

3. Pull the module further until the mounting dowels on the module are disengaged; then the module is turned downward and opened.
4. To put the module back to the previous position, lift up the bottom of the **paper exit**. At this time, make sure that the mounting dowels (both on the right and left sides) are securely engaged with the mounting parts on the module.

Opening/closing the upper frame, cut sheet presenter unit (See Figure 3-2.)

1. Turn the **lever, clamp** in the direction of arrow G to open the unit. You can operate either lever on the right or the left.
2. To close the unit, turn the **lever, clamp** in the direction of arrow H. At this time, make sure that the **lever, clamp** is properly engaged with the **shaft, clamp lever**.

**Note:**

Do not lift the **upper paper guide** when the **upper frame, cut sheet presenter unit** is closed.

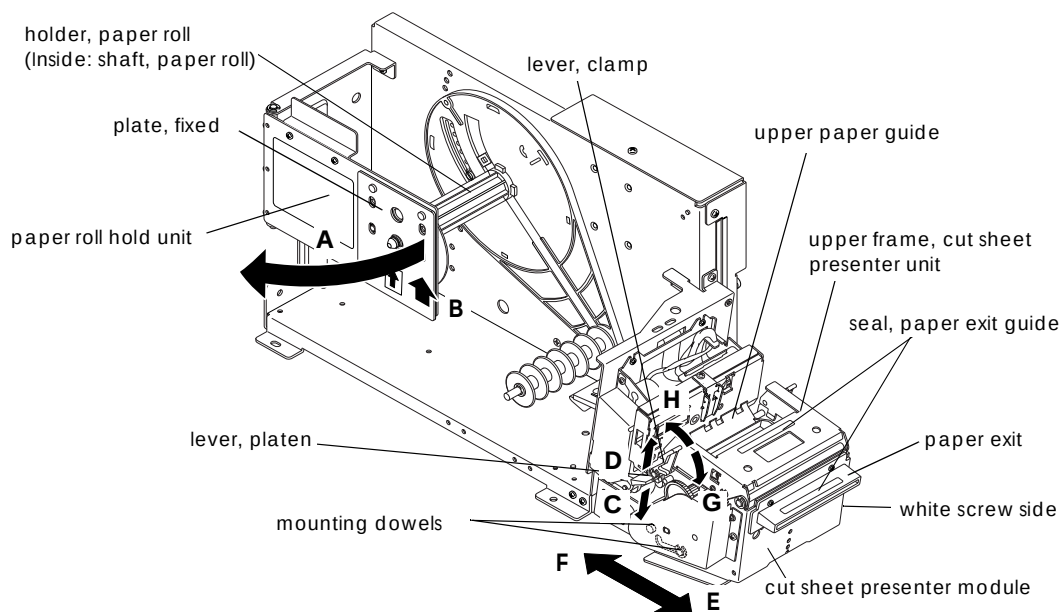


Figure 3-2 Opening/closing units and module

Loading/Removing Paper

Loading Paper

See the sticker on the **paper roll hold unit** for the paper loading.

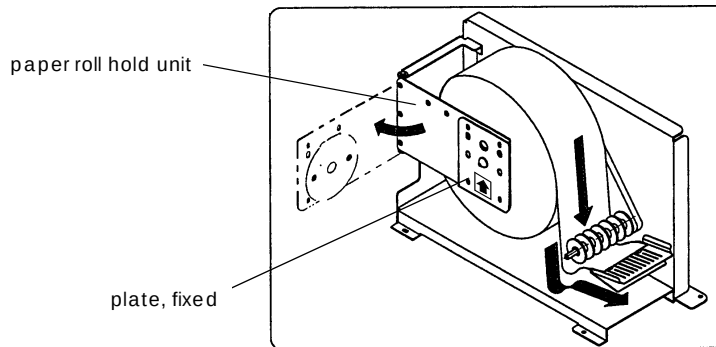


Figure 3-3 Paper loading display on sticker



Note:

Use only the paper specified in the EU-T532 and the EU-T542 specifications issued by Seiko Epson Corporation.

Loading paper for the paper roll supply module

Follow the steps below to load the paper for the paper roll supply module.

1. Lift the **plate, fixed** upward to release the lock with the **shaft, paper roll**.
2. Open the **paper roll hold unit**.
3. Attach a **holder, paper roll** which meets the inside diameter of the paper core to the **shaft, paper roll**; then secure it with a C-ring.



Note:

At the default setting, the **holder, paper roll A** (for the inner diameter of the paper core is 25.4 mm {1"}) is attached to the paper roll supply module. Since two holders, the **holder, paper roll B** (if the inner diameter of the paper core is 50.8 mm {2"}), and the **holder, paper roll C** (if the inner diameter of the paper core is 76.2 mm {3"}), are also packed in the box, use the appropriate **holder, paper roll** that meets your paper core size.

4. Load the paper roll to the **holder, paper roll** with the printing surface of the paper facing upwards.
5. Close the **paper roll hold unit** to secure the paper roll. At this time, make sure that the **plate, fixed** is securely engaged with the **shaft, paper roll**.

Loading paper for printer module

Follow the steps below to load the paper for the printer module from the paper roll supply module.

1. Cut the edge of the paper as shown in Figure 3-4.

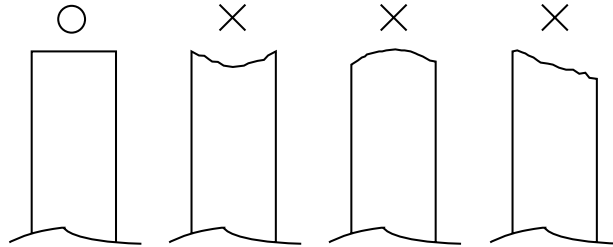


Figure 3-4 Shape of paper edge

2. Pull out the paper and pass it under the **roller, paper roll tension**.
3. After inserting the paper edge straight into the paper slot of the printer module so that the paper is along the upper side of the **plate, lower paper guide**, push the paper with your hand.
4. When the inserted paper is detected by the **paper-end detector** of the printer module, the paper is fed automatically in the semi-autoloading mode.
5. When the semi-autoloading is finished, the extra paper is automatically cut.
6. Remove the extra paper from the **paper exit**.

**Note:**

- Performing operations other than above can cause improper paper feeding and jamming.
- Make sure that the paper is not wrinkled or torn.
- To avoid paper jams, do not fold the edge of the paper.
- Paper curled in the opposite direction from the paper entrance might be difficult to insert.
- If the paper is not inserted at a right angle, paper jams or paper folding may occur. In this case, open the **platen unit**, and load the paper properly after removing a paper jam.
- Do not apply excessive pressure to the **shaft, paper roll**; otherwise the **paper roll hold unit** may not open/close properly because of deformation or damage of the shaft.

Removing Paper

Follow the steps below to remove the paper roll.

Removing paper using command

While the printer is online, the paper can be removed using a **FS (z** command. Using this command, the paper is fed in the reverse direction and detached from the **platen**; then you can pull the paper backward and remove it.

Manual paper removing

1. Turn the **lever, platen** to open the **platen unit**. (See “Opening / Closing the platen unit” on page 3-4.)
2. Pull out the paper from the paper slot of the printer module.
3. Open the **paper hold unit** of the paper roll supply module and remove the paper roll from the **shaft, paper roll**.



Note:

*Do not apply excessive pressure to the **shaft, paper roll**; otherwise the **paper roll hold unit** may not open or close properly because of deformation or damage of the shaft.*

Removing Jammed Paper

CAUTION:

Since the thermal head area and the paper feed motor surface of the printer module and the paper feed motor surface of the cut sheet presenter module can become hot right after printing, never touch them with your bare hands; allow about 15 minutes for them to cool.



Note:

- ☐ Never pull the paper out with the **platen unit** of the printer module or the **upper frame, cut sheet presenter unit** of the cut sheet presenter module down.
- ☐ When using tools such as tweezers to remove paper pieces, avoid touching the head heating elements or the elements of each paper detector with them.

Removing Jammed Paper in the Cut Sheet Presenter Module

Open the **upper frame, cut sheet presenter unit** or the cut sheet presenter module, and remove a paper jam. (See “Opening / Closing Units and Module” on page 3-4.)

Removing Jammed Paper in the Printer Module

1. Open the cut sheet presenter module.
2. Turn the **lever, platen** to open the **platen unit** and remove a paper jam. (See “Opening / Closing Units and Module” on page 3-4.)

Paper NE Detector Setting

This detector is mounted on the **paper roll tension unit** of the paper roll supply module. By adjusting the position of the detector, the detector can detect the amount remaining on the paper roll at the setting value. At the default setting, the amount remaining is set to be about 5 m {196.85"} when the paper tip is detected, and when using the paper which has 25.4 mm {1"} inner diameter of the core, 33.4 mm {1.3"} outer diameter of the core and the 65 μ m paper thickness. When you want to change the setting, follow the steps below.

1. If the paper is loaded, open the **paper roll hold unit**, and remove the paper roll. (See "Removing Paper" on page 3-8.)
2. Loosen the **screw, NE detector** so that the **paper NE detector** can be moved in the direction of arrow.
3. Tighten the **paper NE detector** with the **screw, NE detector** at the given fixing hole for the **paper NE detector**. For further adjustment, use the **paper NE detector** fixing groove.

The hole numbers for the **paper NE detector** fixing hole and the paper roll diameters detected by the **paper NE detector** are as follows:

Table 3-1 Setting of the Paper NE Detector

	Hole No. 1	Hole No. 2	Hole No.3	Hole No.4	Hole No. 5	Hole No. 6	Hole No. 7
Detected paper diameter	45 mm {1.77"}	50 mm {1.97"}	60 mm {2.36"}	70 mm {2.76"}	80 mm {3.15"}	90 mm {3.54"}	100 mm {3.94"}

 Note:

- ☐ Because the amount remaining on the paper roll will vary with the paper types (thickness), make sure to check before setting.
- ☐ Do not touch the light emission or receiving surfaces of the **paper NE detector** with your hands or any objects since dirt may stick to them, or cause damage by static electricity.

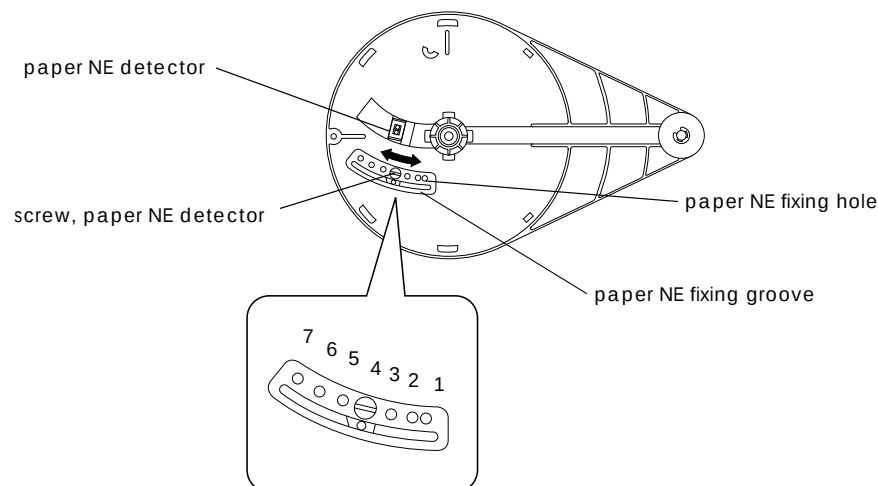


Figure 3-5 Setting of the paper NE detector

Self Test

The EU-T532/542 have self test functions. Follow the steps below to perform the self tests.

Performing the Self Test

1. Loosen two screws to remove the **cover, circuit board B**.

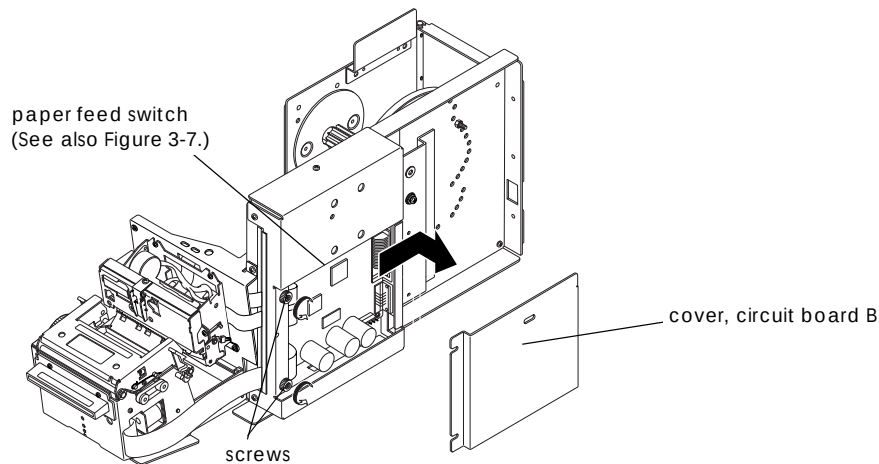


Figure 3-6 Performing the self test

2. With the paper loaded, turn on the power while holding down the paper feed switch on the circuit board. (If the power is already on, turn it off first before performing the self test with the paper loaded.)
3. The current printer status is printed.
4. When the printing is complete, the message, **“Self test printing, please press FEED button,”** is printed; then the PAPER OUT LED starts to flash.
5. Press the paper feed button again while the PAPER OUT LED is flashing; then the printing (for the test pattern printing) is resumed.

Self Test End

1. After a number of lines are printed, the message, *****completed*****, is printed at the end of the self test; then the unit enters the normal operational mode, with all settings initialized.
2. When the self test is completed, attach the **cover, circuit board B** with screws.



Note:

During the self test, check each LED on the circuit board. If an error occurs during the self test, see the following section and “Troubleshooting” in Chapter 5 for details.

Errors

LED Display

The control circuit board module has three LEDs: the POWER LED for power supply error, the PAPER OUT LED for paper-out error and the ERROR LED for various kind of errors. For recovery from errors, see “Troubleshooting” in Chapter 5.

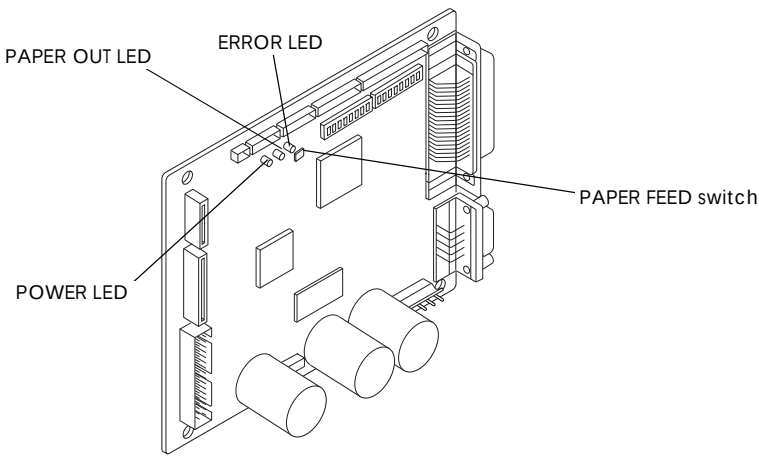


Figure 3-7 LED positions

POWER LED (Power Supply Error): Green

When the POWER LED is lit, the power is supplied. The LED indicates the following:.

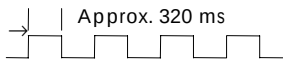
Table 4-4 POWER LED Error

Error type	LED flashing pattern	Cause
Power supply error	Not lit	The power supply connector is unplugged.
		The fuse (F1) is blown out.

PAPER OUT LED (Paper-End Error): Red

When the PAPER OUT LED is not lit, the paper roll has enough paper on it. The LED indicates the following:

Table 4-5 PAPER OUT LED Error

Error type	LED flashing pattern	Cause
Paper-end error	Lit	• The amount of remaining on the paper roll is little, or no paper is loaded. • A paper jam occurs around the detector. • Detector failure has occurred. • The connector of the detector is unplugged.
Waiting for self test printing to be continued or macro execution ready state	Flashing  Approx. 320 ms	Self test printing is in the ready state during self test.

ERROR LED (Error): Red

ERROR LED has three error types: the automatic recovery error, the possible recovery error, and the recovery impossible error. The LED indicates the following:

Automatic recovery error

Table 4-6 Automatic recovery error

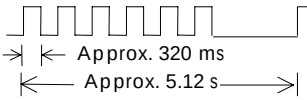
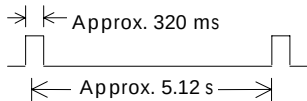
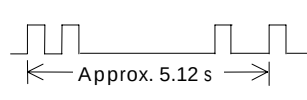
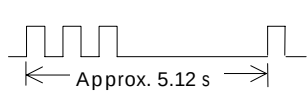
Error type	LED flashing pattern	Cause
Print head high temperature error	 Approx. 320 ms	The head temperature has reached at 70°C or more.

**Note:**

The high temperature error of the print head is not an abnormality. When the head is cooled down to 60°C or less, the unit recovers automatically.

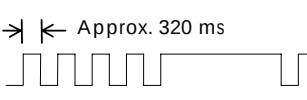
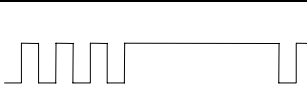
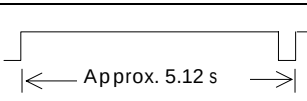
Possible recovery error

Table 4-7 Possible Recover Error

Error type	LED flashing pattern	Cause
Platen open error		Platen unit is open during printing.
Autocutter error		Autocutter malfunction
Black mark sensor detection error		No black mark is detected even after a certain amount of paper with black mark is fed.
Presenter error		A paper jam has been detected in the cut sheet presenter module.

Recovery impossible error

Table 4-8 Impossible recover error

Error type	LED flashing pattern	Cause
CPU execution error		The CPU executes an incorrect address.
R/W error in memory or G/A		After R/W checking, the printer does not work correctly.
High voltage error		The power supply voltage is extremely high.
Low voltage error		The power supply voltage is extremely low.
PCB connection error		The printer is not connected or the head wiring is disconnected.

**Note:**

When any error shown above occurs, turn off the power as soon as possible.

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Chapter 4

Maintenance

To keep the printer in peak working condition, extend its life for a long term and prevent operational failures, follow the maintenance procedures below.

Cleaning

CAUTION:

- Never clean the **thermal head** with solvents other than the specified ones, since other solvents could damage the **thermal head** or cause the malfunction of parts.
- Since the head area and each motor surface can become hot right after printing, allow about 15 minutes for them to cool.

Thermal Head Cleaning

The head heating elements of the printer module will collect dust after printing for a long period of time because of heat sensitive materials contained in the paper, that could affect printing quality. In this case, clean the thermal head using the steps below.

1. Turn off the power.
2. Open the cut sheet presenter module. (See “Opening / Closing Units and Modules” on page 3-4.)
3. Open the **platen unit** using the **lever, platen**, and remove the paper.
4. Wipe off the dust on the head heating elements using a cotton swab dampened with alcohol solvent, such as ethanol, or IPA.

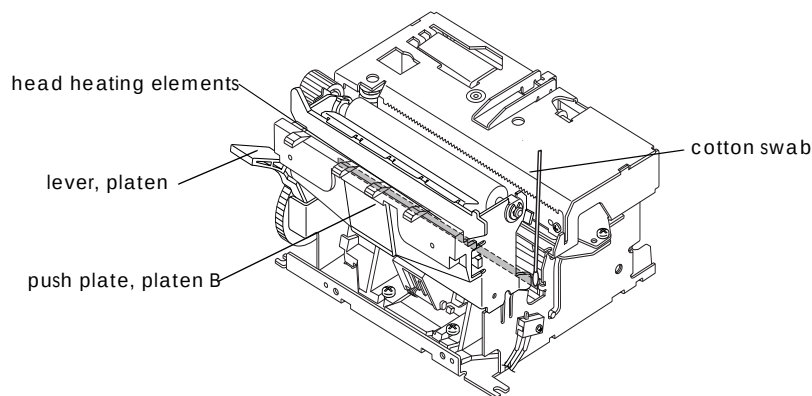


Figure 4-1 Thermal head cleaning

5. After the alcohol evaporates completely, turn the **lever, platen** or push the **push plate, platen B** to close the **platen unit**.

Removing Stains (Except for the Thermal Head)

The areas where the paper is fed will be stained or collect dust after printing for a long time because of paper dust and heat sensitive materials contained in the paper. Especially, if paper feed rollers, the platen, or the paper detectors are not clean, a malfunction of paper feeding or paper detection may occur. In this case, wipe off stains with alcohol.

CAUTION:

Never use thinner, benzine, trichloroethylene, or ketone group solvents, since they could damage rubber and plastic parts or cause them to deteriorate.

Removing Dirt and Dust

Use an electronic vacuum cleaner to remove dirt and dust. After cleaning, check the lubrication point and lubricate when necessary.



Note:

When opening the units and cleaning them, be sure not to damage parts and paper detectors, disconnect wires, or unplug connectors.

Removing Foreign Matter When the Cutter Locks

Follow the procedures below to remove foreign matter when the cutter of the printer module locks.

After rotating the **motor** in reverse so that the **movable cutter blade, full, H** returns to the home position, shut off the current to the **motor**; then remove any foreign matter. (See Figure 2-20 on page 14 in Chapter 2 for checking the home position.)

If the **movable cutter blade, full, H** fails to return to the home position even after executing the above procedure, follow the steps below.

1. Shut off the current to the **motor**.
2. Rotate the knob on the **gear, cutter worm, H** with a tool, such as tweezers, so that the **movable cutter blade, full, H** returns to the home position; then remove the foreign matter.

Inspection

The maintenance and inspection procedures for the printer fall into two categories. One is “Daily checks” for the printer user, and the other is “Periodic checks” for someone with more technical knowledge. Maintenance and inspection procedures should be carried out by properly qualified personnel.

Daily Checks

Make sure the printer is used properly and kept in good repair. If there are any problems, replace the printer. The check items are as follows:

Table 4-1 Daily Checks

Check item	Standard	Procedure
Setup status	No cables or connectors are disconnected.	Connect the cables or connectors properly.
	Paper roll is loaded properly.	Load the paper properly.
	No unit of each modules is open. (the paper roll hold unit, the platen unit, the upper frame, cut sheet presenter unit, the cover, circuit board B, and etc.)	Close the units.
Paper chips or foreign matter inside the product	No paper chips or foreign matter is inside the product	Remove paper chips or foreign matter.
Paper state	Specified paper is used.	Replace with the specified paper
	No discolored or torn paper is used.	Replace with a new paper roll.

Periodic Checks

Every six months, check the items listed in the table below. If there are any problems, correct them using procedures in the table below.

Table 4-2 Periodic Checks

Check item	Standard	Procedure
Dust, fuzz or dirt sticking to various parts	• No dirt or dust is attached or collected in the paper path.	• Remove dust, fuzz, or dirt with a vacuum cleaner.
	• No paper chips or foreign matter is in the areas such as around the thermal head heating elements, the cutter, gears, detectors, and inside the paper path.	• Wipe off dirt and dust with alcohol. • Remove foreign matter or paper chips. • Wipe off paper chips on the platen surface with alcohol when the surface is accumulated with paper chips.
Lubrication status	Lubrication is satisfactory.	Lubricate the lubrication points if required.
Operating status	• Printing, paper feeding and issuing operations perform properly. • No abnormal sound • All other functions perform properly and parts are not deformed or worn.	See “Troubleshooting” on page 5-2.

Lubrication

Lubrication is particularly important in keeping the printer operating properly as long as possible. Therefore, lubricate at prescribed intervals, using the correct lubricants.

Lubricant

The performance and durability of the printer are greatly affected by the lubricant applied. Therefore, pay careful attention to lubricant specifications, especially for the low temperature characteristics. The lubricants for the printer are chosen based on technical information analysis and tests on various lubricants by EPSON. The lubricants are available in 40 cc (gr.) plastic containers (the minimum supply unit). Both G-36 and G-15 are used on this printer.

Lubrication Standards

Lubricate the printer in the following situations:

- ☐ Lubricant is wiped off during cleaning.
- ☐ Lubricant is wiped off when disassembly or assembly is performed.

When lubricating parts during assembly of the printer, clean parts before lubricating them.

Refer to the next section and “Lubrication Diagram” at the end of this manual for the lubricants and the lubrication points.

Lubrication Point

The lubrication points are as follows:

Table 4-2 Lubrication Point

Module	Number	Lubrication point	Lubrication type	Amount of lubricant
Printer module	1	Two points where the screw on the lock lever is secured	G-15	1 mm-diameter lubricant
	2 to 7	The seven points where the gears on the autocutter are engaged with other parts.	G-36	Appropriate quantity
	8	The oval hole on the movable cutter blade (Two points)	G-15	1 mm-diameter lubricant
	9	The two points where the cutter frame contact the fixed blade .	G-15	1 mm-diameter lubricant
	10	The two points where the shaft of the movable cutter blade rotates.	G-15	Appropriate quantity
	11	The dowels where the platen unit rotates.	G-36	Until the dowels are covered.
	12	The points where the frame assembly contact the lock lever assembly .	G-15	1 mm-diameter lubricant

Table 4-2 Lubrication Point

Module	Number	Lubrication point	Lubrication type	Amount of lubricant
Paper roll supply module	13	Two contact points where the paper roll hold unit turns	G-36	Appropriate quantity
	14	Contact point where the paper roll tension turns	G-36	Appropriate quantity
Cut sheet presenter module	15	Two points where the cut sheet presenter module turns	G-36	Appropriate quantity
	16	Two points where the upper frame, cut sheet presenter unit turns	G-36	Appropriate quantity

Note: The lubrication point numbers in the table are the same as those in the lubrication diagrams at the end of this manual.

Lubricant List

Table 4-3 Lubricant List

Type	Name	Quantity	Commercial availability
Grease	G-15	40 gr	Epson exclusive product
Grease	G-36	40 gr	

Tools

Table 4-4 Tool List

Tool name	Commercial availability
Brush #1	Yes
Cleaning brush	Yes
Crosshead screwdriver #0, 1 and 2	Yes
ET holder No. 1.5, 2, 2.5, 3, 3.5 and 4	Yes
Tweezers	Yes
Diagonal cutting nippers	Yes
Pliers	Yes
Electric solder iron	Yes
Wrist band	Yes

Table 4-5 Measuring Equipment List

Name	Standard
Multimeter	DC voltage: 400 V max. Resistance: measurable
Oscilloscope	500 MHz with storage

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Chapter 5

Repair

Repairs are divided into two levels (A and B) in consideration of the degree of difficulty of repair. The person who repairs the printer should perform the proper repair procedures, depending on the individual technical knowledge and skills.

Repair Levels

Level A:	Requires general knowledge of the printer's operation principles and structure but does not require specialized experience.
Level B:	Requires a certain degree of knowledge of the printer's operating principles and structure as well as skills and experience using special tools for disassembly and assembly of the printer.

Repair Procedure

When problems occur, check the condition of the printer and locate the cause of the problem as outlined in "Troubleshooting Table." Then repair the unit properly. The table consists of the following five sections.

Phenomenon	Find the type of problem in this column.
Condition	Check the condition of malfunction by referring to this column.
Cause	Locate the cause of the problem by referring to this column. Also, the repair level is indicated for each cause; use this indication to determine the method of repair.
Where/ how to check	The mechanisms that may cause problems as well as checkpoints are listed in this column. Check the unit as outlined in this column to locate the malfunctioning section.
Procedure	Repair malfunctioning sections as indicated in this column. If the same problem or phenomenon reoccurs after the specified repair is performed, check other items in the "Cause" column and repair the unit again.

Troubleshooting

Use troubleshooting procedures in the table below when problems occur.

Table 5-1 Troubleshooting

Phenomenon	Condition	Cause	Level	Where/how to check	Procedure
No performance	Power (24 V) is not supplied	Power connector is disconnected.	A	See if the power connector is connected properly.	Connect the power connector again.
	POWER LED is not lit.	Fuse (F1) is blown.	B	Check with a tester if the fuse (F1) on the control circuit board is conductive.	•Replace the blown fuse. •Replace the control circuit board if there is no recovery after the fuse replacement.
PAPER OUT LED is lit.	Paper out error	(1) Paper is not loaded in the printer.	A	Check if the paper is loaded.	Load the paper in the printer.
		(2) Only a small amount remaining on the paper roll (paper NE detected)	A	Check the amount of the paper remaining in the paper supply module.	Replace the paper roll if only a small amount of the paper remaining is left.
PAPER OUT LED is not lit even when the paper is out.	Paper detector failure	(1) Paper chips or foreign matter is jammed around the paper detector.	A	Check whether paper chips or foreign matter is jammed around the paper detector.	Remove the paper chips or foreign matter if there is any.
		(2) Paper chips or foreign matter is jammed around the paper NE detector.	A	Check whether paper chips or foreign matter is jammed around the paper NE detector.	Remove the paper chips or foreign matter if there is any.
PAPER OUT LED is lit even when the paper is not out.	Paper detector failure	(1) Paper NE connector is disconnected.	A	Check if the paper NE detector is connected properly.	Connect the connector properly if it is disconnected.
		(2) Paper NE detector is damaged.	B	Check the paper NE detector function with an oscilloscope.	Replace the paper NE detector if it is damaged.
		(3) Paper detector is disconnected.	A	Check if the paper detector is connected properly.	Connect the connector properly if it is disconnected.
		(4) Printer detector is damaged.	B	Check the paper detector function with an oscilloscope.	Replace the paper detector if it is damaged.
		(5) Printer FFC is disconnected.	A	Check if the printer FFC is connected properly.	Connect the FFC if it is disconnected.

Table 5-1 Troubleshooting

Phenomenon	Condition	Cause	Level	Where/how to check	Procedure
PAPER OUT LED is flashing.	Self test standby state	Self test is in the standby state	A	Check if the self test printing is completed.	Press paper feeding SW on the control circuit board to complete the self test when not completed.
ERROR LED is flashing. (For the LED flashing patterns, see "Error LED" on page 3-12.)	Print head high temperature error	The head temperature has reached at 70°C or more.	A	—	— (When the head is cooled down to 60°C or less, the unit will recover automatically.)
ERROR LED is flashing (For the LED flashing patterns, see "Error LED" on page 3-12.)	Platen open error	The platen is open.	A	Check if the platen is not open.	Close the platen when it is open.
	Platen open is not detected.	The platen open detector is damaged.	B	Check the platen open detector function with an oscilloscope.	Replace the detector if it is damaged.
	Autocutter error	(1)Paper chips or foreign matter is inside the autocutter and has locked it.	B	Check whether paper chips or foreign matter is jammed inside the autocutter.	After turning off the power, remove paper chips or foreign matter; then turn on the power.
		(2)The internal function of the autocutter is damaged.	B	Check the power supply voltage.	Replace the autocutter if the power supply voltage is normal.
	Black mark detection error	(1)No black mark is printed.	A	Check if the paper is printed with a black mark.	Replace with the black mark printed paper.
		(2)The wrong side of the paper is used.	A	Check if the correct side of the paper is used.	Replace with the paper with the black mark on the correct side.
		(3)The black mark detector is damaged.	B	Check the black mark detector function with an oscilloscope.	Replace the detector if it is damaged.
		(4)Paper chips or foreign matter is jammed around the black mark detector.	A	Check whether paper chips or foreign matter is jammed around the black mark detector.	Remove the paper chips or foreign matter if there is any.

Table 5-1 Troubleshooting

Phenomenon	Condition	Cause	Level	Where/how to check	Procedure
Printing operation does not work.	Nothing is printed.	(1) The head FFC connection failure	A	Check whether the head FFC is connected properly.	Connect the head FFC properly.
		(2)The head FFC signal line is broken.	A	See or check with an oscilloscope whether there is damage or break of the head FFC.	Replace the head FFC if it is broken.
		(3)Head input pulse failure	B	Check with an oscilloscope whether the input pulse is within the specified range.	If the input pulse is abnormal, replace the control circuit module.
		(4)Head failure (Dr.IC, etc.)	B		If the input pulse is normal, replace the thermal head.
	Dots are missing continuously.	(1)Foreign matter is attached to the head heating elements	A	See if anything is wrong with the head heating elements	Clean the head heating elements if foreign matter attached.
		(2)The head heating elements are damaged.	A		Replace the thermal
		(3)Head failure (Dr.IC, etc.)	B	Check with an oscilloscope if the input pulse is within the specified range.	If the input pulse is normal, replace the thermal head.
	Dots are missing occasionally.	(1)Foreign matter is on the surface of the platen.	A	Check the surface of the platen with an oscilloscope or a magnifier.	Clean the surface of the platen if foreign matter is attached to it.
		(2)The platen surface is deformed.	A		Replace the platen if there is any damage on the platen surface.

Table 5-1 Troubleshooting

Phenomenon	Condition	Cause	Level	Where/how to check	Procedure
Printing is faint.	All printing color is faint.	Printing density setting is set to light. (The color sensitivity difference depending on the paper)	B	•Check the printing density setting of the control circuit module. •Check if the specified paper is used.	Change the setting of the printing density to darken.
	All or some part of printing is faint.	(1)Dirt or foreign matter attaches to the head heating elements.	A	See or check the head heating elements with a magnifier.	Clean the head heating elements if foreign matter is attached to the elements.
		(2)Thermal sensitivity has deteriorated due to paper deterioration	A	Check whether the paper has deteriorated.	Replace the deteriorated paper.
		(3)Thermal head heating elements are defective.	B	Check the surface of the thermal head with a magnifier.	Replace the thermal head.
	Printing is partly faint.	Damage or deformation of the platen surface	A	See or check with a magnifier the platen surface.	Replace the platen if the platen surface is damaged or deformed.
Abnormal or incorrect printing	Abnormal or incorrect printing	(1)Thermal head input pulse failure	B	Check with an oscilloscope if the input pulse is within the specified range.	If the input pulse is abnormal, replace the control circuit board.
		(2)Thermal head failure (Dr.I.C, etc.)	B		If input pulse is normal, replace the thermal head.
Paper cannot be inserted.	Paper cannot be inserted into the printer module.	(1)Paper chips or foreign matter is in the paper guide of the printer module.	A	Check whether paper chips or foreign matter is inside the paper guide.	Remove paper chips or foreign matter if there is any.
		(2)Paper detector on the paper guide of the printer module is defective.	B	Check if the detector operates properly.	•Remove paper chip or foreign matter if there is any. •Replace the detector if it is damaged.
		(3)The shape of the paper edge is not like the specified one.	A	Check if the paper edge is cut properly.	Cut the paper edge properly.

Table 5-1 Troubleshooting

Phenomenon	Condition	Cause	Level	Where/how to check	Procedure
Paper is not fed.	Paper is not fed smoothly.	(1)The paper roll supply module does not oscillate properly.	B	Check if the paper is pulled out smoothly. (The paper tension loading should be less than the rating value.)	•Load the paper properly. •Replace the paper roll supply module if the oscillation loading of the paper supply module is excessive.
		(2) The paper size is not correct.	A	Check the paper diameter, width, and thickness.	Use the specified paper.
	Paper is not fed.	(1)Abnormal input signal or paper feed motor failure	B	Check the power supply voltage, input signal, and operation of each paper feed motor.	•Replace the control circuit board module if there is any problem with the power supply voltage, input signal. •Replace the motor if there is any problem with the motor operation.
		(2)The paper feed connector is disconnected.	A	Check if the each paper feed motor is connected properly.	Connect the connector properly.
		(3)Power transmission parts (gears) are damaged, or foreign matter is caught between gears.	B	•Check the power transmission state of each gears. •Check if no foreign matter is caught between geas.	•Replace damaged gears. •Remove foreign matter if there is any.

Table 5-1 Troubleshooting

Phenomenon	Condition	Cause	Level	Where/how to check	Procedure
Paper feeding pitch is defective.	The character spacing is not uniform.	(1)The paper roll supply module does not oscillate properly.	B	Check if the paper is pulled out smoothly. (The paper tension loading should be less than the rating value.)	•Load the paper properly. •Replace the paper roll supply module if the oscillation load of the paper supply module is excessive.
		(2)Power transmission parts (gears) are damaged, or foreign matter is caught between gears.	B	•Check the power transmission state of each gears. •Check if no foreign matter is caught between gears.	•Remove foreign matter if there is any. •Replace damaged gears .
		(3)Abnormal input signal or paper feed motor failure	B	Check the power supply voltage, input signal, and operation of each paper feed motor.	•Replace the control circuit board module if there is any problem with the power supply voltage, input signal. •Replace the motor if there is any problem with the motor operation.
		(4)Paper feed slip due to the platen wear and paper powder	B	Check the friction force of the platen surface.	•Clean the platen if paper powder accumulates on it. •Replace the platen if it is worn out.
		(5)Operation failure of the paper roll tension unit	B	Check if the unit moves smoothly.	If it does not operate properly, replace the paper roll tension unit.
Paper can not be cut.	Paper is not cut automatically.	(1)Foreign matter inside the autocutter	A	Check whether foreign matter is inside the autocutter.	Remove foreign matter if there is any.
		(2)Abnormal input signal or inner mechanism damage of the autocutter	B	Check the power supply voltage, input signal, and operation of the cutter motor.	•Replace the control circuit board module if there is any problem with the power supply voltage, input signal. •Replace the motor if there is any problem with the autocutting operation.

Table 5-1 Troubleshooting

Phenomenon	Condition	Cause	Level	Where/how to check	Procedure
Platen unit can not open/close.	Platen unit does not open.	The cutter blade is not in the home position.	B	Check if the cutter blade is in the home position.	Turn the knob to return the cutter blade to the home position.
	Platen unit does not close.	Foreign matter inside the printer.	A	Check whether foreign matter is inside the printer.	Remove foreign matter if there is any.
Upper frame, cut sheet presenter unit can not open/close.	Upper frame, cut sheet presenter unit can not open/close.	Foreign matter inside the cut sheet presenter module	A	Check whether foreign matter is inside the cut sheet presenter module.	Remove foreign matter if there is any.

Chapter 6

Assembly and Disassembly

Small Parts Abbreviation

All small parts are represented by the abbreviations listed below.

Table 6-1 Small Parts Abbreviations

Abbreviation	Part name
R.E	Retaining ring E-type
C-ring	Crescent ring
C.B. (M2 × 2.5)	Cross-recessed binding head screw, 2 × 2.5, F/Zn
C.B. (M2.3 × 3)	Cross-recessed binding head screw, 2.3 × 3, F/Zn
C.B. (M2.5 × 4)	Cross-recessed binding head screw, 2.5 × 4, F/Zn
C.B. (M3 × 4)	Cross-recessed binding head screw, 3 × 4, F/Zn
C.B. (M3 × 6)	Cross-recessed binding head screw, 3 × 6, F/Zn
C.P. (M1.6 × 5)	Cross-recessed pan head screw, 1.6 × 5, F/Zn
C.P (P2)	Cross-recessed pan head (S-P1) screw, 3 × 6, F/Zn
C.B.B-tite (M2 × 6)	Cross-recessed binding head B-tite self tapping screw, 2 × 6, F/Zn
C.B.S-tite (M2.5 × 4)	Cross-recessed binding head S-tite self tapping screw, 2.5 × 4, F/Zn
C.B.S-tite (M3 × 5)	Cross-recessed binding head S-tite, 3 × 5, F/Zn
C.C.P-tite (M2.5 × 6)	Cross-recessed cup head P-tite self tapping screw, 2.5 × 6, F/Zn
C. P-tite. F screw (M2 × 3)	Cross-recessed P-tite self tapping flat end screw, 2 × 3, F/Ni

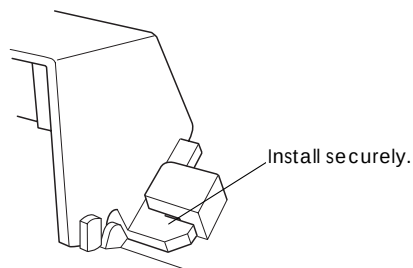
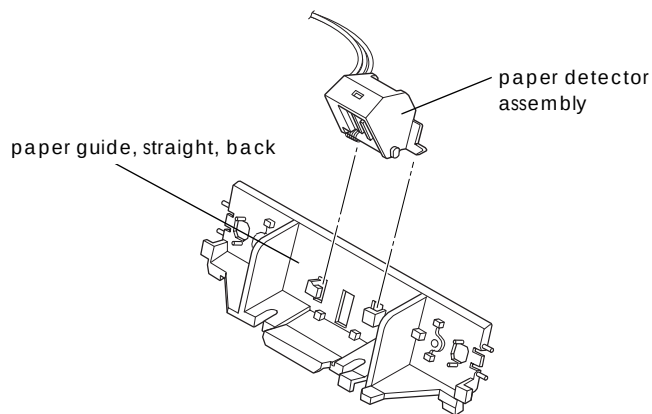
Assembly

- ❑ Only assembly steps for the printer module are in this section. For assembly steps for other modules, follow the disassembly procedures in “Disassembly” in reverse sequence. Also, see <Reassembly Point> in “Disassembly procedure” while assembling.
- ❑ Perform assembly while referring to the component shapes and mounting positions shown in the exploded diagrams at the end of this manual.
- ❑ The ★ symbols in the “Reassembly step” indicate places where checks are required. Make sure to follow the instructions given in these places.
- ❑ Circled numbers in the “Reassembly step” indicate that lubrication is required during the reassembly of that component and that such lubrication will be difficult unless performed during reassembly.
- ❑ Refer to “Lubrication” in Chapter 4 for lubrication details on the printer module and other modules. Also, see the lubrication diagrams at the end of this manual for the places to lubricate.

Pre-assembly A

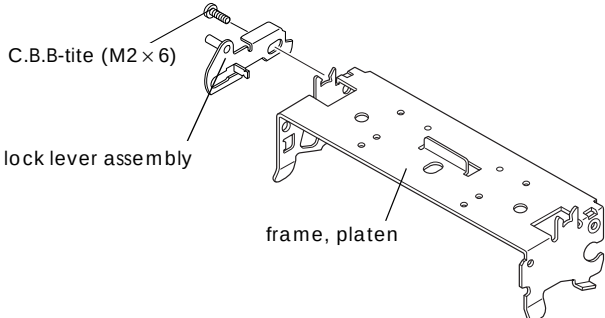
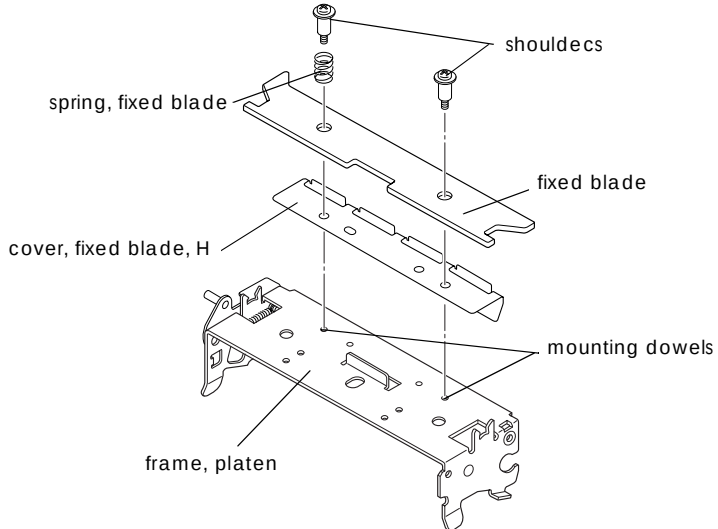
Paper guide, straight, back unit

Reassembly step	Part name	Assembly procedure
1	Paper detector assembly	☐ Slide the paper detector assembly onto the paper guide, straight, back *.
2	Paper guide, straight, back (for the EU-T532) *For the EU-T542, attach the Paper guide, straight, back, B .	
★		<Check> ☐ Make sure that the paper detector assembly is installed securely, as shown below.

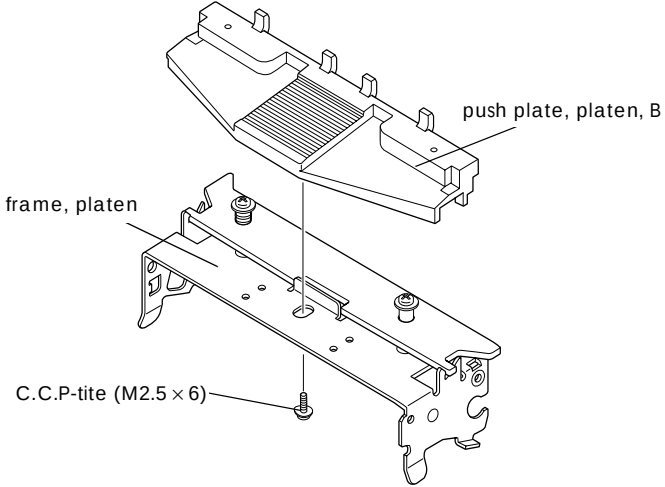
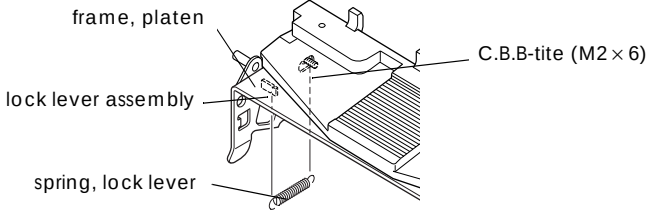


Pre-assembly B

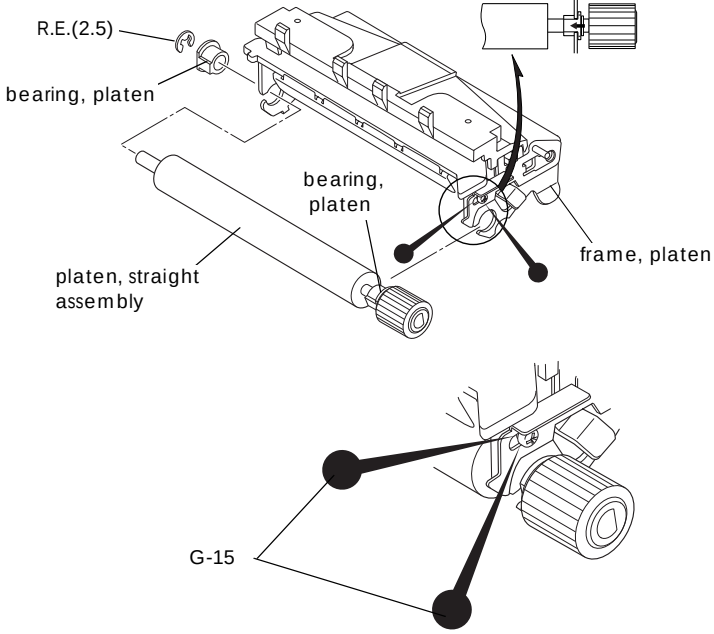
Frame, platen, straight unit

Reassembly step	Part name	Assembly procedure
1	Frame, platen	
2	Lock lever assembly C.B.B-tite (M2 × 6) × 1	□ Install the lock lever assembly on the frame, platen, and secure it with a screw.  C.B.B-tite (M2 × 6) lock lever assembly frame, platen
★		<Check> □ Tightening torque: 294 to 343 mN•m {3.0 to 3.5 kg•cm} □ Make sure that the screw does not skew during tightening.
3	Cover, fixed blade	
4	Fixed blade, H	□ Install the cover, fixed blade and the fixed blade, H on the frame, platen; then secure them with shouldecs.
5	Spring, fixed blade Shouldec (2 × 6 × 2) × 2	At this time, install the spring, fixed blade on one of the shouldecs, as shown below.  spring, fixed blade shouldecs fixed blade cover, fixed blade, H mounting dowels frame, platen
★		<Check> □ Tightening torque: 147 to 196 mN•m {1.5 to 2.0 kg•cm} □ Make sure to install the fixed blade, H right-side-up. □ Make sure that the dowels on the frame, platen fit securely into the holes on the cover, fixed blade. □ Make sure to install the spring, fixed blade in the correct position.

Pre-assembly B

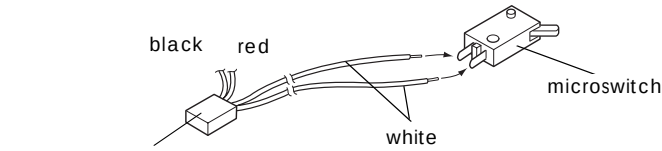
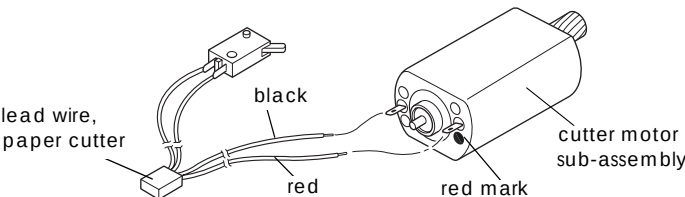
Reassembly step	Part name	Assembly procedure
6	Push plate, platen, B C.C.P-tite (M2.5 × 6) × 1	□ Install the push plate, platen, B to the frame, platen and secure it with a screw.  push plate, platen, B frame, platen C.C.P-tite (M2.5 × 6)
★		<Check> □ Tightening torque: 392 to 490 mN•m {4 to 5 kg•cm}
7	Spring, lock lever	□ Hook the ends of the spring, lock lever onto the lock lever assembly and C.B.B-tite (M2 × 6) from the inside of the frame, platen.  frame, platen lock lever assembly spring, lock lever C.B.B-tite (M2 × 6)
★		<Check> □ Make sure that the spring, lock lever is hooked securely.

Pre-assembly B

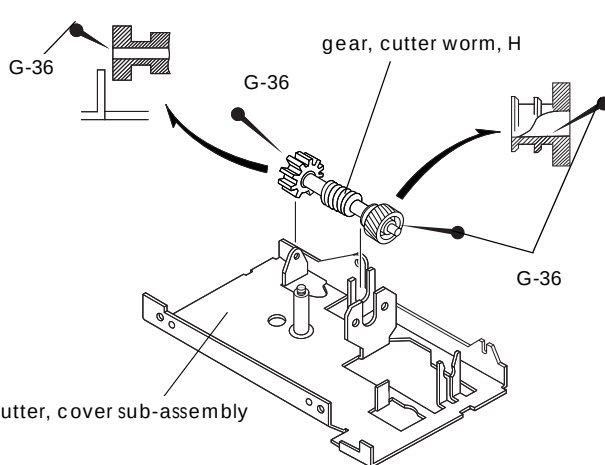
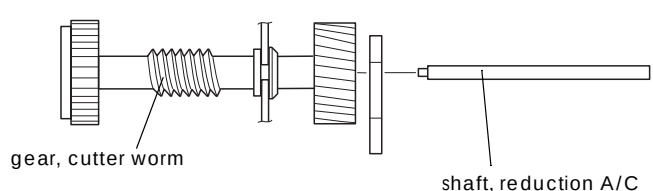
Reassembly step	Part name	Assembly procedure
8	Platen, straight assembly	
9	Bearing, platen R.E. (2.5) × 1	❑ After Installing the platen, straight assembly to the frame, platen, install the bearing, platen from the outside of the frame, platen; then secure it with an R.E. ❑ Lubricate with G-15 two points where the screw on the lock lever assembly is secured. 
10		

Pre-assembly C

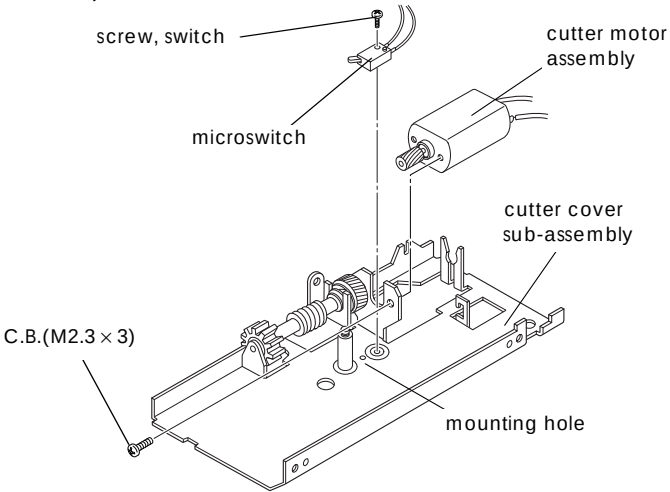
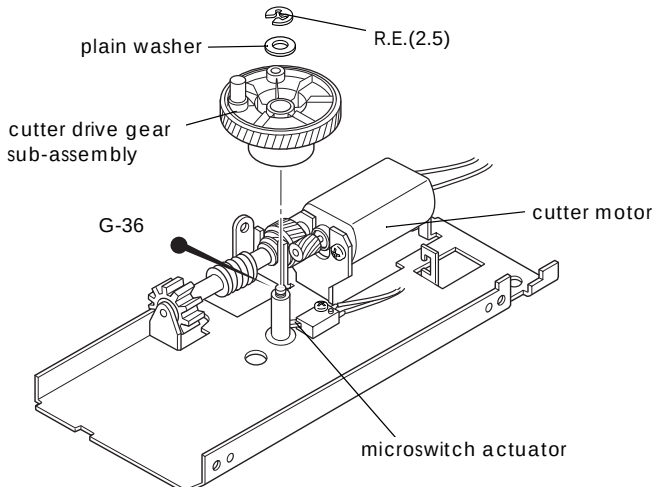
Cutter motor assembly

Reassembly step	Part name	Assembly procedure
1	Microswitch	
2	Lead wire, paper cutter	☐ Solder the white lead wire of the lead wire, paper cutter to the microswitch.  *No polarity
3	Cutter motor sub-assembly	☐ Solder the red wire of the Lead wire, paper cutter to the red marked terminal side of the Cutter motor sub-assembly, and solder the black lead wire to the other terminal. 
★		<Check> ☐ Make sure to arrange the lead wires properly.

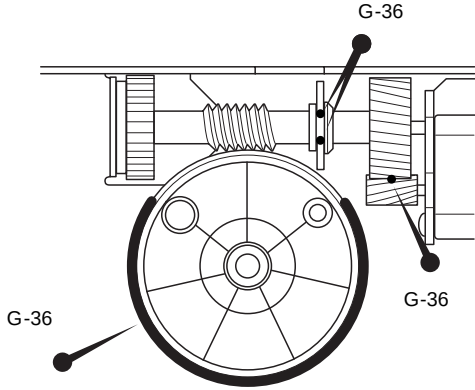
Pre-assembly D Cutter, cover sub-unit

Reassembly step	Part name	Assembly procedure
1	Cutter, cover sub-assembly	☐ Lubricate with G-36 the bore of the gear, cutter worm, H and the point where the gear, cutter worm, H comes in contact with the cutter, cover sub-assembly; then install it on the cutter, cover sub-assembly. 
②	Gear, cutter worm, H	
3	Shaft, reduction A/C	☐ Insert the shaft, reduction A/C to the bores of the gear, reduction A/C and the gear, cutter worm, H. 
★		<Check> ☐ Make sure that the shaft, reduction A/C is oriented properly before insertion.

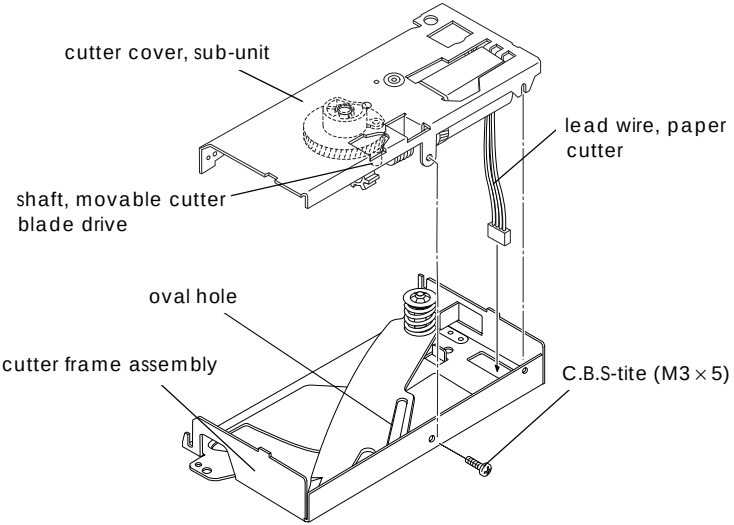
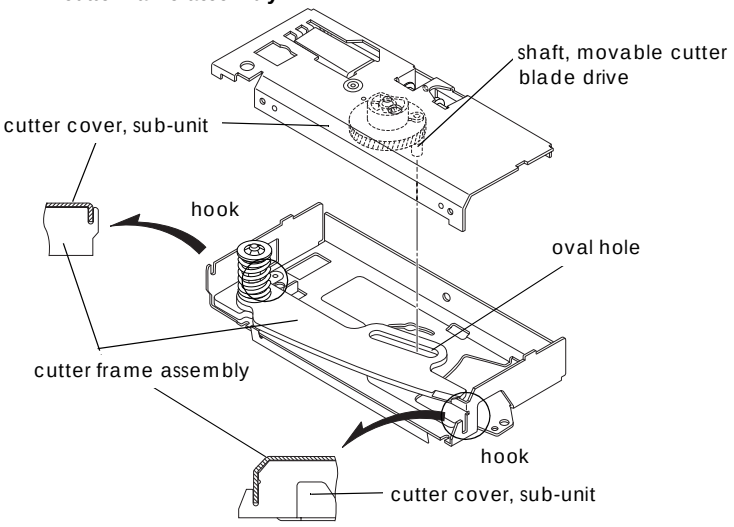
Pre-assembly D

Reassembly step	Part name	Assembly procedure
4	Cutter, motor assembly C.B.(M2.3 × 3) × 1 Screw, switch	☐ Install the cutter, motor assembly to the cutter cover sub-assembly, and secure it with the C.B.(M2.3 × 3). ☐ Install the microswitch to the cutter cover sub-assembly, and secure it with the screw, switch.  <Check> ☐ Tightening torque: 245 to 294 mN•m {2.5 to 3.0 kg•cm} (C.B.(M2.3 × 3)) ☐ Tightening torque: 108 to 147 mN•cm {1.1 to 1.5 kg•cm} (screw, switch) ☐ Make sure to install the cutter, motor with the labeled side down. ☐ Make sure that the cutter, motor is installed securely. ☐ Make sure that the dowel on the microswitch fits securely in the mounting hole on the cutter cover sub-assembly.
★		
5	Cutter drive gear sub-assembly Plain washer (3 × 0.5 × 7) × 1 R.E. (2.5) × 1	☐ After lubricating the shaft on the cutter cover sub-assembly with G-36, install the cutter drive gear sub-assembly and the plain washer on the shaft; then secure them with an R.E. 

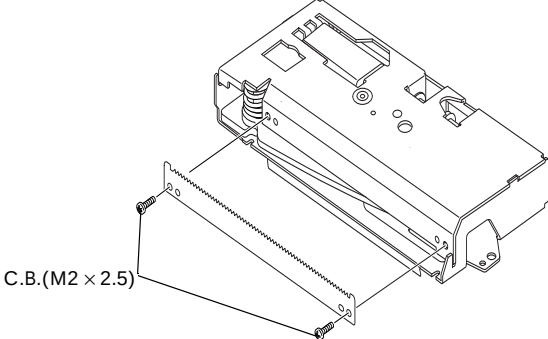
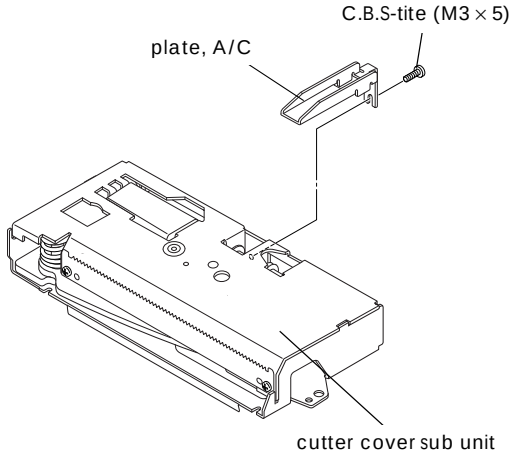
Pre-assembly D

Reassembly step	Part name	Assembly procedure
★		<Check> ❑ Make sure not to apply excessive pressure to the microswitch actuator when installing the cutter drive gear sub-assembly. ❑ Make sure not to damage the cutter drive gear sub-assembly when securing it with the R.E. ❑ Lubricate the specified areas with G-36.
⑥		

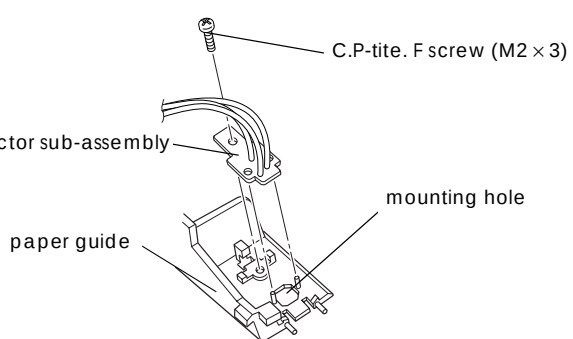
Pre-assembly E Cutter unit

Reassembly step	Part name	Assembly procedure
1	Cutter cover sub-unit	□ Pass the lead wire, paper cutter through the hole on the cutter frame assembly and secure the cutter cover sub-unit and the cutter frame assembly with a screw. □ When putting the cutter cover sub-unit and the cutter frame assembly together, insert the shaft, movable cutter blade drive into the oval hole on the movable cutter blade.  <Check> □ Tightening torque: 686 to 882 mN•m {7 to 9 kg•cm} □ Make sure that the shaft, movable cutter blade drive fits securely into the oval hole on the movable cutter blade. □ Make sure that the edges of the cutter cover sub-unit fit into the hooks on the cutter frame assembly. 
2	Cutter frame assembly C.B.S-tite (M3 x 5) × 1	

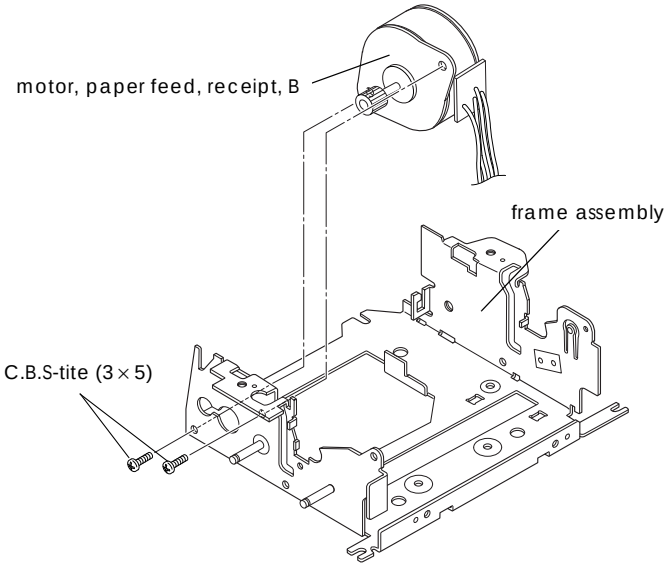
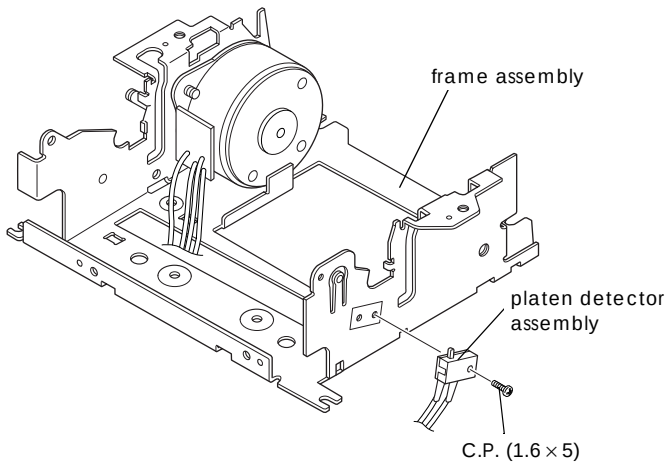
Pre-assembly E

Reassembly step	Part name	Assembly procedure
3	Emergency cutter, full, B C.B.(M2 × 2.5) × 2	□ Install the emergency cutter, full to the cutter cover sub-unit with screws.  C.B.(M2 × 2.5)
★		<Check> □ Tightening torque: 147 to 196 mN•m {1.5 to 2 kg•cm}
4	Plate, A/C	□ Loosen the C.B.S-tite (M3 × 5) to attach the plate A/C to the cutter cover sub-unit; tighten it again.  plate, A/C C.B.S-tite (M3 × 5) cutter cover sub unit

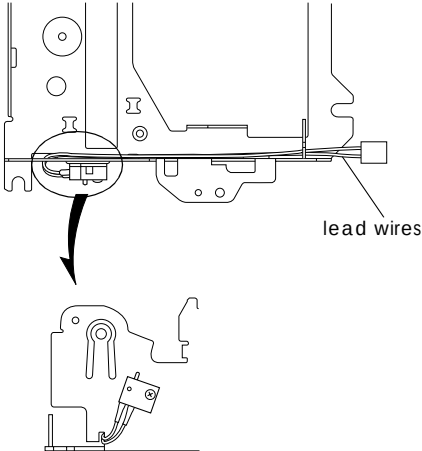
Pre-assembly F Installation of Black mark detector sub-assembly (optional)

Reassembly step	Part name	Assembly procedure
1	Black mark (B.M.) sub-assembly	□ Install the B.M. detector sub-assembly in one of the two detector mounting holes on the paper guide, and secure it with a screw. Both the straight path and the curved path types can be installed this way.  <Check> □ Tightening torque: 118 to 216 mN•m {1.2 to 2.2 kg•cm} □ Make sure that the detector fits securely into the detector mounting hole on the paper guide.
2	Paper guide C.P-tite F screw (M2 x 3) × 1	
★		

Main Assembly A Installation of the Motor, paper feed, receipt, B and the Platen detector

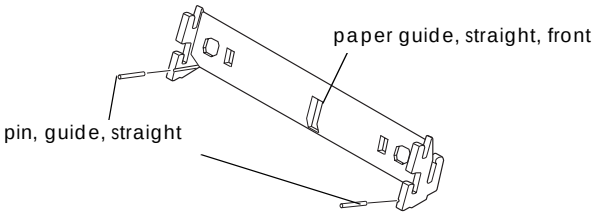
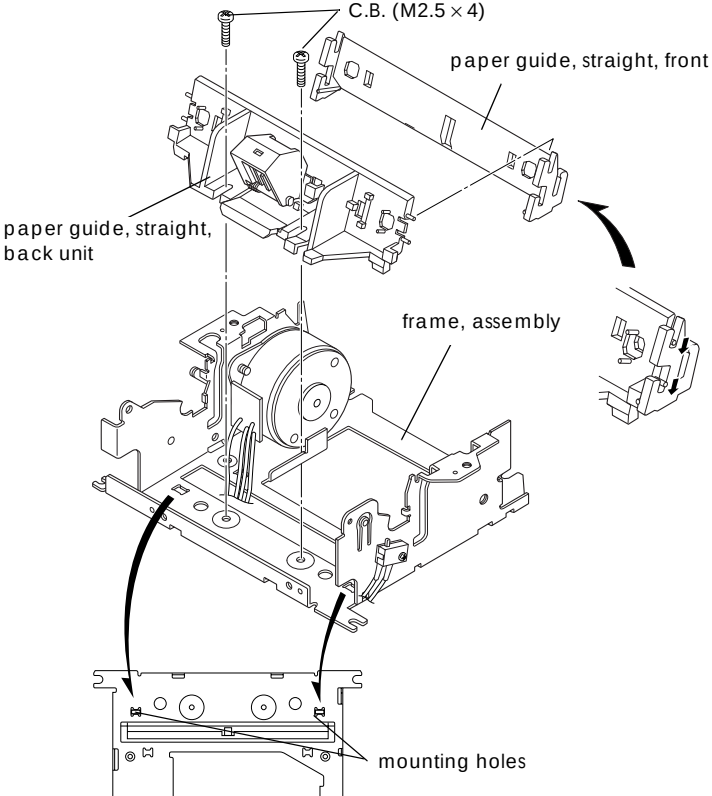
Reassembly step	Part name	Assembly procedure
1	Frame assembly	
2	Motor, paper feed, receipt, B C.B.S-tite (3 × 5) × 2	□ Align the motor, paper feed, receipt, B with the mounting position on the frame assembly and secure it with screws.  motor, paper feed, receipt, B frame assembly C.B.S-tite (3 × 5)
★		<Check> □ Tightening torque: 686 to 882 mN•m {7 to 9 kg•cm} □ Make sure that the motor, paper feed, receipt, B is oriented properly.
3	Platen detector assembly C.P. (1.6 × 5) × 1	□ Align the platen detector assembly to the mounting position on the frame assembly, and secure it with a screw.  frame assembly platen detector assembly C.P. (1.6 × 5)

Main Assembly A

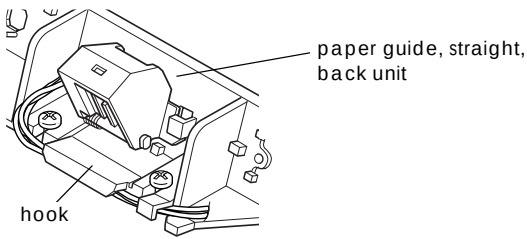
Reassembly step	Part name	Assembly procedure
★		<Check> □ Tightening torque: 98 to 147 mN•m □ After installing the platen detector assembly, arrange the lead wires.  The diagram consists of two parts. The top part is a side-view cross-section of a mechanical assembly. A circular component, the platen detector assembly, is highlighted with a circle. A curved arrow points from this circle down to a detailed view of the assembly below. In this detailed view, the platen detector assembly is shown with several wires connected to it. A label 'lead wires' with a line pointing to the wires is located to the right of the top diagram.

Main Assembly B

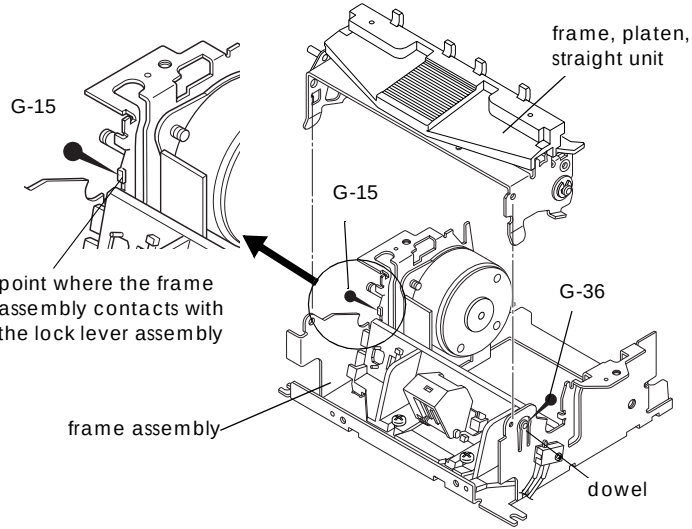
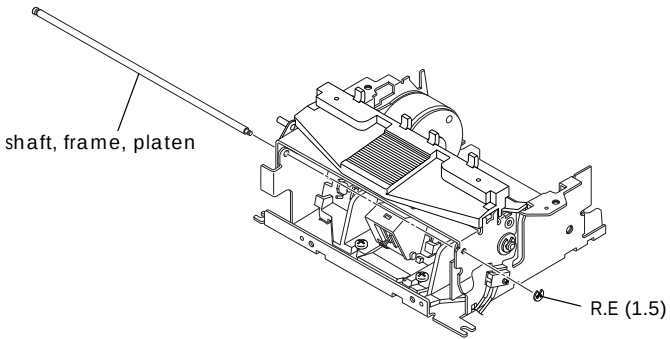
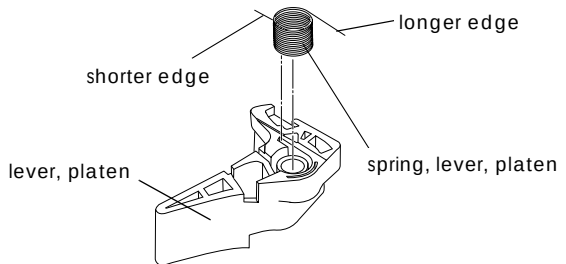
Installation of the Paper guide, straight, front and the Paper guide, straight, back unit

Reassembly step	Part name	Assembly procedure
1	Paper guide, straight, front (for the EU-T532)	
2	Pin, guide, straight × 2	□ Insert the pin, guide, straight into the holes on the paper guide, straight, front.* 
3	Paper guide, straight, back unit (for the EU-T532) C.B. (2.5 × 4) × 2 *For the EU-T542, use the Paper guide, straight, back, B unit .	□ After putting the paper guide, straight, front and the paper guide, straight, back unit* together, install them to the mounting holes on the frame assembly and secure them with screws. 

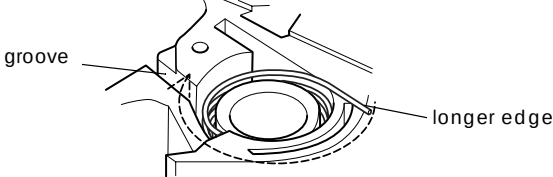
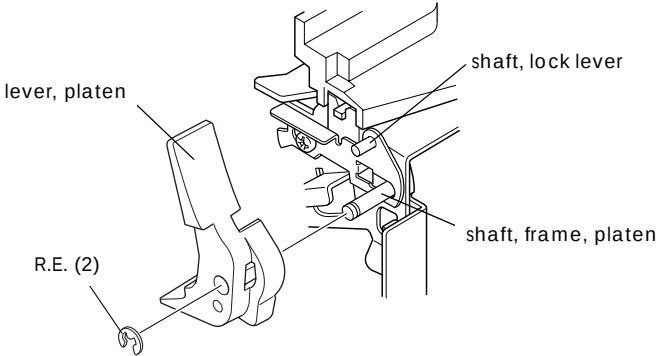
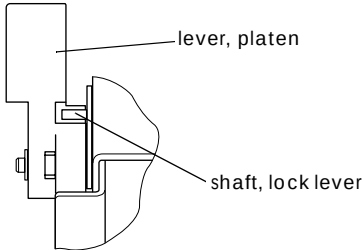
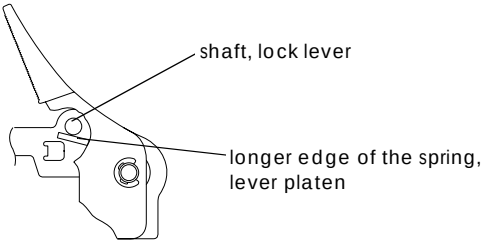
Main Assembly B

Reassembly step	Part name	Assembly procedure
★		<Check> ❑ Tightening torque: 588 to 637 mN•m {6 to 6.5 kg•cm} ❑ The dowels on the paper guide, straight, back unit fit securely into the holes on the frame assembly. ❑ Make sure that the lead wires of the paper detector assembly are not caught between the frame assembly and the paper guide, straight, back unit. ❑ Make sure that the wires of the paper detector assembly are passed under the hook on the paper guide, straight, back unit. 

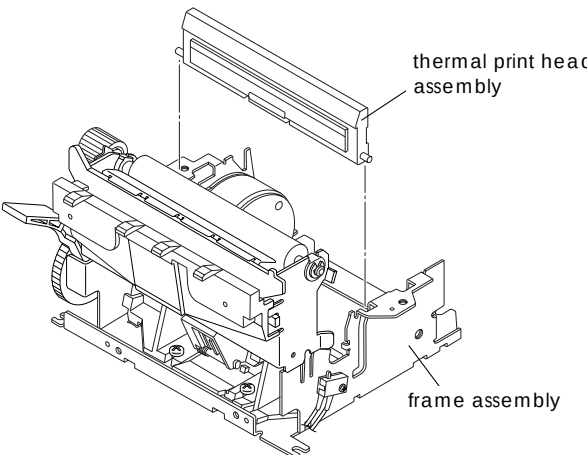
Main Assembly C Installation of the Frame, platen, straight unit

Reassembly step	Part name	Assembly procedure
① ② 3	Frame, platen, straight unit	□ Lubricate the dowel on the frame assembly with G-36. □ Lubricate the point where the frame assembly contacts with the lock lever assembly with G-15. □ Install the frame, platen, straight unit to the frame assembly.  Labels in diagram: frame, platen, straight unit, G-15, point where the frame assembly contacts with the lock lever assembly, frame assembly, G-36, dowel.
4	Shaft, frame, platen R.E. (1.5) × 1	□ Align the holes on the frame assembly and the frame, platen, straight unit, and insert the shaft, frame, platen into these holes; then, secure it with an R.E..  Labels in diagram: shaft, frame, platen, R.E. (1.5).
5 6	Lever, platen Spring, lever, platen	□ Install the spring, lever, platen on the lever, platen, as shown below.  Labels in diagram: longer edge, shorter edge, lever, platen, spring, lever, platen.

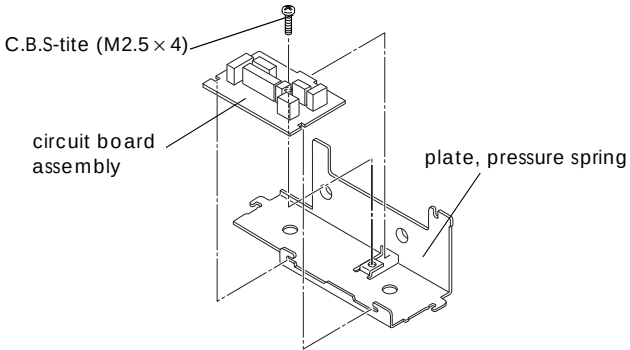
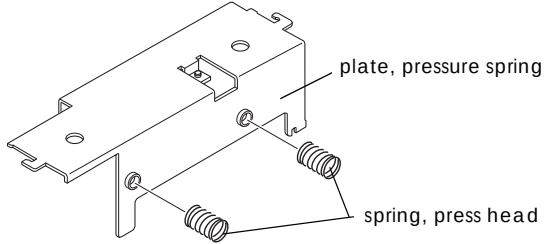
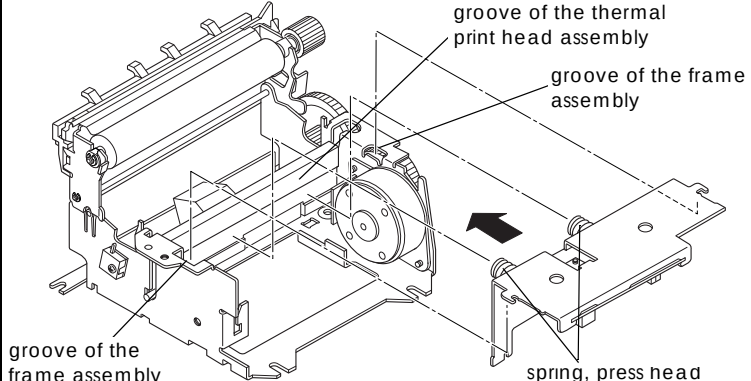
Main Assembly C

Reassembly step	Part name	Assembly procedure
★		<Check> □ Hook the longer edge of the spring, lever, platen into the groove on the lever, platen. □ Make sure not to deform the spring, lever, platen. 
7	R.E. (2) × 1	□ Install the lever, platen to the shaft, frame, platen, and secure it with an R.E.. 
★		<Check> □ Make sure that the shaft, lock lever is placed properly into the specified position on the lever, platen. 
8		□ Remove the longer edge of the spring, lever, platen, and hook it on the shaft, lock lever. 

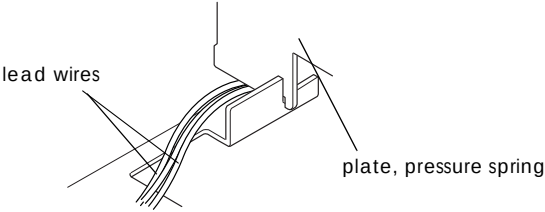
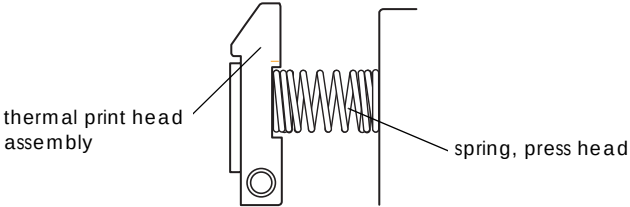
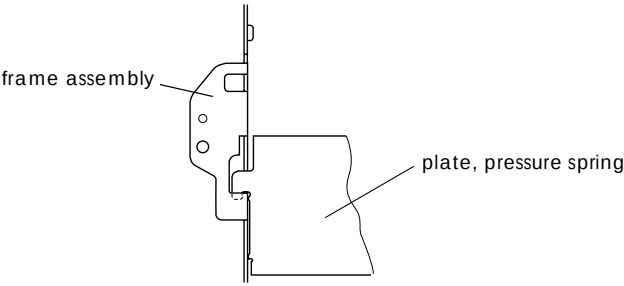
Main Assembly D
Installation of the Thermal print head assembly

Reassembly step	Part name	Assembly procedure
1	Thermal print head assembly	❑ Install the thermal print head assembly in the grooves on the frame assembly.  thermal print head assembly frame assembly ★ <Check> ❑ When handling the thermal print head assembly, use proper body grounding procedures to avoid static electricity. (Use a conductive mat and wrist band during assembly.) ❑ Do not touch the connector terminals and the surface of the thermal print head assembly. If foreign matter attaches to them, wipe off the foreign matter lightly, using a cotton swab dampened with alcohol.

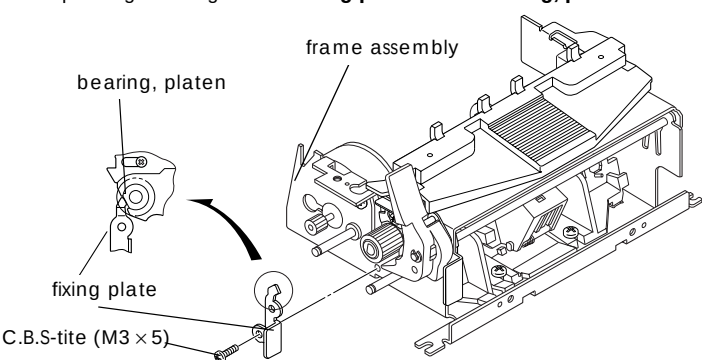
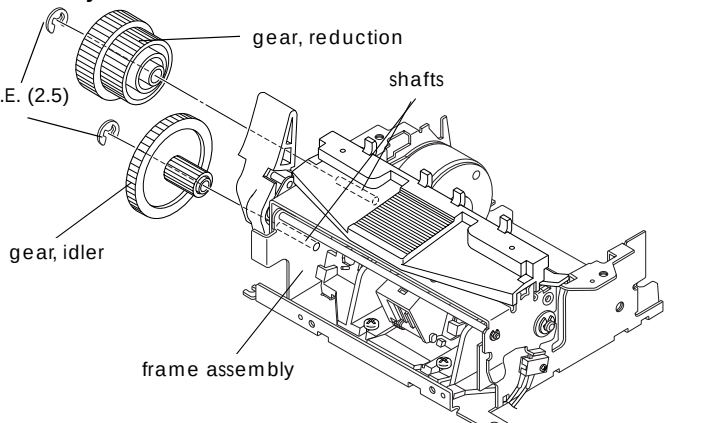
Main Assembly E Installation of the Plate, pressure spring

Reassembly step	Part name	Assembly procedure
1	Plate, pressure spring	
2	Circuit board assembly C.B.S-tite (M2.5 × 4) × 1	□ Install the circuit board to the plate, pressure spring, and secure it with screws.  C.B.S-tite (M2.5 × 4) circuit board assembly plate, pressure spring
★		<Check> □ Tightening torque: 588 to 637 mN•m {6 to 6.5 kg•cm}
3	Spring, press head × 2	□ Install the spring, press head to the plate, pressure spring.  plate, pressure spring spring, press head
★		<Check> □ Make sure that the spring, press head is pushed securely into the plate, pressure spring.
4		□ Hook the edge of the spring, press head to the groove of the thermal print head assembly while pushing the plate, pressure spring in the arrow direction; then hook it to the groove of the frame assembly.  groove of the thermal print head assembly groove of the frame assembly groove of the frame assembly spring, press head

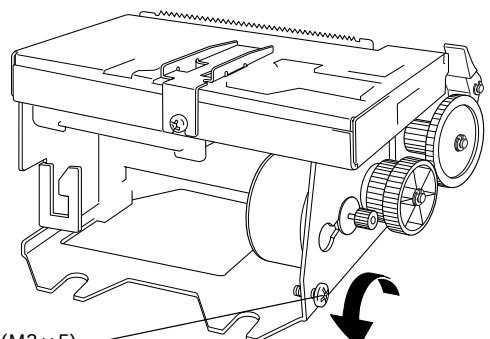
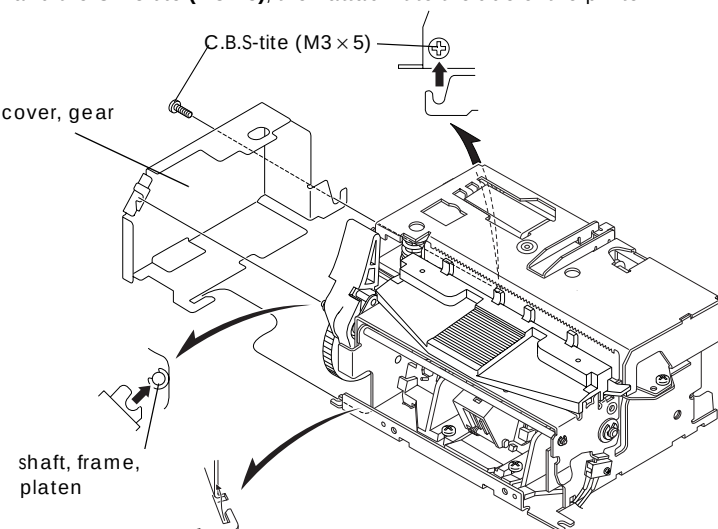
Main Assembly E

Reassembly step	Part name	Assembly procedure
★		<Check> ❑ Make sure that the lead wires, such as those for the paper detector assembly are not caught on anything when installing the spring, press head. ❑ Make sure that the lead wires of the paper detector assembly and the paper detector assembly are passed under the plate, pressure spring.  lead wires plate, pressure spring ❑ Make sure that the edge of the spring, press head fits securely into the groove on the thermal print head assembly.  thermal print head assembly spring, press head ❑ Make sure that the plate, pressure spring is hooked securely into the hole on the frame assembly.  frame assembly plate, pressure spring

Main Assembly F Installation of the Fixing plate, the Gear, reduction and the Gear, idler

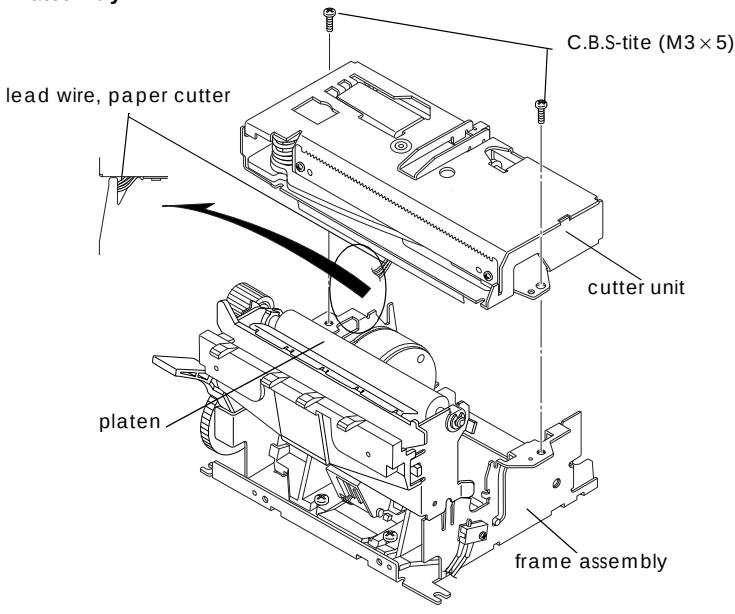
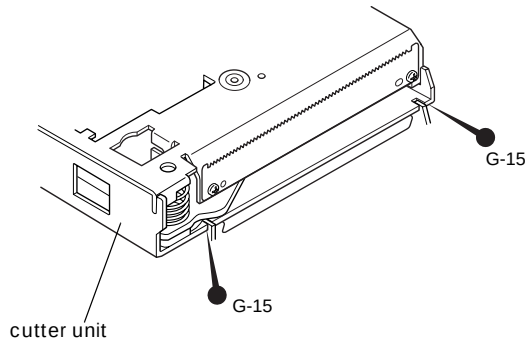
Reassembly step	Part name	Assembly procedure
1	Fixing plate C.B.S-tite (M3 × 5) × 1	□ Install the fixing plate to the frame assembly, and secure it with the screw while pushing the edge of the fixing plate to the bearing, platen.  ★ <Check> □ Tightening torque: 686 to 882 mN•m {7 to 9 kg•cm} □ Make sure that the edge of the fixing plate is pushed securely to the bearing, platen.
2	Gear, reduction	
3	Gear, idler R.E. (2.5) × 2	□ Install the gear, reduction and the gear, idler to the shafts on the frame assembly, and secure them with R.E.s.  ★ <Check> □ Make sure not to deform the shaft on the frame assembly when securing with the R.E.

Main Assembly G Installation of the Cover, gear

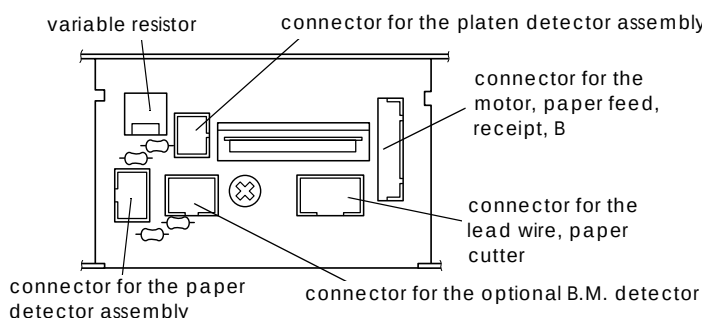
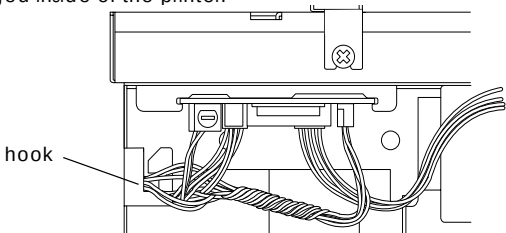
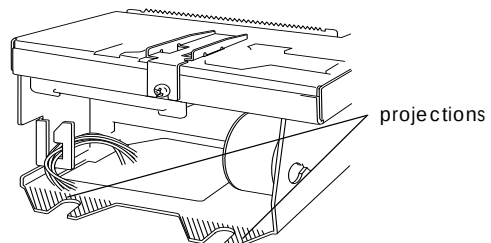
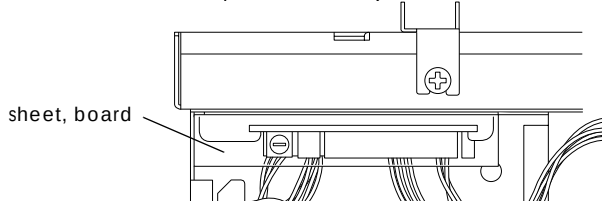
Reassembly step	Part name	Assembly procedure
1	C.B.S-tite (M3 × 5) × 1	Loosen a screw on the gear side.  C.B.S-tite (M3 × 5)
2	Cover, gear × 1	Hook the cover, gear to the edge of the shaft, frame, platen, the frame, and the C.B.S-tite (M3 × 5); then attach it to the side of the printer.  C.B.S-tite (M3 × 5) cover, gear shaft, frame, platen
3 ★		Tighten the C.B.S-tite (M3 × 5) again. <Check> Tightening torque: 686 to 882 mN•m {7 to 9 kg•cm}

Main Assembly H

Installation of the Cutter unit

Reassembly step	Part name	Assembly procedure
1	Cutter unit C.B.S-tite (M3 × 5) × 2	□ Install the cutter unit to the frame assembly and secure it with screws, while the lead wire, paper cutter is passed through the hook on the frame assembly.  lead wire, paper cutter C.B.S-tite (M3 × 5) cutter unit platen frame assembly ★ <Check> □ Tightening torque: 686 to 882 mN•m {7 to 9 kg•cm} □ Make sure that the lead wire, paper cutter is passed through the hook on the frame assembly properly as shown above. □ Make sure that the lead wire, paper cutter is not caught between any places when securing the cutter unit. □ Install the cutter unit in the platen-up state. ② □ Lubricate the point where the fixed blade, H of the cutter unit contacts the cutter frame with G-15.  cutter unit G-15 G-15

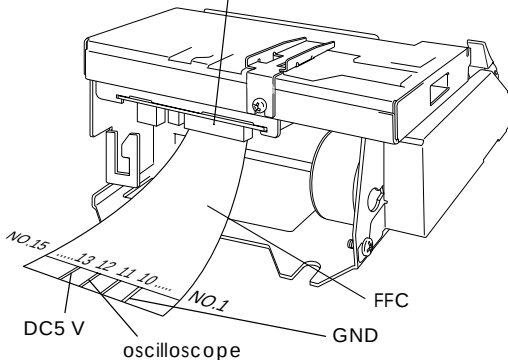
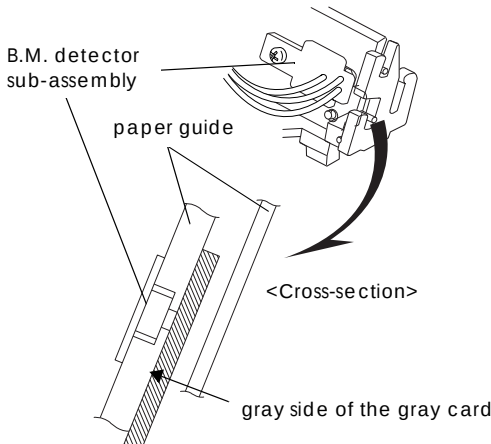
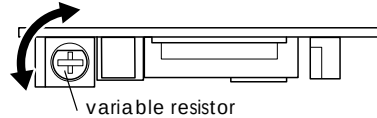
Assembly I Arranging the lead wires

Reassembly step	Part name	Assembly procedure
1		□ Insert the lead wire connectors to the connectors on the circuit board. 
★		<Check> □ Make sure that the connectors are oriented properly when connecting. □ Make sure that the connectors are inserted securely.
2		□ All lead wires should be passed through the hook on the frame assembly, and arranged inside of the printer. 
★		<Check> □ Make sure that any of the lead wires are not caught by the projections (the colored part). □ Make sure not to damage the coats of the lead wires when arranging the lead wires. 
3	Sheet, board × 1	□ Paste the double-sided tape on the sheet, board to the circuit board. 

Adjustment for Printer Module

Adjustment of the black mark detector

Adjust the **black mark (B.M.) detector** using the following procedure.

Adjustment step	Adjustment procedure	Adjustment point
1	☐ Connect the FFC terminal No.12 to an oscilloscope to display the output power voltage of the B.M. detector on the oscilloscope screen.	
2	☐ Input DC5 V to the FFC terminal No. 13.  Labels in diagram: circuit board, FFC, GND, NO.15, NO.13, NO.12, NO.11, NO.10, NO.1, DC5 V, oscilloscope.	
3	☐ Insert a "Kodak Gray Card" into the paper entrance. ("Kodak Gray Card": A commercially available card for adjusting exposure.)	☐ Make sure that the gray side of the card is inserted along the paper guide which the B.M. detector sub-assembly is installed.  Labels in diagram: B.M. detector sub-assembly, paper guide, <Cross-section>, gray side of the gray card.
4	☐ Adjust the output power voltage of the B.M. detector at 1.74 V using the variable resistor on the circuit board assembly .	☐ Turn the slot on the variable resistor to the right and the left with a tool such as a flat-head driver, to adjust the output power voltage.  Label in diagram: variable resistor.

Disassembly

- ❑ The disassembly process is divided into the unit disassembly and the module disassembly. First perform the unit disassembly; then proceed to the module disassembly after the components have been disassembled into modules.
- ❑ Disassembly of printer components beyond the exploded diagrams at the end of this manual may result in damage to the printer and its functions.
- ❑ <Check> and <Reassembly Point> are given in “Disassembly step” with ★ and ☆ symbols. Make sure to follow the instructions given in these places when disassembly and reassembly.
- ❑ New wire bands are required when reassembly for wire bands cut during disassembly. See page 6-29 and “Part name” in the disassembly steps for types and numbers of wire bands.
- ❑ The numbers in the illustrations indicate the step numbers.

Component Configurations Overview

The EU-T532/T542 have two disassembly types for ASP (After Service Parts) replacement. The one is “Unit disassembly” for disassembling the EU-T532/T542 into modules, the other one is “Module Disassembly” for disassembling each module into small parts. The configurations when performing those disassemblies are as follows:

Unit Disassembly (p. 6-30 to 37)

When performing the unit disassembly, the EU-T532/T542 are disassembled into the following modules and parts. When you want to disassemble a corresponding item only, see the page and the step numbers in brackets after part names.

- ❑ Cover, UIB (p. 6-30)
- ❑ Dust cap (p. 6-30)
- ❑ COM, cover (p. 6-30)
- ❑ Control circuit board module (p. 6-30 and p. 6-31: step 5)
- ❑ Paper exit (p. 6-33: step 1)
- ❑ Cut sheet presenter module (p. 6-30 to 34)
- ❑ Printer module (p. 6-30, 31, and 33 to 35)
- ❑ Plate, lower paper guide (p. 6-35: step 5)
- ❑ Plate, paper guide holder (p. 6-35: step 5 and p.6-36: step 7)
- ❑ Holding plate, printer (p. 6-30, 31 to 36)
- ❑ Crescent ring (p. 6-37: step 9)
- ❑ Holder, paper roll (p. 6-37)
- ❑ Paper roll supply module (p. 6-30 to 37)

Module Disassembly (p. 6-38 to 46)

When performing the module disassembly, the modules are disassembled into the following parts. When you want to disassemble a corresponding item only, see the page and the step numbers in brackets after part names.

Paper roll supply module

- ☐ Cover, circuit board B (p. 6-30: step 5 to 6)
- ☐ Plapoint (p. 6-30: step 5)
- ☐ Crescent ring (p. 6-38: step 2 to p. 6-41: step 9)
- ☐ Paper roll hold unit (p. 6-38: step 1)
- ☐ Spacer, paper roll holder (p. 6-38: step 2)
- ☐ Hexagonal nut (p.6-38 to p. 6-39: step 3)
- ☐ Paper roll tension unit (*1) (p. 6-38: step 2 to p. 6-42: step 12)
- ☐ Screw, paper NE detector (p. 6-38: step 2 to p. 6-42: step 12 to 13)
- ☐ Paper NE harness assembly (*2) (p. 6-38: step 2 to p. 6-42: step 12to 15)
- ☐ Photo interrupter (*3) (p. 6-38: step 2 to p. 6-42: step 12 to 16)
- ☐ C.B. (M3 × 6) (p. 6-38: step 1)
- ☐ Wire band

Cut Sheet Presenter Module

- ☐ Spring, cut sheet presenter (p. 6-43: step 1)
- ☐ Recover feeding A assembly (p. 6-43)
- ☐ Cable, presenter module (*4) (p. 6-43 to 44)
- ☐ Presenter module circuit board assembly (p. 6-43 to p. 6-45: step 9)
- ☐ Spring, cut sheet presenter frame (p. 6-43 to 45)
- ☐ Upper frame, cut sheet presenter unit (*5) (p. 6-43 to p. 6-46: step 13)
- ☐ Gear, idler (p. 6-43 to 46)
- ☐ Lower frame unit (*6) (p. 6-43 to 46)
- ☐ Wire band
- ☐ C.B (M3 × 4)
- ☐ R.E (4)



Note:

- For the parts marked with (*1) to (*6), new wire bands are required when assembly, since the following wire bands used for those parts will be cut during disassembly. See the disassembly steps for the position of the wire bands.

(*1): Wire band (SKB-85) × 1

(*2): Wire band (SKB-85) × 1

(*3): Wire band (SKB-85) × 1

(*4): Wire band (SK-1.5M) × 1

(*5): Wire band (SKB-85) × 2

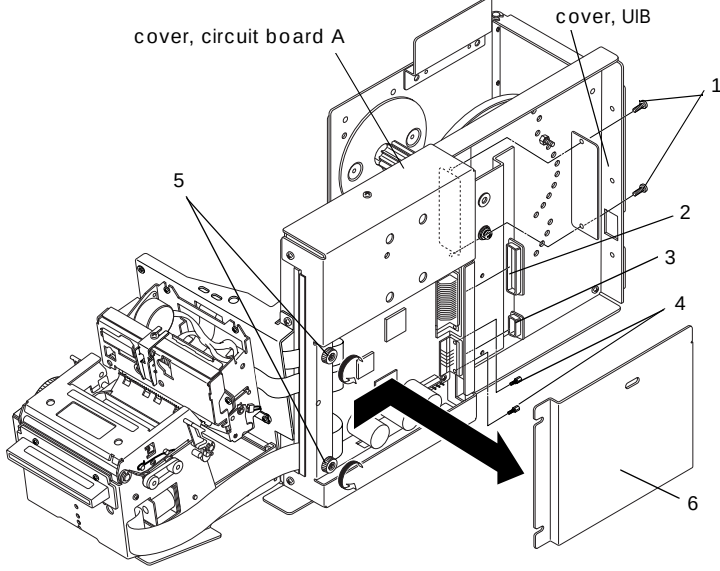
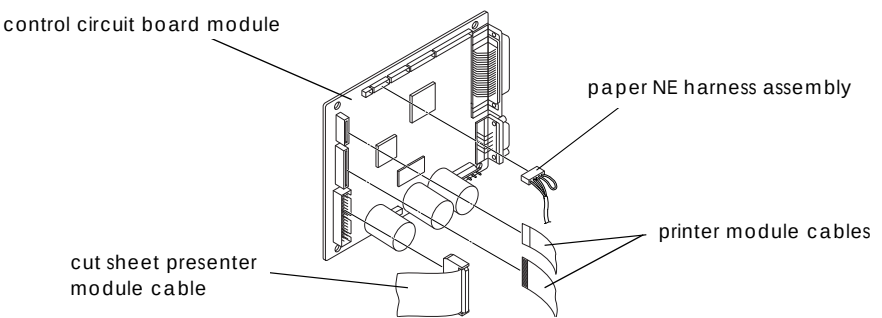
(*6): Wire band (SKB-85) × 2 and wire band (SKB-1.5M) × 1

The wire bands given below are the identical ones.

- (*2) and (*3) wire bands (SKB-85)
 - (*4) and (*6) wire bands (SKB-1.5M)
 - (*5) and (*6) wire bands (SKB-85)
- When you replace the **cut sheet presenter module**, the **paper exit**, and the **upper frame cut sheet presenter unit**, a **seal, paper exit guide** is required for each part.

Unit Disassembly

Cover, circuit board A/B and Control circuit board module

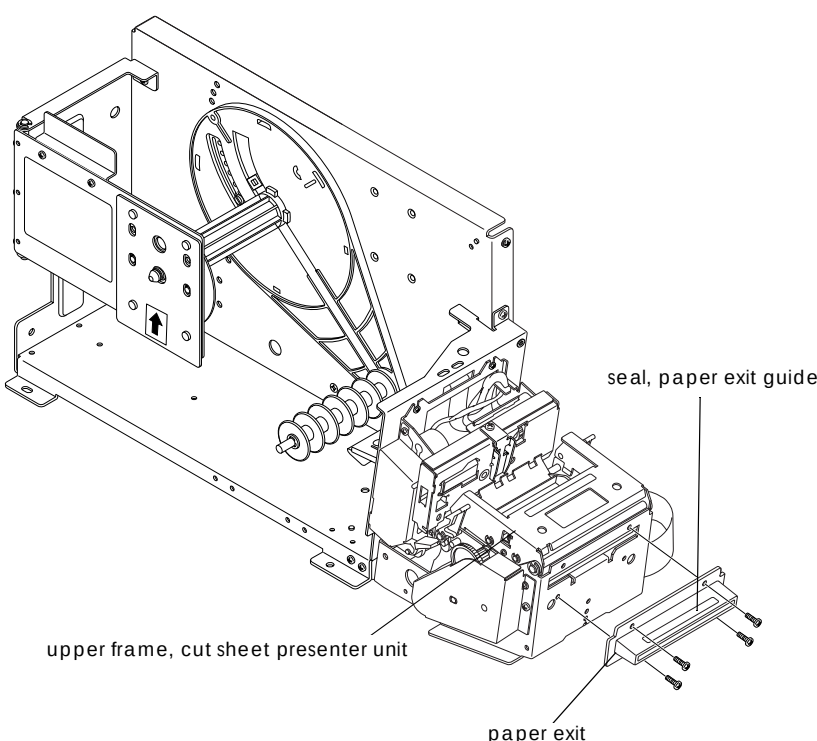
Disassembly step	Disassembly part name	Disassembly procedure
1	Cover, UIB C.B (M3 × 4)	× 1 × 2 ☐ Remove the C.B (M3 × 4) to remove the cover, UIB from the cover, circuit board A .
2	Dust cap	× 1 ☐ Remove the dust cap from the parallel connector on the circuit board module.
3	COM, cover	× 1 ☐ Remove the COM cover from the serial connector on the circuit board module.
4	Hexagonal lock screw (millimeter screw)	× 2 ☐ Remove two hexagonal screws fastening the serial connector on the control circuit board and the cover, circuit board A .
5	Plapoint	× 2 ☐ Loosen two plapoints .
6	Cover, circuit board B	× 1 ☐ Remove the cover, circuit board while sliding it to the right.
7		 ☐ Disconnect the paper NE harness assembly , the connector for the cut sheet presenter module and two cables for the printer module from the control circuit board.
		

Disassembly step	Disassembly part name	Disassembly procedure
8	Control circuit board module × 1 C.B.(3 × 4) × 4	☐ Remove four C.B.(3 × 4) s; then remove the control circuit board module.
★		<Check> ☐ Use a proper body grounding procedure before handling the control circuit board module. ☐ Do not deform the parallel connector on the control circuit board module by getting caught it on the cover.
9	Cover, circuit board A × 1 C.B.(3 × 4) × 6	☐ Remove six C.B.(3 × 4) s; then remove the cover, circuit board A from the paper roll supply module .
10	Plate, cable hold × 1 C.B.(3 × 3) × 2	☐ Remove two C.B.(3 × 3) s; then remove the plate, cable hold .

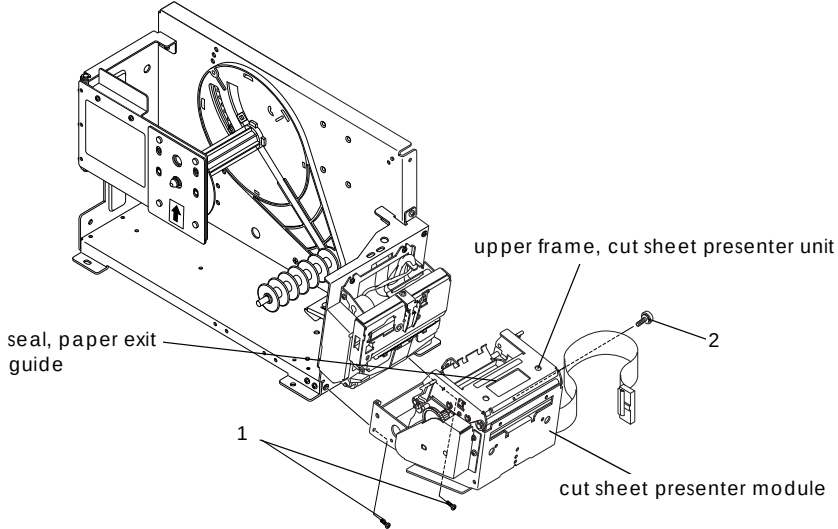
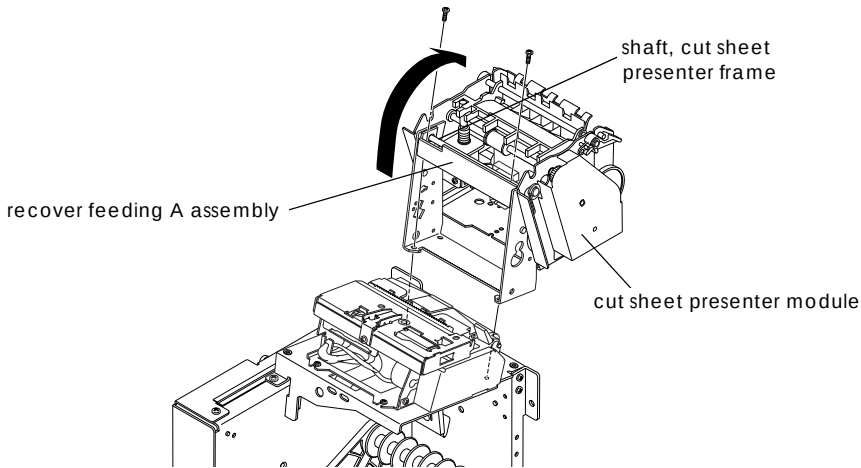
The diagram is an exploded view showing the disassembly of the control circuit board module. It illustrates the relationship between the control circuit board module (8), the cover, circuit board A (9), the plate, cable hold (10), and the seal, paper exit guide. The diagram shows the control circuit board module being removed from the main unit, and the cover, circuit board A and the plate, cable hold being removed from the paper roll supply module.

Disassembly step	Disassembly part name	Disassembly procedure																				
☆		<Reassembly Point: for the cover, circuit board A/B and control circuit board module> 1. Hold two cables for the printer module and a cable for the cut sheet presenter module with the plate, cable hold; then secure it with two C.B. (3 × 3)s. Tightening torque: 539 to 637 mN•m {5.5 to 6.5 kg•cm} <Reassembly Check> •Hold the cable for the cut sheet presenter module 7.5 cm from the connector while aligning it with the frame inside edge of the paper roll supply module. •When you pull the cut sheet presenter module fully to the near side with your fingers on/around the seal, paper exit guide, the cable should have a little slack. (It should not be stretched out.) •The cables for the printer module should not be run together. 2. Attach the cover, circuit board A to the paper roll supply module, and secure it with six C.B. (3 × 4)s 3. Attach the control circuit module and secure it with C.B. (3 × 4)s in four places temporarily. 4. Connect the cables and the connectors to the control circuit board module. <Reassembly Check> Make sure to note the numbers of the pins and the color of the connectors and before connecting. The connector types are as follows: <table><tr><th>Connector</th><th>Type 1</th><th>Type 2</th><th>Type 3</th><th>Type 4</th></tr><tr><td>Paper NE harness assembly × 1</td><td>○</td><td>○</td><td>—</td><td>—</td></tr><tr><td>Cut sheet presenter module × 1</td><td>○</td><td>○</td><td>○</td><td>○</td></tr><tr><td>Printer module: cable × 2</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table> 5. Secure the serial connector of the control circuit board module to the cover, circuit board A with two lock screws. 6. Tighten the control circuit board module firmly. Tightening torque: 539 to 637 mN•m {5.5 to 6.5 kg•cm} 7. Set the DIP switches. *For the DIP switch setting details, see “DIP switches” on page 2-20.	Connector	Type 1	Type 2	Type 3	Type 4	Paper NE harness assembly × 1	○	○	—	—	Cut sheet presenter module × 1	○	○	○	○	Printer module: cable × 2	○	○	○	○
Connector	Type 1	Type 2	Type 3	Type 4																		
Paper NE harness assembly × 1	○	○	—	—																		
Cut sheet presenter module × 1	○	○	○	○																		
Printer module: cable × 2	○	○	○	○																		

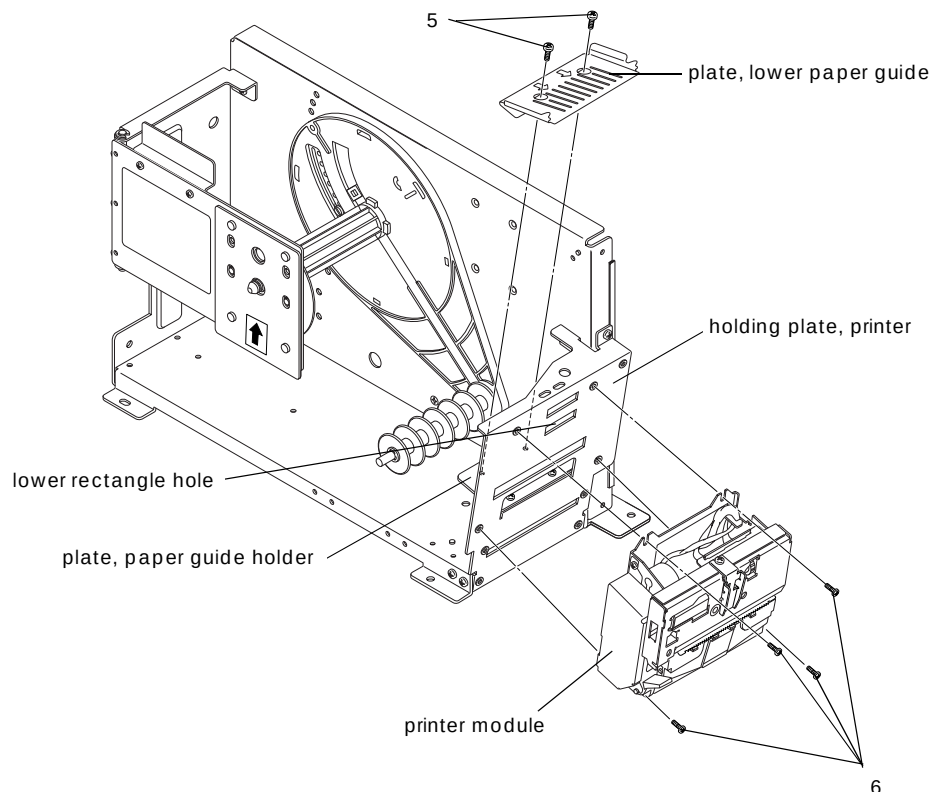
Paper exit

Disassembly step	Disassembly part name	Disassembly procedure
1 ☆	Paper exit × 1 C.B.(3 × 6) × 4	❑ Remove four C.B.(3 × 6)s; then remove the paper exit. <Reassembly Point> ❑ Tightening torque for reassembly: 539 to 637 mN•m {5.5 to 6.5 kg•cm} ❑ Do not forget to paste the seal, paper exit guide on the paper exit. 

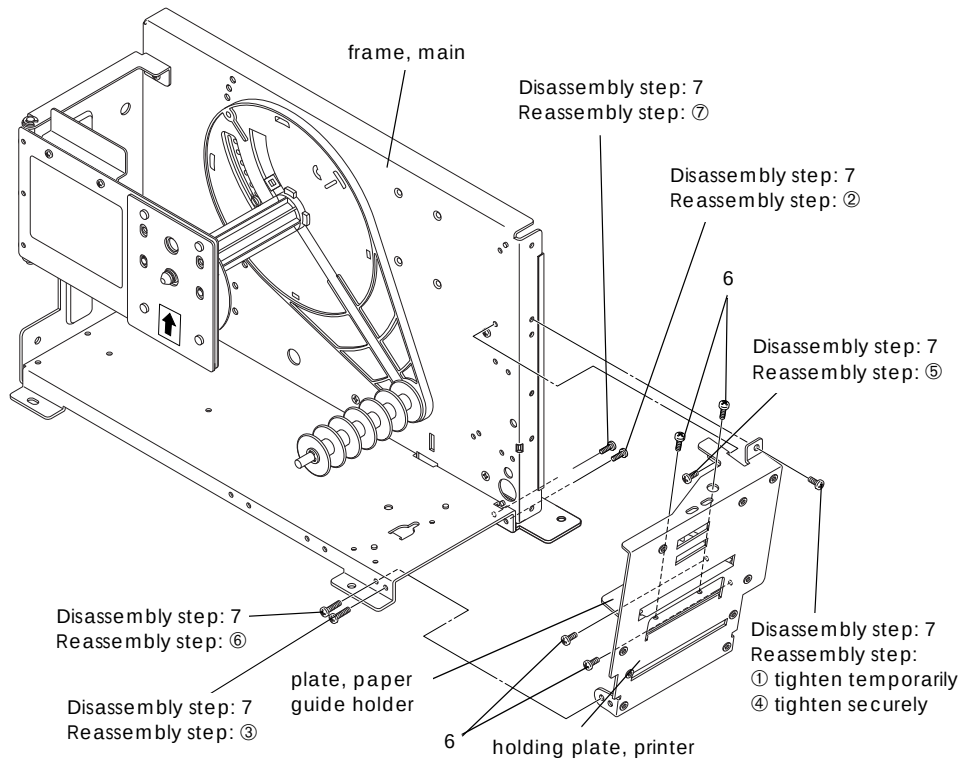
Cut sheet presenter module, Holding plate, printer, Plate, lower paper guide, Plate, paper guide holder, and Holder, paper roll

Disassembly step	Disassembly part name	Disassembly procedure
1	C.B.(M3 × 4) × 2	☐ Remove two C.B.(M3 × 4) s at the bottom of the cut sheet presenter module.
2	Plapoint × 1	☐ Remove the plapoint on the cable side of the cut sheet presenter module.
		
3		☐ Put your fingers on/around the seal, paper exit guide and pull the cut sheet presenter module fully to the near side to turn downward.
4	Cut sheet presenter module × 1	☐ Insert a screwdriver between the shaft, cut sheet presenter frame and the recover feeding A assembly , and remove two upper C.B.(M3 × 4) s to remove the cut sheet presenter module.
☆	C.B.(M3 × 4) × 2	<Reassembly Point> ☐ Do not forget to paste seal, paper exit guide on the upper frame, cut sheet presenter unit .
		

Disassembly step	Disassembly part name	Disassembly procedure
5 ☆	Plate, lower paper guide × 1 C.B.(M3 × 4) × 2	☐ Remove two C.B.(M3 × 4) s; then remove the plate, lower paper guide from the plate, paper guide holder . <Reassembly Point> With the plate, lower paper guide tab section inserted in the paper guide of the printer module, secure the plate, lower paper guide pushed against the holding plate, printer with screws. Tightening torque: 539 to 637 mN•m {5.5 to 6.5 kg•cm}
6 ☆	Printer module × 1 C.B.(M3 × 4) × 4	☐ Remove four C.B.(M3 × 4) s, and remove the printer module from the holding plate, printer . <Reassembly Point> ☐ When you remove the printer module only, attach the plate, lower paper guide again. (See <Reassembly Point> of the plate, lower paper guide for attaching.) ☐ Pass the narrower FFC cable through the lower rectangle hole on the holding plate, printer . Fold the other cable (the wider one) so that it faces the control circuit board side without passing it through the holding plate, printer .



Disassembly step	Disassembly part name	Disassembly procedure
7 ☆	Plate, paper guide holder × 1 C.B.(M3 × 4) × 4	□ Remove two C.B.(M3 × 4)s securing the plate, paper guide holder and the paper roll supply module, and remove two C.B.(M3 × 4)s securing the plate, paper guide holder and the holding plate, printer; then remove the plate, paper guide holder. <Reassembly Point> 1 Secure the plate, paper guide holder to the holding plate, printer while pushing it to the frame, main of the paper roll supply module. 2 Secure the plate, paper guide holder to the frame, main of the paper roll supply module. At this time, make sure that there is no space between the plate, paper guide holder and the frame, main. Tightening torque: 539 to 637 mN•m {5.5 to 6.5 kg•cm}
8 ☆	Holding plate, printer × 1 C.B.(M3 × 4) × 4 C.B.(M3 × 6) × 2	□ Remove four C.B.(M3 × 4)s and two C.B.(M3 × 6)s to remove the holding plate, printer from the paper roll supply module. <Reassembly Point> 1. Attach the holding plate, printer to the paper roll supply module, and secure a screw temporarily. (step ① below) 2. Secure each screw to the respective mounting positions in sequence of reassembly steps ② to ⑦ below. Tightening torque: 539 to 637 mN•m {5.5 to 6.5 kg•cm} <Reassembly Check> Be sure to note the size of screws.② and ⑦: C.B. (M3 × 6), other screws: C.B. (M3 × 4))



Disassembly step	Disassembly part name	Disassembly procedure
9	C-ring 46 × 1	☐ Remove the C-ring 46 from the shaft, paper roll .
10	Holder, paper roll × 1	☐ Remove the holder, paper roll from the shaft, paper roll .

Module Disassembly

Paper roll supply module

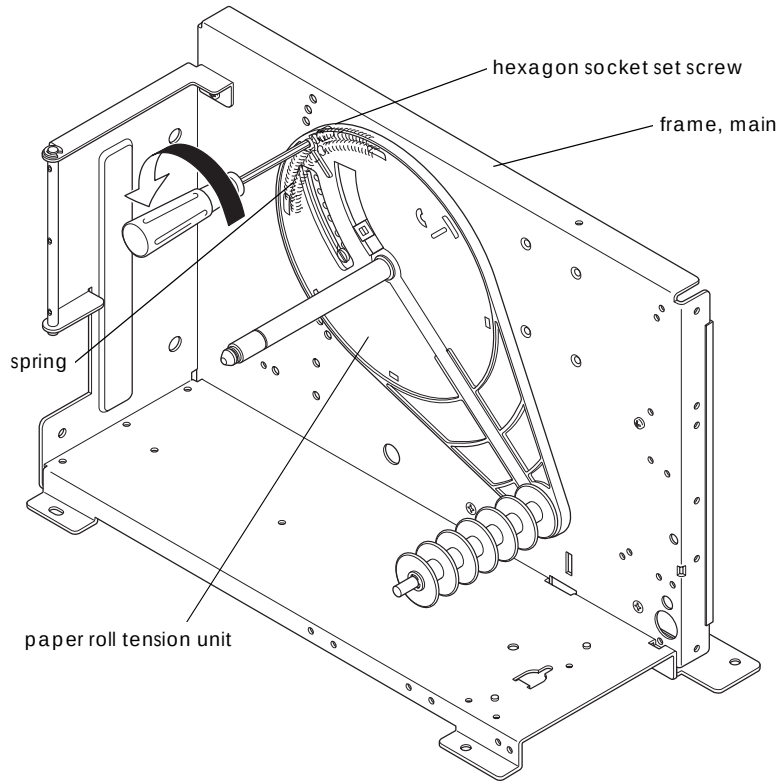
Disassembly step	Disassembly part name	Disassembly procedure
1	C.B.(M3 × 6) × 3 Paper roll hold unit × 1	☐ Remove three C.B.(M3 × 6) s to remove the paper roll hold unit .
☆		<Reassembly Point> Secure the paper roll hold unit while it is set onto the shaft, paper roll . At this time, check if the paper roll hold unit can be opened/closed smoothly.
2	Spacer, paper roll holder × 1	☐ Remove the spacer, paper roll holder from the shaft, paper roll .

Disassembly step	Disassembly part name	Disassembly procedure
3	Hexagonal nut × 1	☐ Remove the hexagonal nut .
4	Wire band (SKB-85) × 1	☐ Cut the wire band securing the paper NE harness assembly of the paper roll tension unit to the frame, main .
5		☐ Align the hole on the paper roll tension unit with the hexagon socket set screw; then push the paper roll tension unit against the frame, main with your hand so that the unit does not move.

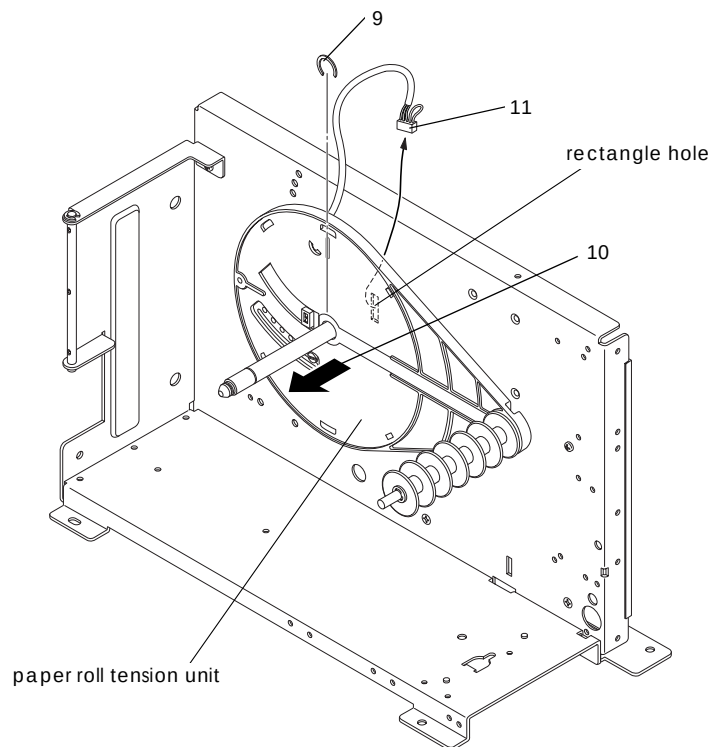
Diagram illustrating the disassembly steps:

- Step 3: Removing the hexagonal nut (labeled 3).
- Step 4: Cutting the wire band (labeled 4) securing the paper NE harness assembly.
- Step 5: Aligning the hole on the paper roll tension unit (labeled 5) with the hexagon socket set screw and pushing the unit against the frame, main.

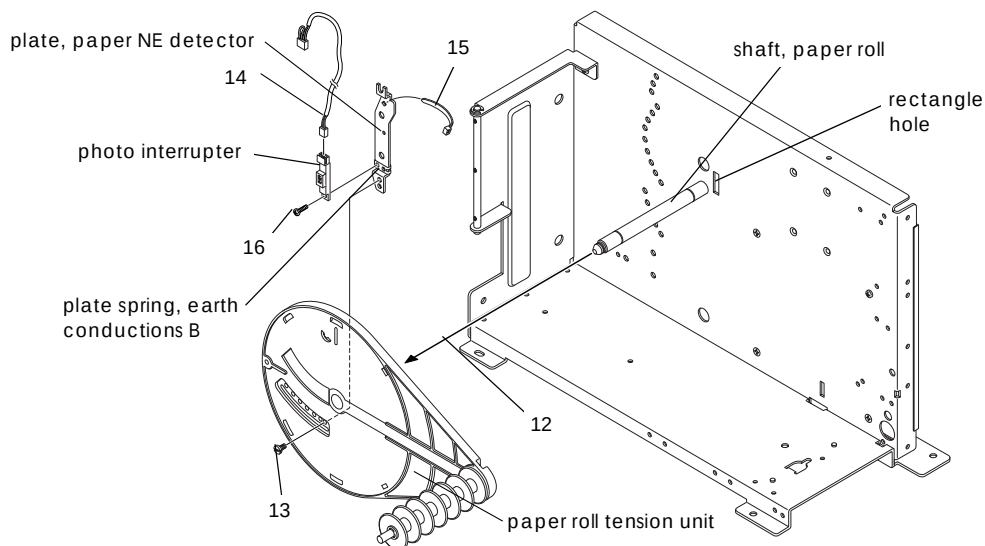
Disassembly step	Disassembly part name	Disassembly procedure
6		☐ Insert a hexagonal screwdriver from the hole on the paper roll tension unit with the paper roll tension unit fixed with your hand.
7		☐ Loosen the hexagon socket set screw with the hexagonal screwdriver and draw it to the paper roll tension unit side; loosen until it is completely drawn from the edge of the frame, main .
★		<Check> ☐ Do not draw the hexagon socket set screw more than 3 mm from the edge of the paper roll tension unit . ☐ Do not remove your hand from the paper roll tension unit until the hexagon socket set screw is drawn from the edge of the frame, main . ☐ Be sure not to remove two springs of the paper roll tension unit from the hexagon socket set screw.
☆		<Reassembly Point> 1. Secure the hexagon socket set screw at the position where it extends 6 ± 0.5 mm {0.236 $\pm$ 0.02"} from the frame, main with the hexagonal nut. 2. Be sure the hexagon socket set screw is in the correct position on the frame, main.
8		☐ After drawing the hexagon socket set screw completely from the frame, main , remove the hexagonal screwdriver and your hand that was holding the paper roll tension unit .



Disassembly step	Disassembly part name	Disassembly procedure
9 10 ★ 11	C-ring 46 × 1	❑ Remove the C-ring 46. ❑ Pull out the paper roll tension unit about 2 to 3 cm from the frame, main. <Check> Do not pull the paper roll tension unit too far, since that cause damage to the cord of the paper NE harness assembly. ❑ Pull out the paper NE harness assembly of the paper roll tension unit from the rectangle hole on the frame, main.



Disassembly step	Disassembly part name	Disassembly procedure
12 ☆	Paper roll tension unit × 1	□ Remove the paper roll tension unit from the shaft, paper roll. <Reassembly Point> 1. Make sure not to bend the plate spring, earth conductions B when attaching the paper roll tension unit to the shaft, paper roll. 2. Pass the paper NE harness assembly through the rectangle hole on the frame, main, and secure it at the position of 280 ± 5 mm with a wire band. 3. Cut the extra part of the wire band.
13 ☆	Paper, NE detector assembly × 1 Screw, paper NE detector × 1	□ Remove the screw, paper NE detector; then paper NE detector assembly attached to the rear side of the paper roll tension unit will come off.) <Reassembly Point> During reassembly, secure the paper NE detector assembly at the same position as the position before disassembly.
14	Paper NE harness assembly × 1	□ Disconnect the paper NE harness assembly from the photo interrupter .
15 ☆	Wire band (SKB-85) × 1	□ Cut the wire band securing the paper NE harness assembly to the plate, paper NE detector. <Reassembly Point> When binding the paper NE harness assembly with a wire band, be sure that the wire band is extended 1.2 mm or less from the rear side of the plate, paper NE detector.
16 ☆	Photo interrupter × 1 Plate, paper NE detector × 1 C.P (P2) × 1	□ Remove the C.P (P2) securing the plate, paper NE detector and the photo interrupter to remove the photo interrupter. <Reassembly Point> Tightening torque: 392 mN•m {4 kg•cm}

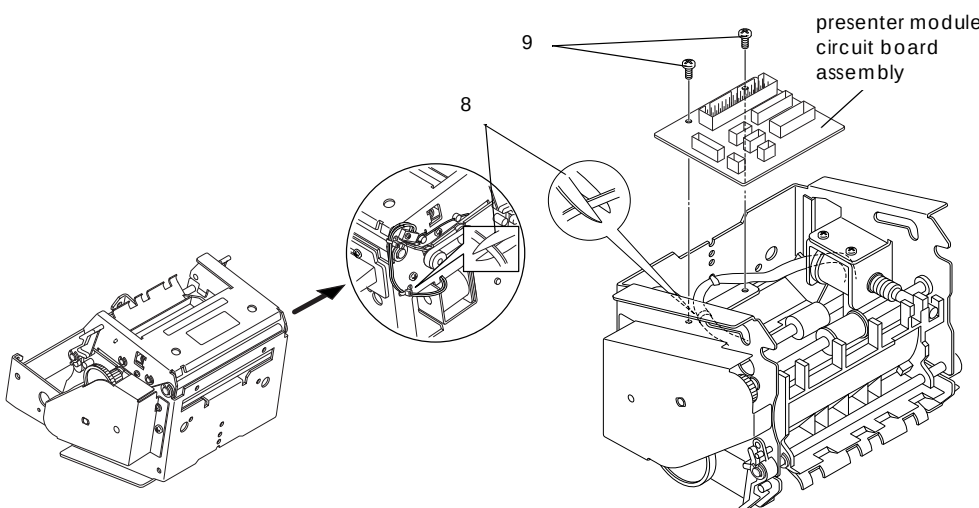
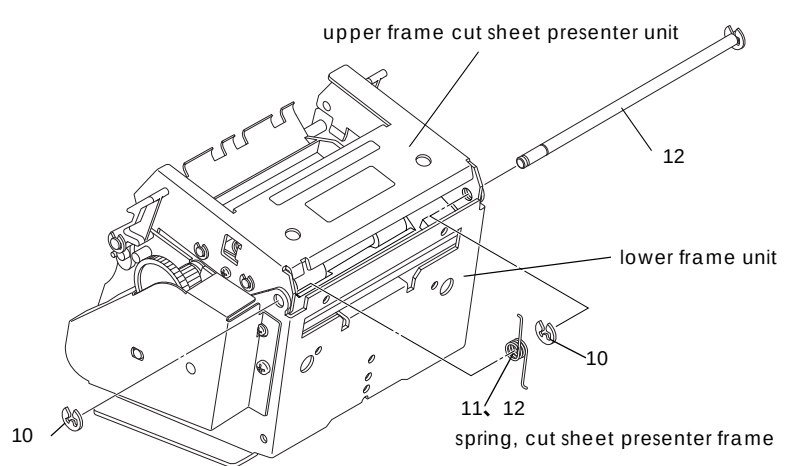


Cut sheet presenter module

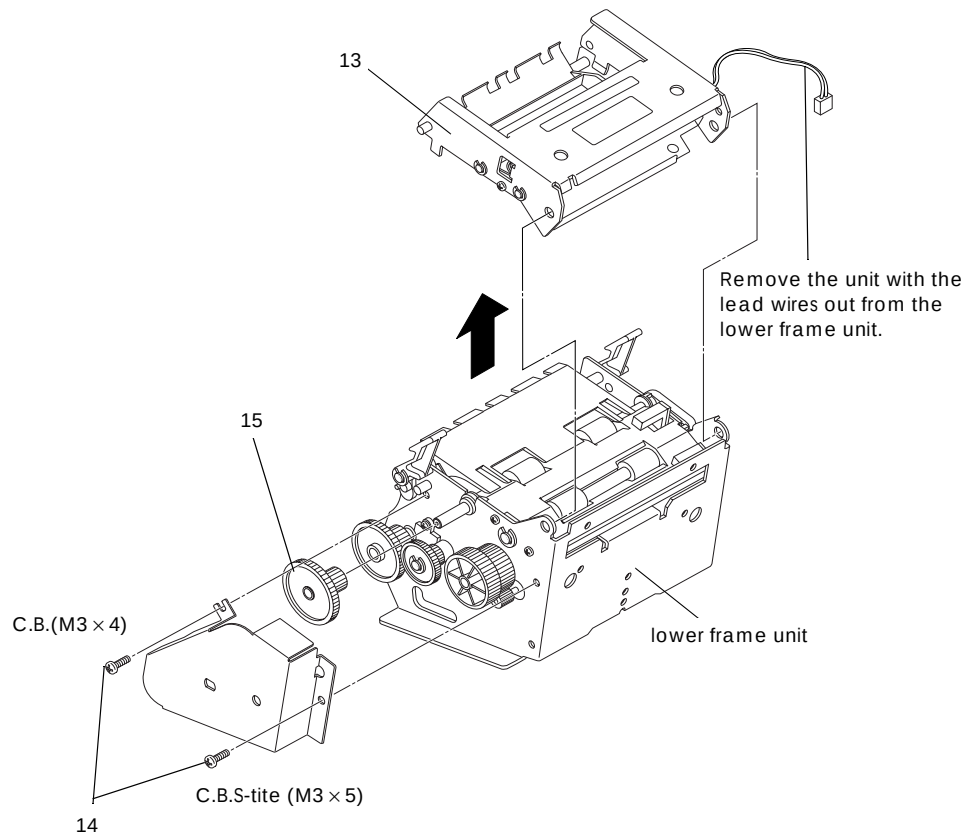
Disassembly step	Disassembly part name	Disassembly procedure
1	Spring, cut sheet presenter × 1	❑ Remove the spring, cut sheet from the recover feeding A assembly and the lower frame unit .
2	R.E(5) × 1	❑ Remove one of the R.E (5) s on the shaft, cut sheet presenter securing the recover feeding A assembly and the lower frame unit .
3	Shaft, cut sheet presenter (R.E (5) × 1)	❑ Pull out the shaft, cut sheet presenter from the lower frame unit and the recover feeding A assembly .
4	Recover feeding A assembly × 1	❑ Remove the recover feeding A assembly from the lower frame unit .

The diagram illustrates the disassembly process of the cut sheet presenter module. It shows the lower frame unit at the top, with the recover feeding A assembly attached to its front. The shaft, cut sheet presenter (3) is shown being pulled out from the recover feeding A assembly. The spring (1) is shown attached to the recover feeding A assembly. The R.E (5) (2) is shown attached to the shaft, cut sheet presenter (3).

Disassembly step	Disassembly part name	Disassembly procedure
5		☐ Disconnect all connectors from the presenter module circuit board assembly .
6	Wire band (SKB-1.5M)×1	☐ Cut the wire band securing the cable, presenter module to the lower frame unit .
7	Cable, presenter module × 1	☐ After disconnecting the cable, presenter module from the presenter module circuit board assembly , pull it out from the rectangle hole on the lower frame unit .
☆		<Reassembly Point> 1. Fold the cable at right angle at the position about 10 mm away from the connector for the presenter module circuit board assembly. 2. Fold the cable at 45° at the position folded in step 1. (Fold the cable so that it faces the rectangle hole on the lower frame unit.) 3. Pass the cable throught the rectangle hole on the lower frame unit.

Disassembly step	Disassembly part name	Disassembly procedure
8	Wire band (SKB-85) × 2	☐ Cut two wire bands below binding the lead wires.
9	C.B.(3 × 4) Presenter module circuit board assembly × 1	☐ Remove two C.B.(3 × 4)s to remove the presenter module circuit board assembly from the lower frame unit .
		
10	R.E(4) × 2	☐ Remove two R.E (4)s (inside and outside of the frame) on the gear side of the fulcrum shaft, cut sheet presenter frame securing the upper frame, cut sheet presenter unit and the lower frame unit .
11		☐ Move the spring, cut sheet presenter frame to the groove of the frame, and unhook the one side of the spring.
12	Spring, cut sheet presenter module × 1 Fulcrum shaft, cut sheet presenter (R.E(4)) × 1	☐ Pull out the fulcrum shaft, cut sheet presenter from the frame, and remove the spring, cut sheet presenter frame from between the upper frame, cut sheet presenter unit and the lower frame unit .
		

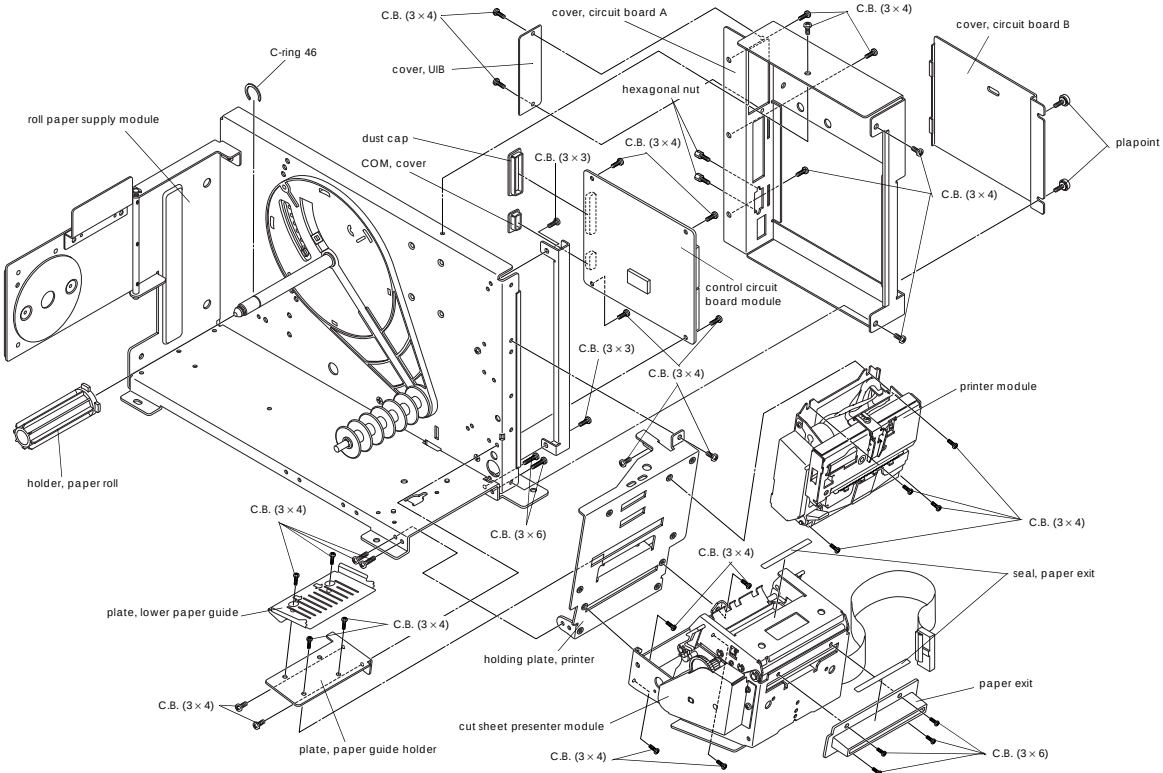
Disassembly step	Disassembly part name	Disassembly procedure
13 ★ ☆	Upper frame presenter unit × 1	❑ Remove the upper frame, cut sheet presenter unit from the lower frame unit. <Check> With the lead wire for the cover open sensor out from the inside of the lower frame unit, remove the upper frame, cut sheet presenter unit. <Reassembly Point> ❑ Do not forget to paste seal, paper exit guide on the upper frame, cut sheet presenter unit.
14	Cover, presenter route gear × 1 C.B.(M3 × 4) × 1 C.B.S-tite (M3 × 5) × 1	❑ Remove the C.B.(M3 × 4) and the C.B.S-tite (M3 × 5) to remove the cover, presenter route gear from the lower frame unit .
15	Gear, idler × 1 Lower frame unit × 1	❑ Pull out the gear, idler from the lower frame unit .



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Appendix

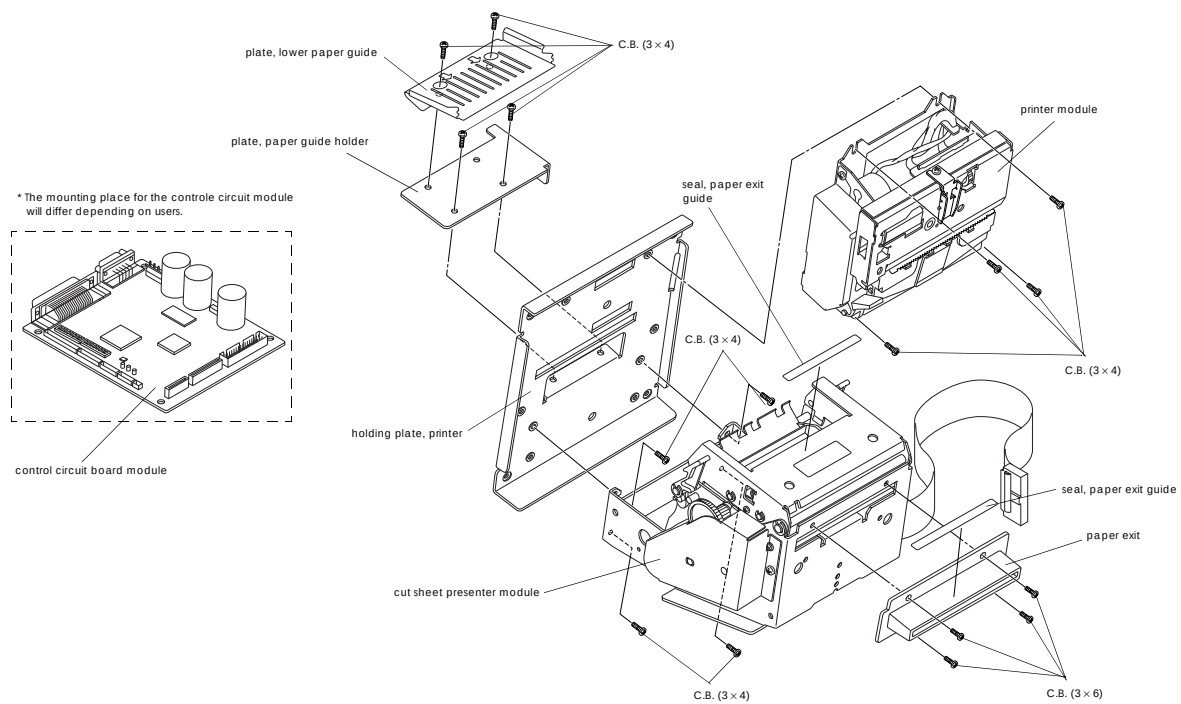
EU-T532/T542 Exploded Diagram (Type 1 and 2)



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EU-T532/T542 Exploded Diagram (Type 3 and 4)



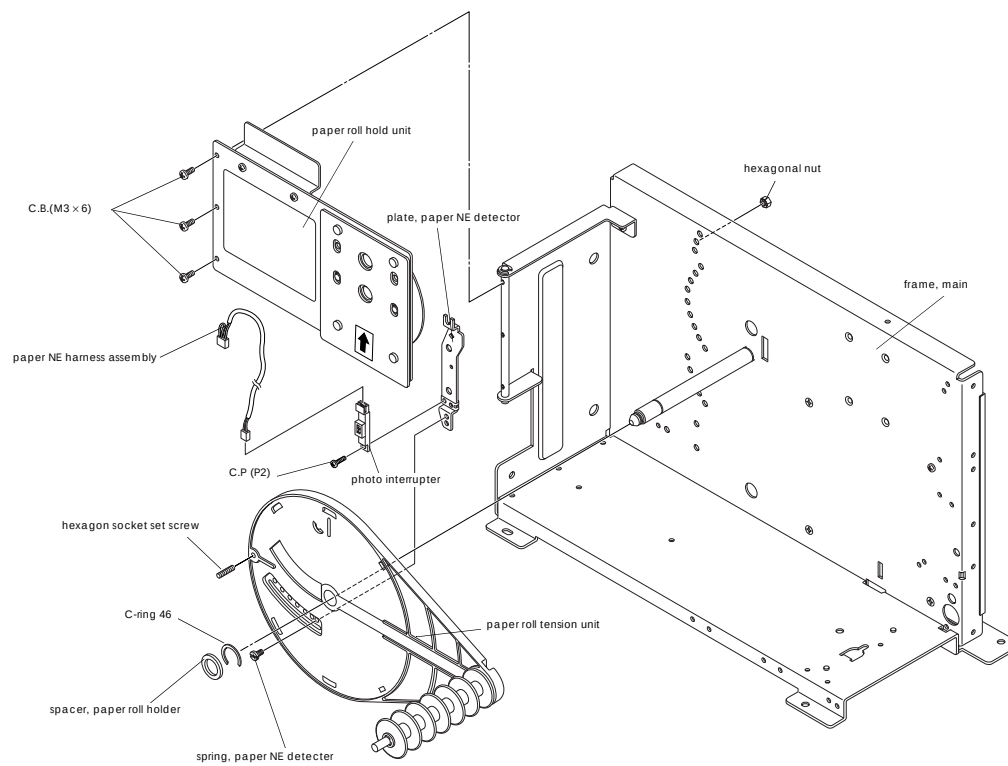
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Appendix -2

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Paper Roll Supply Module Exploded Diagram



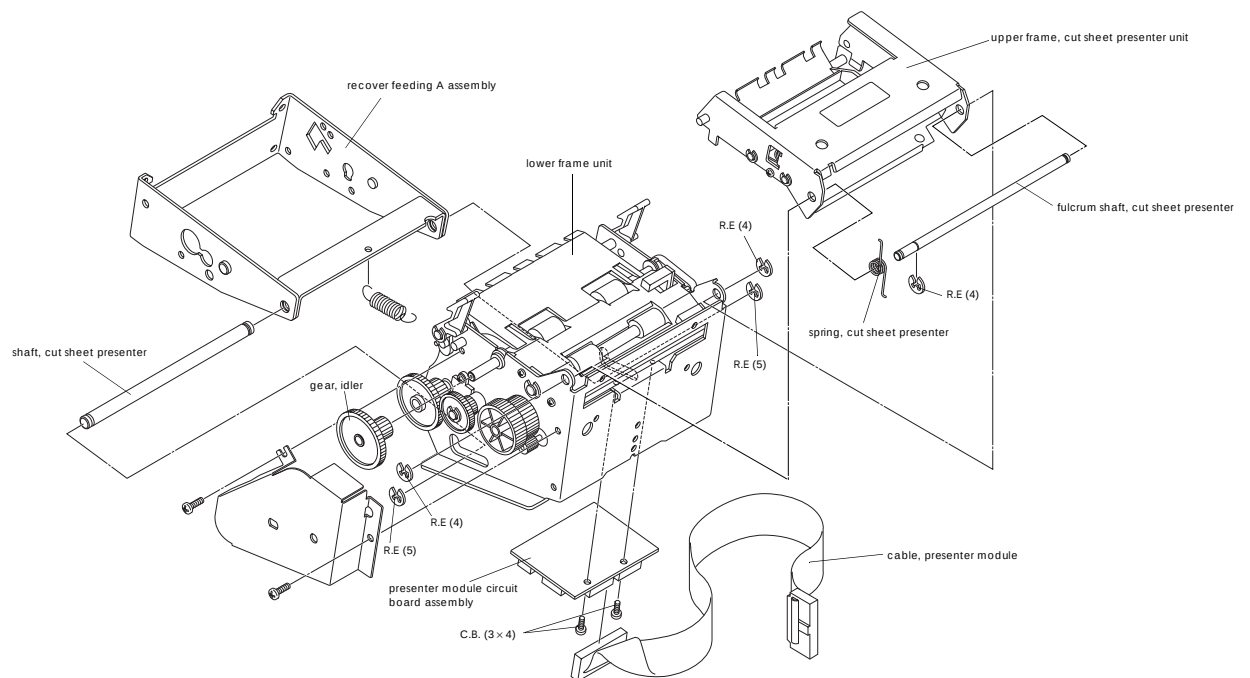
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Appendix -3

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Cut Sheet Presenter Module Exploded Diagram



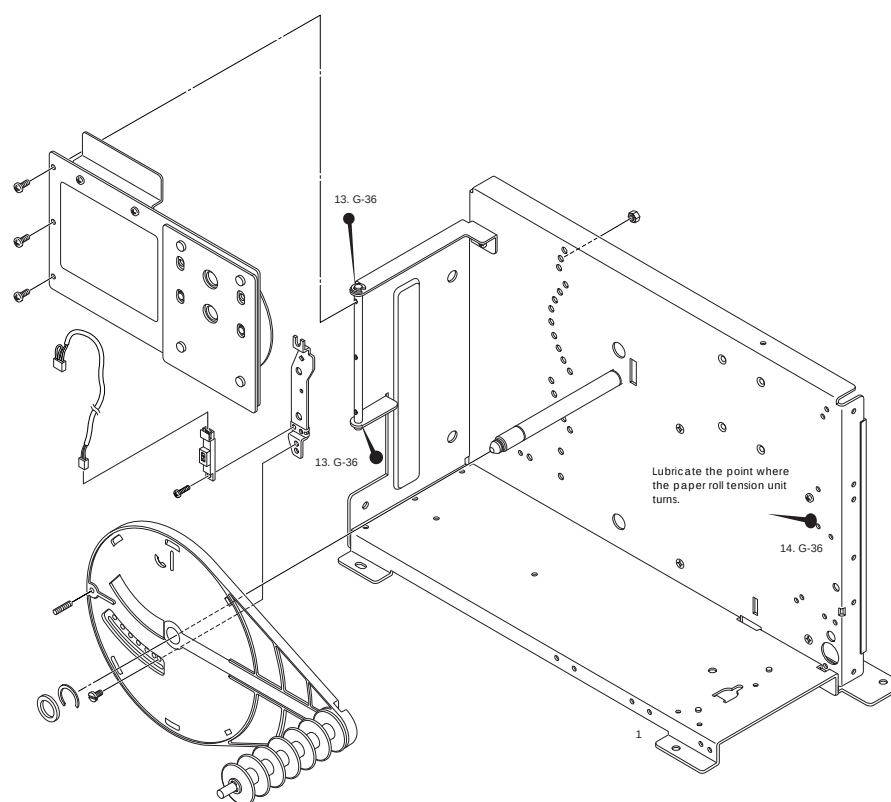
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Appendix -5

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Roll Paper Supply Module Lubrication Diagram



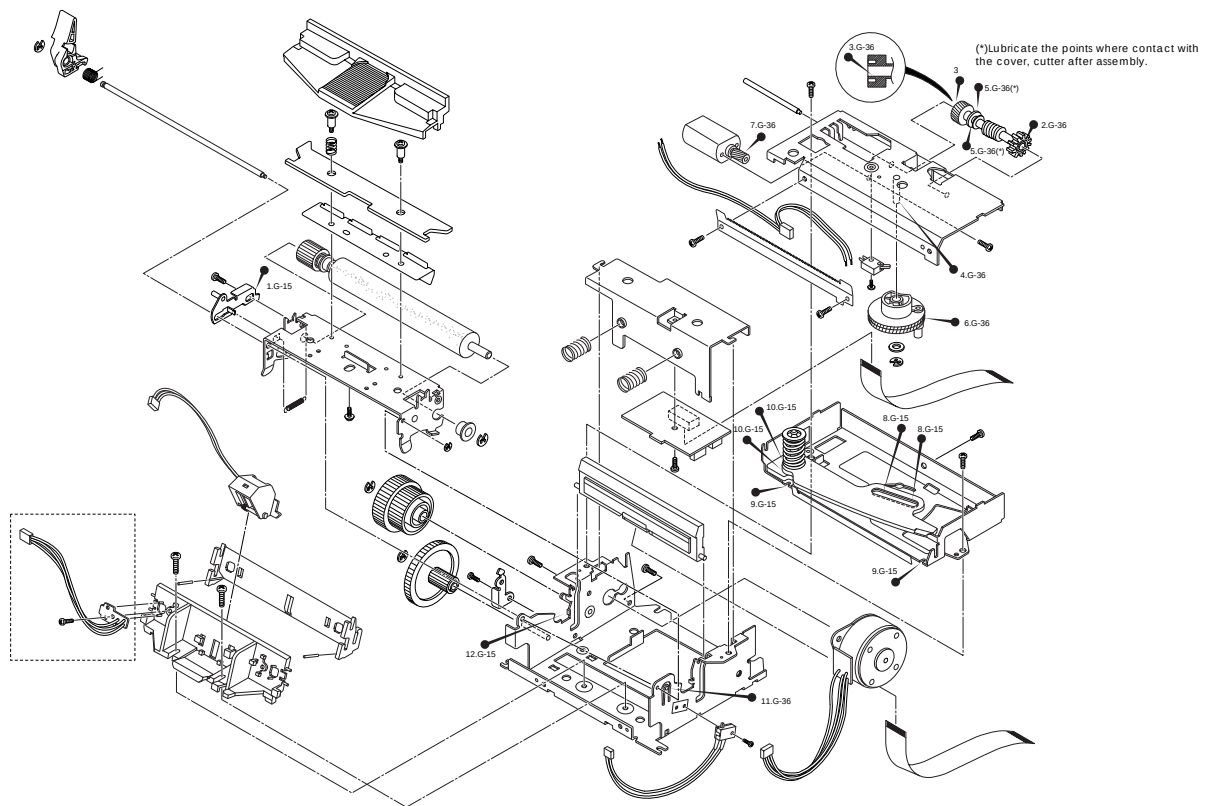
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Appendix -6

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Printer Module Lubrication Diagram



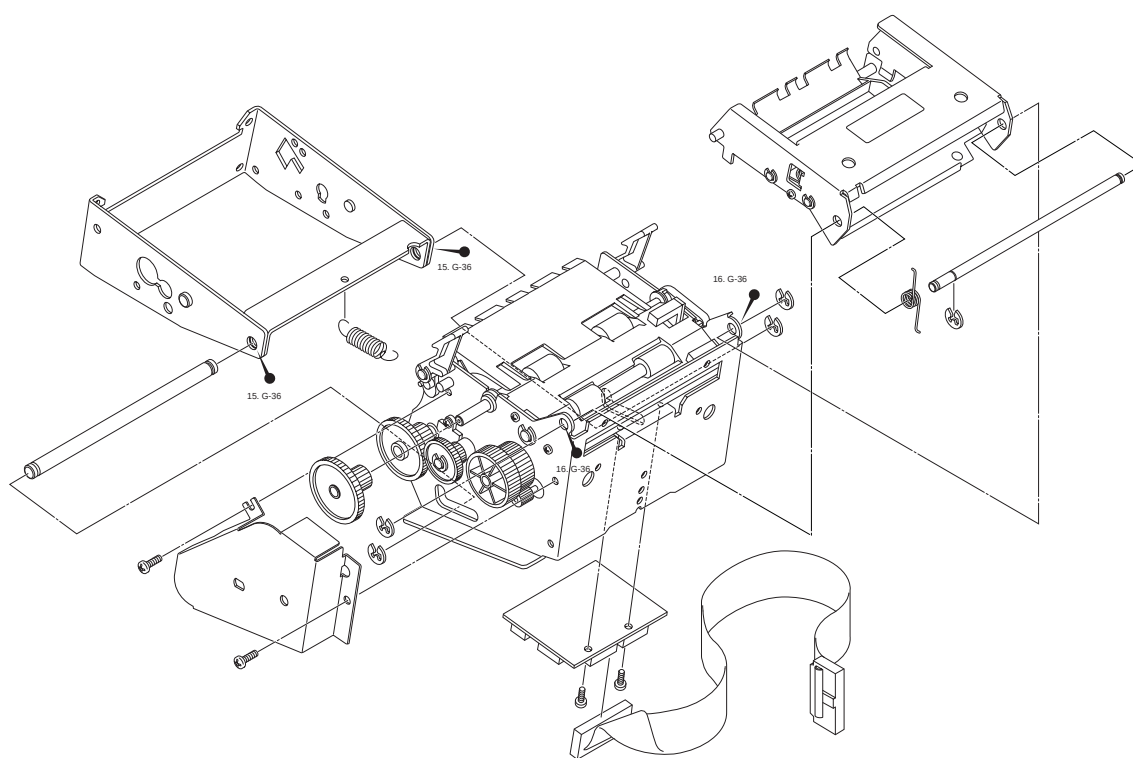
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Cut Sheet Presenter Module Lubrication Diagram



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Appendix -8

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