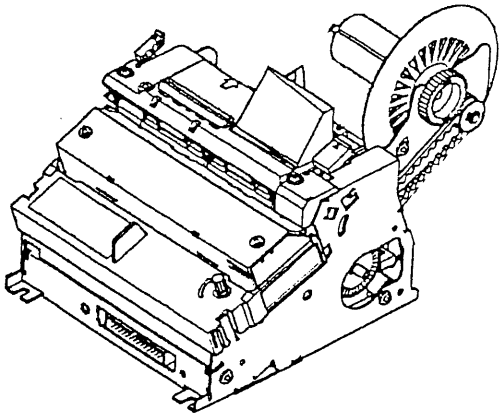
SHARP SERVICE MANUAL

CODE: 00ZM820SM//-E



IMPACT DOT MATRIX PRINTER

MODEL M-820

CONTENTS

SHARP CORPORATION

Chapter 1
Features, Specifications, Operating Principles

Table of Contents

1.1 Features

The Model-820 impact dot-matrix printer, chiefly designed and developed for use in cash registers, has the following features:

- Clear printing with 7-pin dot head
- High-speed, bi-directional printing
- Front paper feeding method for reduced paper jams.
- User-friendly design:
  - Uses ribbon cassettes that can be replaced at the touch of a button.
  - Release mechanism for easy changing of paper rolls.
  - Clamshell mechanism for easier maintenance in case of paper jams.
- Allows stamp printing and validation printing.

1.2 Specifications

Item	Model-820
Printing method	Mechanical serial dot-matrix printer
Printing direction	Bi-directional printing
Printing speed	Approx. 2.8 l/s (26.4V) ~ approx. 2.2 l/s (21.6V) (25°C)
Printing fonts	7 × 7 (half-dot) 7 wires
Total dot number	Maximum of 95 dots (receipt, journal) 190 positions
	Maximum of 213 dots (validation) 426 positions
Number of printing columns	Receipt side: 21 columns
	Journal side: 21 columns
	Validation: 47 columns
Character dimensions	1.5 mm (W) × 2.7mm (H)
Space between lines	4.3 mm
Space between columns	1.83 mm
Paper-feeding	Executed by means of electric current sent to an electromagnet. Independent receipt and journal paper feeding.
Fast forward speed	Continuous fast forward when issuing receipts. Approx. 30 l/s (26.4V) ~ Approx. 23.6 l/s (21.6V) (25°C)
	Fast forward speed. Approx. 12 l/s (26.4V) ~ Approx. 9.4 l/s (21.6V) (25°C)
Recording paper (supplied by user)	Roll paper (DPAPR1006CSZZ) Type: High quality paper Width: 44.5 mm ± 0.5 Maximum diameter: 80 mm Paper width: 0.06 ~ 0.09 mm Area: 52.3 ~ 64.0 g/m^2 (JIS P8124), (45 ~ 55 kg/ 1,000 sheets/ 788 × 1091 mm^2)

Item	Model-820
Recording paper (supplied by user)	Validation-use paper Measurements, Width: 135 ~ 210 mm Height: 70 mm or greater Thickness: 0.07 ~ 0.1mm Combined paper thickness: 0.2 mm or less
Operational voltage	24 VDC±10%, head, motor, control magnets
	5 VDC±5%, detectors
Ribbon cassettes	Color: Purple (single color)
	Life: 6 million characters
	Standards: ERC-32 (P) PRBN-6640RCZZ
Stamp	Material: Porous rubber
	Print surface dimensions 30 (W) × 20 (H) mm
	Recommended stamp: Shachihata XS-16
	Recommended refill ink: Shachihata X-200 purple
External dimensions	150 (W) × 228 (D) × 159.2 (H) mm
Weight:	Approx. 1.5 kg
Position	Horizontal (discrepancy of approx. 2 degrees)
Operational temperature	0°C ~ 50°C
Operational humidity	10-90% RH (no condensation) Note: 40°C correspond to about 85% RH.
Reliability	MCBF: 2 million lines of printing (not including head life).
	Head life: 50 million characters (When printing at an average of 2 dots/1 wire/1 character).

1.3 Summary of mechanisms

The Model-820 is composed of 10 mechanisms: the frame ass'y, transmission mechanism, detection mechanism, printing mechanism, paper feeding mechanism, clamshell mechanism, ribbon mechanism, stamp mechanism, auto-cut mechanism and paper take-up mechanism.
Figure 1.1 shows the Model-820 impact dot matrix printer. Refer to Section 1.4 on operating principles and Chapter 2 regarding the operating principles and handling of the individual mechanisms.

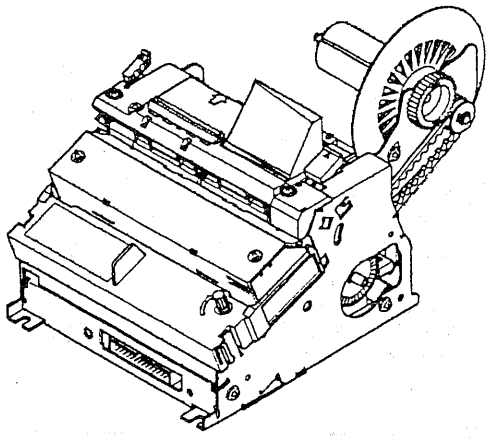


Figure. 1.1 External view of Model-820

1.4 Operating principles of mechanisms

1.4.1 Transmission mechanism

This mechanism is composed of the following sections: fixed to the motor shaft, reduction transmission gear, 1st reduction gear, 2nd reduction gear, paper feeding gear, head feeding tranmission gear, ribbon feeding drive gear, pulley drive gear, ribbon transmission gear. These are all positioned on the journal side of this unit (see Figure. 1.4). There are two gear systems: the paper feeding gear system and the head feeding gear system.

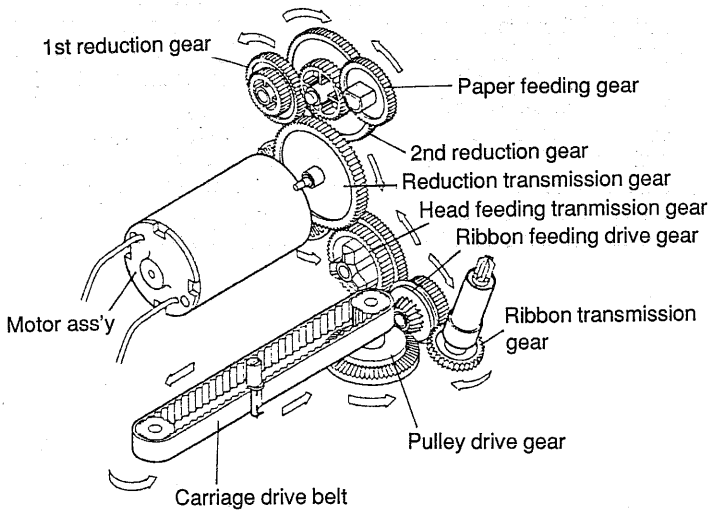


Figure. 1.4 Transmission mechanism

Paper feeding gear system

The paper feeding gear system is composed of the following parts: reduction transmission gear, 2nd reduction gear, paper feeding gear. Rotation of the motor is successively decelerated from the motor gear and transmitted to the paper feeding gear.
The rotation energy transmitted to the paper feeding gear advance is used as the drive energy source for the auto-cutter mechanism, stamp mechanism and paper feeding mechanism that will be described later. The rotation energy of the 2nd reduction gear is used as the drive source energy of the paper take-up mechanism to be described later. The rotation energy of the 1st reduction gear is used as the drive source energy of the paper extension mechanism.

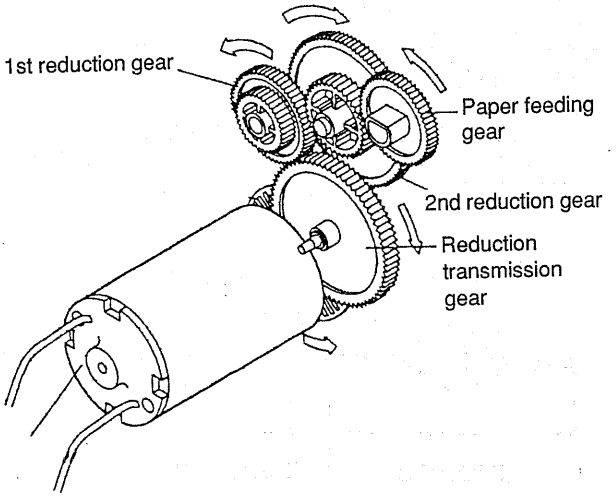


Figure 1.5 paper feeding gear system

Head feeding gear system

The head feeding gear system is composed of the motor ass'y, reduction transmission gear, head feeding tranmission gear, ribbon feeding drive gear, pulley drive gear. The rotation energy of the motor is successively transmitted from the motor ass'y to the pulley drive gear and then acts as the drive power source for the print mechanism to be described later.
The rotation energy of the ribbon feeding drive gear is decelerated by the worm gear and ribbon transmission gear on the ribbon feeding drive gear and acts as the drive power source for the ribbon feeding mechanism described later.

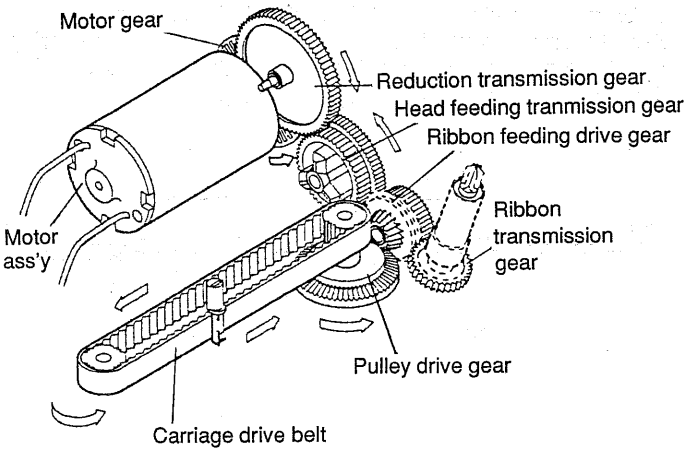


Figure 1.6 Head driving gear system

1.4.2 Detection mechanism

This mechanism is composed of the following sections: timing detection mechanism, reset detection mechanism, validation detection mechanism, low paper detection mechanism. It plays an important role in extending the operations of the individual sections of the printer mechanism.

Timing detection mechanism

The timing detection mechanism is composed of the T detector ass'y attached to the journal side of the main unit frame, the gear secured to the motor shaft, and the T detection plate section on the motor. The T detector ass'y is composed of a LED and a photo IC. The T detector plate section rotates between these so that LED light is alternately passed or blocked via the slit on the T detector plate section to generate a timing detector signal. This timing detector signal determines the timing for printing, paper feeding, stamp and cutter.

Also, because this unit is not equipped with a waveform shaping circuit, this must be supplied by the user (refer to Figure 1.7 regarding the <recommended> waveform shaping circuit).

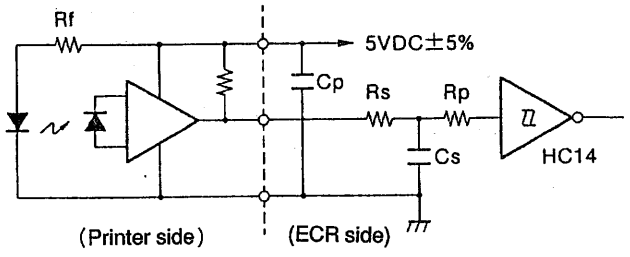


Figure 1.7 Waveform shaping circuit (for timing signal)

Reset detection mechanism

The reset detection mechanism is composed of the R detection board subset (attached to the guide frame joined section of the carriage) and the guide frame ass'y. The R detection board subset is composed of a LED and a photo IC. When the carriage moves parallel with the guide frame ass'y, the reset detection board subset also moves. When the protrusion on the guide frame ass'y and the R detection adjustment plate pass between the LED and the photo IC, a reset detector signal is generated. Recognition of the carriage position is accomplished through recognition of the output waveforms of the reset detector. As shown in Figure 1.8, the side on which two high states with narrow widths are output is the journal side. The side on which one high state of wide width is output is the receipt side.

Also, because this unit is not equipped with a waveform shaping circuit, this must be supplied by the user (refer to Figure 1.9 regarding the <recommended> waveform shaping circuit).

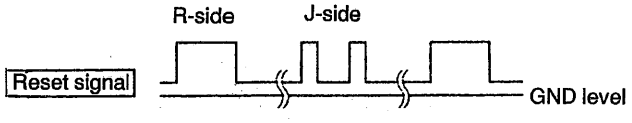


Figure 1.8 Reset detector output

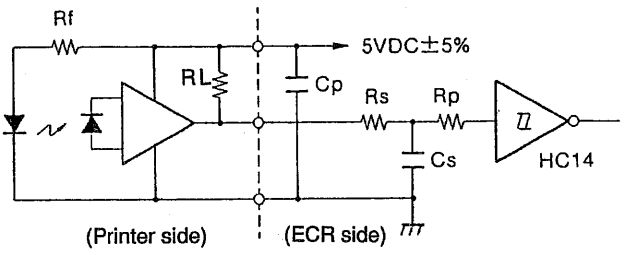


Figure 1.9 Waveform shaping circuit (for reset signal)

Validation detection mechanism [Option]

The card contact position in the center of the validation card insertion groove on the main unit frame includes a V detector and J ass'y as standard equipment on the journal side and the possibility of installing a V detector and R ass'y on the receipt side. The V detector ass'y is composed of a LED and a photo transistor. The lower right corner of the card is inserted in the paper guide contact section in a direction that is diagonal and above the printer. It is then guided directly down. As a result, the light between the LED and photo transistor of the V detector ass'y is blocked and a detection signal is generated.

Also, because this unit is not equipped with a waveform shaping circuit, this must be supplied by the user (refer to Figure 1.10 regarding the <recommended> waveform shaping circuit).

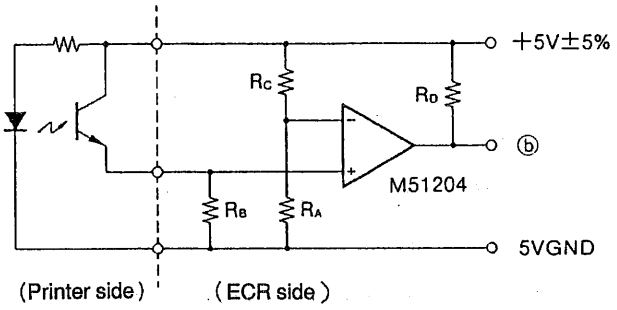


Figure 1.10 Waveform shaping circuit (for validation signal)

Low paper detection mechanism [Option]

This is attached to the supply frame and detects the remaining amount of roll paper (recording paper). The end of the low paper detection lever is constantly pressed down on the edge of the roll paper by means of pressure from the low paper detection lever spring. If there is a large volume of roll paper remaining, the low paper detection lever is in the position shown by the dotted line in the figure, contacting the edge of the roll paper with the microswitch OFF. When the volume of roll paper goes below the specified volume, the contact is released between the end of the low paper detection lever and the roll paper end is released so that it moves in the direction shown by arrow ➡ A and falls into the center hole of the roll paper center (position shown by solid line, see Figure 1.11). At this point, the microswitch goes ON and a detection signal is generated.

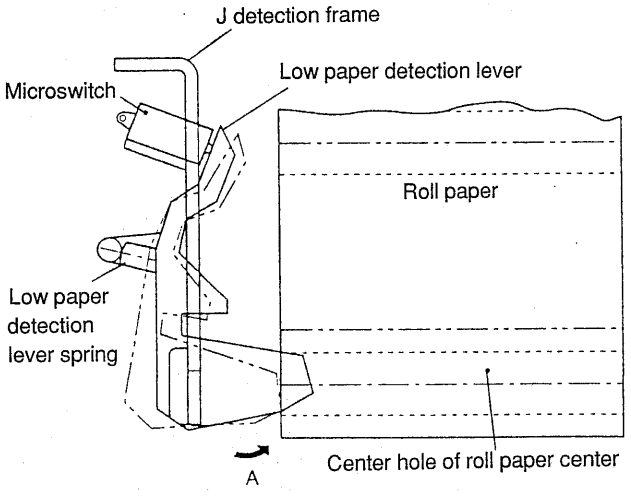


Figure 1.11 Low paper detection mechanism

1.4.3 Print mechanism

This mechanism is composed of a print head unit consisting of seven wires arrayed vertically (on the Model-820) carriage ass'y, shaft, carriage guide, carriage drive belt ass'y, belt drive pulley subset, belt tension adjustment plate ass'y and a platen. The printing method is the bi-directional printing method in which the print head unit moves either in direction ➡ ⓐ or direction ➡ ⓑ to carry out printing (see Figure 1.12).

Model-820

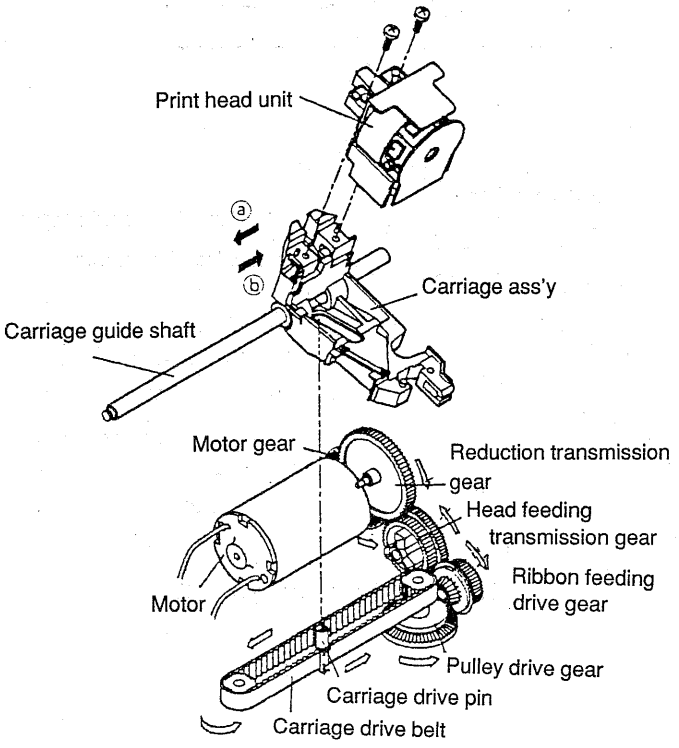


Figure 1.12 Print mechanism

Movement of the print head unit

When the motor operates and gear rotates, the belt drive pulley rotates via the gear ass'y, (reduction transmission gear, head feeding transmission gear, ribbon feeding drive gear, pulley drive gear). The carriage drive belt ass'y moves in the direction. (shown by the arrow ➡) The carriage drive pin secured to the carriage drive belt ass'y interlocks with the shaft on the carriage ass'y and the long hole at a right angle to the carriage guide. The carriage drive pin alternates between movement on a straight line and movement in an arc while the carriage ass'y and the print head unit repeat only back-and-forth motion on a straight line. In other words, the print head unit moves in the direction shown by arrows ➡ ⓐ and ⓑ (see Figure 1.12).

Printing principles of head

Printing is in unison with a timing signal that is generated when the motor rotates and is carried out via current sent through a dot drive coil.

<The following is an explanation of the movement of a single dot wire when forming a single character (see Figure 1.13)>.

① When current is sent through the dot drive coil, the iron core is magnetized and the operating plate is pulled in the direction shown by arrow ➡ ⓐ. Because the operating plate and the wires are constantly joined, the wire is pushed out toward the platen in the direction shown by arrow ➡ ⓑ.

② The pushed wire strikes the platen with the paper and ribbon between to print a single dot.

③ When transmission of current to the coil is completed, the operating plate and wire are returned to the original position due to the spring force of the operating plate spring and wire return spring.

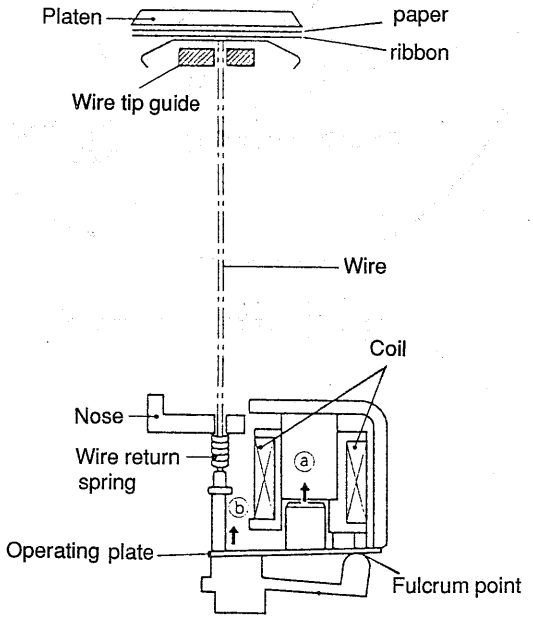


Figure 1-13 Dot wire operation

1.4.4 Paper feeding mechanism

This mechanism is composed of the paper feeding mechanism, paper extension mechanism and release mechanism.

Paper feeding mechanism

The paper feeding mechanism is composed of the paper feeding roller, paper holding roller, paper feeding coil, J paper feeding coil, R paper feeding trigger lever, paper feeding ratchet wheel and paper feeding clutch spring. The type of paper feeding operation is selected by control of current supply to paper feeding coils J and R.

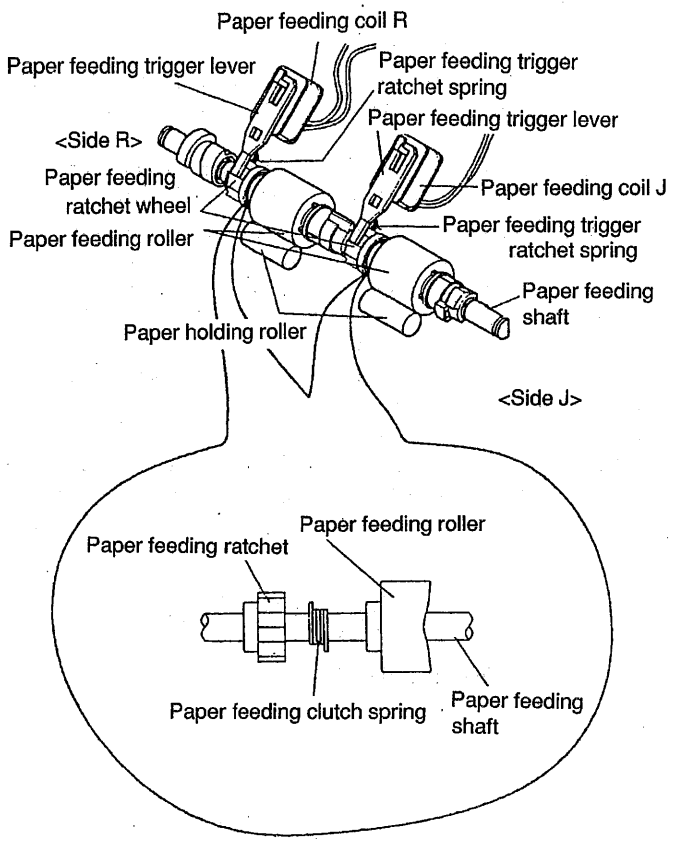


Figure 1.14 Paper feeding mechanism

Paper feeding operation

When a print command is first entered, the motor starts to rotate and the paper feeding shaft rotates in the direction shown by arrow ➡ A via the gear ass'y. At this time, there is still no current to the paper feeding coils J and R, so that the paper feeding trigger lever remains interlocked with the paper feeding ratchet wheel. As a result of movement of the paper feeding clutch spring, the paper feeding roller is maintained in its present position (non-rotation) and only the paper feeding shaft turns in the direction of arrow ➡ A. When paper is advanced and there is current to paper feeding coils J and R, the paper feeding trigger lever is attracted to the individual coils (in the direction of arrow ➡ B) so that the interlocking with the paper feeding ratchet wheel is released. As a result of operation of the paper feeding clutch spring, the paper feeding ratchet wheel and paper feeding roller begin rotating simultaneously together with movement of the paper feeding shaft (direction of arrow ➡ C). Because the paper holding roller is in contact with the paper feeding roller at a set pressure, the paper is advanced by the force of friction. The paper feeding is stopped by the paper feeding coils J and R cut. The paper feeding trigger lever meshes again with the paper feeding ratchet wheel due to the force of the paper feeding ratchet spring so that when the power is off, rotation of the paper feeding ratchet wheel and paper feeding roller stops in the stand by state.

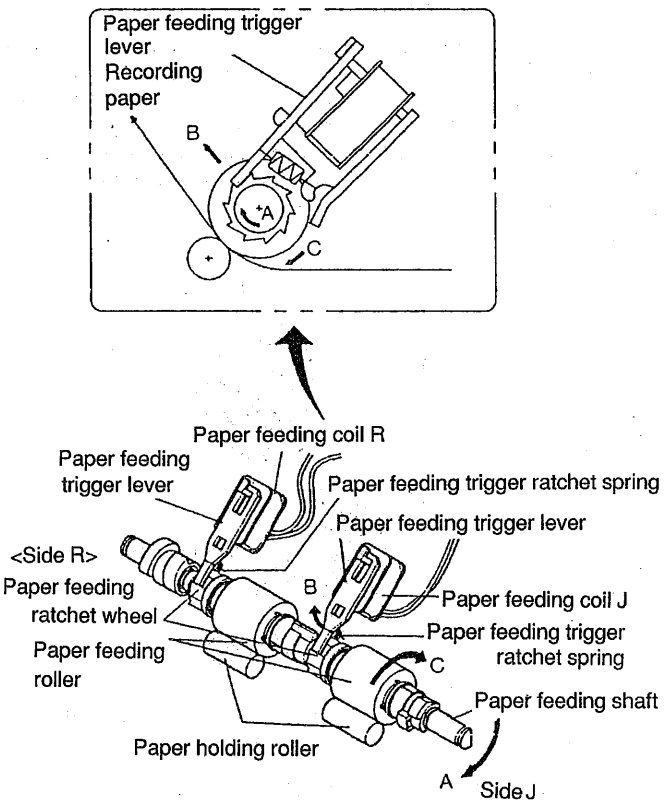


Figure 1.15 Paper feeding operation

Paper feeding clutch spring movement

The configuration of the paper feeding clutch spring is a coil shape. It is attached to the paper feeding shaft (see Figure 1.16). One of the spring hooks is attached to the paper feeding ratchet wheel. The other spring hook is attached to the paper feeding roller.
Normally the paper feeding ratchet wheel is in rotational lock due to the paper feeding trigger lever. When the paper feeding shaft rotates in the direction shown by arrow ➡ A, the diameter of the paper feeding clutch spring increases so that the tightening torque on the paper feeding shaft decreases. The paper feeding shaft can then rotate at low torque in the direction of arrow ➡ A shown in Figure 1-16. The rotational direction of the paper feeding shaft is connected with the configuration of the paper feeding clutch spring. As a result, it can only turn in the direction shown by arrow ➡ A and not in the opposite direction.

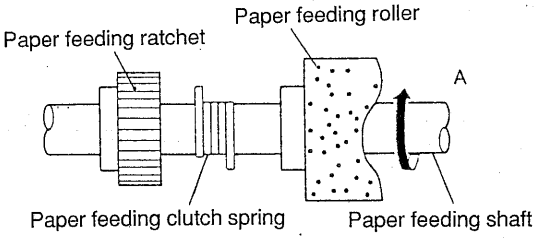


Figure 1.16 Movement of the paper feeding clutch spring

When a current is passed through the paper feeding trigger coil, the paper feeding trigger lever operates so that the rotational lock is released on the paper feeding ratchet wheel. At this time, the diameter of the paper feeding clutch spring contracts. Because the paper feeding clutch spring is keeping the paper feeding shaft in a tightened state, the paper feeding shaft, paper feeding ratchet wheel and paper feeding roller rotate as a single unit via the paper feeding clutch spring (paper feeding state).

Paper extension mechanism

The paper extension mechanism consists of the extension roller, paper extension roller gear and paper extension roller shaft. Paper (roll paper) is inserted in the bottom of the printer. It then passes the paper inlet of the paper extension roller and enters the inside of the printer where it is sent to the paper feeding mechanism. When a print command is input, the motor starts to rotate and the paper extension gear rotates in the direction of arrow ➡ A after receiving motion from the gear ass'y. It thus causes the paper extension shaft to rotate in the same direction. At the same time, the paper extension roller secured to the paper extension roller shaft rotates in the same direction and extends the paper out by means of the force of friction. As a result, in a state where there is no motion transmitted to the paper extension roller, the roll paper that is sent via the route shown in (a) is sent in a loose state as shown in (b) so that there is a decrease in the load on the paper feeding mechanism and the roll paper can be feeding more accurately.

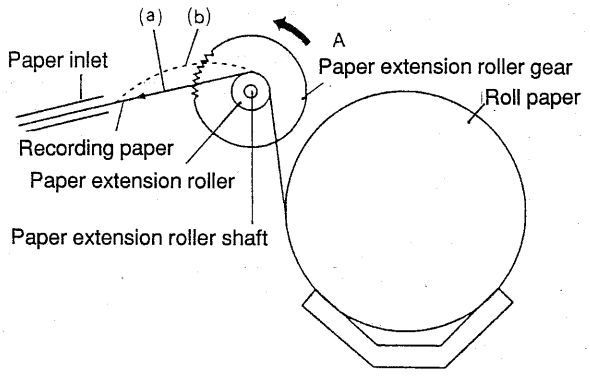


Figure 1.17 Paper extension mechanism

Release mechanism

The release mechanism is composed of the paper holding roller set, paper holding spring and release lever. The paper holding roller and paper feeding roller are meshed with each other due to the spring force of the paper holding spring. When the knob section of the release lever is pushed in the direction shown by arrow ➡ A, (see Figure 1.18), the release lever rotates with the paper feeding shaft as a fulcrum. The end of the release lever pushes up the paper holding roller in the direction shown by arrow ➡ B (see Figure 1.18). At this time, the meshing of the paper feeding roller and paper holding roller is released (condition shown by dotted lines in Figure 1.18). As a result, it is now possible to pull out the paper smoothly in the direction of arrow ➡ C (see Figure 1.18). When the release lever is released, the spring force of the paper holding spring causes the paper holding roller to return to its original position for the standard paper feeding state.

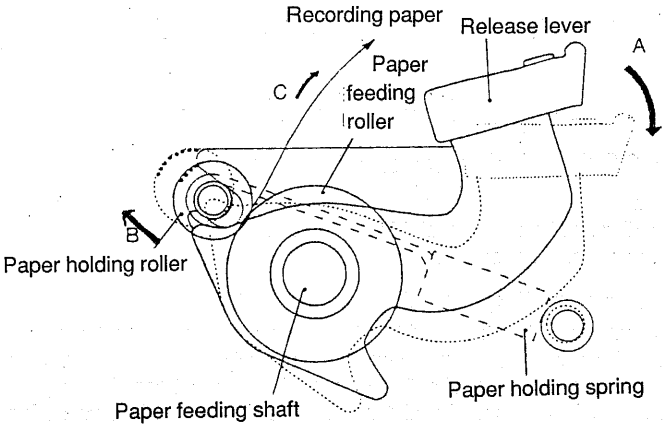


Figure 1-18 Release mechanism

1.4.5 Clamshell mechanism

The clamshell mechanism is composed of the paper guide frame unit, release lever R, release lever J, fixed lever R, fixed lever J and a fixed lever spring.
The paper guide frame unit is attached in such a way that it can move around the main unit frame by means of the shaft. It is connected with the shaft on the other side by means of fixed lever R and fixed lever J which are attached so that they can move to the receipt side and journal side of the main unit frame. It is then retained by the spring force of the fixed lever spring.
Release lever R and release lever J on the receipt side and journal side of the paper guide frame unit are grasped simultaneously and rotated in the direction shown by arrow ➡ A (see Figure 1.19). As a result, they join with fixed lever R and fixed lever J and then turn in the direction of arrow ➡ B to release the bond with the shaft. It is then possible in this position to open the paper guide frame unit about 90 degrees in direction ➡ C and thus expose the paper path.

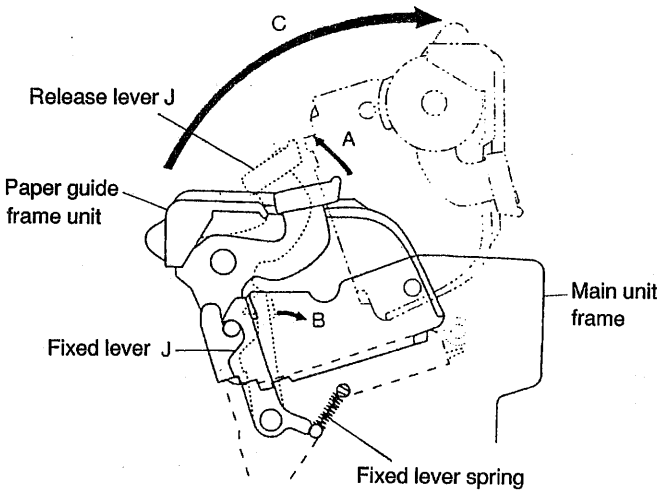


Figure 1.19 Clamshell mechanism

1.4.6 Ribbon feeding mechanism

This mechanism is composed of a ribbon cassette employing an endless ribbon with a Möbius strip configuration, a gear ass'y for ribbon transmission and a ribbon feeding drive gear.

Ribbon feeding operation

When the motor starts and the rotates, this motion causes the ribbon feeding drive gear to rotate via the gear ass'y. A worm transmission causes a major deceleration so that the ribbon transmission gear rotates. In addition, the clutch action of the ribbon feeding spring causes the ribbon take-up shaft on the same shaft as the ribbon transmission to rotate in the same direction.
The ribbon take-up shaft joins with the ribbon feeding gear inside the ribbon cassette. As a result, the ribbon is advanced continuously (see Figure 1.20).

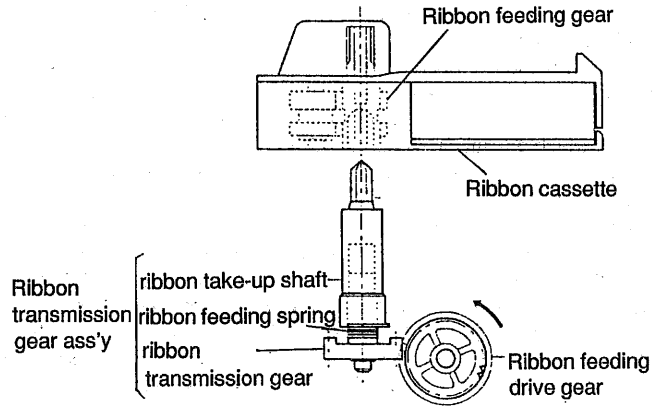


Figure 1.20 Ribbon feeding mechanism

1.4.7 Stamp mechanism

This mechanism is composed of the following sections: stamp cassette, stamp cam, stamp ratchet wheel, paper feeding trigger lever, 1st stamp driving lever, 2nd stamp driving lever, stamp lever, stamp force adjustment spring, stamp return spring. It is attached to the unit near the paper insertion hole.

Stamp operation

When stamping, current is sent to the stamp trigger coil. When a current is sent, the paper feeding trigger lever is attracted to the stamp trigger coil (direction of arrow ➡ A, see Figure 1.21). This releases the meshing with the stamp ratchet wheel. Due to the action of the clutch spring, the stamp ratchet wheel and stamp cam start to rotate simultaneously in direction ➡ B in linked motion with the paper feeding shaft. When the stamp cam rotates, the cam section causes the 1st stamp driving lever to move in the direction of arrow ➡ C (see Figure 1.21).

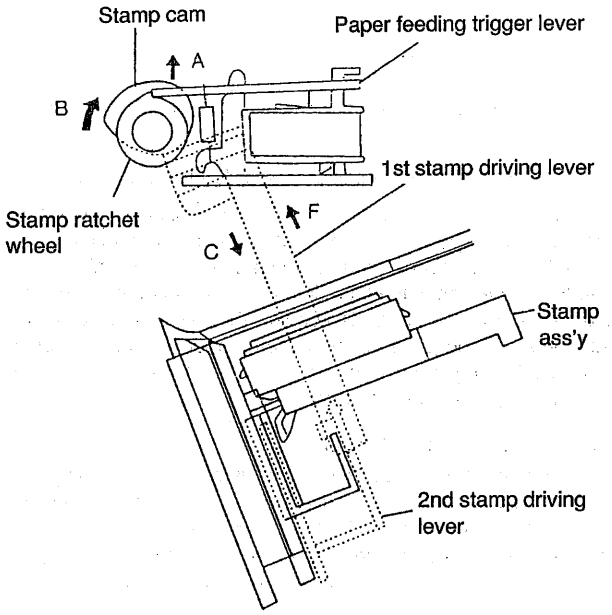


Figure 1.21 Stamp operation ①

Because the end of the 1st stamp driving lever is joined with the 2nd stamp driving lever, the 2nd stamp driving lever moves in the direction of arrow ➡ D. Due to the motion of the 2nd stamp driving lever, the stamp lever joined with the 2nd stamp driving lever moves in the direction of arrow ➡ E (see Figure 1.22). The stamp cassette retained on the stamp lever is pushed onto the paper guide frame. After the stamp cassette is pushed onto the paper guide frame, the 1st and 2nd stamp driving levers move due to the stamp cam. The pressure of the stamp force adjustment spring attached to the 2nd stamp driving lever pushes the stamp cassette to the paper guide frame at a set load to cause stamping.
The stamp cam then rotates further and the cam section moves beyond the 1st stamp driving lever. At this point, the 1st and 2nd stamp driving levers, the stamp lever and the stamp ass'y are returned due to the spring force of the stamp return spring (see Figure 1.22, direction ➡ F). Since the power to the stamp trigger coil has already cut, the paper feeding trigger lever meshes once again with the stamp ratchet wheel due to the spring force of the paper feeding trigger ratchet spring. Rotation of the stamp cam and the stamp ratchet wheel then stops in the stand by state.

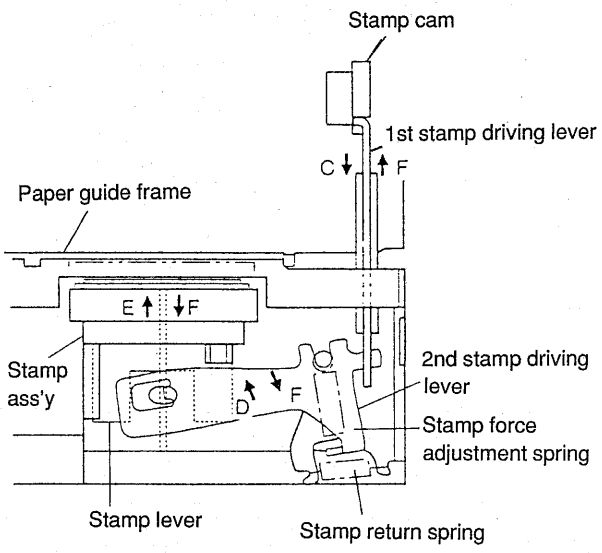


Figure 1.22 Stamp operation (2)

1.4.8 Auto-cutter mechanism

As shown in Figure 1.23, this mechanism is composed of a 1st driving section, 2nd driving section and cutter blade section.

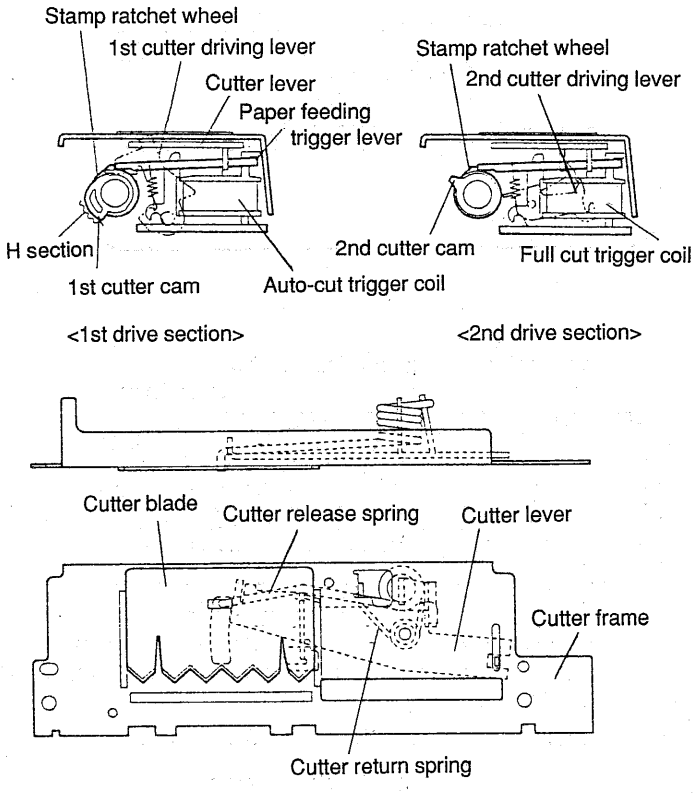


Figure 1-23: Auto-cutter mechanism

Full cutter mechanism

This mechanism is composed of the following sections: a serrated full cutter blade mounted on the cutter frame, cutter lever, cutter release spring, cutter return spring, 1st cutter driving lever set, 1st cutter cam, stamp ratchet wheel, auto-cutter clutch spring, paper feeding trigger lever, auto-cutter trigger coil. An electric current to the auto-cutter trigger coil causes automatic full cut of the paper. Also, there is an emergency cutter in the cutter cover that can be used as a substitute if the auto-cutter is not functioning.

Full-cut operations

① When the paper feeding gear rotates as the result of motion transmitted via the row of gears (see section 1.4.1 on the Transmission Mechanism), the paper feeding shaft rotates in direction ➡ A (see Figure 1.24). Because there is no current to the auto-cutter coil at this time, the paper feeding trigger lever (trigger lever for auto-cutter) and the stamp ratchet wheel (ratchet wheel for auto-cutter) remain locked together. As a result, the stamp ratchet wheel maintains its present state (non-rotating) due to the action of the auto-cutter clutch spring, and only the paper feeding shaft rotates in direction ➡ A.
During auto-cutting, a current is sent to the auto-cutter trigger coil. When a current is sent, the paper feeding trigger lever is attracted by the auto-cutter trigger coil (direction ➡ B, see Figure 1.24), thus releasing contact with the stamp ratchet wheel. As a result of action by the auto-cutter clutch spring, the stamp ratchet wheel and the 1st cutter cam start to rotate simultaneously in direction ➡ C (see Figure 1.24) in linked motion with the paper feeding shaft. When the 1st cutter cam rotates, the cam section causes the 1st cutter driving lever to move in direction ➡ D (see Figure 1.24).
Because the 1st cutter driving lever and the cutter lever are joined, the cutter lever moves in direction ➡ E. Due to the motion of the cutter lever, the cutter blade joined with the cutter lever moves in direction ➡ F and cuts the paper (see Figure 1.24).

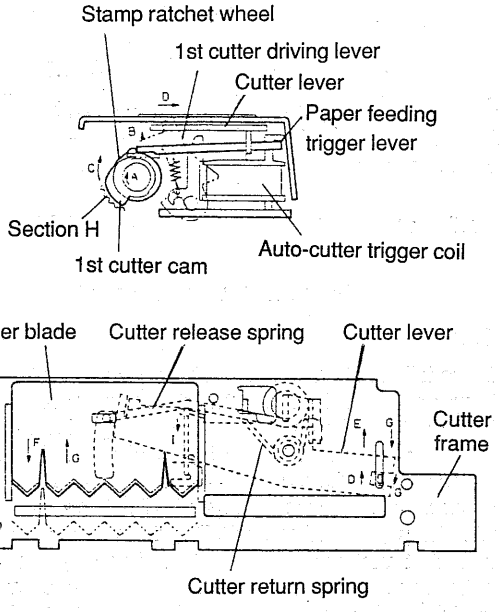


Figure 1.24 Full-cut operation

② The 1st cutter cam continues to rotate so that the cam section passes the 1st cutter driving lever. At this point, the 1st cutter driving lever, cutter lever and cutter blade return due to the spring force of the cutter return spring (direction ➡ G, see Figure 1.24). Moreover, when a load is operating that cannot be returned by means of the spring force of the cutter return spring, there is forced return of the 1st cutter driving lever and the 1st cutter cam. Since current to the auto-cutter trigger coil is stopped, the paper feeding trigger lever meshes again with the stamp ratchet wheel due to the spring force of the paper feeding trigger ratchet spring. The rotation of the 1st cutter cam and the stamp ratchet wheel stop and remain in a stand by state.

Full/partial cutter mechanism

This mechanism differs from the full cutter mechanism in that it features a partial cutter blade instead of a full cutter blade. The other parts include the 2nd ass'y of cutter driving levers, the 2nd cutter cam, the stamp ratchet wheel, the paper feeding trigger lever and the full cutter trigger coil. The unit automatically carries out cutting (full cut, partial cut) depending on the various currents to the electromagnets of the auto-cutter trigger coil and full cutter trigger coil. There is also an emergency cutter in the cutter cover that can be used if the auto-cutter is not functioning.

Partial cut

On the full/partial cutter mechanism, the partial cutter is the same as the full-cut operation of the full-cutter mechanism. It cuts the paper in a perforated configuration depending on the difference in the configuration of the full cutter blade and partial cutter blade.

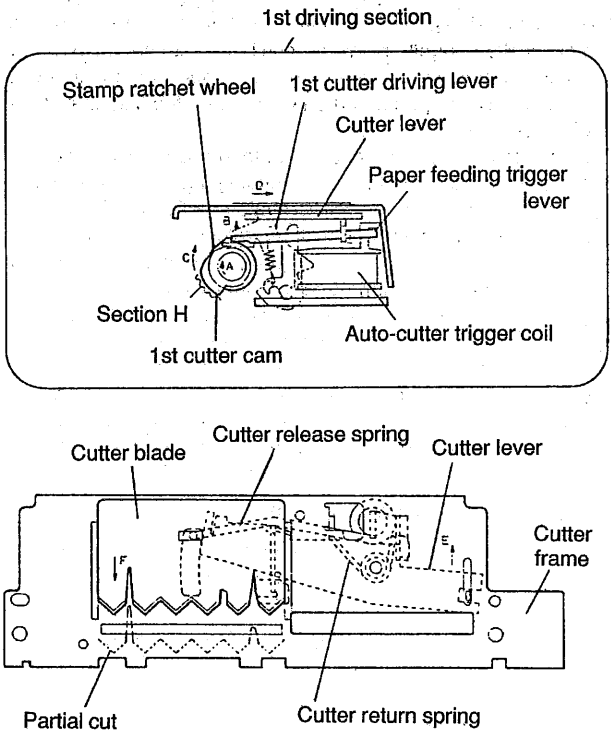
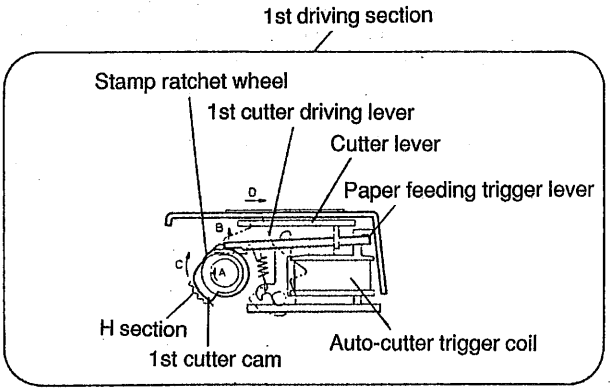


Figure 1.25 Partial cut operation

Full cut

① In the full cut operation, a simultaneous current to the auto-cutter trigger coil and the full cutter trigger coil releases the meshing between the individual paper feeding trigger levers and the stamp ratchet wheels. Due to the action of the individual auto-cutter clutch springs, the stamp ratchet wheel, 1st cutter cam and 2nd cutter cam simultaneously move in direction ➡ C in linked motion with the paper feeding shaft. The 1st cutter cam and 2nd cutter cam start rotating at the same time. Due to the motion of the 1st cutter cam, the cutter lever cutter blade moves and carries out partial cut of the paper. At this point, the cutter blade is temporarily stopped by the cam H section of the 1st cutter cam.



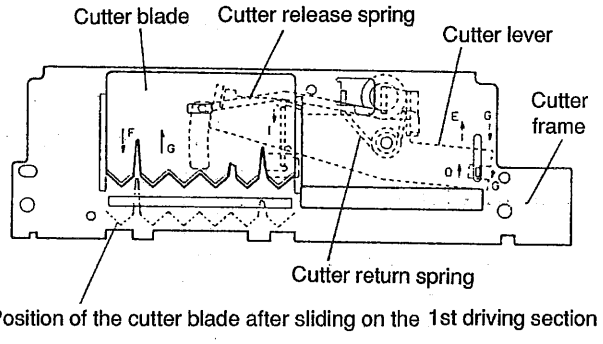
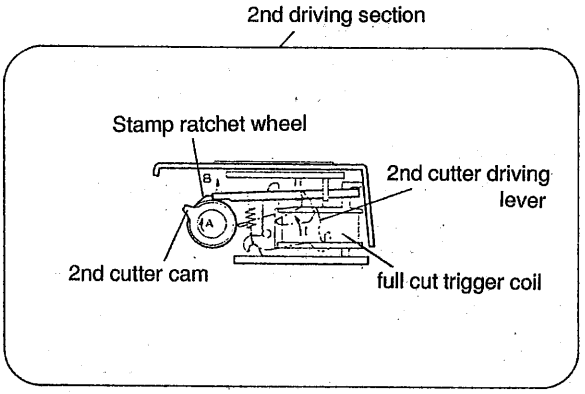


Figure 1.26 Full cut operation ①

② When the 2nd cutter cam rotates, the cam section causes the 2nd cutter driving lever to move in direction I. By means of movement of the 2nd cutter driving lever, the end of the 2nd cutter driving lever joins with the cutter lever that has stopped after partial cut. The cutter lever then moves in direction ➡ E. The cutter blade, which has joined with the cutter lever due to motion of the cutter lever, moves further in direction ➡ F and carries out full cut of the paper (see Figure 1.27).



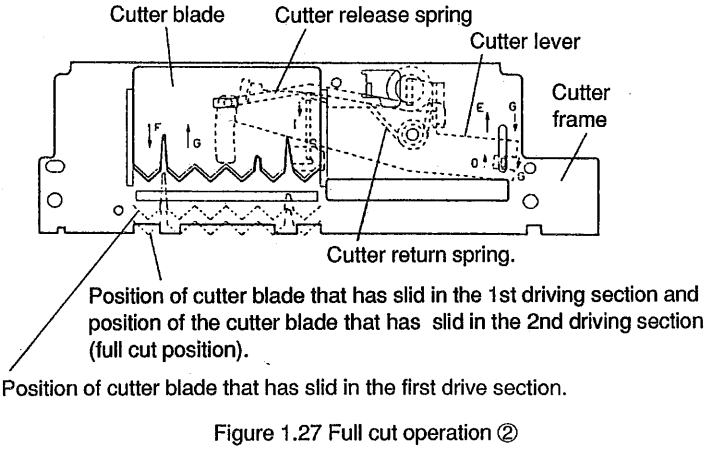


Figure 1.27 Full cut operation ②

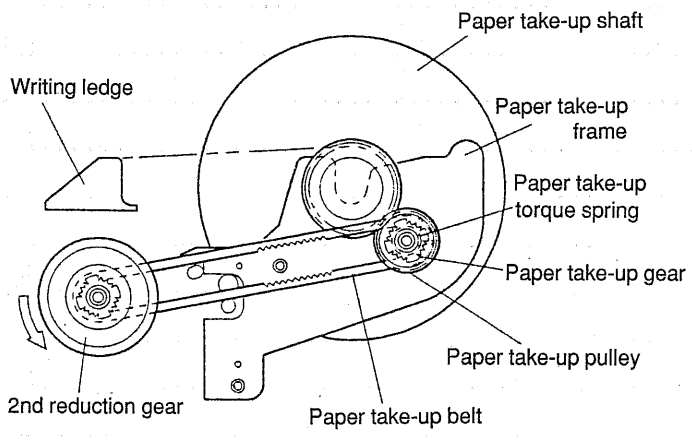
③ The 2nd cutter cam rotates further so that the cam section passes the second cutter driving lever. At this point, the cam section of the 1st cutter cam has exceeded the 1st cutter driving lever. As a result, the 1st cutter driving lever, the cutter lever and the cutter blade are returned due to the spring force of the cutter return spring (direction G, see Figure 1.27). The 2nd cutter driving lever returns due to the cutter driving lever 2nd return spring.
Moreover, when a load is operating that cannot be returned by means of the spring force of the cutter return spring, there is forced return of the 1st cutter driving lever and the 1st cutter cam. Since current to the auto-cutter trigger coil is stopped, the paper feeding trigger lever meshes again with the stamp ratchet wheel due to the spring force of the paper feeding trigger ratchet spring. The rotation of the 1st cutter cam and the stamp ratchet wheel stop and remain in a standby state.

1.4.9 Paper take-up mechanism

This mechanism is composed of a paper take-up frame fixed to the main unit frame, a paper take-up pulley ass'y and a paper take-up shaft. The paper (supply paper) is placed onto the rolled paper holder rollers at the bottom section of the printer, passes inside the printer, and is taken up by the paper rolling shaft installed in the uppen section of the frame. Because the paper take-up shaft is supported on one side on the journal side of the printer, insertion or removal of paper is extremely easy. Transmission of the winding force makes use of a paper take-up belt employing rotation of the second reduction gear, whereupon this is transmitted to the paper take-up pulley set.

Paper take-up operation

When the motor operates and the rotates, the 2nd reduction gear rotates in the direction of the ➡ arrow via the gear ass'y (reduction transmission gear, 1st reduction gear) (See Figure 1.28). The rotation force of the 2nd reduction gear is transmitted to the paper take-up pulley and paper take-up gear via the paper take-up belt. This then rotates the paper take-up shaft to achieve take-up. The paper take-up pulley and paper take-up gear are connected by the paper take-up torque spring. Rotation of the paper take-up pulley is first transferred to the paper take-up torque spring and then to the paper take-up gear. As a result, variations in the amount of winding (varies depending on the amount of paper that has been taken up) are absorbed by the paper take-up torque spring so that the paper is wound without



winding discrepancies.

Figure 1.28 Paper take-up mechanism

Chapter 2
Handling, Maintenance, Repairs

Table of Contents

2.1 Use of printer

2.1.1 Cautions during handling

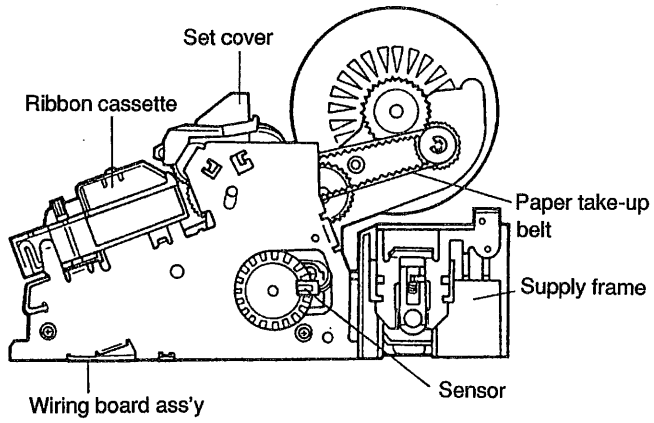
Cautions during transport

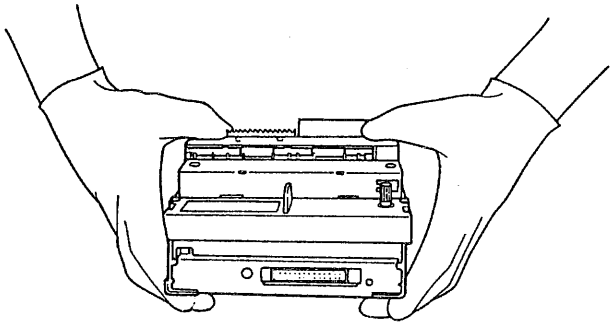
(1) When transporting this equipment, do not hold such parts as the ribbon cassette case section, printer cover section, paper take-up belt section and timing detector ass'y.

(2) Avoid impact to this unit through dropping, collision or contact with another printer.

(3) Be careful that foreign objects do not come in contact with the wiring boards on the bottom of the printer.

(4) The correct method of holding this equipment during transport is supporting the lower frame section and the upper printer cover section with both hands.





Correct handling of bottom frame.

Figure 2.1 Handling and transport of printer

Cautions during storage

(1) Do not store in dirty or dusty areas. Avoid direct sunlight and excessive humidity during storage.

(2) When storing for long periods, insert in a polyethylene bag and use VCL paper to store in a dry place.

Cautions during use

(1) This equipment uses a permanent magnet (motor section) and electromagnets. Avoid use in areas with iron particles or in dusty areas.

(2) Never print when there is no paper or ink ribbon inserted in the printer.

(3) Install the printer on a level plane.
(Because the paper take-up device is part of the printer main unit, the paper will not be taken up correctly if the printer is installed at an angle).

(4) When installing this equipment, use shock absobing materials such as rubber and packing between the attachment fixtures and units of the printer (in order to prevent harmful effects on the circuit side due to vibration during printing and paper feeding as well to prevent increased reverberation).

(5) Use the four long holes on the printer to install the printer.

(6) There are wiring boards on the bottom of the printer. Be sure that these parts do not come in contact with the attachment platform and that foreign objects do not become attached to the boards.
(If eletrical conducting foreign objects adhere to the circuit boards they could cause a short circuit. It is advisable to insert insulation materials on the bottom of the circuit boards).

(7) When inserting the validation card, do this only from the front side of the printer (insertion side for the ribbon cassette).

(8) After the validation card is inserted in the required position, retain it with your finger in that state until validation printing has finished.

(9) Avoid pushing or bending the validation card during validation printing.

2.1.2 Paper insertion (insertion and removal)

Be sure to use papers specified in the specifications only.

Inserting roll paper

<<Roll paper insertion method 1>>

(1) Cut the ends of the roll paper as shown in Figure 2.2.

(2) While operating the paper feeding mechanism on the side for inserting the roll paper, insert the roll paper from the paper insert section and manually feed the roll paper up until the paper feeding mechanism.

(3) Confirm that the roll paper has been fed and that it is sufficiently protruding from the exit on the cover. Then stop operation of the paper feeding mechanism.

<<Roll paper insertion method 2>>

(1) Cut the ends of the roll paper as shown in Figure 2.2.

(2) While securely depressing the release lever, manually feed the roll paper from the paper insertion section. After the end of the roll paper has emerged from the exit on the cover, pull the roll paper in the paper feeding direction.

(3) After confirming that the roll paper has been sufficiently pulled out, take your hand from the release lever.
Never insert the paper without observing the above as this could lead to paper feeding errors and jams.

Figure 2.2 Roll paper end cut configuration

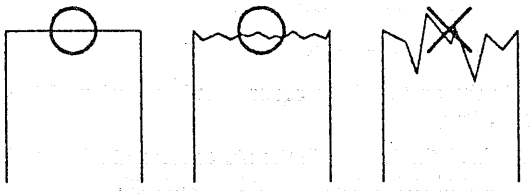
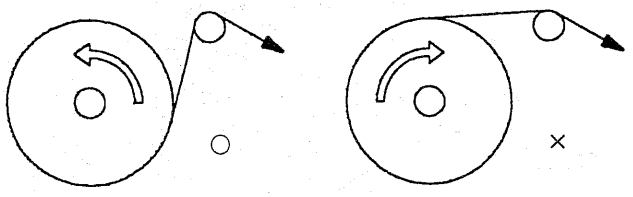


Figure 2.3 Roll paper insertion direction



<<Cautions during insertion>>

(1) Refer to Figure 2.2 for the correct method of disposing of the ends of the roll paper. Refer to Figure 2.3 concerning the correct insertion direction for the roll paper.

(2) Insert the roll paper so that it is pressed straight into the paper inlet.

Cautions during removal

To remove the roll paper, follow one of the methods described above.

<<Replacing roll paper>>

(1) While pressing the release lever, manually pull out the roll paper either in the forward or reverse direction.

(2) Operates the paper feeding mechanism to eject the roll paper.
Never insert the roll paper without observing the above steps as this could lead to paper feeding problems and paper jams. In particular, never attempt to pull the roll paper in the opposite direction without using the release lever.

<<Removing paper in case of jams, etc.>>

Refer to instructions on operation of release lever.

(1) Operates the paper guide open-close mechanism to open the paper guide section.

(2) Manually remove the jammed paper.

(3) Close the paper guide section and make sure it is locked (should be a latching sound).

Method of inserting validation card

Insert the validation card straight in from a position that is above the printer at a slant.

CAUTION

Only use flat cards. If validation cards are excessively bent or folded, this could lead to dirty printing or make it impossible to insert the cards.

Operating the release lever

Paper release mechanism

Use your finger to securely press down the release lever on the printer side in the direction shown by arrow A in Figure 2.4. This makes it possible to carry out paper release indently on the R and J sides. Also, when you release your finger, the release lever will return to the original position due to the spring force of the paper holding spring.

Paper guide open-close mechanism

Simultaneously pull the release levers on both sides toward you (direction shown by Arrow B in Figure 2.4) and then lift up the paper guide section. This will make it possible to open the paper guide section. Also, when closing this section, close the paper guide section carefully by hand and then use both hands to lightly press the covers on the bottom area of the release levers on both sides in order to close them. There should be a click to indicate successful closing.

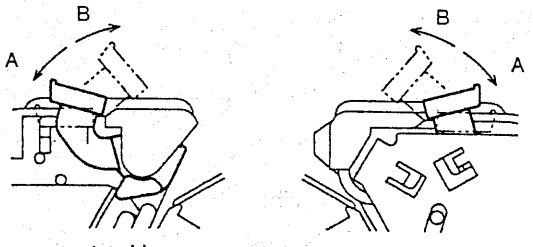


Figure 2.4 Operation of release lever

2.1.3 Inserting the ribbon cassette

Use only regulation ribbon cassettes as described in the ribbon cassette specifications. Using ribbon cassettes other than regulation ones could lead to problems such as inferior printing quality, reduced endurance and ink smearing.

Attaching the ribbon cassette

(1) Use your finger to turn the knob on the ribbon cassette in the direction shown by the arrow to tighten the ribbon (see Figure. 2.5).

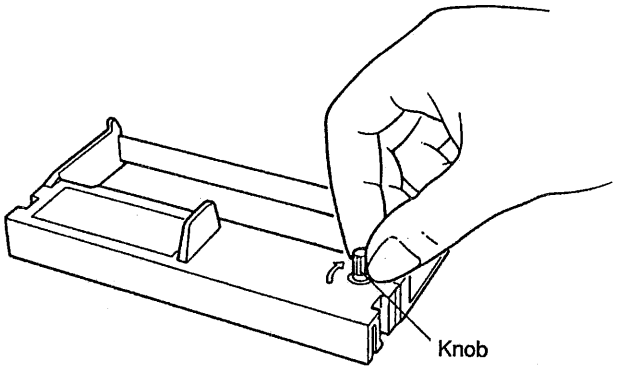


Figure 2.5 Stretching the ribbon

(2) Insert the ribbon between the platen and dot head unit (see Figure. 2.6).

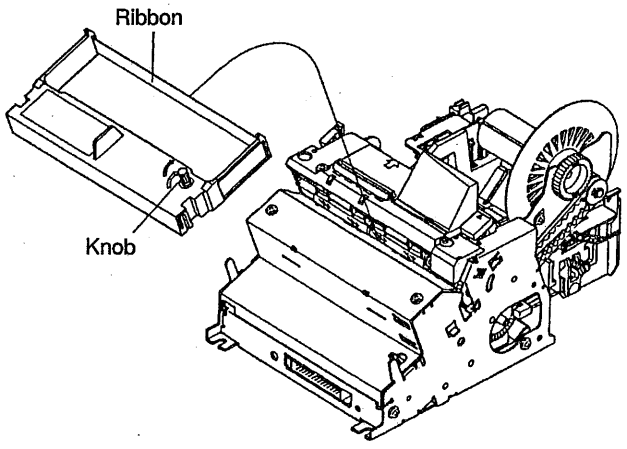


Figure 2.6 Attachment of ribbon cassette

(3) Once again use your finger to turn the knob on the ribbon cassette in the direction shown by the ➡ arrow to tighten the ribbon

(4) Check that the ribbon is not twisted or caught and that the ribbon cassette is not floating up.

Removing the ribbon cassette

Use your finger to grasp the center knob of the ribbon cassette and remove in the direction shown by the ➡ arrow (see Figure. 2.7).

Caution: When removing the ribbon cassette, avoid catching the ribbon on the head.

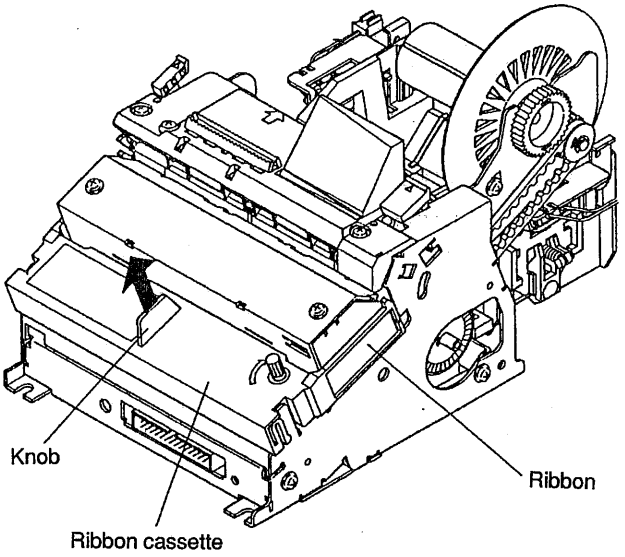


Figure 2.7 Removal of ribbon cassette

2.1.4 Inserting and removing the stamp ass'y

Use only regulation stamp ass'ys as described in the Specifications Sheet.

Inserting the stamp ass'y

Inserting with the stamp lever

- Insert in the center of the square window section of the paper guide (bottom)

Caution: Check the fitting with the stamp lever at this time (should click when it has been inserted normally).

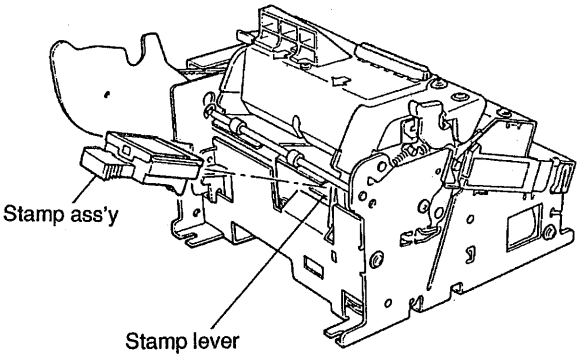
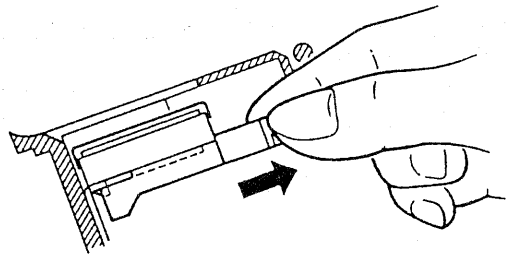


Figure 2.8 Attachment of stamp ass'y

Removing the stamp ass'y

Align your finger(s) with one side or both sides of the knob section of the stamp ass'y located in the center of the square window in the paper guide (bottom). Pull out in the direction shown by the arrow.

<Case: 1>



<Case: 2>

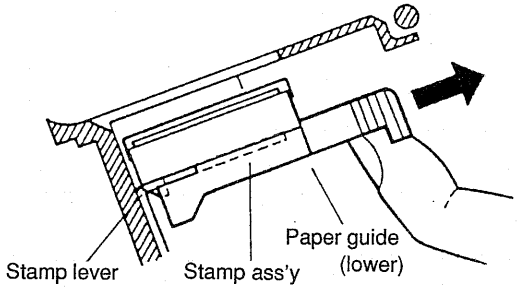


Figure 2.9 Removal of stamp ass'y

2.1.5 Refilling ink in the stamp ass'y

(1) Remove the stamp ass'y (referring to section 2.1.4 on stamp ass'y insertion and removal).

(2) Apply 2-3 drops of ink per hole in the holes of the stamp ass'y as shown in the figure below.

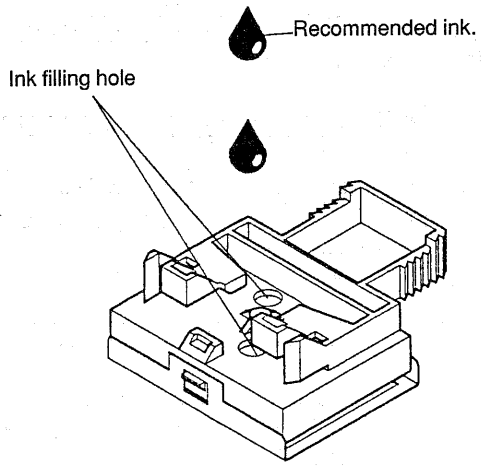


Figure 2.10 Filling ink in stamp ass'y

Cautions when refilling ink

(1) Use only the specified ink.

(2) It takes time after filling for the ink to reach the surface of the stamp. Do not insert too much ink (2-3 drops/hole).

(3) The stamp can be used about 50,000 times after refilling. Use this as a guide for refilling ink.

2.1.6 Changing the stamp character surface of the stamp ass'y

Disassembly

Open the retention hole ⓐ on the stamp frame (inner) in the direction shown by arrow A and remove the dowel on the stamp frame (outer) to disassemble in the order shown by arrows ① ~ ④.

Assembly

Assemble the stamp frame (outer) in the order shown by arrows ① ~ ④. Finally align the dowel section ⓓ of the stamp frame (outer) with the retention hole ⓑ of the stamp frame (inner). Then, while opening out the area near the retention hole ⓐ of the stamp frame (inner), insert the stamp frame (inner) retention hole ⓐ in the stamp frame (inner) dowel ⓒ.

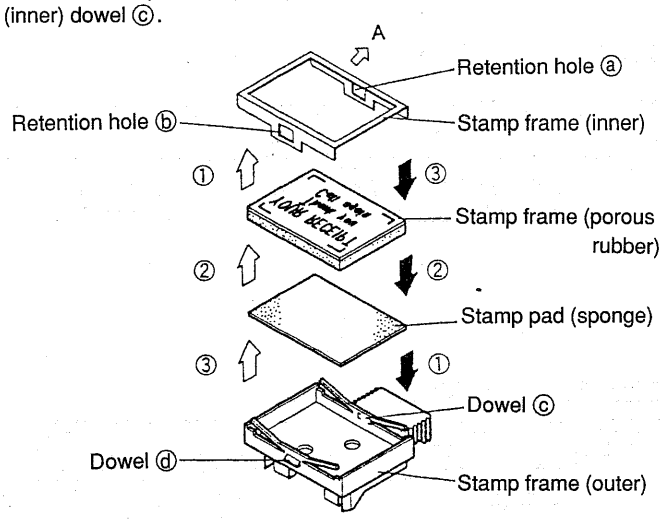


Figure 2.11 Replacement of stamp character surface

2.2 Maintenance

Carry out maintenance by following the items below in order to maintain the original functions of this unit for a long period and prevent trouble before it occurs.

2.2.1 Cleaning

Removing dirt

Use alcohol or benzene to wipe off dirt.

Removing dirt or dust

Cleaning with suction (vacuum cleaner) is advised. Carefully remove all dust and dirt from smaller areas.

Note: • Never use thinners or cleaning agents containing trichlene (trichloroethylene) and ketone as these might damage plastic parts.

• After cleaning, check the oil level of the different sections and lubricate sections requiring lubricant. (Refer to section 2.3.3 on Lubrication Locations).

2.2.2 Inspection

Maintenance and inspection of this equipment is divided into those items that can easily be checked and remedied by the person operating the printer (Daily Checks) and those items requiring a person with knowledge of the printer mechanisms (Regular Checks). Carry out maintenance and inspection according to your level of expertise.

Daily Checks

Check that the regular usage condition of the printer is acceptable and that it is always maintained in the best condition. Remedy the situation when there are abnormalities.

(1) Check that the ribbon cassette is securely inserted in the ribbon unit.

(2) Make sure you are using only ribbon cassettes (ERC.32(P)) that conform to specifications.

(3) Check that there is no folding, twisting or breakage on the ribbon and replace the ribbon cassette when this could affect the printing quality.

(4) Confirm that only regulation paper is being used.

Regular Checks

There should be regular six-month checks for wear, soiling, warping, oil levels and part attachment. Abnormalities should be treated.

(1) Check for accumulations of paper dust, fluff and dirt as well as for paper scraps caught in the paper guide. Use a vacuum cleaner to clean these areas and remove when paper is caught (being especially careful about dirt near the detectors).

(2) Check for any warping of springs and replace when necessary.

(3) Check the lubrication condition of individual parts and lubricate when necessary, following directions in section 2.3 on Lubrication.

(4) Check for any leaking of ink from the stamp frame. Wipe away ink in case of leaking and reduce the ink filling amount.

(5) Check for abnormalities in printing operations, paper feeding and ribbon feeding and remedy abnormalities, referring to section 2.5.3 Guide to Repairs.

(6) Observe the various functions and check whether there is abnormal operation due to wear or bending on parts or due to paper jamming. Correct any abnormalities referring to section 2.5.3 Guide to Repairs.

List of Regular Checks

NO.	Check item	Regulation	Remedy
1	Accumulation of dirt, fluff or dust on parts	• No excessive accumulations of dirt, fluff or dust on moving sections and no foreign objects mixed in with parts. • No paper scraps etc. in the paper guide.	• Use a vacuum cleaner to carefully clean even smaller areas. • Use a tweezers to remove foreign objects.
2	Warping of springs.	• No warping.	• Replace.
3	Lubrication condition	• Refer to Section 2.3 on Lubrication.	• Refer to Section 2.3 on Lubrication.
4	Stamp condition	• There should not be so much ink on the stamp that it is leaking from the stamp frame (outer). • There should be no paper dust on the surface of the stamp.	• Wipe off soiling on the stamp and decrease the amount of ink supplied. • Remove all paper dust and dirt.
5	Attachment of the ribbon cassette	• Ribbon cassette should be correctly inserted in the cover.	• Refer to Section 2.1.3 on Insertion and Removal of the Ribbon Cassette.
6	Operational check	• No abnormalities in printing operation. • No abnormalities in paper feeding operation. • Inspection of functions reveals no abnormal operations due to wear, warping or bending on parts.	• Refer to section 2.5.3 Guide to Repairs. • Refer to Section 2.5.3 Guide to Repairs and Section 2.3 Lubrication.

2.3 Lubrication

Lubrication is an important element for maintaining this equipment in its original state and preventing trouble. Be sure to lubricate with the designated lubricant at the required intervals.

2.3.1 Lubricants

The type of lubricant has a major influence on performance and endurance. Pay particular attention to the low-temperature characteristics of the lubricants.
Sharp provides the designated lubricant in 40 cc (gr) metal cans or plastic containers (minimum supply volume).
There are five different lubricants used with this equipment: G-14, G-15, G-25, G-36 and O-2.

2.3.2 Lubrication standards

When lubricating after disassembly and assembly, be sure to clean all parts prior to lubrication. Be sure to make use of Section 2.3.3 Lubrication Locations and the General Lubrication and Adhesive Chart at the end of this chapter regarding lubrication locations and the type of lubricant to be used. (The numbers for lubrication locations and the numbers on the general lubrication chart are the same).

When the lubricant decreases due to cleaning or after disassembling and replacing parts, be sure to lubricate the parts in question, regardless of whether it is the regular time for lubrication.
A: Lubricate every 6 months.
B: Lubricate during overhauls.

2.3.3 Lubrication locations

No.	Lubrication location	Lubricant type	Lubricant standard
1	Shafts, paper holding roller	G-36	B
2	Shafts of paper feeding shaft ass'y, contact areas of paper feeding bearings and release lever J.	G-14	B
3	End of release lever R.	G-14	B
4	End of release lever J	G-14	B
5	Paper guide frame ass'y shaft, paper holding roller shaft holder (R side and J side)	G-14	B
6	Ribbon feeding drive shaft and gears, ribbon feeding drive contact areas	G-36	B
7	Head feeding transmission shaft and gears, ribbon feeding drive contact areas	G-36	B
8	Reduction transmission shaft and gears, reduction transmission contact areas.	G-36	B
9	2nd reduction gear shaft and gears, contact areas of 2nd reduction gear	G-36	B
10	1st reduction gear shaft and gears, contact areas of 1st reduction gear	G-36	B
11	Ribbon take-up and ribbon transmission shaft and gears, holder for subset.	G-14	B
12	Area around ribbon-feeding drive gear	G-14	B
13	Area around ribbon transmission gear	G-14	B
14	Spring joining areas for ribbon transmission gear and subset	G-36	B
15	Shafts of 2nd cutter drive lever ass'y.	G-25	B
16	Contact areas of paper feeding shaft, paper feeding ratchet wheel and paper feeding clutch wheel	G-36	A
17	Paper feeding axle auto-cutter clutch spring section and paper feeding clutch spring section of stamp cam	G-14	A
18	Bearing contact areas of paper feeding shaft and release lever R.	G-14	B
19	Contact areas of stamp lever and paper guide frame (lower)	G-25	B
20	Joining sections of stamp drive lever 1 and stamp drive lever 2.	G-25	B
21	Joining sections of stamp lever and stamp drive lever 2	G-25	B
22	Contact section of stamp adjustment spring for 2nd stamp drive lever shaft	G-25	B
23	Contact areas of lower paper guide frame and 1st stamp drive lever	G-25	B

No.	Lubrication location	Lubricant type	Lubricant standard
24	Contact areas of adjustment pulley shaft and belt drive pulley	G-14	B
25	Area where oil collects on belt drive pulley	G-14	B
26	Contact areas of paper take-up drive gear and paper rolling gear	G-36	B
27	Contact areas of paper take-up drive gear and paper take-up torque spring	G-36	A
28	Joining sections of paper take-up shaft and paper take-up frame	G-14	B
29	Cam surfaces of 1st cutter cam, 2nd cutter cam and stamp cam on paper feeding shaft	G-14	B
30	Joining sections of 1st cutter drive lever shaft and paper guide frame (upper)	G-14	B
31	Area around timing connector board	G-14	A
32	Contact areas on inside of central groove on carriage ass'y and carriage drive pin	G-14	B
33	Contact areas of carriage bearing and carriage guide shaft	O-2	A
34	Area around pulley drive gear	G-14	B
35	Contact areas (4 locations) of guide frame and carriage ass'y	G-14	B
36	Contact areas of cutter drive lever for cutter frame subset	G-25	A
37	Cutter blade contact areas of cutter frame subset	G-25	B
38	Contact areas of cutter lever and cutter drive shaft	G-25	B
39	Supports (5 locations) of paper feeding trigger lever of the paper feeding trigger yoke ass'y	G-15	B
40	Lever contact section and L-shaped section of receipt paper feeding coil, journal paper feeding coil and cutter coils 1 and 2 (5 locations)	G-14	B

2.3.4 Adhesive Standards

Some of the parts of this equipment are secured to the equipment with adhesive. In case of disassembly and part replacement, apply adhesive to these areas while referring to the List of Adhesive Locations and the General Lubrication and Adhesive Chart at the end of this chapter.

2.3.5 Types of Adhesives

There is only one type of adhesive used with this equipment.

2.3.6 Adhesive locations (Refer to lubrication and adhesive chart).

Number	Adhesive application location
51	Fixed section of R detection board (guide frame)

2.3.7 List of lubricants and adhesives

Type	Name	Content	Market availability	Part code
Oil	O-2	40cc	Ⓢ	UKOG-0025CSZZ
Grease	G-25	40cc	Ⓢ	00BB702500001
	G-14	40cc	Ⓢ	UKOG-0122CSZZ
	G-36	40cc	Ⓢ	00BB703600001
Adhesive	Screw-Lock	10cc	○	

○ General product sold on market
Ⓢ Special product

2.4 Instruments and tools

2.4.1 List of instruments and tools

No.	Name of tool	Market availability
1	Brush # 1	○
2	Brush # 2	○
3	Cleaning brush	○
4	Phillips screwdriver No. 2	○
5	Flat screwdriver	○
6	Round piers	○
7	Nippers with slanted blade	○
8	Electric soldering iron	○
9	Space gauges (0.55, 0.6, 0.65, 0.7 mm)	○
10	ET holder #3	○
11	ET holder #4	○

○ General product sold on market

2.5 Repairs

Repairs on this equipment have been divided into two categories (A, B) in consideration of the level of difficulty of the repairs. The person responsible for repairs should carry out only those repairs he considers to be within his range of ability.

2.5.1 Repair levels

Level A: Requires general knowledge and technical skill, concerning printer principles and structure although no experience in repairs.

Level B: Requires abundant knowledge and technical skill regarding the principles and structure of printers as well as repair experience.

2.5.2 Order of repairs

When problems occur with this equipment, carefully confirm the phenomena and conditions associated with the problem and determine the case, repairing the faulty section while referring to Section 4.3.3 A Guide to Repairs.
Section 4.3.3 A Guide to Repairs is divided into the following five items. Using this when analyzing problems and taking action will allow efficient operations with no mistakes in judgment.

Phenomenon

Check the phenomenon related to the trouble.

Condition

Compare the trouble state with this column and determine whether it is the same or not.

Cause

Includes a list of the causes based on the breakdown state to determine where the problem lies. The repair standards are also listed for each cause for your reference.

Check locations and methods

There is a list concerning how to check the breakdown location. Follow the directions in the column when checking.

Repair method

Follow the directions in this column to carry out repairs of the breakdown location. If the location displays the same phenomenon and state after carrying our repairs, re-check the other items in the cause column and carry out repairs.

2.5.3 Guide to repairs

Phenomenon	Condition	Cause	Level	Check location and method	Repair method
1. Motor does not rotate	Motor does not rotate even when the printing command is input.	(1) Abnormality in input power source to motor.	—	• Check input power source. Use tester or oscilloscope to confirm input voltage between motor terminals of connector. Rated voltage: 24V±2V	• Check current between applicable terminals.
		(2) Faulty motor drive signal.	—	• Check input signal. Use oscilloscope to confirm that a signal is input to the motor drive terminal of the connector.	• Repair the motor drive signal.
		(3) Wire break between connector and motor terminals or faulty wiring.	B	• Check current between applicable terminals.	• Replace the wiring board ass'y if there is no current.
		(4) Fully motor	B	• Apply 24V to motor lead wire and check for rotation. (Between Red (+) and Black (–)).	• Replace motor if it does not rotate.
2. No printing by any dots	Motor rotates normally but there is no printing.	(1) Head FFC has come out of the connector.	A	• Check whether the head FFC is correctly inserted in the connector.	• Re-insert the head FFC if it has come out.
		(2) Common wire cut on head FFC.	B	• Check for current between common lines of head FFC and other terminals.	• Replace the head FFC if here is no current.
		(3) Common wire cut between connector and head FFC terminals.	B	• Check for current on common lines.	• Replace the wiring board ass'y if there is no current.
		(4) Faulty timing detector ass'y.	B	• Use an oscilloscope to observe whether timing signals are generated.	• Replace the timing detector ass'y if no timing signal is being generated.
		(5) Faulty input current pulse.	—	• Use an oscilloscope to observe whether the input current pulse is within the regulation values.	• Repair the drive control circuit if there is absolutely no input pulse or if the pulse values are not within the required values.
		(6) Improve positional relationship between platen ass'y and dot head.	B	• Check whether the space between the platen ass'y and the end of the dot head is correct. M-820 Proper value: 0.6mm	• Repair by disassembling and re-assembling when not correct.
3. Continuous dot misses.	Only particular dots do not print at all.	(1) Head FFC is cut.	B	• Check the current between the common wires of the applicable head FFC and other terminals.	• Replace the dot head ass'y when there is no current.
		(2) Cut between connector and head FFC terminals.	B	• Check the current between the applicable terminals.	• Replace the wiring board ass'y if there is no current.
		(3) Break in dot drive coil wire.	B	• Use a tester between the connector terminals to measure whether the resistance value of the applicable dot drive coil is the rated value or not. Rated value: 11.4Ω ±10%	• Replace the dot head ass'y if the resistance value is different from the rated value.
		(4) Faulty timing detection ass'y.	B	• Refer to "Cause 4" of "Phenomenon 2".	

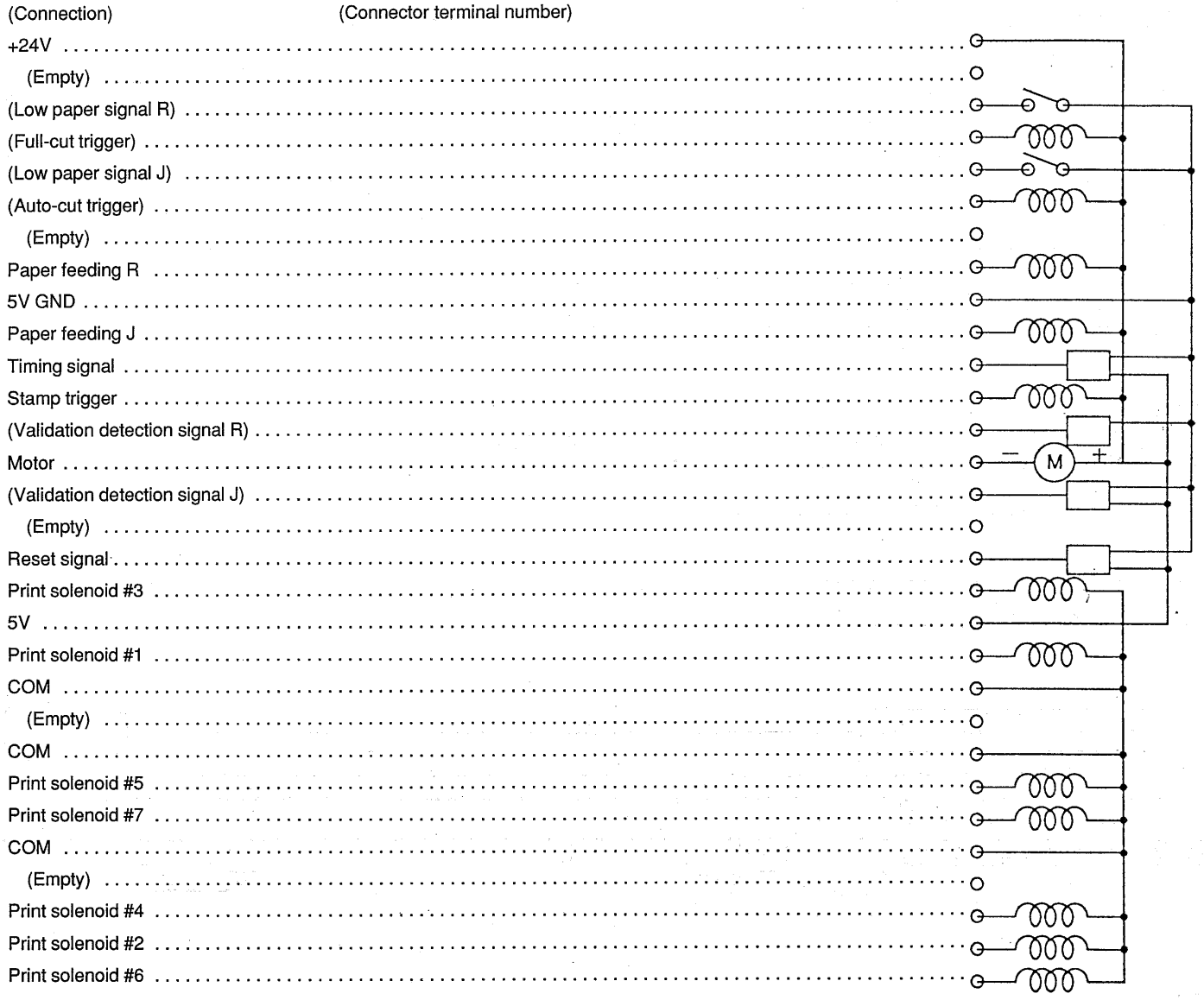
Phenomenon	Condition	Cause	Level	Check location and method	Repair method
		(5) Faulty input current pulse.	—	• Use an oscilloscope to measure whether the input current pulse of the applicable column is within the regulation value or not.	• Repair the drive control circuit if there is absolutely no input pulse or if the pulse values are not within the required values.
		(6) Bending of dot wires.	B	• Check whether the applicable dot wire is bent or not.	• Replace the dot head unit if the dot wires are bent.
4. Discontinuous dot misses	Discontinuous generation of dot misses.	(1) Faulty contact of head FFC.	A	• Refer to "Phenomenon 3", "Cause 1".	
		(2) Faulty operation of dot head ass'y.	B	• Check whether paper dust is stuck on the end of the dot wires of the dot head ass'y so that the action of the dot wires is heavy.	• Remove any paper dust in mechanism.
		(3) Faulty timing detector ass'y.	B	• Refer to "Phenomenon 2", "Cause 4".	
		(4) Warping or breakage of timing detector board.	A	• Check whether the timing detector board is warped or broken.	• Replace the timing detector board when bent or broken.
		(5) Faulty input current pulse.	B	• Refer to "Phenomenon 3", "Cause 5".	
5. Discontinuous errors in character width	Discontinuous change in character width.	(1) Worn or broken gears and carriage belts.	A	• Check for worn or broken gears and carriage belts.	
		(2) Bent or broken timing detector board.	A	• Refer to "Phenomenon 4", "Cause 4".	
		(3) Faulty input current pulse.	—	• Refer to "Phenomenon 2", "Cause 5".	
6. Motor does not stop rotating.	Motor does not stop rotating even when a single printing cycle has finished.	(1) Faulty R detector ass'y	A	• Use an oscilloscope to confirm whether signals are generated from the output terminal of the R detector ass'y.	• Replace the R detector ass'y if no signals are generated.
7. No paper feeding.	Printing only at one location without paper feeding.	(1) Faulty paper supply.	A	• Check whether you are using paper of the regulation width, thickness and diameter. • Check for blocking of the paper supply route.	• Use regulation paper. • Repair the supply mechanisms so that the paper is supplied smoothly.
		(2) Slipped or broken paper feeding trigger ratchet spring.	B	• Check for dislocated, broken or loose paper feeding trigger ratchet spring.	• When dislocated, either re-connect or replace with a new spring. • When broken or loose, replace with a new spring.
		(3) Slipped or broken paper feeding clutch spring.	B	• Check for dislocated, broken or loose paper feeding clutch spring.	• Replace paper feeding shaft subset.
		(4) Faulty position of journal and receipt feeding coils.	B	• Check that the journal and receipt feeding coils are attached to the proper locations.	• Repair when not in proper position.
		(5) Break on line for journal and receipt feeding coils.	B	• Measure the resistance between the journal and receipt feeding coil terminals. Resistance: 70 Ω ±10% (25°C)	• Replace the journal and receipt feeding coils in case of broken wire.
		(6) Faulty paper feeding signal.	—	• Check whether the paper feeding signal of the journal and receipt feeding coil is normal.	• Repair the circuit when there is no paper feeding signal or when the signal is not within the regulation value.
		(7) Worn or broken paper feeding ratchet section.	B	• (7) Check for wear or breakage of paper feeding ratchet.	• Replace the paper feeding shaft subset.

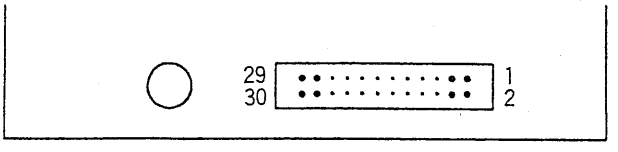
Phenomenon	Condition	Cause	Level	Check location and method	Repair method
		(8) Worn or broken teeth on gears.	B	• Check for wear or breakage of gears.	• Replace gears in case of wear or breakage.
		(9) Worn paper feeding roller.	B	• Check for wear on paper feeding roller surface.	• Replace the paper feeding shaft subset.
		(10) Loose paper holding spring.	B	• Check for looseness of paper holding spring.	• Replace with new spring when loose.
		(11) Worn paper holding roller.	B	• Check for wear on paper holding roller surface.	• Replace the paper holding roller when worn.
8. Paper sending pitch is not aligned.	Uneven width between lines on paper which has been printed on.	(1) Faulty paper supply.	A	• Refer to "Phenomenon 7", "Cause 10".	
		(2) Slack paper holding spring.	B	• Refer to "Phenomenon 7", "Cause 10".	
		(3) Slack paper feeding trigger ratchet spring.	B	• Check for slack in paper feeding trigger ratchet spring.	• Replace with new spring when loose.
		(4) Disconnected, broken or slack paper feeding clutch spring.	B	• Refer to "Phenomenon 7", "Cause 3.	
		(5) Worn or broken paper feeding ratchet.	B	• Refer to "Phenomenon 7", "Cause 7".	
		(6) Worn paper feeding roller	B	• Refer to "Phenomenon 7", "Cause 9".	
		(7) Worn paper holding roller.	B	• Refer to "Phenomenon 7", "Cause 11".	
		(8) Worn or broken teeth on gears.	B	• Refer to "Phenomenon 7", "Cause 8".	
9. No paper fast forward.	Normal feeding of paper is possible but fast forward is not possible.	(1) Faulty paper supply.	A	• Refer to "Phenomenon 8", "Cause 1".	
		(2) Slack paper feeding trigger ratchet spring.	B	• Refer to "Phenomenon 8", "Cause 3".	
		(3) Dislocated, broken or slack paper feeding clutch spring.	B	• Refer to "Phenomenon 7", "Cause 3".	
		(4) Insufficient drive voltage pulse width for journal and receipt feeding coil.	B	• Measure voltage between connector terminals. Voltage: 24V, M-820 Pulse width: 47.68 x (n – 1)+ 16T	• Repair power source supply circuit when the rated voltage and pulse are not being input.
		(5) Faulty paper feeding signal.	—	• Refer to "Phenomenon 6", "Cause 6".	
10. Ribbon mechanism does not operate.	Ribbon is not fed although the printing mechanism is operating normally.	(1) Faulty meshing of ribbon cassette and ribbon gear.	O	• Check that the ribbon cassette is properly inserted.	• Insert in correct position.
		(2) Faulty operation of ribbon drive lever.	A	• Operate the ribbon drive lever manually and check whether the lever moves normally.	• Lubricate or replace ribbon drive lever if not operating normally.
		(3) Worn or broken ribbon take-up shaft ass'y.	A	• Check whether the ribbon take-up shaft ass'y is worn or broken.	• Replace the ribbon take-up shaft ass'y if worn or broken.
		(4) Worn or broken gears and foreign objects.	B	• Check for worn or broken teeth on gears.	• Replace the applicable parts.
11. Paper is not taken up.	Paper is not taken up although paper feeding is normal.	(1) Worn or broken paper take-up shaft.	B	• Check whether paper take-up shaft is worn or broken.	• Replace paper take-up shaft when worn or broken.
		(2) Worn or broken paper rolling pulley ass'y.	B	• Check whether paper rolling pulley is worn or broken.	• Replace paper rolling pulley when worn or broken.
		(3) Bent paper take-up frame.	B	• Refer to "Phenomenon 10", "Cause 4".	

Phenomenon	Condition	Cause	Level	Check location and method	Repair method
		(4) Worn or broken gear teeth.	B	• Check for worn or broken gear teeth.	• Replace gears when worn or broken.
		(5) Worn or stretched paper rolling belt.	B	• Check for wear or stretching of paper rolling belt.	• Replace paper rolling belt when worn or broken.
12. Paper take-up ass'y is loose.	Paper take-up is loose and take-up diameter is too large.	(1) Worn or broken paper take-up shaft.	B	• Refer to "Phenomenon 11", "Cause 1".	
		(2) Worn or broken paper rolling pulley ass'y.	B	• Refer to "Phenomenon 11", "Cause 2".	
		(3) Bending of paper take-up frame.	B	• Check for bending of paper take-up frame.	• Replace paper take-up frame subset.
		(4) Worn or broken gear teeth.	B	• Refer to "Phenomenon 11", "Cause 4".	
		(5) Worn or stretched paper take-up belt.	B	• Refer to "Phenomenon 11", "Cause 5".	
13. No stamp printing.	No stamp printing although paper feeding is normal.	(1) Dislocated, broken or slack paper feeding trigger ratchet spring.	B	• Check for dislocated, broken or slack paper feeding trigger ratchet spring (for stamp mechanism).	• Replace paper feeding subset.
		(2) Dislocated, broken or slack clutch spring (for stamp mechanism).	B	• Check for dislocated, broken or slack clutch spring (for stamp mechanism).	• Replace paper feeding subset.
		(3) Worn or broken stamp cam.	B	• Check for worn or broken stamp cam.	• Replace stamp cam in case of wear or breakage.
		(4) Worn or broken stamp ratchet wheel.	B	• Check for wear or breakage on stamp ratchet wheel.	• Replace stamp ratchet wheel in case of wear or breakage.
		(5) Dislocated, broken or slack stamp return spring and stamp adjustment spring.	B	• Check for dislocated, broken or slack stamp return spring and stamp adjustment spring.	• Replace gears and subset.
		(6) Worn or broken gear teeth.	B	• Check for worn or broken gear teeth.	• Replace gears in case of wear or breakage.
		(7) Faulty stamp trigger ass'y position.	B	• Check that stamp trigger ass'y is in correct position.	• Correct if not in correct position.
		(8) Wire breakage on stamp coil ass'y.	B	• Measure resistance between terminals on the stamp trigger ass'y. Resistance: approx. 70Ω ±10% (25°C)	• Correct circuit if there is no stamp signal or if the signal not within the required values.
		(9) Faulty stamp signal.	—	• Check whether stamp signal is normal on stamp trigger cassette.	• Correct circuit when stamp signal is not emitted or when the signal is not within the regulation value.
14. No validation J-side/R-side sensor detection. <option>	The validation sensor does not go ON although the validation card is in the correct position.	(1) Faulty attachment position for validation J-side/R-side sensor ass'y.	A	• Check whether the validation sensor attachment board is matched with the frame dowel.	• Correct attachment position when incorrect.
		(2) Faulty validation J-side/R-side sensor ass'y.	B	• Use an oscilloscope to observe whether the detection signal is generated when the validation card is inserted.	• Replace validation J-side/R-side sensor ass'y when no signals are generated.
		(3) Faulty validation card.	A	• Check whether the validation card is a regulation card.	• Use regulation validation card.
15. No low paper detection. <option>	Low paper switch does not go ON when the paper decreases to the proper amount.	(1) Faulty low paper switch J.R <option> subset.	A	• Carry out conduction test between terminals of low paper switch J.R subset. Check whether switch is turning ON and OFF normally.	• Replace low paper switch J.R subset when there is abnormal conduction.

Phenomenon	Condition	Cause	Level	Check location and method	Repair method
		(2) Disconnected, broken or slack low paper detection lever spring.	A	• Check for disconnected, broken or slack low paper detection lever spring.	• When disconnected, either reconnect or replace with a new spring. • Replace with new spring in case of breakage or slackness.
		(3) Improper fixing position for J.R detection frame. <option>	A	• Check whether fixing position of the J.R. detection frame matches the inner diameter of the roll paper.	• When not correct, loosen the detection adjustment spring and move the J.R detection frame up or down to correct to the proper position.
		(4) Inner diameter of paper rolls is too small.	A	• Check whether inner diameter of roll paper is regulation or not.	• Use paper with the regulation inner diameter.
16. Auto-cutter does not operate (full cut)	No full cut of roll paper because auto-cutter is not operating normally.	(1) Faulty attachment position for cutter coil.	B	• Check whether cutter coil is attached to proper position.	• Correct attachment position if incorrect.
		(2) Disconnected, broken or slack cutter lever spring.	B	• Check for disconnected, broken or slack cutter lever spring.	• When disconnected, either reconnect or replace with a new spring. • Replace with new spring in case of breakage or slackness.
		(3) Disconnected, broken or slack cutter release spring.	B	• Check for disconnected, broken or slack cutter release spring.	• When disconnected, either reconnect or replace with a new spring. • Replace with new spring in case of breakage or slackness.
		(4) Faulty auto-cutter signal.	B	• Check whether cutter coil auto-cutter signal is normal.	• Correct circuit when auto-cutter signal is not emitted or when the signal is not within the regulation value.
		(5) Worn or broken cutter cam in paper feeding roller ass'y.	B	• Check for worn or broken cutter cam.	• Replace the paper feeding roller ass'y in case of wear or breakage.
		(6) Accumulation of paper dust or foreign matter on cutter blade contact areas.	B	• Check for accumulation of paper dust or foreign matter.	• Remove paper dust and foreign objects. • If rotation is heavy or the shaft catches, remove the cutter cover ass'y and remove all paper dust and foreign objects.
		(7) Faulty full-cut signal.	B	• Manually rotate the reduction gear A and confirm the rotation condition. Check whether the full-cut signal of the full-cut magnet is normal or not.	• Correct circuit when full-cutter signal is not emitted or when the signal is not within the regulation value.
		(8) Worn or broken cutter blade ass'y.	B	• Check for wear or breakage on cutter blade.	• Replace the cutter blade ass'y in case of wear or breakage.
		(9) Broken wire in cutter coil.	B	• Attach a tester between the connector terminals and determine whether the cutter coil resistance value is the rate value or not. Rated value: 70 Ω ±10%	• Replace the cutter coil when the resistance value is not the rated value.
		(10) Disconnected, broken or slack paper feeding trigger ratchet spring.	B	• Check for disconnected, broken or slack paper feeding trigger ratchet spring.	• Replace paper feeding subset.
		(11) Disconnected, broken or slack paper feeding clutch spring in paper feeding roller ass'y.	B	• Check for disconnected, broken or slack paper feeding clutch spring.	• Replace paper feeding shaft subset.

Array chart of connector terminals



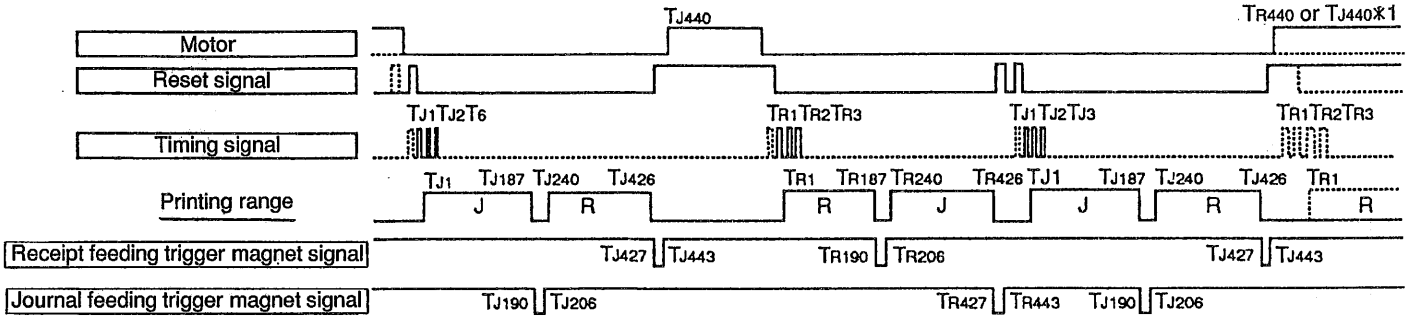


Arranged as shown in above chart from printer front upper right 1 to lower left 30.

Figure 2.12 Array chart of connector terminals ①

Model-820 Timing Chart

(1) Printing, paper feeding

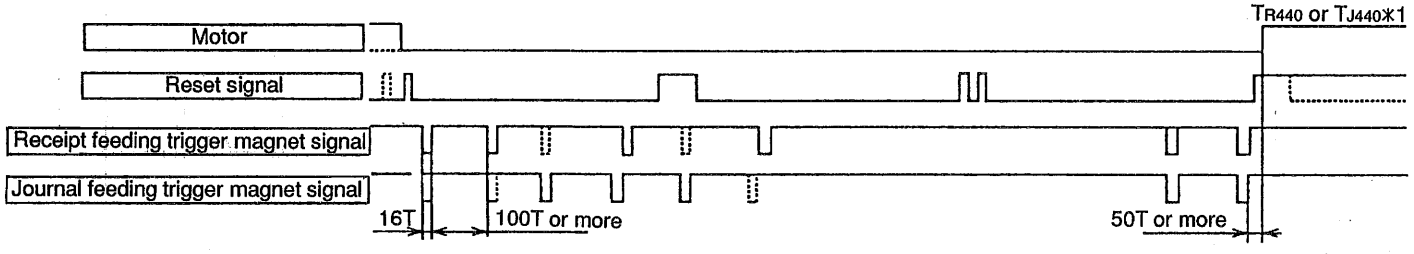


Notes

1. Signals represented by [ ] should be supplied by the person using the equipment.
2. When the motor current is OFF carry out with T_{R440} or T_{J440} (※1).
3. Validation printing is carried out from T_{R1} to T_{R226}.
   (7x7 font, in character space position 2, use T_{R1} ~ T_{R421} or T_{R6} ~ T_{R426}.

(2) Fast forward timing for roll paper.

Description of contents and comments

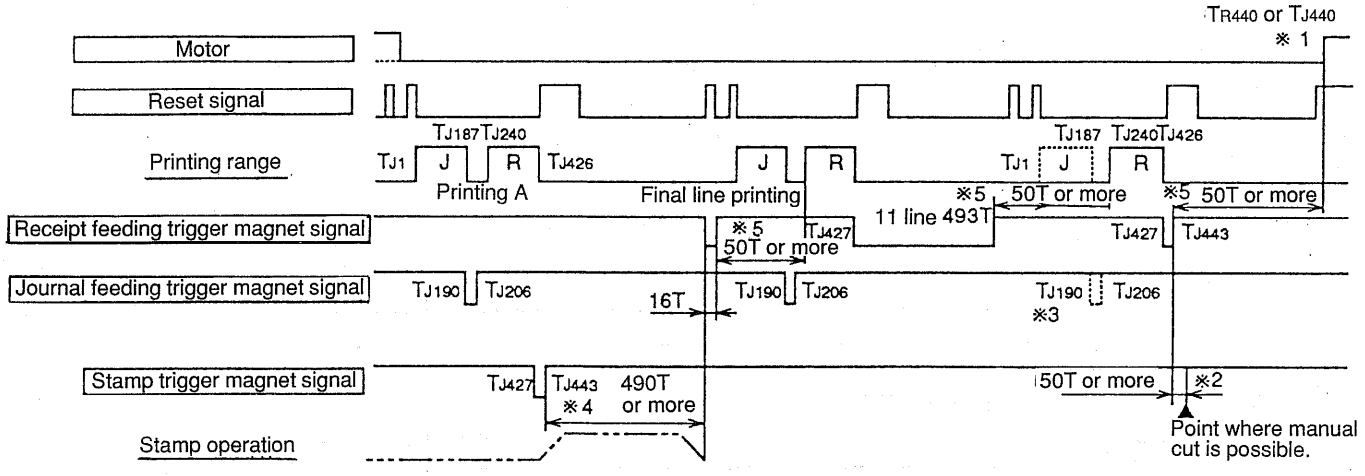


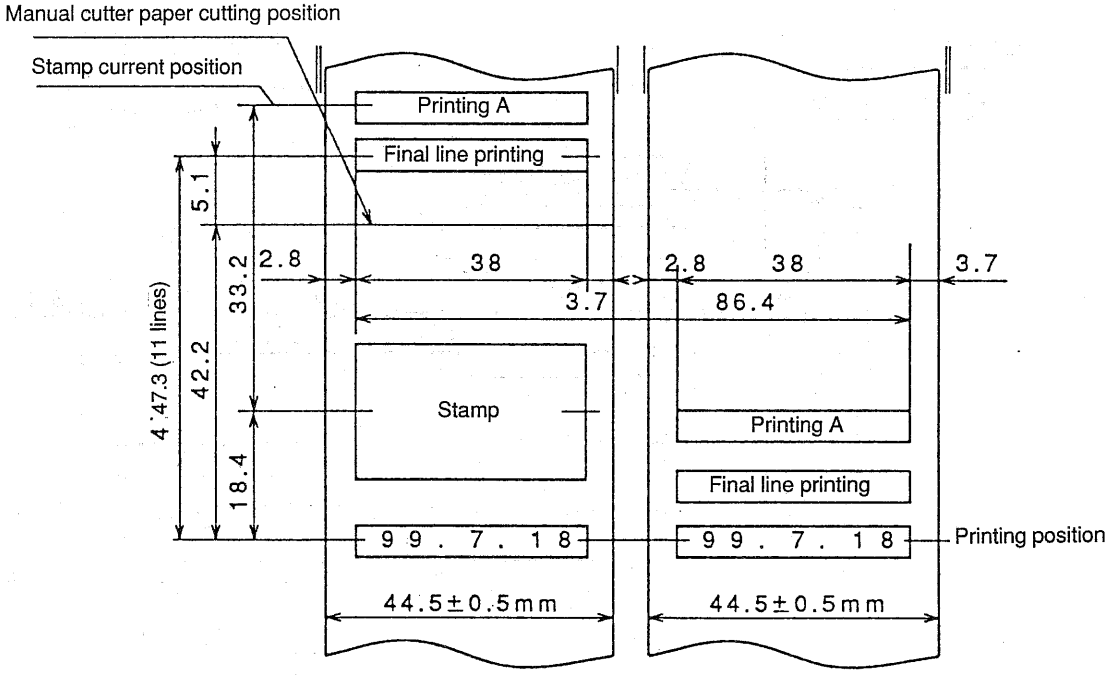
Notes

1. Signals represented by [ ] should be supplied by the person using the equipment.
2. When the motor current is OFF carry out with T_{R440} (※1).
   However, after the paper feeding current OFF at the end of sequences such as receipt issue, 50T or more should have elapsed.
3. When the motor is rotating normally, the timing signal can be counted regardless of the reset signal.
   If the motor is stopped, count from the timing signal T1 based on the reset signal.
4. Continuous paper feeding when issuing receipts requires continuous current (according to the timing shown below).
   However, the current timing for other types of paper feeding is based on the timing chart shown above.
   ※ When feeding n lines: 47.68 x (n - 1)+16T (beyond decimal point, discard 4, insert 5).

Model-820 Timing Chart

(3) Receipt sample A



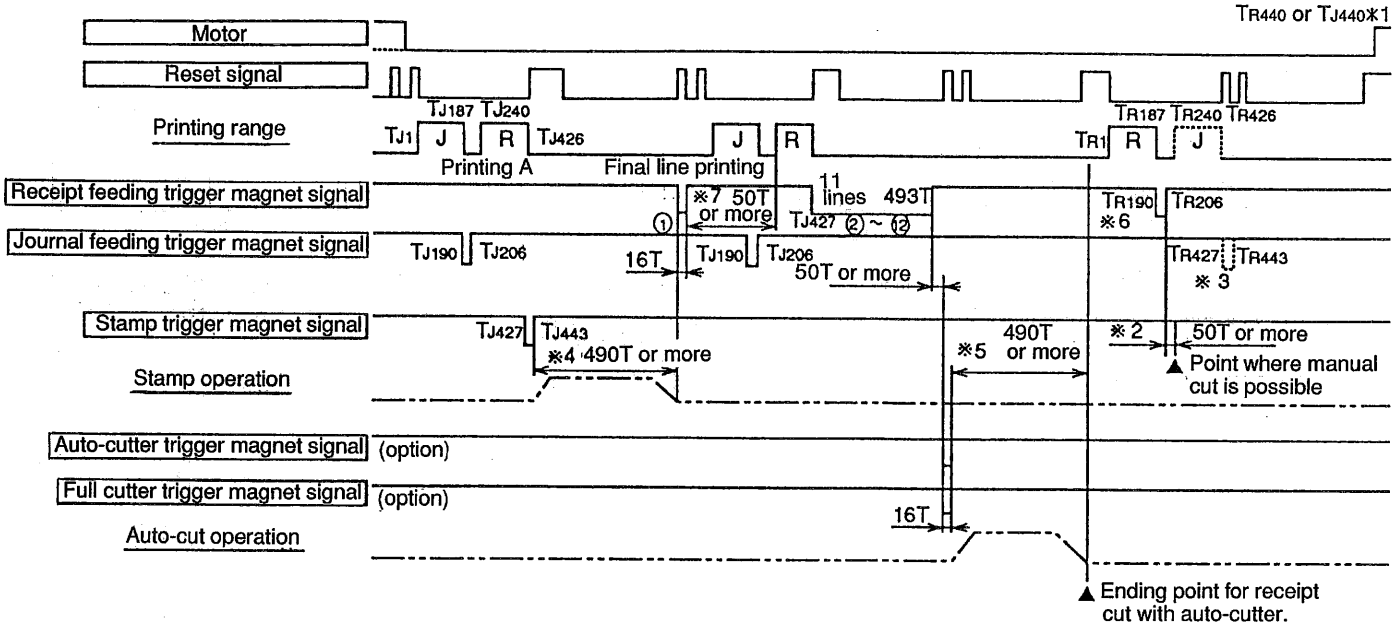


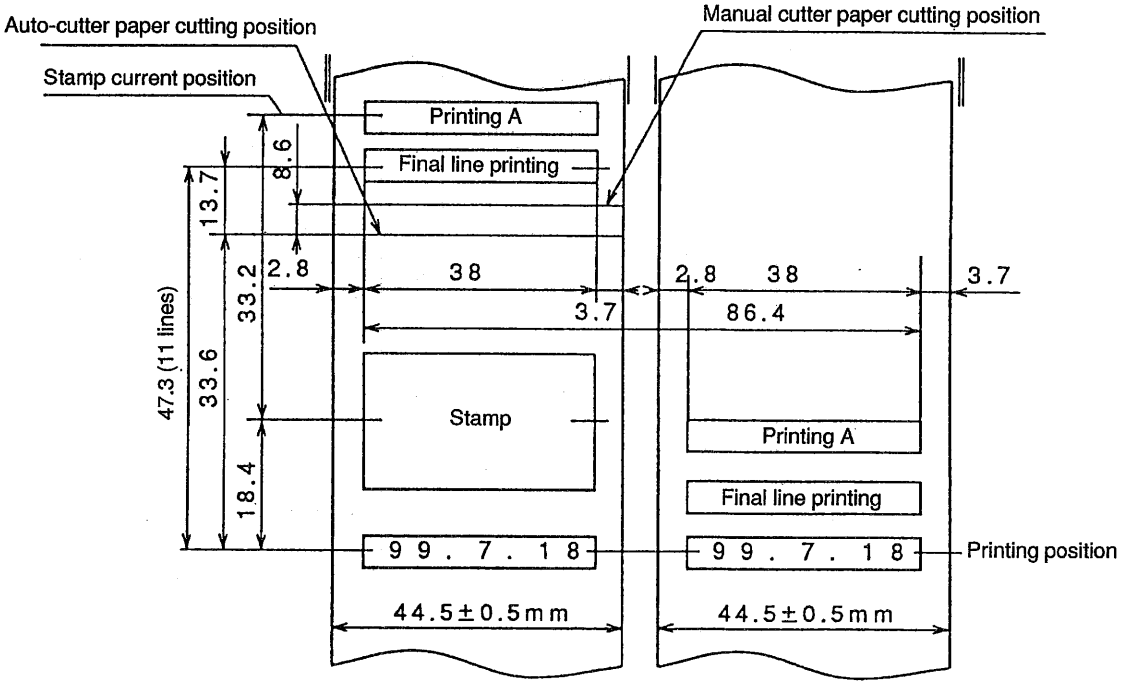
Notes

1. Signals represented by [ ] should be supplied by the person using the equipment.
2. This receipt issue timing chart is based on issue of the above figure.
3. Motor current OFF following receipt issue should always be carried out either with TR440 or TJ440 (※1).
   However, after the paper feeding current OFF at the end of sequences such as receipt issue, 50T or more should have elapsed.
4. When not carrying out printing of date in journal, current does not have to be sent to the journal feeding trigger magnet (※3).
5. During the 490T following OFF of stamp trigger magnetic current, there should be no current sent to the receipt feeding trigger magnet (※4).
6. When continuously feeding paper during issue of receipts, follow the timing below to continuously send current to the receipt feeding trigger magnet.
   However, for other paper feeding operations, follow Timing Chart 2. Also, paper feeding operations require 50T following OFF for paper feeding current (※5).
   ※ When feeding n lines: 47.68 x (n - 1)+16T (beyond decimal point, discard 4, insert 5).

Model-820 Timing Chart

(4) Receipt sample B



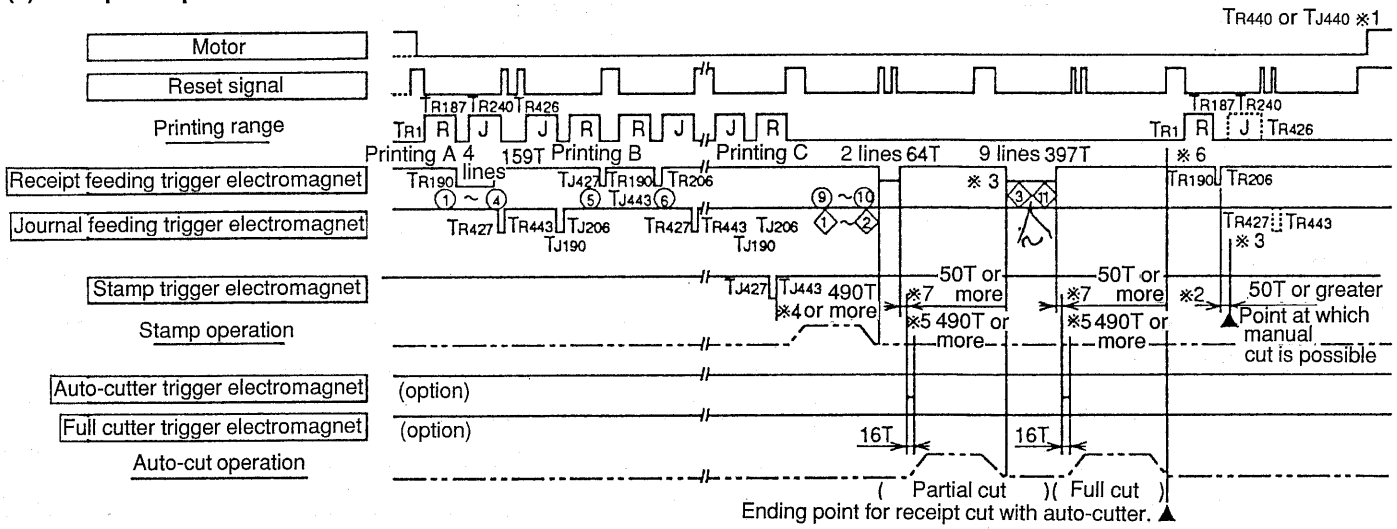


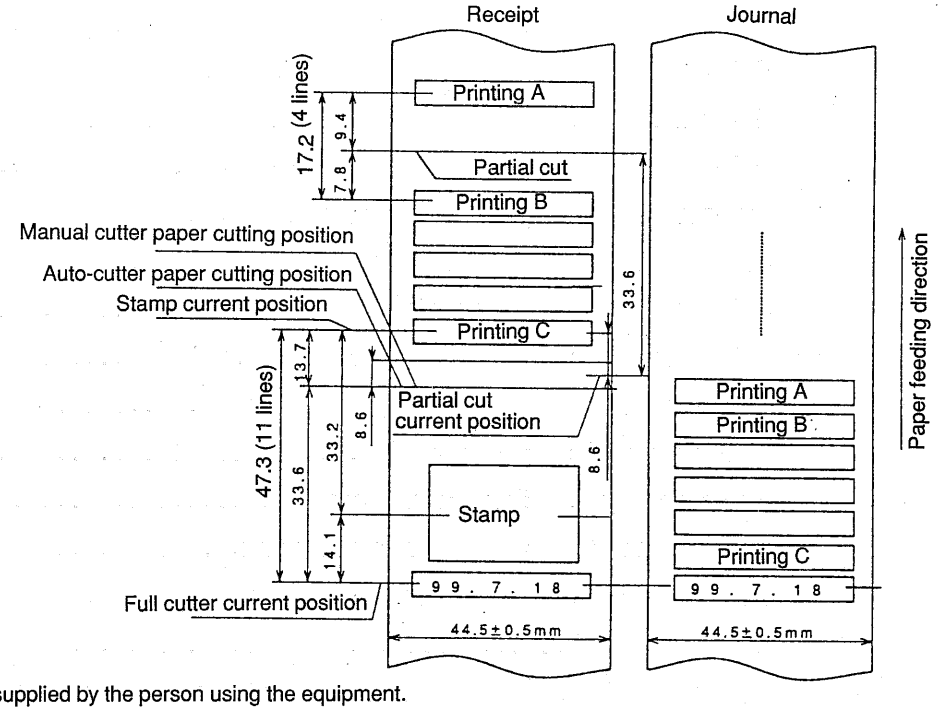
Notes

1. Signals represented by [ ] should be supplied by the person using the equipment.
2. This receipt issue timing chart is based on issue of the above figure.
3. Motor current OFF following receipt issue should always be carried out either with T_{R440} or T_{J440} (※1).
   However, after the paper feeding current OFF at the end of sequences such as receipt issue, 50T or more should have elapsed (※2).
4. When not carrying out printing of date in journal, current does not have to be sent to the journal feeding trigger electromagnet (※3).
5. During the 490T following OFF of stamp trigger electromagnetic current, there should be no current sent to the receipt feeding trigger magnet (※4).
6. During the 490T following OFF of auto-cut trigger electromagnetic current, there should be no current sent to the receipt feeding trigger magnet (※5).
7. Be aware that, after using the manual cutter, the paper cutting position with the auto-cutter has changed. Pay particular attention to the relationship between printing on the final line and the position of the manual cutter, if paper feeding (※6) is not carried out after auto-cut.
8. (1), (2)...(12) represents the number of lines of receipt feeding after printing. Auto-cutting is carried out by sending current to the auto-cutter trigger magnet after auto-cutter A printing and 12 lines of paper feeding.
9. When continuously feeding paper during issue of receipts, follow the timing below to continuously send current to the receipt feeding trigger magnet.
   However, for other paper feeding operations, follow Timing Chart 2. Also, paper feeding operations require 50T following OFF for paper feeding current (※7).
10. Regarding cutter operations, displays operation during attachment of options (full and partial cutter).

Model-820 Timing Chart

(5) Receipt sample C





Notes

1. Signals represented by ☐ should be supplied by the person using the equipment.
2. This receipt issue timing chart is based on issue of the above figure.
3. Motor current OFF following receipt issue should always be carried out either with TR440 or TJ440 (※1).
   However, after the paper feeding current OFF at the end of sequences such as receipt issue, 50T or more should have elapsed (※2).
4. When not carrying out printing of date in journal, current does not have to be sent to the journal feeding trigger electromagnet (※3).
5. During the 490T following OFF of stamp trigger electromagnetic current, there should be no current sent to the receipt feeding trigger electromagnet (※4).
6. During the 490T following OFF of auto-cut trigger magnetic current, there should be no current sent to the receipt feeding trigger magnet (※4).
7. Be aware that, after using the manual cutter, the paper cutting position with the auto-cutter has changed. Pay particular attention to the relationship between printing on the final line and the position of the manual cutter, if paper feeding (※6) is not carried out after auto-cut.
8. ①, ②...② represents the number of lines of receipt feeding after printing. Full-cut is carried out by sending current to the auto-cutter trigger magnet after auto-cutter A printing and 12 lines of paper feeding.
9. <1>, <2>...<11> indicate the number of lines of receipt feeding after C printing. For full-cut, current is sent to the auto cut trigger electromagnet and full cut trigger magnet after 11 lines of paper feeding following C printing.
10. When continuously feeding paper during issue of receipts, follow the timing below to continuously send current to the receipt feeding trigger magnet.
    However, for other paper feeding operations, follow Timing Chart 2. Also, paper feeding operations require 50T following OFF for paper feeding current (※7).
    ※ When feeding n lines: 47.68 x (n - 1)+16T (beyond decimal point, discard 4, insert 5).
11. Regarding cutter operations, displays operation during attachment of options (full and partial cutter).

Notes: 1. Partial cut should be carried out after advancing paper 10 lines following print A.
2. When carrying out partial cut, carry out print B after advancing the paper 4 lines following print A.
3. Carry out full cut after advancing the paper 11 lines following print C.

Chapter 3
Disassembly, Assembly, Adjustment

Table of Contents

3.1 Disassembly

- Disassembly is carried out keeping in mind that the order is the opposite of that for Assembly in Section 3.2. First the main assembly is disassembled. These parts are then divided into the sub-assembly blocks after which the individual blocks are disassembled.
- To attempt disassembly beyond the steps shown in the General Disassembly Chart at the end of this chapter could lead to impairment of function. Only disassemble within the range shown by the Disassembly Chart.
- When disassembling, it will be helpful to observe the "Assembly Points" beforehand to get an understanding of attachment methods.

3.2 Assembly

- Assembly is divided into sub-assemblies and main assemblies. First carry out sub-assemblies so the parts are in units to some extent, and then proceed to main assemblies.
- When assembling, use the General Disassembly Chart at the end of this chapter to confirm part configurations and attachment positions.
- The stars in the Assembly Order column mean that the items require either <Check> or <Adjustment>. Regarding <Adjustment>, there are concrete descriptions in Section 3.3 Adjustments of the steps to be carried out.
  If you have done even a small amount of disassembly, check whether there are areas requiring adjustment.
- Numbers with a circle around them in the Assembly Order column indicate parts that should be lubricated before insertion because lubrication after assembly is difficult.
- Regarding lubrication and adhesives, when the printer has been assembled, there are detailed descriptions in Section 2.3.3 Lubrication Locations and Section 2.3.6 Adhesive Locations, including the necessary items. Refer also to the General Lubrication/Adhesive Chart at the end of the chapter.
- Items with a circle around them in the Model column and those with a standard ◎ sign indicate options.
- All smaller parts are indicated with abbreviations.

Abbreviations for Smaller Parts

C. C. S-tite	:	Cross recessed Cup head tap tite Self tapping Screw
C. B. S-tite	:	Cross recessed Binding head tap tite Self tapping Screw
C. C	:	Cross recessed Cup head Screw
C. B	:	Cross recessed Binding head Screw
C. B. T-BT	:	Cross recessed Binding head Self tapping Screw
C. P. T-BT	:	Cross recessed Pan head Self tapping Screw
C. P. (S)	:	Cross recessed Pan head screw with Spring lack washer
RE	:	Retaining Ring (E-Type)

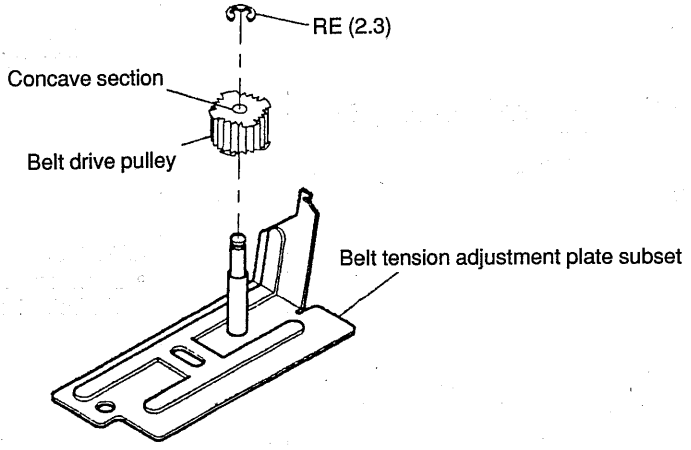
Small Parts-Actual Size

RE (2) RE (2.3) RE (2.5) RE (3) RE (4)

3.2.1 Sub-assemblies

Sub-assembly A: Belt tension adjustment plate ass'y (Model 820)

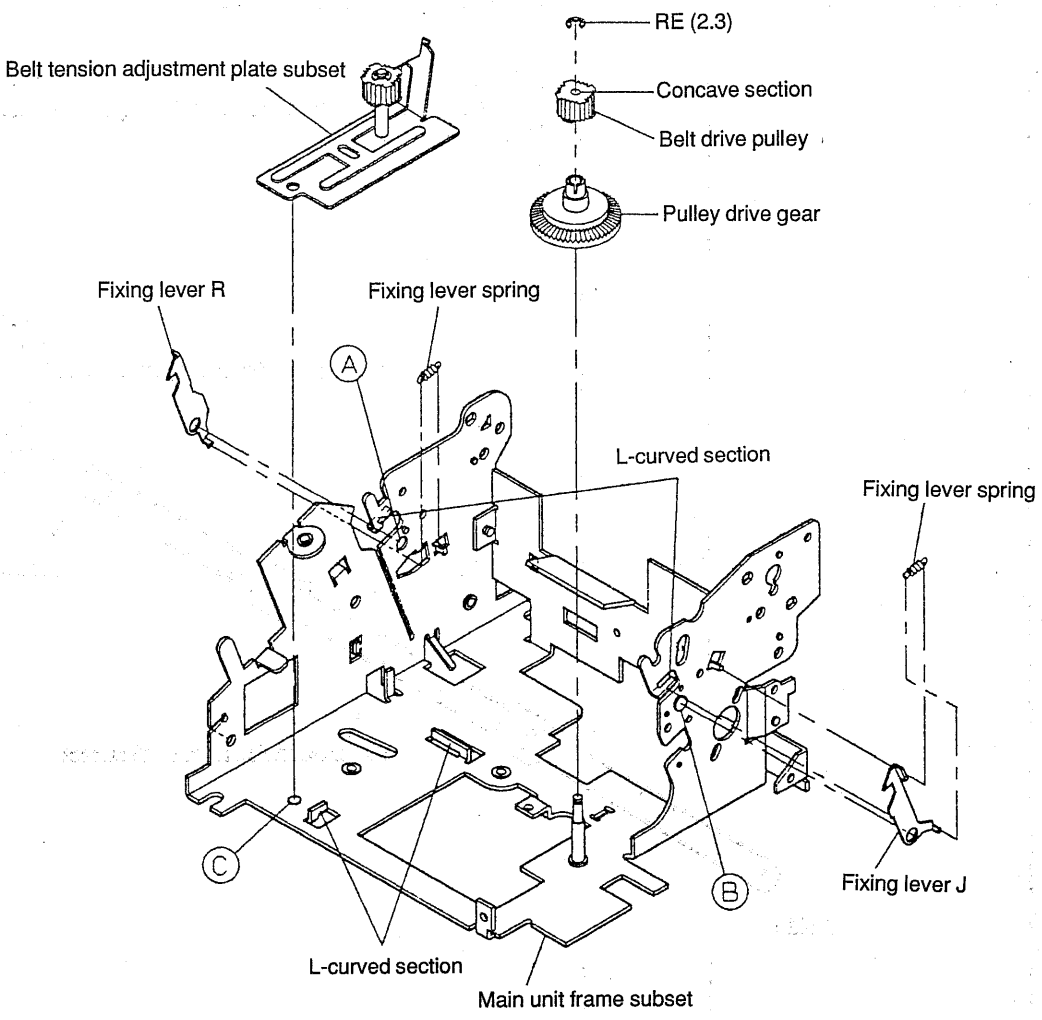
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
①	Belt tension adjustment plate subset	○	
②	Belt drive pulley RE(2.3) ×1	○	
★			<CHECK> • Do not confuse the insertion direction for the belt drive pulley. • The belt drive pulley should operate smoothly.



Sub-assembly B: Main unit frame unit (Model-820)

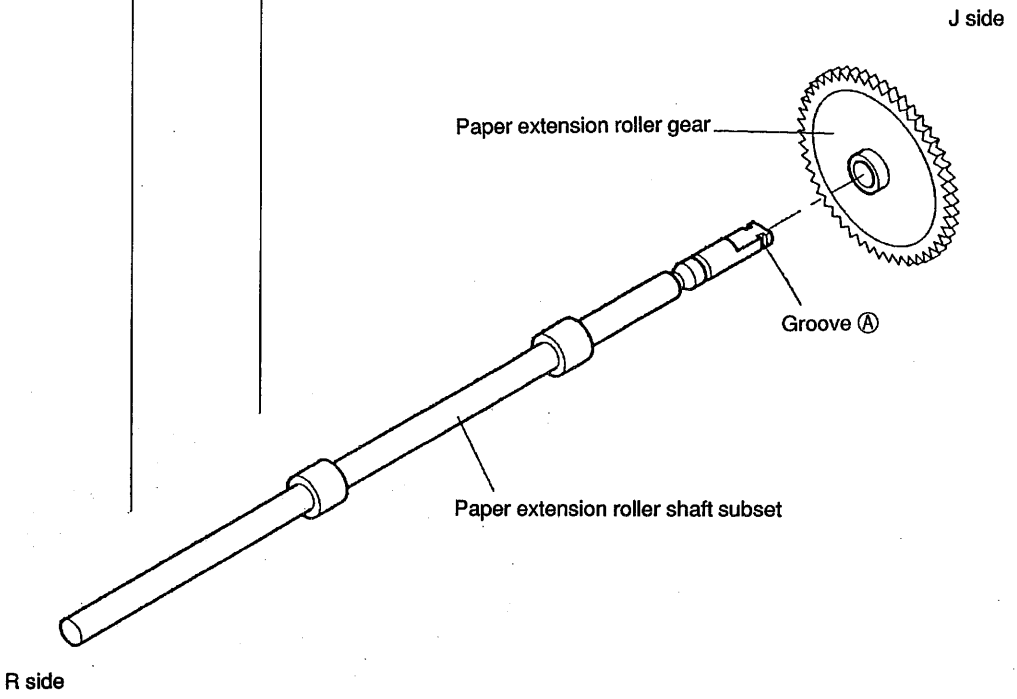
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
①	Main unit frame subset	○	
2	Fixed lever R		• Insert in L-curve section after aligning with dowel Ⓐ of the main unit frame subset.
3	Fixed lever spring		• Place over main unit frame subset and fixed lever R.
★			<CHECK> • Fixed lever R should operate smoothly.
4	Fixed lever J	○	• Insert in L-curve section after aligning with dowel Ⓑ of the main unit frame subset.
5	Fixed lever spring	○	• Place over main unit frame subset and fixing lever J.
★			<CHECK> • Fixing lever J should operate smoothly.
6	Pulley drive gear, belt drive pulley RD(2.3) X1		
⑦		○	
★			<CHECK> • Do not confuse the insertion order of the belt drive pulley. • The belt drive pulley and pulley drive gear should operate smoothly.

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
8	Belt tension adjustment plate ass'y (Sub-assembly A)	○	• Insert in L-curve section after aligning with dowel Ⓒ of the main unit frame subset.



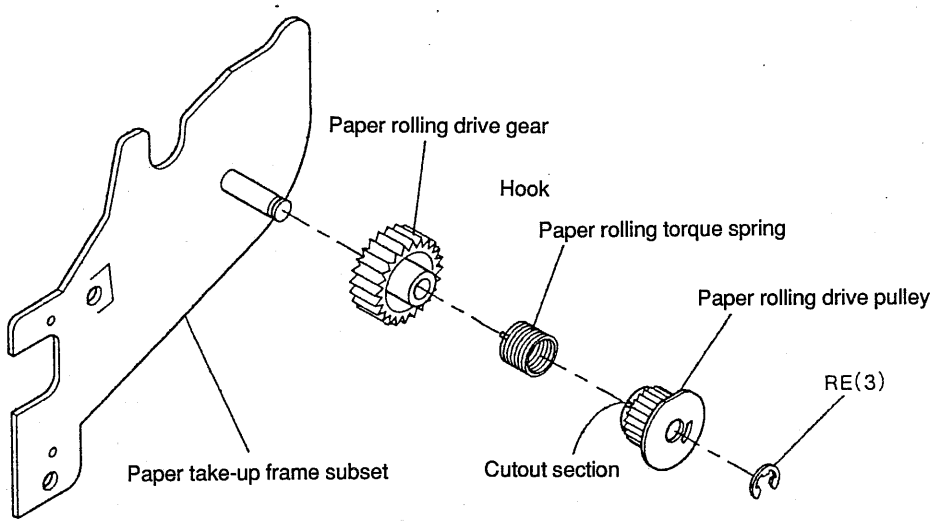
Sub-assembly C: Paper extension roller shaft ass'y

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
1	Paper extension roller shaft subset	○	
2	Paper extension roller gear	○	• Insert by aligning with the shaft configuration of the paper extension roller shaft subset.
★			<CHECK> • Make sure that the snap-fit section of the paper extension roller gear is securely inserted in groove Ⓐ.



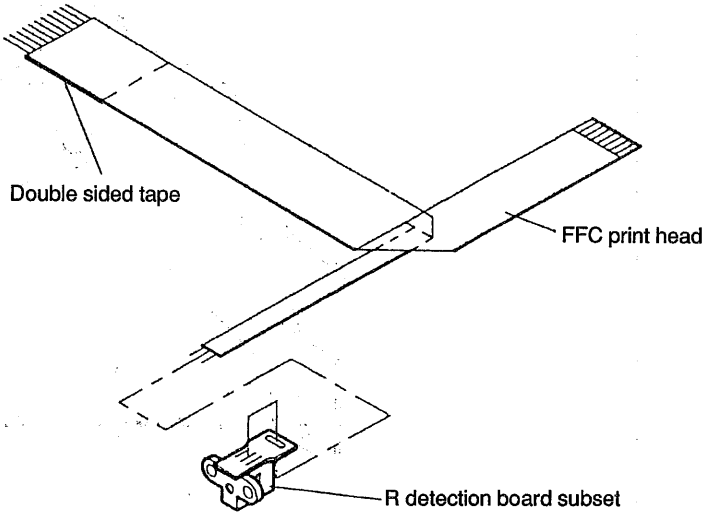
Sub-assembly D: Paper take-up frame ass'y

Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
①	Paper rolling drive gear	○	
②	Paper rolling torque spring	○	• Insert in paper rolling drive gear
3	Paper rolling drive pulley		• Insert the hook on the paper rolling torque spring into the cut-out area on the paper rolling drive pulley.
④	Paper take-up frame subset RE (3) X1	○	• Attach the connected pieces to the paper take-up frame subset.

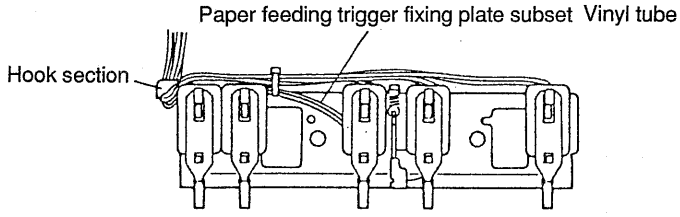
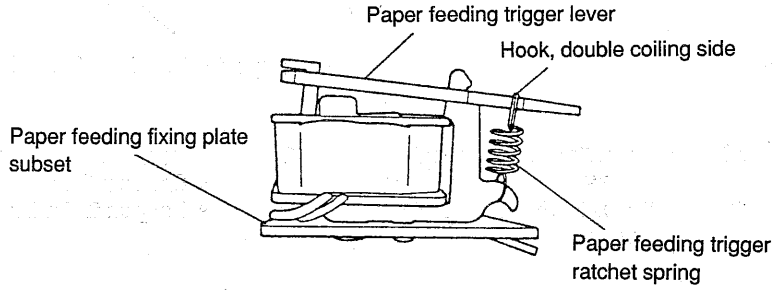


Sub-assembly E: Head FCC ass'y

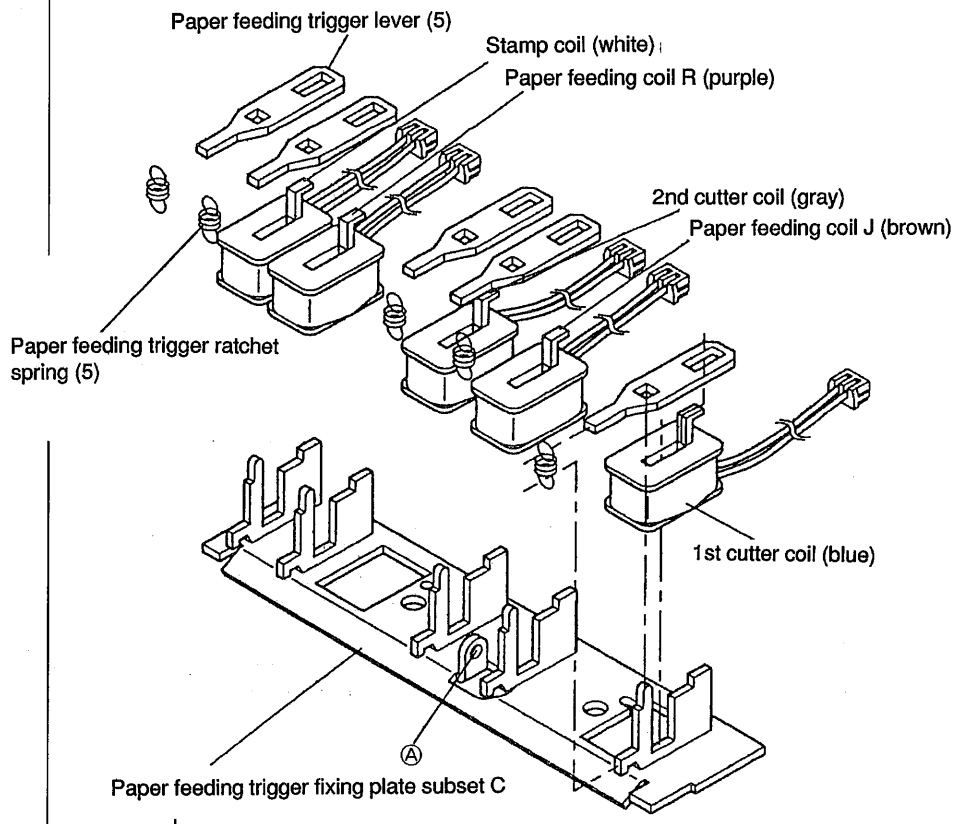
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
1 ★	FFC, print head	○	<CHECK> • Be careful of bending direction. • Solder the FFC, print head to the R detection board subset.
2 ★	R detection board subset	○	<CHECK> • Be careful of attachment direction.



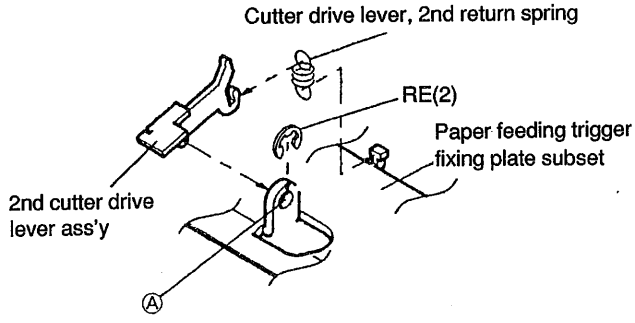
Sub-assembly F: Paper feeding trigger ass'y C

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
1	Paper feeding trigger fixed plate subset C	○	
②	Paper feeding coil R	○	• Lead line: purple
③	Paper feeding coil J	○	• Lead line: Brown
④	Stamp coil	○	• Lead line: White
⑤	1st cutter coil	◎	• Lead line: Blue
⑥	2nd cutter coil	◎	• Lead line: Gray
			• Gather together the lead lines and hang on the hook of the paper feeding trigger fixed board subset.
			
★			<CHECK> • Do not confuse with other parts. • Securely insert each coil.
⑦	Paper feeding trigger lever	○	
8	Paper feeding trigger ratchet spring	○	• After hanging on the paper feeding trigger lever, hang on the paper feeding trigger fixed plate subset hook.
			
★			<CHECK> • Do not stretch the spring. • Press the paper feeding trigger lever with your hand and confirm that it operates smoothly.

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	

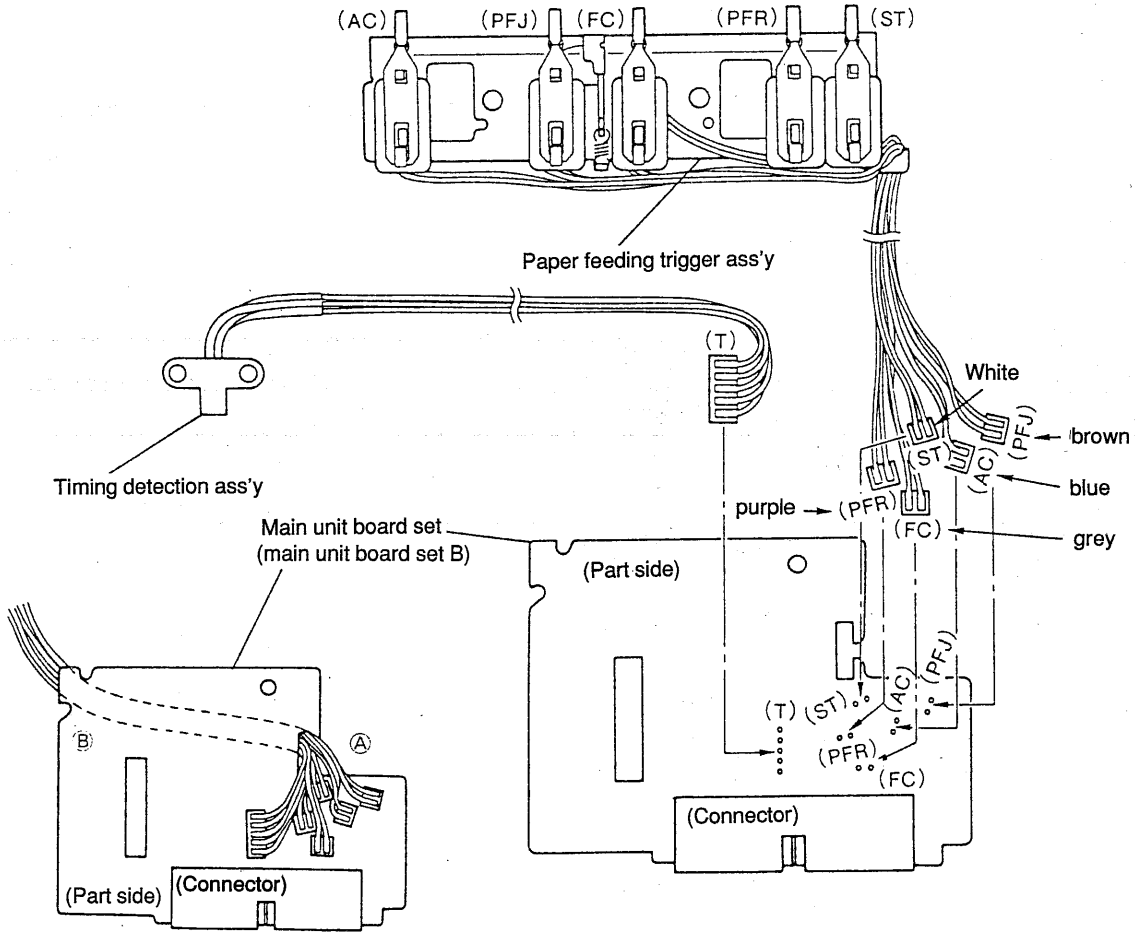


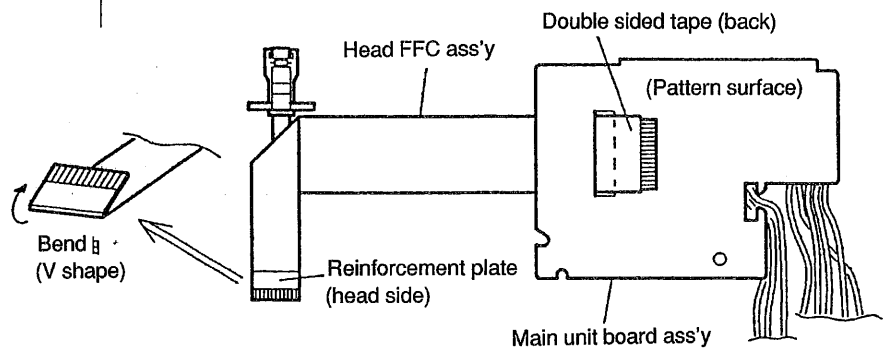
⑨	2nd cutter drive lever ass'y RE(2) X1	O	• Insert in hole A of paper feeding trigger set. • Secure with RE.
10	2nd cutter drive lever ass'y, return spring	O	• Hang on 2nd cutter drive lever ass'y and paper feeding trigger fixed plate subset.



Sub-assembly G: Main unit circuit board ass'y (Model-820)

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
1	Main unit board set Main unit board set B	○	
2	Timing detector ass'y	○	• Solder to main unit board ass'y (main unit board ass'y B). T position
3	Paper feeding trigger ass'y C (Sub-assembly F)	○	• Solder to main unit board ass'y (main unit board ass'y B). Paper feeding coil R (Lead wire: purple) (PFR) position Paper feeding coil J (Lead wire: brown) (PF) position Stamp coil (Lead wire: white) (ST) position 1st cutter coil (Lead wire: blue) (AC) position 2nd cutter coil (Lead wire: gray) (FC) position • Pass the lead wire of the paper feeding trigger ass'y C and the lead wire of the timing detector ass'y through section A of the main unit board set and bring out in direction B.

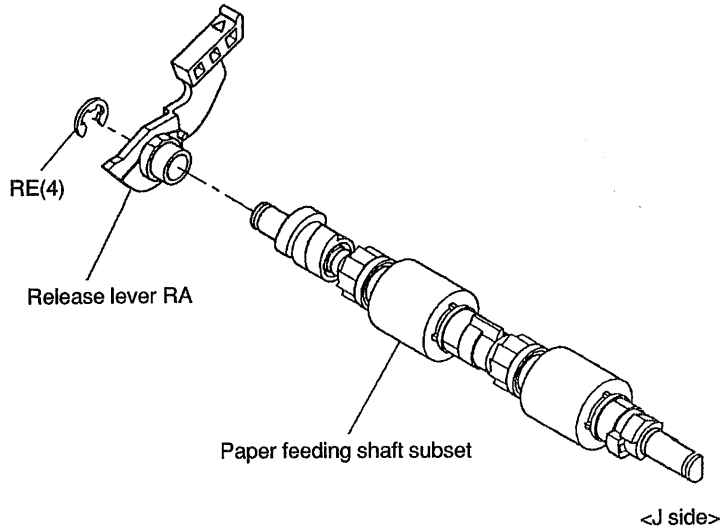


Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
4	Head FFC ass'y (Sub-assembly E)	○	<Model 820> • Pass through the long hole of the main unit board ass'y and secure with double-stick tape before soldering. • Bend along the reinforcement plate of the head FFC ass'y. 
★			<CHECK> • Check that there are no broken wires on the head FFC ass'y.

Sub-assembly H: Paper feeding shaft ass'y C

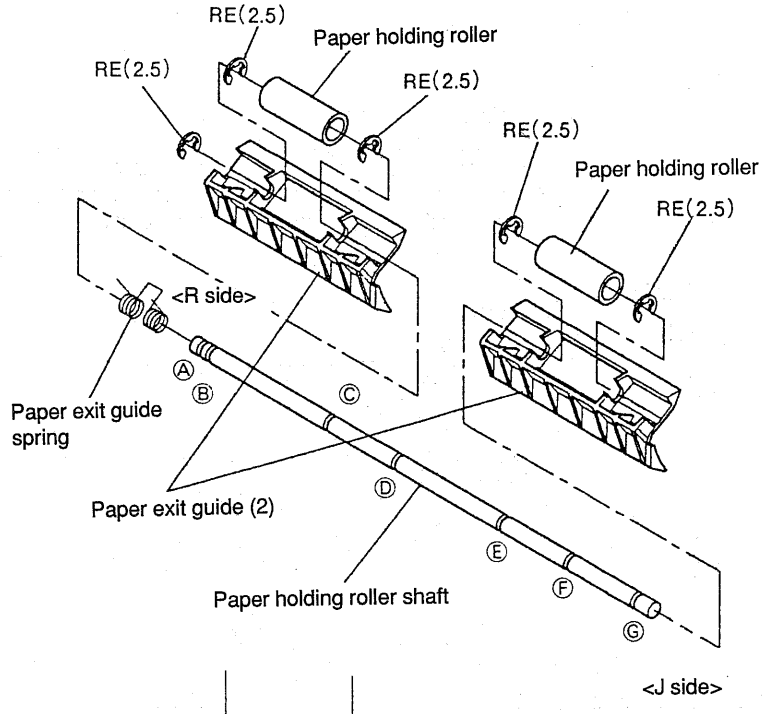
Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
①	Paper feeding shaft subset (C)	○	
2	Release lever RA	○	• Insert in paper feeding shaft subset.
	RE(4) X1	○	

<R side>



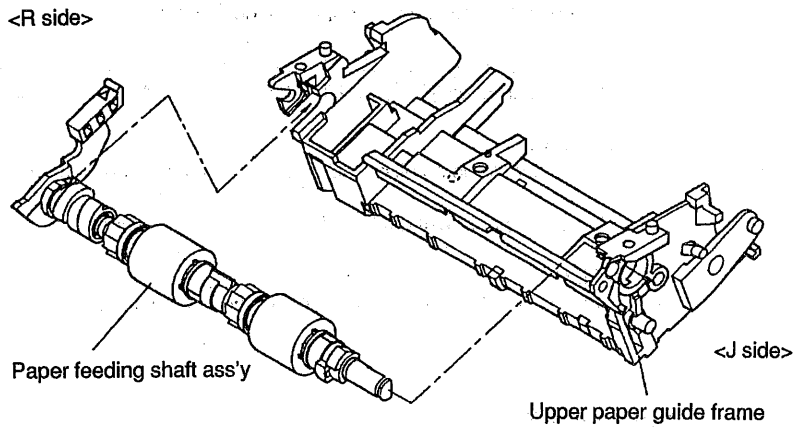
Sub-assembly I: Paper holding roller shaft ass'y

Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
①	Paper holding roller shaft	○	• The two sides of the grooves (grooves Ⓐ, Ⓑ) are side R.
2	Paper exit guide spring	○	• Insert the paper exit guide spring between grooves Ⓓ and Ⓔ of the paper holding roller shaft.
	RE (2.5) X2	○	• Insert in grooves Ⓓ and Ⓔ of the paper holding roller shaft.
★			<CHECK> • Check insertion direction of paper exit guide spring. • Be careful not to bend the paper exit guide spring.
3	Paper holding roller X2	○	• Insert between grooves Ⓒ, Ⓓ and Ⓔ of the paper holding roller shaft.
	RE(2.5) X3	○	• Insert in grooves Ⓑ, Ⓒ and Ⓕ of the paper holding roller shaft.
★			<CHECK> • There should be no oil on the exterior of the paper holding roller.
4	Paper exit guide X2	○	• Insert the paper exit guide in the paper holding roller shaft.
★			<CHECK> • There should be no heaviness in the operation of the paper exit guide.

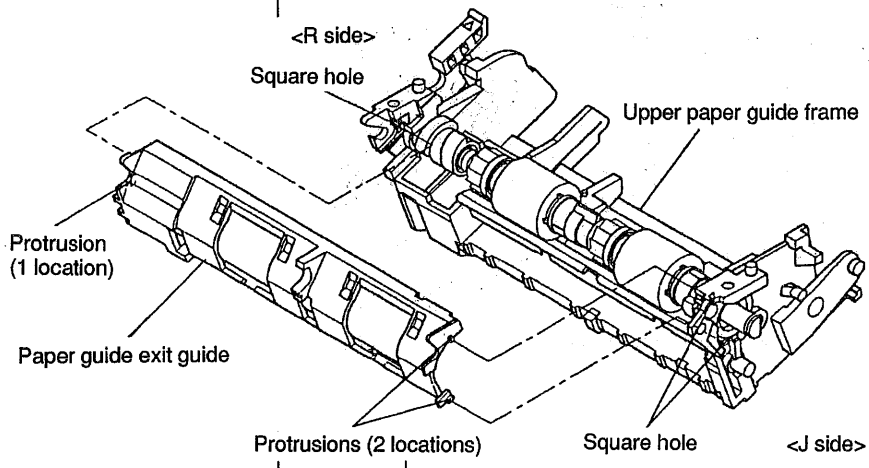


Sub-assembly J: Paper guide frame unit C

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
1	Upper paper guide frame	○	
②	Paper feeding shaft ass'y (Sub-assembly H)	○	• Insert in upper paper guide frame. (1) Insert the J side of the paper feeding shaft ass'y until it makes contact with the upper paper guide frame. (2) Insert the R side of the paper feeding shaft ass'y in the U groove of the upper paper guide frame.

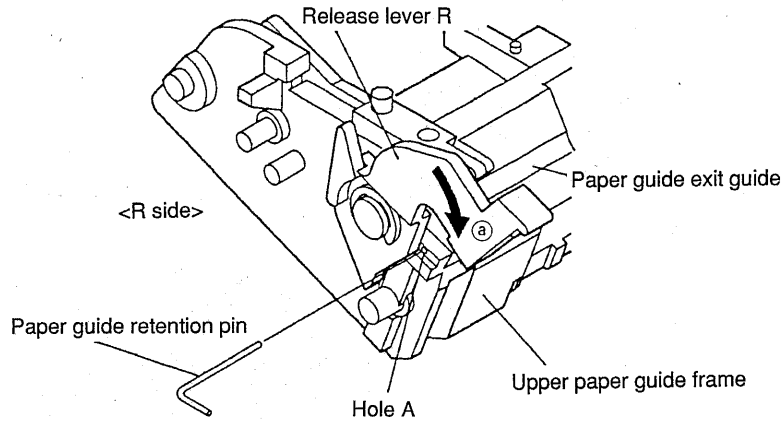


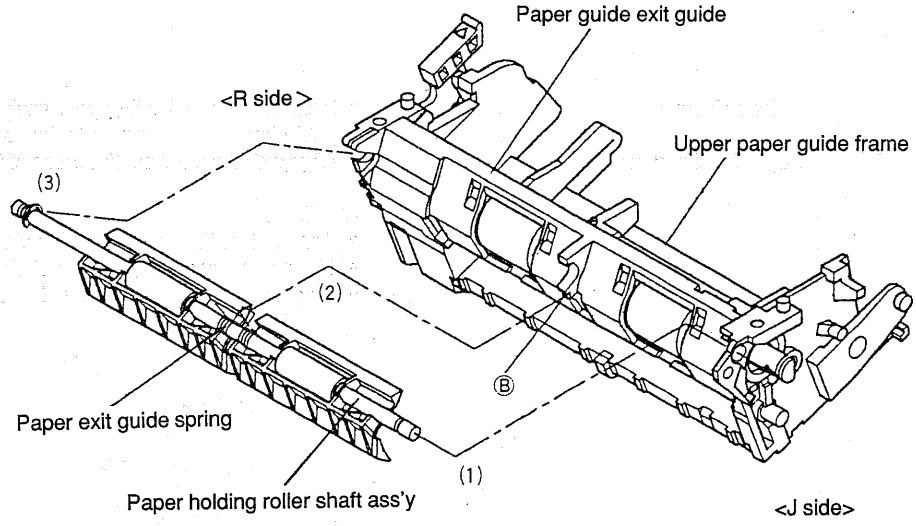
3	Paper guide exit guide	○	• Insert in the upper paper guide frame. (1) Align the protrusion on the J side of the paper guide exit guide with the square hole on the upper paper guide frame. (2) Insert the protrusion on the R side of the paper guide exit guide with the square hole on the upper paper guide frame.



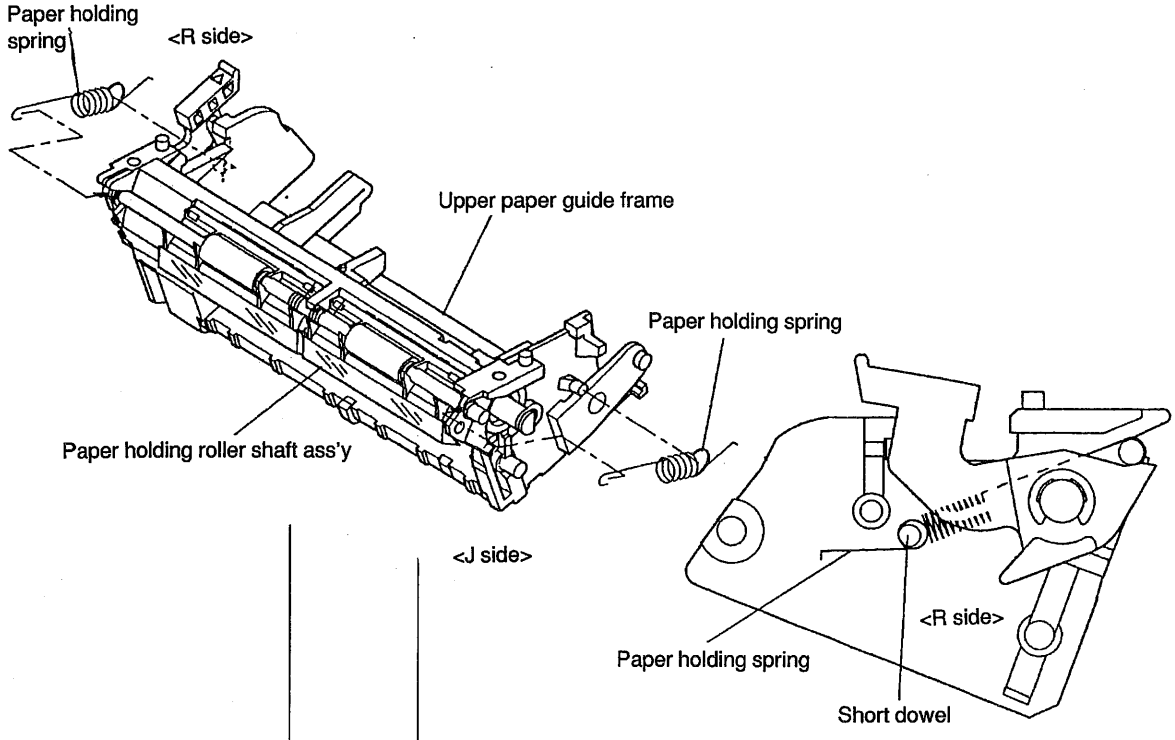
★			<CHECK> • Confirm that the upper paper guide frame and paper guide exit guide are securely attached to each other.

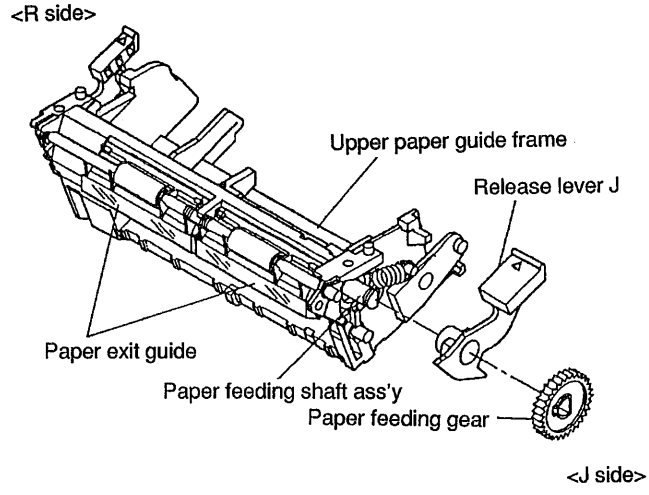
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
4	Paper guide retention pin	○	• Insert in hole Ⓐ of the upper paper guide frame. (1) Rotate the release lever R in direction ⓐ until hole Ⓐ can be seen. (2) Insert the longer side of the paper guide retention pin in hole Ⓐ and then return the release lever R to its original position.
⑤	Paper holding roller shaft ass'y (Sub-assembly I)	○	• Insert in the upper paper guide frame and the paper guide exit guide in the order (1), (2), (3). • Catch the hook of the paper exit guide spring on groove Ⓑ of the paper guide exit guide.



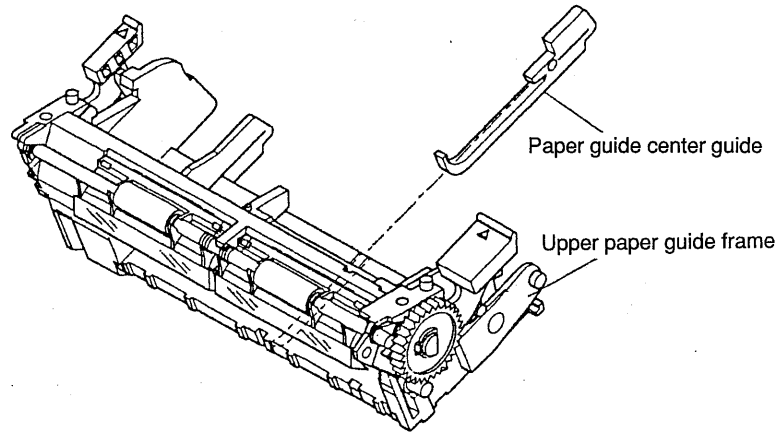


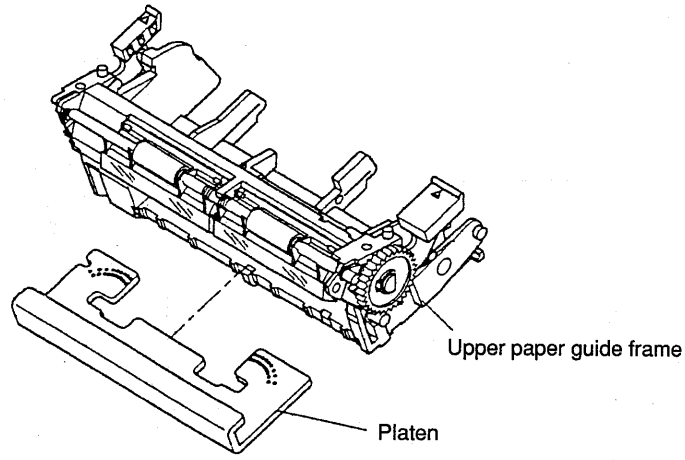
Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
6	Paper holding spring X2	O	• Hang on the R side dowel of the paper guide frame and the paper holding roller shaft ass'y. • Hang on the J side dowel of the paper guide frame and the paper holding roller shaft ass'y.
⑦	Release lever J	O	• Insert the paper feeding gear ass'y in the center of the hole in the upper paper guide frame and then insert release lever J.
8	Paper feeding gear	O	• Align with the shaft configuration of the paper feeding shaft ass'y.
★			<CHECK> • Confirm that the snap-fit section of the paper feeding gear is securely inserted. • The paper exit guide (R, J sides) should operate smoothly. • Confirm that the release operation is smooth.

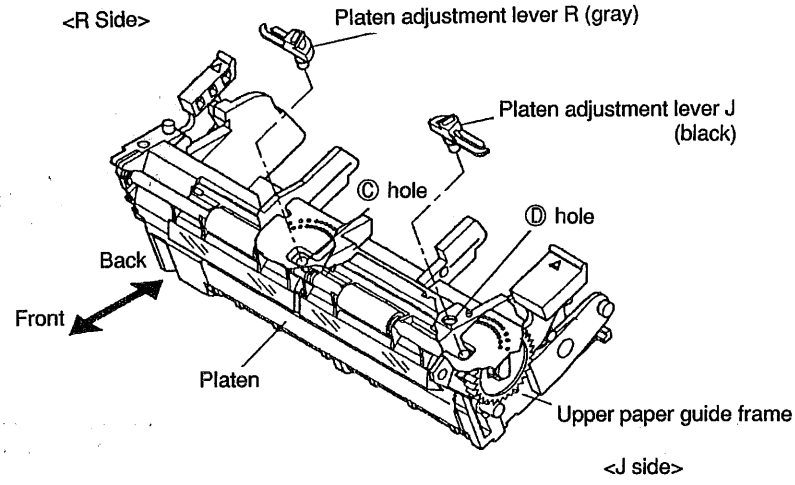
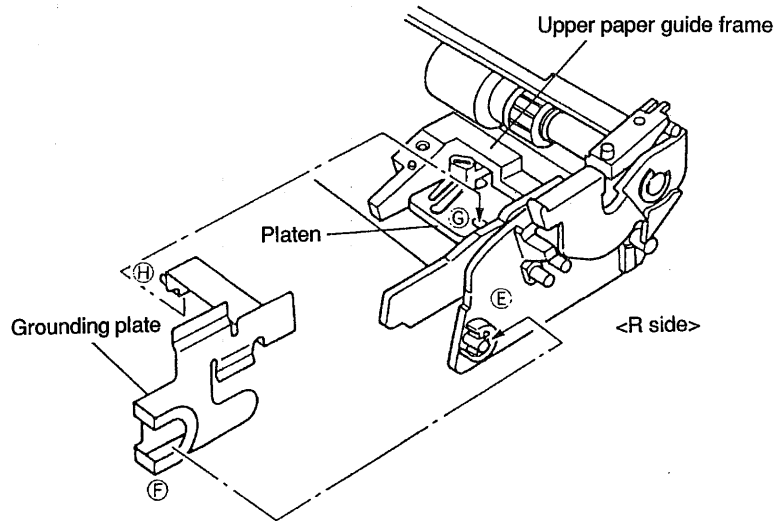




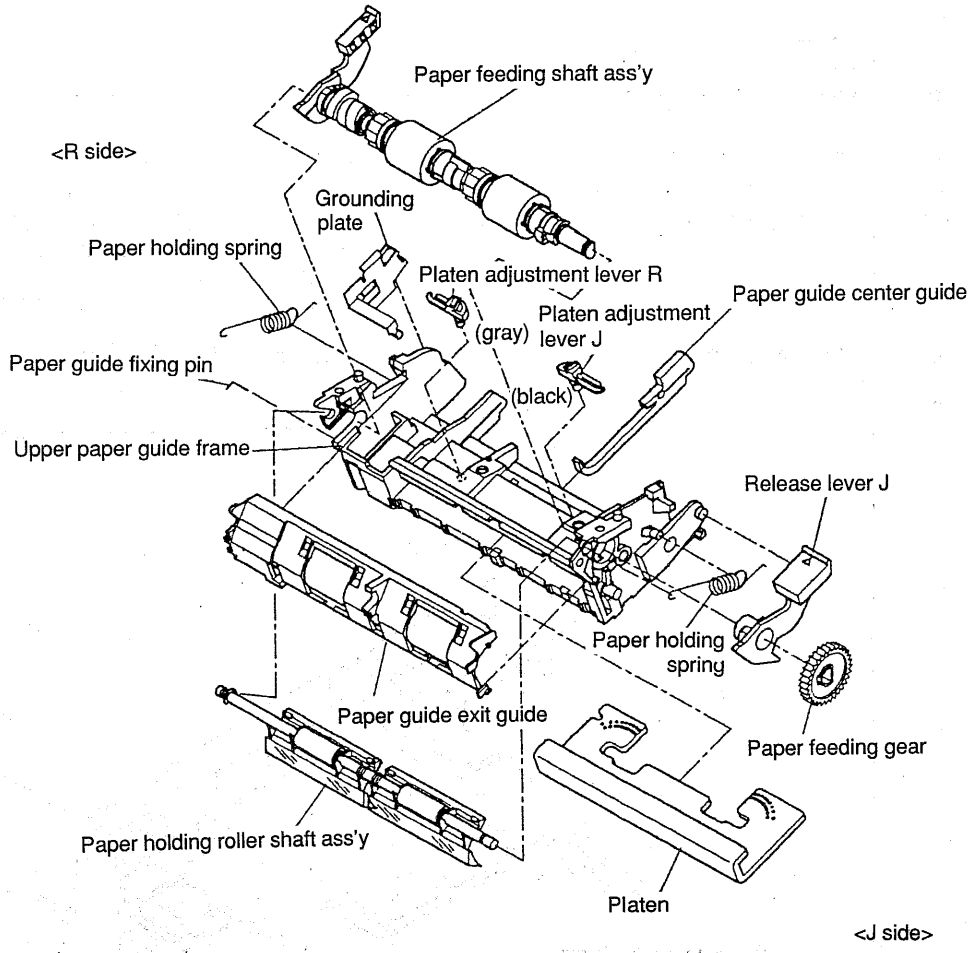
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
9	Paper guide center guide	○	• Insert in the center groove on the upper paper guide frame.
10	Platen	○	• Insert in the upper paper guide frame • Push in until it is completely in contact with the frame.





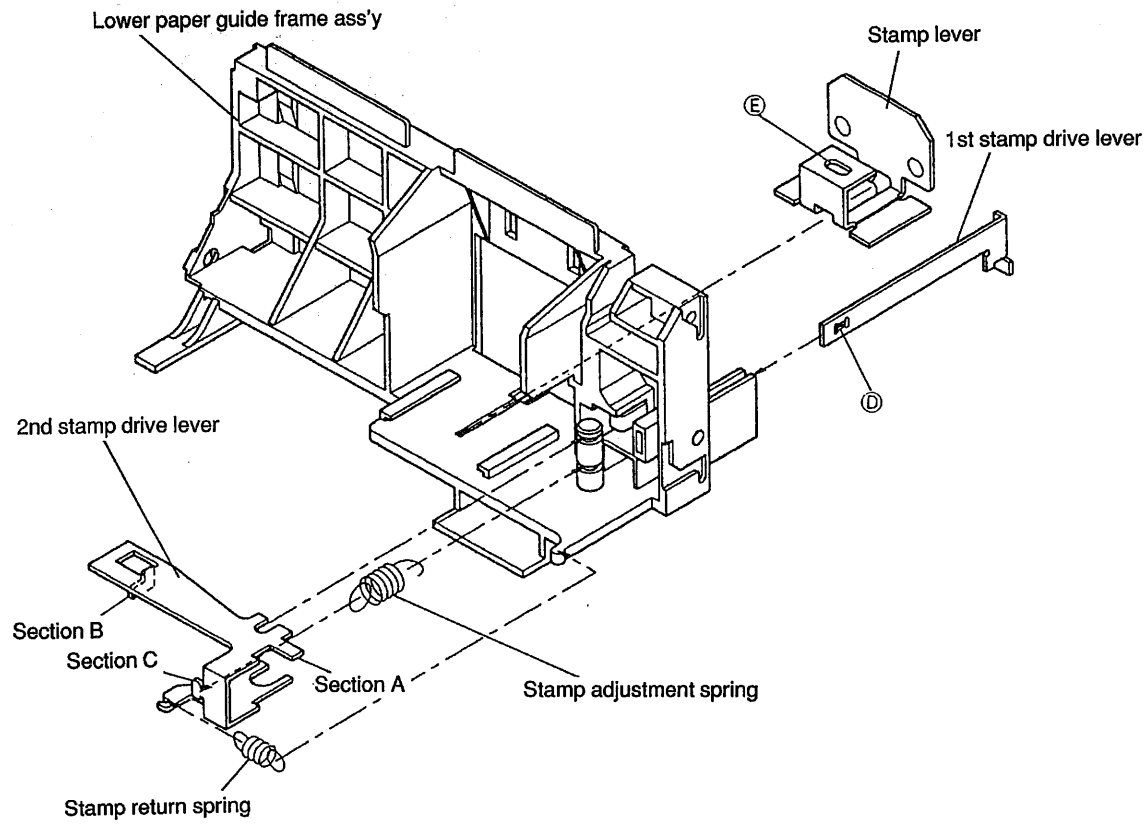
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
11	Platen adjustment lever R	O	• Insert in hole Ⓒ of the upper paper guide frame.
12	Platen adjustment lever J	O	• Insert in hole Ⓓ of the upper paper guide frame.
			
★			<CHECK> • Confirm that the platen moves forward and backward smoothly when the platen adjustment levers R and J are rotated.
13	Grounding plate	O	• Insert in the upper paper guide frame and the platen. (1) Insert hole Ⓕ on the grounding plate in dowel Ⓔ on the upper paper guide frame. (2) Insert section Ⓗ of the grounding plate in groove Ⓖ of the platen.
			

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	

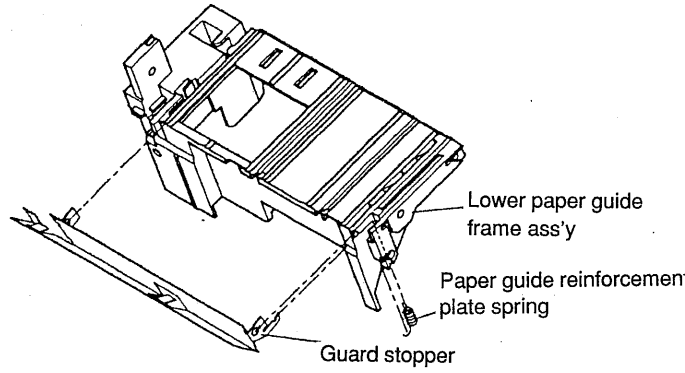


Sub-assembly K: Paper guide frame, lower unit

Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
①	Upper paper guide frame ass'y	O	
2	Stamp adjustment spring	O	• Hang on the groove in the center of the shaft of the lower paper guide frame ass'y.
③	1st stamp drive lever		
④	Stamp lever	O	
⑤	2nd stamp drive lever	O	• Insert sections Ⓐ and section Ⓑ (bent section) of the 2nd stamp drive lever in the long hole Ⓓ on the 1st stamp drive lever and the long hole Ⓔ on the stamp lever respectively. • Hang the stamp adjustment spring on section Ⓒ of the 2nd stamp drive lever.
6	Stamp return spring	O	• Hang on the 2nd stamp drive lever and the lower paper guide frame ass'y.
★			<CHECK> • Confirm that the stamp lever operates smoothly.

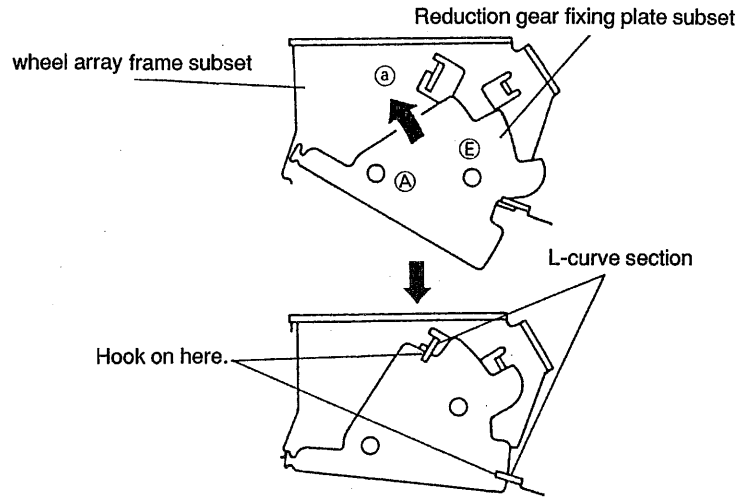


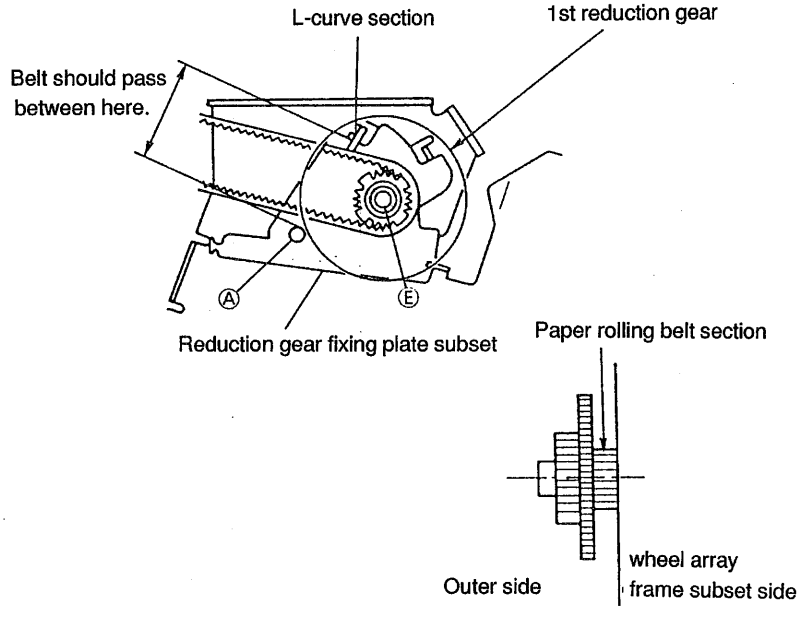
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
7	Card stopper	○	• Insert on the dowel of the lower paper guide frame ass'y.
8	Paper guide reinforcement plate spring	○	• Hang on the card stopper and the lower paper guide frame ass'y.
★			<CHECK> • Confirm that the card stopper operates smoothly.

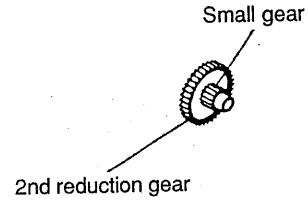
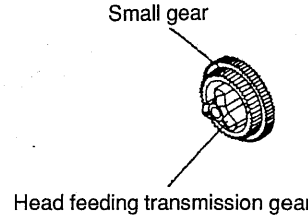
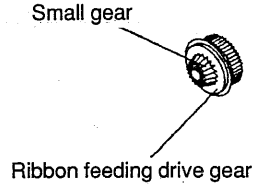
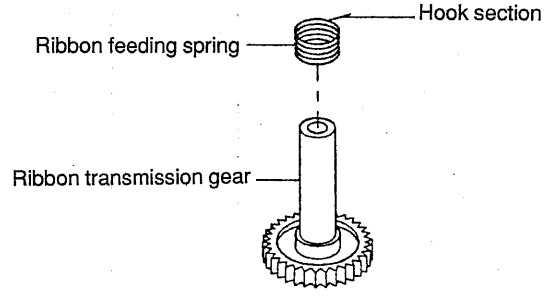


Sub-assembly L: Wheel array frame unit

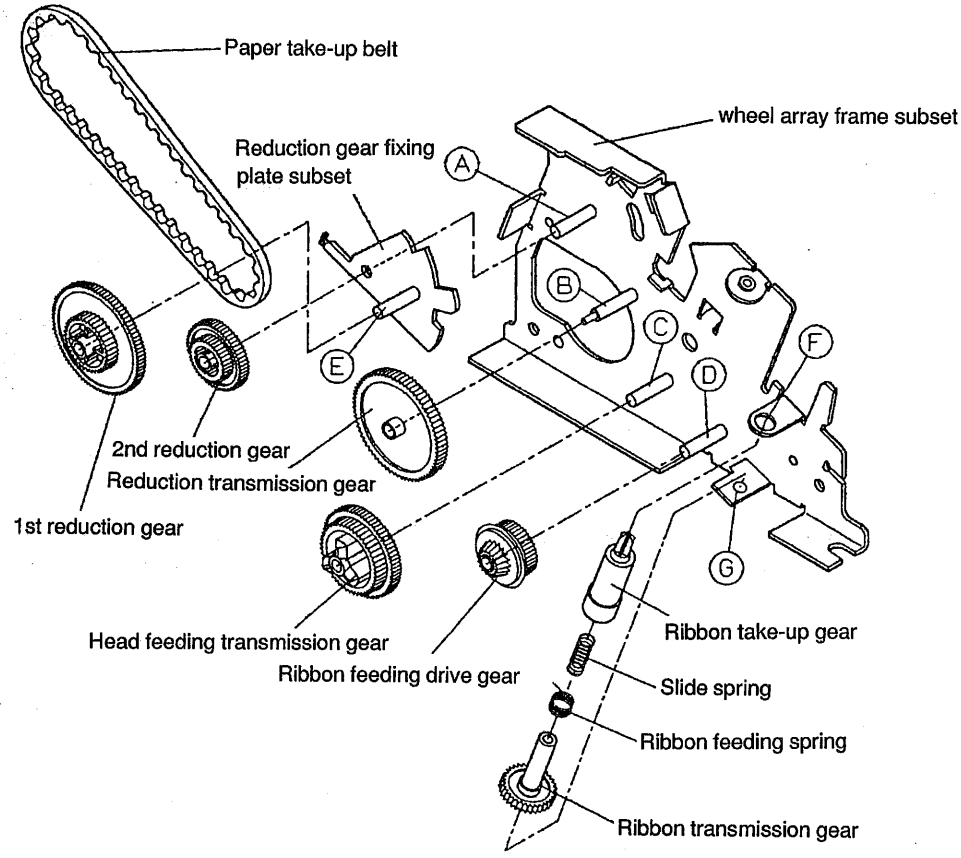
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
①	Wheel array frame subset	○	
②	Reduction gear fixed plate subset	○	• Inset in shaft Ⓐ of wheel array frame subset, rotate in direction ⓐ and insert in the L-curve section.
3	Paper rolling belt	○	
4	1st reduction gear	○	• Wind the paper rolling belt around the 1st reduction gear and attach to shaft Ⓔ of the reduction gear retention plate subset.
★			<CHECK> • After insertion, confirm that the paper rolling belt passes between shaft Ⓐ and the L-curve section.





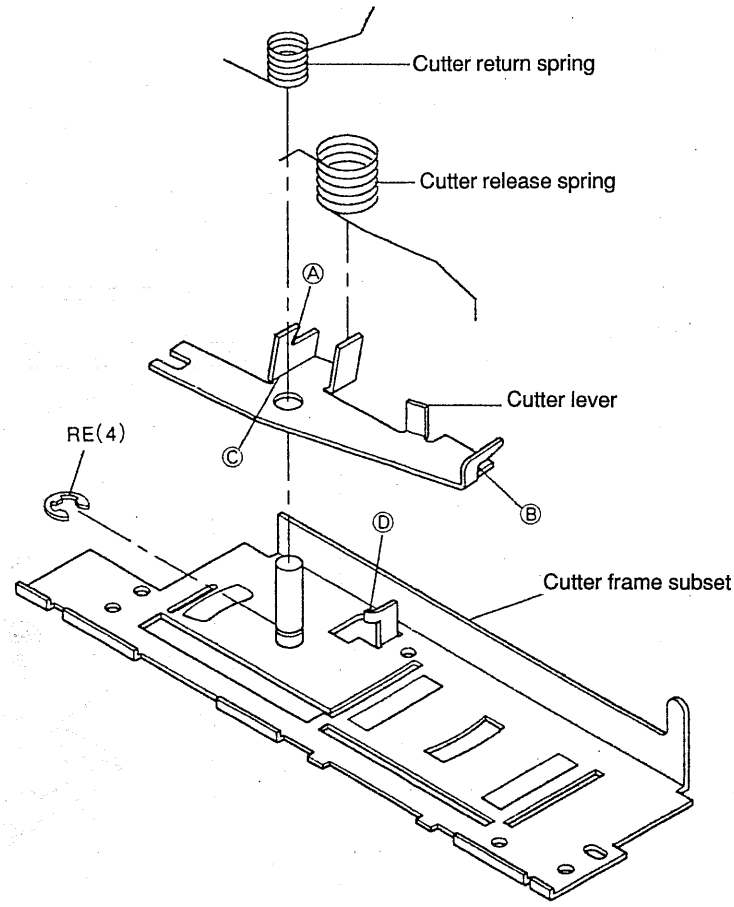
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
5	2nd reduction gear	○	• Insert so that small gear is on the wheel array frame subset side. 
6	Head feeding transmission gear	○	• Insert so that the small gear is facing outward. 
7	Reduction transmission gear	○	• Insert the longer gear so that it is on the wheel array frame subset side.
⑧	Ribbon feeding drive gear	○	• Insert so that small gear is on the wheel array frame subset side. 
9	Ribbon transmission gear	○	
⑩	Ribbon feeding spring	○	• Insert on the ribbon transmission gear so that the hook of the ribbon feeding spring is on the top side. 
11	Slide spring	○	• Insert the slide spring in the hole on the ribbon take-up shaft.
12	Ribbon take-up shaft	○	• Attach the ribbon transmission gear to the ribbon take-up shaft. • Insert in hole Ⓕ at the end of the ribbon take-up shaft while compressing the slide spring in a joined state. • Insert the shaft of the ribbon transmission gear in hole Ⓖ.

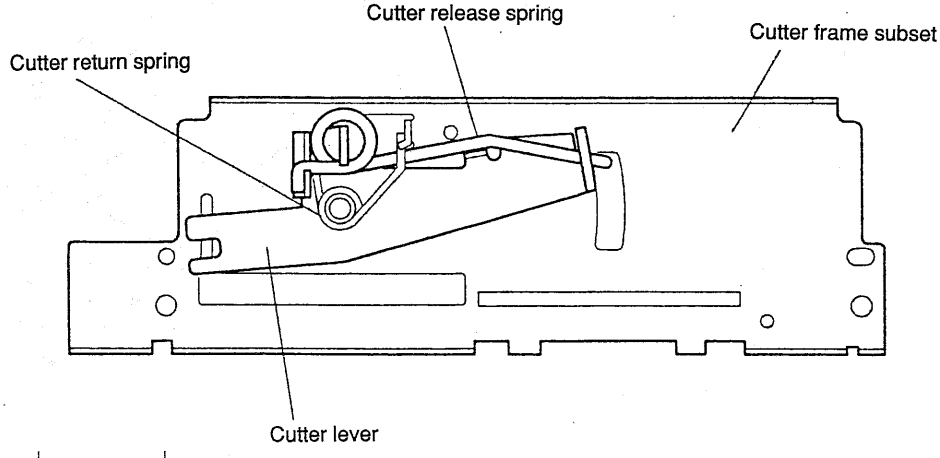
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
★			<CHECK> • The wheel array should rotate smoothly. • The ribbon take-up shaft should return due to the slide spring force.



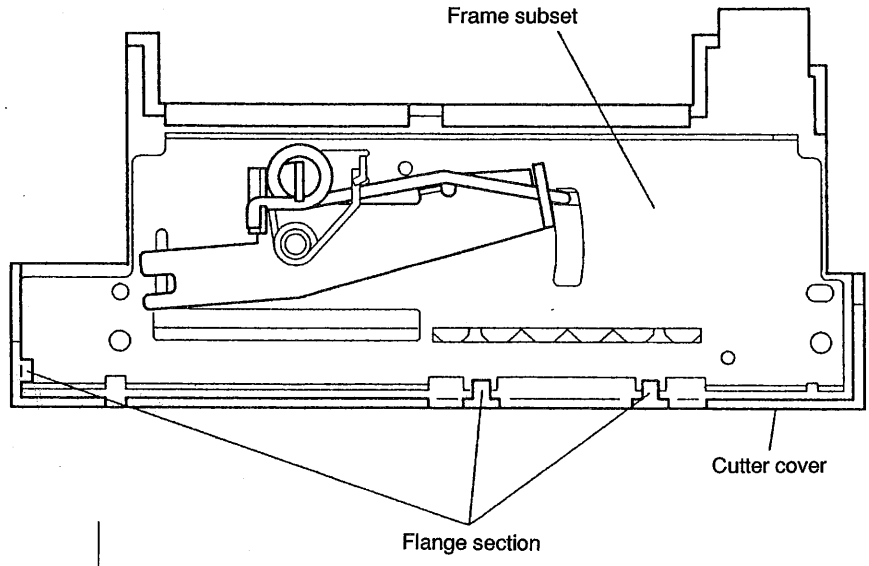
Sub-assembly M: Cutter unit B

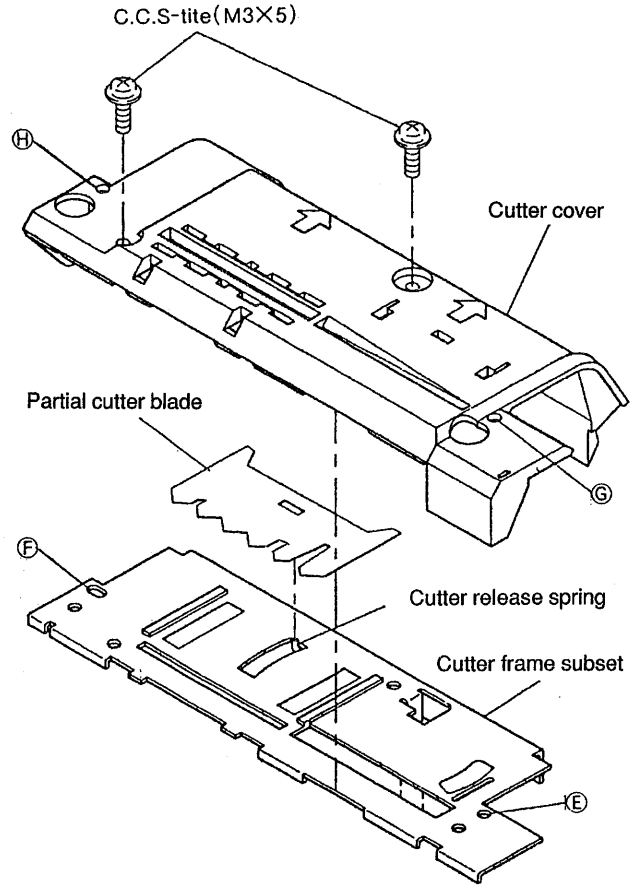
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
①	Cutter frame subset	○	
②	Cutter lever	○	• Insert on the shaft of the cutter frame subset.
	· RE(4) ×1	○	
3	Cutter release spring	◎	• Hang the short side of the cutter release spring on section Ⓐ of the cutter lever and the longer side on section Ⓑ.
④	Cutter return spring	◎	• Hang the shorter side of the cutter return spring on section Ⓒ of the cutter lever and the long side on section Ⓓ of the cutter frame subset.





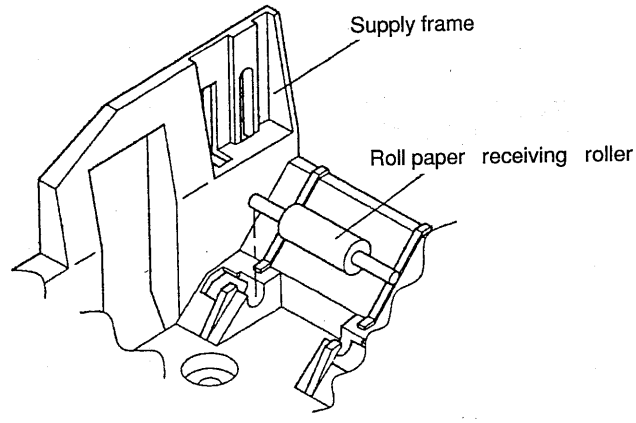
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
5	Partial cutter	◎	• Turn the blade surface (side on which blade is visible) upward and insert in the frame subset and the cutter release spring. <CHECK> • There should be no scratches or dents in the blade section.
★			
6	Cutter cover, C.C.S-tite (M3x5) X2	○	• Hang the cutter frame subset on the flange section of the cutter cover. • Holes Ⓔ and Ⓕ of the cutter frame subset and holes Ⓖ and Ⓗ of the cutter cover should be correctly matched with each other. <CHECK> • The blade should operate smoothly.
★			





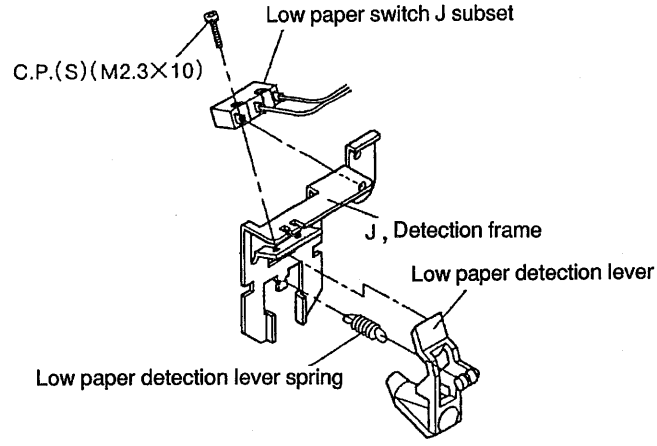
Sub-supply frame ass'y N:

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
1	Supply frame set	◎	• Securely insert both sides of the roll paper receiving rollers in the grooves on the supply frame.
2	Roll paper receiving rollers x 2	◎	



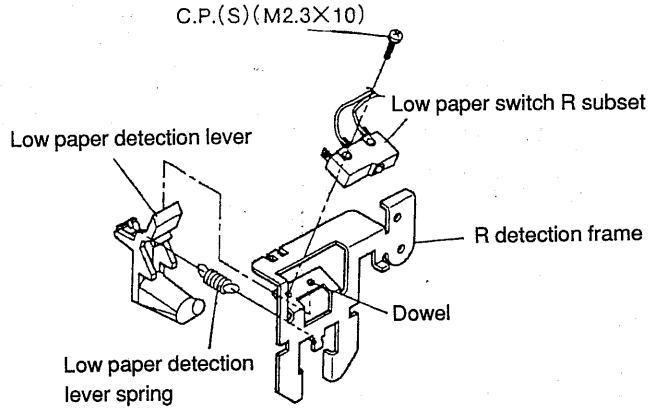
Sub-assembly O: Low paper detection unit J

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
1	J detection frame	◎	
2	Low paper switch J subset	◎	• Align the hole on the lower paper switch J subset with the dowel on the detection frame and screw together.
	C.P.(S)(M2.3×10) ×1	○	
★			<CHECK> • Do not confuse the front and back sides of the lower paper switch J subset.
3	Low paper detection lever	◎	• Hang on low paper detection lever and J detection frame.
4	Low paper detection lever spring	◎	



Sub-assembly P: Low paper detection unit

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
1	R detection frame	◎	
2	Low paper switch R subset	◎	• Align the hole on the low paper switch R subset with the dowel on the detection frame and secure with the screw.
★	C.P.(S)(M2.3X10) X1		<CHECK> • Do not confuse the front and back of the low paper switch R subset.
3	Low paper detection lever	◎	• Insert in the R detection frame.
4	Low paper detection lever spring	◎	• Hang on the low paper detection lever and R detection frame.

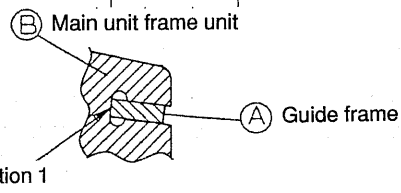


3.2.2 Main assemblies

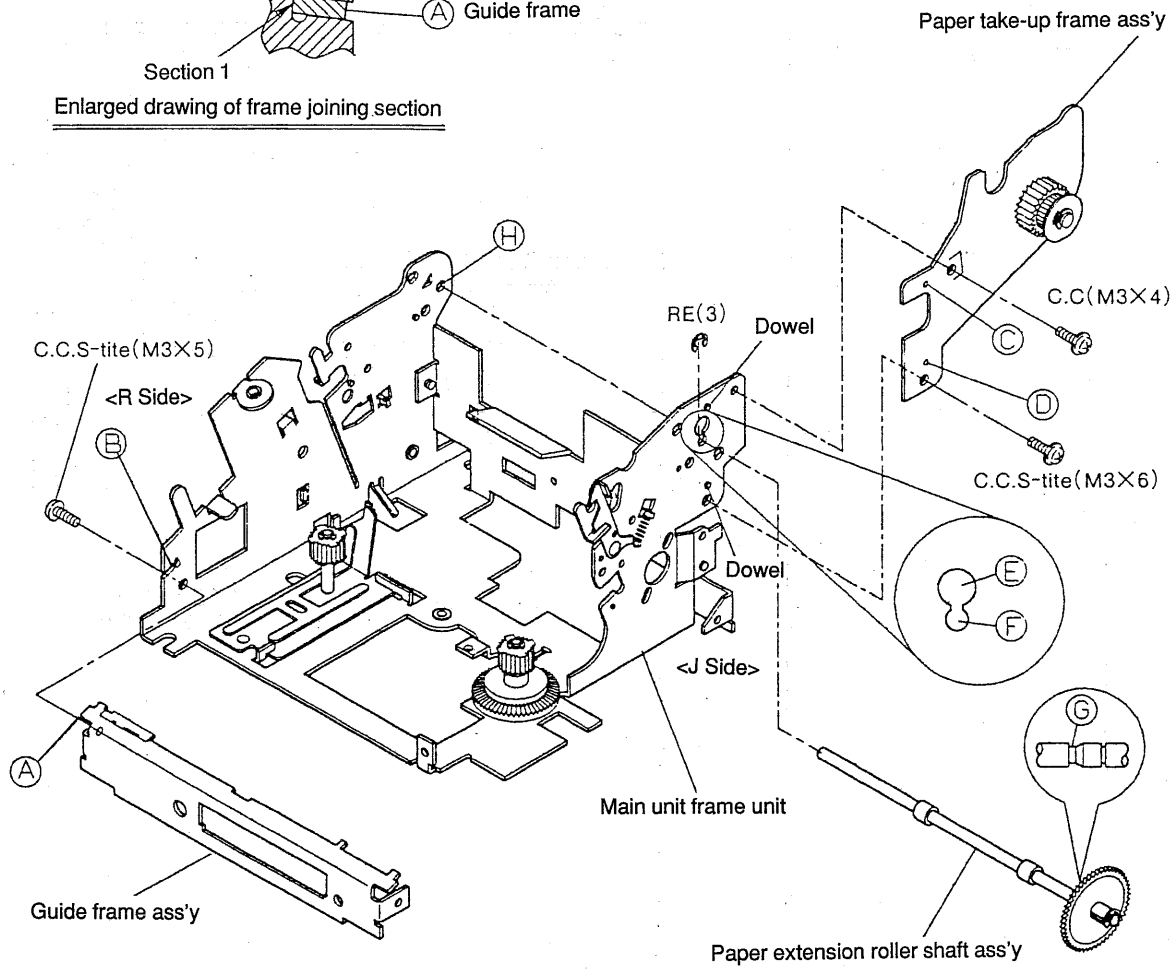
Main assembly A: Main unit frame unit, guide frame ass'y, paper extension roller shaft ass'y, paper take-up frame ass'y

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
①	Main unit frame unit (Sub-assembly B)	O	
②	Guide frame ass'y	O	• Insert section Ⓐ of the guide frame ass'y in groove Ⓑ of the main unit frame unit and tighten with the screw.
	C.C.S-tite(M3×5) ×1	O	
★			<CHECK> • There should be no space at joining section I of the main unit frame unit and the guide frame ass'y.
3	Paper rolling frame ass'y (Sub-assembly D)	O	• Insert holes Ⓒ and ⓓ of the paper rolling frame ass'y in the dowels on the main unit frame unit and tighten the screws.
	C.C.S-tite(M3×6) ×1	O	
	C.C(M3×4) ×1	O	

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
4	Paper extension roller shaft ass'y (Sub-assembly C) RE(3) X1	○	• Insert the paper extension roller shaft ass'y in the main unit frame unit. (1) Insert the paper extension roller shaft ass'y in hole Ⓔ on the main unit frame unit. (2) Move section Ⓖ of the paper extension roller shaft ass'y from hole Ⓔ to hole Ⓕ. (3) Insert the paper extension roller shaft ass'y in hole Ⓗ of the main unit frame unit and secure with RE.
★			<Check> • Confirm that the paper extension roller shaft ass'y rotates smoothly.

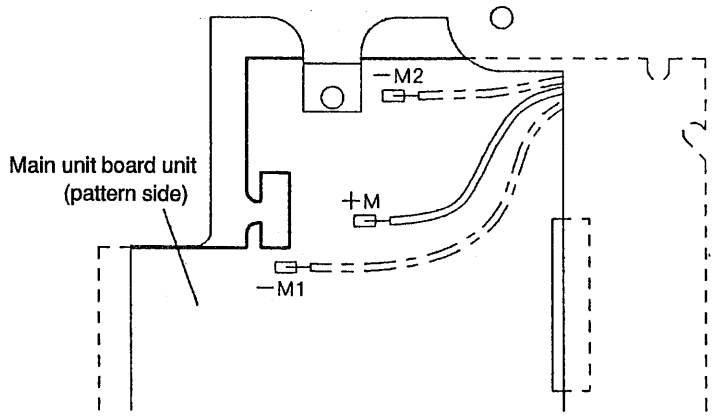


Enlarged drawing of frame joining section



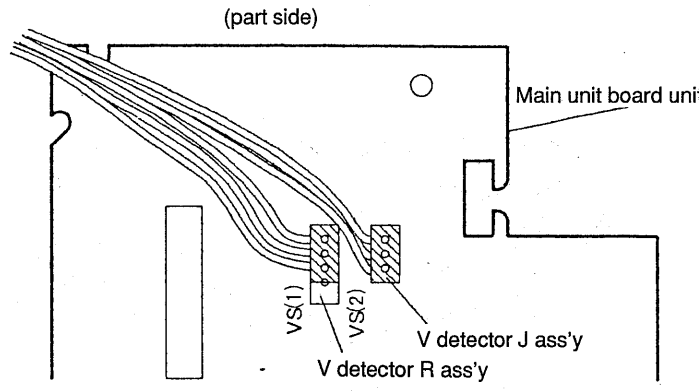
Main assembly B: Main unit circuit board unit, motor ass'y, V detector, J ass'y, V detector, R ass'y

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
5	Main unit board unit. Main unit board unit F (Sub-assembly G) C.C.S-tite(M3X5) X1	O O	• Insert in main unit frame unit. (1) Insert the connector on the main unit board unit in the square hole on the guide frame ass'y. (2) Align hole Ⓐ of the main unit board unit with hole Ⓑ of the main unit frame unit and tighten the screw. (3) Bring the timing detector ass'y out of the square hole Ⓒ on the main unit frame unit.
★			<CHECK> • There should be no lead wires caught between the units.
6	Motor ass'y Motor ass'y C.B(M3X4) X2	O O	• Screw the motor ass'y to the main unit frame unit. • Solder the motor ass'y lead wire to the main unit board unit.

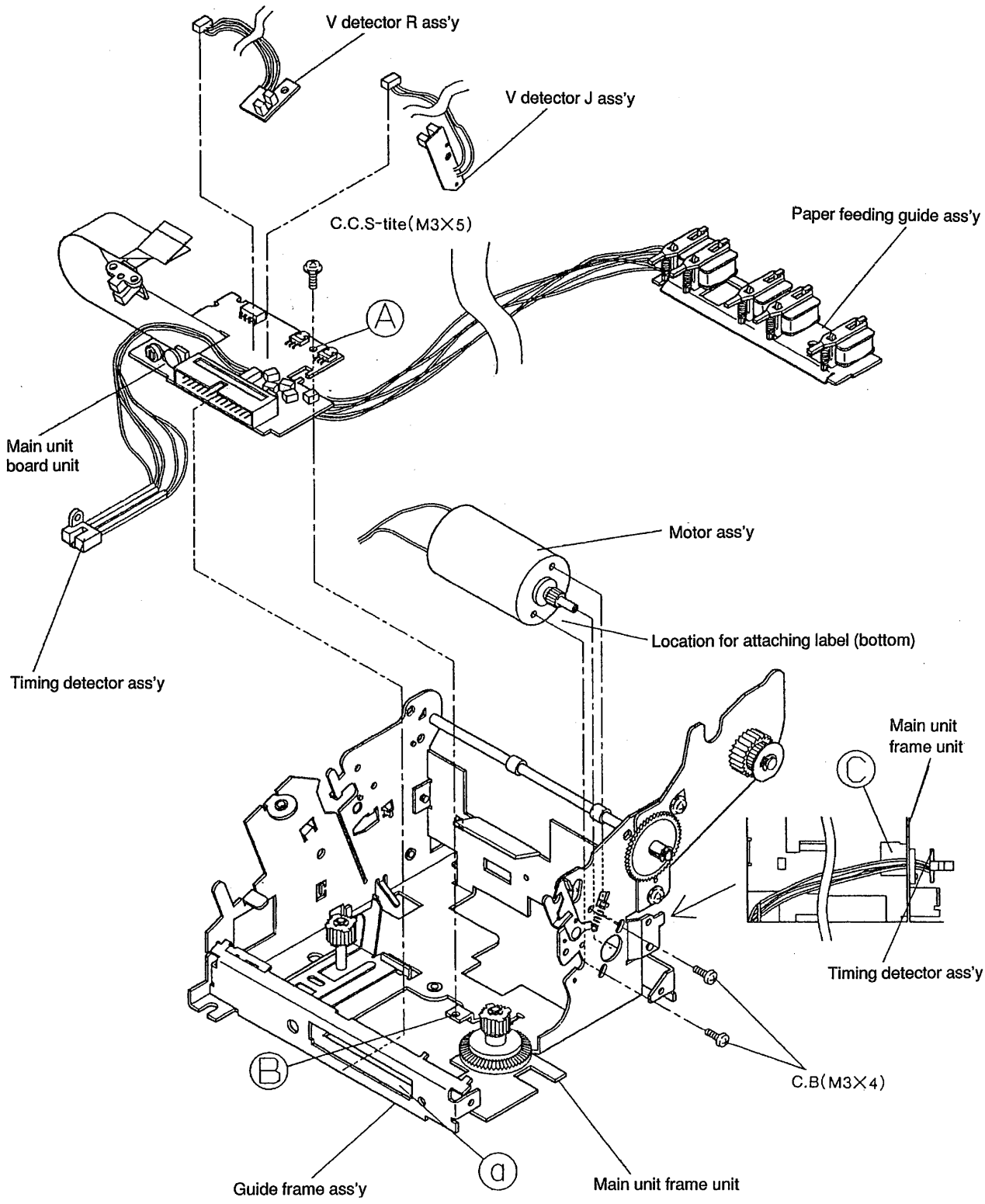


• M-820 { Lead wire: red +M position
Lead wire: black −M position

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
7	V detector, J set	◎	• Solder the V detector J set to the main unit board unit (VS2 position).
8	V detector, R set	◎	• Solder the V detector R set to the main unit board unit (VS1 position).

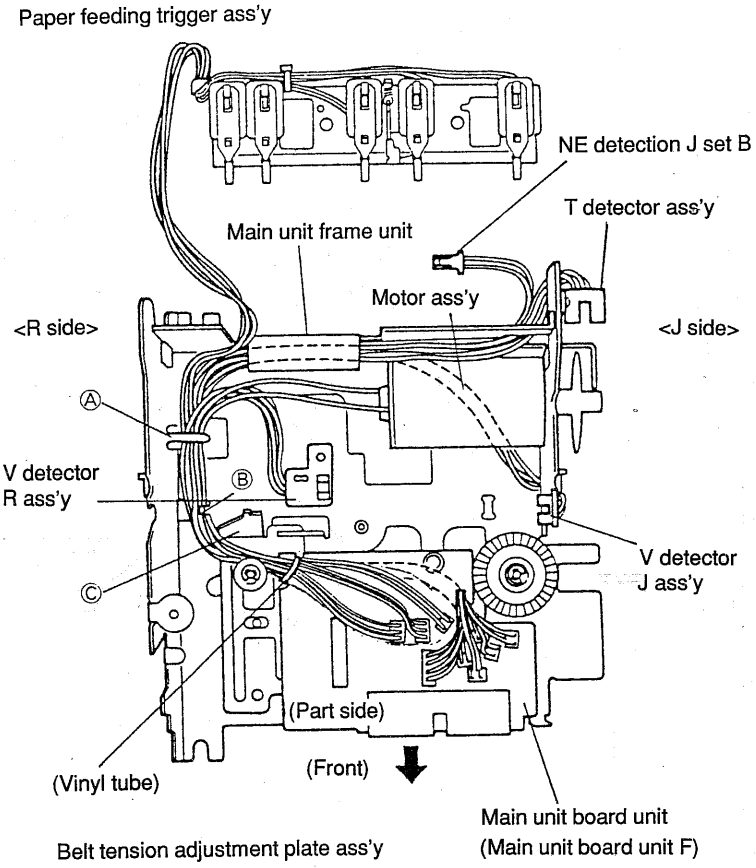


Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	



Main assembly C: Lead wire process

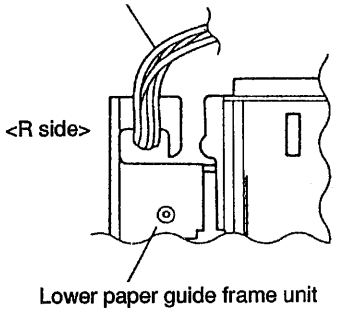
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
9	Lead wire	○	• Pass the lead wires for the paper feeding trigger ass'y and the timing detector ass'y and the lead wire for the motor ass'y through locations Ⓐ ~ Ⓒ. (Pass through lower side of main unit board unit (main unit board unit F)).
	(vinyl tube)	○	• Pass the lead wires for the V detector J ass'y, the V detector R ass'y, and the low paper detection J ass'y B through position Ⓐ ~ Ⓒ and attach to the main unit board unit (main unit board unit F). (Pass through upper side of main unit board unit (main unit board unit F)). • After passing all the lead wires, bend section Ⓐ of the main unit frame unit.

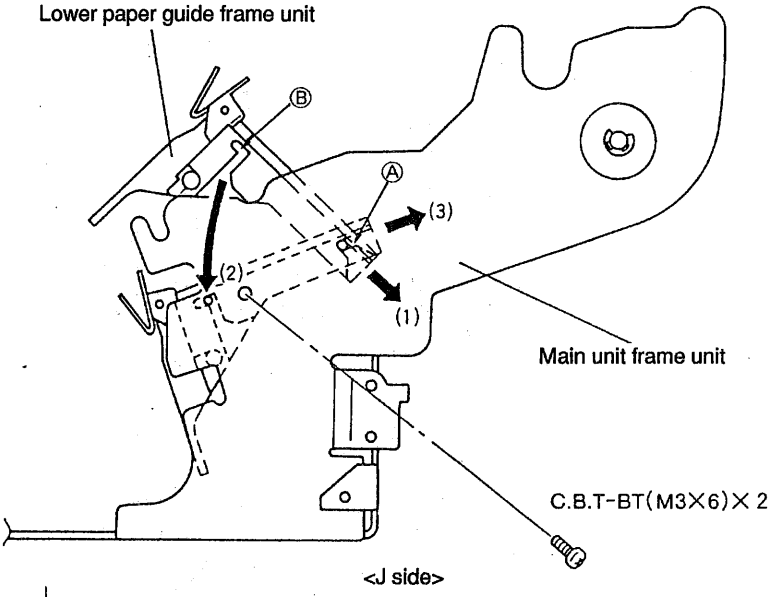


★			<CHECK> • There should be no lead wires floating above the top side of the main unit board unit (main unit board unit F).

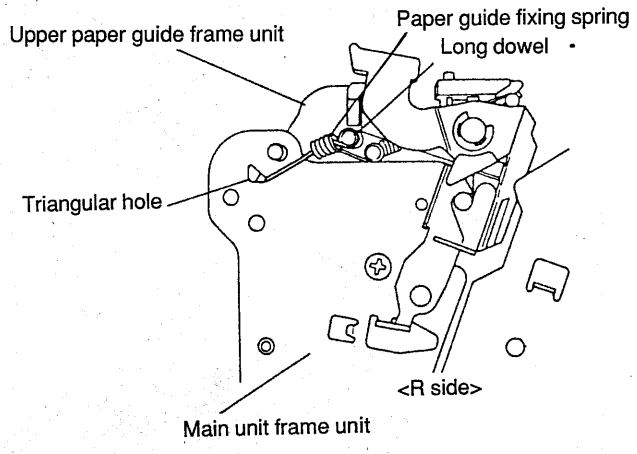
Main assembly D: Paper guide frame, lower unit, paper guide frame, upper unit, paper guide retention spring

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
10	Paper guide frame lower unit (Sub-assembly K)	O	• Insert on the main frame unit in the order (1),(2),(3),(4). (1) Insert groove Ⓐ on the paper guide frame lower unit on the dowel on the main unit frame unit (R,J sides). (2) Rotate the paper guide frame lower unit with section A in the center and insert the dowel of the main unit frame unit in groove B (R,J sides). (3) Slide the paper guide frame lower unit along grooves Ⓐ and Ⓑ. (4) Temporarily fasten the main unit frame unit and paper guide frame lower unit with screws (R, J sides).
	C.B.T.-BT(M3×6) ×2	O	

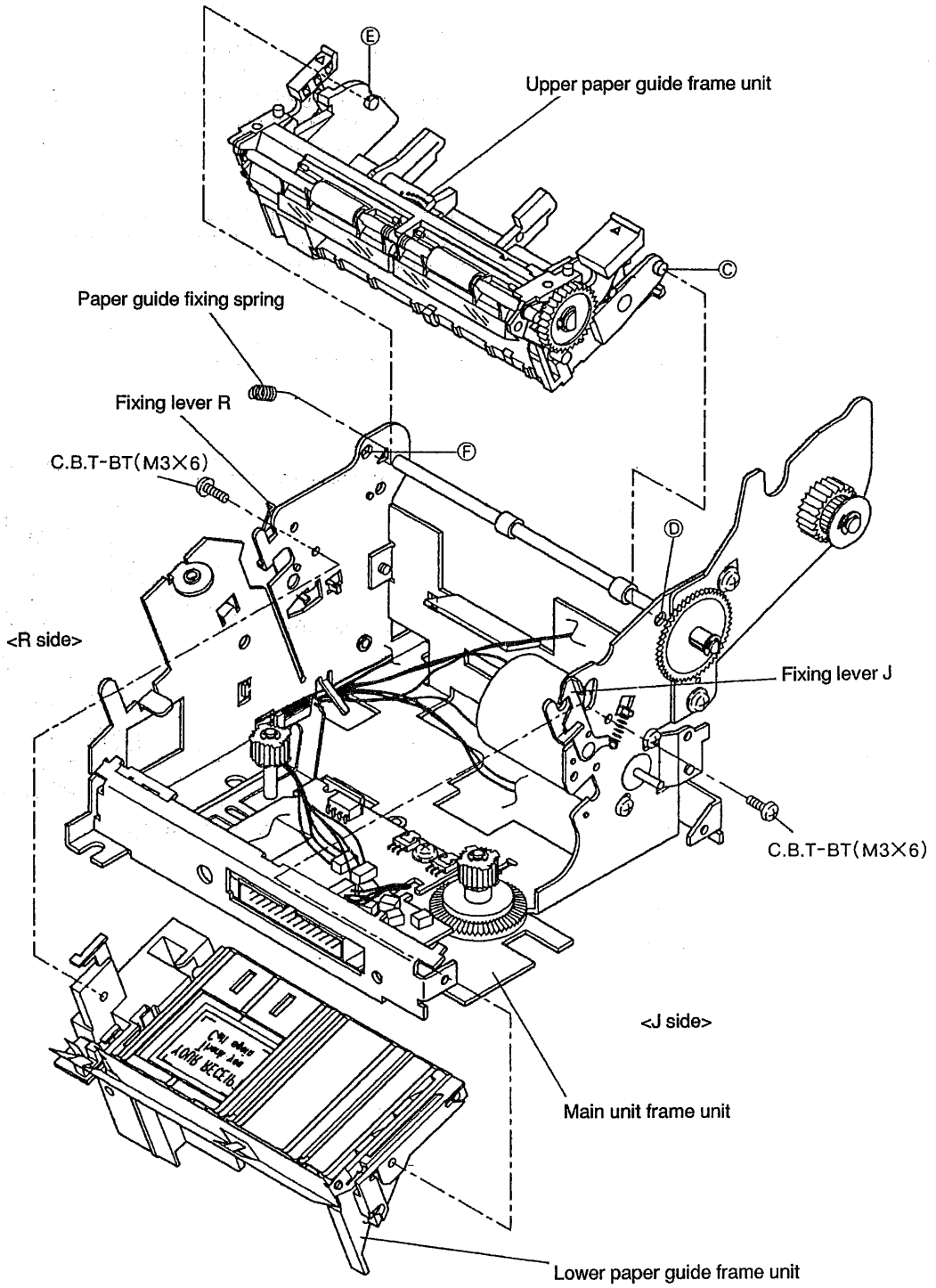




Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
⑪	Paper guide frame upper unit (Sub-assembly J)	○	• Insert on the main frame unit in the order (1), (2), (3), (4). (1) Insert dowel Ⓒ on the paper guide frame upper unit in hole Ⓓ on the main unit frame unit (R,J sides). (2) Move the paper guide frame upper unit to side J and insert dowel Ⓔ in hole Ⓕ on the main unit frame unit. (3) Align the paper guide frame lower unit and paper guide frame upper unit and lock with fastening lever R and fastening lever J. (4) Securely tighten the screws on the paper guide frame lower unit
★			<CHECK> • Confirm that the paper guide frame upper unit opens and closes smoothly. • Check that there are no spaces between the paper guide frame upper unit surface and the main unit frame unit.
⑫	Paper guide fixing spring	○	• Hook on the long dowel of the paper guide frame upper unit and the triangular hole on the main unit frame unit.

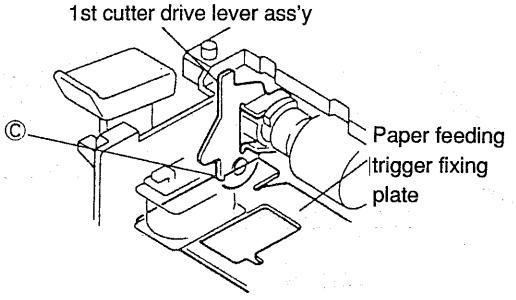


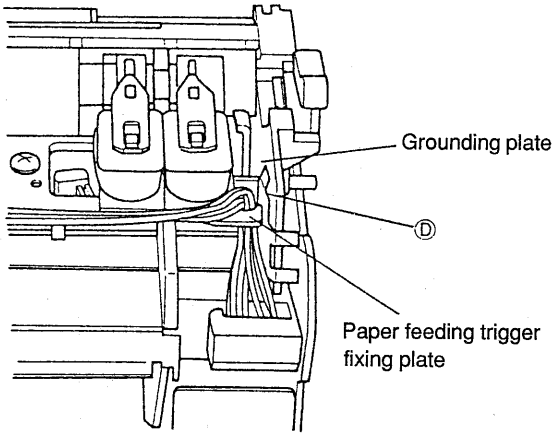
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	

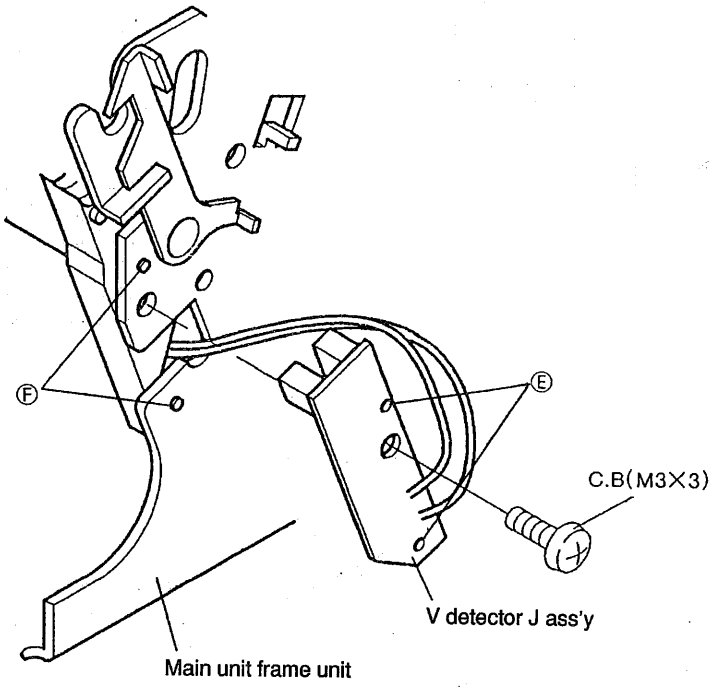
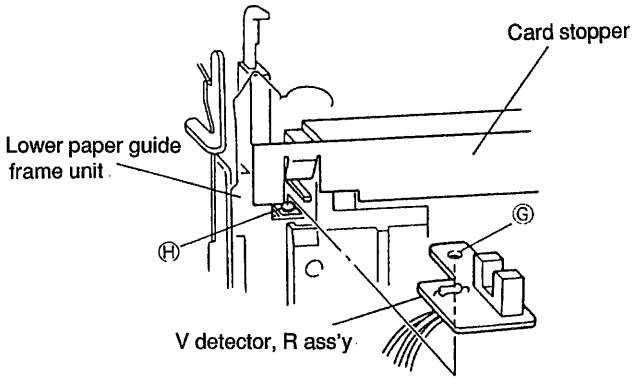


Main assembly E: Cutter drive lever, 1st ass'y, paper feeding trigger ass'y, V detector, J ass'y, V detector, R set

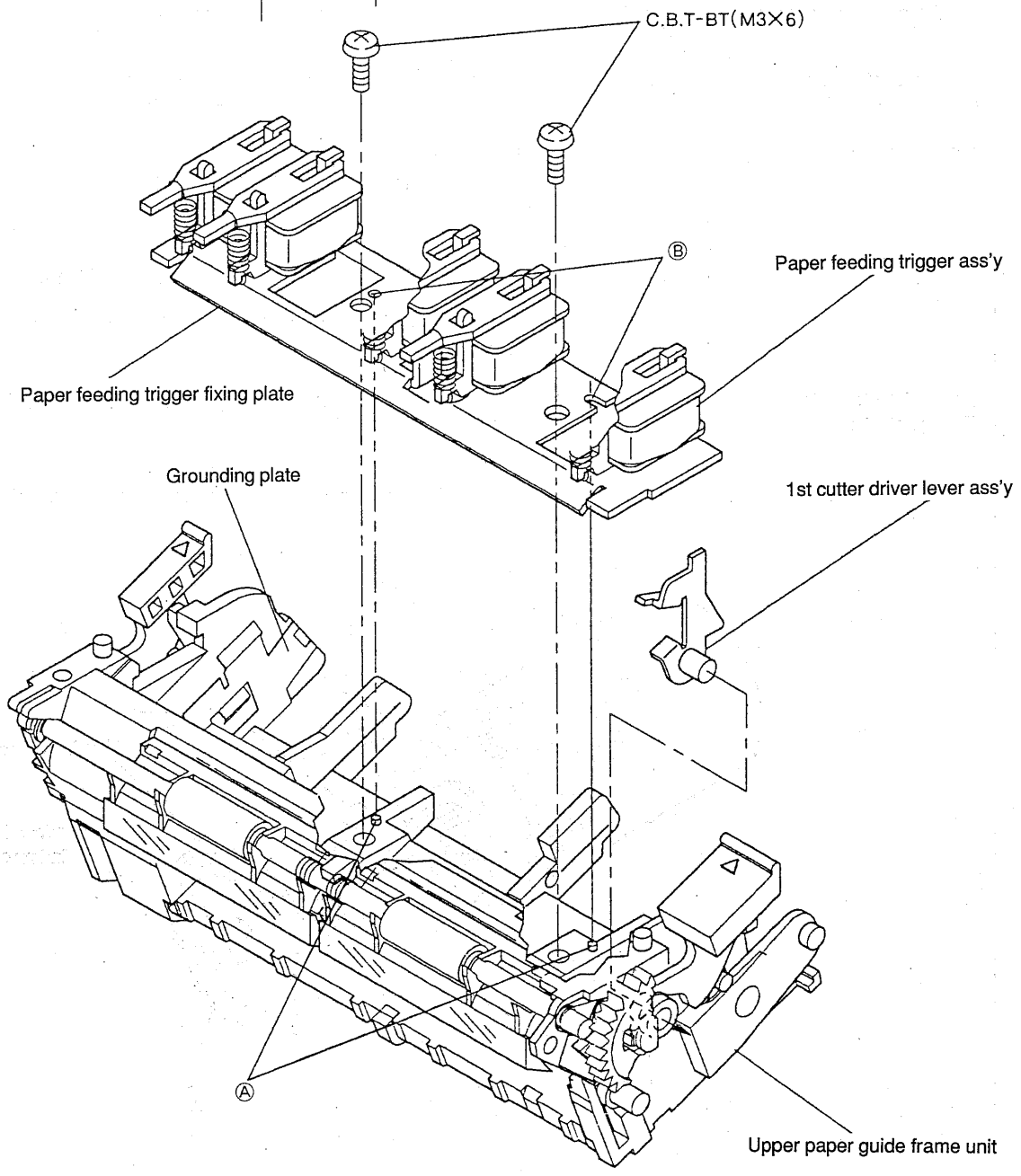
Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
⑬	1st cutter drive lever ass'y	○	• Insert in the hole on the paper guide frame upper unit.
14	Paper feeding trigger ass'y	○	• Align hole Ⓑ on the paper feeding trigger ass'y with dowel Ⓐ on the paper guide frame upper unit and tighten the screw.
	(Sub-assembly F)		
	C.B.T-BT(M3X6) X2	○	
★			<CHECK> • Confirm that the paper feeding trigger fixing plate is not floating off from the paper guide frame upper unit. • Check if the 1st cutter drive lever ass'y is pressed down by the surface Ⓒ of the paper feeding trigger fixing plate. • Confirm that the grounding plate is completely pressed down by surface Ⓓ of the paper feeding trigger fixing plate and that there is complete contact.





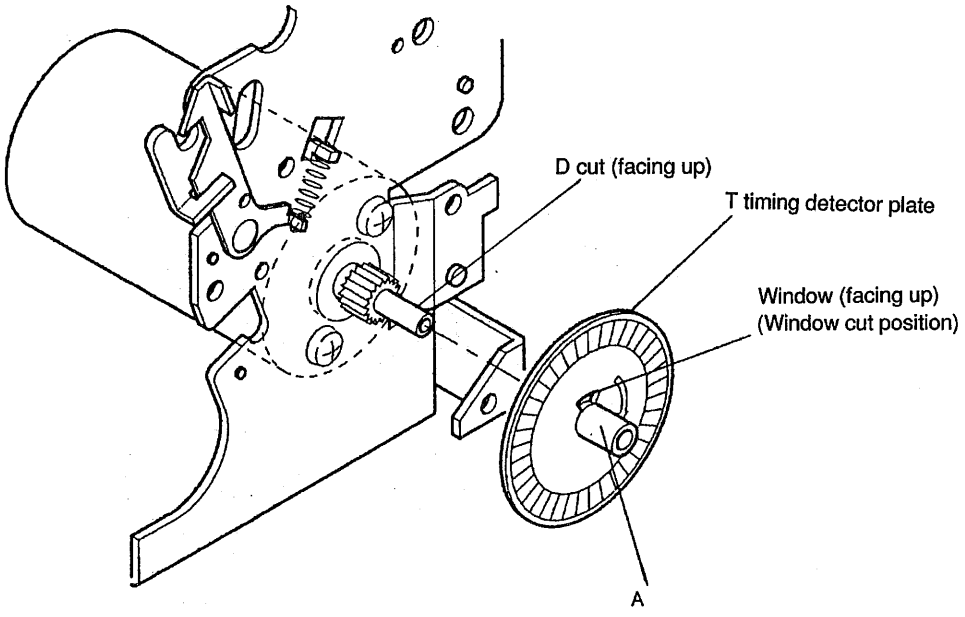
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
15	V detector J ass'y	◎	• Align hole Ⓔ of the V detector J ass'y with dowel Ⓕ on the main unit frame unit and tighten the screw.
	C.B(M3×3) ×1	◎	 <J side>
16	V detector R ass'y	◎	• Align hole Ⓖ of the V detector J ass'y with dowel Ⓗ on the main unit frame unit and tighten the screw.
			 <R side>

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	

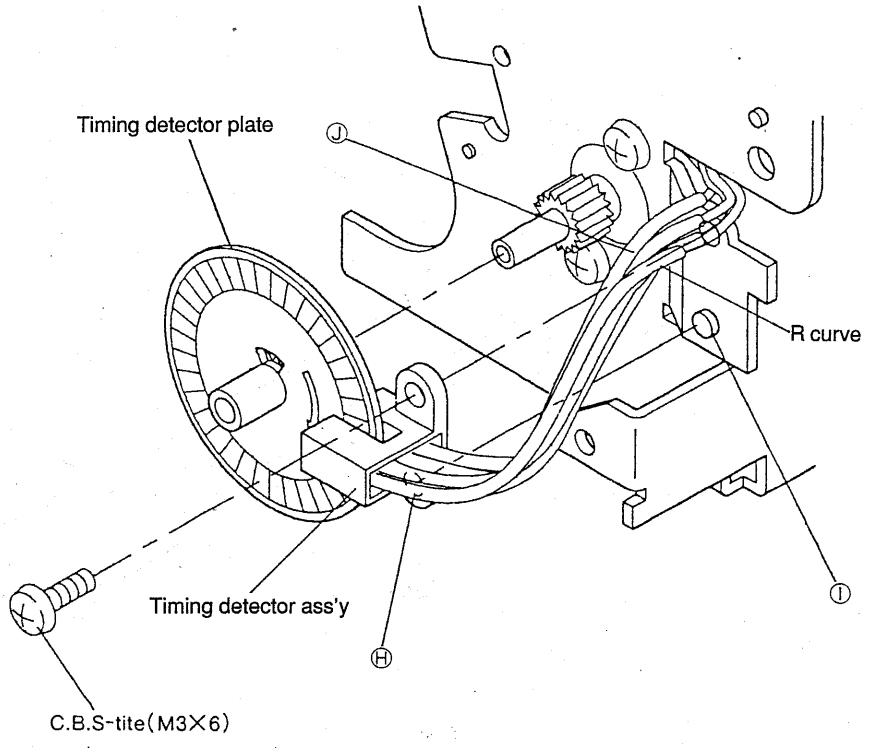


Main assembly F: Wheel array frame unit, timing detection board, timing detection ass'y

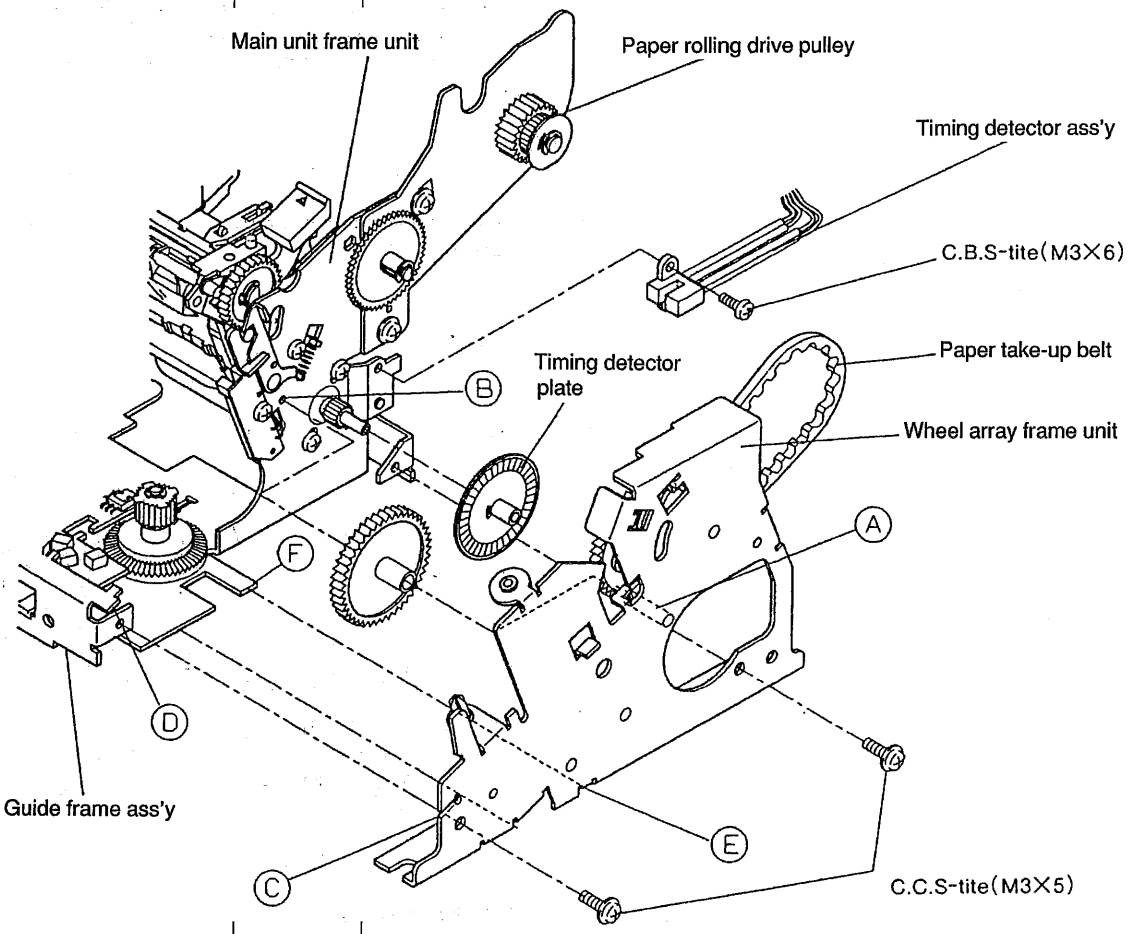
Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
17	Wheel array frame unit ([Sub-assembly L])	O	• Insert the wheel array frame unit in the main unit frame unit. (1) Align sections Ⓑ, Ⓓ and Ⓕ of the main unit frame unit with sections Ⓐ, Ⓑ and Ⓒ of the wheel array frame unit.
	C.C.S-tite(M3X) ×2	O	(2) Tighten the screws so that there is no play between the main unit frame unit and the bottom of the wheel array frame unit. (3) Place the paper rolling belt on the paper rolling drive pulley.
★			<CHECK> • Make sure there is no gap at the joining section Ⓖ of the main unit frame unit and the wheel array frame unit. • There should be no play between the main unit frame unit and the bottom of the wheel array frame unit.
⑱	Timing detector plate Timing detector plate	O	• Push in the timing detection plate until it makes full contact with the shaft configuration of the motor ass'y.
★			<CHECK> • There should be no play or contacting of surfaces on the timing detector plate.

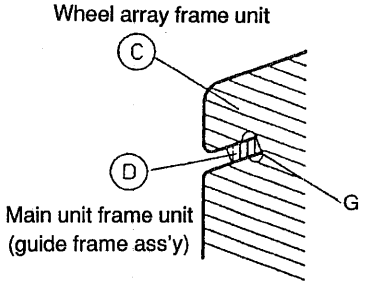


Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
19	Timing detector ass'y	○	• Insert the timing detector ass'y in the main unit frame unit. (1) Create an R-curve at section J of the timing detector ass'y and pass the ass'y through the groove on the main unit frame unit. (2) Securely join hole Ⓗ on the timing detector ass'y with dowel Ⓘ on the main unit frame unit and tighten the screw.
	C.B.S-tite(M3×6) ×1	○	
★			<CHECK> • Check that the timing detector ass'y is not floating up from the main unit frame unit. • Confirm that the timing detector plate and timing detector ass'y are not contacting each other.



Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	

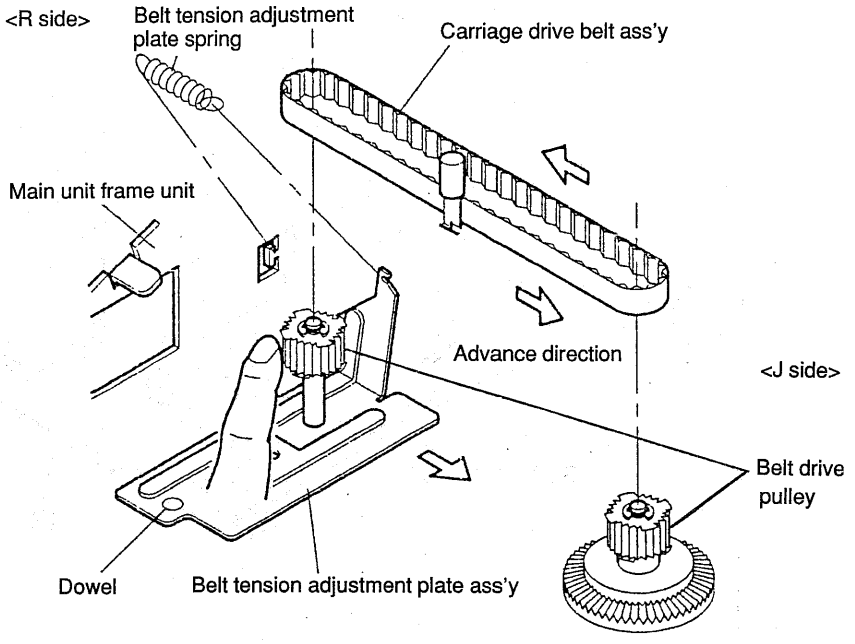




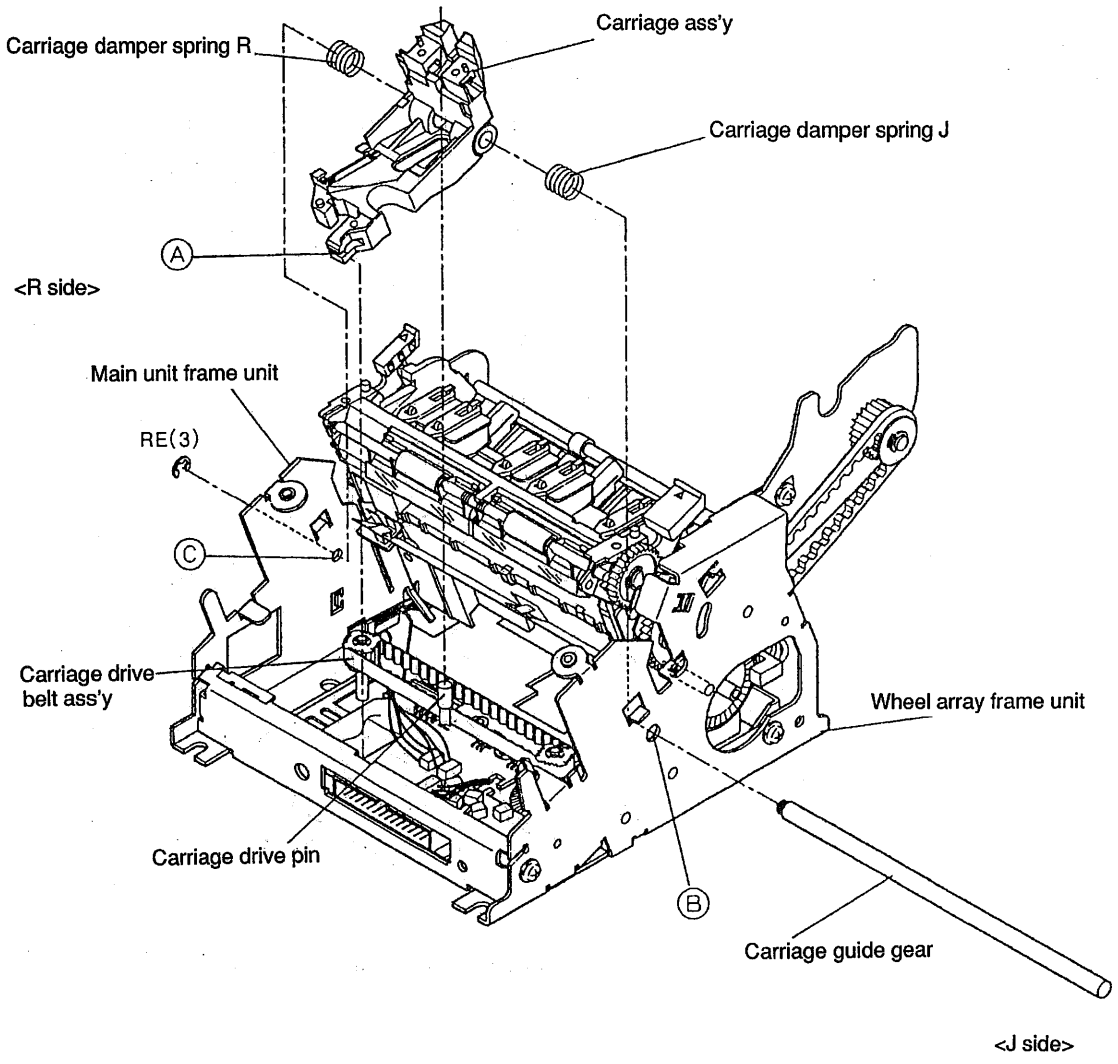
Enlarged picture of frame joining section

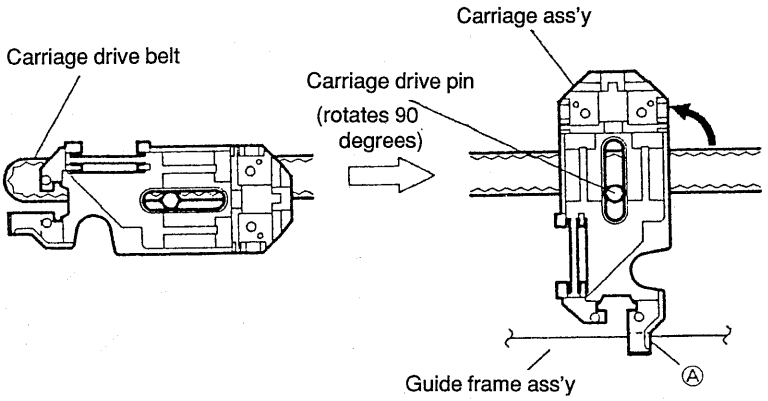
Main assembly G: Belt tension adjustment plate spring, carriage drive belt ass'y, carriage guide shaft, carriage damper spring R, carriage damper spring J

Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
20	Belt tension adjustment plate spring	○	• Hang over the main unit frame ass'y and the belt tension adjustment plate ass'y.
21	Carriage drive belt ass'y Carriage drive belt ass'y B	○	• Attach the carriage drive belt ass'y to the belt drive pulley. (1) Push the belt tension adjustment plate ass'y to side J. (2) Hang the carriage drive belt ass'y on the belt drive pulley on sides R and J.
★			<CHECK> • Confirm that the belt tension adjustment plate ass'y is not disconnected from the dowel of the main unit frame unit.,



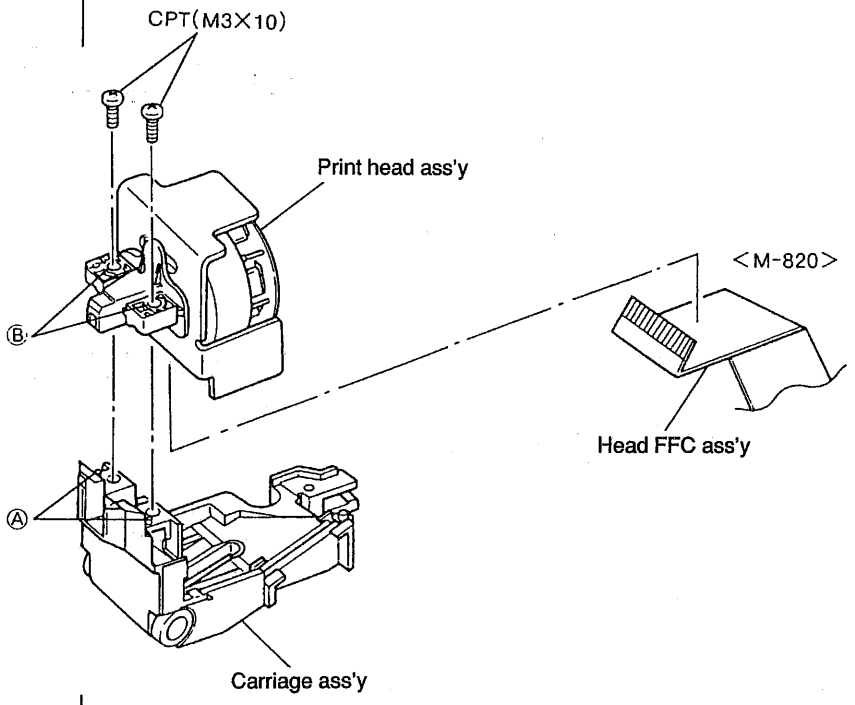
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	

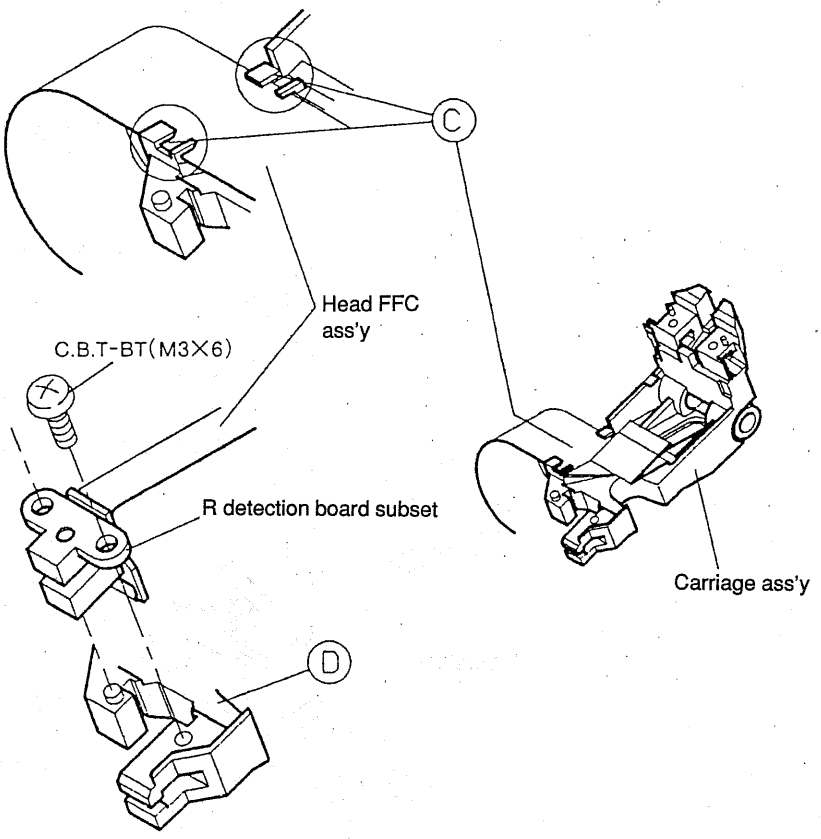


Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
㉒	Carriage ass'y	○	• Attach the carriage ass'y to the carriage drive belt ass'y and guide frame ass'y in the order (1), (2), (3). (1) Align the long hole on the carriage ass'y so that it is parallel with the carriage drive belt and then insert it in the carriage drive pin. (2) Rotate the carriage ass'y 90 degrees. (3) Insert groove A of the carriage ass'y in the guide frame ass'y. 
23	Carriage guide shaft	○	• Pass the carriage guide shaft through the following in the order described: hole Ⓑ of wheel array frame unit, carriage damper spring J, carriage ass'y, carriage damper spring R, hole Ⓒ of main unit frame unit.
24 25 ★	Carriage damper spring J Carriage damper spring R		<CHECK> • Do not confuse carriage damper spring J (double coil on side) with carriage damper spring R (single coil on side).
	RE(3) X1	○	• Secure the carriage guide shaft with RE.

Main assembly H: Printing head unit, head FFC ass'y, R detection board subset

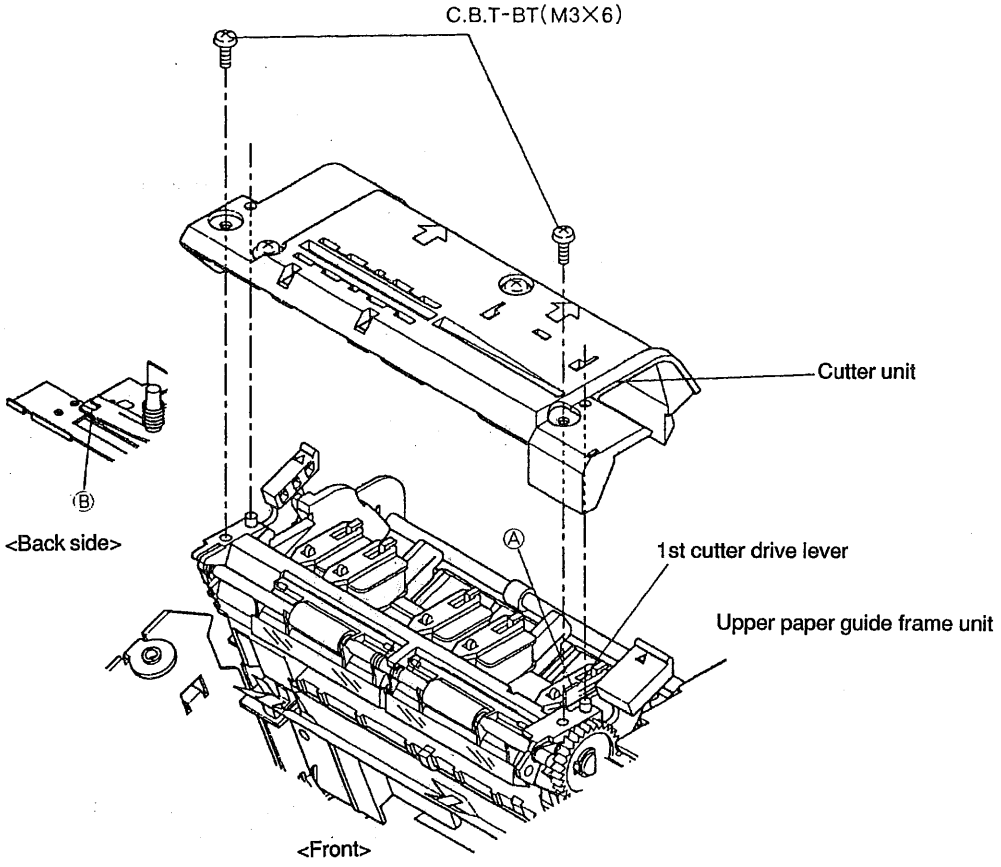
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
26	Print head unit A Print head unit Z	O	• Attach print head unit to carriage ass'y. (1) Insert the head FFC ass'y through the connector of the print head unit. (2) Align hole Ⓑ of the print head unit with dowel Ⓐ on the carriage ass'y and tighten the screw.
	Head FFC ass'y	O	
	Head FFC ass'y (Sub-assembly E) C.P.T-BT(M3X10) X2	O	
★			<CHECK> • Confirm that the print head unit is not floating up from the carriage ass'y. • There should be no breaks on the wires for the head FFC ass'y. (Be careful when inserting in the print head unit).



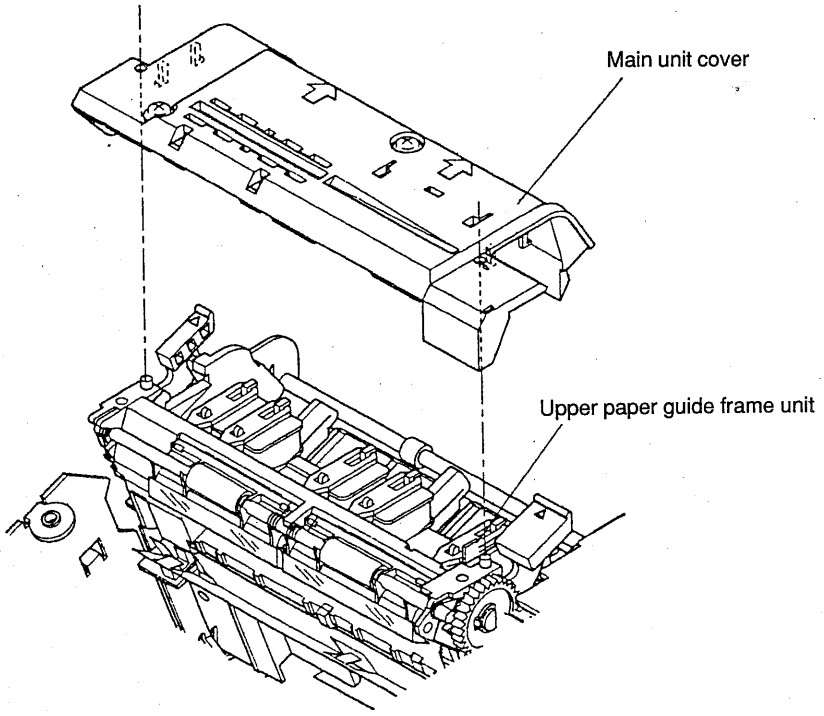
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
27	Head FFC ass'y (R detection board subset)	○	• Attach the R detection board subset to the carriage ass'y. (1) Hang the head FFC ass'y on part Ⓒ of the carriage ass'y. (2) Securely insert the hole on the R detection board subset on the dowel of the carriage ass'y and tighten the screw.
★	C.B.T-BT(M3×6) ×1	○	<CHECK> • Confirm that the R detection board subset is not floating up from the carriage ass'y. • There should be no bending of scratching of the head FFC ass'y. • Check for any play in the insertion sections Ⓒ, Ⓓ of the head FFC ass'y.
			
★			<Adjustment> • Adjust the gap between the platen and the print head unit (See Section 3.3 Adjustments).

Main assembly I: Cutter unit, main unit cover, head cover, writing ledge, manual cutter blade

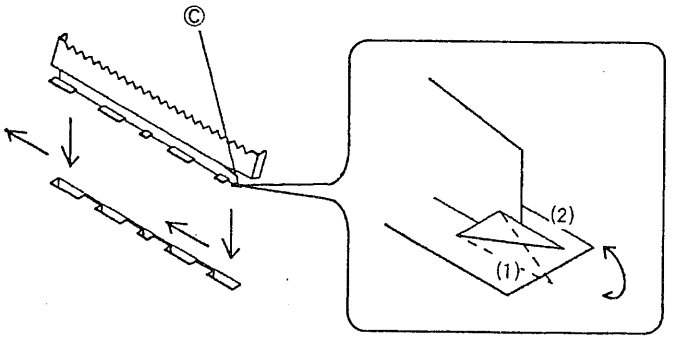
Assembly order	Assembly part names	Applicable model M820	Points to observe during assembly
㉘	Cutter unit ([Sub-assembly M]) C.B.T-BT(M3X6) X2	◎ ◎	• Align the hole on the cutter unit with the dowel on the paper guide frame unit and tighten the screw.
★			<CHECK> • Check that the end section Ⓐ of the 1st cutter drive lever and the cut-out section Ⓑ of the cutter unit are joined with each other.

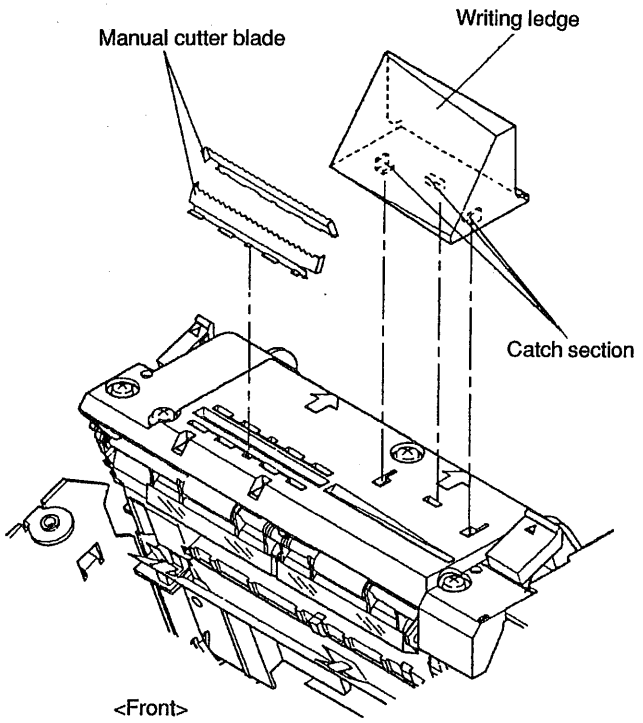


Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
29	Main unit cover	○	• Attach the main unit cover to the upper paper guide frame unit. (1) Align the hole on the main unit cover with the dowel on the upper paper guide frame unit. (2) Catch the four pawls on the main unit cover on the cutaway section of the upper paper guide frame unit.

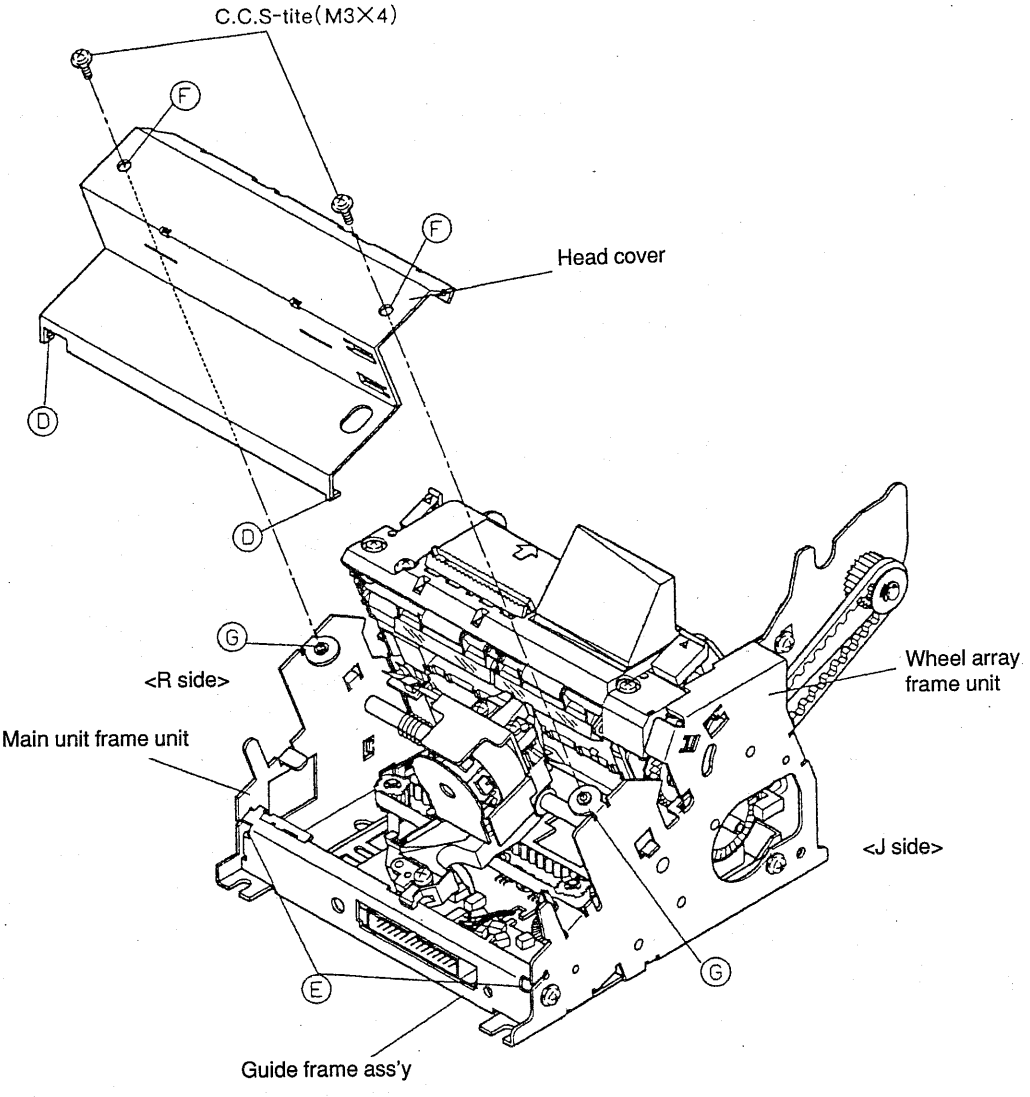


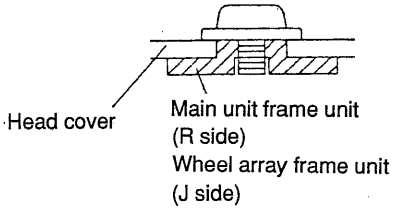
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
30	Writing ledge	○	• Attach the writing ledge either to the cutter unit or the main unit cover. (1) Insert the three pawls on the writing ledge in the holes of the cutter unit or the main unit cover. (2) Push the writing ledge to the back.
31	Manual cutter blade	◎	• Attach the manual cutter blade either to the cutter unit or to the main unit cover. (1) Bend section Ⓒ of the manual cutter blade and insert in the groove on the cutter unit or main unit cover while sliding to the left. (2) After attachment to the groove, return section Ⓒ to the original position to remove the gap.





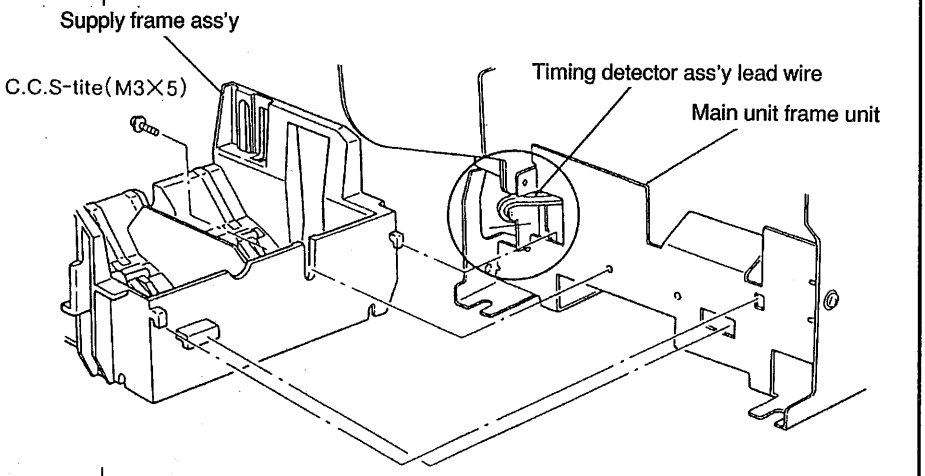
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
32	Head cover C.C.S-tite(M3×4) ×2	○ ○	• Attach the head cover to the main unit frame unit. (1) Hang section Ⓓ of the head cover on section Ⓔ of the guide frame ass'y. (2) Securely insert hole Ⓕ of the head cover on the dowels of the main unit frame unit and the wheel array frame ass'y. Tighten the screws.

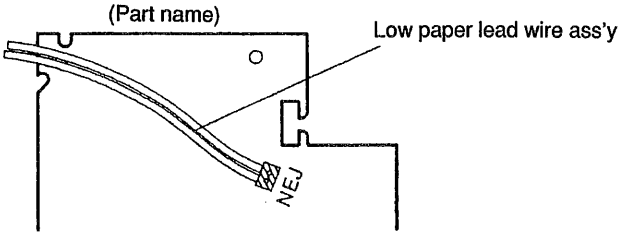




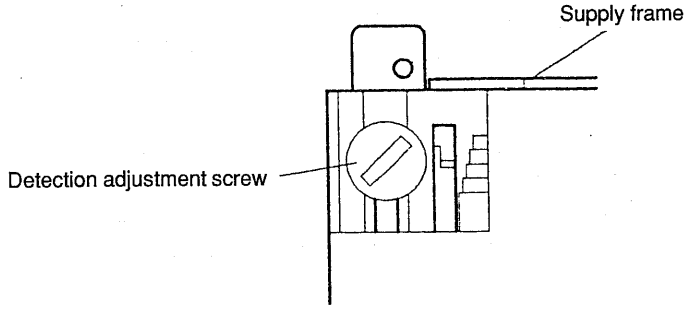
Main assembly J: Supply frame, low paper detection ass'y J, low paper detection unit R, paper take-up shaft

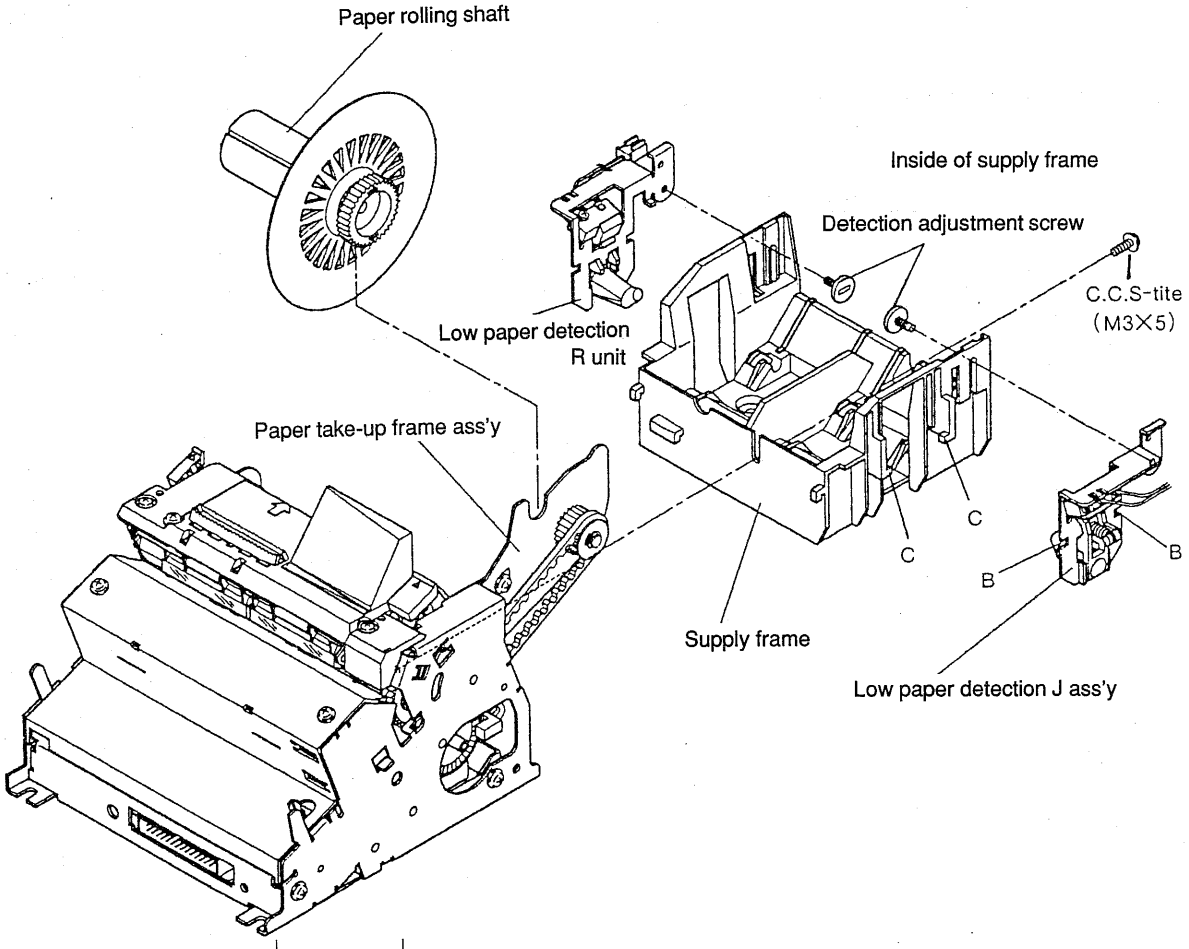
Assembly order	Assembly part names	Applicable model	Points to observe during assembly
		M820	
33	Supply frame (Sub-assembly N) C.C.S-tite(M3×5) ×1	◎ ○	• Attach the three pawls on the supply frame to the square holes of the main unit frame unit. Tighten the screws.
★			<CHECK> • The lead wires of the timing detection ass'y should not come between the supply frame and the main unit frame unit.
34	Low paper detection J ass'y Low paper detection J ass'y B (Sub-assembly O)	◎	• Align the cutaway section Ⓑ on the metal holder of the low paper detection J ass'y with the L-shaped section Ⓒ on the supply frame and attach. • Solder the low paper lead wire ass'y of low paper detection J set B to position NEJ of the main unit board unit.





Assembly order	Assembly part names	Applicable model: M820	Points to observe during assembly
			• Processing lead wires Insert via hole Ⓐ of the main unit frame unit and carry out the same processing of lead wires as for [Main Assembly C] . (Pass through top side of main unit board unit.)
	Detection adjustment screw	◎	• Confirm the attachment position on the inside of the supply frame and attach with the detection adjustment screws.
35	Low paper detection R ass'y ([Sub-assembly P])	◎	• Attach in the same way as for low paper detection J ass'y.
㊱	Paper take-up shaft	○	• Attach the paper take-up shaft in groove U of the paper take-up frame ass'y.



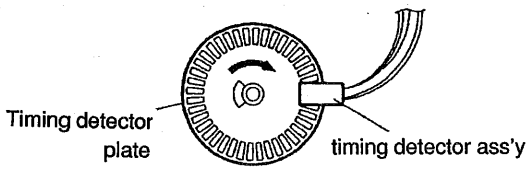


3.3 Adjustments

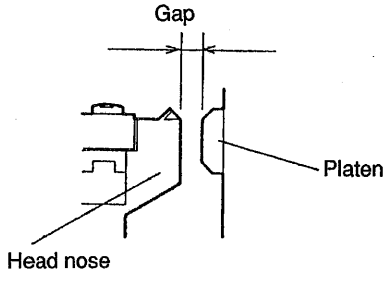
- Refer to adjustments A-C below for the necessary adjustment methods when assembling the printer.
- The equipment is adjusted to the regulation values at the time of production. For maintenance and repairs when the applicable parts have been disassembled or replaced, be sure to carry out adjustments in order that the printer will operate normally.

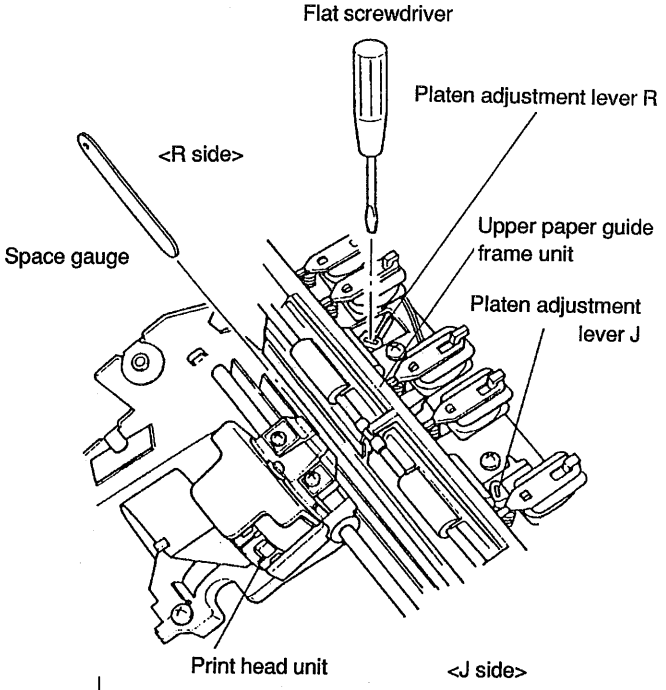
Adjustment A: Adjustment of gap between platen and printing head ass'y

Order	Content	Points to observe
1	• Turn the timing detector plate in the direction shown by the arrow to move the print head unit to the main unit frame side R.	• Move the print head all the way to side R of the platen.
2	• Insert a space gauge between the end of the head of the print head unit and the platen.	• Insert the space gauge sideways.
3	• Turn the platen adjustment lever R of the upper paper guide frame unit to the right and left to adjust the gap.	• Regulation values M-820: 0.60±0.05mm
4	• Follow steps 1-3 in the same way for side J to adjust the gap.	



Direction of rotation	Side R		Side J	
	right	left	right	left
Platen	front	back	back	front





1 Mechanism etc.

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
16	00BF75030204 0	AG		C	Roller torque spring
17	00BB30030421 1	AA		C	C.S.S.screw (M3×6)
19	00B1004024///	AF	N	C	Second reduction gear R2 EC
18 19	00B1004023///	AE	N	C	First reduction gear A7 D8
20	00B1004129///	AN	N	C	Paper take-up belt
21	00BF75030205 0	AC		C	Paper take-up drive pulley
22	00BB15030061 1	AA		C	Retaining ring TYPE-E(3)
23	00B1004502///	AH	N	C	Reduction gear fixing plate sub ass'y
24	00B1004501///	AV	N	D	Wheel array frame sub ass'y
25	00BB30030411 1	AA		C	C.C.S.screw (3×5)
26	00B1004026///	AF	N	C	Head feeding transmission gear
27	00B1004027///	AW	N	C	Ribbon feeding drive gear
28	00B1004038///	AK	N	C	Carriage guide shaft
29	00B1004100///	AC	N	C	Ribbon take-up shaft
30	00B1004098///	AB	N	C	Slide spring
31	00B1004101///	AG	N	C	Ribbon feeding spring
32	00B1004099///	AD	N	C	Ribbon transmission gear
33	00B1008474///	AE	N	C	Timing detector plate
34	00B1004025///	AG	N	C	Reduction transmission gear
35	00BB01035011 1	AB		C	C.B.screw (M3×4)
36	00BB01260161 1	AA	N	C	C.T-2.B.screw (M3×6)(F/ZN)
37	00B1004033///	AC	N	C	Fixing lever spring
38	00B1004032///	AD	N	C	Fixing lever J
39	00BB15035011 1	AA		C	Retaining ring Type-E (2.3)
40	00B1004045///	AD	N	C	Belt drive pulley
41	00B1004028///	AE	N	C	Pulley drive gear
42	00B1004517///	AW	N	C	Carriage ass'y
43	00B1007667///	AG	N	D	Caution seal
44	00B2005506///	BA	N	E	Main unit board C ass'y A2 B4
45	00B1004509///	AG	N	C	Guide frame ass'y
46	00B1004556///	AM	N	E	R deduction board sub ass'y
47	00B2002198///	AX	N	C	FFC print head SUBS TO 00B2012409 /// A24 E8
48	00B1004050///	AM	N	C	Head cover
49	00BB30030031 1	AA	N	C	C.C.S.screw (M3×4)
50	00B1008447///	BK	N	B	Print head unit A A3 D3
51	00BB01810181 1	AA	N	C	C.P.T.screw (M3×10)
52	00B1004498///	AK	N	C	Belt tension adjustment plate sub ass'y
55	00B1004049///	AC	N	C	Belt tension adjustment plate spring
56	00B1004515///	AZ	N	C	Carriage drive belt ass'y
57	00B1004031///	AD	N	C	Fixing lever R
58	00B1007615///	AN	N	C	Paper extension roller shaft sub ass'y
59	00B1008471///	BD	N	B	Motor ass'y
60	00B1004066///	AF	N	C	Paper exit guide
61	00B1004399///	AA	N	C	Retaining ring Type-E(2.5)
62	00B1004063///	AE	N	C	Paper holding roller
63	00B1004064///	AG	N	C	Paper holding roller shaft
64	00B1004118///	AE	N	C	Cutter release spring
65	00B1004119///	AC	N	C	Cutter return spring
66	00BB15030071 1	AA		C	Retaining ring TYPE-E(4)
67	00B1004116///	AH	N	C	Cutter lever
68	00B1004503///	AR	N	C	Cutter frame sub ass'y
69	00B1004115///	AT	N	C	Partial cutter blade
70	00B1004113///	AP	N	C	Cutter cover
71	00B1004588///	AX	N	C	Writing ledge
72	00B1004065///	AC	N	C	Paper holding spring
73	00B1004067///	AF	N	C	Paper exit guide spring
74	00B1004035///	AQ	N	C	Platen A3 F9
75	00B1004053///	AH	N	C	Paper guide exit guide
76	00B1004068///	AB	N	C	Paper guide retention spring
77	00B1004061///	AD	N	C	Release lever RA
78	00B1005635///	AC	N	C	Paper guide retention pin
79	00B1005838///	AD	N	C	Grounding plate
80	00B1004037///	AC	N	C	Platen adjustment lever R
81	00B1007614///	BB	N	C	Paper feeding shaft sub ass'y C
82	00B1004036///	AC	N	C	Platen adjustment lever J
83	00B1004522///	AG	N	C	1st cutter drive lever ass'y
84	00B1004051///	AS	N	D	Upper paper guide frame
85	00B1004057///	AC	N	C	Paper feeding gear
86	00B1004062///	AD	N	C	Release lever J
87	00B1004557///	AK	N	C	Paper feeding trigger fixed plate sub ass'y
88	00B1004200///	AK	N	C	Stamp coil
89	00BF70125 1080	AB		C	Paper feeding trigger spring
90	00B1004060///	AC	N	C	Paper feeding trigger lever
91	00B1004126///	AB	N	C	2nd cutter drive lever return spring
92	00B1004201///	AK	N	C	1st cutter coil
93	00B1004202///	AK	N	C	2nd cutter coil
94	00B1004198///	AK	N	C	Paper feeding coil R
95	00B1004199///	AK	N	C	Paper feeding coil J
96	00BB15030041 1	AA		C	Retaining Ring Type-E(2)
97	00B1004523///	AG	N	C	2nd cutter drive lever ass'y
98	00B1004054///	AD	N	C	Paper guide centor guide

NO STOCK

57.60

134.83

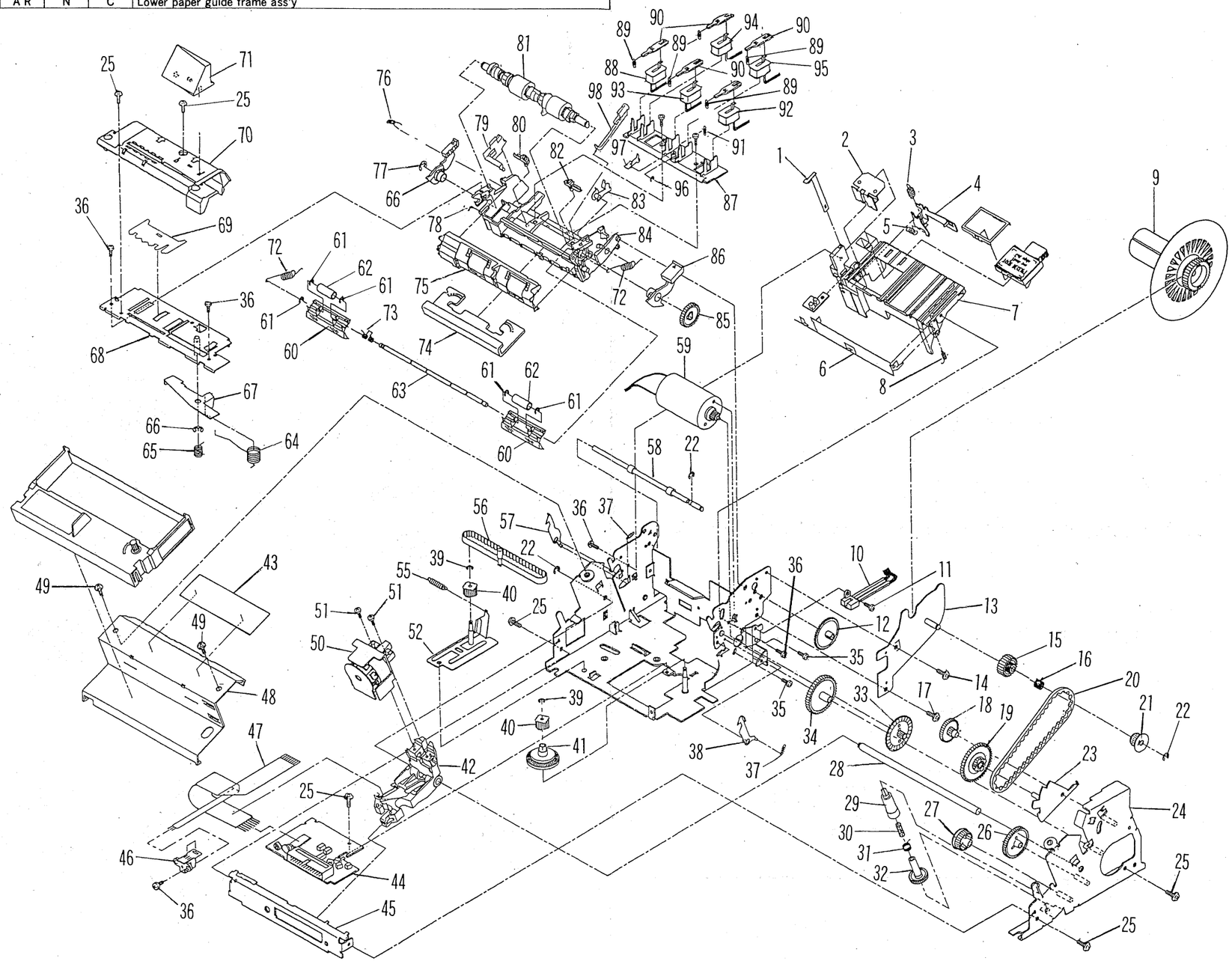
PARTS GUIDE

1 Mechanism etc.

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	00B1004102////	AD	N	C	1st stamp drive lever
2	00BF240451020	AG		C	Stamp lever
3	00B1004106////	AB	N	C	Stamp adjustment spring
4	00B1004103////	AH	N	C	2nd stamp drive lever
5	00B1004105////	AB	N	C	Stamp return spring
6	00B1004055////	AK	N	C	Card stopper
7	00B1004553////	AR	N	C	Lower paper guide frame ass'y

1 Mechanism etc.

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
8	00B1004076////	AB	N	C	Paper guide reinforcement plate spring
9	00BF703301010	AQ		C	Paper rolling shaft
10	00B1004554////	AT	N	E	Timing detector ass'y
11	00BB300204211	AA	N	C	C.B.S.screw (M3×6)
12	00B1004081////	AE	N	C	Paper extension roller gear
13	00B1004499////	AN	N	C	Paper take-up frame sub ass'y
14	00BB040302311	AA		C	Cup screw (M3×4)
15	00BF750302030	AC		C	Paper take-up drive gear

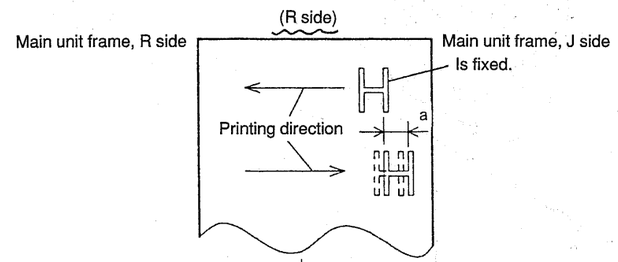


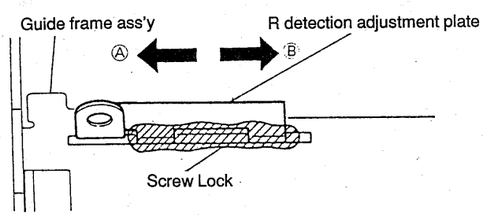
Order	Content	Points to observe
5	• Move the print head unit again to side R and check whether the gap is within the regulation values.	• When the regulation values cannot be obtained, repeat the operations steps 2 and 3.

Adjustment B: R detection adjustment

- When the R detection board subset has been replaced, adjust the printing slip. Because the R detection board subset is fixed, carry out adjustments with the R detection adjustment plate.

Order	Content	Points to observe
1	• Insert paper and carry out printing (R side, J side)	• Check for printing slip a (R side, J side).
2	• Slide the R detection board to the left and right to adjust.	• Slide in directions Ⓐ, Ⓑ and (C so that the measurements at a are 0).
3	• Use adhesive to secure the R detection board to the guide frame.	





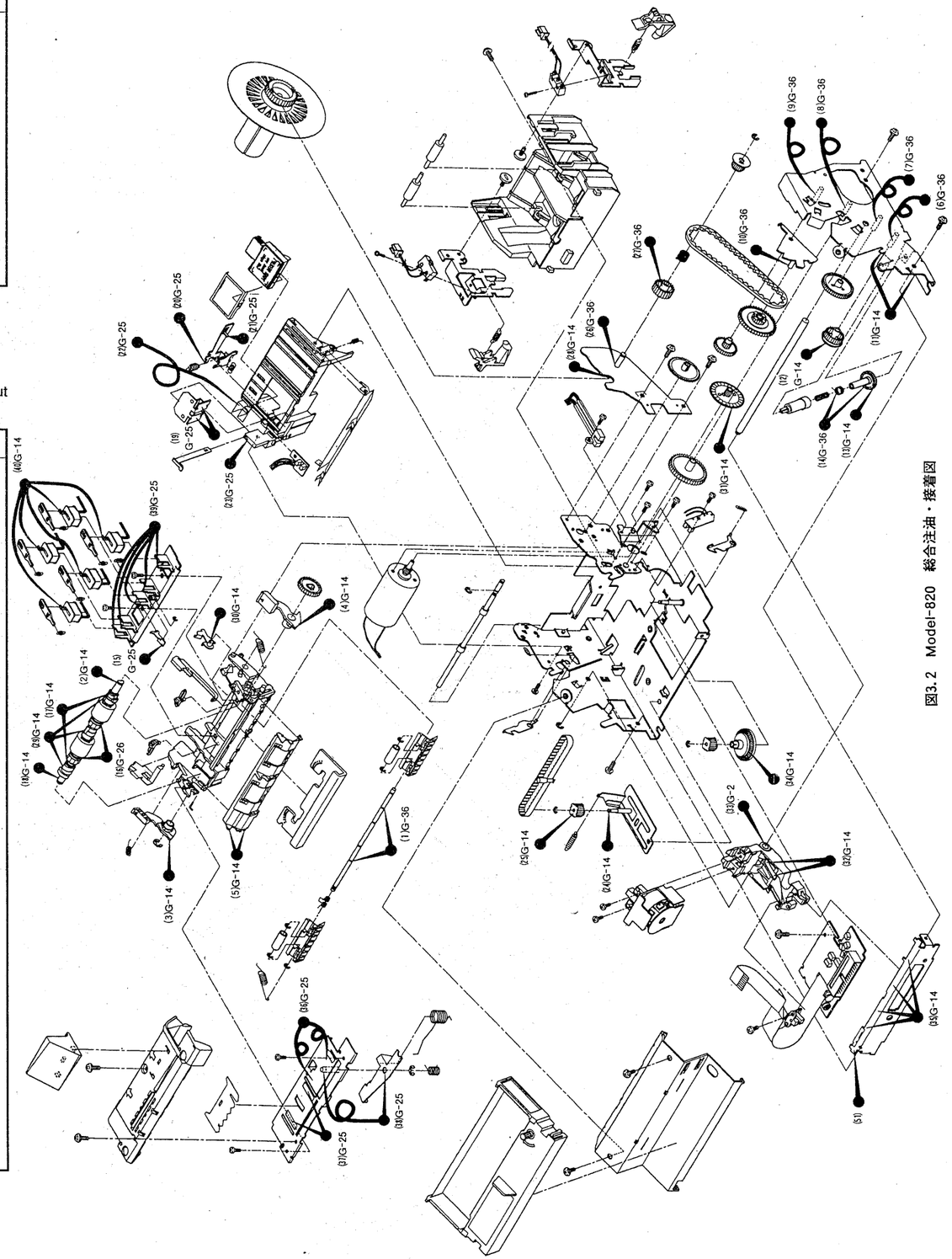


図3.2 Model-820 総合注油・接着図

SHARP

SHARP CORPORATION
Information Systems Group
Quality & Reliability Control Center
Yamatokoriyama, Nara 639-11, Japan
1991 December Printed in Japan Ⓢ