

VT 2200

SERVICE MANUAL

INTRODUCTION

This manual explains only the features of the N850 (C224 model) that are different compared with the VT2000 series (C211, C212 and C213 models). So, please refer to the VT2000 series service manual for the sections which are not described in this manual.

The N850 (C224 model) has been designed based on the N865 (C216 model), and some descriptions are the same as the N865 service manual.

SECTION 1

OVERALL MACHINE INFORMATION

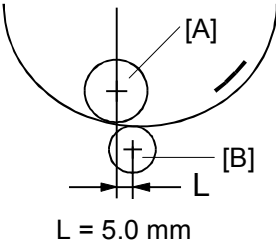
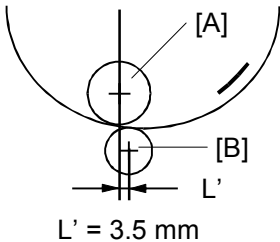
1. SPECIFICATIONS

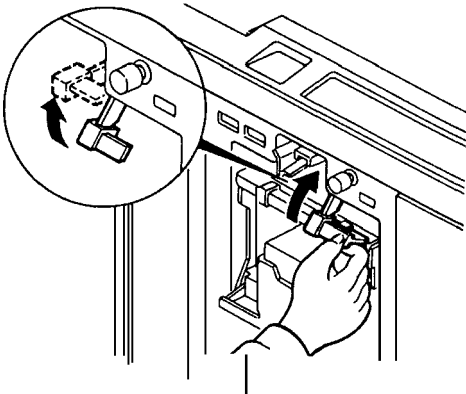
| | | | |
|--------------------------------|---|------------|------------|
| Configuration: | Desktop | | |
| Master processing: | Digital | | |
| Printing process: | Full automatic one-drum stencil system | | |
| Original type: | Sheet | | |
| Original size: | Maximum 307 mm x 432 mm (12.0" x 17.0") Minimum 90 mm x 140 mm (3.6" x 5.5") | | |
| Reproduction ratios: | | LT Version | A4 Version |
| | Full Size | 100% | 100% |
| | Reduction | 93% | 93% |
| | | 75% | 82% |
| | | 64% | 71% |
| Image mode: | Line/Photo | | |
| Color printing: | Drum unit replacement system | | |
| Master feed/eject: | Roll master automatic feed/eject | | |
| Printing area: | Maximum: 250 mm x 355 mm (9.8" x 13.9") at 20°C/ 65 % RH. | | |
| Leading edge margin: | 5 ± 3 mm at the "0" position | | |
| Print paper size: | Minimum: 90 mm x 148 mm (3.6" x 5.8") Maximum: 325 mm x 447 mm (12.7" x 17.5") | | |
| Print paper weight: | 47.1 g/m ² to 209.3 g/m ² (12.5 lb to 55.6 lb) | | |
| Printing speed: | 60, 75, 90, 105, 120 sheets/minute (5 steps) | | |
| First copy time: | Less than 35 seconds (B4) Less than 32 seconds (A4) | | |
| Second copy time: | Less than 38 seconds (B4) Less than 35 seconds (A4) | | |
| Paper feed table capacity: | 1000 sheets (66.3 g/m ² / 17.6 lb) | | |
| Paper delivery table capacity: | 500 sheets (66.3 g/m ² / 17.6 lb) | | |
| Power source: | 110/120 V, 60 Hz | 4.5 A | |
| | 220/240 V, 50/60 Hz | 2.7 A | |

| | | |
|---------------------------------------|---|-------|
| Maximum power consumption: | 110/120 V version: 280 W 220/240 V version: 280 W | |
| Weight: | 97kg (213.6 lb) | |
| Dimensions: (W x D x H) | Trays closed: 735 mm x 607 mm x 577 mm (28.9" x 23.9" x 22.7") Trays open: 1279 mm x 607 mm x 656 mm (50.4" x 23.9" x 25.9") | |
| ADF original capacity: | 20 sheets (66 g/m ²) or 1.8 mm height | |
| Original guide width settings: | 98 mm to 316 mm (38.6" to 12.44") | |
| Original scanning time: | 2.5 ms/line | |
| Original thickness: | 0.05 mm to 0.8 mm | |
| Original feed speed: | 21.2 mm/second (When master processing) 33.9 mm/second (When not master processing) | |
| Pixel density: | 300 dots/inch | |
| Master eject box capacity: | 70 masters (Normal condition) 60 masters (10°C/30% RH Condition) | |
| Paper feeding: | Friction roller/center separation system | |
| Feed table side plate width settings: | 88 mm to 330 mm (3.46" to 12.99") | |
| Paper feed roller pressure: | Normal position | 300 g |
| | Thick paper position | 400 g |
| Separation roller pressure: | Normal position | 180 g |
| | Weak position | 70 g |
| Side registration: | ± 10 mm (manual) | |
| Vertical registration: | ± 20 mm (mechanical) | |
| Ink supply: | Automatic ink supply system | |
| Press roller pressure: | 10 ± 0.3 kg | |
| Paper delivery: | Air knife/vacuum delivery | |
| Delivery side plate width settings: | 90 mm to 320 mm (3.54" to 12.6") | |
| Print counter: | 7 digits | |

| | | |
|---------------------------------------|--|------------------|
| Master counter: | 6 digits | |
| Supplies: | Thermal master | 280 mm width |
| Priport | | |
| Master VT- II - M: (300 dots/inch) | | |
| | Master roll | 257 masters/roll |
| | Roll diameter | 130 mm |
| | Master length | 480 mm/master |
| | Max run length | 2000 prints |
| Ink colors: (600 ml/pack) | Black, Red, Blue, Green, Brown Yellow, Purple, Navy, Maroon | |

2. ESSENTIAL DIFFERENCES BETWEEN C211/C212/C213 AND C224 MODELS

| No. | Item | Remarks | | | | | | |
|-------------------------------------|------------------------|---|-------------------------------------|---------------|------------------------------------|-----------|-----------------------|--------|
| 1. | CCD | <p>A CCD which corresponds to 300 dpi pixel density is used.</p> <table border="1" data-bbox="539 338 1020 486"> <tr> <td>Number of Effective Pixels:</td> <td>3648 pixels</td> </tr> <tr> <td>Reading Length:</td> <td>309 mm</td> </tr> <tr> <td>Photo Signal Storage:</td> <td>2.5 ms</td> </tr> </table> | Number of Effective Pixels: | 3648 pixels | Reading Length: | 309 mm | Photo Signal Storage: | 2.5 ms |
| Number of Effective Pixels: | 3648 pixels | | | | | | | |
| Reading Length: | 309 mm | | | | | | | |
| Photo Signal Storage: | 2.5 ms | | | | | | | |
| 2. | Thermal Head | <p>The thermal head and thermal head drive circuit have been changed corresponding to the 300 dpi pixel density and the increased master feed speed.</p> <table border="1" data-bbox="539 633 969 813"> <tr> <td>Density of thermal heating elements</td> <td>300 dots/inch</td> </tr> <tr> <td>Number of thermal heating elements</td> <td>3072 dots</td> </tr> <tr> <td>Memory length</td> <td>256 mm</td> </tr> </table> | Density of thermal heating elements | 300 dots/inch | Number of thermal heating elements | 3072 dots | Memory length | 256 mm |
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| Number of thermal heating elements | 3072 dots | | | | | | | |
| Memory length | 256 mm | | | | | | | |
| 3. | Drum Ink Roller Layout | <p>To ensure paper separation from the drum, the ink roller has been shifted towards the paper feed table. The distance L has been changed from 5.0 mm to 3.5 mm (same as the C216 model).</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>C211 model</p>  <p>L = 5.0 mm</p> </div> <div style="font-size: 2em;">→</div> <div style="text-align: center;"> <p>C224 model</p>  <p>L' = 3.5 mm</p> </div> </div> <p>NOTE: The optional color drum for the C224 model is commonly used for the C211 model. (The distance L for the color drum is 4.5 mm.)</p> | | | | | | |

| No. | Item | Remarks |
|-----|---------------------------------------|--|
| 4. | Drum Connector | <p>To ensure drum connection, a drum lock lever has been added inside the front door. To remove the drum from the machine, the drum release lever must be pulled up to disconnect the drum connector. (Same as the C216 model.)</p>  |
| 5. | Ink Detection Board | The location of the ink detection board has been changed from the upper side to the right side of the drum shaft. The ink type switch (SW901), which was not used (always set at oil type), has been removed. (Same as the C216 model.) |
| 6. | Drum Shaft | To supply ink to the ink roller evenly, the second ink supply hole (count from the front side) of the drum shaft is covered with a strip of tape. (Same as the C216 model.) |
| 7. | Exit Pawl Air Pump | To ensure paper separation from the drum, the exit pawl air pump system is standardized. (Same as the C216 model.) (The pump system can optionally be installed in models of the C211 series.) |
| 8. | Main Board and Image Processing Board | The main board and the image processing board have been combined into one board. |
| 9. | Thermal Head Drive | The thermal head drive board has been removed. The function of the board has been moved to the main board. The thermal head voltage is directly applied from the power supply unit. The main board applies the signal to the PSU to supply thermal head voltage only during the master making process. (Same as the C216 model.) |
| 12. | Paper Table Drive Motor | The paper table drive motor has been changed from an ac motor to a dc motor. |
| 13. | Air Knife Motor | The air knife motor has been changed from an ac motor to a dc motor. |
| 14. | Pressure Plate Position Sensors | The pressure plate position switch and the full master detecting switch have been eliminated. Three photo-interrupters, upper and lower pressure plate sensors and full master box sensor are used instead. |

| No. | Item | Remarks |
|-----|---------------------------------|--|
| 15. | Pressure Plate Motor | The master eject motor which had two functions: (one is to drive the exit rollers, the other is to drive the pressure plate) has been replaced by two motors; the master eject motor and pressure plate motor. Due to this modification, the master box capacity has been increased. |
| 16 | Skip Feed | A user can select from 2 to 9 rotations of the drum while one sheet of paper is fed. |
| 17. | Economy Function (New Function) | If "Economy mode" is selected on the operation panel, a lower thermal head energy is applied when a master is made. As a result, the image will be lighter than normal and ink consumption will be less. |
| 18. | Security Mode (New Function) | "Secret mode" can be selected by changing DIP SW103-6. If this mode is selected, the Print key is disabled after turning the main switch off and on. (Only the "Master making key" is available.) |

3. ELECTRICAL COMPONENT DESCRIPTIONS

| INDEX No. | NAME | FUNCTION |
|------------------|--------------------------------|--|
| Motors | | |
| 1 | Main Motor | Drives paper feed, drum, printing and paper delivery unit components. |
| 4 | Vacuum Motor | Provides suction so that paper is held firmly on the transport belt. |
| 7 | ADF Drive Motor | Feeds the original to the original transport section. |
| 12 | Original Transport Motor | Transports the original to the scanner section. |
| 20 | Master Feed Motor | Feeds the master to the drum. |
| 22 | Pressure Plate Motor | Raises and lowers the pressure plate. |
| 26 | Air Knife Motor | Rotates the fan to provide air to separate the paper leading edge from the drum. |
| 28 | Master Eject Motor | Sends used masters into the master eject box. |
| 33 | Cutter Motor | Cuts the master. |
| 60 | Image Shift Motor | Changes the timing between the paper feed roller and the drum to adjust the vertical image position. |
| 64 | Paper Table Drive Motor | Raises and lowers the paper table. |
| Solenoids | | |
| 11 | Original Pressure Solenoid | Presses the original pressure plate down on the originals. |
| 21 | Ink Supply Solenoid | Releases the spring clutch to activate the ink supply pump. |
| 29 | Master Eject Solenoid | Opens the master clamp to eject the master. |
| 51 | Paper Feed Solenoid | Releases the paper feed sector gear to rotate the paper feed roller. |
| 52 | Printing Pressure Solenoid | Moves the press roller against the drum. |
| 56 | Master Eject Clamper Solenoid | Opens the master clamp to eject the master. |
| 58 | Drum Lock Solenoid | Prevents removal of the drum unit when the drum is not at the home position. |
| 59 | Master Feed Clamper Solenoid | Opens the master clamp to eject the master. |
| Switches | | |
| 6 | Printing Density Switch | Use to select the printing density corresponding to the type and quality of the original. |
| 14 | ADF Safety Switch | Check whether the ADF unit is set correctly or not. |
| 18 | Fluorescent Lamp Safety Switch | Cuts the power for the fluorescent lamp when the scanner is opened. |
| 19 | Left Cutter Switch | Detects when the cutter position is at the far left. |
| 27 | Master Eject Box Switch | Checks whether the master eject box is installed correctly or not. |
| 32 | Right Cutter Switch | Detects when the cutter position is at the far right. |

| INDEX No. | NAME | FUNCTION |
|-----------------------|--|---|
| 37 | Front Door Safety Switch | Checks whether the front door is set correctly or not. |
| 38 | Drum Safety Switch | Checks whether the drum unit is set correctly or not. |
| 41 | Paper Table Safety Switch | Checks whether the paper table is opened or not. |
| 47 | Test Switch | Releases the cover safety functions. (NOTE:) |
| 48 | Main Switch | Turns the power on or off. |
| 49 | Master Eject Unit Safety Switch (220V machines only) | Checks whether the master eject unit is closed correctly or not. Cuts the ac power. |
| 55 | Master Eject Unit Safety Switch (115V machines only) | |
| 62 | Master Cutter Switch | Informs the CPU to cut the master paper leading edge. |
| 65 | Drum Rotation Switch | Informs the CPU to rotate the main motor at 10 rpm. |
| Sensors | | |
| 3 | 1st Paper Exit Sensor | Detects misfeeds. |
| 5 | 2nd Paper Exit Sensor | Detects misfeeds. |
| 9 | Original Registration Sensor | Detects misfeeds in the ADF, and synchronizes master feed with original feed. |
| 10 | 2nd Original Sensor | Detects when the original comes to the feed position. |
| 13 | 1st Original Sensor | Detects when the original is set in the ADF mode. |
| 23 | Lower Pressure Plate Sensor | Informs the CPU if the pressure plate is at the lower limit position. |
| 24 | Full Master Box Sensor | Informs the CPU if the master eject box is full of used masters. |
| 25 | Upper Pressure Plate Sensor | Informs the CPU if the pressure plate is at the upper limit position. |
| 30 | Master Eject Sensor | Detects master eject jams. |
| 34 | Master Buckle Sensor | Detects master buckling. |
| 35 | Master End Sensor | Informs the CPU when the plotter unit runs out of master roll. |
| 40 | Paper Table Height Sensor | Detects when the paper table reaches the paper feed position. |
| 42 | Paper Table Lower Limit Sensor | Detects when the paper table reaches the lowest position. |
| 43 | Printing Pressure Sensor | Informs the CPU when printing pressure is applied. |
| 44 | Paper End Sensor | Informs the CPU when the paper table runs out of paper. |
| 50 | Drum Rotation Sensor | Supplies timing pulses to the main board. |
| 53 | 2nd Drum Position Sensor | Checks the position of the drum. |
| 57 | 1st Drum Position Sensor | Checks the position of the drum. |
| Printer Circuit Board | | |
| 16 | CCD PCB | Converts light into an electrical signal. |
| 17 | A/D Conversion PCB | Converts analog signals into digital signals. |
| 39 | Main Control PCB | Controls all machine functions both directly and through other boards. |
| 54 | Ink Detection PCB | Checks if the ink is present in the drum. |

| INDEX No. | NAME | FUNCTION |
|-----------|-----------------------------|--|
| 63 | Power Supply PCB | Rectifies 100 V ac input and supplies dc voltage. |
| Counters | | |
| 45 | Copy Counter | Keeps track of the total number of copies made. |
| 46 | Master Counter | Keeps track of the total number of masters made. |
| Others | | |
| 2 | Transformer | Steps down the wall voltage. |
| 8 | Fluorescent Lamp | Exposes the original. |
| 15 | Fluorescent Lamp Stabilizer | Controls the exposure lamp. |
| 31 | Reverse Roller Clutch | Transfers master feed motor rotation to the reverse roller at proper timing. |
| 36 | Thermal Head | Burns the image onto the master. |
| 61 | Encoder | Converts 16 image positions to 4 bit data. |
| 66 | Operation Panel | Interfaces the CPU and the operator. |

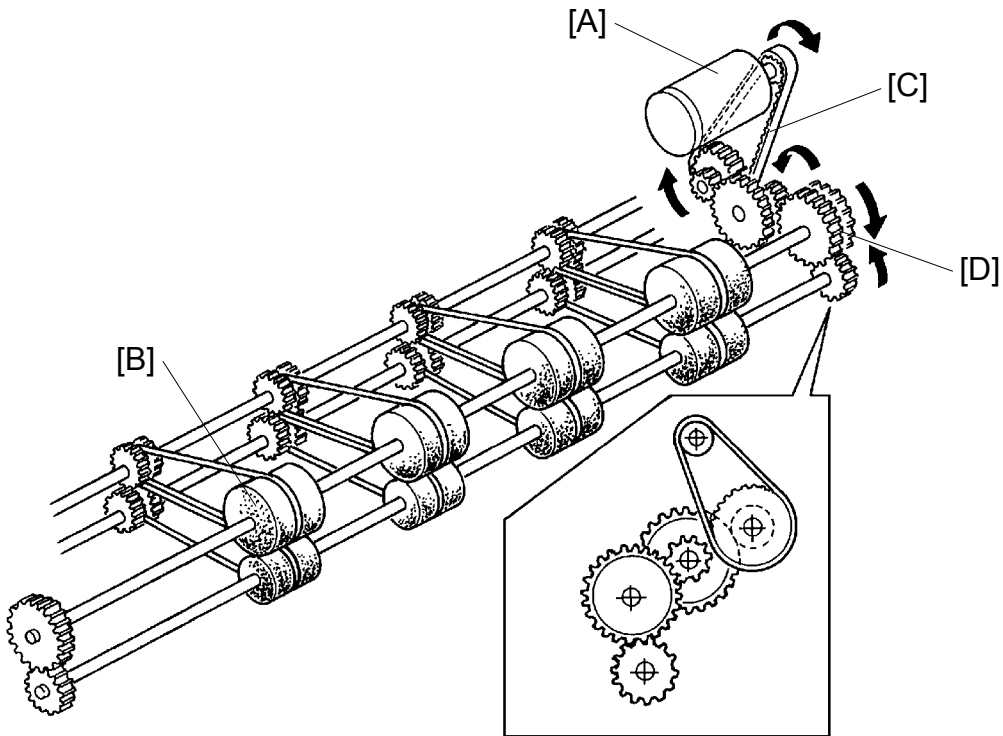
NOTE: The Master Eject Unit Safety Switch in the 220 V machines cannot be disabled by this test switch.

SECTION 2

DETAILED DESCRIPTIONS

1. MASTER EJECT SECTION

1.1 MASTER EJECT ROLLER DRIVE MECHANISM

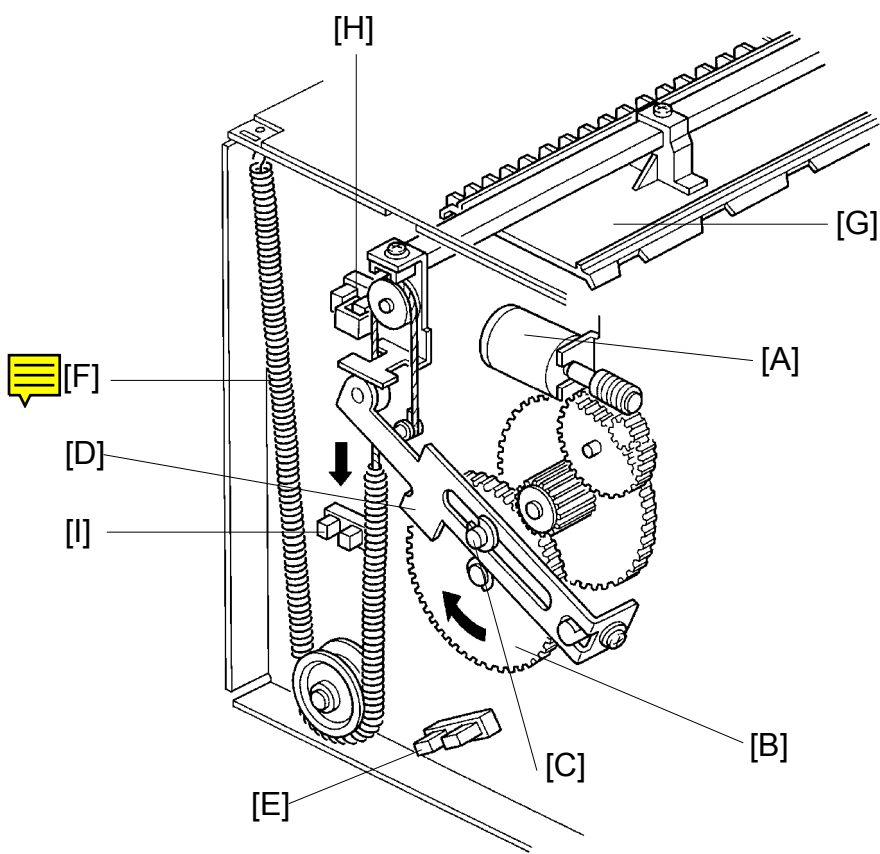


Detailed
Descriptions

C224D500.img

A dc motor [A] installed in the rear of the machine drives the master eject rollers [B] through a timing belt [C] and gears [D] to eject used masters. The master is transported between the upper and lower master eject rollers to be ejected to the master eject box.

1.2 PRESSURE PLATE UP/DOWN MECHANISM



C224D501.img

After the used master is transported to the master eject box, the master is compressed by the pressure plate.

The pressure plate is driven by an independent dc motor. The pressure plate motor [A] drive is transmitted to the gear [B] through gears, and the pin [C] moves link [D] down until the lower pressure plate sensor [E] is actuated. Spring [F] pulls down on the pressure plate [G] and the ejected master in the master eject box is compressed. Then the pressure plate motor stays off until the master making process is finished. Then the pressure plate motor starts again to return the pressure plate to the upper position. The motor stops when the upper pressure plate sensor [H] is actuated.

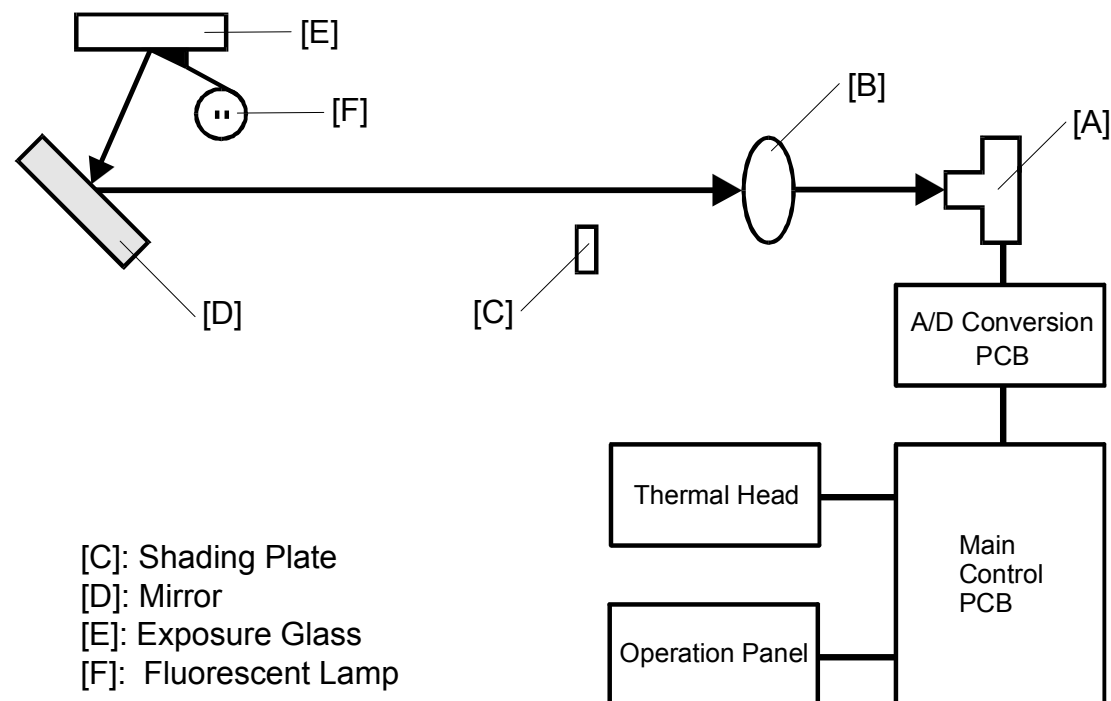
The machine detects that the master box is full if the full master box sensor [I] is not actuated when the pressure plate goes down.

2. OPTICS

2.1 OVERALL

The CCD [A] which corresponds to a 300 dpi pixel density is used for the C224 model.

Light reflected from the original goes to the CCD through a lens. The CCD changes the light into an analog electrical signal which is changed to 4-bit digital data in the A/D conversion PCB. The main control PCB changes the 4-bit data into 1-bit data to drive the thermal head.



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2.2 THERMAL HEAD

(1) Specifications

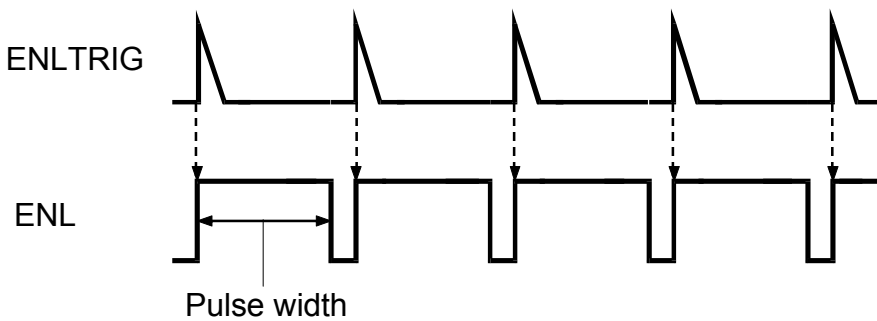
The C224 model uses a 300 dpi thermal head.

Thermal head

- Width 256 mm
- Number of thermal head elements 3072 dots
- Density of thermal head elements 300 dpi

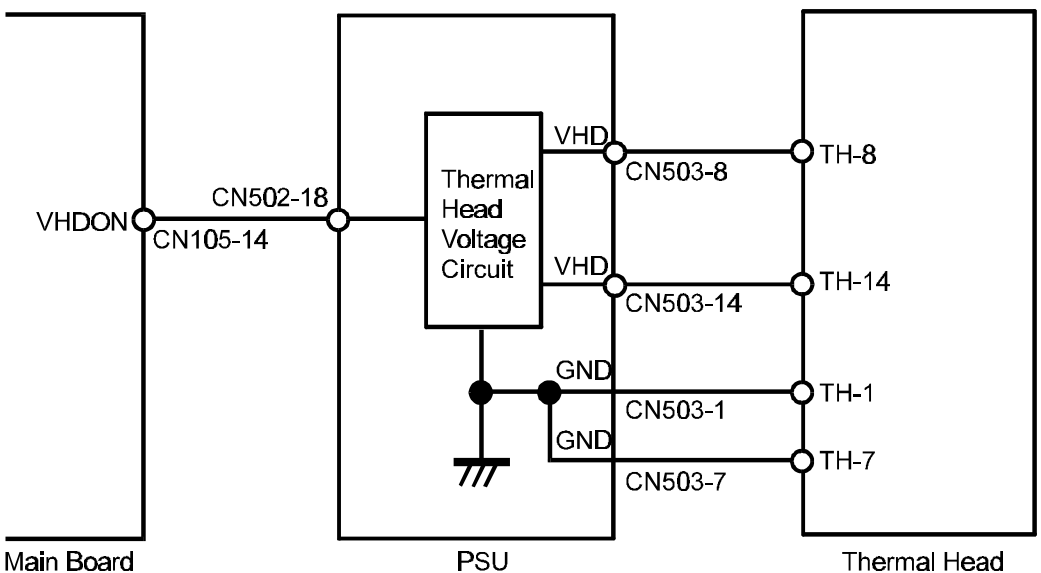
(2) Thermal Head Control

The PSU applies thermal head voltage which is adjusted in the factory to match individual thermal head characteristics. The main control PCB controls the thermal head to reproduce the image on the master.



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The thermal head energy is controlled by changing the pulse width. The pulse is controlled by the ENL signal from the main board corresponding to ENLTRIG from the image processing board.

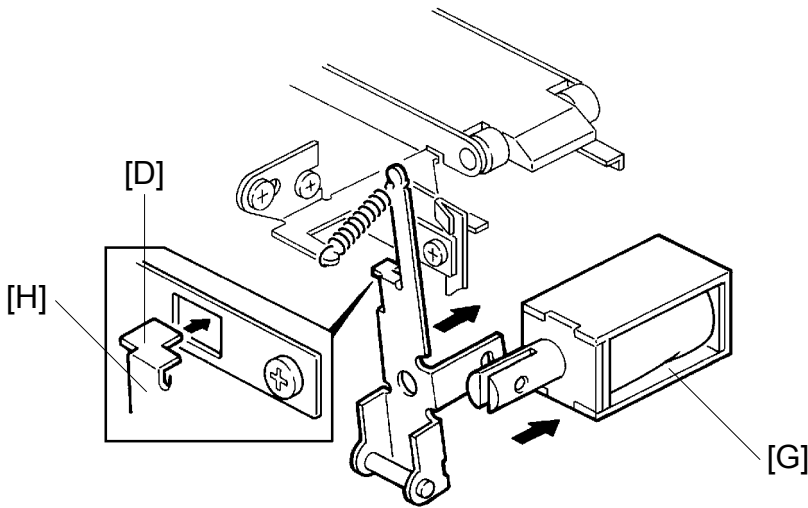
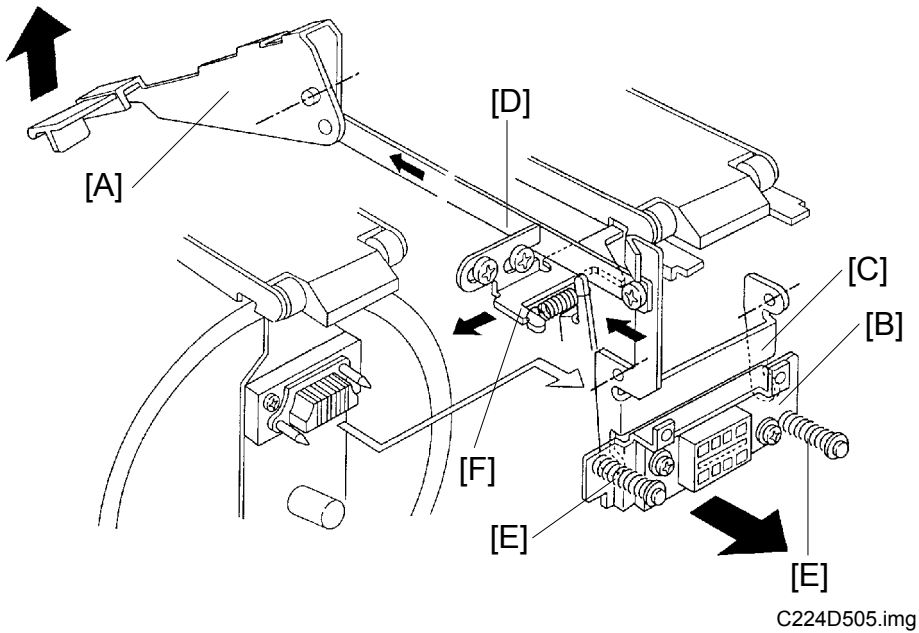


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Thermal head voltage is applied from the PSU only during the master making process. This is controlled by the VHDON signal (CN105-14) from the main board.

3. DRUM

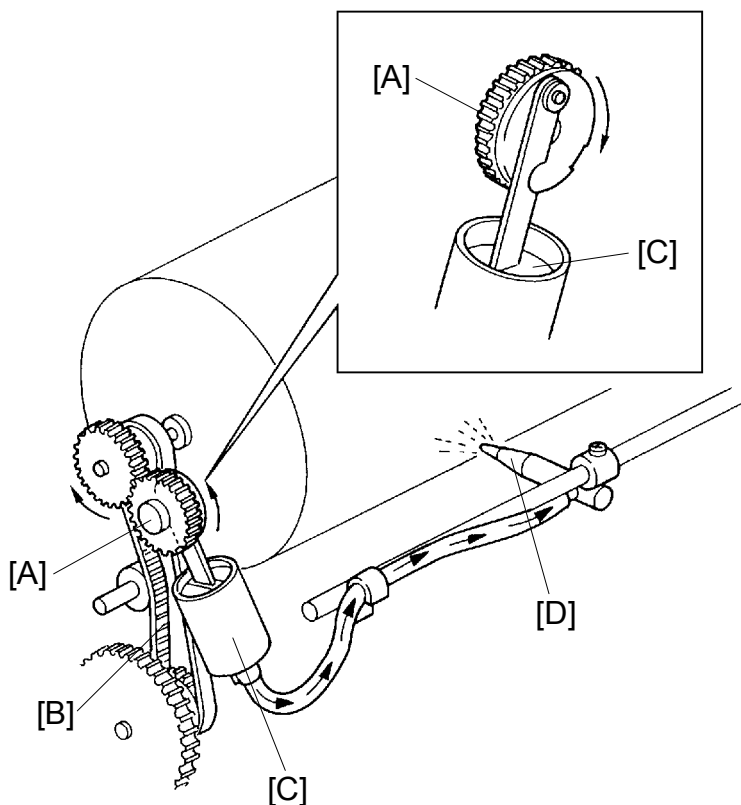
3.1 DRUM CONNECTION MECHANISM



When the drum release lever [A] in front of the machine is raised, the connector [B] is pushed away from the drum by the bracket [C] through the link [D], and is thus disconnected. The connector moves only horizontally due to the guidance of the shafts [E]. The bracket [C] also pushes the drum lock lever [F] to release the drum lock allowing the drum to be removed. While the drum is out of home position, the drum lock solenoid [G] is energized and the stopper [H] locks the link [D] so that it will not be pulled. The solenoid is de-energized when the drum stops at the home position (when the 1st drum home position sensor is actuated).

4. PAPER DELIVERY

4.1 EXIT PAWL AIR PUMP MECHANISM



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The main motor drive is transmitted to the pump gear [A] through gears and a timing belt [B]. The gear [A] rotates and drives the piston [C] back and forth.

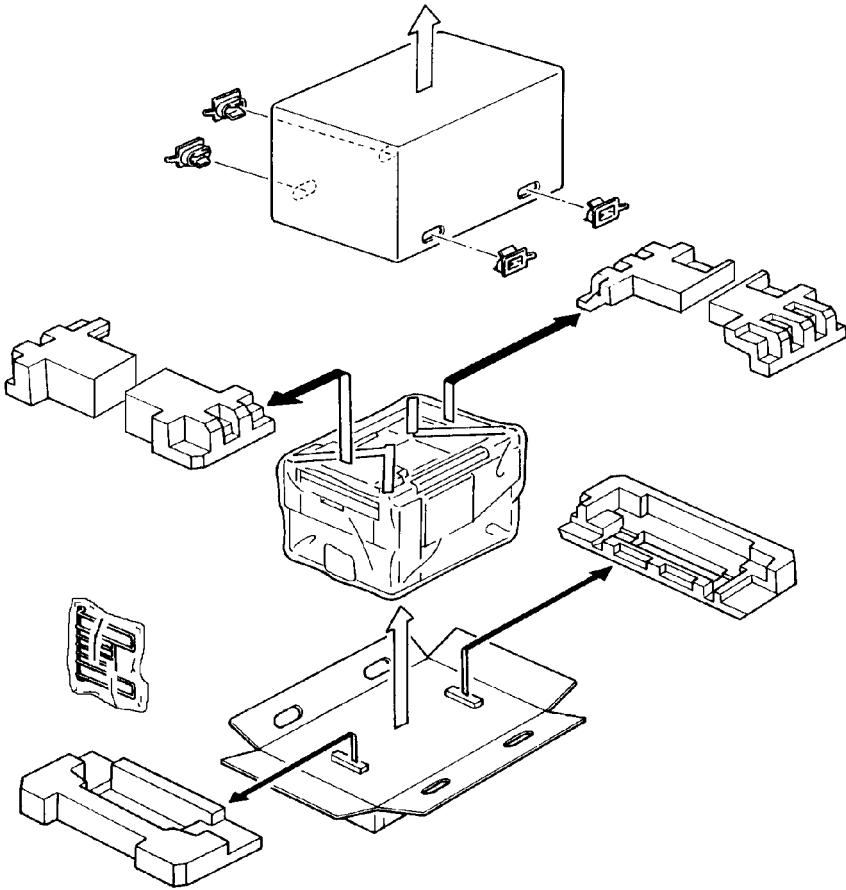
The piston moves forward and pushes a jet of air out through the nozzle [D]. This jet of air helps to separate the paper from the drum.

SECTION 3

INSTALLATION

NOTE: THE MACHINE MUST BE INSTALLED BY A CUSTOMER SERVICE REPRESENTATIVE WHO HAS COMPLETED THE TRAINING COURSES ON THIS MACHINE

1. INSTALLATION PROCEDURE

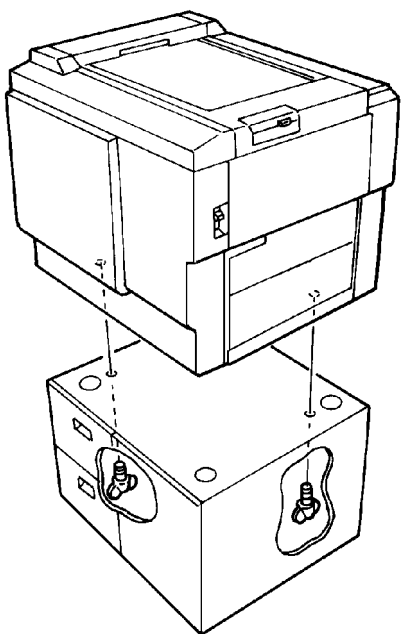


Installation

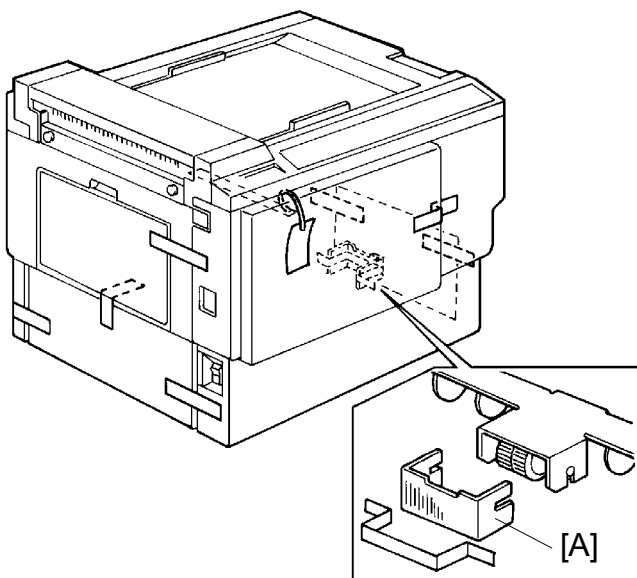
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1. Make sure that you have all the accessories listed below.

- (1) Original Exit Tray 1
- (2) Operating Instructions (USA and Asia version only)..... 1
- (3) NECR 1



C2241502.img



C2241503.img

2. Mount the machine on the optional table (2 screws packed with the table).
3. Remove the strips of tape securing the covers and units as shown on the right.
 - a. Open the paper feed tray. Then remove the cushion plate [A] from the paper feed roller section.
 - b. Open the master delivery unit. Then remove the tape securing the paper delivery guide plate.

4. Remove the protective sheet [A] from the drum unit.

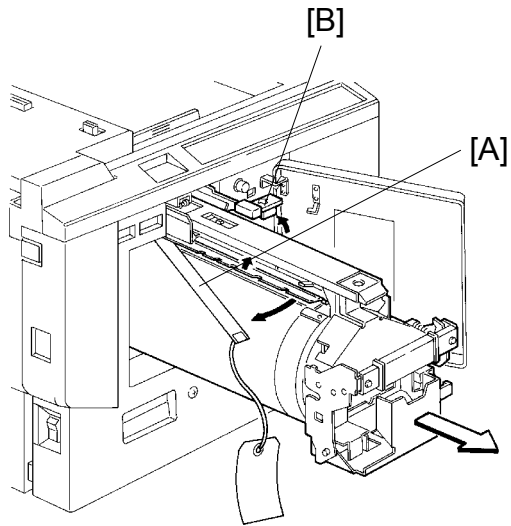
a. Open the front door.

b. Take out the drum unit.

c. Remove the protective sheet from the master clamper.

d. Reinstall the drum unit in the machine.

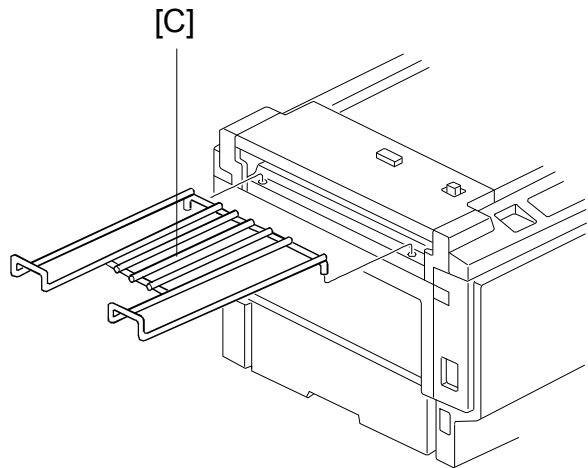
e. Push down the drum lock lever [B].



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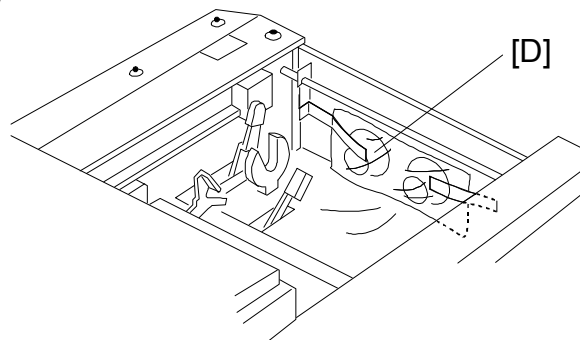
Installation

5. Install the original exit tray [C].



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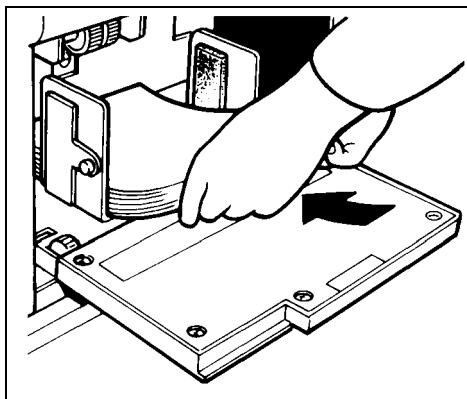
6. Slide the scanner unit all the way to the left, and take the master spools [D] out.



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7. Loading Paper on the Paper Feed Table

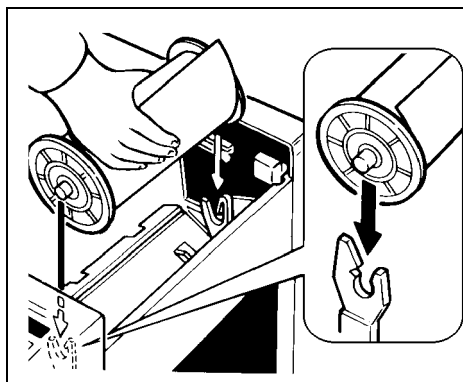
- a. Open the paper feed table.
- b. Stack the paper neatly on the paper feed table.
- c. Position the paper feed side plates so that they lightly contact the paper on both sides.
- d. Position the paper delivery table for the printing paper size, using the scale on the table.
- e. Position the paper delivery side plate for the printing paper size, using the scale on the table.



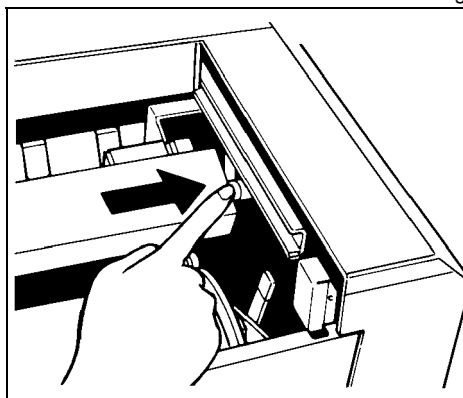
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8. Installing the Master Roll (Type VT-II-M)

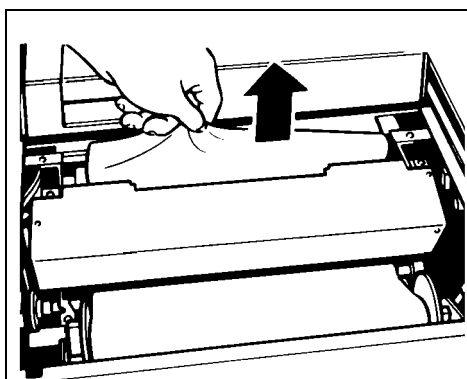
- a. While lifting the release lever, slide the scanner unit to the left.
- b. Attach a spool to each end of the master roll.
- c. Set the master roll in the machine.
NOTE: The vinyl side faces down.
- d. Return the pressure release lever to the original position.
- e. Plug in the power cord and turn on the main switch.
- f. Press the Master Cut button.
- g. Remove the cut master paper.
NOTE: Check that the master paper is not bent or creased.
- h. Close the scanner unit.



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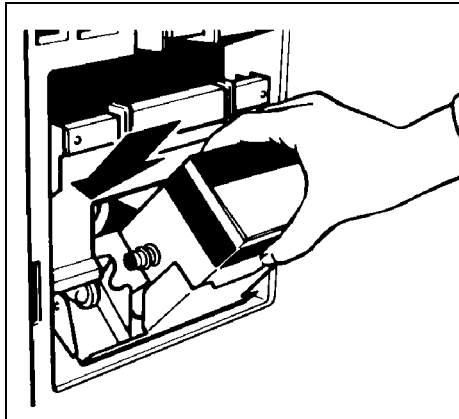
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C2241508.img


9. Installing the Ink Cartridge

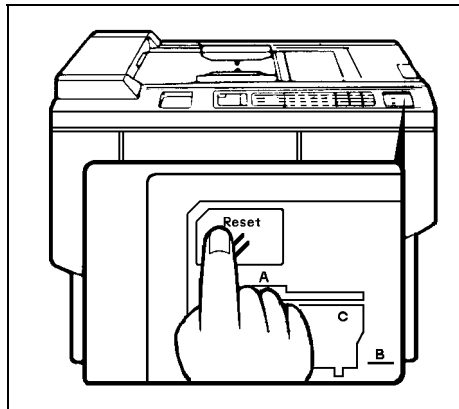
- Open the front door and lower the ink holder.
- Remove the ink cartridge cap.
- Insert the ink cartridge into the ink holder and return the ink holder to the original position.
- Close the front door.



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10. Idling


- While holding down the "0" key on the operation panel, press the Reset key.
- If  + D blinks on the operation panel, repeat the above procedure.



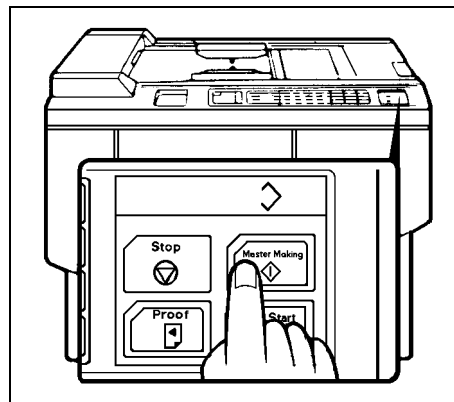
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11. Test Printing

- Adjust the original guide to match the original size.
- Place an original face down.
- Input the desired number of prints with the number keys and press the Master Making key.

NOTE: With a new machine, the master paper misfeed indicator  + F blinks because there is no master yet on the drum. Press the Reset key, then press the Master Making key.

- After one sheet of paper is delivered, make prints at the lowest print speed (1) until the print image density stabilizes. Use a test chart to check for changes in the image density.
- Check the copy quality after the image is stabilized.



C224I511.img

SECTION 4

SERVICE TABLES

1. MAINTENANCE TABLES

1.1 LUBRICATION POINTS

Lubricate after removing adhering ink and paper dust.

| Lubrication Point | Interval | Type |
|---------------------------------------|----------|--------|
| Bearings for the drum drive shaft | Yearly | Oil |
| Bearing for each cam shaft | Yearly | Oil |
| Bearing for the main motor shaft | Yearly | Oil |
| Bearing for the speed reduction shaft | Yearly | Oil |
| Gears on the drum drive shaft | Yearly | Grease |
| Gears for each cam | Yearly | Grease |
| Paper feed sector gear | Yearly | Grease |
| Second feed sector gear | Yearly | Grease |
| Edge of each cam | Yearly | Grease |
| Master pressure plate groove | Yearly | Grease |

Type of Oil and Grease

Oil: Motor Oil (SAE No.20)

Grease: Shell Albania No.2

1.2 USER'S MAINTENANCE

Please advise the customer to clean each item at suitable intervals.

| Cleaning Point | Interval | Cleaner |
|-----------------------|-------------|--|
| Original platen cover | At any time | Cloth and water |
| Exposure glass | At any time | Cloth and glass cleaner |
| Paper feed rollers | At any time | Cloth, and soap and water (or alcohol) |
| Press roller | At any time | Cloth, and soap and water (or alcohol) |

1.3 PERIODIC INSPECTION TABLE (EVERY 6 MONTHS)

| Item/Location | Step | Inspection Standard |
|----------------------------|-------------------------|--|
| Original platen cover | Cleaning | Wipe off any stains with a soft cloth dampened with ethyl alcohol. |
| Exposure glass | Cleaning | Wipe with a dry cloth. |
| Mirror/Sub mirror | Cleaning | Use a blower brush. |
| Platen roller | Cleaning | Wipe off paper powder with a cloth dampened with water. |
| Sensors | Inspection and cleaning | Check the performance of all the sensors. Remove stains from sensors with dry cloth. |
| Press roller | Cleaning | Wipe off the ink and paper powder with cloth dampened with ethyl alcohol. |
| Drum surface | Cleaning | Wipe off the paper powder and ink which is forced out from the trailing edges of the masters using a cloth dampened with ethyl alcohol. |
| Master feed and delivery | Inspection | The master should be properly fed and clamped, without generation of skew, folding, etc. The master should also be properly delivered without jam. |
| Paper feed and delivery | Inspection | Print a few sheets to ensure that paper is smoothly fed and delivered, without generation of skew, folds, wrinkles, etc. |
| Second paper feed rollers | Cleaning | Wipe off ink and paper powder with a cloth dampened with alcohol. |
| Original transport rollers | Cleaning | Wipe off paper powder with a cloth dampened with water. |
| ADF | | |
| Pull-out roller | Cleaning | Wipe off paper powder with a cloth dampened with water. |
| Original feed roller | Cleaning | Wipe off paper powder with a cloth dampened with water. |
| Separation blade | Cleaning | Wipe off paper powder with a cloth dampened with water. |

1.4 TABLE OF PERIODIC INSPECTION (EVERY 12 MONTHS)

| Item/Location | Step | Inspection Standard |
|---------------------------|-------------------------|---|
| Original platen cover | Cleaning | Wipe off stains with a soft cloth dampened with ethyl alcohol. |
| Exposure glass | Cleaning | Wipe off stains with a soft cloth dampened with ethyl alcohol. |
| Fluorescent lamp | Cleaning | Wipe with a dry cloth. |
| Mirror/Sub mirror | Cleaning | Use a blower brush. |
| Platen roller | Cleaning | Wipe off paper powder with a cloth dampened with water. |
| Paper feed roller | Cleaning | Wipe off paper powder with a cloth dampened with water and wipe off ink with a cloth dampened with ethyl alcohol. |
| Separation roller | Cleaning | Wipe off paper powder with a cloth dampened with water and wipe off ink with a cloth dampened with ethyl alcohol. |
| Sensors | Inspection and cleaning | Check the performance of all the sensors. Wipe off stains on the sensor with a dry cloth. |
| Master delivery rollers | Cleaning | Wipe off built up ink and paper powder on the master delivery rollers using a cloth dampened with ethyl alcohol. |
| Master delivery belts | Cleaning | Wipe off built up ink and paper powder on the master delivery belts using a cloth dampened with ethyl alcohol. |
| Second paper feed rollers | Cleaning | Wipe off built up ink and paper powder on the second feed rollers using a cloth dampened with ethyl alcohol. |
| Press roller | Cleaning | Wipe off built up ink and paper powder on the press roller using a cloth dampened with ethyl alcohol. |
| Drum surface | Cleaning | Wipe off the ink, which is forced out from the trailing edges of masters, and paper powder using a cloth dampened with ethyl alcohol. |
| Master feed and delivery | Inspection | The master should be properly fed and clamped without generation of skew, folds, etc. The master should also be properly delivered without jam. |
| Paper feed and delivery | Inspection | Print a few sheets to ensure that paper is smoothly fed and delivered without generation of skew, folds, wrinkles, etc. |
| Original transport roller | Cleaning | Wipe off paper powder with a cloth dampened with water. |
| Lubrication points | Lubrication | Lubricate the lubrication points in the lubrication points list. |

| Item/Location | Step | Inspection Standard |
|----------------------|----------|---|
| ADF | | |
| Pull-out roller | Cleaning | Wipe off paper powder with a cloth dampened with water. |
| Original feed roller | Cleaning | Wipe off paper powder with a cloth dampened with water. |
| Separation blade | Cleaning | Wipe off paper powder with a cloth dampened with water. |

1.5 EXPECTED LIFE OF PARTS

NOTE: The main parts have the following expected life.

Target Copy Volume Range: Avg. 50,000 prints/month.
 (Max. 100,000~Min. 20,000 prints/month)
 Avg. 500 masters/month

| Section | Part Description | Expected Life |
|------------------|------------------------------|-----------------------------|
| Scanner Unit | Fluorescent lamp | 15,000 masters |
| | Original transport rollers | 1 year or 6,000 masters |
| Master Feed Unit | Thermal head | 30,000 masters |
| | Cutter | 30,000 masters |
| | Upper master feed rollers | 1 year or 6,000 masters |
| | Platen roller | 30,000 masters |
| Drum Unit | Cloth screen | 2 years or 1,200,000 prints |
| Paper Feed Unit | Paper feed rubber side plate | 1,200,000 prints |
| | Paper feed roller | 6 months or 300,000 prints |
| | Upper separation roller | 600,000 prints |
| | Separation plate | 2,000,000 prints |
| | Lower separation roller | 1,000,000 prints |
| | Feed roller brake | |
| Printing Unit | Press roller | 2 years or 1,200,000 prints |
| Delivery Unit | Vacuum belts | 2 years or 1,200,000 prints |
| ADF Unit | Pull-out roller | 60,000 sheets |
| | Original feed roller | 60,000 sheets |
| | Separation blade | 60,000 sheets |
| | Original pressure plate | 60,000 sheets |

Service
Tables

1.6 SPECIAL TOOLS

| Description | Parts Number |
|----------------------|--------------|
| Test chart | 99992131 |
| Resolution chart | A0129110 |
| Drum gauge | C2009001 |
| Image shifting gauge | C2009002 |

2. TABLE OF SERVICE CALL INDICATIONS

| Indication | Trouble | Possible causes |
|------------|--|---|
| E 01 | Malfunction in the cutter section: The cutter does not reach both right and left cutter position switches within 2 seconds. | 1) Drive wire cut 2) Drive section malfunction 3) No power supply |
| E 02 | Malfunction in the paper table drive section: The lower limit sensor or the paper table height sensor status does not change even though the paper table Up or Down signal is applied. | 1) Drive worm gear broken 2) Mounting screw of the worm gear broken 3) No power supply |
| E 04 | The temperature of the thermal head or the power supply unit is high: The temperature of the thermal head becomes greater than 53°C. | 1) Defective thermistor 2) Defective thermal head 3) Defective power supply unit |
| E 05 | Malfunction in the image shifting section: All the encoder output signals are at the "H" level. | 1) Encoder connector of the image shifting section is disconnected. 2) Defective encoder |
| E 06 | Mechanical lock: The drum rotation sensor detects that the drum rotation speed is abnormal. | 1) Mechanical lock 2) Main motor failure |
| E 09 | Malfunction of the thermal head. | 1) Defective thermal head 2) Defective thermistor 3) Thermal head harness broken |
| E-10 | Malfunction in the thermal head drive section. | 1) Defective main control PCB 2) Thermal head drive wire short circuit |
| E-11 | Image shift motor malfunction: The encoder status does not change within 3 seconds after the encoder motor starts rotating. | 1) Image shift motor lock 2) Image shift motor harness broken |
| E-12 | Malfunction in the pressure plate drive section: The lower pressure plate sensor is not actuated within 8 seconds. The upper pressure plate sensor is not actuated within 4 seconds. | 1) Pressure plate motor lock 2) Pressure plate motor harness broken 3) Pressure plate position sensor malfunction |

3. DIP SW, LED, VR, AND TP TABLES

3.1 DIP SW TABLE (ON THE MAIN BOARD)

| No. | DIP SW | Function | Remarks | Factory Setting |
|-----|----------------------------------|------------------------------|--|-----------------------------------|
| 1 | DPS101 | Not Used | | OFF |
| 2 | DPS102-1 | Thermal Head Test | Turn off to access test pattern mode. (Refer to the Thermal Head Test section.) | ON |
| 3 | DPS102-2 | Dither Matrix Selection | Turn off to select the 6 x 6 dither matrix. (Image will be lighter if the 6 x 6 dither matrix is selected.) ON: 4 x 4 OFF: 6 x 6 | ON |
| 4 | DPS103-1 DPS103-2 | Skip Paper Feed Setting | Select the number of drum rotation for every print when the Skip Paper Feed mode is selected. (See the skip paper setting table on the next page.) | DPS103-1: OFF DPS103-2: OFF |
| 5 | DPS103-3 | Initial Full Master Check | If this switch is on, when the main switch is turned on, masters in the master eject box are compressed once to check if the master eject box is full. | OFF |
| 6 | DPS103-4 | Initial Print | ON: Make two prints after making a master. OFF: Make one print after making a master. | OFF |
| 7 | DPS103-5 | Beeper ON/OFF | Turn on to sound the beeper. | OFF |
| 8 | DPS103-6 | Security Function | If this switch is on, prints cannot be made without making a new master after turning the main switch off and on. | OFF |
| 9 | DPS103-7 | Key Counter | Turn on when installing the key counter. | OFF |
| 10 | DPS103-8 | On Line | Turn on when installing the option controller. | OFF |
| 11 | DPS104-1 DPS104-2 DPS104-3 | Reduction Ratio Compensation | Used to adjust the reduction ratio in the sub-scan direction. (Refer to Image Magnification in the Sub-Scan Direction Adjustment.) | |
| 12 | DPS104-4 | Not Used | | OFF |
| 13 | DPS104-5 | Not Used | | OFF |
| 14 | DPS104-6 | Auto Class | If this switch is on, in Memory/Class mode, the next job starts 5 seconds after the previous job is finished even if the tape marker is not installed. | OFF |
| 15 | DPS104-7 | Reduction Ratio Selection | Select the reduction ratio setting. ON: 93%, 75%, 64%. OFF: 93%, 82%, 71%. | A4 version: OFF LT version: ON |
| 16 | DPS104-8 | Class/Memory Selection | Select class or memory function. ON: Memory OFF: Class | ON |

Skip Paper Setting Table

| | 1 Sheet/ 2 Rotations | 1 Sheet/ 3 Rotations | 1 Sheet/ 5 Rotations | 1 Sheet/ 8 Rotations |
|----------|-------------------------|-------------------------|-------------------------|-------------------------|
| DPS103-1 | OFF | ON | OFF | ON |
| DPS103-2 | OFF | OFF | ON | ON |

Skip paper setting can also be changed by key operation.

Press a number key while pressing the skip paper feed key to select the number of rotations per print.

3.2 LED TABLE

| No. | LED | Function | Remarks |
|-----|---------------|-------------------|---|
| 1 | LED101 (MSPD) | Main Motor ON | When the main motor turns on, the LED lights. |
| 2 | LED102 (PDLV) | 2nd Paper Exit SN | When paper is detected, the LED lights. |
| 3 | LED103 (ROLL) | 1st Paper Exit SN | When paper is detected, the LED lights. |
| 4 | LED104 (MDLV) | Master Eject SN | When a master is detected, the LED lights. |
| 5 | LED105 (INK) | Ink Detection | When ink is detected, the LED lights. NOTE: When the drum release lever is raised, the drum connector is disconnected and the the LED turns off. |

3.3 VR TABLE

| No. | VR | Function |
|-----|--------------|-----------------------------------|
| 1 | VR101 (MSPD) | Main motor speed adjustment. |
| 2 | VR102 (PDLV) | 2nd paper exit sensor adjustment. |
| 3 | VR103 (ROLL) | 1st paper exit sensor adjustment. |
| 4 | VR104 (MDLV) | Master eject sensor adjustment. |

3.4 TEST PIN TABLE (Main Control PCB)

| No. | Test Pin | Function |
|-----|--------------|----------------------------------|
| 1 | TP101 (DPLS) | Drum rotation sensor output. |
| 2 | TP102 (PDLV) | 2nd drum position sensor output. |
| 3 | TP103 (ROLL) | 1st drum position sensor output. |
| 4 | TP104 (MDLV) | Master eject sensor output. |
| 5 | TP105 (INK) | Ink detection signal. |
| 6 | TP106 (GND) | GND. |
| 7 | TP107 (GND) | GND. |

3.5 TEST PIN TABLE (A/D Conversion PCB)

| No. | Test Pin | Function |
|-----|----------|--------------------------------------|
| 1 | TP600 | GND. |
| 2 | TP601 | Shift signal output (SH). |
| 3 | TP602 | CCD output (OS). |
| 4 | TP603 | Inverted and amplified CCD output. |
| 5 | TP604 | Black level standard voltage output. |

4. SERVICE PROGRAM TABLE

4.1 HOW TO ACCESS I/O CHECK MODE

1. Turn on the main switch while holding down the Print Start key, Stop key, and Clear key.
2. Press the Memory/Class key to select either "Input" or "Output".
Memory indicator "1" Input
Memory Indicator "0" Output

4.2 INPUT CHECK MODE

| Counter Indication | Component to be checked |
|--------------------|--------------------------------|
| 1-1 | ADF Safety Switch |
| 2-2 | 1st Original Sensor |
| 3-1 | 2nd Original Sensor |
| 4-1 | Original Registration |
| 5-1 | Paper End Sensor |
| 6-1 | Paper Table Lower Limit Sensor |
| 7-1 | Paper Height Sensor |
| 8-1 | Right Cutter Switch |
| 9-1 | Left Cutter Switch |
| 10-1 | Master Buckle Sensor |
| 11-1 | Master End Sensor |
| 12-1 | Ink Detection |
| 13-1 | Color Drum |
| 14-1 | Drum Safety Sensor |
| 15-1 | Master Eject Sensor |
| 16-1 | Upper Pressure Plate Sensor |
| 17-1 | Lower Pressure Plate Sensor |
| 18-1 | Master Eject Box Switch |
| 19-1 | Full Master Box Sensor |
| 20-1 | 1st Paper Exit Sensor |
| 21-1 | 2nd Paper Exit Sensor |
| 22-1 | Printing Pressure Sensor |
| 23-1 | 1st Drum Position Sensor |
| 24-1 | 2nd Drum Position Sensor |
| 25-1 | Master Cut Position Sensor |
| 26-1 | Key Counter Set |
| 27-1 | Not Used |

4.3 OUTPUT CHECK MODE

| Counter Indication | Output |
|--------------------|---|
| 1-0 | ADF Motor is energized. |
| 2-0 | ADF Original Pressure Solenoid is energized. |
| 3-0 | Master Eject Motor is energized. |
| 4-0 | Pressure Plate Motor is energized. |
| 5-0 | Reverse Roller Clutch is energized. |
| 6-0 | Vacuum Fan Motor is energized. |
| 7-0 | Air Knife Motor is energized. |
| 8-0 | Key Counter counts up. |
| 9-0 | Master Counter counts up. |
| 10-0 | Total Counter counts up. |
| 11-0 | Ink Supply Solenoid is energized. |
| 12-0 | Drum Lock Solenoid is energized. |
| 13-0 | Printing Pressure Solenoid is energized. |
| 14-0 | Paper Feed Solenoid is energized. |
| 15-0 | Master Feed Clamper Solenoid is energized. |
| 16-0 | Master Eject Clamper Solenoid is energized. |
| 17-0 | Master Eject Solenoid is energized. |
| 18-0 | Paper Table Drive Motor is energized to moves the paper table down. |
| 19-0 | Paper Table Drive Motor is energized to moves the paper table up. |
| 20-0 | Relay for main motor reversing is energized. |
| 21-0 | Lamp is energized. |
| 22-0 | Cutter Motor is energized to move the cutter unit from front to rear. |
| 23-0 | Cutter Motor is energized to move the cutter unit from rear to front |
| 24-0 | Image Shifting Motor rotates in the (+) direction. |
| 25-0 | Image Shifting Motor rotates in the (-) direction. |
| 26-0 | Drum rotates at 10rpm. |
| 27-0 | Drum rotates at 20rpm. |
| 28-0 | Drum rotates at 60rpm. |
| 29-0 | Drum rotates at 75rpm. |
| 30-0 | Drum rotates at 90rpm. |
| 31-0 | Drum rotates at 105rpm. |
| 32-0 | Drum rotates at 120pm. |
| 33-0 | Original Transport Motor is energized. |
| 34-0 | Master Feed Motor is energized. |
| 35-0 | Thermal Head Energy is applied. |
| 36-0 | All the operation panel indicators are turned on. |
| 37-0 | Tape Maker (option) feeds out strips of paper. |
| 38-0 | Printing operation is done at 10rpm. |
| 39-0 | Simulates original transportation in ADF mode. |

- NOTE: 1. If the drum is rotated using output check mode 26-0 to 32-0, the drum rotation speed (rpm) is displayed in the copy counter.
2. After selecting output check mode 35-0 and pressing the Print Start key, the thermal head voltage is continuously applied until the Stop key or the Clear key is pressed. The beeper sounds while the thermal head energy is applied. Do not apply thermal head voltage for a long time.

4.4 THERMAL HEAD TEST

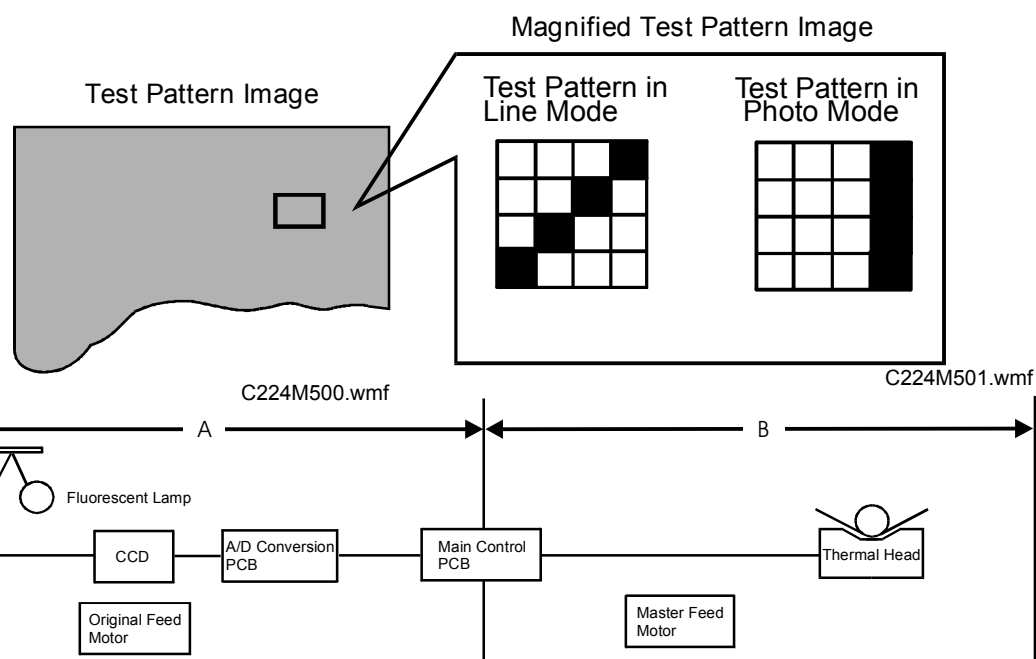
The purpose of this mode is to distinguish whether the cause of the image problem is located before or after image processing.

Output image: The normal output of this test pattern image mode is one of the dither matrix patterns as illustrated below.

Master processing length:

Main scan (Horizontal) direction: Full width of the thermal head

Sub-scan (Vertical) direction: Same as the vertical size of the original set on the original table.



This test pattern is generated by the image processing PCB.

C224M502.wmf

[Example] Problem:

Possible Cause 1

Vertical white lines appear on the print. If the same problem appears on the output image from the thermal head in test pattern image mode, the cause should be in area B, as shown above.

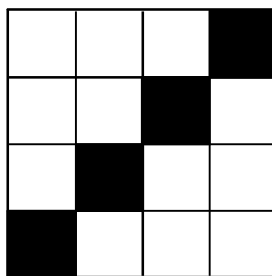
Possible Cause 2

If the output image from the thermal head is correct in test pattern mode but the output image in the normal mode is incorrect, the cause should be in area A, as shown above.

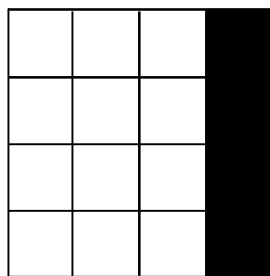
4.4.1 OPERATION: (To Enter Test Pattern Image Mode)

- 1) Remove the front cover.
- 2) Turn off DIP SW102-1 only when the power switch is off.
- 3) Turn on the main switch.
- 4) Press the Image Mode key to select the test pattern image.

Test pattern in line mode



Test pattern in photo mode



C224M503.wmf

- 5) Place an original on the original table.

CAUTION:

To prevent overheating of the thermal head, make the original as short as possible. Any type of original is suitable as the test pattern being used is in the image processing PCB memory.

- 6) Press the Master Making key and make prints.
- 7) After completion of the test pattern image mode, turn on DIP SW 102-1.

5. AVAILABLE OPTION/SUPPLY TABLE

O: Standard combination

Δ: Usable under certain conditions

X: Cannot be used

| | | |
|-------------|----------------------|----------|
| | | |
| Masters | Type 800 | X |
| | Type 900 | X |
| | VT-S | X |
| | VT-M | X *NOTE1 |
| | VT-L | X |
| | VT-II-M | O |
| Inks | Black | O |
| | Color | O |
| | VT-Black-1000 | X |
| Color Drums | Color Drum | Δ *NOTE2 |
| | Color Drum Type 905 | Δ *NOTE2 |
| | Color Drum VT2000-M | O |
| | Color Drum VT2000-LG | X *NOTE3 |
| | Color Drum VT2000-S | X *NOTE3 |
| | Color Drum VT3000-L | X |
| | Color Drum VT3000-S | X |
| Others | Cassette B4 | X |
| | Cassette VT3000-L | X |
| | Cassette VT3000-S | X |
| | Tape Marker Type 20 | O |
| | Priport Table | O |
| | Priport Table VT3000 | X |

Service
Tables

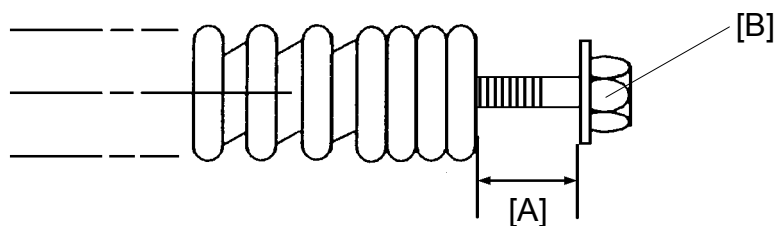
- NOTE:
1. The VT-M master can be installed in the C224 model, however, a weak image (sometimes blank) will appear. This is because the VT-II-M master is more sensitive than the VT-M master.
 2. The modified master clasper (P/N C2074948) must be installed.
 3. The drum can be installed. However, the maximum image area is limited depending on the drum screen size.

SECTION 5

**REPLACEMENT
AND ADJUSTMENT**

- 1) The replacement and adjustment procedures not mentioned in the following pages are identical to those of the C211, C212 and C213 models.
- 2) The purpose and procedure of the following adjustments are identical to those of the C211, C212 and C213 models, however the adjustment value or VR number is different.

- **PRINTING PRESSURE ADJUSTMENT**



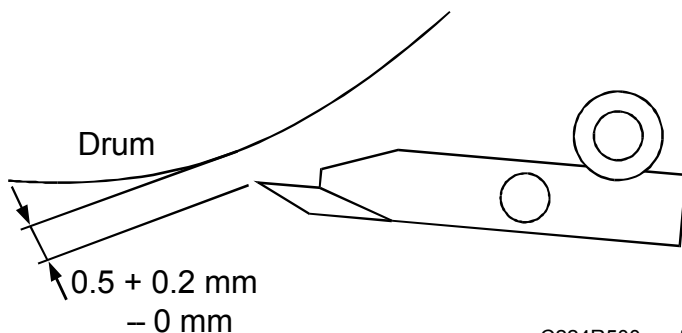
C224R511.img

Adjust the clearance [A] to be 14 ± 0.5 mm by turning the adjustment bolt [B].

- **PRINTING SPEED ADJUSTMENT**

Adjust the drum speed by turning VR101 on the main board.

- **EXIT PAWL CLEARANCE ADJUSTMENT**



C224R500.wmf

Adjust the exit pawl clearance so that the distance between the exit pawl and the drum is between 0.5 and 0.7 mm.

- **FIRST PAPER EXIT SENSOR ADJUSTMENT**

Adjust the 1st paper exit sensor sensitivity by turning VR103. Check the sensor status with LED103.

- **SECOND PAPER EXIT SENSOR ADJUSTMENT**

Adjust the 2nd paper exit sensor sensitivity by turning VR102. Check the sensor status with LED102.

1. OPTICS ADJUSTMENT

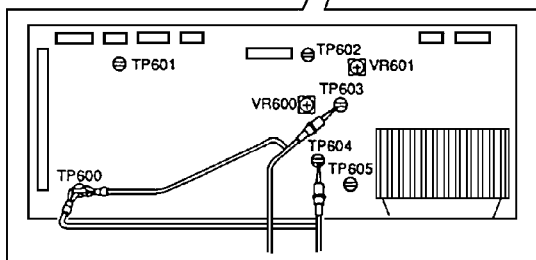
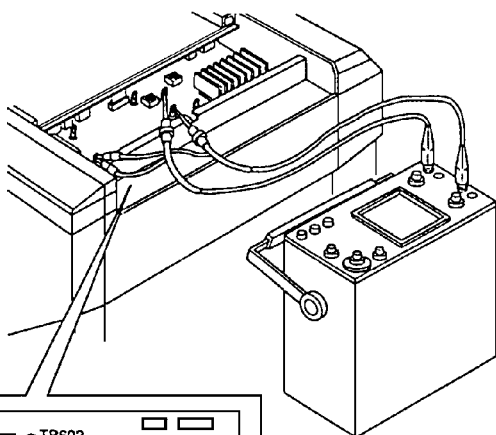
The method of the optics adjustment is the same as the C211, C212 and C213 models. However, the wave shape is not exactly the same because the pixel density of the C224 model is different from that of the C211, C212 and C213 models.

Necessary Tools

- 1) Facsimile Text Chart R-21 (99992131)
- 2) Resolution Chart (A0129110)
- 3) Oscilloscope

1.1 PREPARATION FOR ADJUSTMENT

1. Remove the original table and the original table cover.
2. Connect the terminals of the oscilloscope to the following test pins on the A/D conversion board.



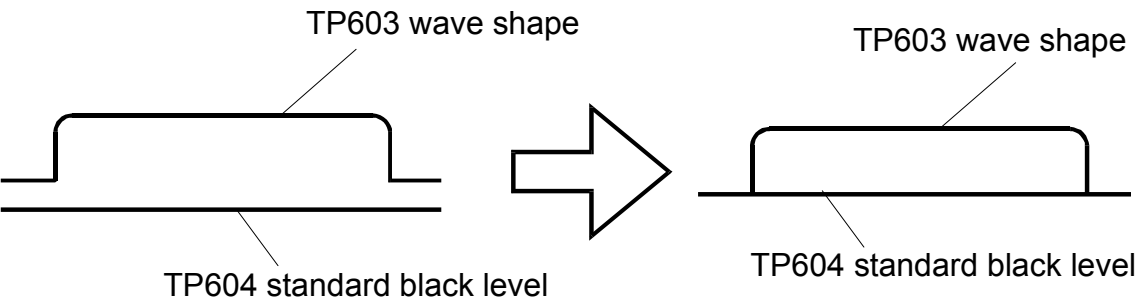
| Oscilloscope | Text Pin |
|--|----------|
| Channel 1 | TP603 |
| Channel 2 (Black level standard voltage) | TP604 |
| GND | TP600 |

C224R515.img

3. Access "I/O Check Mode".

- Turn on the main switch while holding the Print Start key, Stop key and Clear key on the operation panel.
4. Set "21" in the copy counter using the number keys, and set "0" in the memory/class display by pressing the memory/class key
 5. Press the Print Start key to turn on the fluorescent lamp.

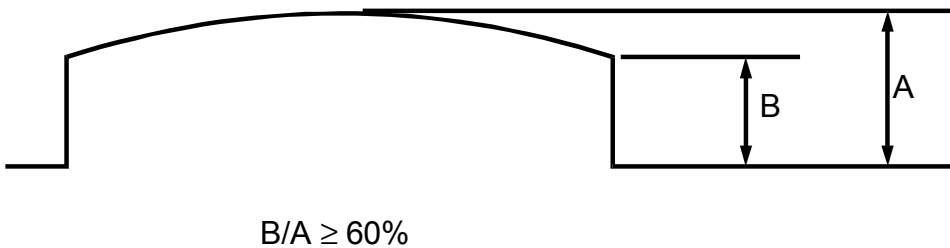
1.2 BLACK LEVEL ADJUSTMENT



C24R506.wmf

Adjust VR601 so that the black level at TP603 is the same as the standard black level ($1.4 \text{ V} \pm 0.03 \text{ V}$).

1.3 SHADING ADJUSTMENT

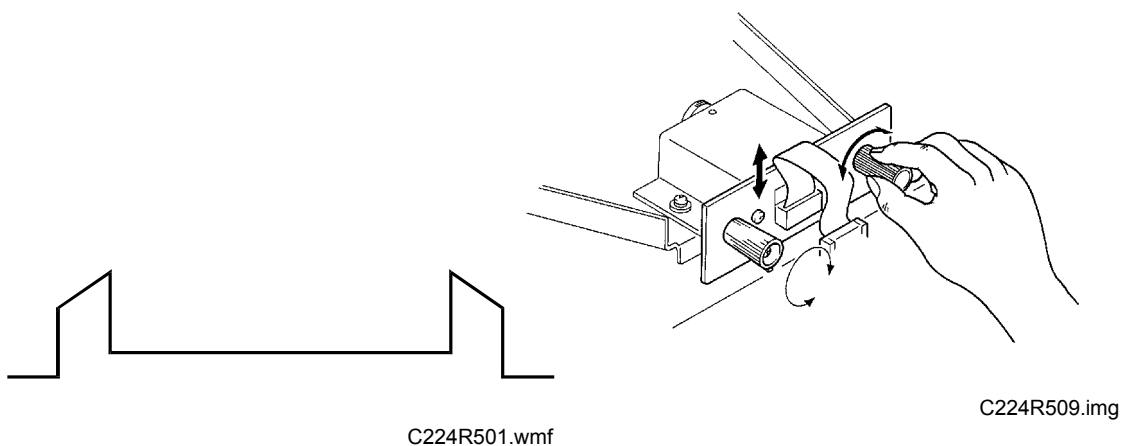


C224R505.wmf

Replacement
Adjustment

Adjust the shading plate position so that the wave is shaped as shown above.

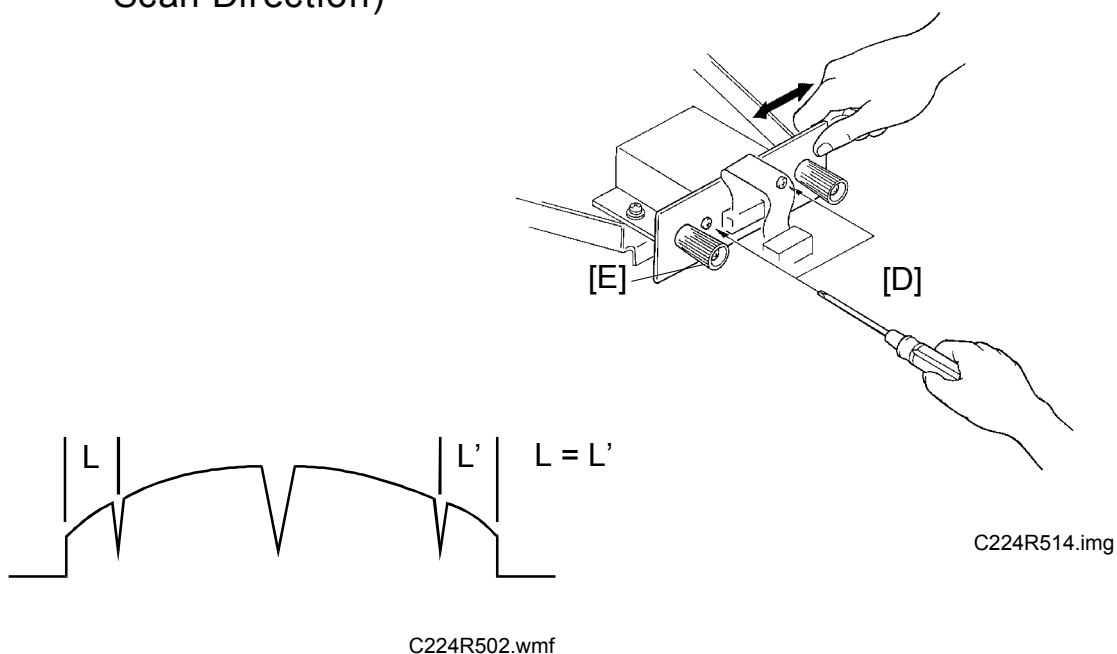
1.4 SCAN LINE POSITION ADJUSTMENT



Set the R-21 test chart so that the 1 mm black line is positioned 16 mm away from the edge of the lower original guide plate.

Adjust the CCD board position so that the shape of the wave is similar to the above illustration.

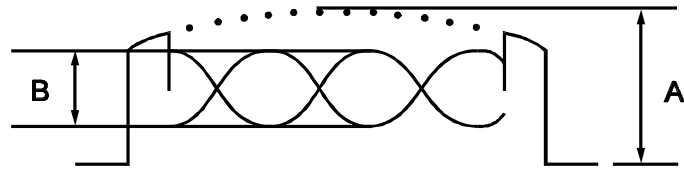
1.5 READING START POSITION ADJUSTMENT (In The Main Scan Direction)



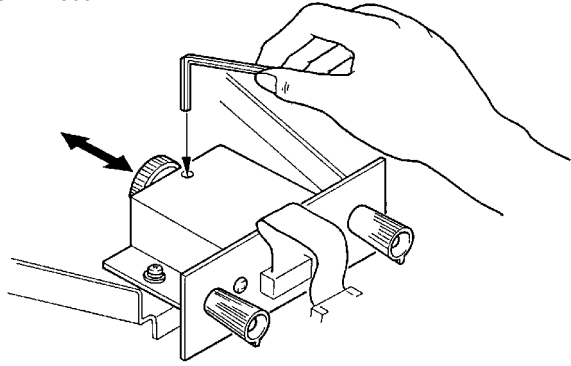
Set the test chart so that the center line, located at the leading edge of the test chart, is positioned above the original leading edge sensor actuator. Then feed the test chart so that the center line can be read.

Adjust the CCD board position so that the above wave is displayed.

1.6 FOCUS ADJUSTMENT



C224R503.wmf



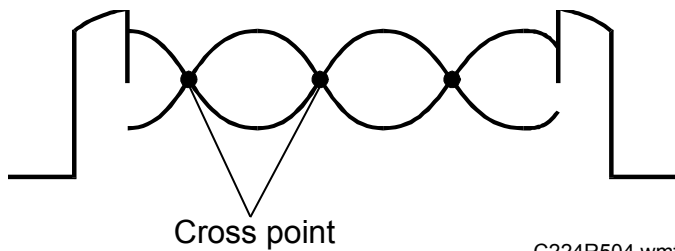
- $\frac{B}{A} \times 100 \geq 20\%$

C224R508.img

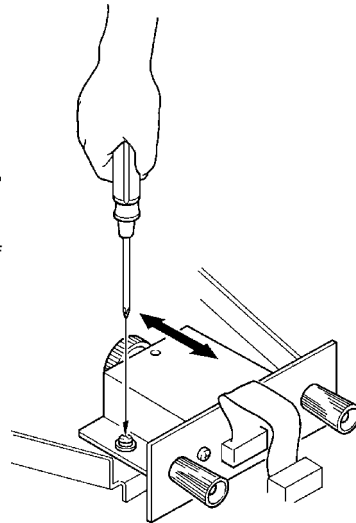
- Amplitude "B" (difference between white and black levels) must be a maximum.

Position the resolution chart so that the 300 DPI section can be read. Adjust the lens position so that the above wave appears.

1.7 REDUCTION RATIO ADJUSTMENT



C224R504.wmf

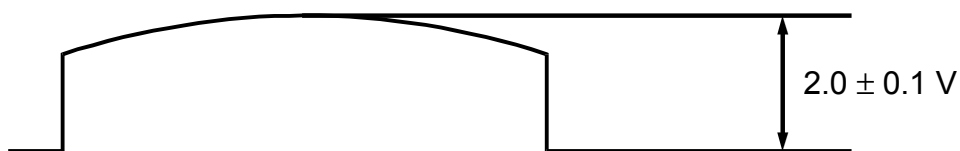


C224R513.img

Position the resolution chart so that the 300 DPI section can be read. Adjust the lens block position so that the cross points are fewer than 8.

Replacement
Adjustment

1.8 WHITE LEVEL ADJUSTMENT



C224R507.wmf

Adjust VR600 on the AD conversion board so that the maximum level is 2.0 ± 0.1 V.

1.9 IMAGE MAGNIFICATION IN THE SUB-SCAN DIRECTION ADJUSTMENT

Adjust the magnification ratio in the sub-scan direction using DIP103-1, 2, 3 on the main board, so that the printed image length is $100\% \pm 0.5\%$ compared with the original image length.

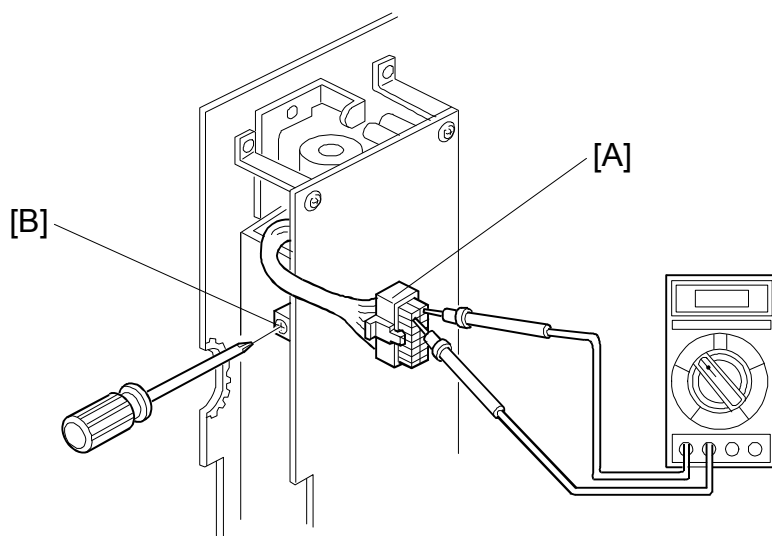
–DIP SW/Correction Ratio –

| DPS 104 | | | $\frac{\text{Original Length}}{\text{Print Image Length}} \times 100$ |
|---------|-----|-----|---|
| 1 | 2 | 3 | |
| OFF | OFF | OFF | 100% |
| OFF | ON | OFF | 99.5% |
| OFF | OFF | ON | 99.0% |
| OFF | ON | ON | 98.5% |
| ON | OFF | OFF | 100% |
| ON | ON | OFF | 100.5% |
| ON | OFF | ON | 101.0% |
| ON | ON | ON | 101.5% |

2. THERMAL HEAD VOLTAGE ADJUSTMENT

Purpose: To maintain master making quality and extend the lifetime of the thermal head.

NOTE: This adjustment is always required when the thermal head or power supply board is replaced.

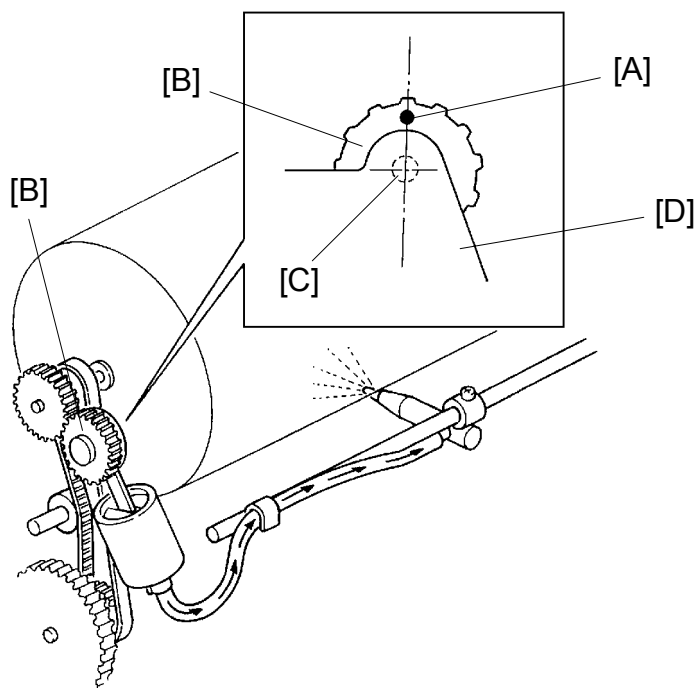


C224R512.wmf

1. Remove the rear cover and the right cover and right cover of the machine.
2. Disconnect the connector [A] from the plotter unit.
3. Check the voltage noted on the decal, located on the thermal head.
(The voltage varies with each thermal head.)
4. Access "I/ Check Mode".
 - Turn on the main switch while holding the Print Start, Stop and Clear keys.
5. Input 35 in the copy counter using the number keys, and set "0" in the Memory/Class display by pressing the Memory/Class key.
6. Press the Print Start key to apply the thermal head voltage.
7. Confirm that the voltage between one of the VHD terminals and one of the ground terminals of CN503 is at the level specified on the decal
(Within + 0 V , - 0.1 V).
8. If it is not, adjust VR3 on the power supply board.

NOTE: Press the stop key to stop applying the thermal head voltage.
Do not keep the thermal head voltage on for a long period.

3. AIR PUMP TIMING ADJUSTMENT

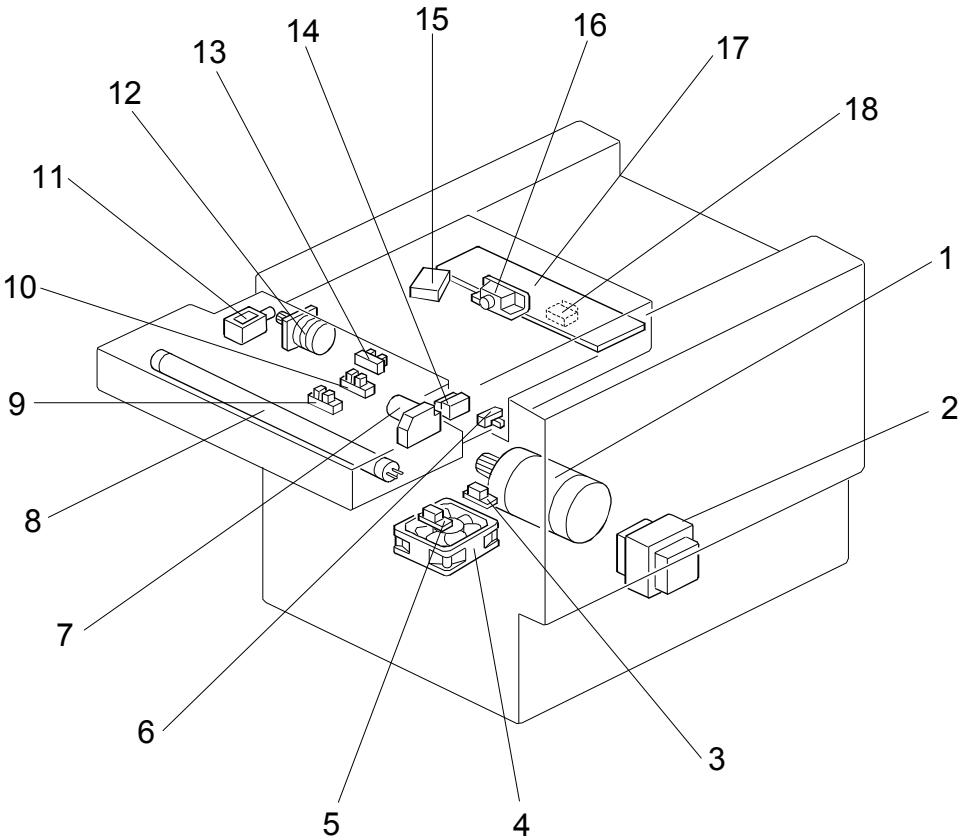


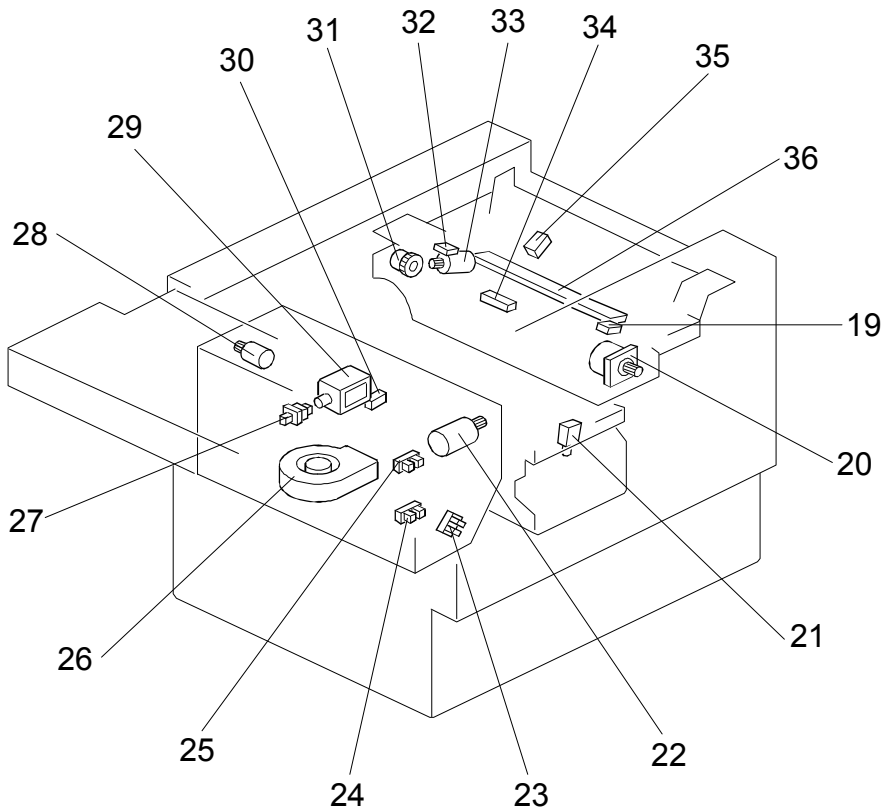
C224R510.img

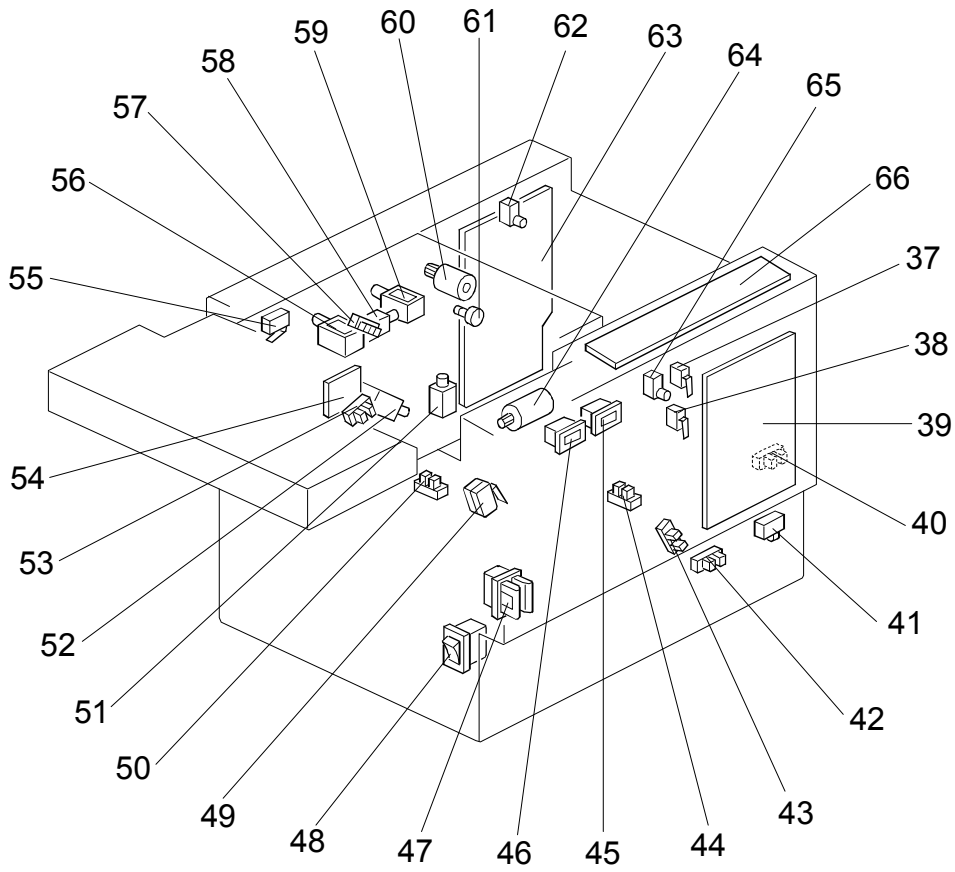
Purpose: To ensure that the paper exit pawl air pump produces a jet of air at the proper time.

1. Remove the rear cover.
2. Set the drum in the home position.
3. Confirm that the mark [A] on the pump drive gear [B] is right over the gear shaft [C].
4. If incorrect, remove the support plate [D] (5 screws) and reposition the gear.
5. Rotate the drum to the home position and do step 3 again.

ELECTRICAL COMPONENT LAYOUT







ELECTRICAL COMPONENT DESCRIPTIONS

| INDEX No. | NAME | P to P LOCATION |
|------------------|--------------------------------|-----------------|
| Motors | | |
| 1 | Main Motor | A-7 |
| 4 | Vacuum Motor | B-16 |
| 7 | ADF Drive Motor | J-7 |
| 12 | Original Transport Motor | J-8 |
| 20 | Master Feed Motor | D-5 |
| 22 | Pressure Plate Motor | B-10 |
| 26 | Air Knife Motor | B-10 |
| 28 | Master Eject Motor | B-10 |
| 33 | Cutter Motor | B-9 |
| 60 | Image Shift Motor | B-15 |
| 64 | Paper Table Drive Motor | A-7 |
| Solenoids | | |
| 11 | Original Pressure Solenoid | J-6 |
| 21 | Ink Supply Solenoid | B-12 |
| 29 | Master Eject Solenoid | B-10 |
| 51 | Paper Feed Solenoid | J-12 |
| 52 | Printing Pressure Solenoid | J-12 |
| 56 | Master Eject Clamper Solenoid | J-13 |
| 58 | Drum Lock Solenoid | B-14 |
| 59 | Master Feed Clamper Solenoid | J-14 |
| Switches | | |
| 6 | Printing Density Switch | G-8 |
| 14 | ADF Safety Switch | I-7 |
| 18 | Fluorescent Lamp Safety Switch | I-5 |
| 19 | Left Cutter Switch | B-9 |
| 27 | Master Eject Box Switch | B-11 |
| 32 | Right Cutter Switch | B-9 |
| 37 | Front Door Safety Switch | B-7 |
| 38 | Drum Safety Switch | B-8 |

| INDEX No. | NAME | P to P LOCATION |
|----------------|---|-----------------|
| 41 | Paper Table Safety Switch | A-6 |
| 47 | Test Switch | B-3, B-6 |
| 48 | Main Switch | A-2 |
| 49 | Master Eject Unit Safety Switch (115 V machines only) | B-3 |
| 55 | Master Eject Unit Safety Switch (220 V machines only) | |
| 62 | Master Cutter Switch | B-9 |
| 65 | Drum Rotation Switch | B-14 |
| Sensors | | |
| 3 | 1st Paper Exit Sensor | B-15 |
| 5 | 2nd Paper Exit Sensor | B-16 |
| 9 | Original Registration Sensor | I-6 |
| 10 | 2nd Original Sensor | I-5 |
| 13 | 1st Original Sensor | I-6 |
| 23 | Lower Pressure Plate Sensor | B-11 |
| 24 | Full Master Box Sensor | B-11 |
| 25 | Upper Pressure Plate Sensor | B-11 |
| 30 | Master Eject Sensor | B-11 |
| 34 | Master Buckle Sensor | B-8 |
| 35 | Master End Sensor | B-9 |
| 40 | Paper Table Height Sensor | J-11 |
| 42 | Paper Table Lower Limit Sensor | J-11 |
| 43 | Printing Pressure Sensor | J-12 |
| 44 | Paper End Sensor | J-12 |
| 50 | Drum Rotation Sensor | B-13 |
| 53 | 2nd Drum Position Sensor | B-13 |
| 57 | 1st Drum Position Sensor | B-13 |

| INDEX No. | NAME | P to P LOCATION |
|-----------------------|-----------------------------|-----------------|
| Printer Circuit Board | | |
| 16 | CCD PCB | I-3 |
| 17 | A/D Conversion PCB | H-4 |
| 39 | Main Control PCB | F-7 |
| 54 | Ink Detection PCB | C-13 |
| 63 | Power Supply PCB | G-1 |
| | | |
| Counters | | |
| 45 | Copy Counter | J-13 |
| 46 | Master Counter | J-13 |
| | | |
| Others | | |
| 2 | Transformer | B-2 |
| 8 | Fluorescent Lamp | K-4 |
| 15 | Fluorescent Lamp Stabilizer | J-4 |
| 31 | Reverse Roller Clutch | B-9 |
| 36 | Thermal Head | C-3 |
| 61 | Encoder | B-14 |
| 66 | Operation Panel | I-9 |