Model PT3
Machine Code: C275

Field Service Manual

2 November, 2009

Important Safety Notices

Responsibilities of the Customer Engineer

Customer Engineer

Maintenance shall be done only by trained customer engineers who have completed service training for the machine and all optional devices designed for use with the machine.

Reference Material for Maintenance

- Maintenance shall be done using the special tools and procedures prescribed for maintenance of the machine described in the reference materials (service manuals, technical bulletins, operating instructions, and safety guidelines for customer engineers).
- In regard to other safety issues not described in this document, all customer engineers shall strictly obey procedures and recommendations described the "CE Safety Guide".
- Use only consumable supplies and replacement parts designed for use of the machine.

Before Installation, Maintenance

Shipping and Moving the Machine

⚠CAUTION

- Work carefully when lifting or moving the machine. If the machine is heavy, two or more customer engineers may be required to prevent injuries (muscle strains, spinal injuries, etc.) or damage to the machine if it is dropped or tipped over.
- Personnel moving or working around the machine should always wear proper clothing and footwear. Never wear loose fitting clothing or accessories (neckties, loose sweaters, bracelets, etc.) or casual footwear (slippers, sandals, etc.) when lifting or moving the machine.
- Always unplug the power cord from the power source before you move the product. Before you move the product, arrange the power cord so it will not fall under the product.

Power

⚠WARNING

- Always disconnect the power plug before doing any maintenance procedure. After switching off the machine, power is still supplied to the main machine and other devices. To prevent electrical shock, switch the machine off, wait for a few seconds, then unplug the machine from the power source.
- Before you do any checks or adjustments after turning the machine off, work carefully to avoid injury. After removing covers or opening the machine to do checks or adjustments, never touch electrical components or moving parts (gears, timing belts, etc.).
- After turning the machine on with any cover removed, keep your hands away from electrical components and moving parts. Never touch the cover of the fusing unit, gears, timing belts, etc.

Installation, Disassembly and Adjustments

⚠CAUTION

- After installation, maintenance, or adjustment, always check the operation of the machine to make sure that it is operating normally. This ensures that all shipping materials, protective materials, wires and tags, metal brackets, etc., removed for installation, have been removed and that no tools remain inside the machine. This also ensures that all release interlock switches have been restored to normal operation.
- Never use your fingers to check moving parts causing spurious noise. Never use your fingers to lubricate moving parts while the machine is operating.

Special Tools

⚠CAUTION

- Use only standard tools approved for machine maintenance.
- For special adjustments, use only the special tools and lubricants described in the service manual. Using tools incorrectly, or using tools that could damage parts, could damage the machine or cause injuries.

During Maintenance

General

⚠CAUTION

- Before you begin a maintenance procedure:
- 1) Switch the machine off

- 2) Disconnect the power plug from the power source.

Safety Devices

⚠WARNING

- Never remove any safety device unless it requires replacement. Always replace safety devices immediately.
- Never do any procedure that defeats the function of any safety device. Modification or removal of a safety device (fuse, switch, etc.) could lead to a fire and personal injury. Always test the operation of the machine to ensure that it is operating normally and safely after removal and replacement of any safety device.
- For replacements use only the correct fuses or circuit breakers rated for use with the machine. Using replacement devices not designed for use with the machine could lead to a fire and personal injuries.

Organic Cleaners

⚠CAUTION

- During preventive maintenance, never use any organic cleaners (alcohol, etc.) other than those described in the service manual.
- Make sure the room is well ventilated before using any organic cleaner. Use organic solvents in small amounts to avoid breathing the fumes and becoming nauseous.
- Switch the machine off, unplug it, and allow it to cool before doing preventive maintenance. To avoid fire or explosion, never use an organic cleaner near any part that generates heat.
- Wash your hands thoroughly after cleaning parts with an organic cleaner to contamination of food, drinks, etc. which could cause illness.
- Clean the floor completely after accidental spillage of silicone oil or other materials to prevent slippery surfaces that could cause accidents leading to hand or leg injuries. Use dry rags to soak up spills.

Power Plug and Power Cord

⚠WARNING

- Before serving the machine (especially when responding to a service call), always make sure that the power plug has been inserted completely into the power source. A partially inserted plug could lead to heat generation (due to a power surge caused by high resistance) and cause a fire or other problems.
- Always check the power plug and make sure that it is free of dust and lint. Clean it if necessary. A dirty plug can generate heat which could cause a fire.

- Inspect the length of the power cord for cuts or other damage. Replace the power cord if necessary. A frayed or otherwise damaged power cord can cause a short circuit which could lead to a fire or personal injury from electrical shock.
- Check the length of the power cord between the machine and power supply. Make sure the power cord is not coiled or wrapped around any object such as a table leg. Coiling the power cord can cause excessive heat to build up and could cause a fire.
- Make sure that the area around the power source is free of obstacles so the power cord can be removed quickly in case of an emergency.
- Make sure that the power cord is grounded (earthed) at the power source with the ground wire on the plug.
- Connect the power cord directly into the power source. Never use an extension cord.
- When you disconnect the power plug from the power source, always pull on the plug, not the cable.

After Installation, Servicing

Points to Confirm with Operators

At the end of installation or a service call, instruct the user about use of the machine. Emphasize the following points.

- Show operators how to remove jammed paper and troubleshoot other minor problems by following the procedures described in the operating instructions.
- Point out the parts inside the machine that they should never touch or attempt to remove.
- Confirm that operators know how to store and dispose of consumables.
- Make sure that all operators have access to an operating instruction manual for the machine.
- Confirm that operators have read and understand all the safety instructions described in the operating instructions.
- Demonstrate how to turn off the power and disconnect the power plug (by pulling the plug, not the cord) if any of the following events occur: 1) something has spilled into the product, 2) service or repair of the product is necessary, 3) the product cover has been damaged.
- Caution operators about removing paper fasteners around the machine. They should never allow paper clips, staples, or any other small metallic objects to fall into the machine.

Safety Instructions for this Machine

Prevention of Physical Injury

1. Before disassembling or assembling parts of the machine and peripherals, make sure that the machine and peripheral power cords are unplugged.
2. The plug should be near the machine and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. The inside and the metal parts of the fusing unit become extremely hot while the machine is operating. Be careful to avoid touching those components with your bare hands.
5. To prevent a fire or explosion, keep the machine away from flammable liquids, gases, and aerosols.

Health Safety Conditions

1. If you get ink in your eyes by accident, try to remove it with eye drops or flush with water as first aid. If unsuccessful, get medical attention.
2. If you ingest ink by accident, induce vomiting by sticking a finger down your throat or by giving soapy or strong salty water to drink.

Observance of Electrical Safety Standards

1. The machine and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.

Safety and Ecological Notes for Disposal

1. Dispose of replaced parts in accordance with local regulations.
2. Used ink and masters should be disposed of in an environmentally safe manner and in accordance with local regulations.

Symbols

This manual uses several symbols. The meanings of those symbols are as follows:

	See or Refer to
	Clip ring

	E-ring
	Screw
	Connector
	Clamp

TABLE OF CONTENTS

4. Replacement and Adjustment

5. System Maintenance

6. Troubleshooting

7. Energy Saving

1. Product Information

Specifications

See "Appendices" for the "General Specifications":

Guidance for Those Who are Familiar with Predecessor Products

1

Machine C275 is a successor model to Machine C267/C271. If you have experience with the predecessor products, the following information will be of help when you read this manual.

Different Points from Predecessor Products

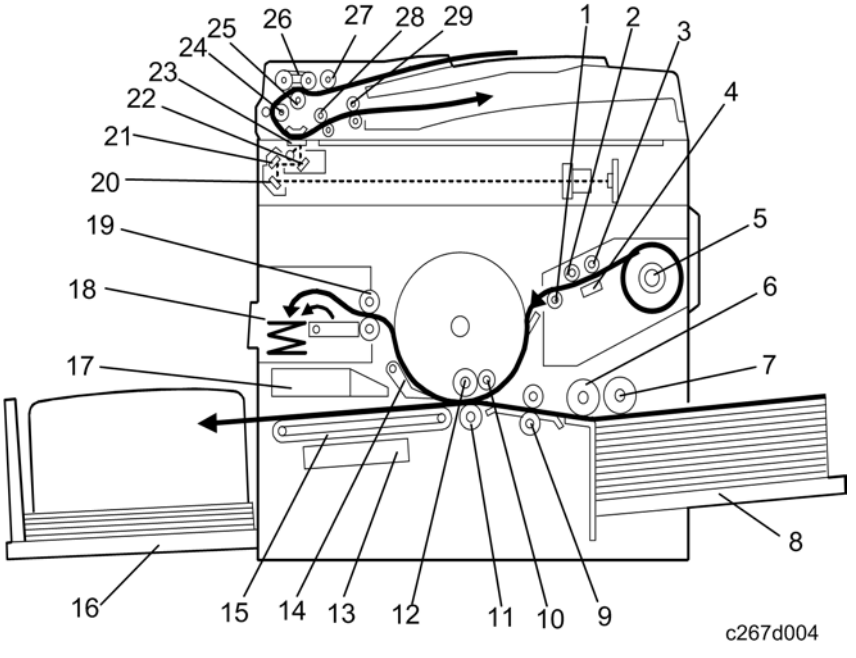
Item	C267/C271	C275
Paper Delivery Motor	No	Yes
Drum HP Lock Mechanism	No	Yes
Optional Printer Unit Type 4545A	No	Yes
First Print Time	33 seconds (A4 ▭) When setting an original on the exposure glass	34 seconds (A4 ▭) When setting an original on the exposure glass
Depth	676 mm	681 mm
Power Source	120 V, 60 Hz, 1.7 A 220 V – 240 V, 50 – 60 Hz, 1.1 A	120 V, 60 Hz, 2.2 A 220 V – 240 V, 50 – 60 Hz, 1.2 A
Power Consumption	120V, 60Hz: Less than 150W (Printing) Less than 150W (Master making) 220V-240V, 50-60Hz: Less than 160W (Printing) Less than 160W (Master making)	120V, 60Hz: Less than 185W (Printing) Less than 210W (Master making) 220V-240V, 50-60Hz: Less than 185W (Printing) Less than 210W (Master making)

Item	C267/C271	C275
Noise Emission	**Sound Power Level** Standby: 36 dB Copying 80 cpm: 78 dB Copying 100 cpm: 80 dB Copying 130 cpm: 84 dB **Operating Position Sound Power Level** Standby: 20 dB Copying 80 cpm: 63 dB Copying 100 cpm: 70 dB Copying 130 cpm: 72 dB	**Sound Power Level** Standby: 34 dB Copying 80 cpm: 78 dB Copying 100 cpm: 80 dB Copying 130 cpm: 84 dB **Operating Position Sound Power Level** Standby: 20 dB Copying 80 cpm: 63 dB Copying 100 cpm: 66 dB Copying 130 cpm: 70 dB

Overview

1

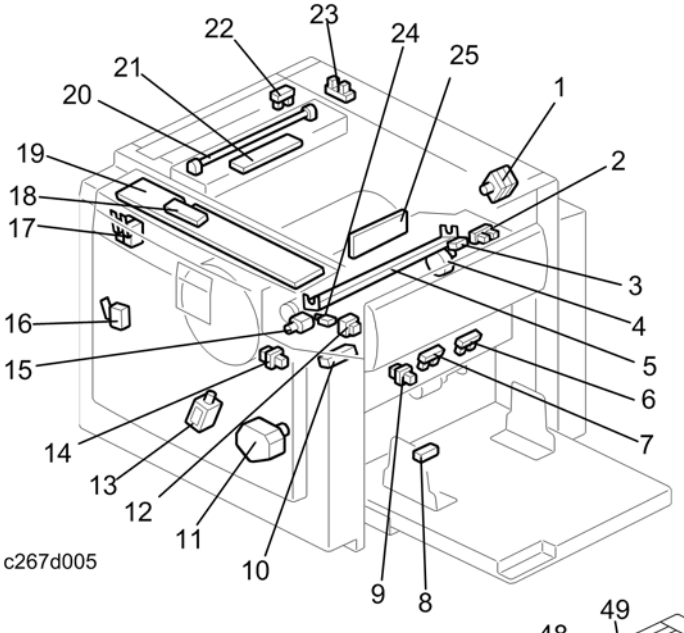
Mechanical Component Layout

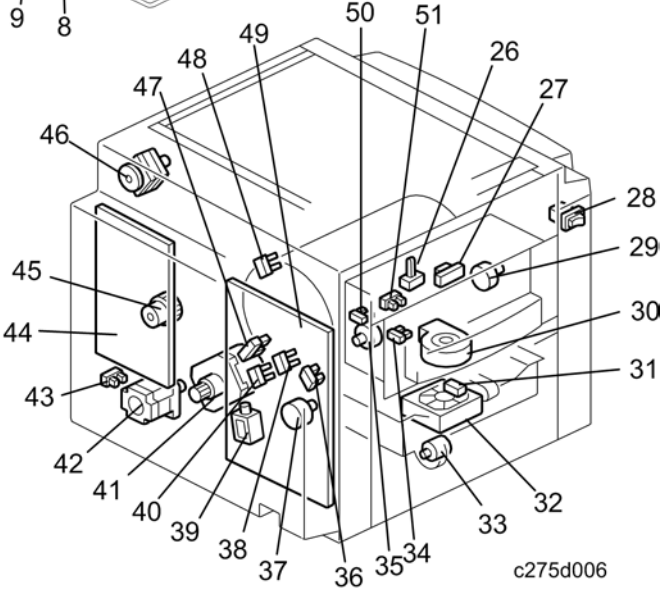


1. Tension Roller 2. Master Feed Roller 3. Platen Roller 4. Thermal Head 5. Master Roll 6. Paper Feed Roller 7. Paper Pick-up Roller 8. Paper Table 9. Registration Rollers 10. Doctor Roller 11. Press Roller 12. Ink Roller 13. Vacuum Fan Motor 14. Exit Pawl 15. Transport Belts	16. Paper Delivery Table 17. Air Knife Fan Motor 18. Master Eject Box 19. Master Eject Rollers 20. 3rd Mirror 21. 2nd Mirror 22. 1st Mirror 23. DF Exposure Glass 24. 1st Transport Roller 25. Separation Roller 26. Original Feed Belt 27. Pick-up Roller 28. 2nd Transport Roller 29. Original Exit Roller

1

Electrical Component Layout





Boards

Index No.	Name	Function
18	LCD	Displays messages for the operator

Index No.	Name	Function
19	Operation Panel Boards	These boards control the operation panel.
21	Lamp Stabilizer	This supplies power to the xenon lamp.
25	SBU	Makes a video signal from the scanned original.
44	Main Processing Unit (MPU)	Controls all machine functions both directly and through other boards.
49	Power Supply Unit	Provides dc power to the system.

Motors

Index No.	Name	Function
1	Scanner Motor	Stepper motor drives the book scanner.
4	Master Feed Motor	Feeds the master to the drum.
11	Paper Table Motor	Raises and lowers the paper table.
15	Cutter Motor	Cuts the master.
29	Master Eject Motor	Sends used masters into the master eject box.
30	Air Knife Fan Motor	Rotates the fan to provide air to separate the leading edge of the paper from the drum.
32	Vacuum Fan Motor	Provides suction so that paper is held firmly on the transport belt.
33	Paper Delivery Motor	Drives the paper delivery unit.
35	Pressure Plate Motor	Raises and lowers the pressure plate.
37	Clamper Motor	Opens or closes the drum master clamper.
41	Main Motor	Drives paper feed mechanisms and the drum.
42	Registration Motor	Feeds the paper to align it with the master on the drum.
46	Original Feed Motor	Stepper motor drives the book scanner.

Solenoids

Index No.	Name	Function
13	Front Pressure Release Solenoid	Releases the press roller to apply printing pressure.
39	Rear Pressure Release Solenoid	Releases the press roller to apply printing pressure.

Switches

Index No.	Name	Function
9, 14	Master making unit set switches	The machine does not work until the two set switches turn on.
12	Paper Table Lowering Switch	Lowers the paper table.
16	Master eject unit safety switch	Checks whether the master eject unit is properly closed.
17	Door Safety Switches	Checks whether the front door is properly closed.
24	Cutter HP Switch	Detects when the cutter is at the home position
28	Main Switch	Turns the power on or off.

Sensors

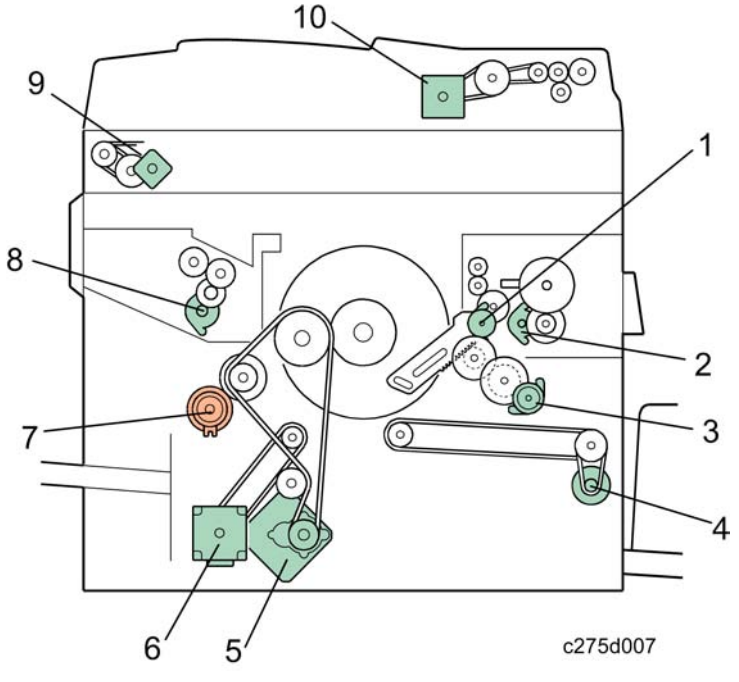
Index No.	Name	Function
3	Master End Sensor	Informs the CPU when the master making unit runs out of master roll.
6	Paper Height Sensor 1	Detects when the paper table reaches the paper feed position.
7	Paper Height Sensor 2	Detects when the paper table reaches the paper feed position.
8	Paper End Sensor	Informs the CPU when the paper table runs out of paper.

Index No.	Name	Function
10	Paper Registration Sensor	Detects paper approaching the registration roller.
24	Scanner Home Position Sensor	Detects when the image sensor is at home position.
25	Platen Cover Sensor	Detects whether the platen cover is open or closed.
26	Master Eject Sensor	Detects used master misfeeds.
27	Drum Master Sensor	Detects if there is a master on the drum
31	Paper Exit Sensor	Detects paper misfeeds at the exit.
34	Pressure Plate Limit Sensor	Detects if the pressure plate is in the lowest position.
36	2nd Feed start Timing Sensor	Determines the paper misfeed check timing at the paper registration area.
38	Clamper Open Sensor	Detects if the clamper is in the open position.
40	Clamper Close Sensor	Detects if the clamper is in the closed position.
43	Paper Table Lower Limit Sensor	Detects when the paper table is at its lower limit position.
47	Feed Start Timing Sensor	Determines the paper feed start timing.
48	Master Eject Position Sensor	Detects when the drum is at the master eject position (this is the home position)
50	Pressure Plate Home Position Sensor	Detects if the pressure plate is at the home position.
51	Eject Box Set Sensor	Checks if the master eject box is set.

Others

Index No.	Name	Function
5	Thermal Head	Burns the image onto the master.
20	Xenon Lamp	Applies light to the original for exposure.
45	Paper Feed Clutch	Transmits main motor drive to the paper feed roller at the appropriate time.

Drive Layout



1. Master Eject Motor	6. Registration Motor
2. Pressure Plate Motor	7. Paper Feed Clutch
3. Clamper Motor	8. Master Feed Motor
4. Paper Delivery Motor	9. Scanner Motor
5. Main Motor	10. Original Feed Motor

2. Installation

Installation Requirements

Carefully select the installation location because environmental conditions greatly affect machine performance.

Optimum Environmental Condition

1. Temperature: 10 to 30°C (50 to 86 F)
2. Humidity: 20 to 90 %RH
3. Install the machine on a strong and level base. The machine must be level within 5mm (0.2") both front to rear left to right.

Environments to Avoid

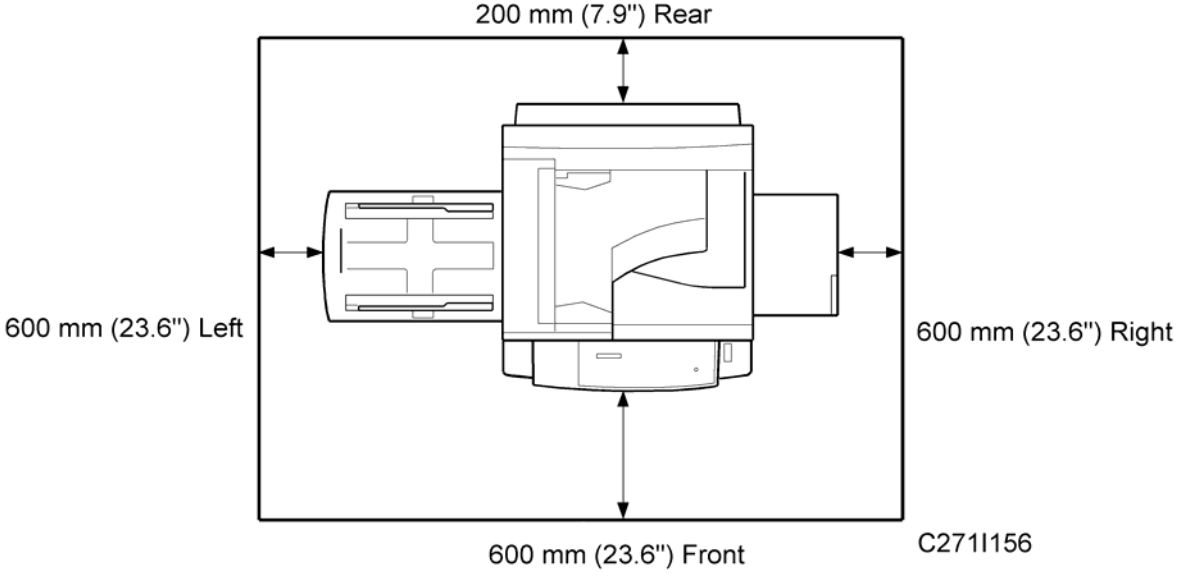
1. Locations exposed to direct sunlight or strong light (more than 1,500 lux).
2. Dusty areas
3. Areas containing corrosive gases.
4. Locations directly exposed to cool air from an air conditioner or reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause condensation within the machine.)

Power Connection

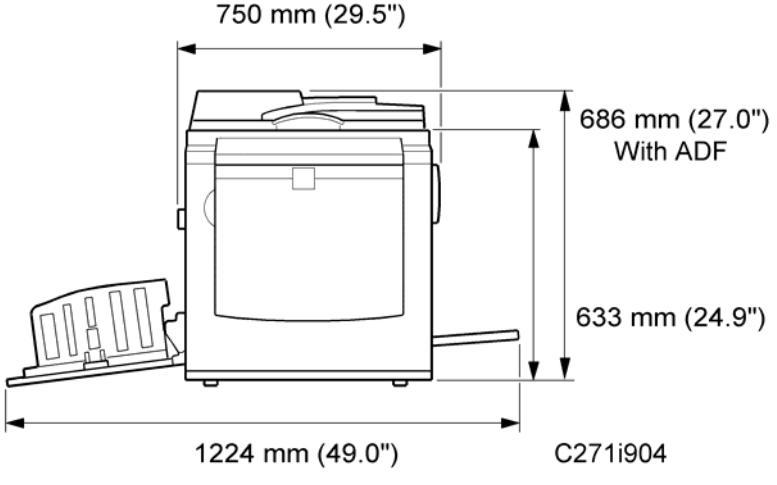
1. Securely connect the power cord to a power source.
2. Make sure that the wall outlet is near the machine and easily accessible.
3. Make sure the plug is firmly inserted in the outlet.
4. Avoid multi-wiring
5. Do not pinch the power cord.

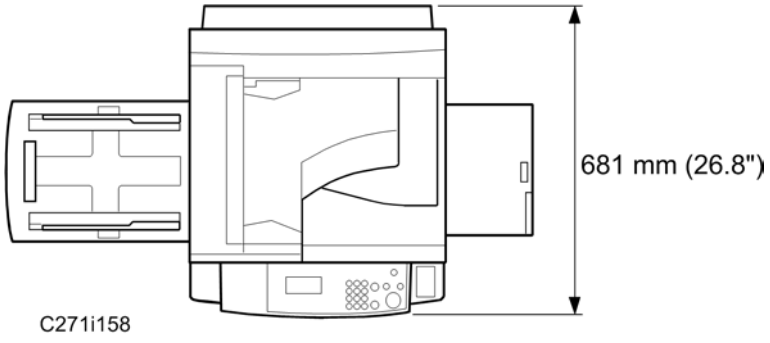
Minimum Space Requirements

Place the machine near a power source, providing minimum clearance as shown below.


200 mm (7.9") Rear
600 mm (23.6") Left
600 mm (23.6") Right
600 mm (23.6") Front
C271I156

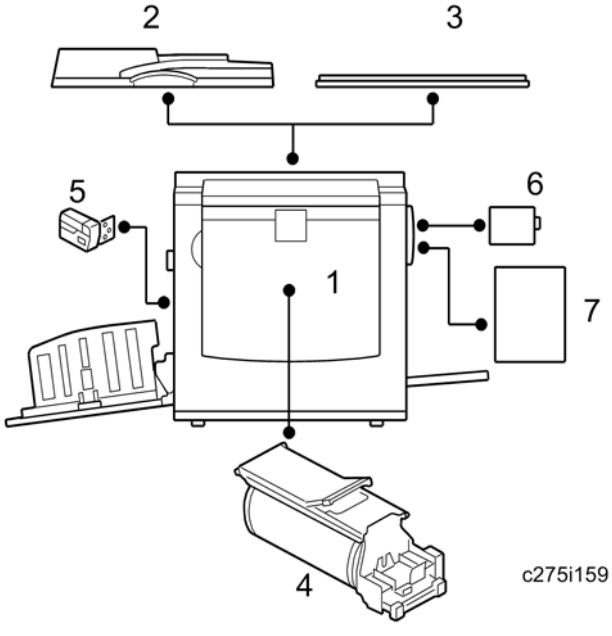
Dimensions


750 mm (29.5")
686 mm (27.0")
With ADF
633 mm (24.9")
1224 mm (49.0")
C271i904



Main Body and Peripherals

This is a list of the peripheral devices that can be installed with the digital duplicator.



No.	Model	Name	Comments
1	C275	Digital duplicator	Main Machine
2	C642	ADF	Auto document feeder
3	B406	Platen cover	
4	C643/C647/C648	Color drum	Optional drum – A4/LG/B4
5	C651	Tape Dispenser	

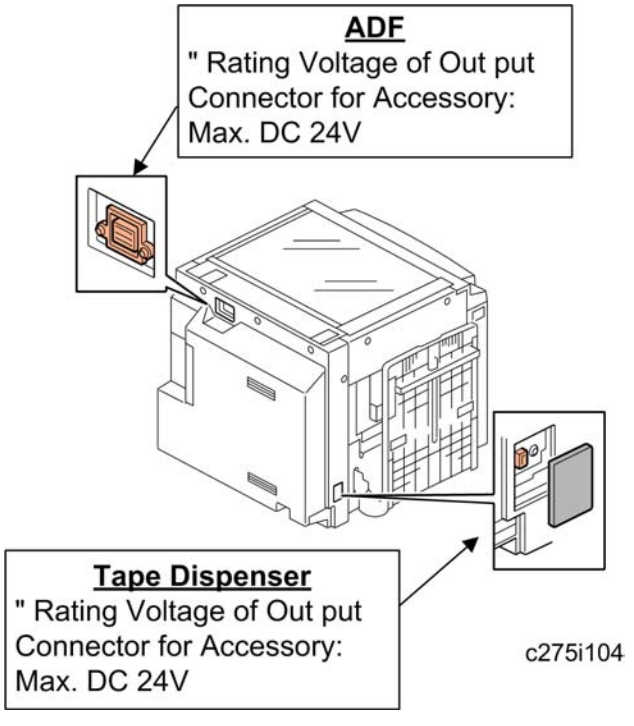
No.	Model	Name	Comments
6	C646	Printer unit VC-20	Printer controller unit
7	C654	Printer Unit Type 4545A	

Power Sockets for Peripherals

CAUTION

Rating Voltage for Peripherals

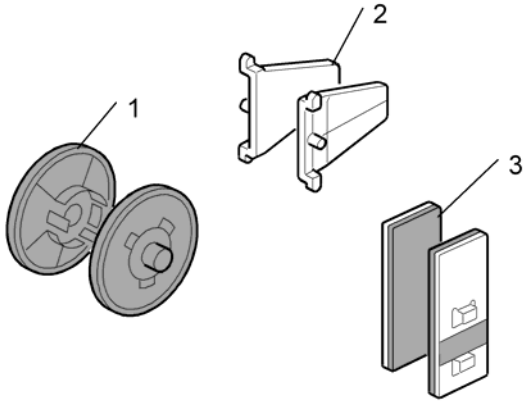
Make sure to plug the cables into the correct sockets.



Installation Procedure

Main Body

Accessory Check



C271i108

Make sure that you have all the accessories listed below.

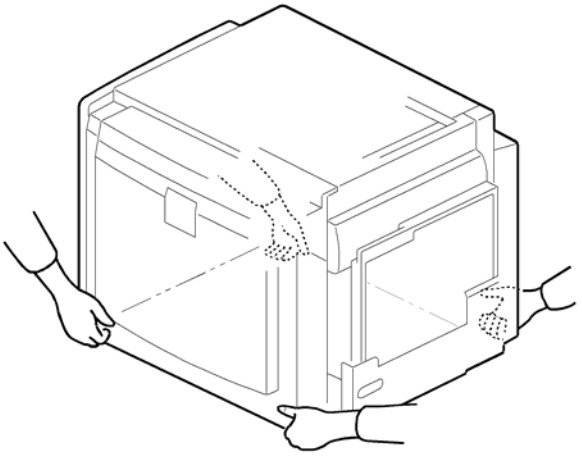
No.	Description	Quantity
1	Master Spool	2
2	Paper Delivery Table Side Plate Guide	2
3	Paper Feed Side Pad	2
4	Emblem Cover (C275-80, -83, -92, -93)	1
5	Emblem – Ricoh DX 3440 (C275-80)	1
6	Emblem – Gestetner DX 3440 (C275-80)	1
7	Warranty Letter on carton box (C275-76, -78)	1
8	Leaflet (C275-76, -78)	1
9	Operating Instructions (C275-61, -76, -78, -80, -92)	1
10	Easy Operation Guide (C275-61, -76, -78, -80, -92)	1

No.	Description	Quantity
11	German Acoustic Statement – Ricoh (C275-83, -93)	1
12	German Acoustic Statement – Gestetner (C275-83, -93)	1
13	Bundled Items List (C275-76, -78)	1
14	NECR (C275-80, -92)	1

Installation Procedure

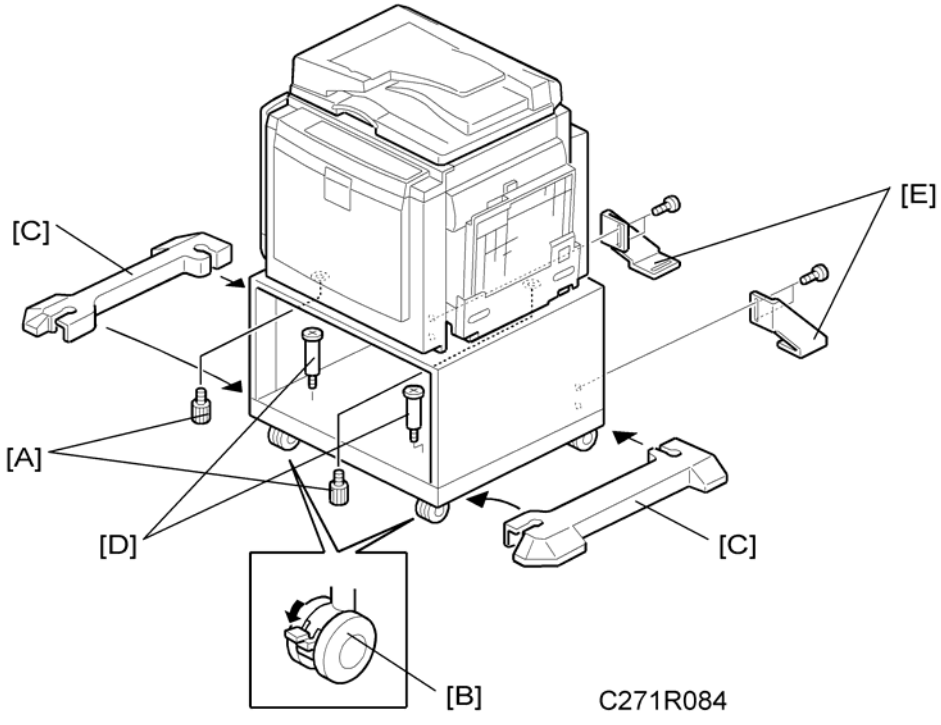
⚠CAUTION

- To avoid serious injury, do not connect the power plug to the machine until you are instructed to do so.

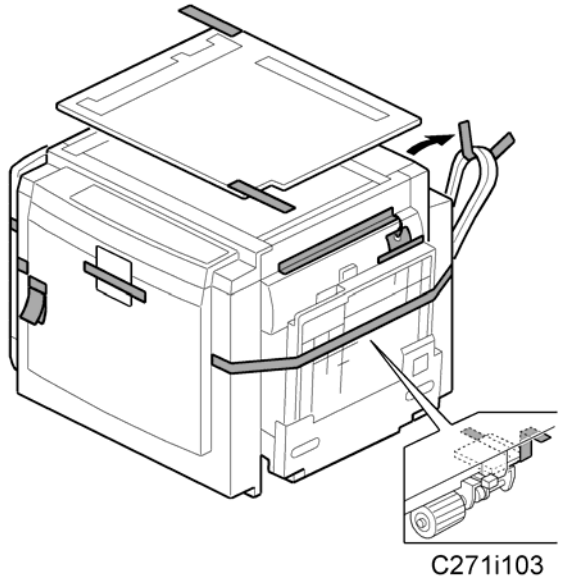


C271i102

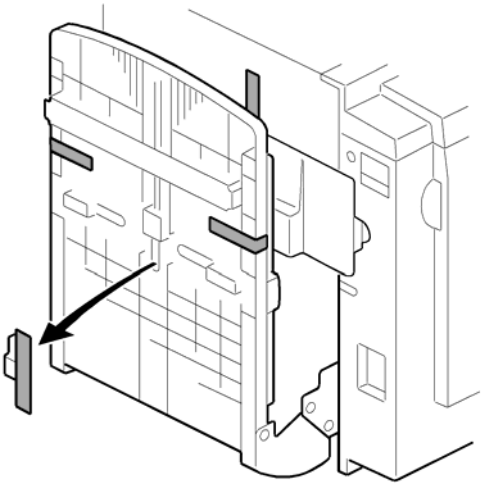
1. Unpack the machine and remove all the wrapping.



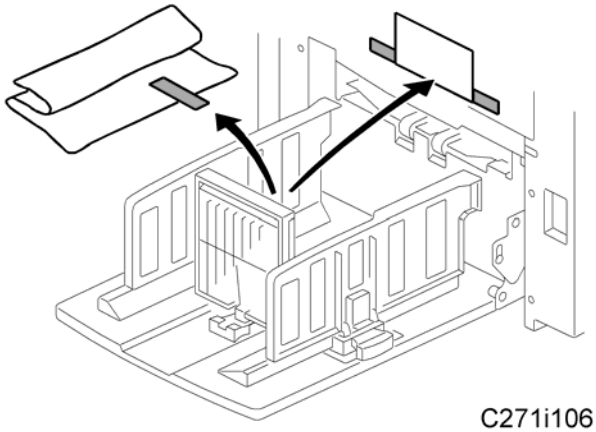
2. When you install the optional table:
    - Mount the machine on the table. There are two screws [A] packed with the table.
    - Lock the caster [B]
    - Fix the caster lock stays [C] and tighten the screws [D]
    - Attach the stabilizing brackets [E] (these help to prevent the machine from falling over).



C271i103

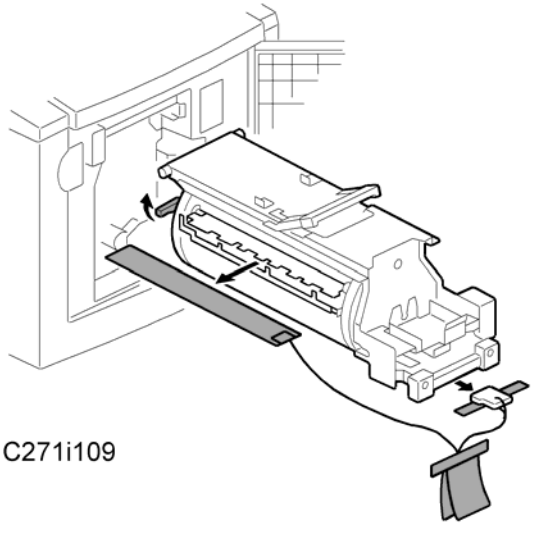


C271i111



C271i106

3. Remove the filament tape as shown above.



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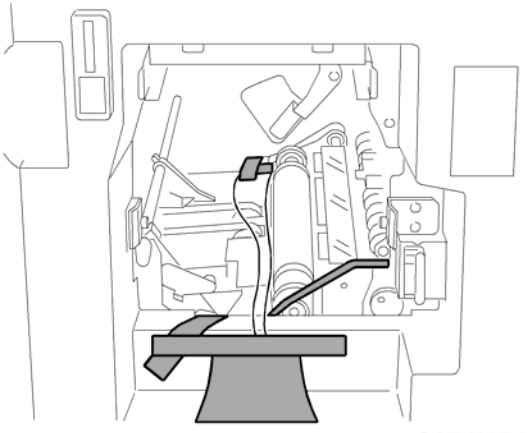
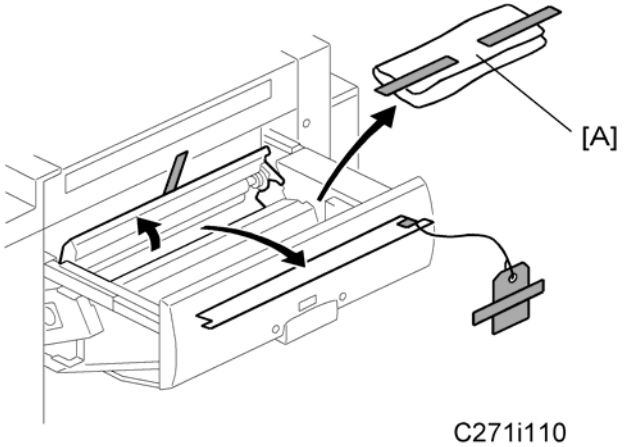


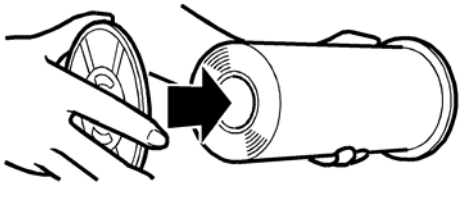
C271i151

4. Remove the string securing the covers and units as shown above.



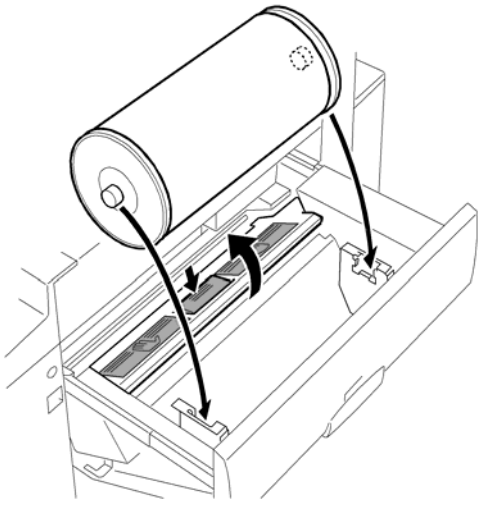
C271i110

5. Open the paper table.
6. Pull out the master making unit, and take out the accessory bag [A].
7. Remove the filament tape and string securing the covers and units.



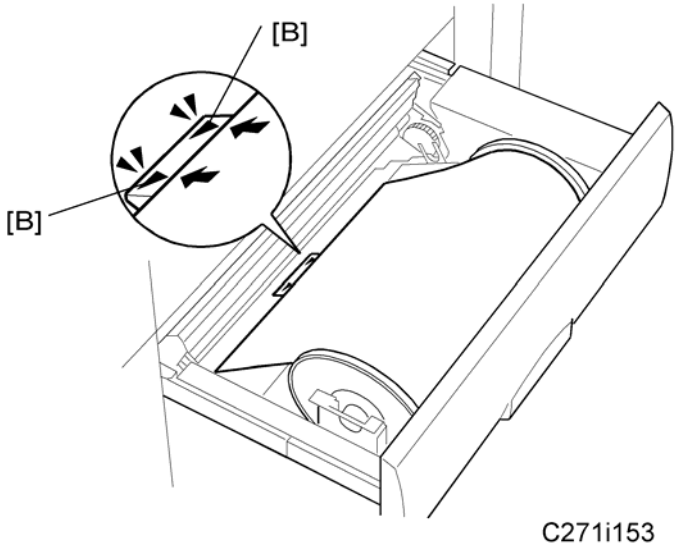
C271i907

8. Insert both spools into a new master roll.



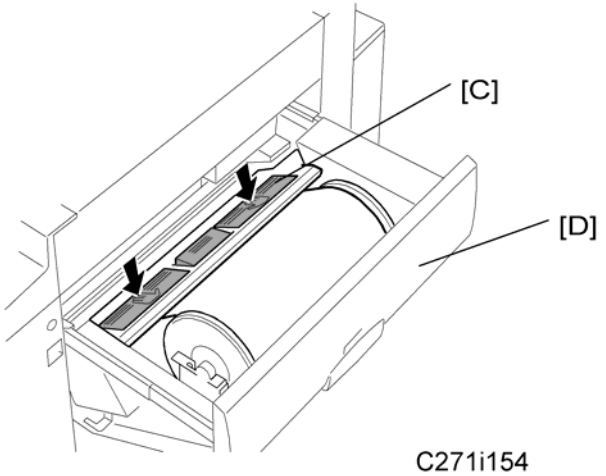
C271i152

9. Install the master roll, and open the master making unit cover.

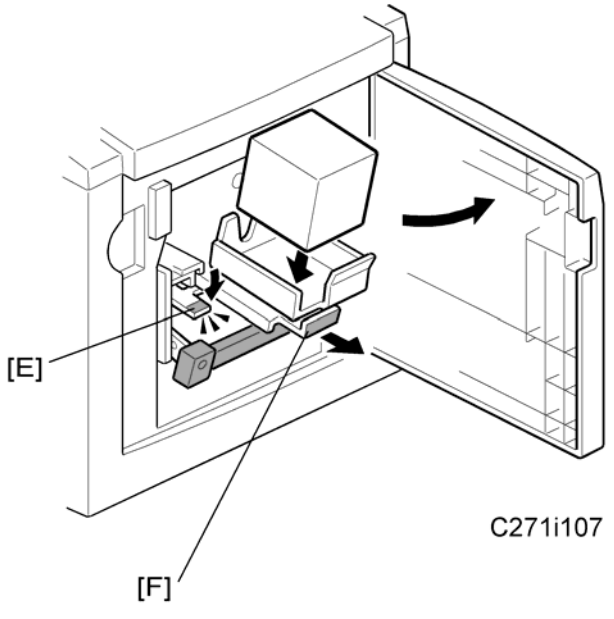


C271i153

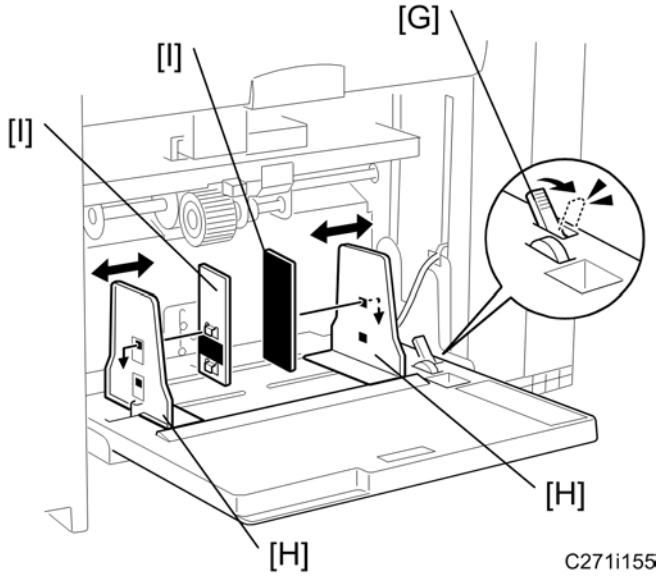
10. Insert the leading edge of the master roll under the platen roller. The arrows [B] indicate the correct position of the master leading edge.



11. Close the master making unit cover [C] using both hands until it clicks into place.
12. Close the master making unit [D].



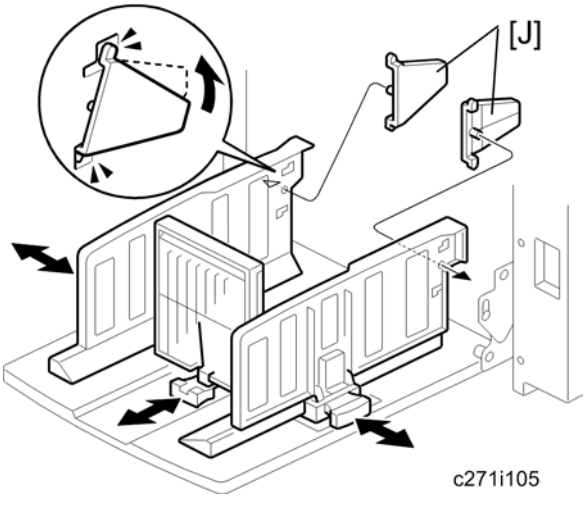
13. Open the front door.
14. Release the ink holder lock lever [E] and pull out the ink holder [F].
15. Remove the cap of the new ink cartridge, and insert a new ink cartridge into the ink holder.
16. Set the ink holder [F].



17. Load a stack of paper on the paper table.
18. Shift the lock lever [G] in the direction of the arrow. Make sure that the side plates [H] touch the paper gently.
19. Shift the lock lever [G] to its original position.

Note

- Two side fence friction pads [I] are included as accessories. They are not used normally, but if paper multi-feed frequently occurs or thin paper is used, the side fence friction pads [I] can be installed to apply stopping pressure to the paper.



20. Raise the paper delivery table slightly, then gently lower it.
21. Lift the side plates and the end plate, and attach the side plate guides [J] for both side plates.

Note

- When printing on A4 SEF, 81/2" SEF, B5 JIS LEF and SEF size paper and thin paper, you should attach the side plate guides to the side plates of the paper delivery tray. Users can also attach these guides.

22. Adjust the side and end fences of the paper delivery table to match the paper size.
23. Firmly insert the power plug in the outlet.
24. Turn on the main switch.
25. Make a master and make 30 prints with this master. Do this at least three times, until the image quality is acceptable.

Note

- This is a new drum. Because of this, before the first print is made, ink is supplied automatically. This takes 2 minutes.

Changing the operation panel language

There are ten languages in the machine. If you need to change the language, use the User Tools menu to set the language.

- On the operation panel, press the User Tools key.
- Select "2. System".
- Select "5. Language on LCD".
- Select the language.

Date/Time Setting

Use the User Tools menu to set the current date and time.

- On the operation panel, press the User Tools key.
- Select "2. System".
- Select "6. Date/Time".
- Enter the date and the time.

SP Codes Setting

SP No.	Menu	Function
SP3-2	Input TEL number	Do this SP and input the contact numbers of the customer engineer. These numbers are shown when a service call is issued.

Color Drum (Option)

Accessory Check

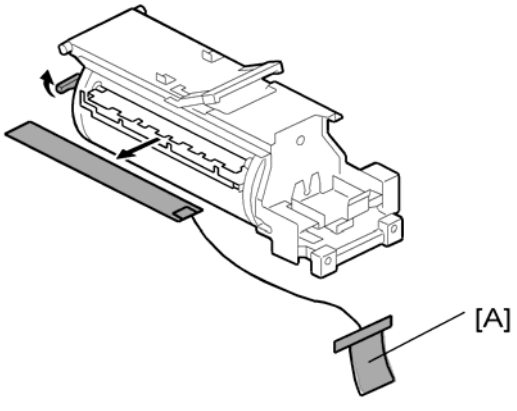
Check the quantity and condition of the accessories in the box against this list:

No.	Description	Quantity
1	Color Indicator Decal	5

Installation Procedure

⚠CAUTION

- To avoid serious injury, do not connect the power plug to the machine until you are instructed to do so.



C271i900

1. Remove the protective sheets [A] from the drum.
2. Attach a color indicator decal to the drum case. The decal must be the same color as the ink in use.
3. Remove the drum from the machine.
4. Leave the master wrapped around the removed drum to protect the drum from dust and from drying.
5. Keep the removed drum in the drum case.
6. Install the color drum in the machine.

   Note

   - The color drum indicator on the operation panel stays lit when a drum is mounted in the machine.
7. Remove the ink cartridge cap.
8. Insert the ink cartridge in the ink holder.

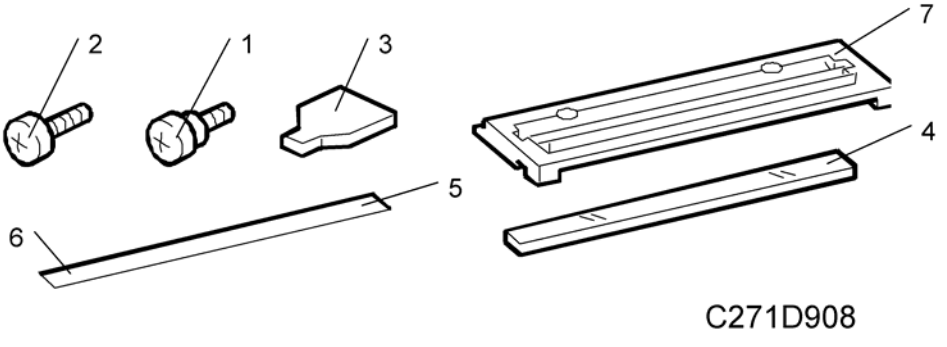
9. After main body installation, firmly insert the power plug in the outlet.
10. Turn on the main switch.
11. Make a master and make 30 prints with this master. Do this at least three times, until the image quality is acceptable.

Note

- This is a new drum. Because of this, before the first print is made, ink is supplied automatically. This takes 2 minutes.

ADF (Option)

Accessory Check



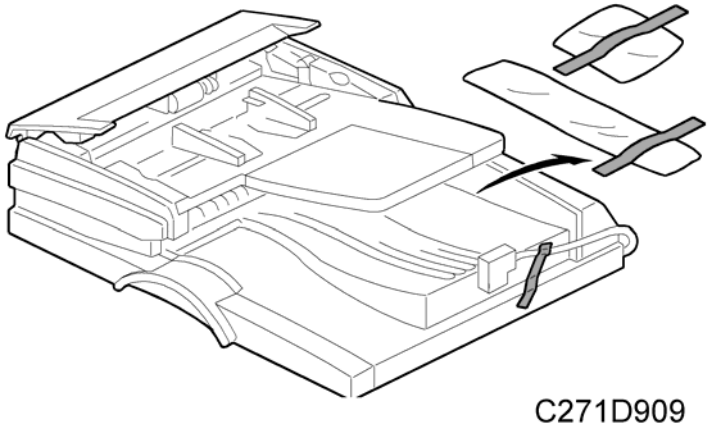
Check the quantity and condition of the accessories in the box against this list:

No.	Description	Quantity
1	Stepped Screw	2
2	Screws	2
3	Screwdriver Tool	1
4	DF Exposure Glass	1
5	Decal - Scale - mm	1
6	Decal - Scale - inch	1
7	Scale Guide	1
8	Attention Label	1

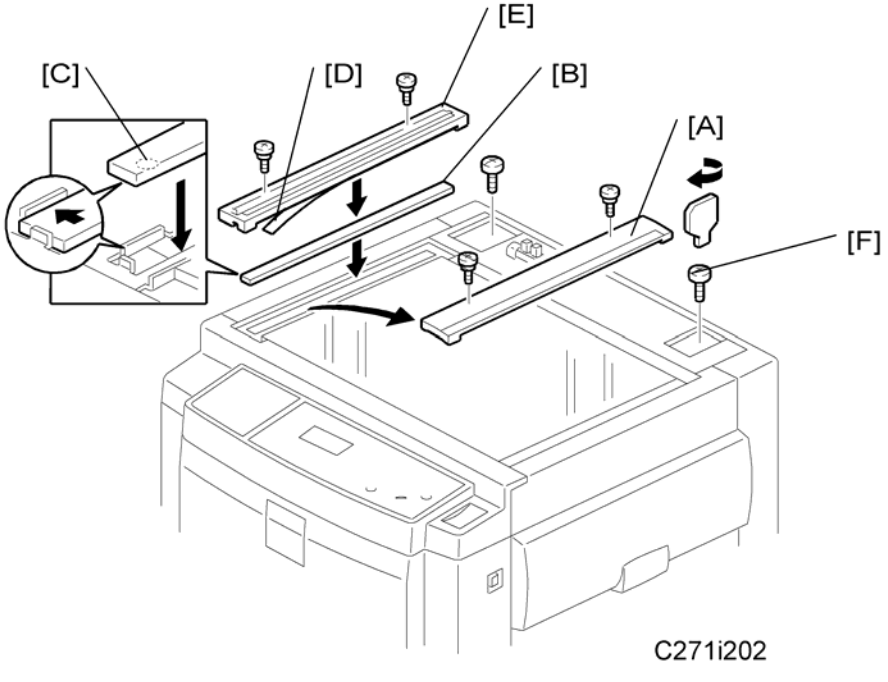
Installation Procedure

⚠CAUTION

- To avoid serious injury, do not connect the power plug to the machine until you are instructed to do so.



1. Remove the strips of tape.

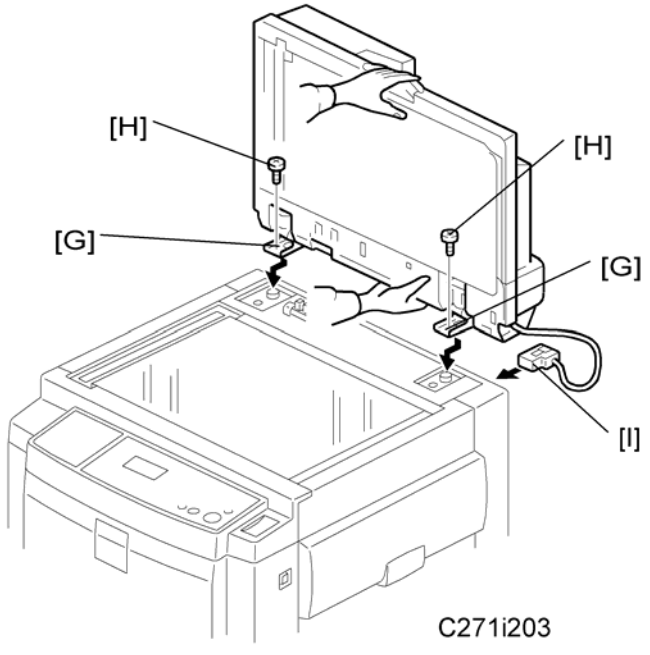


2. Remove the left scale [A] (x 2).
3. Place the DF exposure glass [B] on the glass holder.

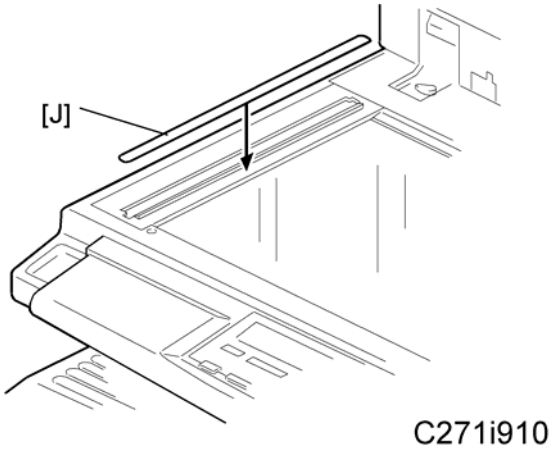
Note

- When installing the DF exposure glass, make sure that the white dot [C] is positioned at the front side, as shown.

4. Peel off the backing [D] of the double-sided tape attached to the rear side of the scale guide [E], then install the scale guide (2 screws removed in step 2).
5. Install the two stepped screws [F].



6. Mount the DF by aligning the holes [G] in the DF with the stepped screws, then slide the DF to the front as shown.
7. Secure the DF unit with two screws [H].
8. Connect the cables [I] to the main body.



9. Attach the scale decal [J] as shown.
10. Connect the power cord, then turn the main switch on.

Platen Cover (Option)

Accessory Check

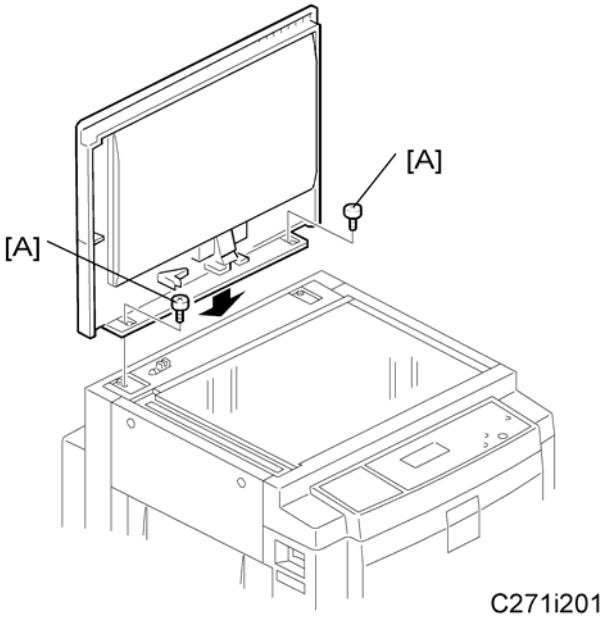
Check the quantity and condition of the accessories in the box against this list:

No.	Description	Quantity
1	Stepped Screw	2

Installation Procedure

⚠CAUTION

- To avoid serious injury, do not connect the power plug to the machine until you are instructed to do so.



1. Install the platen cover [A] (x 2).

Tape Dispenser (Option)

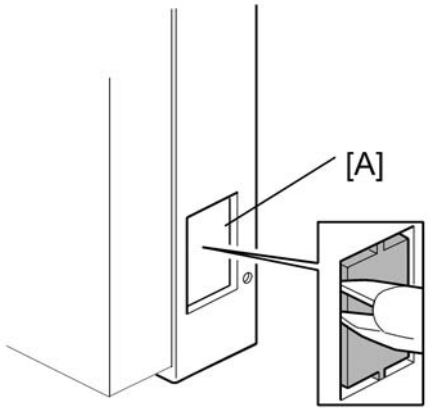
Accessory Check

Check the quantity and condition of the accessories in the box against this list:

No.	Description	Quantity
1	Knob Screw (For C210, C217, C218, C219, C222, C223, C225, C228, C238, C237, C238, C248, C249, C264 and C267, C271)	2
2	Screw M4 x 25 (For C211, C212, C213, C214, C216, C224 and C226)	2
3	Hexagon Nut M4 (For C211, C212, C213, C214, C216, C224 and C226)	2
4	Auxiliary Bracket (For C226 and C267, C271)	1
5	Auxiliary Bracket (For C238, C247 and C249)	1
6	Auxiliary Bracket (For C264)	1
7	Screw M4 x 8 (For C226, C238, C247, C249 and C267, C271)	4
8	Lock Washer (For C226 only)	1

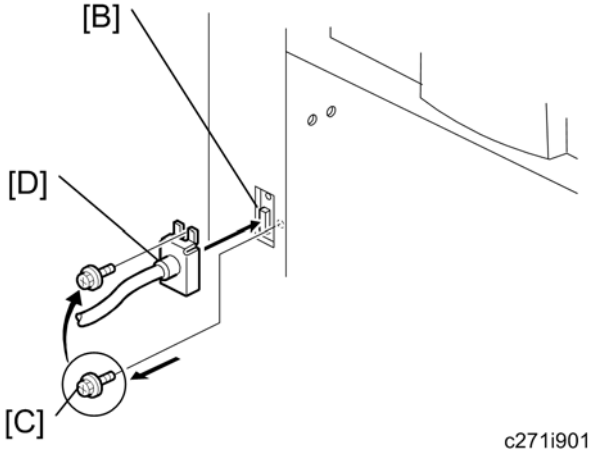
No.	Description	Quantity
9	Lock Washer (Without C267, C271)	1
10	Tape	1

Installation Procedure



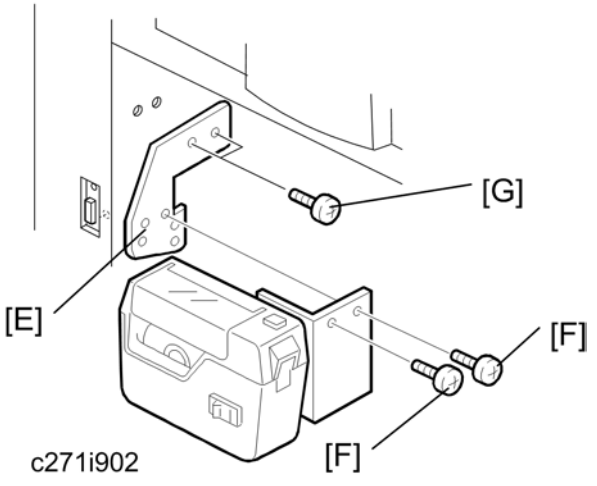
c271i903

1. Turn off the main switch and unplug the power cord.
2. Remove the paper delivery cover (x 5).
3. Remove the cutout [A] from the rear cover, as shown.

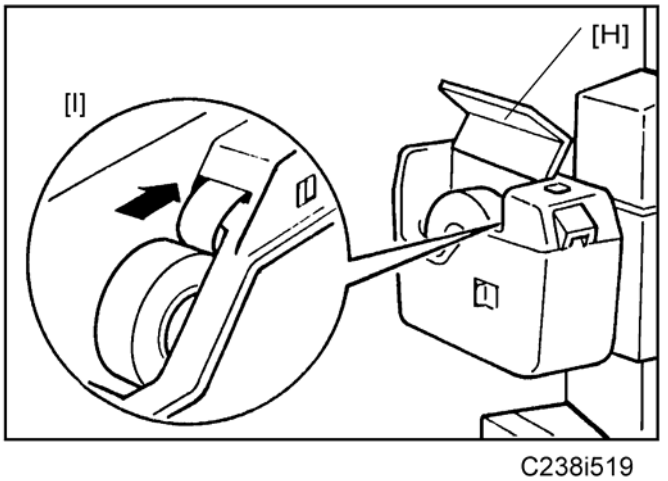


c271i901

4. Connect the harness from the tape dispenser to the connector [B].
5. Remove the screw [C] that is beside the connector [B]. Reuse the screw to secure the bracket [D], as shown.



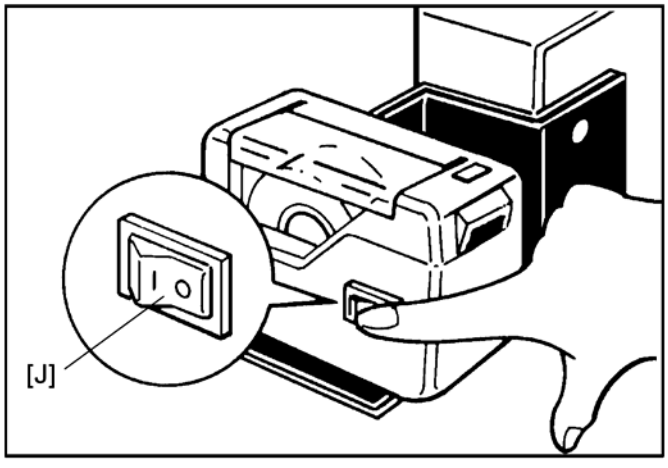
6. Open the master eject unit.
7. Install the auxiliary bracket [E] on the tape dispenser with M4x8 screws (accessories) [F].
8. Install the tape dispenser on the main body with two M4x8 screws [G] (accessories) in the two outer holes in the tape dispenser bracket.
9. Close the master eject unit. Reinstall the paper delivery cover.



10. Open the tape dispenser cover [H]. Then, insert the leading edge of the tape into the tape entrance until it stops as shown in the illustration [I].

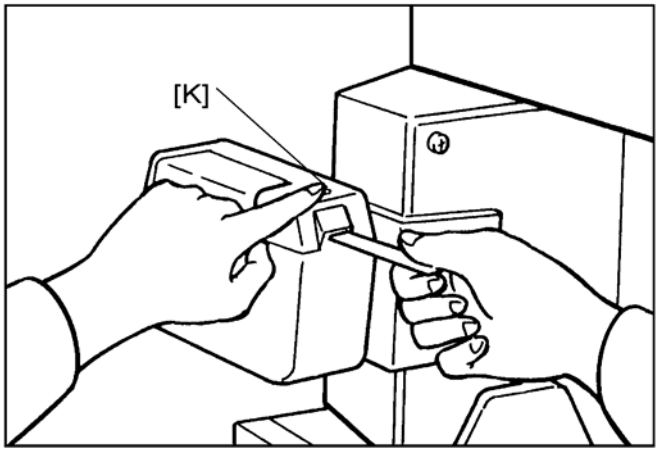
Note

- Be sure that the tape is installed in the proper direction. If it is not, the tape dispenser will not work correctly.



C238i520

11. Firmly insert the power plug in the outlet.
12. Turn on the main switch of the main body.
13. Turn on the tape dispenser switch [J].



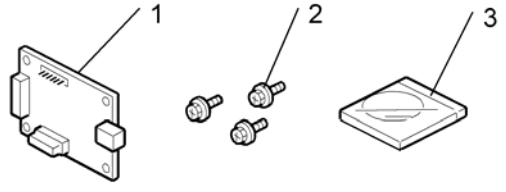
C238i521

14. Press the tape cut button [K] to cut off the leading edge of the tape.
15. Check the tape dispenser operation using the Memory/Class modes of the main body.

Printer Unit VC-20 (Option)

Accessory Check

Make sure that you have all the accessories listed below.



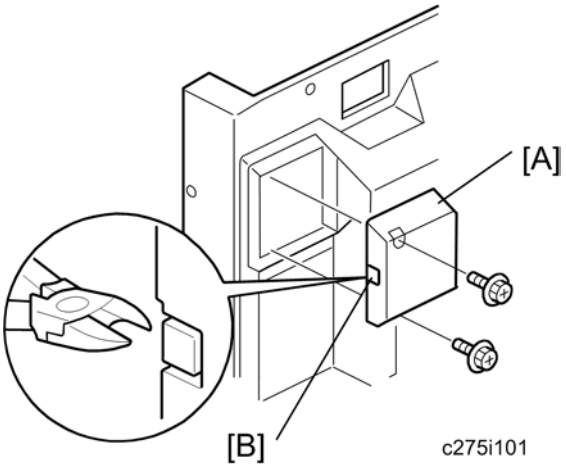
C271i906

No.	Description	Quantity
1	VC-20 Interface Board	1
2	Screws	3
3	Installation CD	1
4	Quick Install Guide	1
5	Safety Information	1

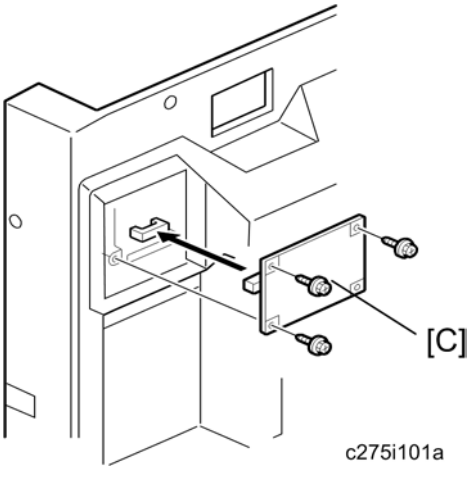
Installation Procedure

⚠CAUTION

- To avoid serious injury, do not connect the power plug to the machine until you are instructed to do so.



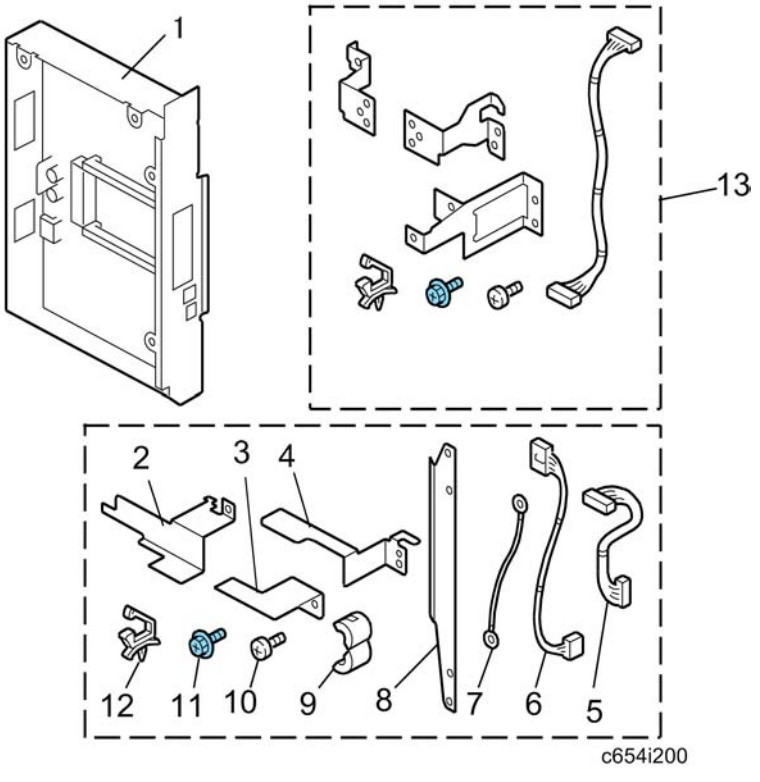
1. Remove the small rear cover [A] in the rear cover. (x 2)
2. Cut out the USB port cover [B] in the small rear cover.



3. Connect the VC-20 interface board [C] to CN114 of the MPU board and secure it using three screws.
4. Reinstall the small rear cover.

Printer Unit Type 4545A (Option)

Components Check



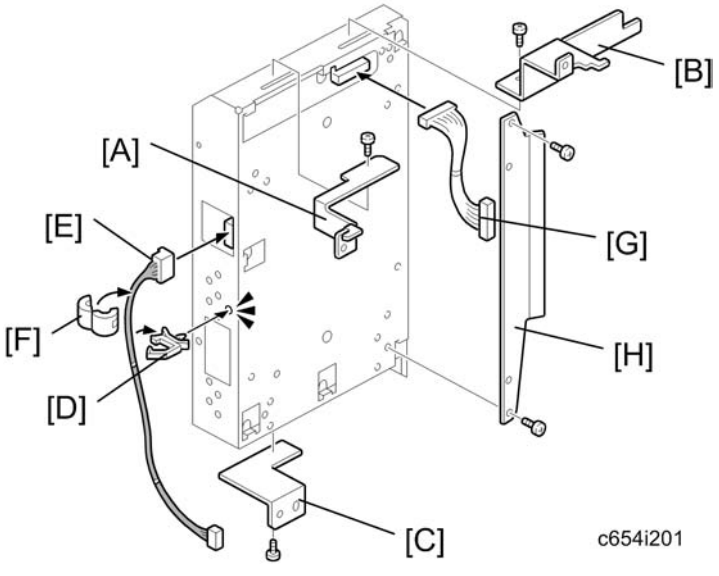
No.	Description	Quantity
1	ACU Board (with Case)	1
2	Top Right Bracket	1
3	Bottom Bracket	1
4	Top Left Bracket	1
5	Short Harness	1
6	Long Harness	1
7	Ground Cable	1
8	Cover	1

No.	Description	Quantity
9	Ferrite Core	1
10	Screw: M3x4	5
11	Screw: M3x6	4
12	Clamp	1
13	Attachment Kit for HP4R2.5*1	1

*1: This item is not used for this machine.

Installation Procedure

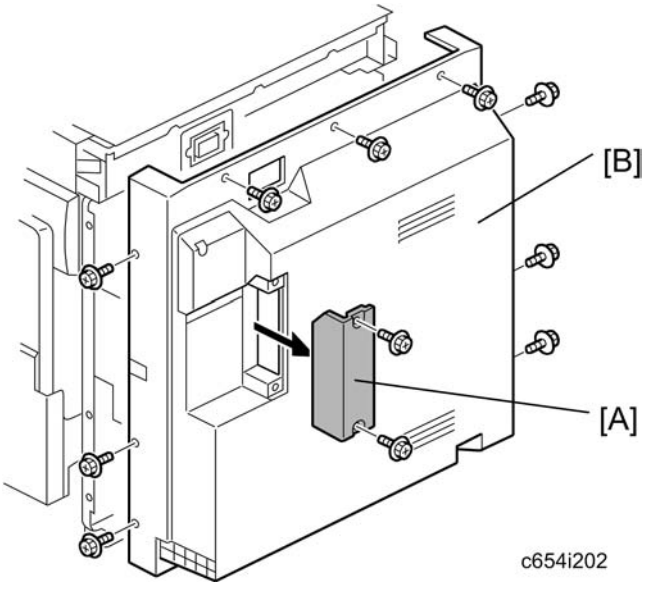
Preparation for Installing



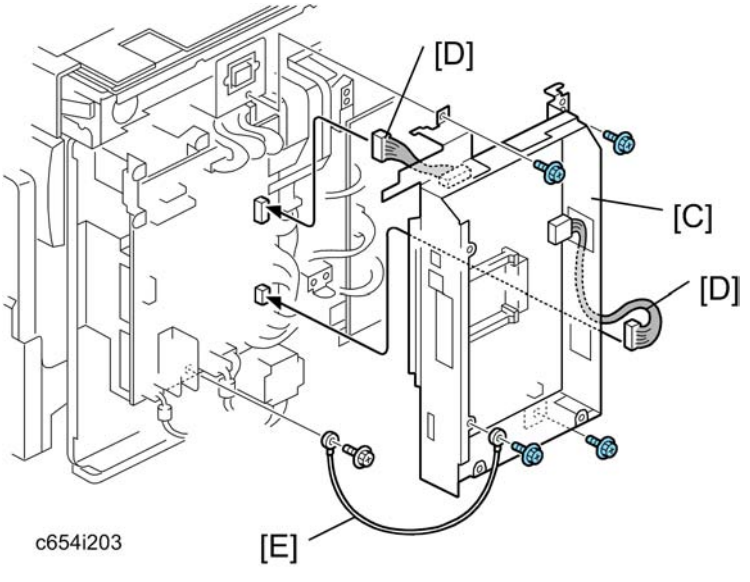
1. Attach the top left bracket [A], top right bracket [B] and bottom bracket [C] to the case (x 1 each)
2. Install the clamp [D].
3. Attach the long harness [E] to the left side of the case (x 1).
4. Attach the ferrite core [F] to the long harness.
5. Attach the short harness [G] to the front side of the case.
6. Attach the cover [H] to the case (x 2).
7. Check whether the "mm/inch" setting in the User Tools (System - mm/inch) is set to the correct value. If necessary, change it to the correct "mm/inch" setting.

8. Check whether "SP2-7" (Vendor Selection) is set to the correct value. If necessary, change it to the correct vendor setting.

Installing the Controller in the Main Machine



1. Remove the controller cover [A] (x 2).
2. Remove the rear cover [B] (x 9).



3. Attach the controller [C] to the main machine (x 4).
4. Connect the harness [D] to the main board.
5. Attach the ground cable [E] (x 1).

6. Reinstall the rear cover.

Note

- After installing the printer unit, make sure that the board and cable are securely connected.

3. Preventive Maintenance

Maintenance Tables

See "Appendices" for the "Maintenance Tables".

4. Replacement and Adjustment

General Caution

⚠CAUTION

- Turn off the main power switch and unplug the machine before attempting any of the procedures in this section.

Special Tools

The followings are the special tools used for service.

Description	Part number	Note
Scanner positioning pins (4 pins as a set)	A0069104	☛ p.68
Flash memory card – 4MB	N8036701	☛ "8. System Test" in the Appendices
Alvamoa 2 (Alvania) Grease	A0699502	-

Image Adjustment

Overview

"Image Adjustment" adjusts the image position on prints by changing the SP settings.

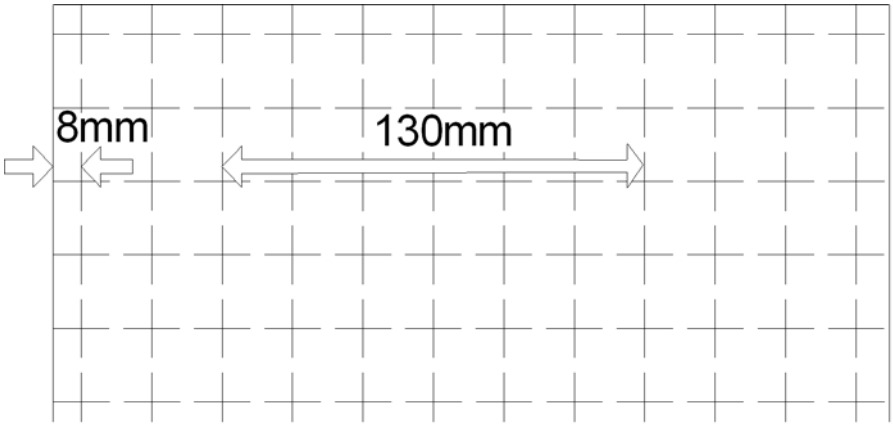
Adjust the settings in the order:

- SP6-10 ⇒ 6-21 ⇒ 6-5 ⇒ 6-6 ⇒ 6-3 ⇒ 6-4 ⇒ 6-1 ⇒ 6-2

When correcting errors made when printing with the controller, use only the first two procedures. When correcting errors made when printing with scanned originals, do all six adjustments in the given order.

This adjustment is required every time the RAM on the MPU has been replaced.

SP6-10: Master Writing Speed



c267s902

1. Input SP8-10 (Test patterns) and enter "6", then press the Start key.
2. Exit the SP mode, print 10 copies at 100 rpm (speed 2). Use the 10th print for the adjustment.
3. The length of the 6 squares in the feed direction should be 130 mm, as shown above.
4. If it is not, calculate the reproduction ratio using the following formula.

   {(130 - Value) / 130} x 100 = ± X.X % (Round off to one decimal place)
5. Example: If the value is 133, {(130 - 133) / 130} x 100 = - 2.3 %
6. Access SP6-10, input the calculated ratio, and press the Enter key.
7. Repeat the procedure to make sure that the ratio is correct.

SP6-21: Paper Regist Position

1. Input SP8-10 (Test patterns) and enter "6", then press the Start key.
2. Exit the SP mode, print 10 copies at 100 rpm (speed 2). Use the 10th print for the adjustment.
3. The space between the leading edge and the next line should be 8 mm, as shown above.
4. If it is not, access SP6-21, input the difference and press the Enter key.

   Example: If the value is 7 mm, 7 - 8 = -1.0
5. Repeat the procedure to make sure that the gap is correct.

SP6-5: Scanning Speed – Platen and SP6-6: Scanning Speed – ADF mode

1. Make copies of the test pattern printed during the previous adjustments (☛ previous page), in platen mode at speed 2. Use the 10th print for the adjustment.
2. The length of the 6 squares in the feed direction should be 130 mm.
3. If it is not, calculate the reproduction ratio using the following formula.

   {(130 - Value) / 130} x 100 = ± X.X % (Round off to one decimal place)

   Example: If the value is 133, {(130 - 133) / 130} x 100 = - 2.3 %
4. Access SP6-05, input the calculated ratio, and press the Enter key.
5. Check again to make sure that the ratio is correct.
6. Make copies of the test pattern in ADF mode and repeat the process using SP6-06.

SP6-3: Scanning Start Position – Platen and SP6-4: Scanning Start Position - ADF

1. Make copies of the test pattern printed during the previous adjustments (☛ previous page), in platen mode at speed 2. Use the 10th print for the adjustment.
2. The space between the leading edge and the next line should be 8 mm.
3. If it is not, access SP6-03, input the gap value and press the Enter key.

   Example: If the value is 7 mm, 7 - 8 = -1.0
4. Repeat the procedure to make sure that the gap is correct.
5. Make copies of the test pattern in ADF mode and repeat the process using SP6-04.

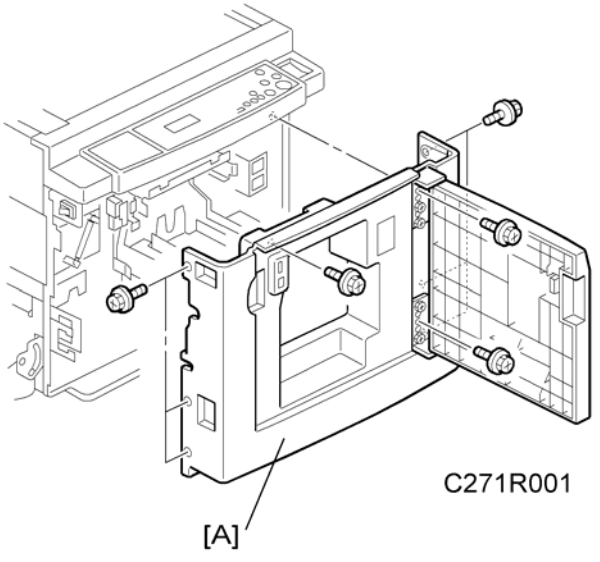
SP6-1: Main Scan Position – Platen and SP6-2: Main Scan Position - ADF

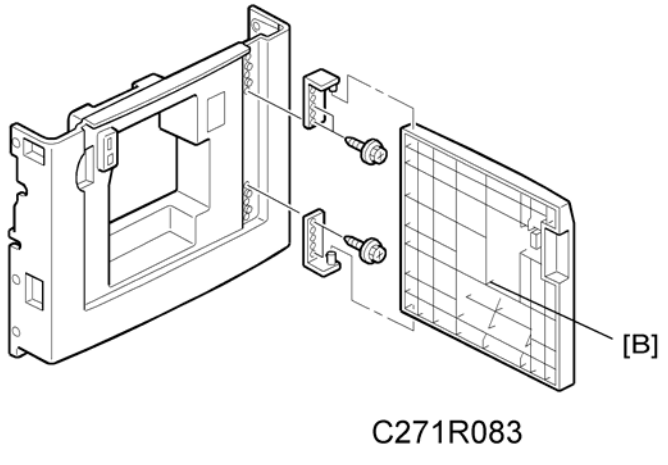
1. Make a copy in platen mode at speed 2.
2. Measure the difference between the center of the main-scan on the original and on the print.

3. Access SP6-01, input the gap value and press the Enter key. (If you input a positive value, the image moves towards the operation side.)
4. Repeat the procedure to make sure that there is no difference.
5. Make a copy in ADF mode and repeat the process using SP6-02.

Covers

Front Cover and Front Door

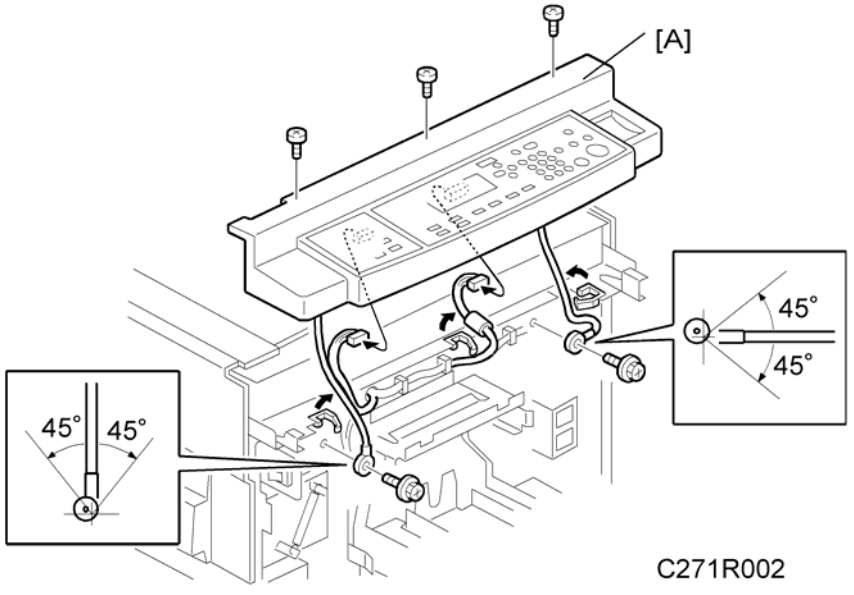




[A]: Front cover (x 9)

[B] Front door (x 4)

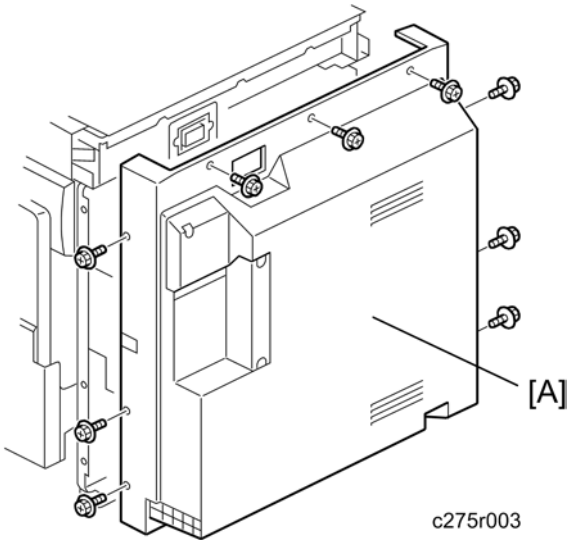
Operation Panel



- Front cover (☛ p.58 "Front Cover and Front Door")

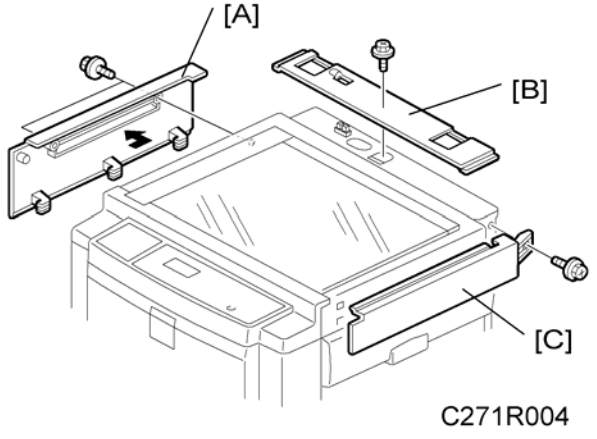
[A]: Operation panel (x 5, x 2, x 3)

Rear Cover



[A]: Rear cover (x 9)

Upper Covers



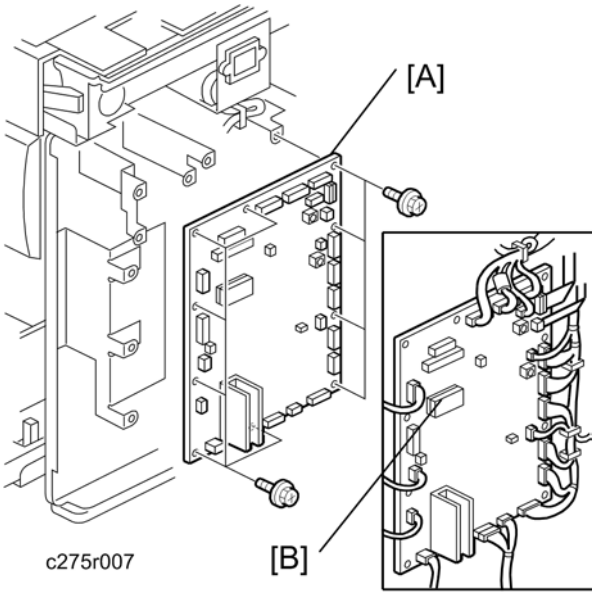
[A]: Left upper cover (x 2)

[B]: Top rear cover (x 1)

[C]: Right upper cover (x 1)

Boards

MPU



- Rear cover (☛ p.59)

[A]: MPU (x 10, x 18, 2 ribbon cables)

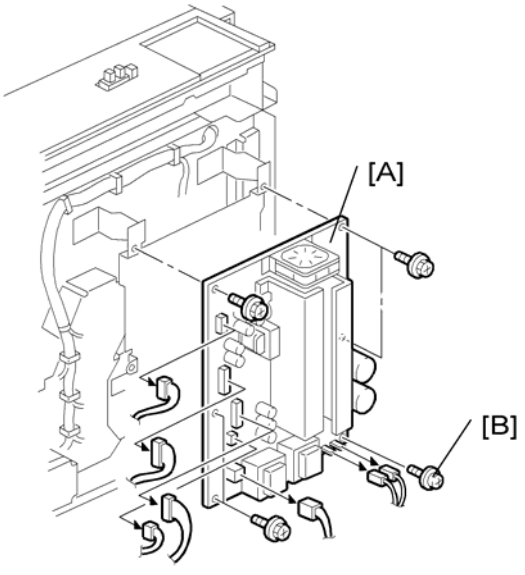
Note

- Take the NVRAM [B] from the old board and put it in the socket on the new board.
- Adjust the master end sensor (☛ p.77) after installing the new MPU.
- Adjust the ink detection (☛ p.110) after installing the new MPU.
- If you must replace the MPU RAM, you must then do the image adjustments after you install the new RAM (☛ p.55).

PSU

Note

- When the PSU is replaced, the thermal head voltage returns to the default. Adjust the thermal head voltage (☛ p.79) after installing the new board.



C271R005

PSU Board

- Rear cover (☛ p.59)
- PSU (x 6, x 7)

Note

- The split washer screw [B] is used for grounding. Do not use another type of screw here.

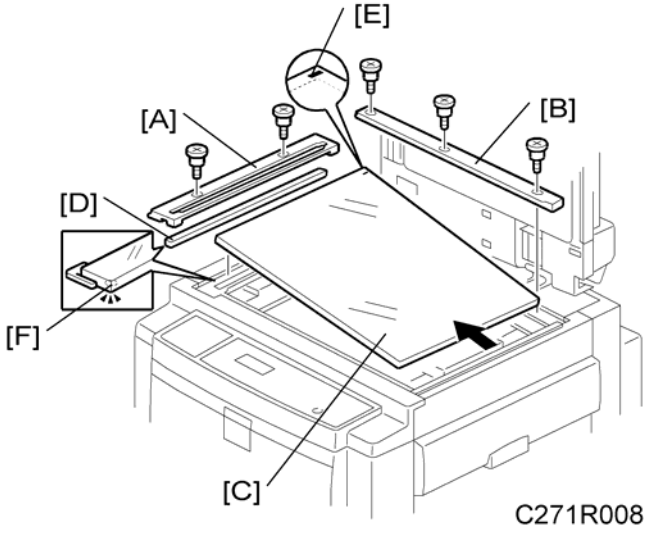
PSU Board with Bracket

- Rear cover (☛ p.59)

[A]: PSU (x 5, x 7)

Scanner

Exposure Glass, DF Exposure Glass and Scales



Exposure Glass

[A]: Left scale (x 2)

[B]: Rear scale (x 3)

[C]: Exposure glass

Note

- When reinstalling, make sure that the mark [E] is at the rear left corner, and that the left edge is aligned with the support on the frame.

DF Exposure Glass

[A]: Left scale (x 2)

[D]: DF exposure glass

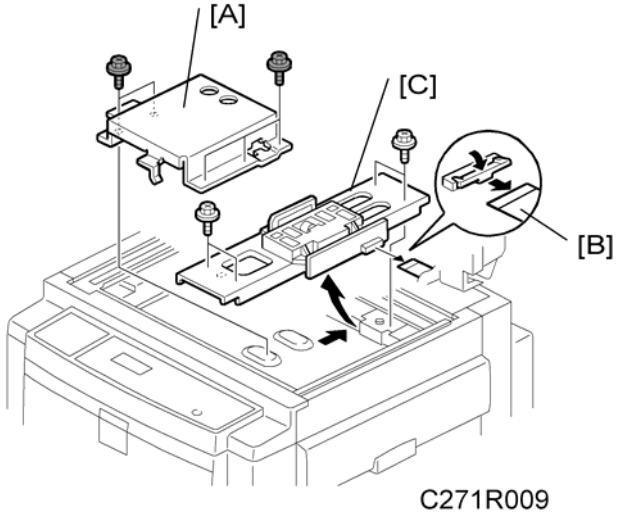
Note

- When reinstalling, make sure that the mark [F] is on the bottom.

Lens Block

⚠CAUTION

- Do not touch the paint-locked screws on the lens block. The position of the lens assembly (black part) is adjusted before shipment.
- Do not grasp the PCB or the lens assembly when handling the lens block. The lens assembly may slide out of position.



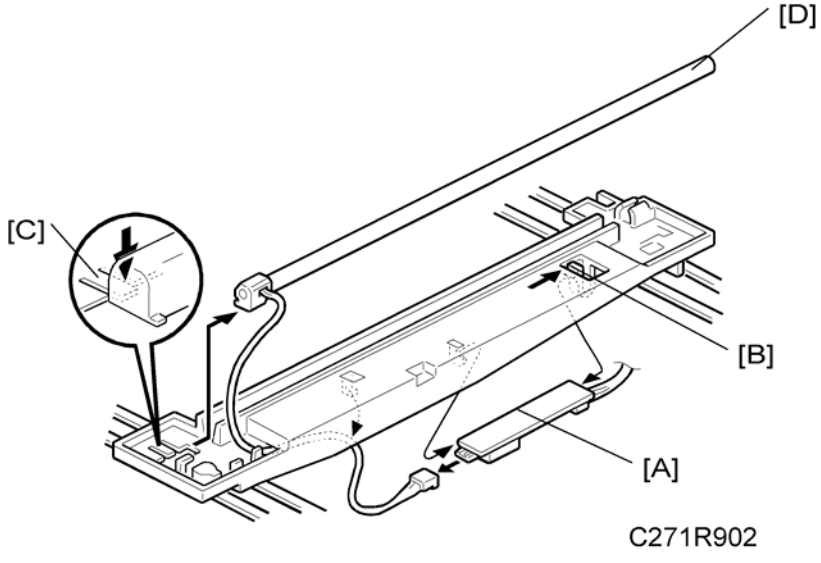
- Exposure glass (☛ p.63)

[A]: Lens cover (🔩 x 5)

[B]: Ribbon cable

[C]: Lens block (🔩 x 4).

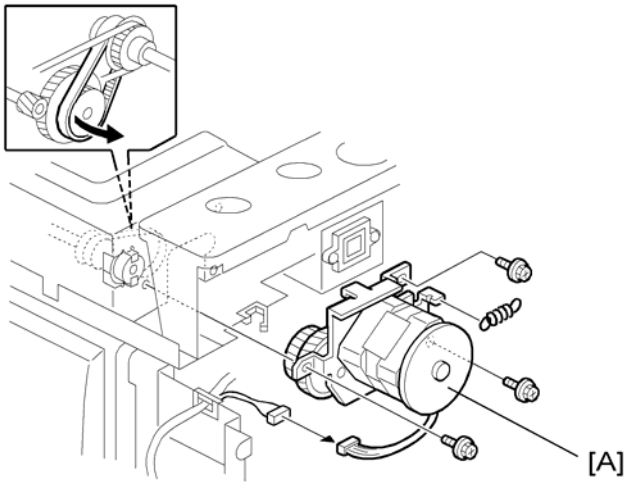
Exposure Lamp and Lamp Stabilizer Board



- Exposure glass (☛ p.63)

1. Slide the first scanner to a position where the front end of the lamp is visible.
2. Place one hand under the lamp stabilizer board [A] and release the hook [B].
3. Remove the lamp stabilizer board [A] (x 2).
4. Press the plastic latch [C] and push the front end of the lamp toward the rear.
5. Remove the lamp [D] (with the cable).

Scanner Motor



C271R010

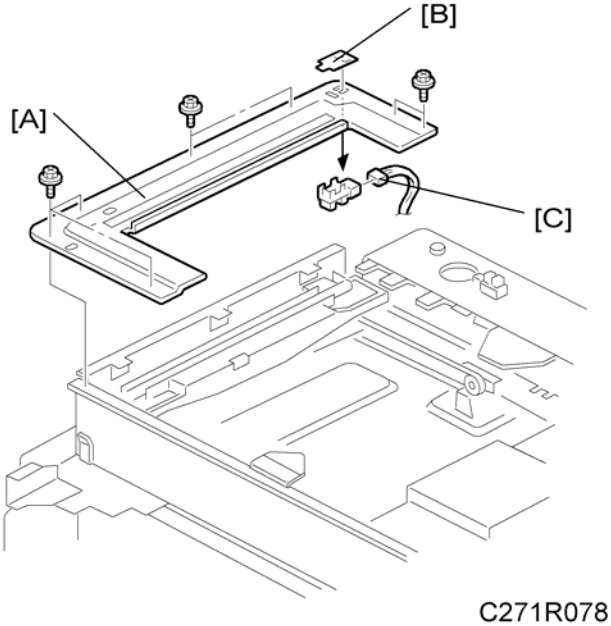
- Rear cover (☛ p.59)
- Exposure glass (☛ p.63)

[A]: Scanner motor (x 3, x 1, x 1, 1 spring, 1 belt)

Note

- When reassembling, install the belt first, and set the spring next. Fasten the leftmost screw (viewed from the rear), then fasten the other two screws.

Scanner Home Position Sensor



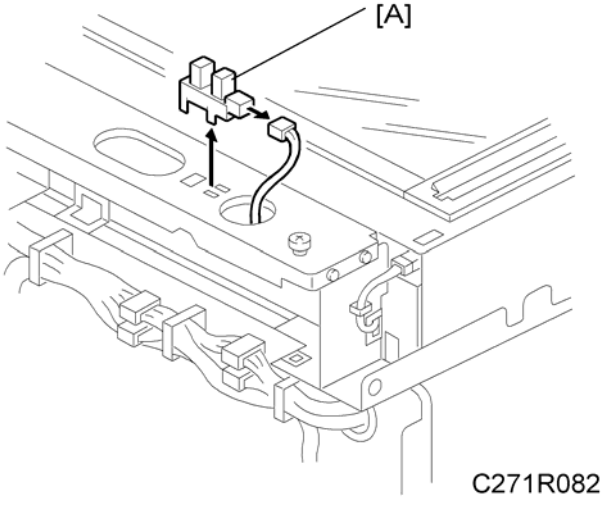
- Left upper cover (☛ p.60 "Upper Covers")
- Top rear cover (☛ p.60 "Upper Covers")
- Front cover (☛ p.58 "Front Cover and Front Door")
- Operation panel (☛ p.59)
- Exposure glass, DF exposure glass (if installed) (☛ p.63)

[A]: Scanner left lid (x 7, x 1).

[B]: Sensor tape

[C]: Scanner home position sensor

Platen Cover Sensor



- Top rear cover (☛ p.60 "Upper Covers")

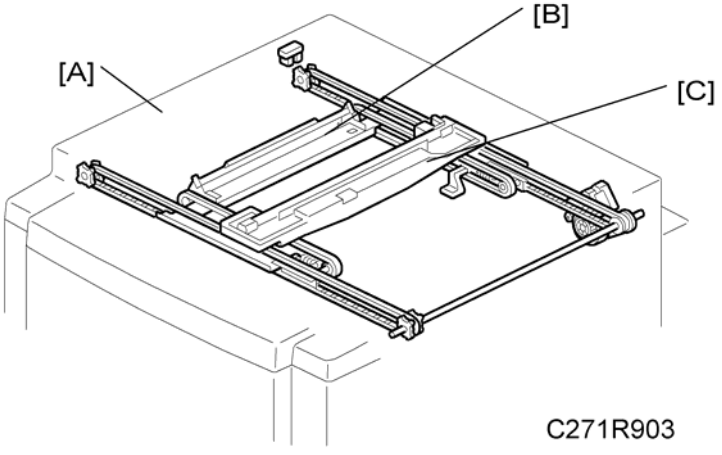
[A]: Platen cover sensor (x 1).

Adjusting the Scanner Position

⚠CAUTION

- Grasp the front and rear ends (not the middle) of the first scanner when you manually move it. The first scanner may be damaged if you press, push, or pull the middle part of the scanner.

Overview

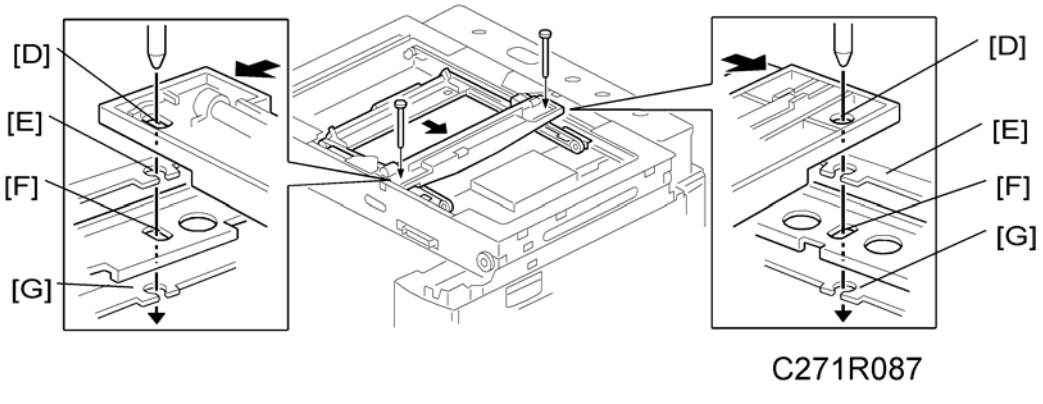


Adjust the scanner positions at these times:

- When the first scanner [C] and second scanner [B] are not parallel with the side frames [A]
- When you have replaced one or more of the scanner belts.

To adjust the scanner positions, do either of the following:

- To adjust the belt contact points on the first scanner (☛ Adjusting the Belt Contact Points for the First Scanner)
- To adjust the belt contact points on the scanner bracket (☛ Adjusting the Belt Contact Points for the Second Scanner)

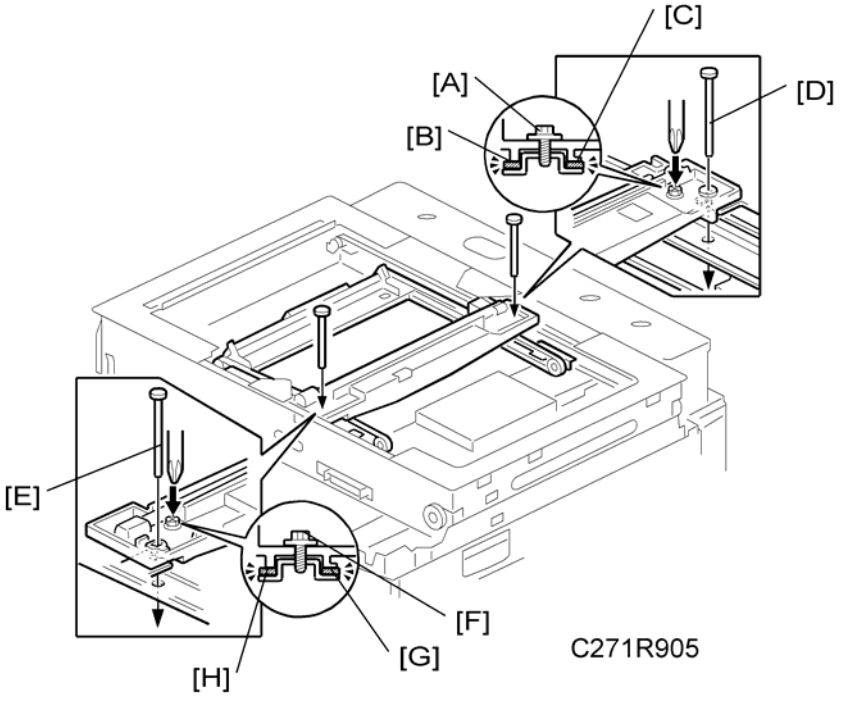


The two actions above have the same objectives: to align the following holes.

1st scanner [D], frame [E], arm of second scanner [F], and frame [G]

The scanner positions are correct when these holes are all aligned.

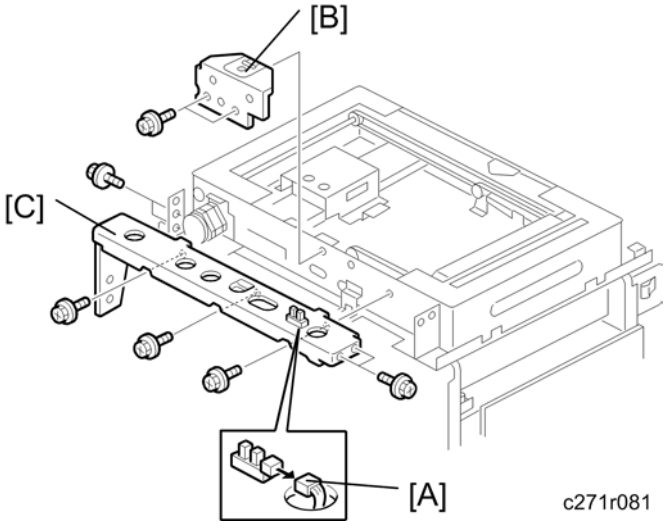
Adjusting the Belt Contact Points for the First Scanner



- ADF or platen cover
- Front cover (☛ p.58 "Front Cover and Front Door")
- Operation panel (☛ p.59)
- Rear cover (☛ p.59)
- Top rear cover (☛ p.60 "Upper Covers")
- Left upper cover (☛ p.60 "Upper Covers")
- Exposure glass (☛ p.63)

1. Loosen the 2 screws [A] [F].
2. Slide the 1st and 2nd scanners to align the following holes and marks (☛ p.14 "Overview"):
    - Align all four holes: 1st scanner, frame, arm of second scanner and frame
3. Insert the positioning tools [D] [E] through the holes.
4. Check that the scanner belts [B] [C] [G] [H] are properly set between the bracket and the 1st scanner.
5. Tighten the screws [A] [F].
6. Remove the positioning tools.
7. Reassemble the machine and check the operation.

Adjusting the Belt Contact Points for the Second Scanner

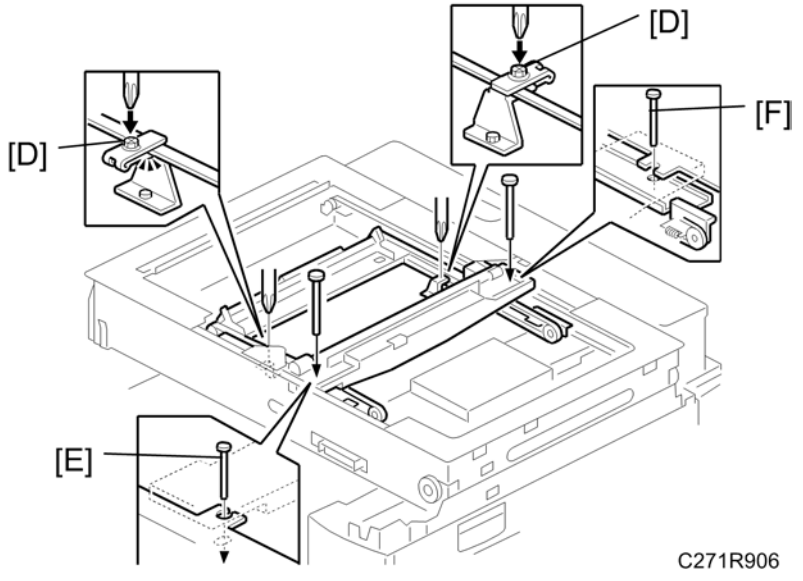


- ADF or platen cover
- Front cover (☛ p.58 "Front Cover and Front Door")
- Operation panel (☛ p.59)
- Rear cover (☛ p.59)
- Top rear cover (☛ p.60 "Upper Covers")
- Left upper cover (☛ p.60 "Upper Covers")
- Exposure glass (☛ p.63)

1. Disconnect the platen cover sensor connector [A].
2. Scale bracket [B] (🔩 x 2)

Note

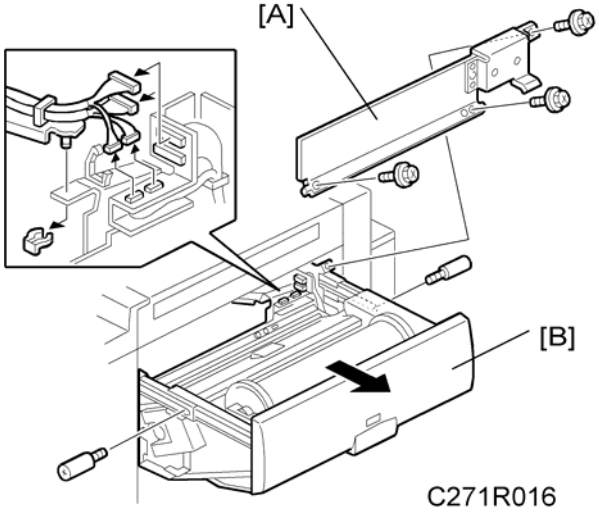
- 1). Take off the scale bracket, otherwise the screws [D] cannot be loosened.
- 2). Take off the bracket [C] in order to take off the scale bracket.



3. Loosen the 2 screws [D].
4. Slide the 2nd scanner to align the following holes and marks (☛ p.14 "Overview"):
    - Align all four holes: 1st scanner, frame, arm of second scanner and frame
5. Insert the positioning tools [E] [F] through the holes.
6. Check that the scanner belts are properly set in the brackets.
7. Remove the positioning tools.
8. Reassemble the machine and check the operation.

Master Feed

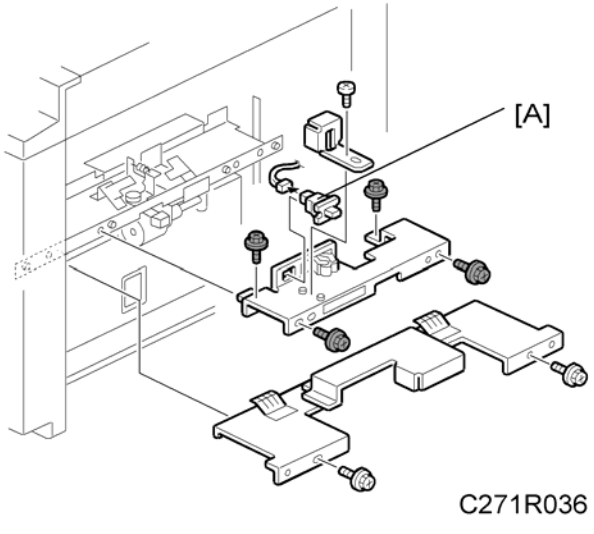
Master Making Unit



[A]: Master making unit cover (x 3)

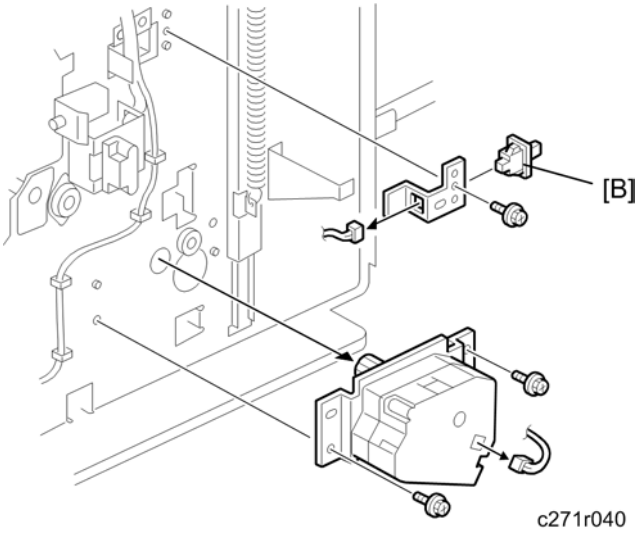
[B]: Master making unit (x 2, x 4, x 1, x 1)

Master Making Unit Set Switches



- Master making unit (☛ p.73)

[A]: Master making unit set switch (x 1, x 1)



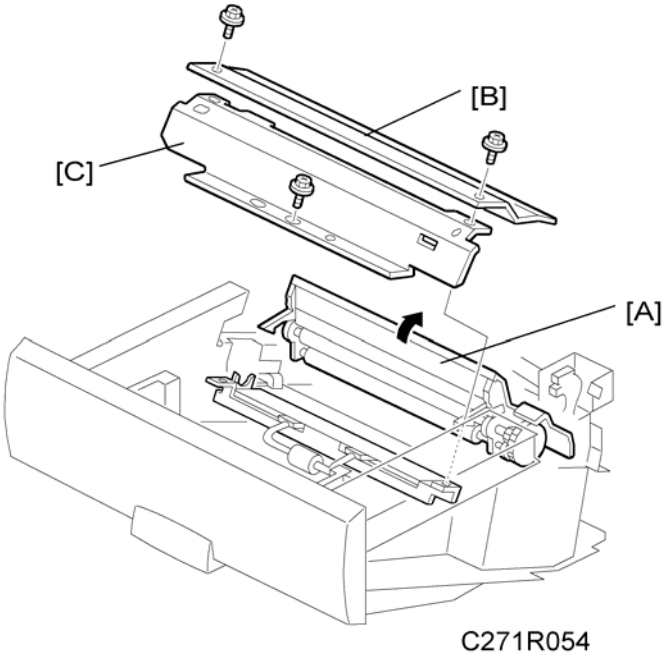
- Front cover (☛ p.58 "Front Cover and Front Door")

[B]: Master making unit set switch (x 1, x 1)

Note

- There are two master making unit set switches for safety. Both sensors must be on or the machine will not start.

Thermal Head

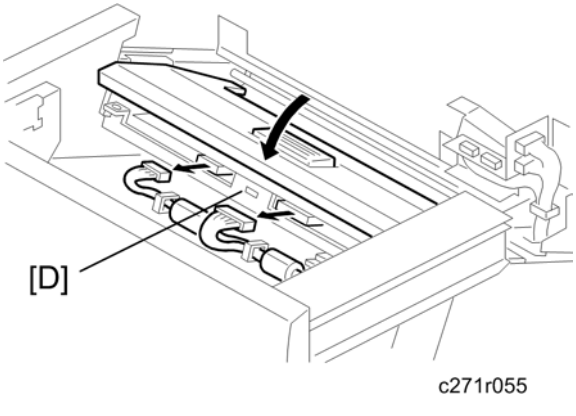


- Master making unit (☛ p.73)

[A]: Open the platen roller unit.

[B]: Thermal head upper cover (x 2)

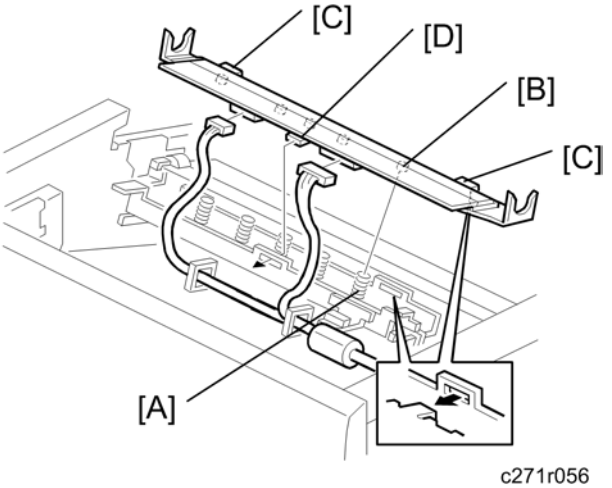
[C]: Thermal head side cover (x 1)



- Close the platen roller unit.

[D]: Thermal head (x 2)

Installation



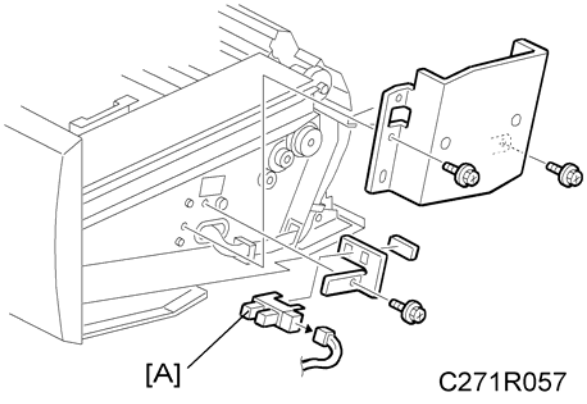
If the following remarks are not followed, the thermal head will be installed incorrectly.

1. Fit the base's springs [A] over the protrusions [B] on the underside of the thermal head (5 points).
2. While fitting the tops of the springs [A] over the protrusions on the underside of the thermal head, hook the lock pawls [C] of the thermal head onto the base (3 lock pawls). Make sure to set the front side [D] (the paper table side) first.
3. Make sure that all protrusions are properly fitted into the springs.

Note

- Adjust the thermal head voltage (☛ p.79) after installing the new thermal head.
- Do not touch the surface with bare hands. (If you touch it, clean the surface with alcohol.)
- Do not touch the terminals of the connectors with bare hands.

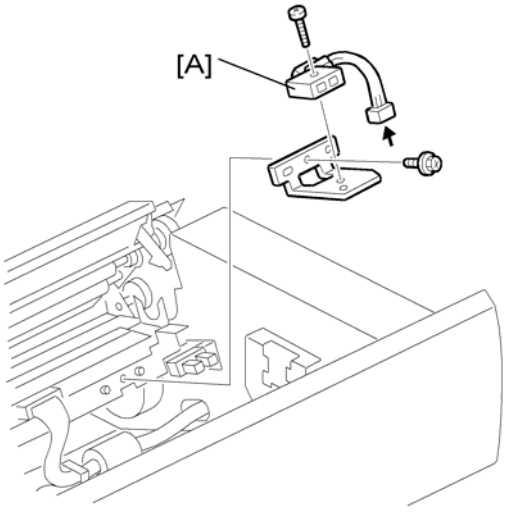
Master Set Cover Sensor



- Master making unit (☛ p.73)

[A]: Master set cover sensor (🔧 x 3, 🔌 x 1)

Master End Sensor



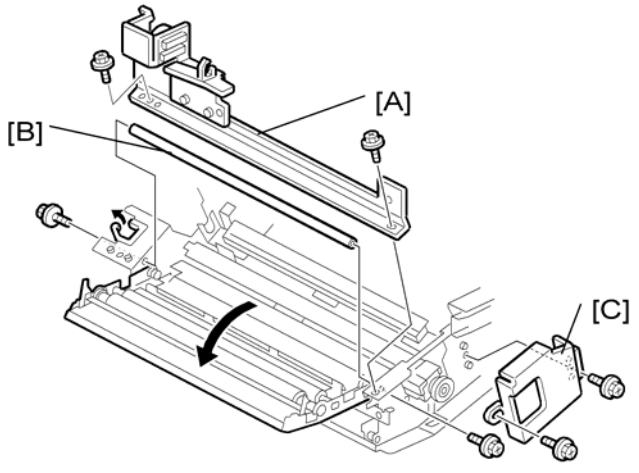
- Master making unit (☛ p.73)
- Thermal head upper cover (☛ p.75 "Thermal Head")
- Thermal head side cover (☛ p.75 "Thermal Head")

[A]: Master end sensor (🔧 x 2, 🔌 x 1)

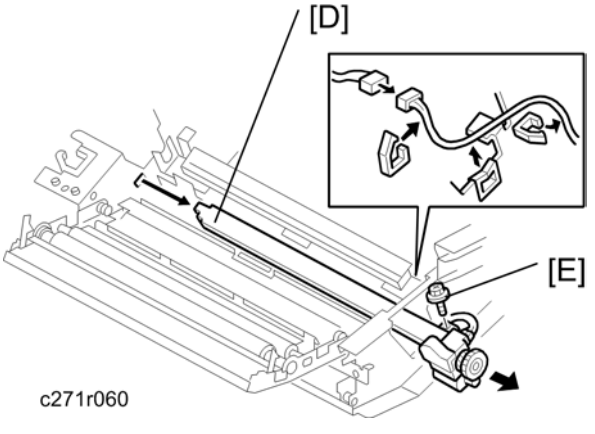
Note

- Adjust the master end sensor (☛ p.80) after installing a new sensor.

Cutter Unit



C271R059



- Master making unit (☛ p.73)

[A]: Bracket (x 2)

[B]: Shaft (x 2)

[C]: Bracket (x 2)

[D]: Cutter unit (x 3, x 1, x 1)

Note

- To remove the screw [E], you must slide the thermal head a small distance towards the paper feed table.

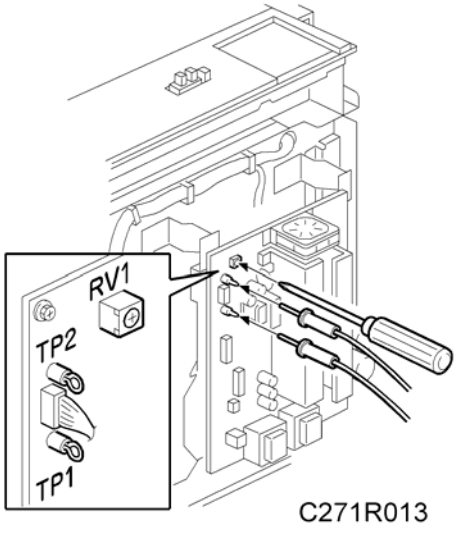
Thermal Head Voltage Adjustment

⚠CAUTION

- This adjustment is always required when the thermal head or PSU has been replaced.

Purpose	To maintain master making quality and extend the lifetime of the thermal head.
Standard	Refer to the voltage value (X) printed on the thermal head. The value varies from one thermal head to another. The adjustment voltage should be between X and X - 0.1 V.
Tools	Circuit tester

- Rear cover (☛ p.59)
- Read the voltage value on the decal on the thermal head.



1. Connect the positive terminal of a circuit tester to TP1 and the negative terminal to TP2 on the PSU.

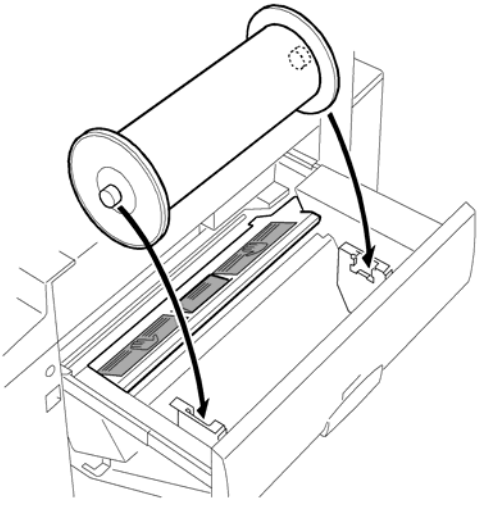
   ### ⚠CAUTION

   - If the output and ground terminals touch each other, the board will be damaged.
2. Connect the power plug, and turn on the main switch to access SP mode.
3. Select SP5-12 (Thermal head signal output).

4. Press the # key. Power is continuously supplied to the thermal head, which could damage the thermal head, so press the clear/stop key if you cannot finish the adjustment quickly.
   A beeper sounds while the power is being supplied.
5. Measure the voltage, and turn RV1 on the PSU until the value is between "+0" and "-0.1" volts from the value on the thermal head decal.

Master End Sensor Adjustment

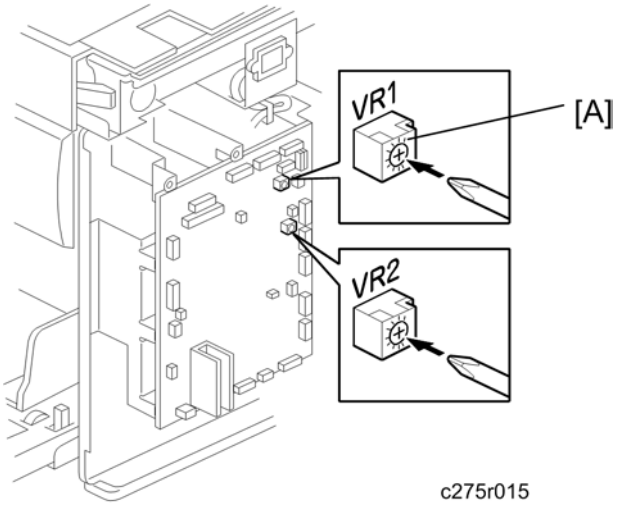
Purpose	To ensure that the sensor detects the end mark (a solid black area) on the master roll.
Standard	2.0 ± 0.1 volts
Tools	The core of a used master roll (the core just before a master end display appears)



C271R900

- Rear cover (☛ p.59)

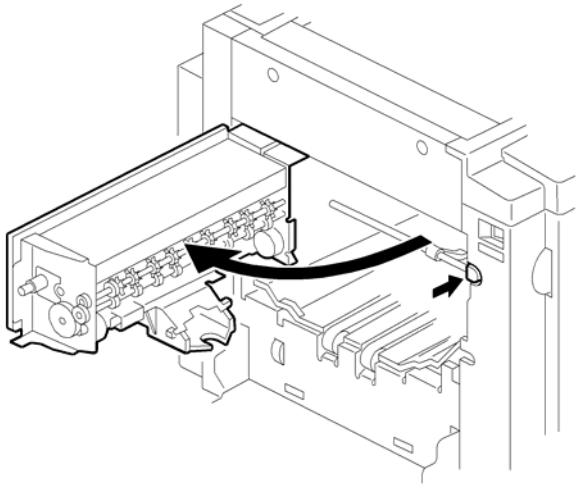
1. Place the core inside the master making unit, and close the master making unit.
2. Connect the power plug, and turn on the main switch.
3. Access SP6-50.



4. Turn VR2 [A] on the MPU board until the display is 2.0 ± 0.1 volts.

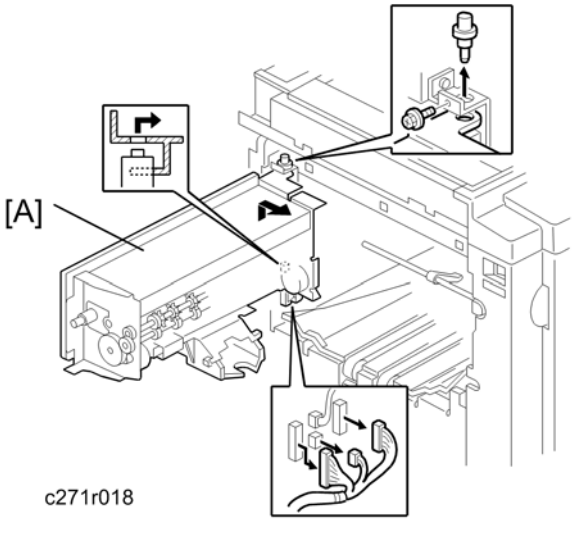
Master Eject

Master Eject Unit



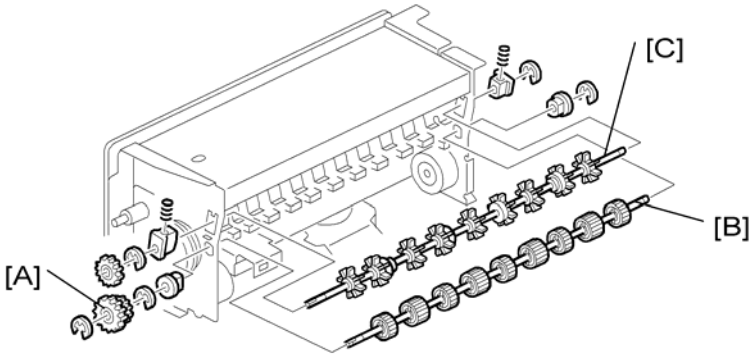
C271R017

Open the master eject unit.



[A]: Master eject unit (x 3, x 1)

Master Eject Rollers



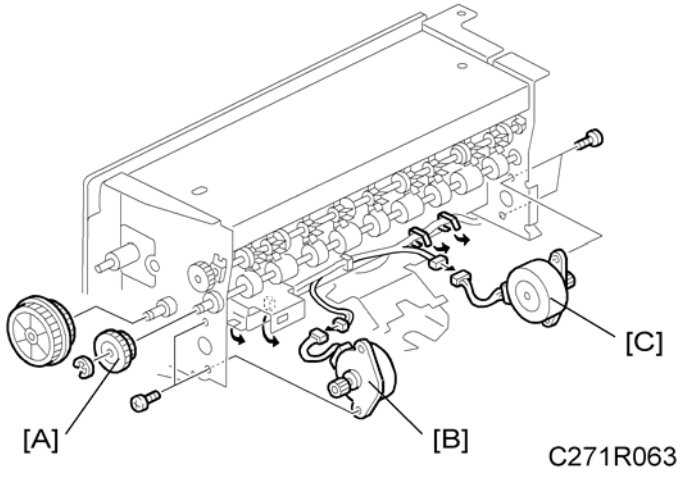
- Master eject unit (☛ p.82)

[A]: Gears (© x 1)

[B]: Lower master eject roller (© x 2)

[C]: Upper master eject roller (© x 2, 2 springs)

Master Eject Motor and Pressure Plate Motor



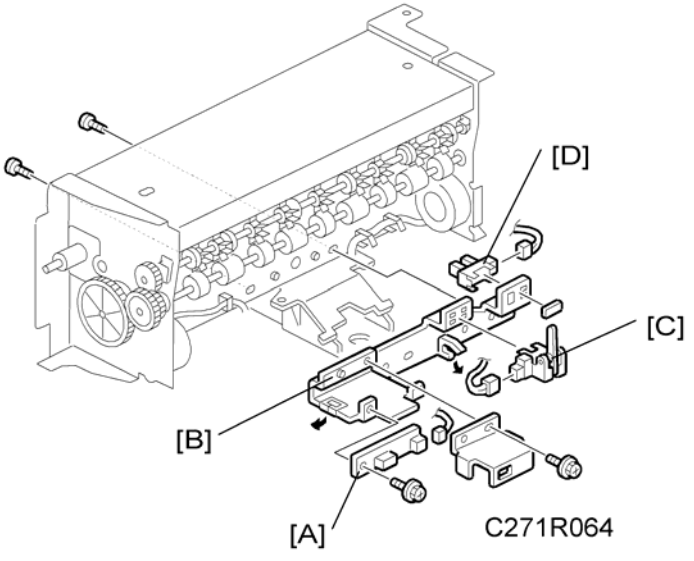
- Master eject unit (☛ p.82)

[A]: Gears (© x 1)

[B]: Master eject motor (x 2, x 1, x 2)

[C]: Pressure plate motor (x 2, x 1, x 2)

Drum Master Sensor, Master Eject Sensor and Eject Box Set Sensor



- Master eject unit (☛ p.82)
- Master eject box

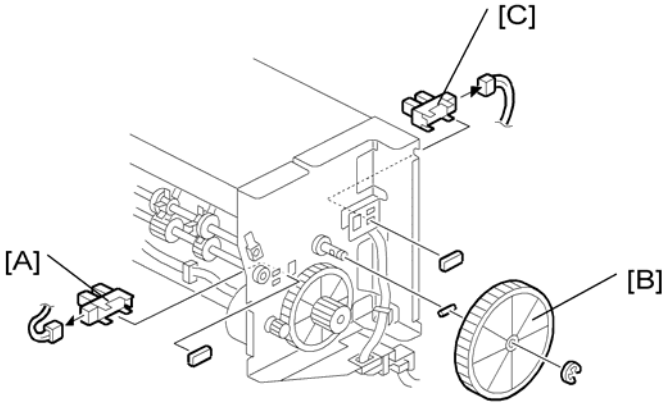
[A]: Drum master sensor (x 2, x 1)

[B]: Bracket (x 2, x 1)

[C]: Master eject sensor (x 1, x 1)

[D]: Eject box set sensor (x 1)

Pressure Plate HP Sensor and Pressure Plate Limit Sensor



C271R065

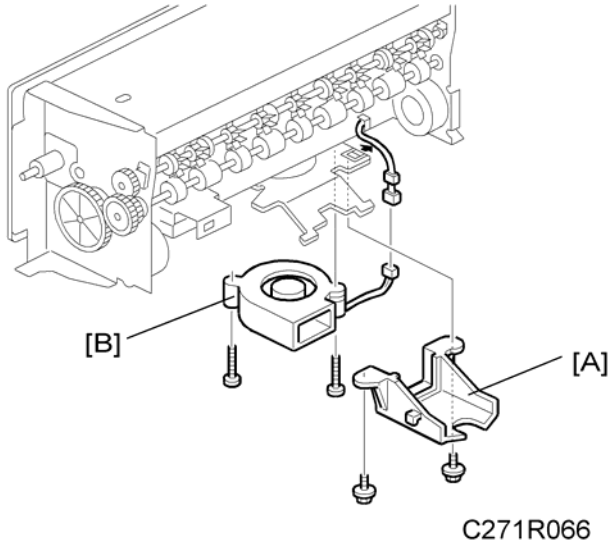
- Master eject unit (☛ p.82)
- Master eject box

[A]: Pressure plate HP sensor (x 1)

[B]: Gear (x 1, 1 pin)

[C]: Pressure plate limit sensor (x 1)

Air Knife Fan Motor

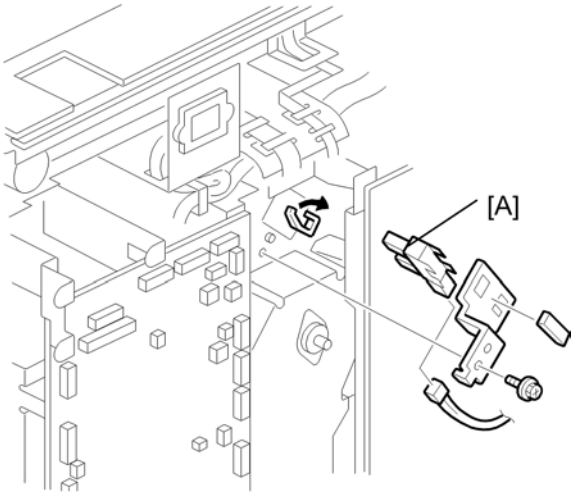


C271R066

[A]: Air knife fan duct (x 2)

[B]: Air knife fan motor (x 1, x 1, x 2)

Master Eject Position Sensor

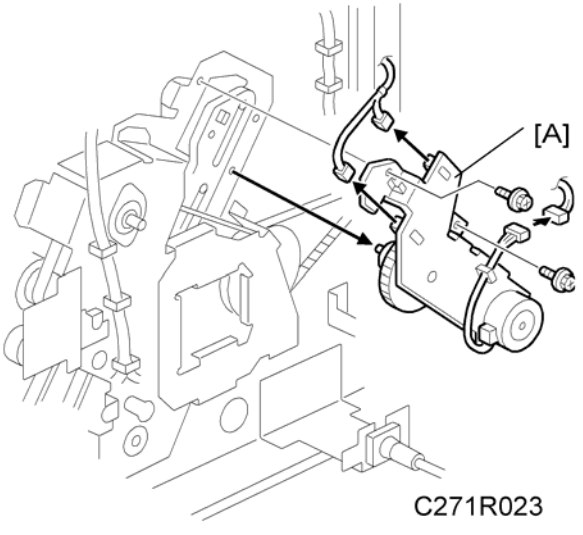


C271R035

- Rear cover (p.59)

[A]: Master eject position sensor (x 1, x 1, x 1)

Master Clamper Opening Unit



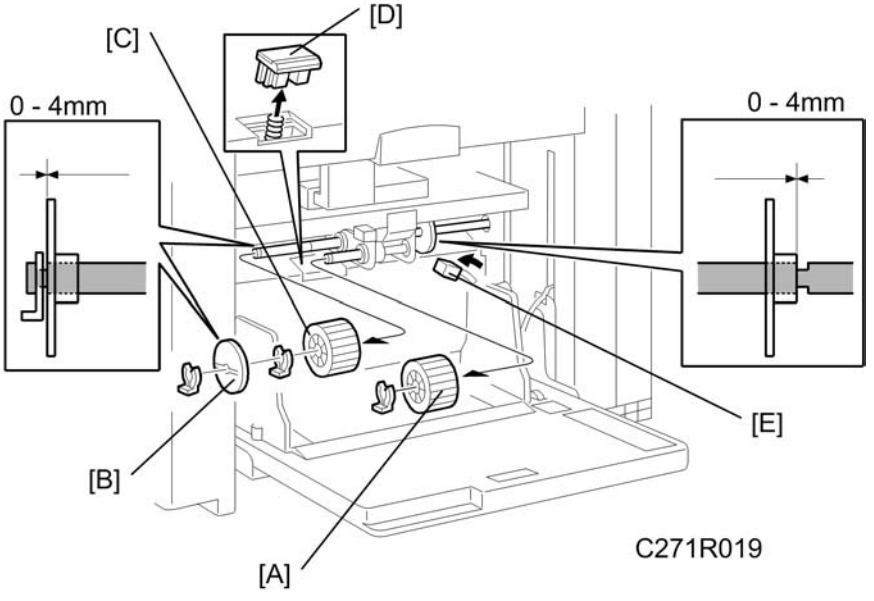
C271R023

- Rear cover (☛ p.59)

[A]: Master clamper opening unit ( x 3,  x 2)

Paper Feed

Pick-up Roller, Paper Feed Roller and Friction Pad



- Move the separation pressure slider [E] to position 1.

[A]: Pick-up roller (x 1)

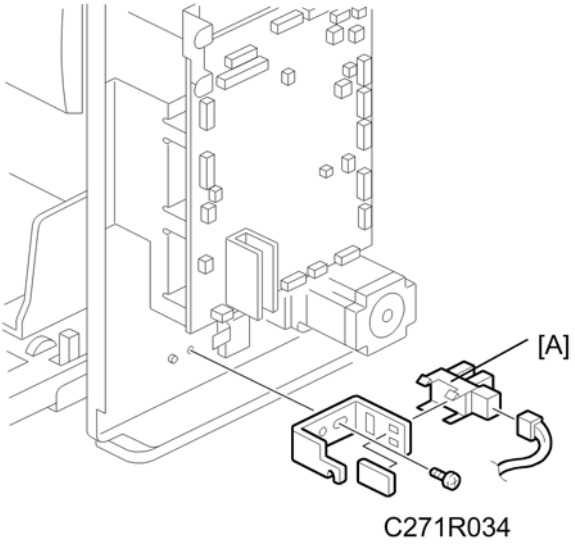
[B]: Paper guide (x 1)

[C]: Paper feed roller (x 1)

[D]: Friction pad

Do not change the position and direction of the paper guide [B].

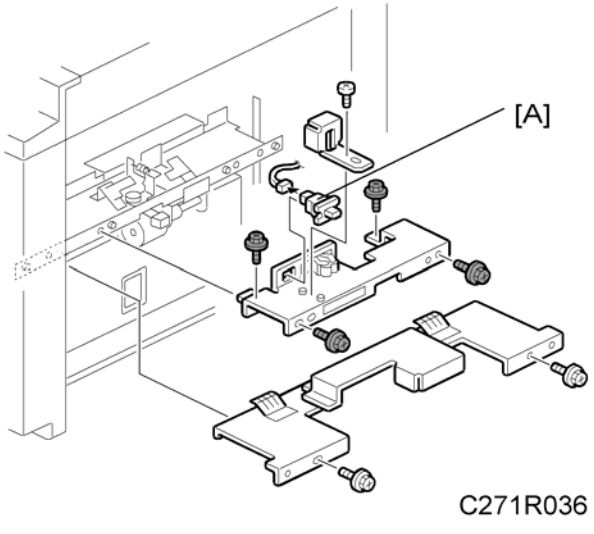
Paper Table Lower Limit Sensor



- Rear cover (☛ p.59)

[A]: Paper table lower limit sensor (x 1, x 1)

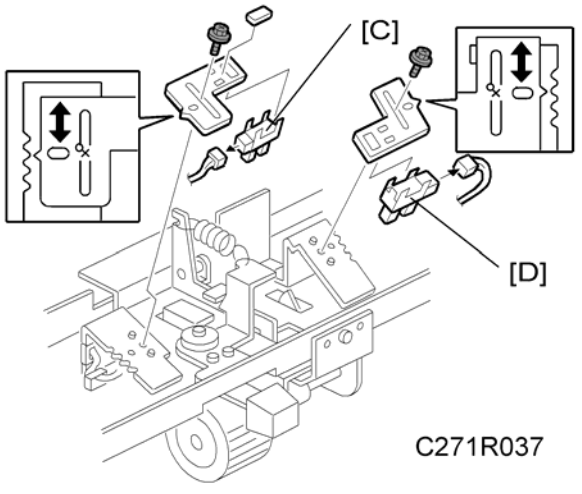
Paper Height Sensor 1 and 2



- Master making unit (☛ p.73)

[A]: Paper feed unit cover (x 2)

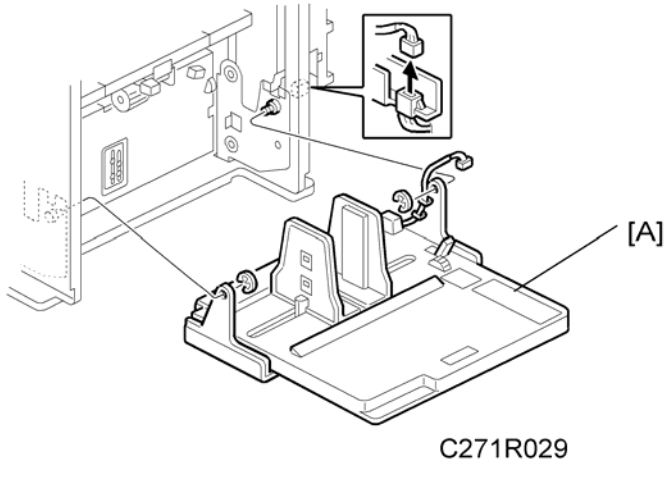
[B]: Paper feed unit cover – small (x 4, x 1)



[C]: Paper height sensor 1 (x 1, x 1)

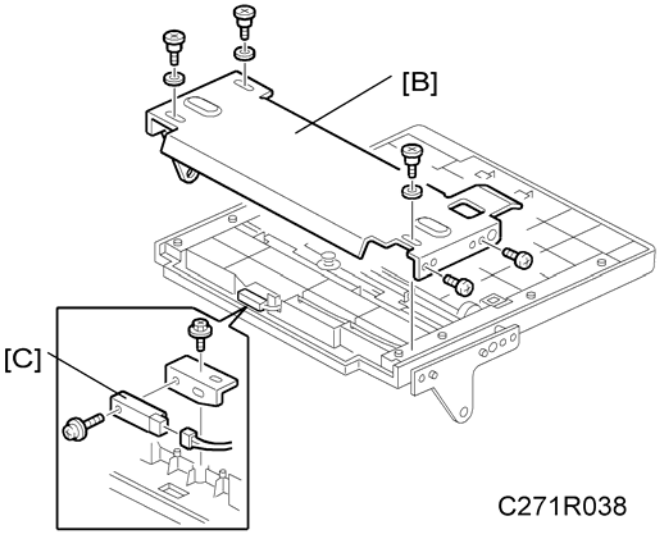
[D]: Paper height sensor 2 (x 1, x 1)

Paper End Sensor



- Rear cover (p.59)

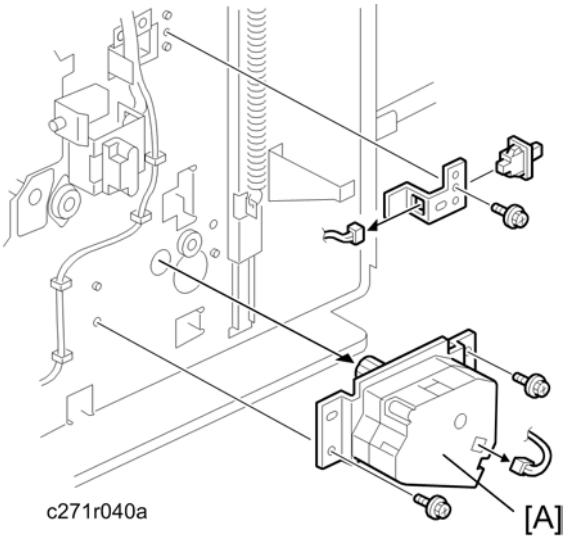
[A]: Paper table (x 1, x 2)



[B]: Paper table bottom plate (x 5, 3 washers)

[C]: Paper end sensor (x 2, x 1)

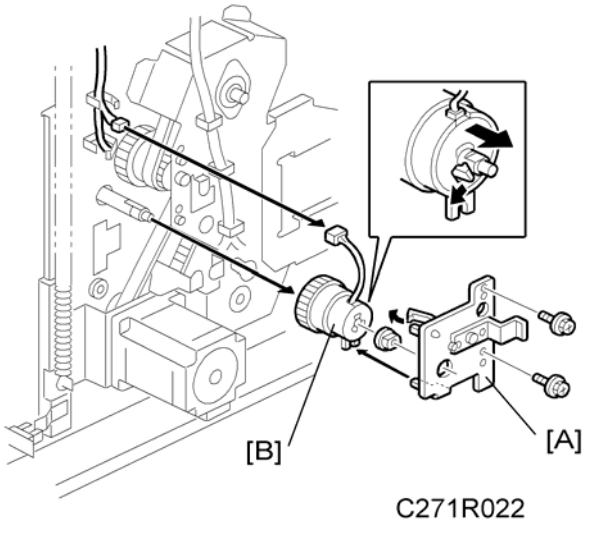
Paper Table Motor



- Front cover (p.58 "Front Cover and Front Door")

[A]: Paper table motor (x 2, x 1)

Paper Feed Clutch



C271R022

- Rear cover (☛ p.59)
- MPU (☛ p.61)

[A]: Paper feed clutch bracket (x 2)

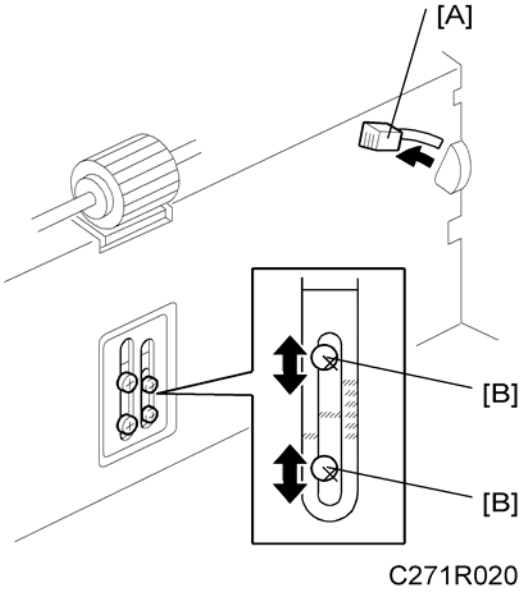
[B]: Paper feed clutch (x 1, x 1)

Paper Separation Pressure Adjustment

The position of the screw can be changed in order to change the amount of pressure exerted by the friction pad.

This adjustment can be done:

- When feeding special paper, especially thick paper
- When the customer is experiencing feed problems.



- Move the separation pressure slider [A] to position 1.

Increase the paper separation pressure: Move up the screws [B]

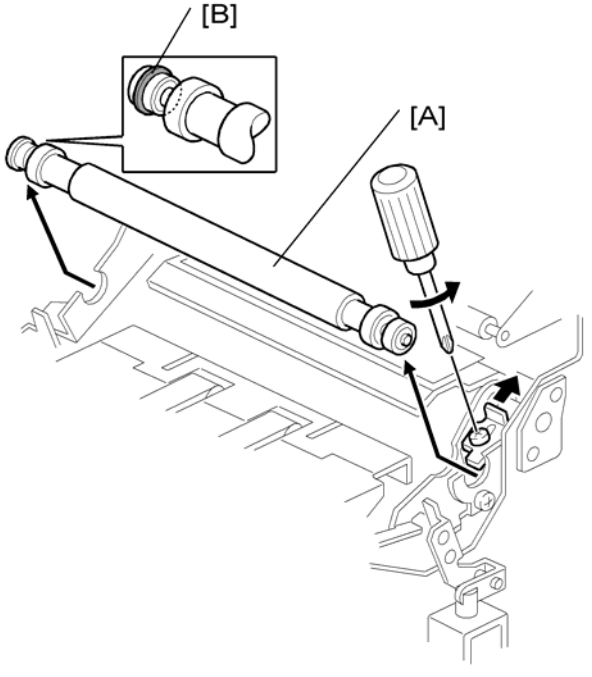
Decrease the paper separation pressure: Move down the screws [B]

Default position: lowest position

The adjustment is automatically applied to all settings of the separation pressure slider.

Printing

Press Roller



C271R907

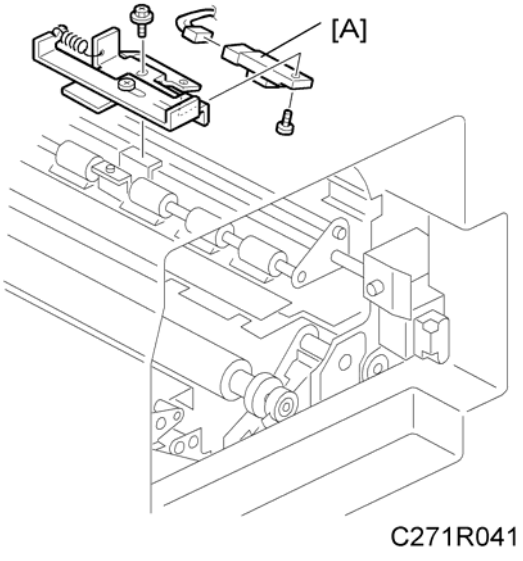
⚠CAUTION

- Take care to avoid possible injury. If the printing pressure release arms disengage, the press roller will be pulled upwards suddenly.
- Remove the drum.

[A]: Press roller (x 1)

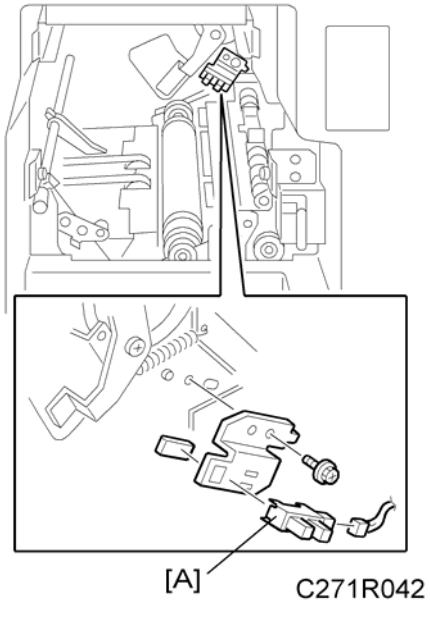
The bearings on the rear and front differ. During installation, ensure that the bearing with the stopper [B] is positioned towards the rear of the machine.

Registration Sensor



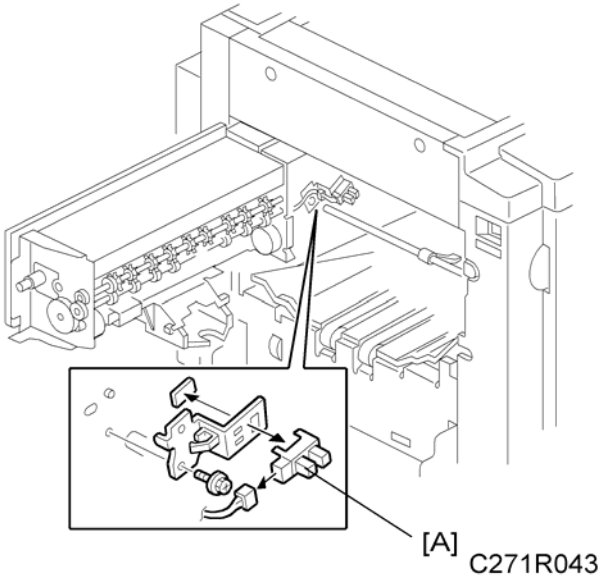
[A]: Registration sensor (x 2, x 1)

Feed Start Timing Sensor



[A]: Feed start timing sensor (x 1, x 1)

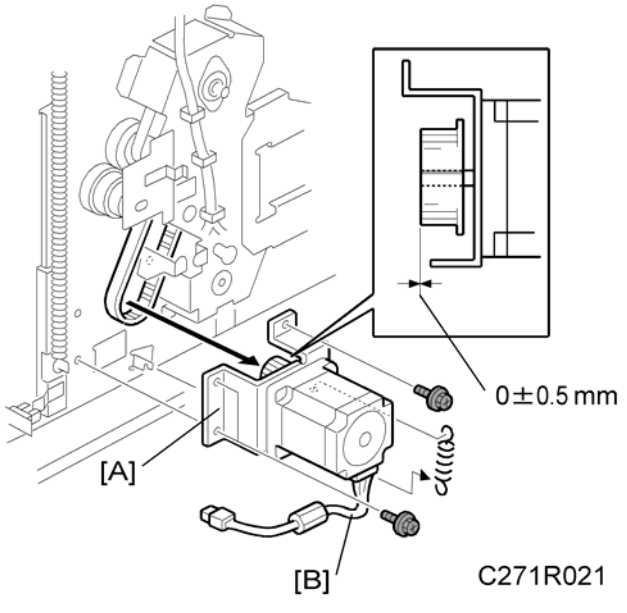
2nd Feed Timing Sensor



- Open the master eject unit

[A]: 2nd feed timing sensor (x 1, x 1)

Registration Motor



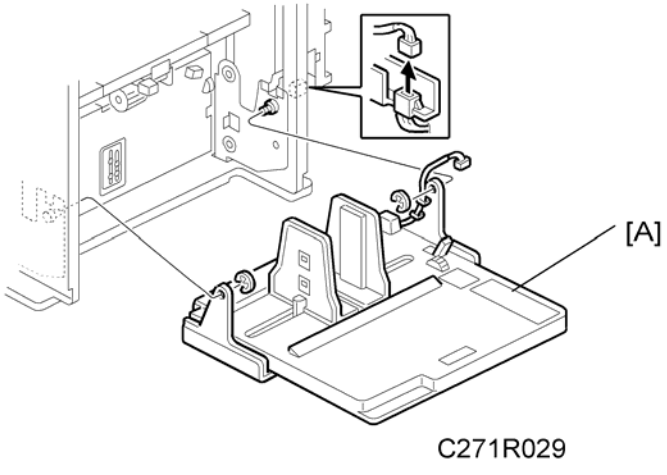
- Rear cover (☛ p.59)
- MPU (☛ p.61)

[A]: Registration motor (spring, x3, belt, x 1)

Note

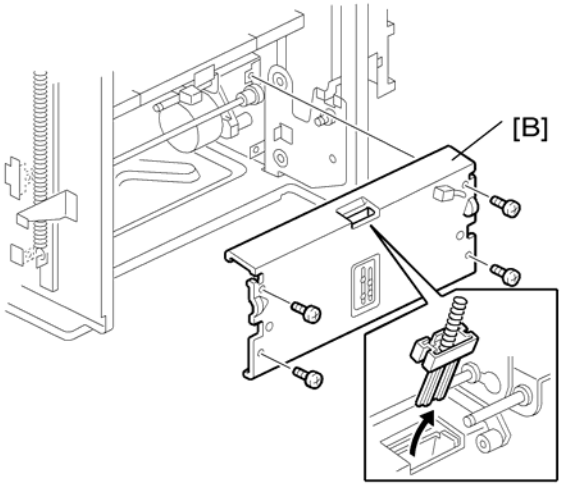
- The side of the motor with the harness [B] should face downward, as shown in the diagram
- The flange of the gear should face towards the motor as shown in the diagram

Registration Roller



- Front cover (☛ p.58 "Front Cover and Front Door")
- Rear cover (☛ p.59)

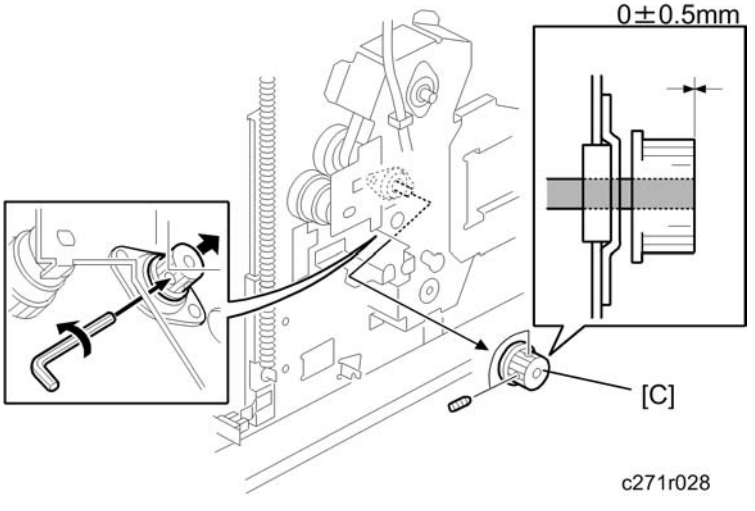
[A]: Paper table (x 1, x 2)



C271R030

[B]: Plate (x 4)

- MPU (p.61)
- PSU (p.61)
- Registration motor (p.96)

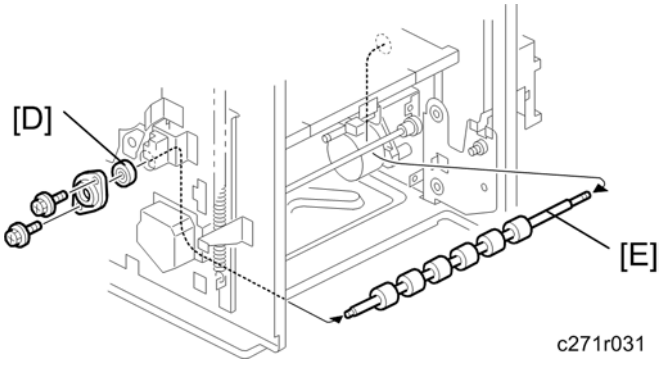


c271r028

[C]: Gear

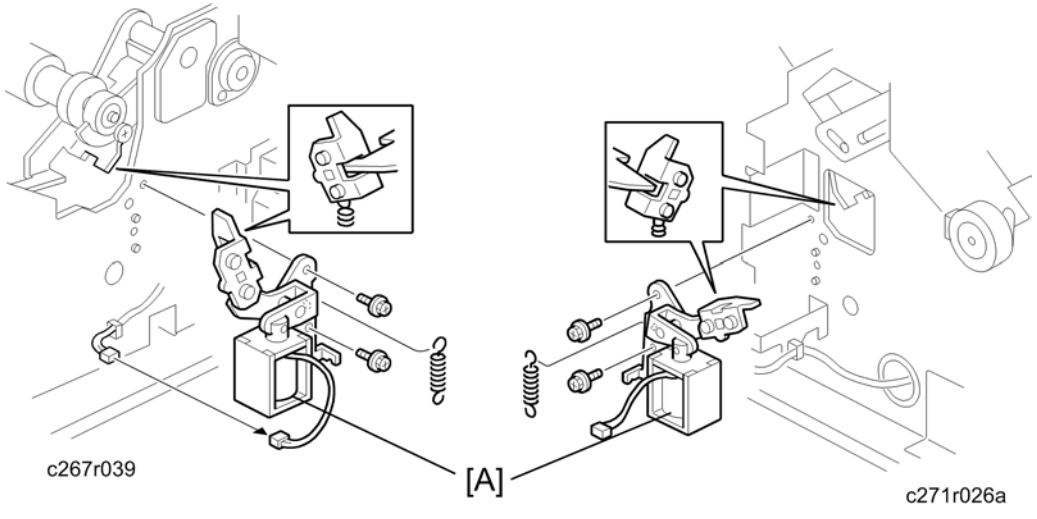
Note

- The flange of gear [C] should face towards the machine, as shown in the diagram.



[D]: Bearing (x 2)
[E]: Registration roller

Press Roller Release Solenoids



- Front cover (p.58 "Front Cover and Front Door")
- Rear cover (p.59)

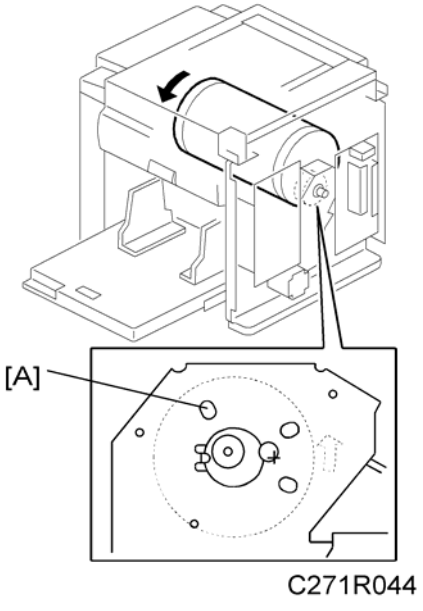
[A]: Press roller release solenoid (x 2, x 1)

Note

- Adjust the press roller release lever (p.100 "Press Roller Release Lever Adjustment") after installing the new solenoid.

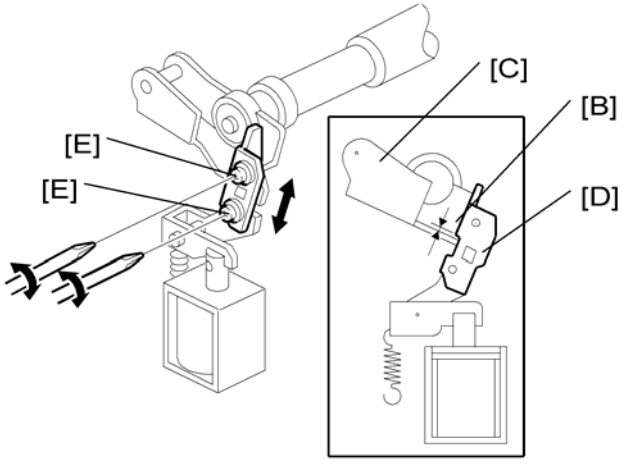
Press Roller Release Lever Adjustment

Purpose:	To maintain the correct clearance between the press roller arms and press roller lock levers. This ensures that the press roller is correctly released and pressed against the drum when the press roller release solenoid is energized.
Standard:	0.7 to 1.2 mm
Tools:	Thickness gauge



- Front cover (☛ p.58 "Front Cover and Front Door")
- Rear cover (☛ p.59)

1. Turn the drum manually until the drum master clamper on the drum moves into the lowest position. (This is when the high points of the cams on the drum flanges meet with the cam followers on both ends of the press roller.)
    - To find out the correct position of the drum for the adjustment, look at the rear end of the drum shaft. The recess on the drum drive gear meets the hole [A] in the bracket when the drum is in the correct position.

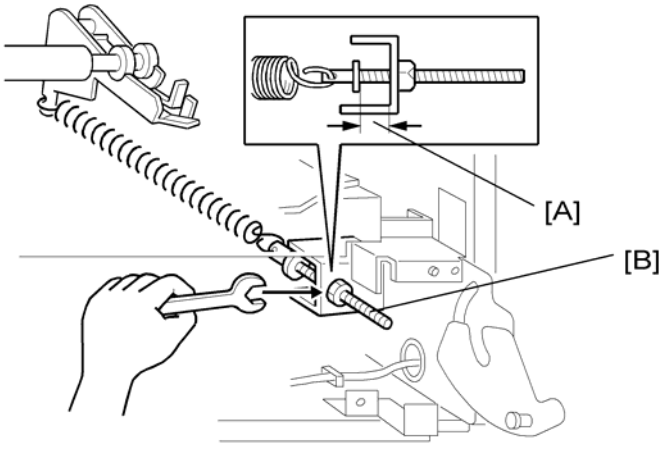


C271R908

2. Using a thickness gauge, measure the clearance [B] between the press roller arm [C] and the press roller lock lever [D] (rear side). It should be between 0.7 and 1.2 mm.
3. If it is not correct, adjust the position of the press roller lock lever after loosening the two screws [E].
4. Repeat steps 2 and 3 for the front side.

Printing Pressure Adjustment

Purpose:	To make better print results without decreasing the run length.
Standard:	Within 10 ± 0.5 mm



C271R051

- Paper delivery unit (☛ p.114)

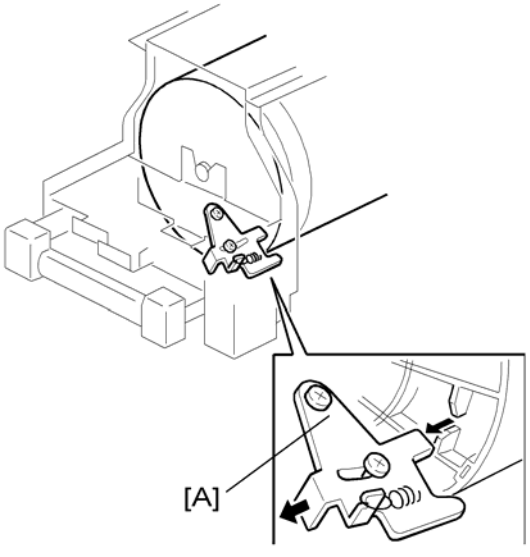
1. Adjust the distance [A] to 10 ± 0.5 mm by turning the adjusting bolt [B].
2. Repeat the same procedure for the printing pressure spring at the non-operation side.

Drum

Preparation

Before attempting any of the procedures in this section, wipe off the ink around the ink roller. To do this, set SP2-10 (ink detection) to off, and feed paper until ink ends.

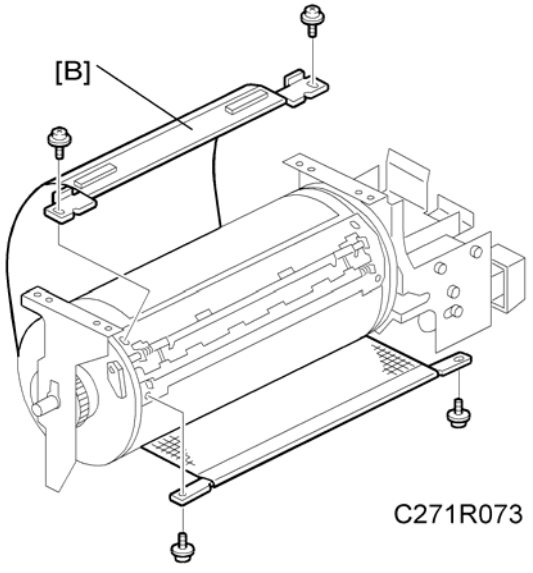
Cloth Screen



C271R909

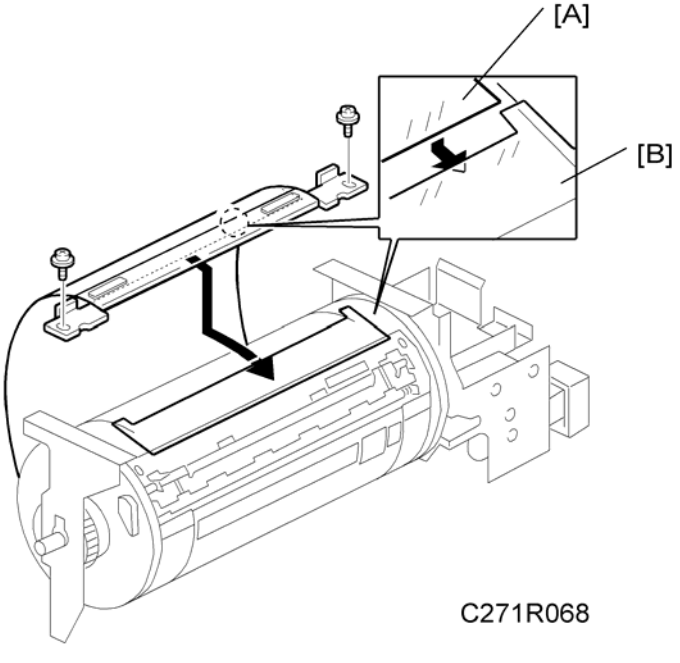
- Remove the drum.

1. Remove the drum upper bracket (x 4).
2. Release the stopper [A], then rotate the drum until the master clamper faces top.



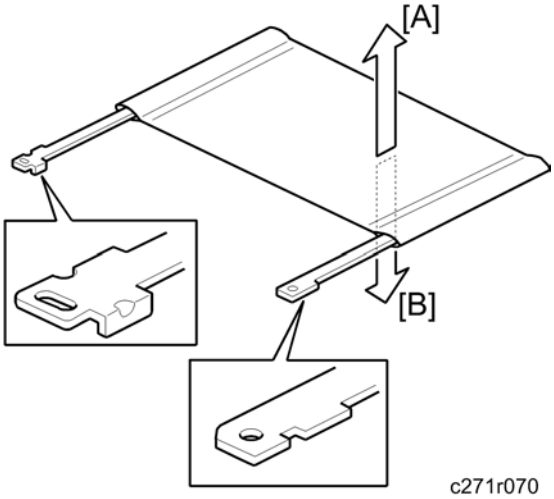
3. Remove the cloth screen [B] (x 4).

Installation

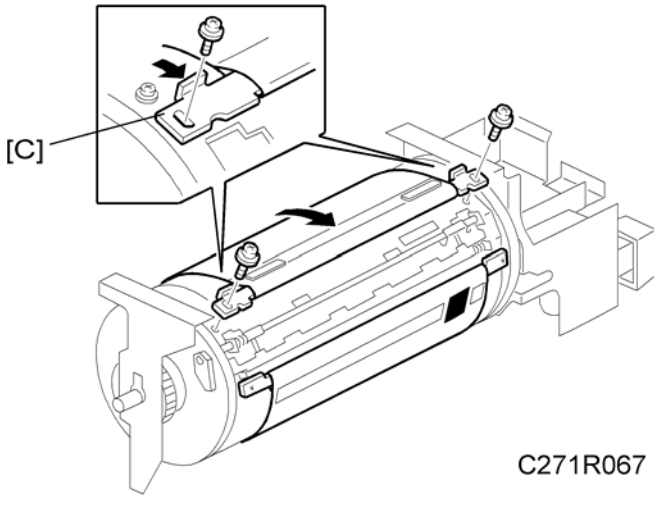


- Do not scratch the cloth screen or metal screen.

- Properly insert the edge of the cloth screen [A] on the cloth screen under the mylar [B] on the metal screen, as shown above. Otherwise, ink will leak from the trailing edge of the master on the drum during a long printing run.

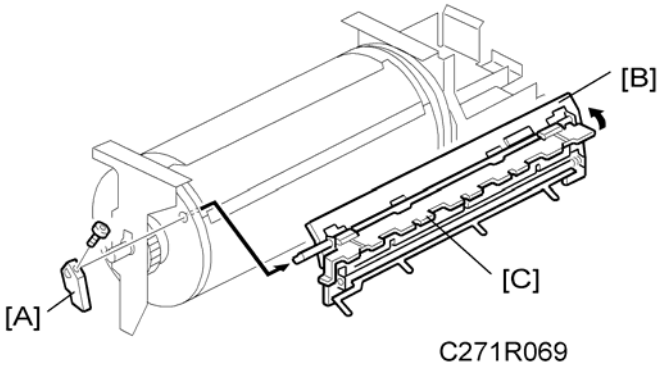


- Make sure that the correct side ([A]: Inside, [B]: Outside) of the screen is facing up. In addition, make sure that the stays for securing the cloth screen are positioned correctly.



- When replacing the cloth screen, spread the screen around the metal screen while pulling the stay [C]. Adjust the stay so that it is parallel to the master clamper, then tighten the screws.
- Make sure that the cloth screen is not wrinkled while spreading it around the drum.

Clamper and Metal Screen



C271R069

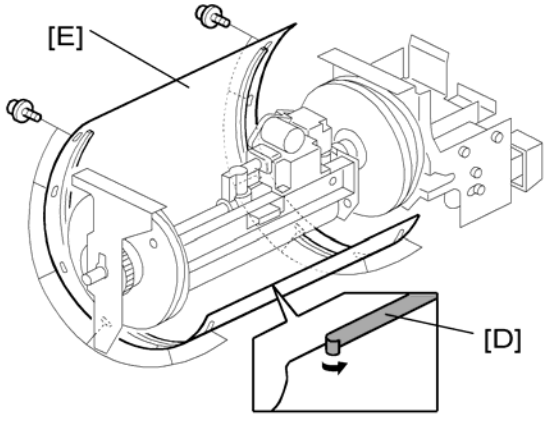
- Remove the drum.
- Cloth screen (☛ p.103)

[A]: Clamper lever (1 hexagon screw)

[B]: Clamper - open the clamping plate [C], then remove the clamper.

Note

- Do not allow ink to get on the inside of the clamping plate [C]. Otherwise, the master may slip off and the image position on the prints will move toward the trailing edge of the prints during a printing run.
- Use a cloth dampened with water to clean the inside of the clamping plate [C]. Never use alcohol or other solvents, or the clamping force of the magnet will be weakened.

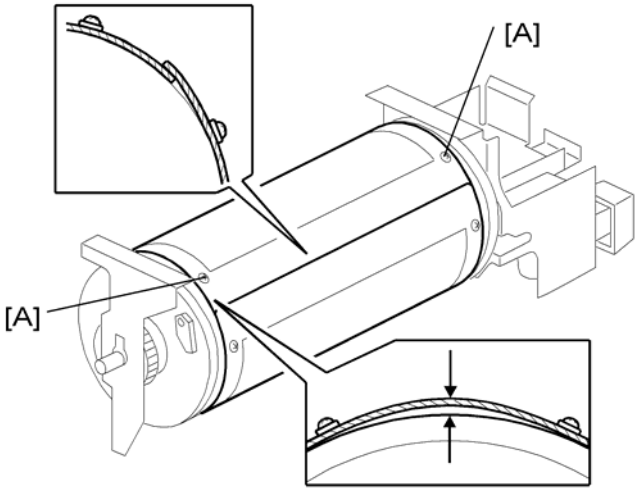


C271R074

[D]: Tape (do not lose it)

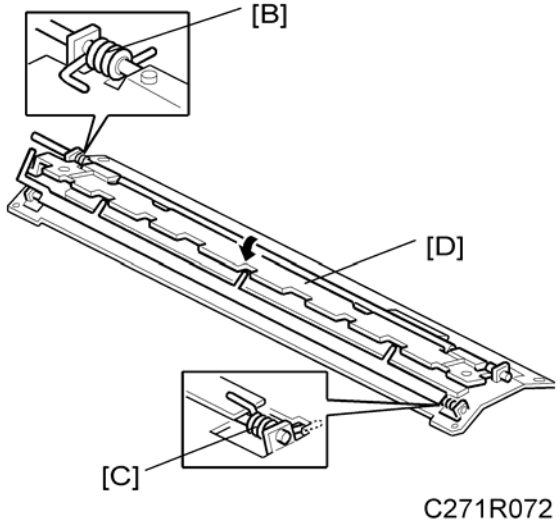
[E]: Metal screen (x 12)

Installation



C271R071

- Make sure that the correct end of the metal screen is overlapping. (The right side overlaps, as viewed from the non-operation side, as shown above.)
- The 4 screws holding the drum master clamper are longer than the 12 screws holding the metal screen, although they are similar in appearance. Be careful not to mix them up or use the wrong screws.
- When installing the metal screen, secure the trailing edge first with the 2 screws. Then, tighten the other screws while removing the slack from the screen. Make sure that the gap between the drum flanges and the screen is 0.3 mm or less, as shown above. (The two holes [A] on the trailing side are round holes and the other holes are long holes, to allow for the removal of the slack.)



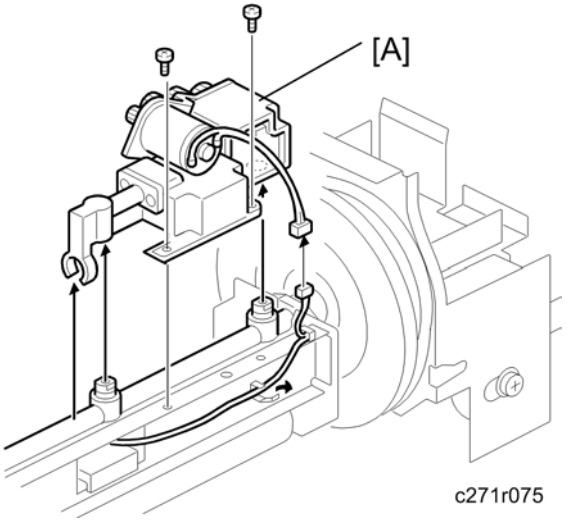
C271R072

- Position the springs [B] and [C] (one each at the front and rear) as shown when reinstalling the drum master clamper [D].
- Do not scratch the cloth screen or metal screen.

Note

- The side [E] with the part number printed on it must be on the top.

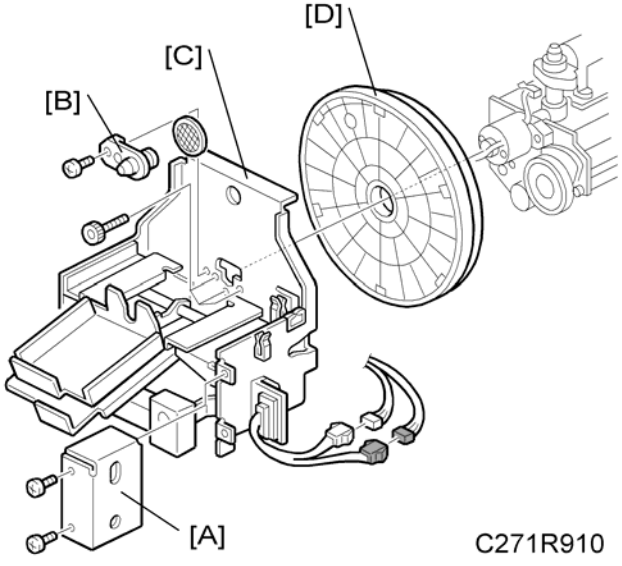
Ink Pump Unit



- Remove the drum.
- Cloth screen (p.103)
- Clamper / Metal screen (p.106)

[A]: Ink pump unit (x 1, x 2)

Ink Roller Unit and Ink Roller One-Way Clutch



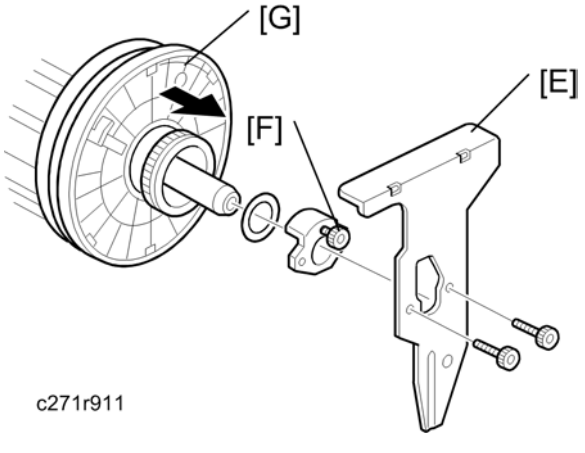
- Wipe off the ink around the ink roller beforehand (use SP2-10).
- Remove the drum
- Cloth screen (☛ p.103)
- Clamper / Metal screen (☛ p.106)

[A]: Connector cover (x 2, x 2)

[B]: Ink socket (x 1)

[C]: Front drum bracket (x 3)

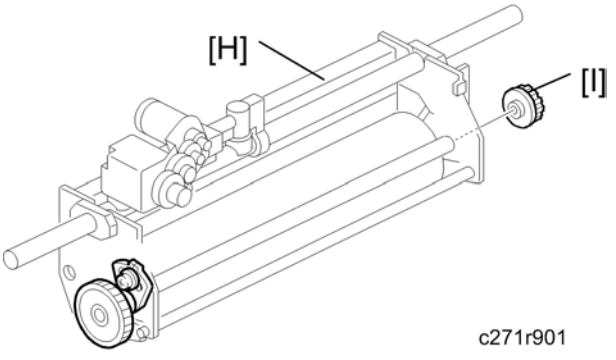
[D]: Front drum flange



[E]: Drum rear plate (x 2)

Loosen the screw [F] to take off the drum rear stoppers (x 1)

[G]: Drum rear flange



[H]: Ink roller unit

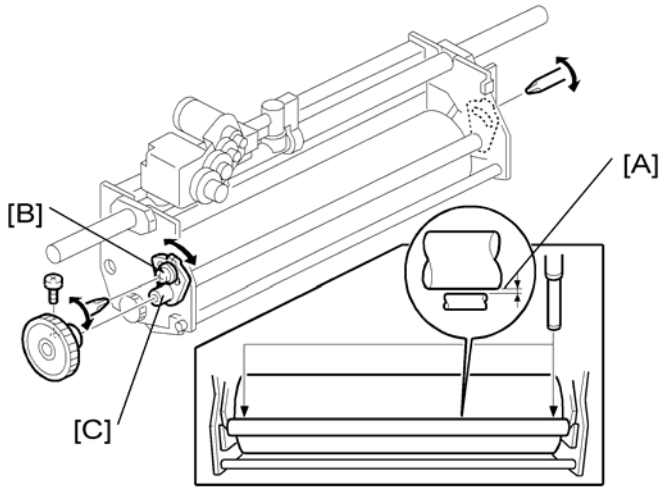
[I]: Ink roller one-way clutch

Doctor Roller Gap Adjustment

Purpose:	To control the ink thickness around the ink roller.
Standard:	A 0.07mm gauge passes, but a 0.09mm gauge does not.
Tools:	Thickness gauge

Note

- Normally the doctor roller gap is not adjusted or changed. It tends to be difficult to change in the field. If the gap is too narrow, an uneven image may appear on the prints. If it is too wide, too much ink will be applied to the drum screens, resulting in ink leakage from the drum.



C271R076

- Wipe off the ink around the ink roller beforehand. (Use SP2-10.)
- Remove the drum
- Remove the Ink roller unit

1. Make sure that a 0.07 mm gap gauge goes through the gap [A] between the ink and doctor rollers, and that a 0.09 mm gap gauge does not.

Note

- The gap should be checked at both ends of the doctor roller. Insert a gap gauge at each end of the roller. The gap tends to be larger for the center.
- While the gap gauge is inserted, hold the doctor and ink rollers with your fingers in order to stop the rollers from rotating.
- While the gap gauge is inserted, hold the end of the gap gauge.

2. If the gap is out of the standard, loosen the screw [B] and adjust the gap by turning the cam bushing [C] for the front and for the rear.

Note

- Make sure to repeat the adjustment for both ends of the rollers.

Ink Detection Adjustment

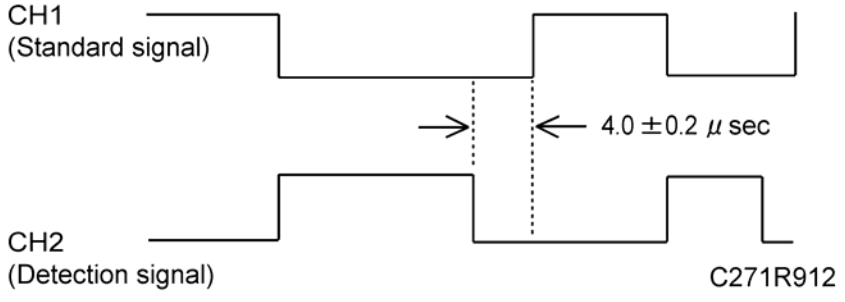
Using an Oscilloscope

Purpose:	To ensure that the CPU detects a no ink condition.

Standard:	4.0 ± 0.2 µsec

Note

- Before attempting this procedure, wipe off the ink around the ink roller. To do this, set SP2-10 (Ink Detection) to OFF, and feed paper until ink ends.
- This adjustment is required every time the MPU has been replaced.
- Normally, the simple method is sufficient. But, the oscilloscope method is more accurate. Use the oscilloscope method if you cannot adjust the sensor to the required value with the simple method, or if ink flooding problems occur after adjustment with the simple method.



1. Turn off the main switch and disconnect the power plug.
2. Remove the rear cover.
3. Connect the CH1 probe of an oscilloscope to TP25 (INK1), the CH2 probe to TP23 (INK2). Select the 2-microsecond range on the oscilloscope.
4. Connect the power plug and turn on the main switch.
5. Make sure that the waveform is as shown in the illustration while the ink end indicator lights.
6. If it is not correct, adjust the ON timing of the detection signal by turning VR1 beside the test pins.

Note

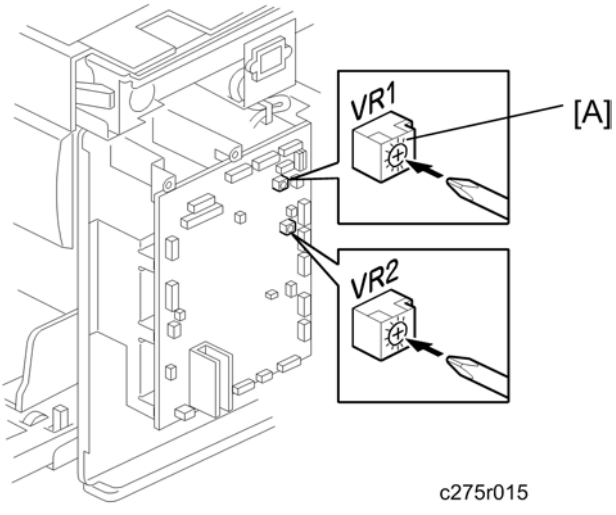
- If the ink detection off mode has been selected with SP2-10, do not forget to return it to the default (detection on).

Simple Method

Purpose:	To ensure that the CPU detects a no ink condition.
Standard:	4.0 ± 0.2 µsec

Note

- Before attempting this procedure, wipe off the ink around the ink roller. To do this, set SP2-10 (Ink Detection) to OFF, and feed paper until ink ends.
- This adjustment is required every time the MPU has been replaced.
- Normally, the simple method is sufficient. But, the oscilloscope method is more accurate. Use the oscilloscope method if you cannot adjust the sensor to the required value with the simple method, or if ink flooding problems occur after adjustment with the simple method.



c275r015

- Rear cover (☛ p.59)

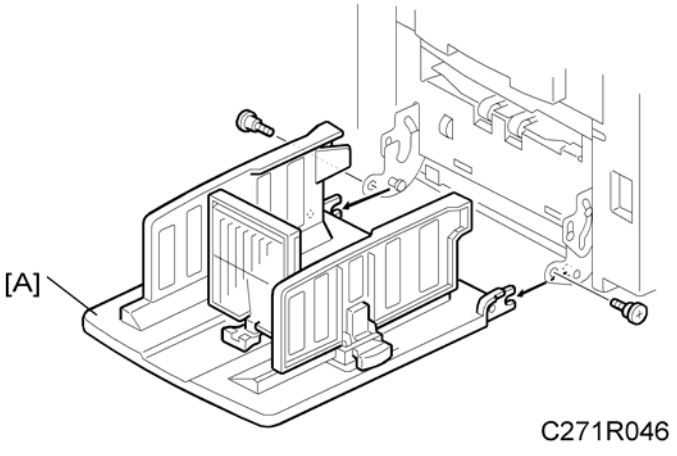
1. Access SP6-40.
2. Turn VR1 [A] on the MPU board until the display is "4.0 ± 0.2 µsec".
3. When the drum has ink inside, the machine displays "----". Do SP 2-10 again, then go back to step 1.

Note

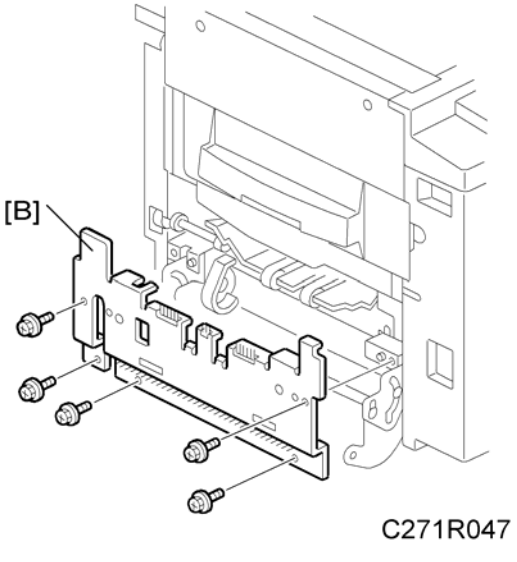
- If the simple method gives an inaccurate result (causing ink flooding, for example), it is possible that too much ink will come out into the drum during printing. If this happens, repeat the adjustment, but use the oscilloscope method, because this is more accurate.

Paper Delivery

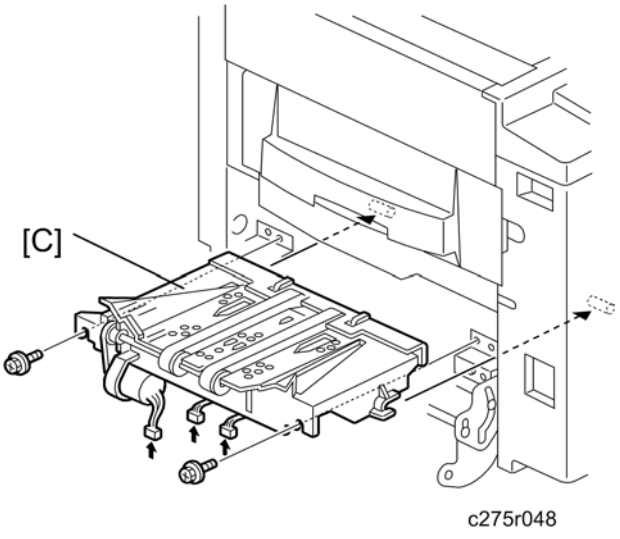
Paper Delivery Unit



[A]: Paper table (x 2)

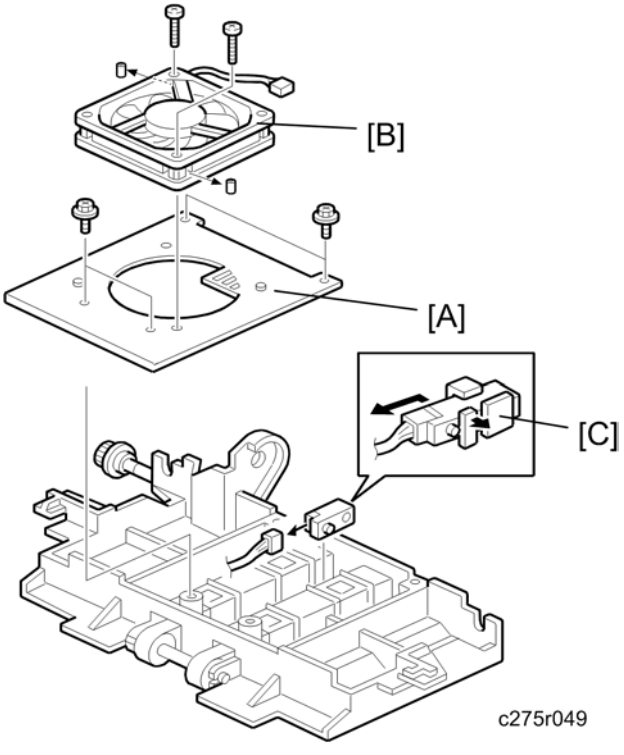


[B]: Paper delivery cover (x 5)



[C]: Paper delivery unit (x 2, x 3)

Delivery Belt, Paper Exit Sensor, Vacuum Fan Motor and Paper Delivery Unit Bushings



- Remove the paper delivery unit (☛ p.114).

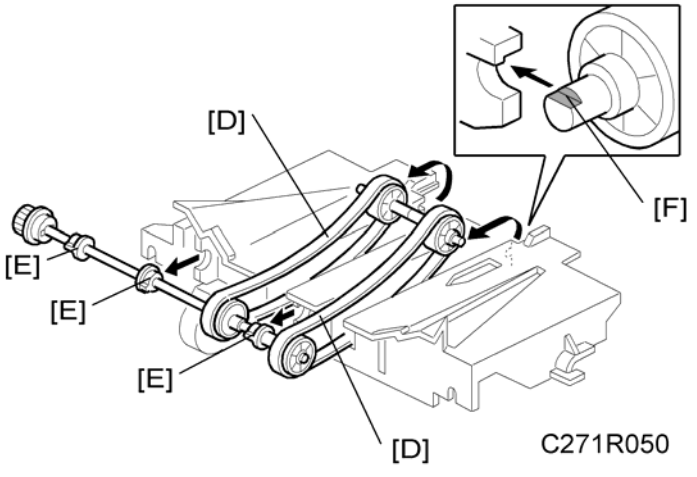
[A]: Vacuum fan motor bracket (x 4)

[B]: Vacuum fan motor (x 2, pin x 2)

[C]: Paper exit sensor (x 1)

Note

- Make sure that you install the vacuum fan [B] the correct way around.



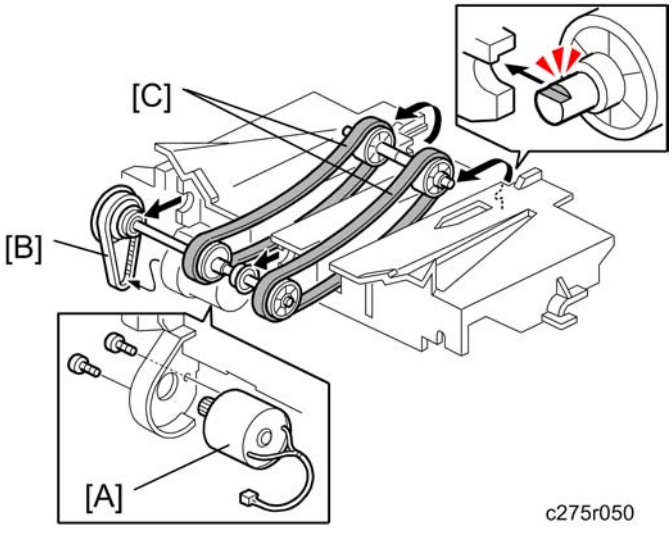
[D]: Delivery belts (x 1)

[E]: Paper delivery unit bushings

Note

- Install the delivery belt [D] the correct way around. The writing must be on the outside surface of the belt.
- The flat part of the "D" shaped cutout in the shaft [F] must face upwards.

Paper Delivery Motor



- Remove the paper delivery unit (☛ p.114).
- Delivery belts (☛ p.115 "Delivery Belt, Paper Exit Sensor, Vacuum Fan Motor and Paper Delivery Unit Bushings")

[A]: Paper delivery motor (🔩 x 2)

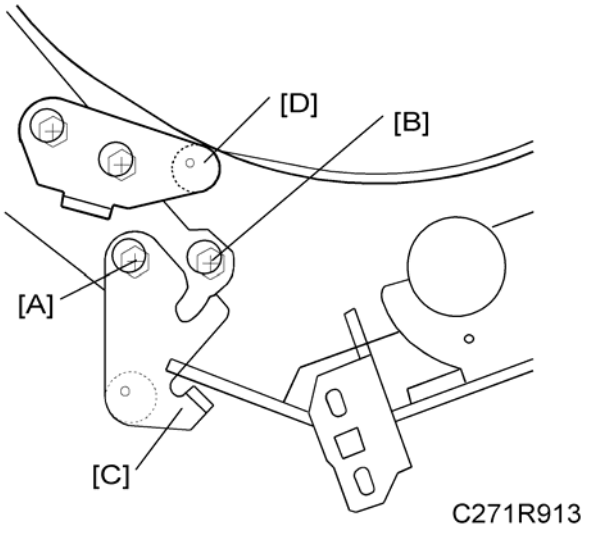
Note

- When installing the paper delivery motor in the paper delivery unit, make sure that the pulley of the paper delivery motor hooks the timing belt [B], and the paper delivery motor is linked with the delivery belts [C] of the paper delivery unit.

Exit Pawl Adjustment

Purpose:	To ensure that the exit pawls can move out of the way of the drum master clamper while the drum is rotating.
Standard:	Within 1.15 ± 0.15 mm

Clearance adjustment



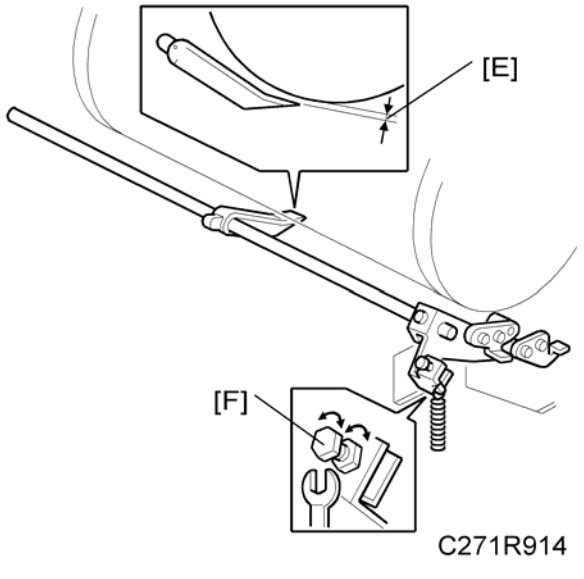
- Front cover (☛ p.58 "Front Cover and Front Door")
- Rear cover (☛ p.59)

1. Turn the drum to the drum home position.

   Note

   - The drum turns to home position automatically immediately after the power switch is turned on.

2. Loosen screw [A] then screw [B] in this order (do not remove them). Make sure that the bracket [C] becomes free from engagement and the cam follower [D] contacts the drum flange.

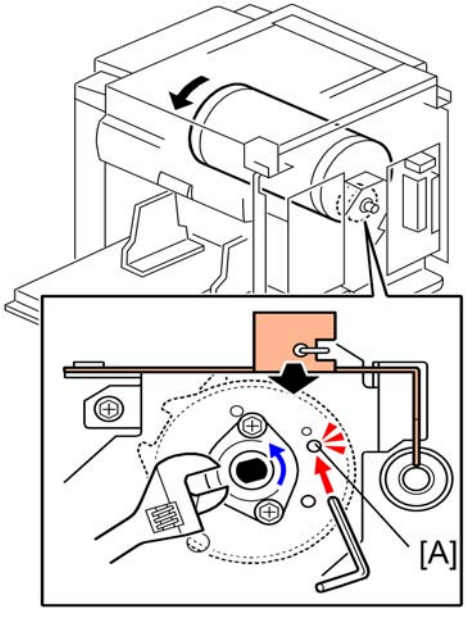


3. Using a gap gauge, measure the clearance [E] between the drum surface and the exit pawls. It should be 1.15 ± 0.15 mm.
4. If the clearance is not correct, adjust the clearance by turning the bolt [F].
5. Reposition the bracket [C] and tighten the screws [A] and [B].

Timing adjustment

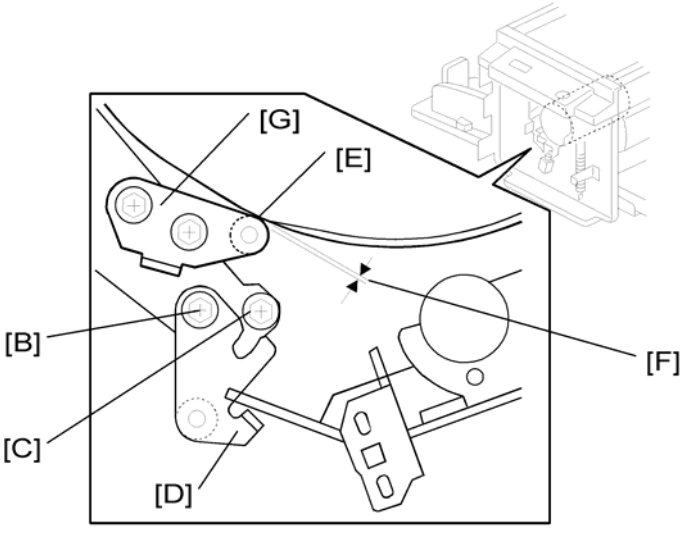
Do this after the clearance adjustment.

Standard: 0 or less than 0.5 mm



c275r044

1. Turn the drum manually until the recess in the drum drive gear meets the positioning hole [A] in the bracket, as shown.

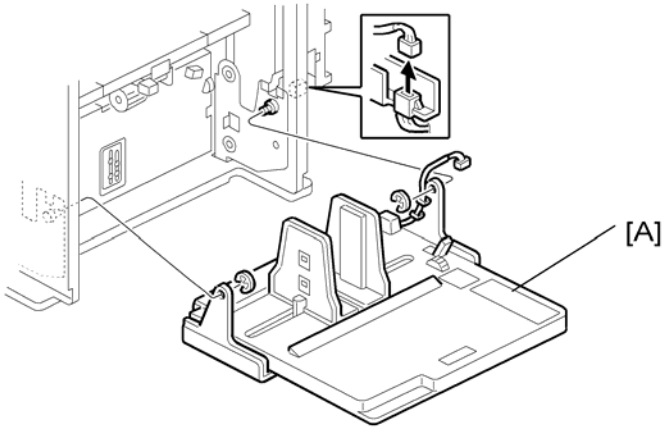


C271R052

2. Loosen screw [B] then screw [C] in that order (do not remove them). Make sure that the bracket [D] becomes free from engagement and the cam follower [E] contacts the drum flange.
3. Measure the gap [F] between the cam follower and cam face (front drum flange). It should be 0 to 0.5 mm.
4. If the gap is not correct, loosen the two screws securing the cam follower bracket [G].
5. Re-tighten the two screws while pushing the cam follower against the cam face. Make sure that the gap [F] is 0 or less than 0.5 mm.
6. Do not push the cam followers too strongly against the cam.
7. Re-position the bracket [D] and tighten the screws [B] and [C].

Main Drive

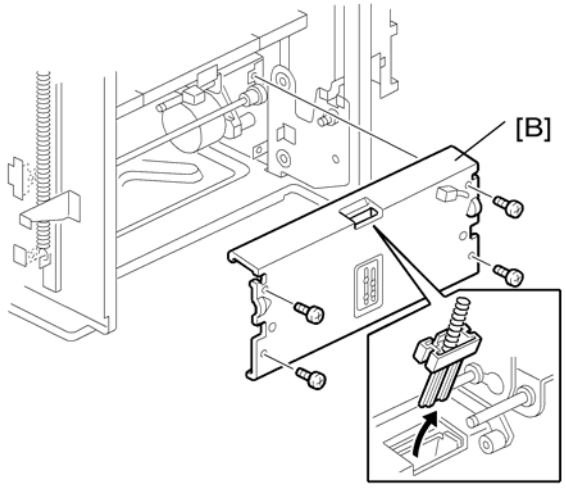
Registration Motor



C271R029

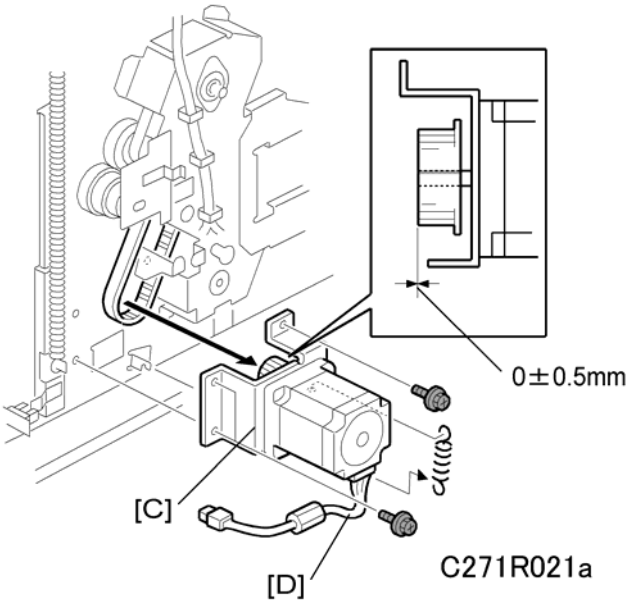
- Rear cover (☛ p.59)
- MPU (☛ p.61)
- PSU (☛ p.61)

[A]: Paper table (x 1, x 2)



C271R030

[B]: Plate (x 4)

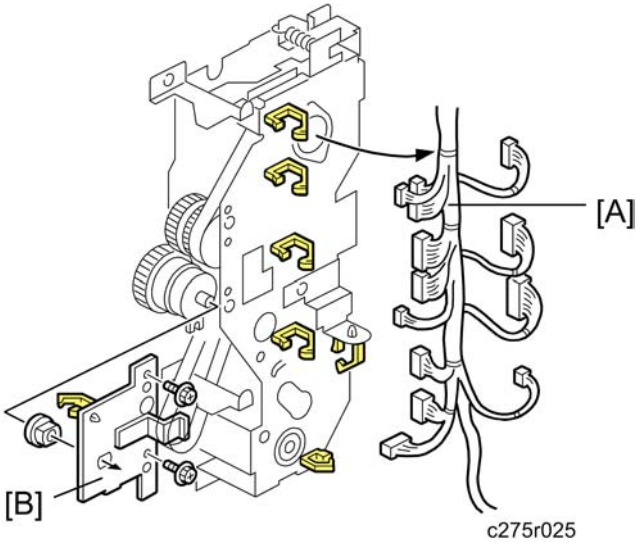


[C]: Registration motor (spring, x3, belt)

Note

- The side of the motor with the harness [D] should face downward, as shown in the diagram.
- The flange of the gear should face towards the motor, as shown in the diagram.

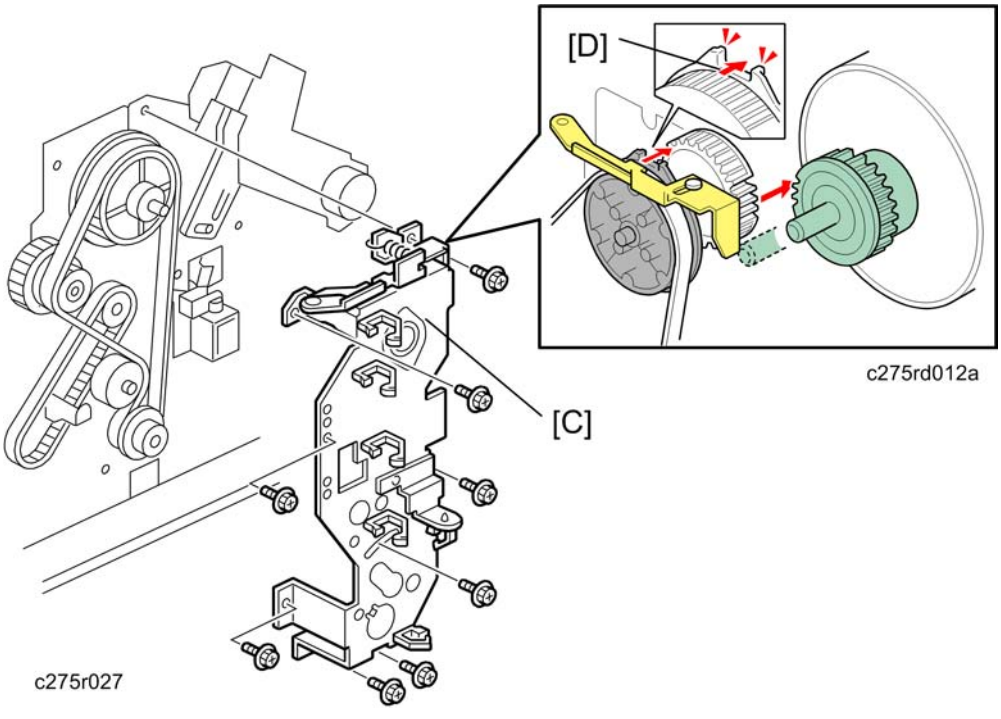
Main Motor



- Registration motor (☛ p.96)

[A]: Harnesses (x 6)

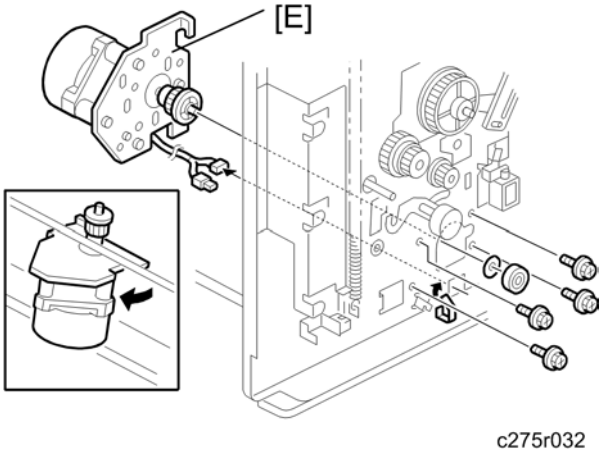
[B]: Bracket (x 2, bushing x 1)



[C]: Drive bracket (x 8)

Note

- If the drive bracket [C] is to be removed from the machine with the drum removed, return the drum position to its home position [D].



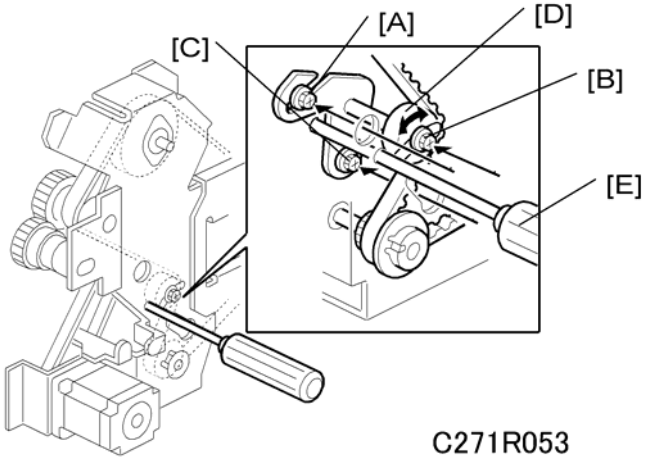
[E]: Main motor (x 1, x 4)

Note

- Adjust the main drive timing belt (☛ p.124 "Main Drive Timing Belt Adjustment") after installing the new main motor.

Main Drive Timing Belt Adjustment

After the timing belt is replaced, correct belt tension must be applied.



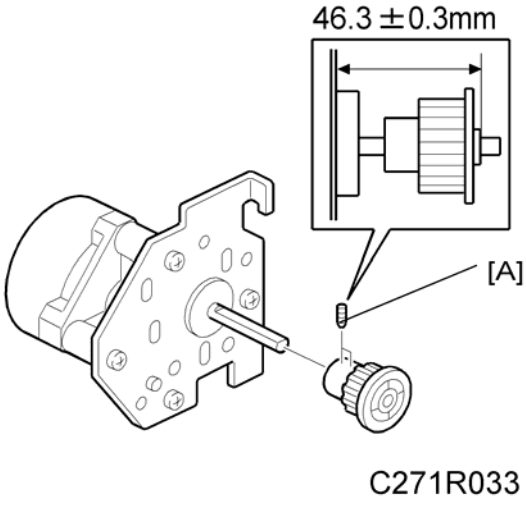
- Rear cover (☛ p.59)
- MPU (☛ p.61)

1. Loosen the screws [A], [B], and [C].
2. Move the tension roller [D] to the right with a screwdriver [E] as shown.
3. Tighten the screws [A], [B], and [C].
4. Remove the screwdriver.

Main Motor Pulley Position

After putting the pulley back on the main motor shaft, refer to the above illustration for the correct position of the pulley.

Standard: 46.3 ± 0.3 mm



C271R033

Note

- Tighten the screws alternately little by little. Do not tighten them completely one by one.

5. System Maintenance

Service Program Mode

See "Appendices" for the "Service Program Mode".

6. Troubleshooting

Troubleshooting Guide

See "Appendices" for the followings:

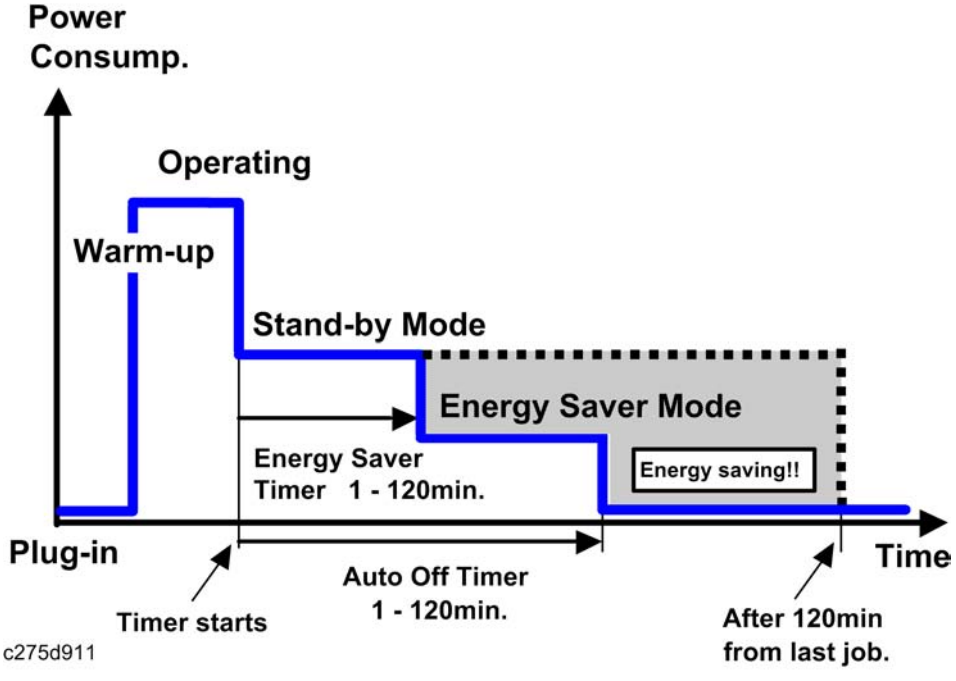
- "Service Call Conditions"
- "Electrical Component Defects"
- "DIP SW, LED, VR, TP and Fuse Tables"

7. Energy Saving

Energy Save

Energy Saver Modes

Customers should use energy saver modes properly, to save energy and protect the environment.



The area shaded grey in this diagram represents the amount of energy that is saved when the timers are at the default settings. If the timers are changed, then the energy saved will be different. For example, if the timers are all set to 120 min., the grey area will disappear, and no energy is saved before 120 min. expires.

Timer Settings

The user can set these timers with User Tools (System settings)

- Energy saver timer (1 – 120 min): Low Power Mode. Default setting: 3 minute
- Auto off timer (1 – 120 min): Off

  Default settings:

PT3	3 min.

Note

- The energy saver timer and the auto off timer cannot be used at the same time. Only one is available.

Recommendation

We recommend that the default settings should be kept.

- If the customer requests that these settings should be changed, please explain that their energy costs could increase, and that they should consider the effects on the environment of extra energy use.
- If it is necessary to change the settings, please try to make sure that the Auto Off timer is not too long. Try with a shorter setting first, such as 30 min., then go to a longer one (such as 60 min.) if the customer is not satisfied.
- If the timers are all set to the maximum value, the machine will not begin saving energy until 120 minutes has expired after the last job. This means that after the customer has finished using the machine for the day, energy will be consumed that could otherwise be saved.

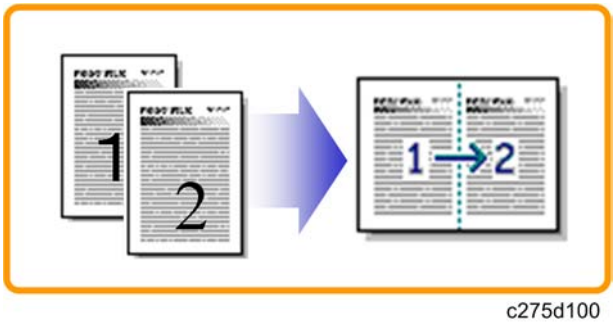
Paper Save

Effectiveness of the Combine Function

The combine function reduces the amount of paper used. This means that less energy overall is used for paper production, which improves the environment.

Combine mode:

Reduce paper volume in half!



c275d100

Recommendation

Please explain the above features to the customers, so that they can reduce their paper usage.

PT3

The following table shows paper savings and how the counters increase for some simple examples of single-sided jobs.

If combine mode is used, the total counters work in the same way as explained previously. The following table shows paper savings and how the counters increase for some simple examples of combine jobs.

2 in 1 mode:

Originals	Simplex Sheet used	Paper Saved
1	1	0
2	2	1

Model PT3
Machine Code: C275

Appendices

2 November, 2009

TABLE OF CONTENTS

1. Appendix: General Specifications

General Specifications

Configuration	Desktop
Pixel Density	300 dpi x 300 dpi In Fine mode, 400 dpi in sub-scanning resolution
Scanning	600 dpi x 300 dpi CCD This model always reduces the amount of scanned data in the main-scan direction by half before printing.
Master Process	Digital with 300 dpi thermal head
Originals	Sheet / Book
Printing Process	Fully automatic one-drum system
Original Size	**Platen Mode:** Maximum A3 / DL size **ADF Mode:** Maximum 297 mm x 432 mm, 11.7" x 17.0" Minimum 105 mm x 128 mm, 4.1" x 5.0"
Original Thickness / Weight	**Platen Mode:** Maximum 30 mm **ADF Mode:** 52 to 105 g/m^2, 14 to 28 lb.
Original Stack Capacity (ADF)	A4/ 8 1/2" x 11" or less: 40 sheets (80 g/m^2 [20 lb.]) More than A4/ 8 1/2" x 11": 30 sheets (80 g/m^2 [20 lb.])

Copy Paper Size	**Maximum:** 275 mm x 395 mm, 10.8" x 15.6" 297 mm x 420 mm, 11.7" x 16.5" (A3 Printing Mode) **Minimum:** 90 mm x 140 mm, 3.5" x 4.7"
Copy Paper Weight	**China model:** 35 to 127.9 g/m^2 (Normal Printing Mode) 52.3 to 127.9 g/m^2 (A3 Printing Mode) **B4/LG model (except China model):** 47.1 to 209.3 g/m^2 (Normal Printing Mode) 52.3 to 157 g/m^2 (A3 Printing Mode) **A4 model:** 47.1 to 209.3 or 127.9 g/m^2 (Normal Printing Mode) **Note:** 47.1 to 209.3g/m^2 (A4 size and smaller), 47.1 to 127.9 g/m^2 (More than A4 size)
Printing Speed	80, 100 or 130 cpm (Normal Printing Mode) 80 cpm (A3 Printing Mode)
Original Type	Text, Text/Photo, Photo, Pale mode, Pencil mode
Master Making Density	Lighter, Normal, Darker 1, Darker 2
Reproduction Ratios	Metric (%): 141, 122, 115, 93, 87, 82, 71 Inch (%): 155, 129, 121, 93, 77, 74, 65
Master Eject Box Capacity	30 masters
Copy Paper Capacity	1,000 sheets (64 g/m^2, 17 lb.)
Paper Delivery Tray Capacity	1,000 sheets (64 g/m^2, 171 lb., Normal Printing Mode) 500 sheets (64 g/m^2, 17 lb., A3 Printing Mode)
Power Source	120 V, 60 Hz, 2.2 A 220 V – 240 V, 50 – 60 Hz, 1.2 A

Power Consumption	**120V, 60Hz:** Less than 185W (Printing) Less than 210W (Master making) **220V-240V, 50-60Hz:** Less than 185W (Printing) Less than 210W (Master making)
Noise Emission	**Sound Power Level** Standby: 34 dB Copying 80 cpm: 78 dB Copying 100 cpm: 80 dB Copying 130 cpm: 84 dB **Operating Position Sound Power Level** Standby: 20 dB Copying 80 cpm: 63 dB Copying 100 cpm: 66 dB Copying 130 cpm: 70 dB
Dimensions (W x D x H)	Stored: 750 x 681 x 633 mm, 29.5" x 26.8" x 24.9" Stored with ADF: 750 x 681 x 686 mm, 29.5" x 26.8" x 27.0" Set up: 1224 x 681 x 633 mm, 48.2" x 26.8" x 24.9" Set up with ADF: 1224 x 681 x 686 mm, 48.2" x 226.8" x 27.0"
Weight	69.0 kg (Main) 2 kg (Platen) 7 kg (ADF)

Master Processing Time	32 seconds (A4 ▭, Platen) 35 seconds (A4 ▭, ADF)
First Print Time	34 seconds (A4 ▭, Platen) 37 seconds (A4 ▭, ADF)

Printing Area	B4 Drum: 250 mm x 355 mm LG Drum: 210 mm x 355 mm A4 Drum: 210 mm x 288 mm
Leading Edge Margin	5 mm ± 3 mm (Normal Printing Mode) 15 mm (B4/LG model, A3 Printing Mode) 25 mm (A4 model, A3 Printing Mode)
Side / Vertical Registration Adjustable Range	**Side Registration:** ± 10 mm (Normal Printing Mode) Fixed (A3 Printing Mode: -10 mm (B4/LG model) or -20 mm (A4 model) **Vertical Registration:** ± 10 mm or more (Normal Printing Mode) Fixed at Center (A3 Printing Mode)

Master	Master Type	280 mm width (B4) 240 mm width (LG / A4) 100 m / roll (China/ Korea) 125 m / roll (other destinations)
	Yield	260 masters / roll (B4 / LG) 300 masters / roll (A4) 205 masters / roll (B4 China/ Korea)
	Maximum run length per master	2000 prints / master
	Storage Condition	-10 to 40°C, 10 to 90 %RH
	Storage Period	18 months after production date

Ink	Ink Type	500 ml / pack (Black, China) 600 ml / pack (Black, Other destinations) 600 ml / pack (Other colors)
	Available Colors	Black, Red, Blue, Green, Brown, Violet Yellow, Maroon, Navy, Orange, Hunter green
	Storage Condition	-5 to 40 C, 10 to 95 %RH
	Storage Period	-5 to 40 C (12 months after production date) 15 to 25 C (18 months after production date)

Avoid locations exposed to direct sunlight.

2. Appendix: PM Tables

Maintenance Tables

The following items should be maintained periodically. There are two sets of intervals - one based on time and the other based on print count or original count. For maintenance items with entries in both of them, use whichever comes first.

Symbol Key: **C**: Clean, **R**: Replace, **L**: Lubricate

⚠WARNING

- Turn off the main power switch and unplug the machine before performing any procedure in this section.

Main Body

	Time				Print Counter				EM	Note
	6M	1Y	2Y	5Y	300K	600K	1.2M	3M		
Optics										
Exposure glass	C	C	C	C					C	Clean with water.
Platen cover	C	C	C	C					C	Clean with water.
White plate	C	C	C	C					C	Clean with water.
Master Feed										
Thermal head	C	C	C	C					C	Clean with alcohol.
Platen roller							C			Clean with alcohol.
Drum and Ink Supply										
Ink nozzle							C			Damp cloth
Drum master sensor							C			Dry cloth

Black patches	C	C	C	C					C	Dry cloth
Cloth screen							R			
Ink roller one-way clutch								R		
Drum master sensor							C			Dry cloth
Master clamper	C	C	C	C					C	Clean with water.
Paper Feed										
Paper feed roller	C	C	C	C		R			C	Dry or damp cloth
Pick-up roller	C	C	C	C		R			C	Dry or damp cloth
Friction pad	C	C	C	C		R			C	Clean with alcohol.
Registration rollers						C				Clean with alcohol.
Feed start timing sensor						C				Dry cloth
Press roller	C	C	C	C			R		C	Dry or damp cloth
Drum drive gears						L				Grease (Alvania #2)
Paper feed clutch								R		
Paper delivery motor								R		

ADF

	Time				Print Counter	EM	Note
	6M	1Y	2Y	5Y	300K		

Feed belt	C	C	C	C	R	C	Clean with water or alcohol.
Separation roller	C	C	C	C	R	C	Clean with water or alcohol.
Pick-up roller	C	C	C	C	R	C	Clean with water or alcohol.
White plate	C	C	C	C		C	Clean with water or alcohol.
DF exposure glass	C	C	C	C		C	Clean with water.
Platen cover	C	C	C	C		C	Clean with water or alcohol.

3. Appendix: Service Call Conditions

Service Call Conditions

Service Call Codes

Note

- If the problem concerns electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
- If the problem concerns a motor lock, first check the mechanical load before replacing motors or sensors.

No.	Description/Definition	Points to Check
E-00	**Clamper Motor Failure** The MPU cannot detect the clamper position sensor signal (open or closed) within 3.0 seconds after the clamper motor turns on.	Clamper drive Clamper sensors Clamper motor MPU board Main motor encoder Master eject position sensor
E-01	**Cutter error:** The cutter HP sensor does not turn on within 3.0 seconds after the cutter motor turns on.	Cutter drive Cutter switch Cutter motor
E-02	**Paper Table Drive error:** The paper height sensor or the table lower limit sensor does not turn on within 7.5 seconds after the table motor turns on. Paper height sensor 1 or 2 does not turn on within 1 second after the paper height sensor 1 or 2 turn on.	Paper table drive Paper table motor Paper height sensor 1 or 2 Paper table lower limit sensor Gears Paper table spring
E-04	**Thermal Head Overheat:** Temperature of the thermal head is greater than 65°C when the Start key is pressed.	Overheat (wait for the thermal head to cool down) Thermal head

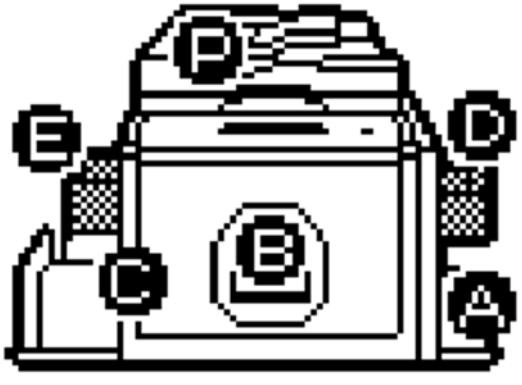
No.	Description/Definition	Points to Check
E-06	**Main Motor Lock:** The CPU cannot detect the master eject position sensor (drum HP) signal within 5.0 seconds after the main motor turns on.	Main motor drive Main motor Motor drive board Master eject position sensor
E-09	**Thermal Head Thermistor Open:** The thermistor output voltage is over 2.925 volts.	Thermal head thermistor Thermal head connector
E-10	**Thermal Head Energy Pulse error:** The CPU detects an abnormal ID signal from the thermal head energy control pulse.	Thermal head connector Thermal head MPU
E-12	**Pressure Plate error:** The pressure plate home position sensor does not turn on within 6 seconds during initialization. Both the pressure plate home position and pressure plate limit sensors turn on when the main SW is turned on. The pressure plate home position sensor does not turn off when the pressure plate limit sensor does not turn on within 4.5 seconds when compressing the ejected master.	Pressure plate drive Pressure plate motor Plate position sensors Master eject error
E-13	**Scanner error:** The scanner HP sensor does not turn on after the scanner motor has moved for more than 10 seconds back to home position after scanning. The scanner cannot leave the home position within 2.0 seconds of power on. Just after switching the power on, the scanner cannot return to the home position within 2.0 seconds of leaving.	Scanner drive Scanner HP sensor Scanner motor Scanner wire has come off
E-22	**2nd Feed Start Timing Sensor error:** The 2nd feed start timing sensor does not activate before the master eject position sensor activates.	Drum sensors Feeler

No.	Description/Definition	Points to Check
E-23	**Master Eject Position Sensor (Drum HP) error:** The master eject position sensor does not activate before the feed start timing sensor activates.	Drum sensors Feeler
E-24	**Feed Start Timing Sensor error:** The feed start timing sensor does not activate before the 2nd feed timing sensor activates.	Drum sensors Feeler
E-40	**Thermal Head ID error:** The CPU detects an abnormal ID signal from the thermal head.	Different thermal head MPU Thermal head connector disconnected
E-44	**MSU error**	Replace the MPU
E-50	**NVRAM data version disagreement:** Data for the uploading NVRAM is not expected data for the machine.	Replace the MPU
E-51	**Flash Rom error:** The data in the flash ROM is not complete.	Replace the MPU
E-61	**Auto Off Switch error:** The main switch does not turn off for more than 6.0 seconds.	Auto off switch defective Auto off switch connector disconnected

4. Appendix: Electrical Component Defects

Electrical Component Defects

Paper Feed and Exit



c271t900

	Jam Type
Paper feed	A Jam
Drum	B Jam
Paper eject	C Jam
Master feed	D Jam
Master eject	E Jam
ADF	P Jam
Paper remaining	A or B Jam

Drum

Name	State	Symptoms
2nd Feed Start Timing Sensor	Open	E22 is displayed when the drum rotates.
	Shorted	
Master Eject Position (HP) Sensor	Open	E23 is displayed when the drum rotates.
	Shorted	
Feed Start Timing Sensor	Open	E24 is displayed when the drum rotates.
	Shorted	
Drum Set Sensor	Set	Setting Drum: Normal Operation No Drum: E-06 is displayed when the main motor rotates.
	OFF	Displays "not drum".
Drum Ink Sensor	ON	Image will be patchy because ink will not be supplied.
	OFF	Displays "Ink end".

Paper Eject

Name	State	Symptoms
Paper Exit Sensor	Open	The "C" jam indicator is lit.
	Shorted	The "B" jam indicator is lit when a copy is made.

Paper Feed

Name	State	Symptoms
Paper Registration Sensor	Open	The "AB" jam indicator is lit.
	Shorted	The "A" jam indicator is lit when a copy is made.

Name	State	Symptoms
Paper Table Lower limit Sensor	Open	The paper table does not go down.
	Shorted	The paper table goes down below the sensor, and E-02 is displayed.
Paper End Sensor	Open	Printing can begin even if there is no paper, and the "A" jam indicator will be lit.
	Shorted	The "load more paper" indicator is lit.
Paper height sensor 1	Open	E-02 is displayed after 1 second from moving up the paper feed table during printing.
	Shorted	The paper table goes up over the sensor, and E-02 is displayed
Paper height sensor 2	Open	E-02 is displayed after 1 second from moving up the paper feed table during printing.
	Shorted	The paper table goes up over the sensor, and E-02 is displayed

Main Drive

Name	State	Symptoms
Clamper Open Sensor	Open	E-00 is displayed.
	Shorted	E-00 is displayed when the clamper operates.
Clamper Close Sensor	Open	E-00 is displayed when the clamper operates.
	Shorted	E-00 is displayed.

Scanner

Name	State	Symptoms
Platen Cover Sensor	Open	The master is made normally, even if the platen cover is open. (Have to push the start button twice)
	Shorted	The image is treated using center/edge erase mode.

Name	State	Symptoms
Scanner HP Sensor	Open	E-13 is displayed.

Master Eject

Name	State	Symptoms
Drum Master Sensor	On	The "B" jam indicator is lit when print is started. (Print without master)
	Off	Master does not eject The "D" jam indicator is lit.
Pressure Plate Limit Sensor	Open	E-12 is displayed.
	Shorted	The "Full eject master" indicator is lit.
Pressure Plate HP Sensor	Open	E-12 is displayed.
	Shorted	E-12 is displayed.
Master Eject Box Sensor	On	The master is ejected, even if there is no master eject box
	Off	"No master eject box" is displayed. "Full eject master" indicator is lit.
Master Eject Sensor	Open	The "B" and "E" jam indicator is lit.
	Shorted	The "B" jam indicator is lit
Master eject unit safety switch	Open	"Unit open" is displayed.

Master Making Unit

Name	State	Symptoms
Master Set Cover Sensor	Open	The "D" jam indicator is lit.
	Shorted	The "open cover" indicators are lit.

Name	State	Symptoms
Cutter HP Sensor	Open	E-01 is displayed.
	Shorted	E-01 is displayed.
Master making unit set switches	On	If both sensors work correctly, the machine operates correctly.
	Off	"Not set making unit" is displayed
Master End Sensor	White	Master making can start even if there is no master roll, but the "D" jam indicator will be lit.
	Black	The "load new master roll" indicator is lit.
Thermal Head Temperature	Open	E-09 is displayed.
	Short	E-04 is displayed.

Other

Name	State	Symptoms
Auto shut off Switch	On	Cannot shut off the main switch. E-61 is displayed at auto shut off.
	Off	The main switch stays off

5. Appendix: DIP SW, LED, VR, TP and Fuse Tables

DIP SW, LED, VR, TP and Fuse Tables

Test Points

MPU

No.	Usage
TP7	GND-a
TP8	Standard Pulse
TP9	Ink Detection Pulse
TP11	+5VE
TP12	GND-a

Potentiometers

MPU

No.	Usage
VR1	Ink detection adjustment
VR2	Master End Sensor Adjustment

Power Supply Unit

No.	Usage
RV1	Thermal Head Voltage Adjustment

LEDs

MPU

LED #	OFF	ON
LED 1	CPU2 (not use for service)	
LED 2	Low Ink Condition	Sufficient Ink Condition
LED 3	CPU1 (not use for service)	
LED 4	CPU1 (not use for service)	

Fuses

MPU

FUSE #	Rated Current	Voltage	Related Devices
FU 1	2 A	5 V DC	UC2 PC Controller

PSU

FUSE #	Rated Current	Voltage	Related Devices
FU 700	T6.3 A	120/230V AC	AC Line
FU 701	T6.3 A	24VDC	Paper Transport Motor, Paper Feed Clutch, Paper Up-Down Motor, Air Knife Fan Motor, Front/Rear Pressure Release Solenoid, Vacuum Fan Motor, Ink Pump Motor, Master Eject Motor, Optional Key Counter, Master Counter, Paper Counter, Cutter Motor, Clamper Motor, Scanner Motor
FU 702	T6.3 A	24V DC	Not used
FU 703	T8 A	24V DC	Main Motor
FU 704	T6.3 A	24V DC	Optional Tape Dispenser

6. Appendix: Service Program Mode Tables

Service Program Mode

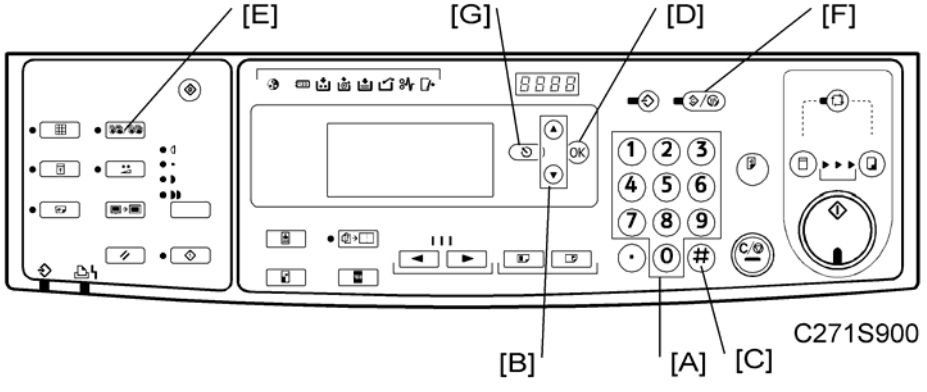
Note

- The Service Program Mode is for use by service representatives only so that they can properly maintain product quality. If this mode is used by anyone other than service representatives for any reason, data might be deleted or settings might be changed. In such case, product quality cannot be guaranteed any more.

Using Service Program Modes

Use the service program modes (SP modes) to check electrical data, change operating modes, and adjust values.

How to Select a Program Number



1. Using the number keys [A] or the △ ▽ keys [B], enter the desired main menu number, then press the Enter key [C] or the OK key [D].
2. Using the number keys or the △ ▽ keys, enter the desired sub-menu number, then press the Enter key or the OK key.
3. Enter the desired value or mode using the number keys (SP modes are listed in the service program tables).

Note

- Use the Memory/Class [E] key to toggle between "+" and "-".
- To enter a decimal place, you do not have to enter a decimal point. For example, to enter "1.5" just press "1" and "5" keys.

4. Press the Enter key or the OK key to store the displayed setting.

Note

- To cancel the SP mode, press the Clear Modes/Energy Saver key [F] or the Cancel key [G].

Main Menu Number List

No.	Main Menu
1	Copy Data
2	Basic Settings
3	System Settings
4	Input Mode
5	Output Mode
6	Adjustment
7	Memory Clear
8	System Test

1. Copy Data

SP Table (SP 1-xxx)

No.	Menu Items
1	Total master counter
20	Total print counter
50	D - master clamp jam

No.	Menu Items
51	E - master eject jam
52	E - master compressing jam
53	A - paper non-feed jam
54	A - paper registration jam
55	B - paper wrapping jam
56	C - paper delivery jam
57	P - original feed - in jam
58	P - original feed - out jam
60	D - master cut jam
70	Main firmware part number
72	Serial number
73	Main firmware version
75	Serial number (Factory)
80	Error code history
81	Telephone number display
82	Jam history
83	PSU unusual voltage history
160	Japanese Display type (Japan only)
161	Key counter setting check
162	Key card setting check (Japan only)

SP1-70: Main Firmware Parts Number

Displays the main firmware parts number and the suffix.

SP1-80: Error Code History

Displays the latest 40 SC codes. Use the △ ▽ keys to view the codes.

SP1-83: PSU Unusual Voltage History

Display the unusual power supply events in the machine history.

2. Basic Settings

SP Table (SP 2-xxx)

No.	Menu Items	Default	Settings
1	Default print speed	2	1 to 3
2	Default image position	0	-10.0mm to +10.0mm (0.5mm interval)
4	Destination code		
5	Not used (Ink)	0	0 / 2-
6	Image position display	1	0:Slow 1:Normal 2:Fast
7	Vender Selection	-	RICOH TIE KonicaMinolta Edisys NRG Nashuatec RexRotary Gestetner Lanier Savin Standard
10	Ink detection board	On	Off/On (Off is used for tests, and for removing ink from the drum)
11	Paper end sensor	On	Off/On (Off is used for tests)
12	Drum master sensor	On	Off/On (Off is used for tests)

No.	Menu Items	Default	Settings
13	Platen cover sensor	On	Off/On (Off is used for tests)
14	ADF cover sensor	On	Off/On (Off is used for tests)
20	Destination setting	Other	Other/Japan
21	Ink setting (not used)	0	0 to 1
33	Re - Feeding setting	On	Off/On
34	Proof Print Adjustment	Off	Off/On
35	Number of Proof Prints	0	0 to 5
40	T/H energy control – B4/Black	7	0 to 50%
41	T/H energy control – B4/Color	7	0 to 50%
42	T/H energy control – A4/Black	7	0 to 50%
43	T/H energy control – A4/Color	7	0 to 50%
44	T/H energy control – LG/Black	7	0 to 50%
45	T/H energy control – LG Color	7	0 to 50%
50	T/H energy control - B4/Black eco	15	0 to 50%
51	T/H energy control - B4/Color eco	15	0 to 50%
52	T/H energy control - A4/Black eco	15	0 to 50%
53	T/H energy control - A4/Color eco	15	0 to 50%
54	T/H energy control – LG/Black eco	15	0 to 50%
55	T/H energy control – LG/Color eco	15	0 to 50%
60	Bold letter mode	Off	Off/On
61	T/H Swing Mode	Off	Off/On
62	T/H Swing Quantity	2	± 1mm to ± 5mm

No.	Menu Items	Default	Settings
80	Auto off at unusual voltage	On	Off/On
95	Paper table standby position	Low	High / Low
100	Make master without print	Off	Off/On

SP2-6: Image Position Display

When the user moves the image position on the operation panel, this SP controls the length of time that the adjustment value is shown on the display before the screen goes back to the previous display.

"Slow" means that the display is shown for the longest time possible.

SP2-33: Re-Feeding Setting

When the machine performs re-feeding, the paper registration position can be up to 5mm out of range. If this incorrect position is not acceptable to the customer, change this SP mode to "OFF".

ON: Re- feeding is on (factory setting).

OFF: Re- feeding is off.

SP2-34: Proof Print Adjustment

This enables or disables the proof print adjustment mode (default: Off). The proof print adjustment mode is designed to compensate for the low image density of the first few sheets. If the proof print adjustment is enabled, the machine prints several sheets of paper, which can be adjusted by SP2-35, at 30 cpm.

- Off: No proof print adjustment
- On: The machine prints the first few sheets (up to 5) at 30 cpm.

For example:

Default setting (SP2-34: Off)

Number of sheets	Idling	1	2	3	4	5
Speed (cpm)	80	100	100	100	100	100

Proof print mode enabled (SP2-34: ON)

	Setting of SP2-35: "1"					
Number of sheets	1	Idling	2	3	4	5
Speed (cpm)	30	80	100	100	100	100
↓						

	Setting of SP2-35: "5"					
Number of sheets	1	2-5	Idling	6	7	8
Speed (cpm)	30	30	80	100	100	100

Proof print mode enabled (SP2-34: ON) and skip feed mode enabled (2 sheets)

	Setting of SP2-35: "2"							
Number of sheets	1	Idling (Skip)	Idling (Skip)	2	Idling (Skip)	Idling (Skip)	3	Idling (Skip)
Speed (cpm)	30	30	30	30	80	100	100	100

SP2-35: Number of Proof Prints

This can set the number of sheets for the print proof adjustment mode.

- Default: 1
- Adjustable range: 1 to 5 (sheets)

For details about how to use this, see the description above (SP2-34).

SP2-40, 2-55: Thermal Head Energy Control

2-40 to -45:	The default is 7%. This means that during normal printing mode, the thermal head energy is 93% of the maximum possible (100 – 7).
2-50 to 55:	The default is 15%. This means that in economy printing mode, the thermal head energy is reduced by another 15%. With the default settings, this means that the thermal head energy is 85% of maximum power (100-15).

SP2-60: Bold Mode: Letter Mode Only

Makes a bold outline of a letter-mode image.

SP2-61: T/H Swing Mode

If this is set to "ON", the thermal head writing position is moved a small amount between masters. The amount is set with SP2-61 (T/H Swing Amount) automatically. This changes the side-to-side margin on the master.

This prevents the same parts of the thermal head from being used all the time, because if masters that contain the same image (such as a logo) are made frequently, this can burn out the thermal head.

Default: OFF

SP2-62: T/H Swing Amount

Settings: ± 1 to± 5 mm

Default: 2 mm

SP2-80: Auto off at Unusual Voltage

There is an automatic detection system for unexpected voltage surges, featuring automatic shut-off and data logging features.

SP2-95: Paper Table Standby Position.

High: The paper table after printing is moved to a higher position than the standard position. This will reduce the time for starting the first print when continuously making masters.

Low: The standard position

Note

- If SP2-95 is "high", the machine goes to the standard position in the following situations.
- When the master end indicator lights and a message is displayed
- When a master eject jam (B jam location indicator) is displayed
- When a master feed jam (D jam location indicator) is displayed
- When the paper height sensor is actuated immediately after the main switch is turned on.

SP2-100: Make master without print

This function wraps a blank master around the drum. The ink on the drum may dry up at the following times:

- The machine is not used for a long time.
- The customer changes to a color drum that has not been used recently.

This might affect the print quality (Poor image: ghost image of the previous print).

Wrap a blank master around the drum after you print, to prevent ghost images of previous prints when the machine is not used for a long time.

Procedure:

1. Access SP2-100 (Make master without printing). Then press "OK".
2. Press the "Start" key while holding down the "#" key.

3. System Settings

SP Table (SP 3-xxx)

No.	Menu Items	Default	Settings
1	Input the present time	(00/01/01 0:00)	99/12/31 23:59
2	Input TEL number	-	
3	Input serial number	-	

No.	Menu Items	Default	Settings
4	Input installation data	(00/01/01)	99/12/31
9	Key counter setting	No	No/Yes
10	Key card setting (Japan only)	No	No/Yes

SP3-1: Input the present time

Input the year, the month / date, and the time in that order. Press the Enter key between each one.

Input the last two digits of the present year (two-digit number).

↓#

Input the present month (two-digit number).

↓#

Input the present date (two-digit number).

↓#

Input the present hour (two-digit number).

↓#

Input the present minute (two-digit number).

↓#

Input the present second (two-digit number).

↓#

Example: 2003/January/27th/13:00:00

03

↓#

01

↓#

27

↓#

13

↓#

00

↓#

00

↓OK

SP3-4: Input installation date

Input installation date in that order. Press the Enter key between each one.

Input the last two digits of the present year (two-digit number).

↓#

Input the present month (two-digit number).

↓#

Input the present date (two-digit number).

↓#

Example: 2003/January/27th/13:00:00

03

↓#

01

↓#

27

↓OK

4. Input Mode

SP Table (SP 4-xxx)

No.	Menu Items	No.	Menu Items
1	Scanner HP sensor	28	Drum size2 signal
2	Platen cover sensor		
7	Master eject unit open SN	30	Table lowering switch
9	Master making unit set SW 1	31	Table lower sensor
		33	Paper end sensor
10	Master making unit set SW 2	35	Paper pick-up roller sensor
11	Master set cover sensor	36	Paper height filler sensor
12	Cutter HP switch	41	Registration sensor
13	Master end sensor	42	Feed start timing sensor

No.	Menu Items	No.	Menu Items
14	Eject box set switch	43	2nd feed timing sensor
15	Master eject sensor	44	Paper exit sensor
16	Pressure plate HP sensor		
17	Pressure plate limit Sensor	50	Door safety switch
18	Ink detection signal	60	ADF connecting signal
19	Color drum signal	61	ADF cover sensor
		62	ADF registration sensor
21	Drum set signal	64	ADF original set sensor
22	Clamper open sensor	69	ADF open sensor
23	Clamper close sensor		
24	Drum master sensor	70	Key counter signal
25	Master eject position SN	71	Key card signal (Japan only)
27	Drum size1 signal		
28	Drum size2 signal		

5. Output Mode

SP Table (SP 5-xxx)

No.	Menu Items	No.	Menu Items
1	Exposure lamp (xenon lamp)	40	Registration motor - 30 rpm
2	Scanner motor - scan	41	Registration motor - 60 rpm
3	Scanner motor - return	42	Registration motor - 80 rpm
4	Scanner to HP	43	Registration motor - 100 rpm
8	Master feed motor – Forward	44	Registration motor - 130 rpm
9	Cutter motor – to HP		

No.	Menu Items	No.	Menu Items
10	Cutter motor – reverse	46	Air knife fan motors
11	Cutter motor – forward	47	Vacuum fan motor
12	VHD signal	48	PSU fan motor
13	Master eject motor	49	Paper Delivery Motor
14	Pressure plate motor - limit	50	Paper counter
15	Pressure plate motor -to HP	51	Master counter
		60	ADF motor
17	Main motor - 30 rpm	61	ADF feed clutch
18	Main motor - 60 rpm	62	ADF pick-up solenoid
19	Main motor - 80 rpm	63	Key counter signal
20	Main motor - 100 rpm	64	Not used
21	Main motor - 130 rpm	65	Key card (Japan only)
23	Clamper motor: to open	90	Main motor – to HP
24	Clamper motor: to close	91	Main motor – to Master clamp
25	Ink pump motor		
26	Pressure release solenoids	100	All indicators on the panel
30	Table motor – down	111	Auto Off solenoid
31	Table motor – up		
32	Paper feed clutch		

6. Adjustment

SP Table (SP 6-xxx)

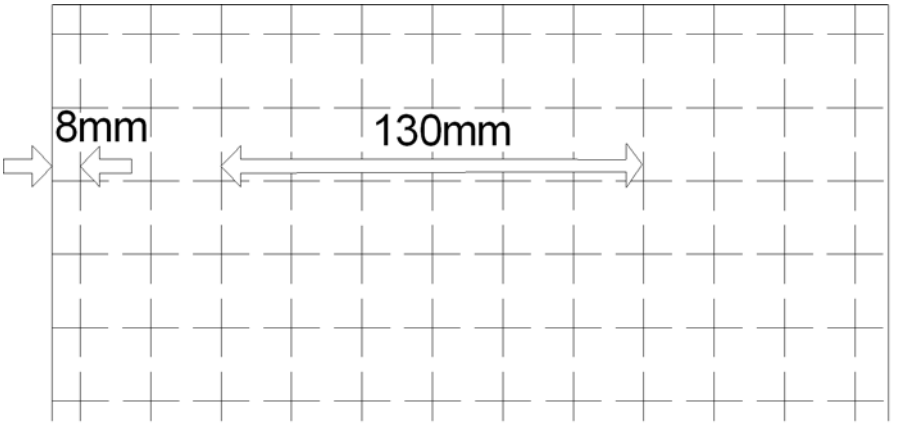
No.	Menu Items	Default	Settings
1	Main-scan position – platen	0	-5.0 to 5.0 mm
2	Main-scan position – ADF	0	-5.0 to 5.0 mm
3	Scan start position – platen	0	-2.0 to 5.0 mm
4	Scan start position - ADF	0	-5.0 to 5.0 mm
5	Scanning speed - platen	0	-5.0 to 5.0 %
6	Scanning speed - ADF mode	0	-5.0 to 5.0 %
10	Master writing speed	0	-5.0 to 5.0 %
11	Master writing length	0	-5.0 to 5.0 %
20	Registration buckle	0	0 to100 PLS
21	Paper regist position	0	-5.0 to 5.0 mm
26	Master making density - Pencil	1	0: Pale, 1: Normal, 2: Dark
27	Master making density - Tint	1	0: Pale, 1: Normal, 2: Dark
28	Master making density - Photo	1	0: Pale, 1: Normal, 2: Dark
29	Master making density - Letter/Photo	1	0: Pale, 1: Normal, 2: Dark
30	Master making density - Letter	1	0: Pale, 1: Normal, 2: Dark
32	MTF filter – Letter: Main	2	0 to 7
33	MTF filter – Letter: Sub	2	0 to 7
34	MTF filter – Letter/Photo: Main	2	0 to 7
35	MTF filter – Letter/Photo: Sub	2	0 to 7
36	MTF filter - Photo: Main	2	0 to 7

No.	Menu Items	Default	Settings
37	MTF filter – Photo: Sub	2	0 to 7
40	Ink detection adjustment	–	
50	Master end sensor voltage	2	0.5 to 3.5V
61	Master length – LG drum	4780	4200 to 6000 (0.1mm)
62	Master length – B4 drum	4780	4200 to 6000 (0.1mm)
63	Master length – A4 drum	4140	3000 to 6000 (0.1mm)
70	SBU VRT value	–	
71	SBU FBO value	–	
72	SBU FBE value	–	
100	Paper registration 30rpm	0	-40 to 40
101	Paper registration 60rpm	0	-40 to 40
102	Paper registration 80rpm	0	-40 to 40
103	Paper registration 100rpm	0	-40 to 40
104	Paper registration 130rpm	0	-40 to 40
108	Paper regist: skip: 30rpm	0	-40 to 40
109	Paper regist: skip: 60pm	0	-40 to 40
110	Paper Regist: skip: 80rpm	0	-40 to 40
111	Paper Regist: skip: 100rpm	0	-40 to 40
112	Paper Regist: skip: 130rpm	0	-40 to 40
116	Paper middle bulge 30rpm (Do not Adjust)	0	-100 to 100
117	Paper middle bulge 60rpm (Do not Adjust)	0	-100 to 100
118	Paper middle bulge 80rpm (Do not Adjust)	0	-100 to 100

No.	Menu Items	Default	Settings
119	Paper middle bulge 100rpm (Do not Adjust)	0	-100 to 100
120	Paper middle bulge 130rpm (Do not Adjust)	0	-100 to 100
124	Paper front bulge 30rpm (Do not Adjust)	0	-90 to 8
125	Paper front bulge 60rpm (Do not Adjust)	0	-90 to 8
126	Paper front bulge 80rpm (Do not Adjust)	0	-90 to 8
127	Paper front bulge 100rpm (Do not Adjust)	0	-90 to 8
128	Paper front bulge 130rpm (Do not Adjust)	0	-90 to 8
132	Paper Regist: A4 drum 30 rpm	0	-40 to 40
133	Paper Regist: A4 drum 60 rpm	0	-40 to 40
134	Paper Regist: A4 drum 80 rpm	0	-40 to 40
135	Paper Regist: A4 drum 100 rpm	0	-40 to 40
136	Paper Regist: A4 drum 130 rpm	0	-40 to 40
140	Paper Regist: skip: A4: 30 rpm	0	-40 to 40
141	Paper Regist: skip: A4: 60 rpm	0	-40 to 40
142	Paper Regist: skip: A4: 80 rpm	0	-40 to 40
143	Paper Regist: skip: A4: 100 rpm	0	-40 to 40
144	Paper Regist: skip: A4: 130 rpm	0	-40 to 40
148	Paper middle bulge A4 30rpm(Do not Adjust)	0	-100 to 100
149	Paper middle bulge A4 60rpm(Do not Adjust)	0	-100 to 100
150	Paper middle bulge A4 80rpm(Do not Adjust)	0	-100 to 100

No.	Menu Items	Default	Settings
151	Paper middle bulge A4 100rpm(Do not Adjust)	0	-100 to 100
152	Paper middle bulge A4 130rpm(Do not Adjust)	0	-100 to 100
156	Paper front bulge A4 30rpm(Do not Adjust)	0	-90 to 8
157	Paper front bulge A4 60rpm(Do not Adjust)	0	-90 to 8
158	Paper front bulge A4 80rpm(Do not Adjust)	0	-90 to 8
159	Paper front bulge A4 100rpm(Do not Adjust)	0	-90 to 8
160	Paper front bulge A4 130rpm(Do not Adjust)	0	-90 to 8

SP6-10: Master Writing Speed



1. Input SP8-10 (Test patterns) and enter "6", then press the Start key.
2. Exit the SP mode, print 10 copies at 100 rpm (speed 2). Use the 10th print for the adjustment.
3. The length of the 6 squares in the feed direction should be 130 mm, as shown above.
4. If it is not, calculate the reproduction ratio using the following formula.

   {(130 - Value) / 130} x 100 = ± X.X % (Round off to one decimal place)

   Example: If the value is 133, {(130 - 133) / 130} x 100 = - 2.3 %
5. Access SP6-10, input the calculated ratio, and press the Enter key.
6. Repeat the procedure to make sure that the ratio is correct.

SP6-21: Paper Regist Position

1. Input SP8-10 (Test patterns) and enter "6", then press the Start key.
2. Exit the SP mode, print 10 copies at 100 rpm (speed 2). Use the 10th print for the adjustment.
3. The space between the leading edge and the next line should be 8 mm, as shown above.
4. If it is not, access SP6-21, input the difference and press the Enter key.
5. Example: If the value is 7 mm, 7 - 8 = -1.0
6. Repeat the procedure to make sure that the gap is correct.

SP6-5: Scanning Speed – Platen and SP6-6: Scanning Speed – ADF mode

1. Make copies of the test pattern printed during the previous adjustments (☛ previous page), in platen mode at speed 2. Use the 10th print for the adjustment.
2. The length of the 6 squares in the feed direction should be 130 mm.
3. If it is not, calculate the reproduction ratio using the following formula.

   {(130 - Value) / 130} x 100 = ± X.X % (Round off to one decimal place)

   Example: If the value is 133, {(130 - 133) / 130} x 100 = - 2.3 %
4. Access SP6-05, input the calculated ratio, and press the Enter key.
5. Check again to make sure that the ratio is correct.
6. Make copies of the test pattern in ADF mode and repeat the process using SP6-06.

SP6-3: Scanning Start Position – Platen and SP6-4: Scanning Start Position - ADF

1. Make copies of the test pattern printed during the previous adjustments (☛ previous page), in platen mode at speed 2. Use the 10th print for the adjustment.
2. The space between the leading edge and the next line should be 8 mm.
3. If it is not, access SP6-03, input the gap value and press the Enter key.

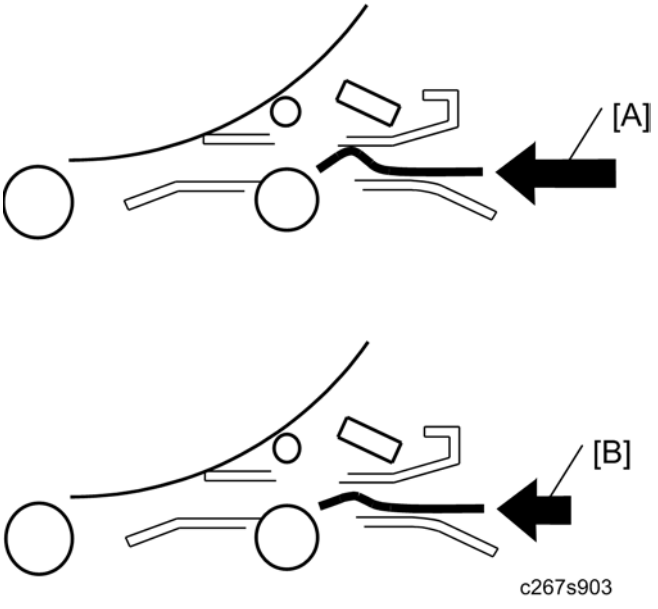
   Example: If the value is 7 mm, 7 - 8 = -1.0
4. Repeat the procedure to make sure that the gap is correct.
5. Make copies of the test pattern in ADF mode and repeat the process using SP6-04.

SP6-1: Main Scan Position – Platen and SP6-2: Main Scan Position - ADF

1. Make a copy in platen mode at speed 2.
2. Measure the difference between the center of the main-scan on the original and on the print.
3. Access SP6-01, input the gap value and press the Enter key. (If you input a positive value, the image moves towards the operation side.)
4. Repeat the procedure to make sure that there is no difference.
5. Make a copy in ADF mode and repeat the process using SP6-02.

SP6-20: Registration Buckle

Adjusts the paper skew and the paper registration slippage.



[A]: **Increase the value**

The occurrence of paper skew will be reduced, but the paper is more likely to slip and the registration position may be incorrect.

[B]: **Decrease the value**

The paper registration position will be correct.

SP6-32 to 37: MTF filter

Sharpens the image, but moiré can become more apparent.

Refer to the following table for the relationship between this SP mode value and filter strength (the relationship is not linear).

Value	Strength of Filter
7	X 4
6	X 2
0	X 1
5	X 1/2
4	X 1/4
3	X 1/8
2	X 1/16

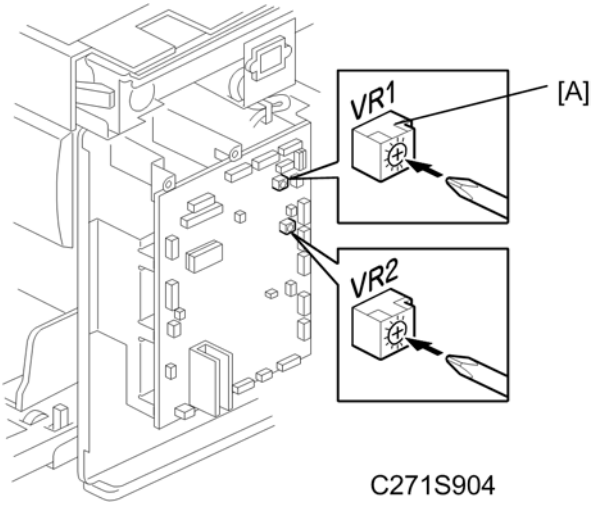
Value	Strength of Filter
1	X 1/32

SP6-40: Ink detection adjustment

Ensures that the CPU detects a no ink condition.

⚠CAUTION

- Before attempting this procedure, wipe off the ink around the ink roller. To do this, set SP2-10 (ink detection) to OFF, and feed paper until ink ends. After finishing the procedure, do not forget to return SP2-10 to the default (ink detection on).



C271S904

Access SP6-40, and open the door cover. Then turn the VR1 [A] on the MPU board until the display becomes "4.0 ± 0.2μ" (4 μs).

Note

- When the drum has ink inside, the machine displays "----".

SP6-100 to 104: Paper registration - each speed

The following procedure allows the image position to be adjusted for each speed (30, 60, 80, 100 and 130 rpm)

Note

- If you want to adjust the image position for all the speed at the same time, use SP6-21 (Paper registration position).

1. Set SP8-10 (Test patterns) to a value of "6", then press the Start key.
2. Make 3 copies at speed 3 (finishing with 130 rpm). Perform the adjustment below for all 3 copies.

   Trial print: 30 rpm

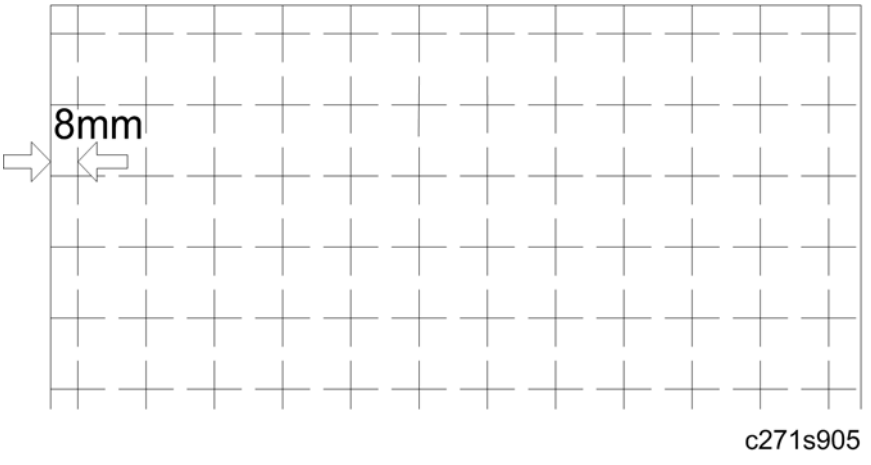
1st print: 60 rpm

2nd print: 80 rpm

3rd print: 100 rpm

4th print: 130 rpm

3. The distance between the leading edge and first line should be 8mm, as shown below.



4. If this distance is not 8mm, access SP6-101 to 104 and then input a value to adjust the distance (range: -40 to 40, step: 1) for each of 3 copies samples (i.e. 30, 60, 80, 100 and 130 rpm samples). The higher the value, the narrower the distance between the leading edge and 1st line becomes (and vice-versa). Also, each step corresponds to approximately 0.5mm. Input the value that will bring the distance to 8mm.
5. Perform the adjustment again for any of the samples that are still outside the 8mm standard.

Note

- Adjust SP6-108 to 112, 132 to 144 in the same way.

7. Memory Clear

SP Table (SP 7-xxx)

No.	Menu Items
1	Factory settings clear
3	Total counter clear
4	Jam/Error data clear

No.	Menu Items
11	Protect Code clear

SP7-1: Factory settings clear

This resets all SP and User tool settings except for the following SP and User tool numbers.

- User tool 1: Counter Display (Masters and Prints)
- User tool 2-4: mm/inch
- User tool 2-5: Language on LCD
- User tool 2-6: Date/Time
- SP2-4: Destination code
- SP2-20: Destination setting
- SP2-80: Auto off at unusual voltage
- SP3-3: Input serial number
- SP6-All: Adjustments

SP7-3: Total counter clear

This resets the following SP numbers

- SP1-1 Total master counter
- SP1-20 Total print counter

Note

- The counters for "User tool 1: Counter Display" are unresettable counters

SP7-11: Protect Code clear

This clears the settings of the "User Tools Protect (Administrator Setting)".

- User Tools Protect: Off
- User Tools Protect PW (Password): null

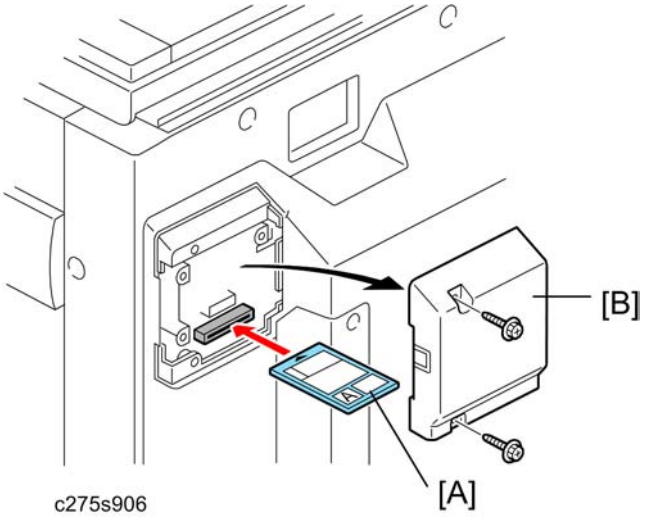
8. System Test

SP Table (SP 8-xxx)

No.	Menu Items	Default	Settings
1	Download main firmware	-	Start with # key
2	Upload main firmware	-	Start with # key

No.	Menu Items	Default	Settings
3	Data printout – Basic/SC/Jam	-	
4	Data printout – Adjustment	-	
5	Data printout – Input/Output	-	
9	Data printout – Power failure	-	
10	Test patterns	6	1 to 9 A4 start with #
19	Free run - ADF	100%	65%~155%
20	Free run - scanner	100%	65%~155%
21	Paper feed at 30rpm	Off	Off/On
22	Free run - Paper feed	Off	Off/On
30	All indicators on panel	-	Active when start press
31	LCD data download (Do not use)	Off	Off/On
100	Drum size/type check		

SP8-1: Download Main Firmware



Updates the main firmware using a flash memory card [A].

1. Before downloading new firmware, check the current version with SP1-70
2. Prepare a flash memory card with the latest firmware.
3. Turn off the main switch and disconnect the power cord.
4. Remove the rear card cover [B].
5. Plug the flash memory card into the connector on the MPU.
6. Connect the power cord, then turn on the main switch.
7. Access SP8-1 and press the OK key. Press the "Enter(#)" key.
8. Press the Enter key. (It takes about 2.0 minutes to complete.)
9. Check that the "Completed" is displayed.
10. Turn off the main switch, and remove the flash memory card.

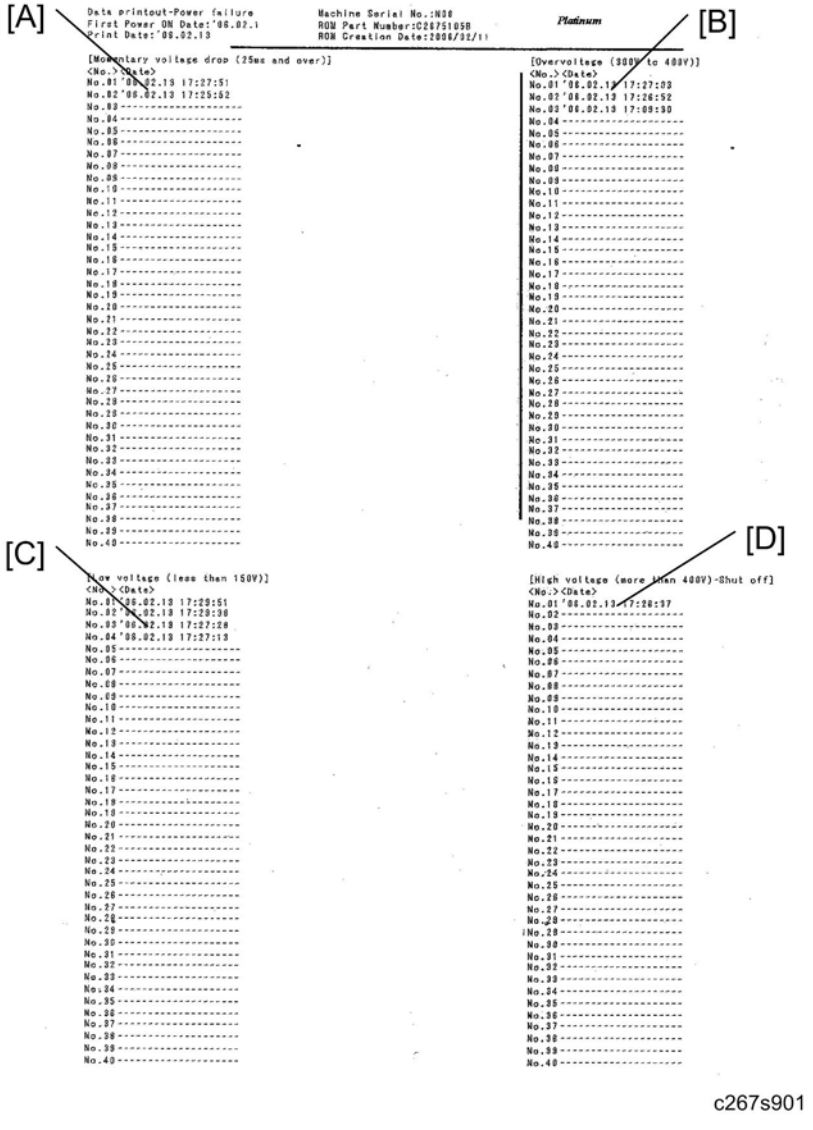
SP8-2: Upload main firmware

Writes firmware to a flash memory card (P/N' #A2309352 or N8036701) from the machine.

1. Refer to steps 3 to 5 of section (download main firmware).
2. Connect the power cord, then turn on the main switch while holding the Clear Modes key.
3. Access SP8-2 and press the OK key. Press the "Enter(#)" key.

Refer to steps 8 and 10 in section (download main firmware).

SP8-9: Data printout – Power failure



[A]: Momentary Voltage Drop

[B]: Over voltage

[C]: Low voltage

[D]: High voltage

The machine collects information about unusual voltages from the power outlet and you can check this data with SP 8-9 Data printout – Power failure

SP8-10: Test patterns

Makes prints without using the scanner.

Access SP8-10 and select the number "6", then press the "Enter(#)" key.

Other numbers are as shown below

1: Grid, 2: Vertical, 3: Horizontal gray, 4: Vertical gray, 5: 16 grays,

6: Cross, 7: Diagonal grid, 8: 256 grays, 9: 64 grays

SP8-21: Paper feed test (30 rpm)

Feeds paper at the lowest speed (30 rpm), and applies printing pressure.

1. Set a stack of paper on the paper feed table.
2. Access SP8-21 and press the OK key.
3. Exit the SP mode and enter the number of sheets that you want to feed.
4. Press the Print key.
5. To exit this mode, turn off the main switch.

SP8-22: Free run paper feed (30 rpm)

Drives the paper feed mechanism at the lowest speed (30 rpm) without paper.

1. Access SP8-22 and press the OK key.
2. Exit the SP mode and enter the number of times that you want to repeat the paper feed cycle.
3. Press the Print key.
4. To exit this mode, turn off the main switch.

9. Print Controller

These SPs are displayed after installing C654 (Printer Unit Type 4545A).

SP Table (SP 9-xxx)

No.	Menu Items	Default	Settings
9-1	Output Data Print	0	0:Normal, 1:Hex dump, 2:SD Card
9-2	Service Summary Print	-	-
9-3	NIB Summary Print	-	-
9-4	Firmware Part Number	-	-
9-5	Firmware Version	-	-

No.	Menu Items	Default	Settings
9-30	Clear Printer Setting	-	-
9-31	Clear NIB NVRAM – System	-	-
9-40	Load Program - System	-	☛

SP9-1: Output Data Print

In normal operation, an image that is sent from the computer is printed out. But with this SP mode, the image is changed to hex data and then output on paper or to an SD card.

There are three settings:

0: Normal (Default setting)

1: Hex Dump

2: SD card

Hex Dump:

The image is changed to hex data, and the hex data is printed out on paper.

⚠CAUTION

- This mode continues until main power is shut off.
- In some cases, there will be a large quantity of data, and many masters will be consumed to print out the hex dump. Be careful when you use this mode.

SD Card:

The image is changed to hex data, and the hex data is transferred to an SD card.

Procedure:

1. Turn off the main switch.
2. Put the SD card in the SD card slot.
3. Turn on the main switch.
4. Set SP 9-1 to "1: SD card" and get out from the SP mode.
5. Send the data from the computer
6. The "data in" LED on the machine blinks during the data transfer, and the LED turns off when the data transfer is finished (the transfer takes a few seconds).
7. Set SP 9-1 to "0: Normal".

8. Turn off the main switch.
9. Remove the SD card from the machine.

⚠CAUTION

- Do not take out the SD card before you turn off the main switch and set the SP Mode to "Normal".