Model PD-D1
Machine Code: C279

Field Service Manual

3 February, 2012

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

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.

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

- 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

- Dispose of replaced parts in accordance with local regulations.

  Used ink and masters should be disposed of in an environmentally safe manner and in accordance with local regulations.

The Aim of Anti-tip Components and Precautions

- The anti-tip components are necessary for meeting the requirements of IEC60950-1, the international standard for safety.
- The aim of these components is to prevent the products, which are heavy in weight, from toppling as a result of people running into or leaning on the products, which can lead to serious accidents such as persons becoming trapped under the product. (U.S.: UL60950-1, Europe: EN60950-1)

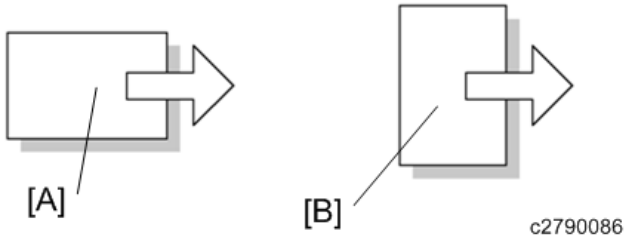
- Therefore, removal of such components must always be with the consent of the customer. Do not remove them at your own judgment.

Symbols and Trademarks

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



[A]: Short Edge Feed (SEF)

[B]: Long Edge Feed (LEF)

Trademarks

Microsoft®, Windows®, and MS-DOS® are registered trademarks of Microsoft Corporation in the United States and /or other countries.

PostScript® is a registered trademark of Adobe Systems, Incorporated.

PCL® is a registered trademark of Hewlett-Packard Company.

Ethernet® is a registered trademark of Xerox Corporation.

PowerPC® is a registered trademark of International Business Machines Corporation.

Other product names used herein are for identification purposes only and may be trademarks of their respective companies. We disclaim any and all rights involved with those marks.

TABLE OF CONTENTS

1. Product Information

2. Installation Procedure

3. Preventive Maintenance

4. Replacement and Adjustment

5. System Maintenance Reference

6. Troubleshooting

7. Energy Saving

1. Product Information

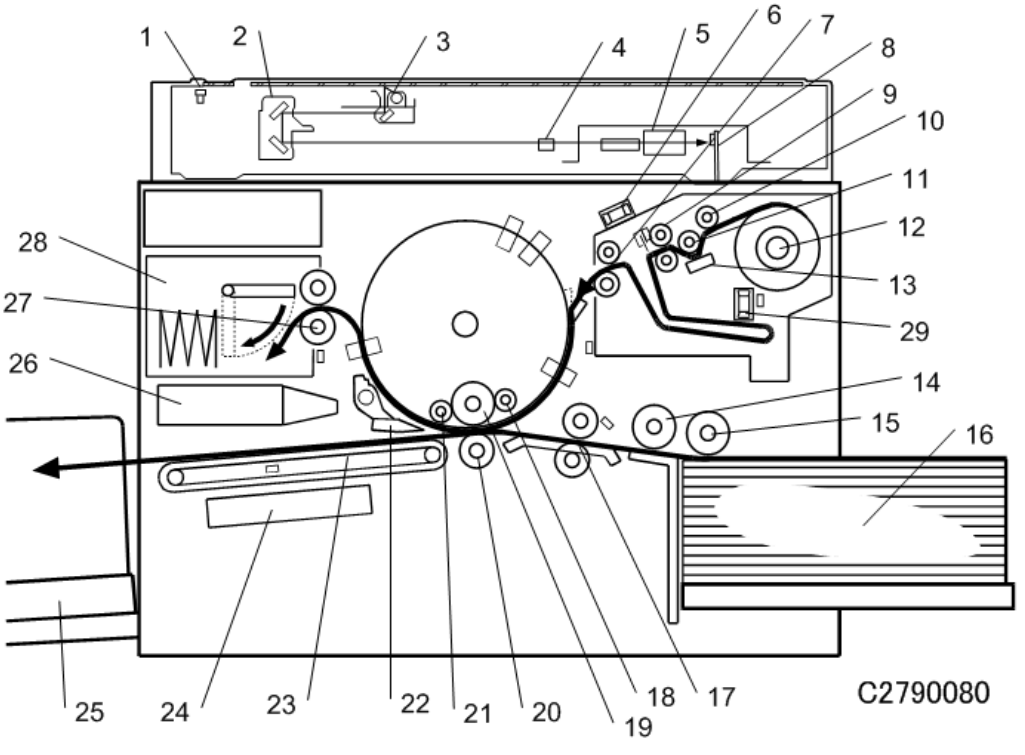
Specifications

See "Appendices" for the following information:

- Main Frame
- Supported Paper Sizes
- Software Accessories
- Optional Equipment

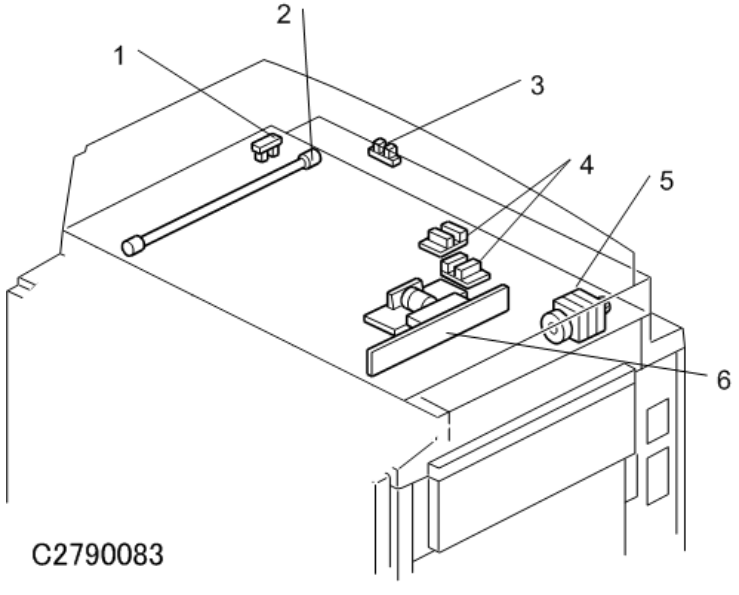
Overview

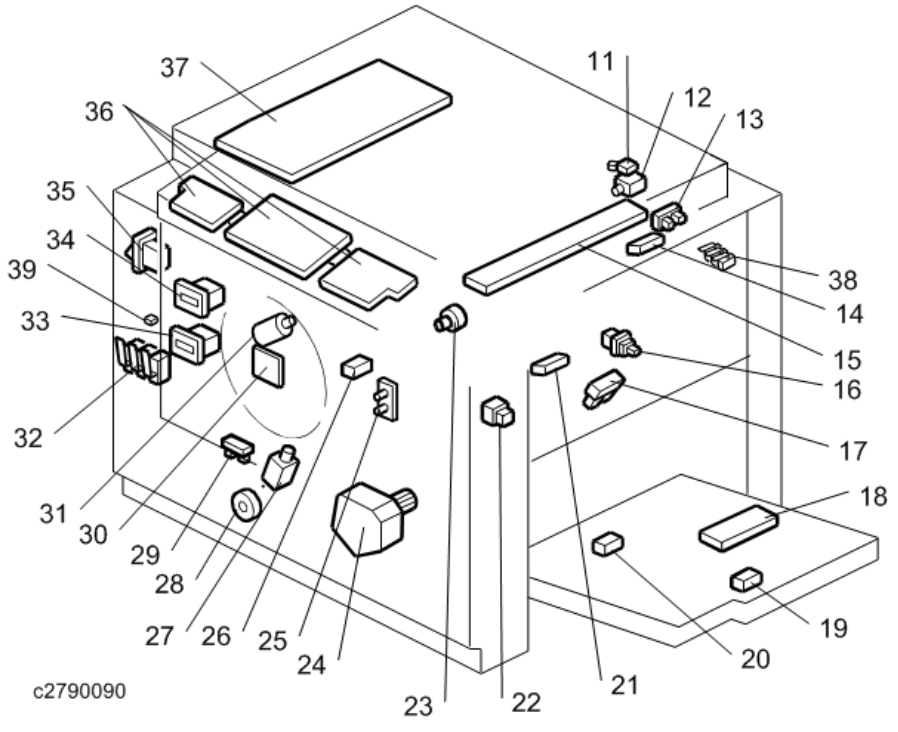
Component Layout

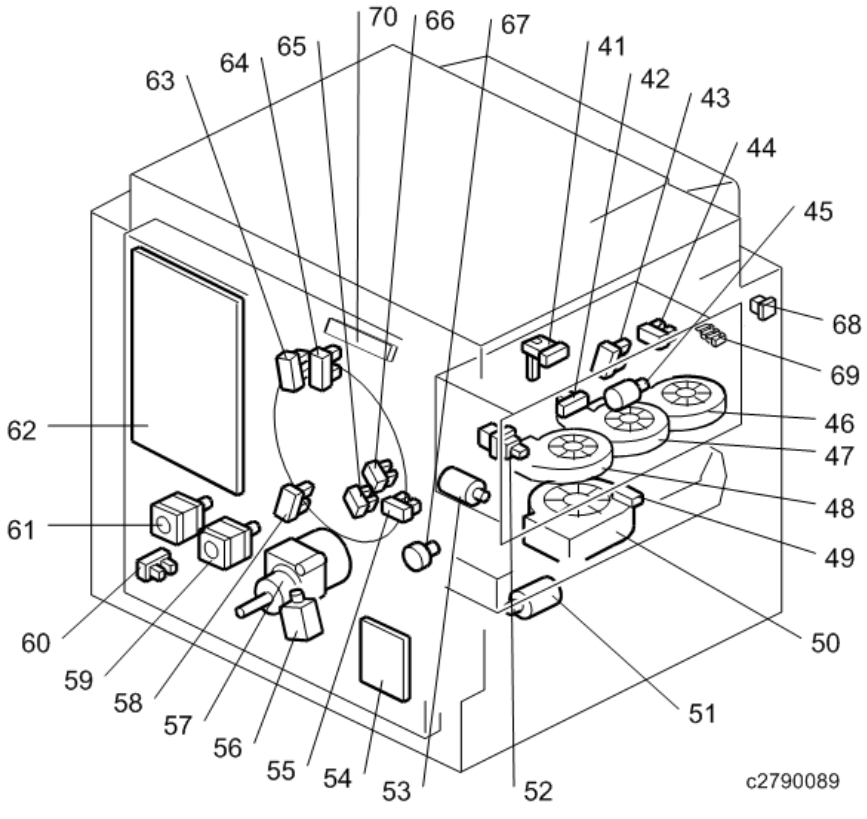


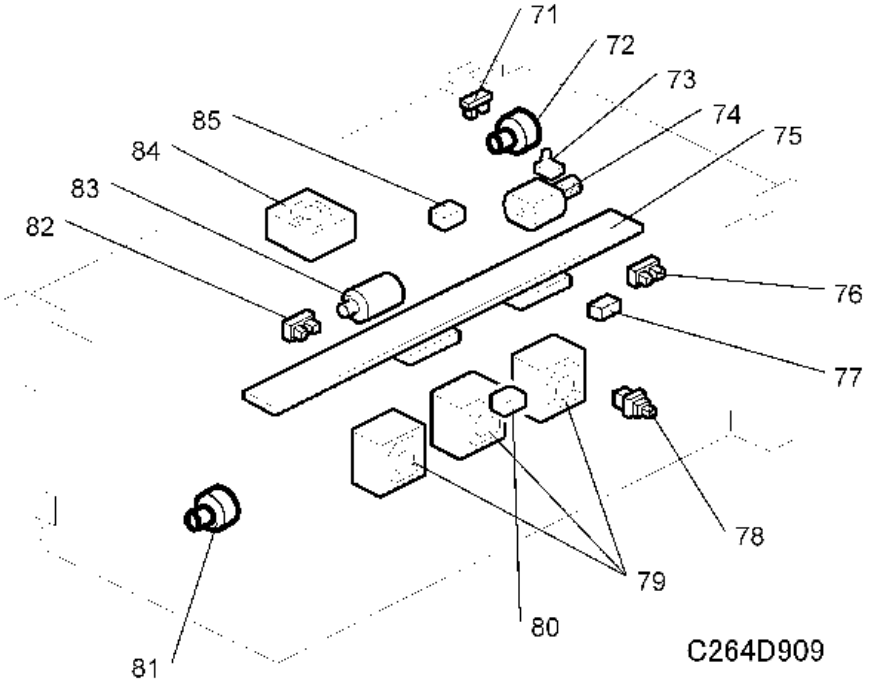
1. Scanner HP sensor 2. 2nd carriage 3. 1st carriage 4. Original length sensor 5. Lens 6. Blower fan motor 7. Reverse roller 8. SBU 9. Tension roller 10. Master set roller 11. Platen roller 12. Master roll 13. Thermal head 14. Paper separation roller 15. Paper feed roller	16. Paper table 17. Registration rollers 18. Doctor roller 19. Ink roller 20. Press roller 21. Idling roller 22. Exit pawl 23. Transport belts 24. Vacuum fan motor 25. Paper delivery table 26. Air knife fan motors 27. Master eject rollers 28. Master eject box 29. Vacuum fan motor

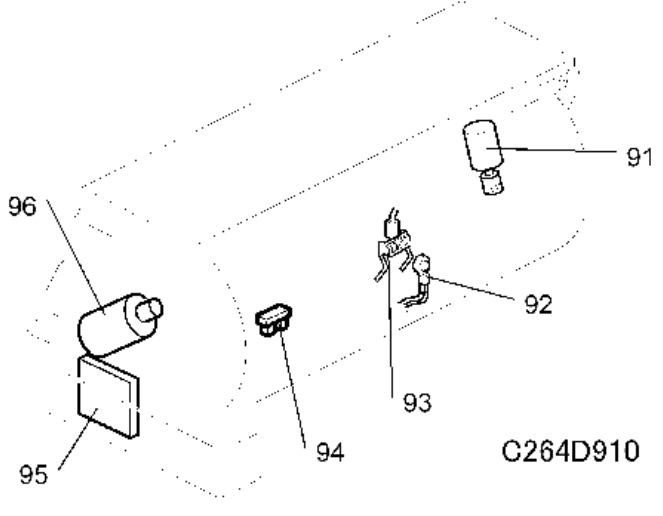
Electrical Component Layout




37
36
35
34
39
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
38
13
12
11
c2790090


70
66
67
41
42
43
44
45
63
64
65
68
69
62
46
47
48
61
49
60
50
59
58
57
56
55
54
53
52
51
c2790089





Boards

No.	Component	Function
6	CCD and SBU	Outputs a video signal to the MPU.
18	Paper Width Detection Board	Sends data about the paper width on the paper table to the MPU.

No.	Component	Function
30	Ink Detection Board	Checks if there is ink in the drum.
36	Operation Panel Boards	These boards control the operation panel.
37	Power Supply Unit (PSU)	Provides dc power to the machine.
54	Main Motor Board	Controls the main motor speed.
62	Main Processing Unit (MPU)	Controls all machine functions, both directly and through other boards.
70	Lamp Stabilizer	This supplies power to the exposure lamp.

Motors

No.	Component	Function
5	Scanner Motor	Drives the scanner.
23	Master Feed Motor	Feeds the master to the drum.
24	Table Motor	Raises and lowers the paper table.
28	Printing pressure motor	Raises and lowers the pressure roller.
31	Ink Pump Motor	Drives the ink pump.
45	Master Eject Motor	Sends used masters into the master eject box.
46	Air Knife Fan Motor 1	Rotates the fan to provide air to separate the leading edge of the paper from the drum.
47	Air Knife Fan Motor 2	
48	Air knife fan motor 3	
50	Vacuum Fan Motor	Provides suction so that paper is held firmly on the transport belt.
40	Paper Delivery Motor	Feeds out the printed paper.
53	Pressure Plate Motor	Raises and lowers the pressure plate.
57	Main Motor	Rotates the drum.
59	Registration Motor	Feeds the paper to align it with the master on the drum.
61	Paper Feed Motor	Feeds the paper from the paper table.

No.	Component	Function
67	Clamper Motor	Opens or closes the master clamper on the drum.
72	Duct plate motor	Opens or closes the duct plate at entrance of the duct.
74	Cutter Motor	Cuts the master.
79	Duct fan motors	Provides suction to guide the master into the duct.
81	Master Feed Motor	Feeds the master to the drum.
83	Thermal head driving motor	Raises and lowers the thermal head.
84	Blower fan motor	Provides air to separate the master.
91	Idling roller motor	Presses or releases the drum idling roller against the drum screen.
96	Ink Pump Motor	Drives the ink pump.

Sensors

No.	Component	Function
1	Scanner HP Sensor	Detects when the image sensor is at home position.
3	Platen Cover Sensor	Detects whether the platen cover is open or closed.
4	Original length sensor 1, 2	Detect the length of the original on the exposure glass.
13	Master Set Cover Sensor	Checks if the master set cover is properly set.
14	Master End Sensor	Detects when the master making unit runs out of master roll.
17	Paper Height Sensor	Detects when the paper table reaches the paper feed position.
19	Paper Length Sensor	Detects when long paper is on the paper table.
20	Paper End Sensor	Detects when the paper table runs out of paper.
21	Registration Sensor	Detects paper approaching the registration roller.
26	2nd drum master sensor	Detects if there is a master on the drum.
29	Printing pressure HP sensor	Detects when the printing pressure is at the home position.

No.	Component	Function
39	Front Door Switching Sensor	Detects if the Front Cover is in the closed position.
41	Master Eject Sensor	Detects used master misfeeds.
42	Drum Master Sensor	Detects if there is a master on the drum.
43	Pressure Plate HP Sensor	Detects when the pressure plate is at the home position.
44	Pressure Plate Limit Sensor	Detects when the pressure plate is in the lowest position.
49	Paper Exit Sensor	Detects paper misfeeds at the exit.
55	2nd Feed Timing Sensor	Determines the paper misfeed check timing at the paper registration area.
58	Feed Start Timing Sensor	Determines the paper feed start timing.
60	Table Lower Sensor	Detects when the paper table is at its lower limit position.
63	Master Eject Position (Drum HP) Sensor	Detects when the drum is at the master eject position.
64	Paper Exit Timing Sensor	Determines the paper exit misfeed check timing.
65	Clamper Closed Sensor	Detects if the clamper is in the closed position.
66	Clamper Open Sensor	Detects if the clamper is in the open position.
71	Duct plate HP sensor	Detects when the duct plate is at the home position.
73	Cutter HP Sensor	Detects when the cutter is at the home position.
76	Master Set Cover Sensor	Checks if the master set cover is properly set.
77	Master End Sensor	Detects when the master making unit runs out of master roll.
80	Duct jam sensor	Detects when a master remains in the duct.
82	Thermal head HP sensor	Detects when the thermal head is at the home position.
85	Master edge sensor	Detects the leading edge of the master.
94	Ink idling roller HP sensor	Detects when the idling roller is at home position.

Solenoids

No.	Component	Function
27	Front Pressure Release Solenoid	Releases the press roller to apply printing pressure.
56	Rear Pressure Release Solenoid	Releases the press roller to apply printing pressure.

Switches

No.	Component	Function
16	Master Making Unit Set Switch	Checks if the master making unit is installed.
22	Table Lowering Switch	Lowers the paper table.
32	Door Safety Switch	Checks whether the front door is properly closed.
35	Main Switch	Turns the power on or off.
38	Plotter Safety Switch	Checks if the master making unit is installed. Note: The master making unit is sometimes called the 'plotter unit'.
52	Eject Box Set Switch	Checks if the master eject box is installed.
68	Auto Off Switch	Turns the power off automatically.
69	Master Eject Safety Switch	Checks if the master eject unit is installed.
78	Lower master tray set switch	Checks if the lower master tray is installed.

Counters

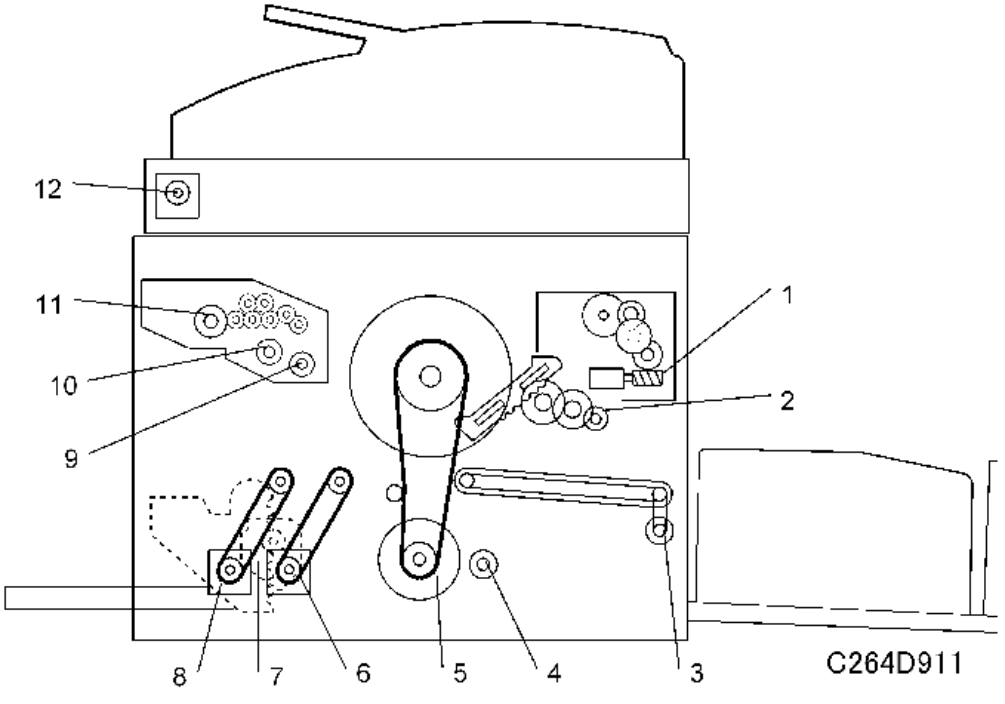
No.	Component	Function
33	Paper Counter	Keeps track of the total number of copies.
34	Master Counter	Keeps track of the total number of masters made.

Others

No.	Component	Function
2	Exposure Lamp (Xenon Lamp)	Applies light to the original for exposure.
15	Thermal Head	Burns the image onto the master.
25	Drum home position indicator (LEDs)	LEDs that indicates the drum position.

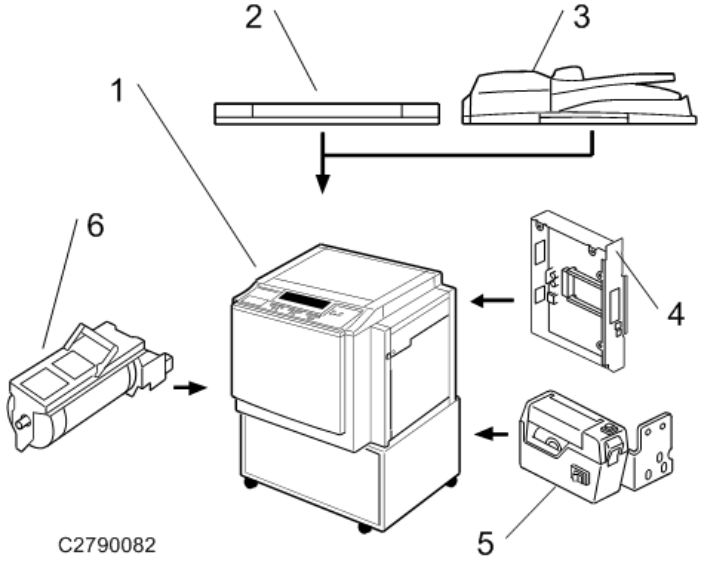
No.	Component	Function
92	Drum thermistor	Detects the temperature inside the drum to adjust various processes.
93	Ink detection pins	Detect if ink is present in the drum

Drive Layout



1. Pressure plate motor	7. Table motor
2. Clamper motor	8. Paper feed motor
3. Paper delivery motor	9. Duct plate motor
4. Printing pressure motor	10. Thermal head driving motor
5. Main motor	11. Master feed motor
6. Registration motor	12. Scanner motor

Machine Codes and Peripherals Configuration



No	Item	Machine Code	Remarks
1	Mainframe	C279 -11/-17/-27/-29 -61/-65	
2	Platen Cover	D593	One from No.2 or No.3
3	Auto Document Feeder	D578	
4	Network Controller	C654	
5	Tape Dispenser	C651	
6	Optional Drum	C618/C619/C620	

Guidance for Those Who are Familiar with Predecessor Products

Machine C279 is a successor model to Machine C264. 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

	C279	C264
Universal color	Yes	No
Three new language selections added *1	Traditional Chinese, Russian, Turkish	-
New user modes added	Fine mode Protect code	-
New SP mode added	Refer to the SP table section	-
Controller	FV-Lt (RPCS driver)	VC-20 (Windows GDI)
@Remote	Yes *2	No
Original size sensor	Yes	No
Firmware Update	SD card	IC card

Note

- *1. Because of the increased number of languages, one firmware module cannot contain all the languages, so the firmware is divided into two (depending on the model). When you update the firmware, chose the right type of firmware.
- *2. Auto meter reading and Fleet report only. Printer controller is required.

2. Installation Procedure

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

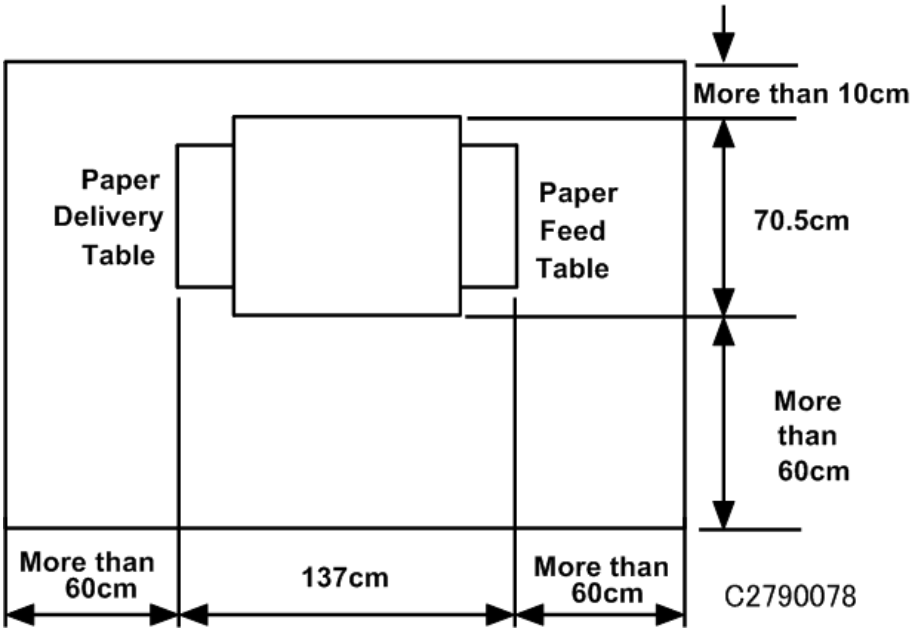
1. Locations exposed to direct sunlight or strong light (more than 1,500 lux).
2. Dusty areas
3. Areas containing corrosive gases.
4. Locations directly exposed to cool air from an air conditioner or reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause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

Machine Access

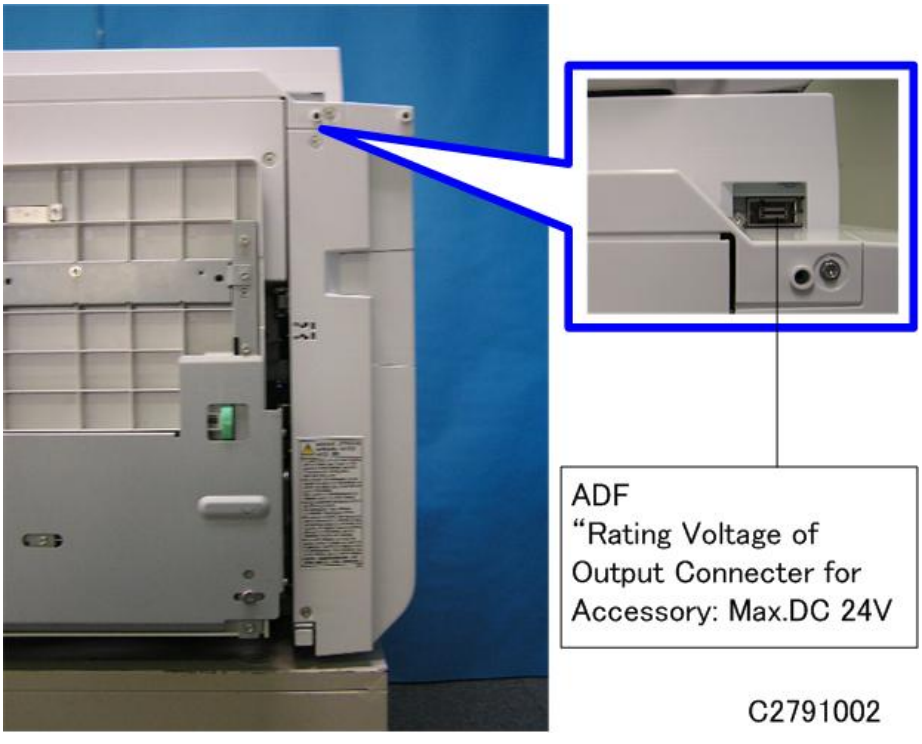
Place the machine near a power source, providing clearance as shown below.



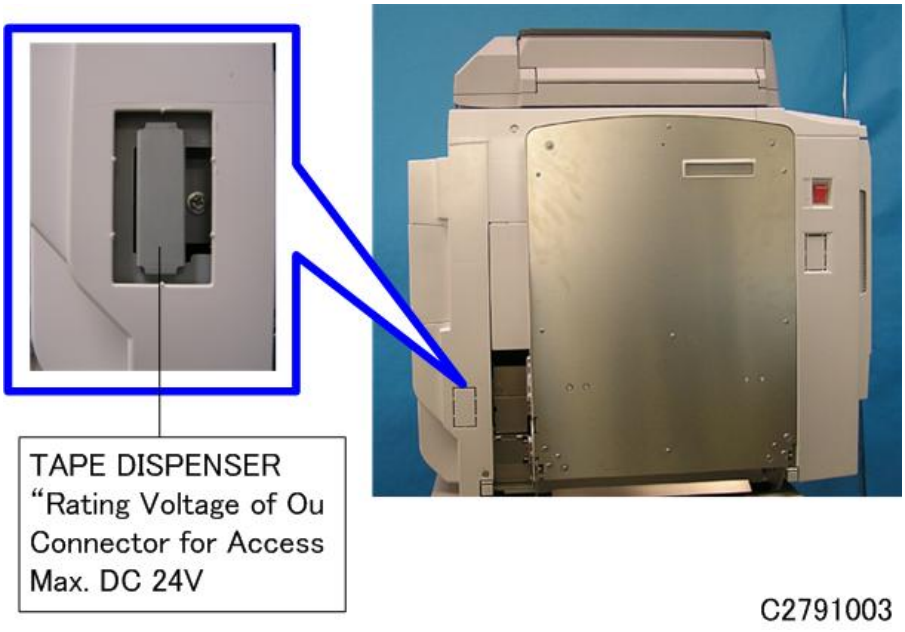
Power Sockets for Peripherals

⚠CAUTION

- Rating Voltage for Peripherals
- Make sure to plug the cables into the correct sockets.



C2791002



C2791003

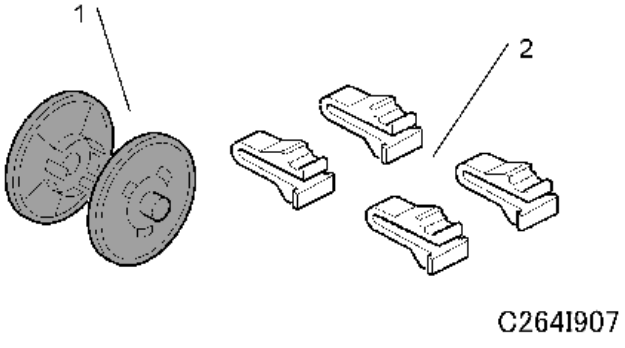
Optional Unit Combinations

Machine Options

No.	Options	Remarks
1	Platen Cover (D593)	One from No.1 or No.2
2	Auto Document Feeder (D578)	
3	Tape Dispenser (C651)	
4	Network Controller (C654)	
5	Optional Drums (C618/C619/C620)	

Machine Installation

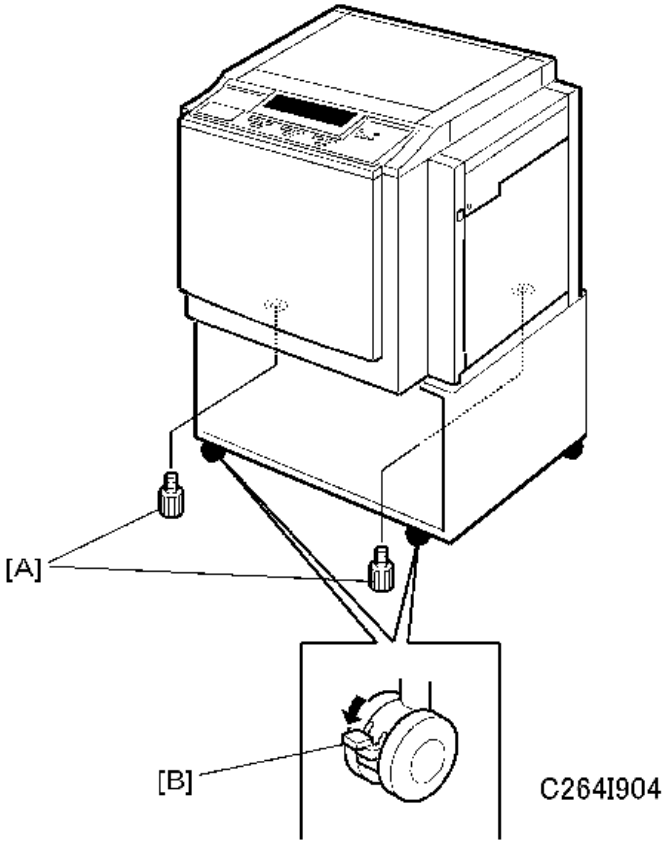
Accessory Check



Make sure that you have all the accessories listed below:

No.	Description	Quantity
1	Master Spool	2
2	Carrying Handle Stoppers	4
3	Operating Instructions (CD-ROM)	1
4	Easy Operation Guide	1
5	Manuals & Safety Information for this machine	1
6	NECR	1
7	Emblem Cover	1
8	Emblem (RICOH)	1
9	Operation Panel Logo Plate (RIC/SAV/LAN)	1×3
10	Sheet & Pocket for the Exposure Glass	1
11	Power Cable	1

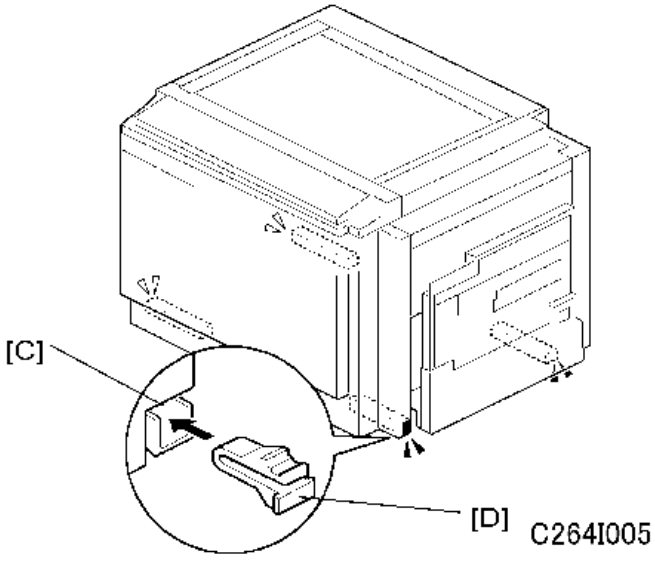
Installation Procedure



1. Unpack the box. When installing the optional table, mount the machine as shown (there are 2 screws [A] packed with the table).

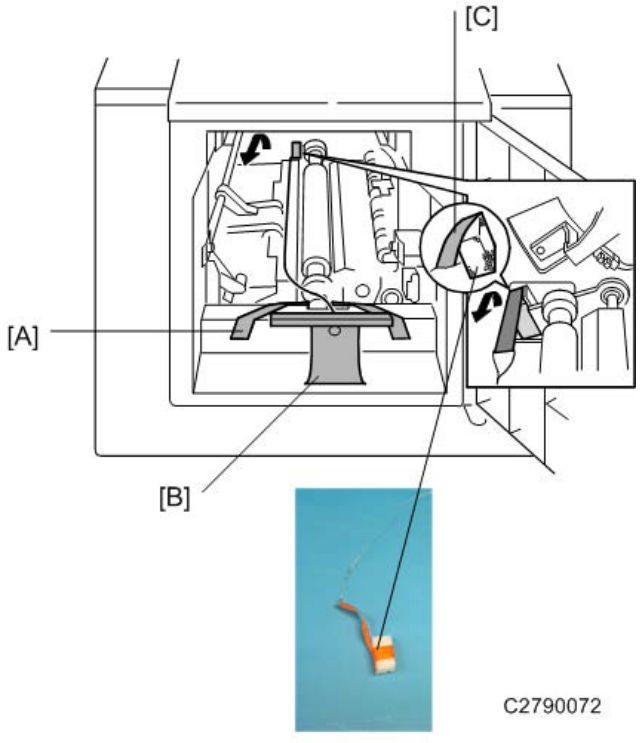
⚠CAUTION

- Only lift with the carrying handles on the bottom corners of the machine.
- Secure the machine on the table with the 2 screws [A] provided. This prevents the machine from falling from the table when the platen cover is open.
- Lock the casters of the table as shown [B], to prevent the machine from moving (e.g. when the drum is set).



2. Push the carrying handles [C] into the machine, and attach the carrying handle stoppers[D].

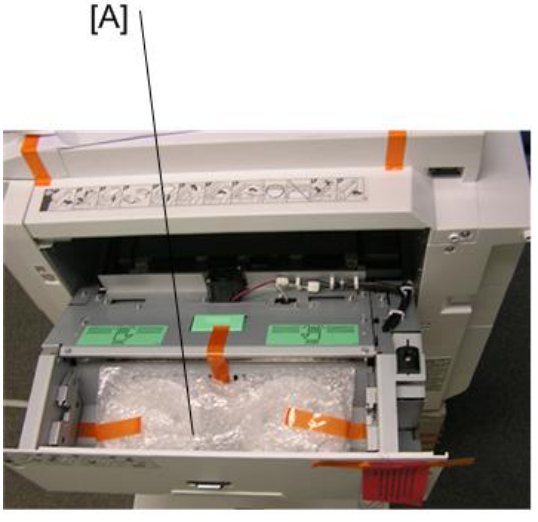
3. Remove the filament tape and string securing the covers and units as shown above.



4. Remove the front tape [A], the tag [B], and the rear tape [C].

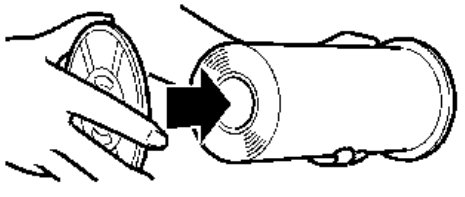
Note

- To remove the rear tape, pull the portion shown in the diagram toward the front of the machine.



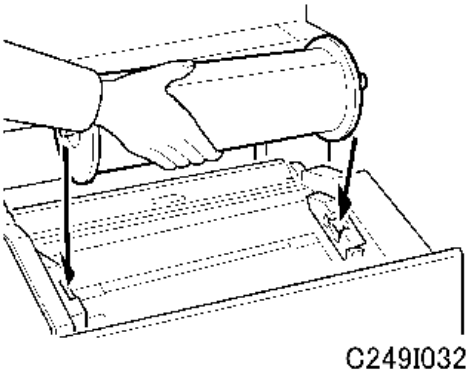
C2791029

5. Pull out the master making unit, and take out the accessory bag [A].



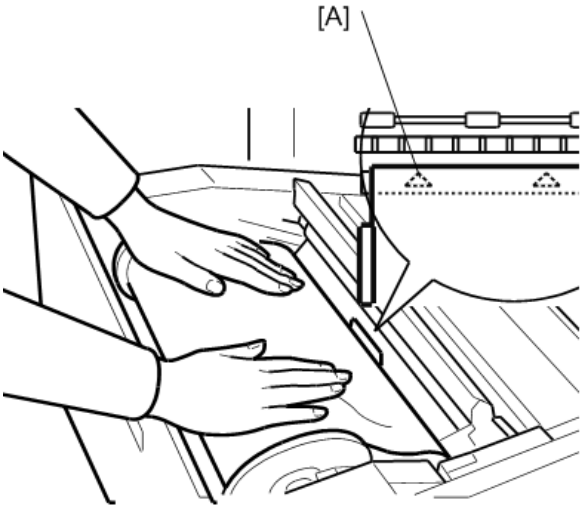
C249I030

6. Insert both spools into a new master roll.



C249I032

7. Install the master roll as shown above.

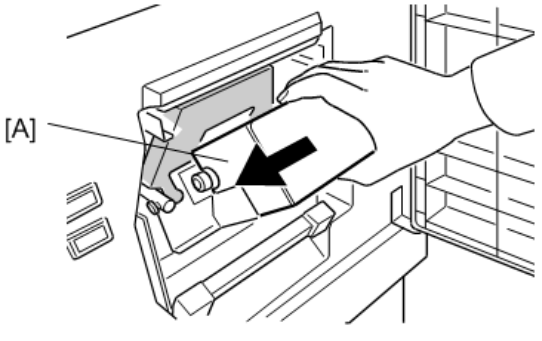


C2790073

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

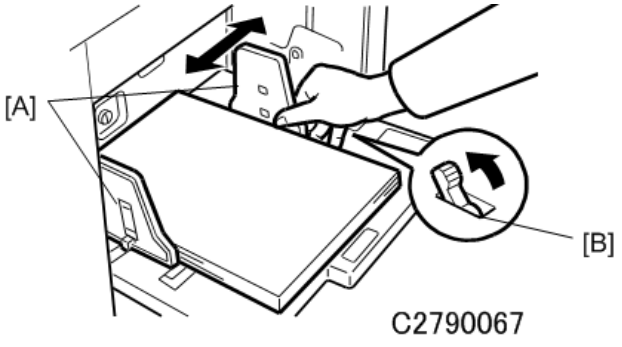
C2790065

9. Close the cover [A] using both hands.
10. Set the master-making unit.

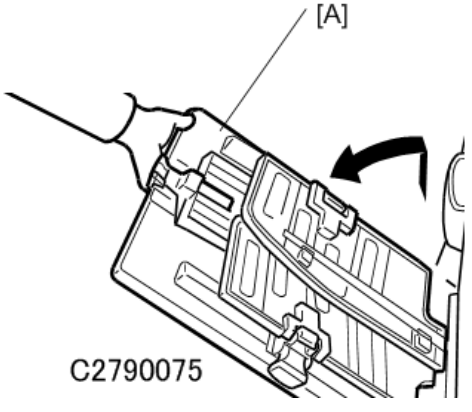


C2790066

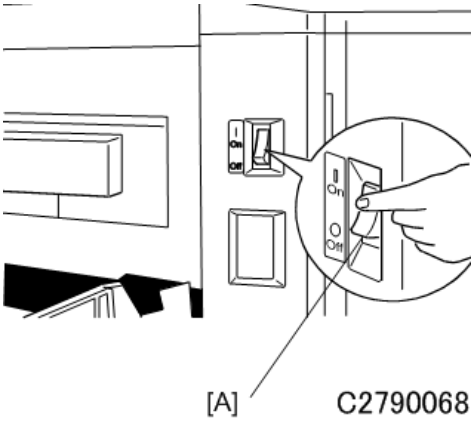
11. Open the door, and insert a new ink cartridge [A].



12. Open the paper table, and load a stack of paper.
13. Make sure that the side plates [A] touch the paper gently. Shift the lock lever [B] in the direction of the arrow.



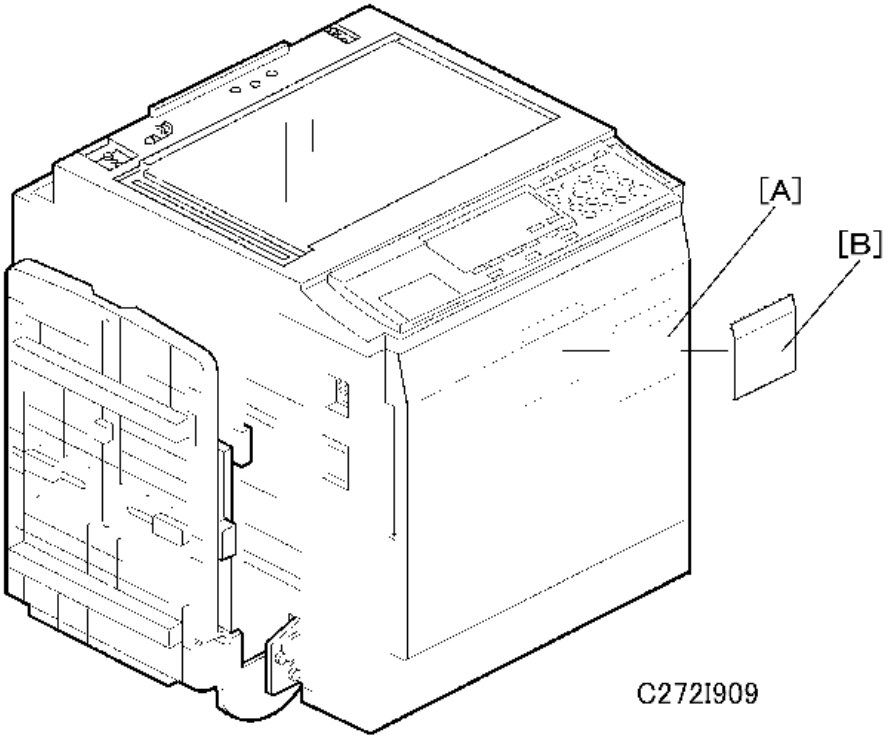
14. Raise the paper delivery table [A] slightly, then gently lower it.
15. Lift the side plates and the end plate, and adjust them to the paper size.
16. Firmly insert the power plug in the outlet.
17. Make sure that the wall outlet is near the machine and easily accessible.



18. Turn on the main switch [A].
19. Press the "Economy mode" key while holding down the "0" key, to supply ink inside the drum.
20. Make some test copies.

Brand Setting

If the machine was not set with the correct brand in the factory, you need to do this now.



1. Install your brand emblem [A] and emblem cover [B].

Note

- When you set up the Ricoh brand model, install the emblem plate insted of the emblem and emblem cover.

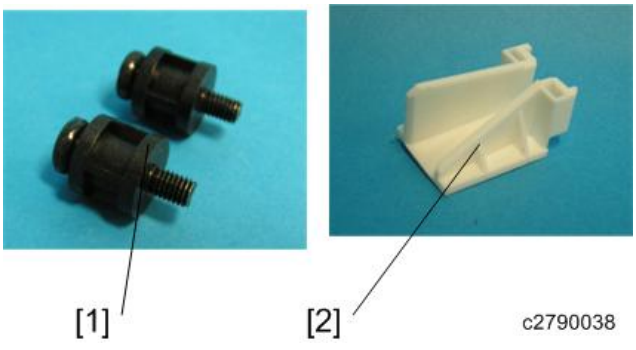
2. Select your brand in the SP mode.

   Access SP2-7 (Vendor Selection) and choose your brand. (☛ Appendices – Main SP Tables)

Platen Cover (D593)

Accessory Check

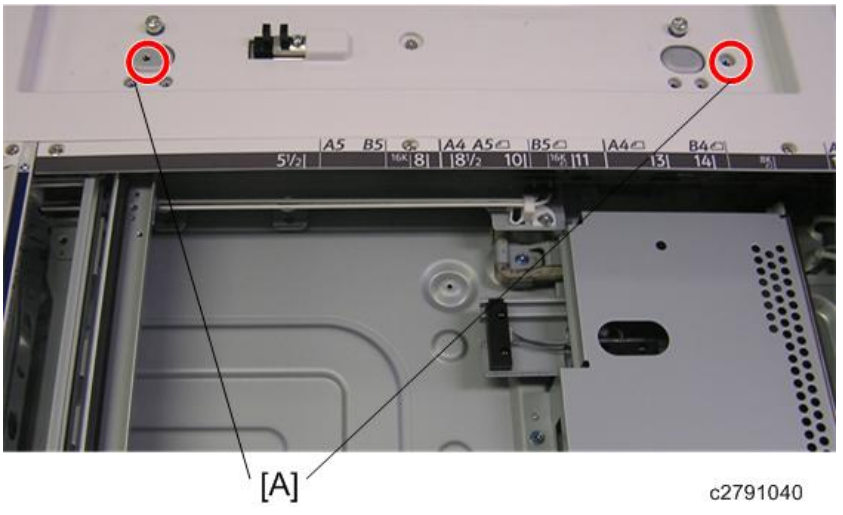
Check the quantity and condition of the accessories in the box against the following list:



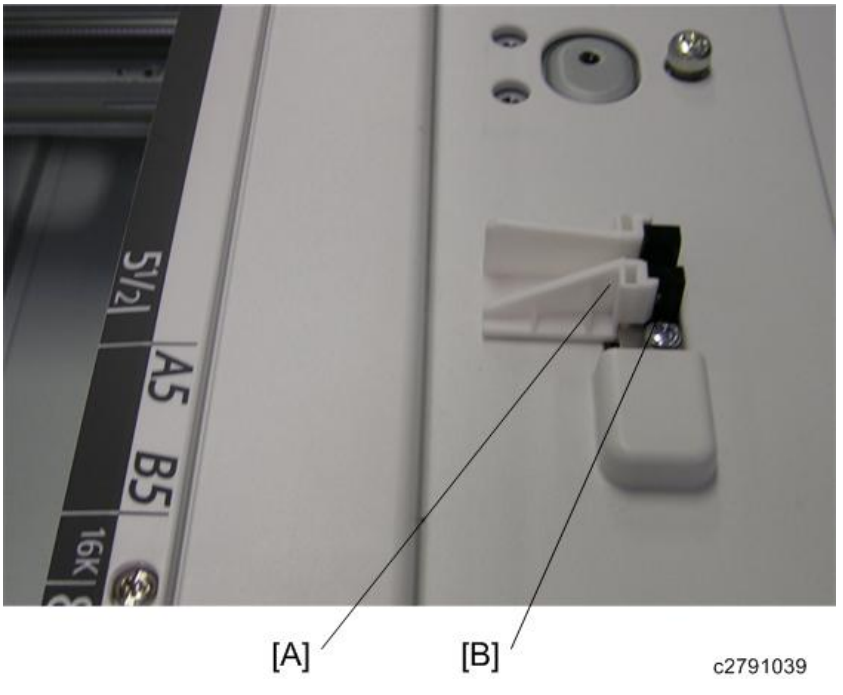
No.	Description	Quantity
1	Stepped Screw	2
2	Guard Rail Filler	1

Installation Procedure

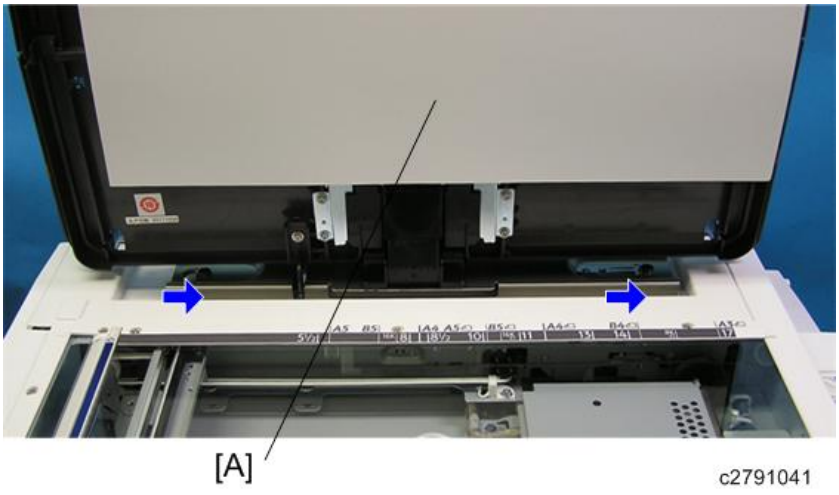
1. Remove the strips of tape.



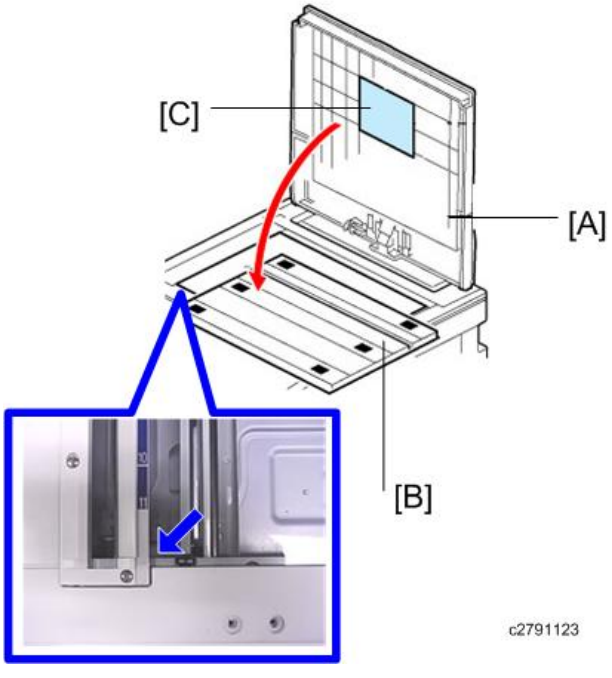
2. Insert the two stepped screws [A] on the top of the machine.



3. Peel off the double sided tape from the guard rail filler [A] and place it by the platen cover sensor [B].



4. Mount the platen cover [A] by aligning the screw keyholes over the stud screws.
5. Slide the platen cover toward the right of the machine.



6. Remove the platen sheet [B] from the platen cover [A].
7. Place the platen sheet on the exposure glass.
8. Slowly close the platen cover, gently pressing it against the platen sheet so that the sheet sticks to the cover.
9. Open the platen cover again and lightly hold the Velcro part.

Note

- When placing the platen sheet on the exposure glass, make sure to align it with the front left corner.

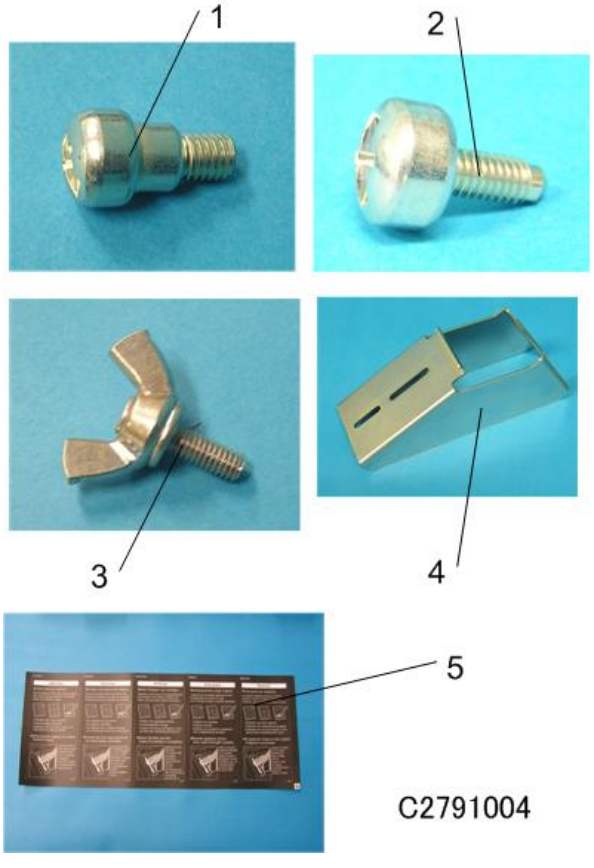
10. Turn on the main switch.
11. Place an original on the exposure glass and confirm that it can be printed properly.

Note

- The SMC sheet is contained in the front cover[C].

Auto Document Feeder (D578)

Accessory Check



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

No.	Description	Quantity
1	Stepped Screw	2
2	Screw	2
3	Thumbscrew	4
4	Stabilizer Bracket	2
5	ADF exposure glass cleaning decal	1
6	EMC ADDRESS:RIC	1

The Aim of Anti-tip Components and Precautions

The anti-tip components are necessary for meeting the requirements of IEC60950-1, the international standard for safety.

The aim of these components is to prevent the products, which are heavy, from toppling as a result of people running into or leaning on the products, which can lead to serious accidents such as persons becoming trapped under the product.

(U.S.: UL60950-1, Europe: EN60950-1)

Therefore, removal of such components must always be with the consent of the customer.

Do not remove them at your own judgment.

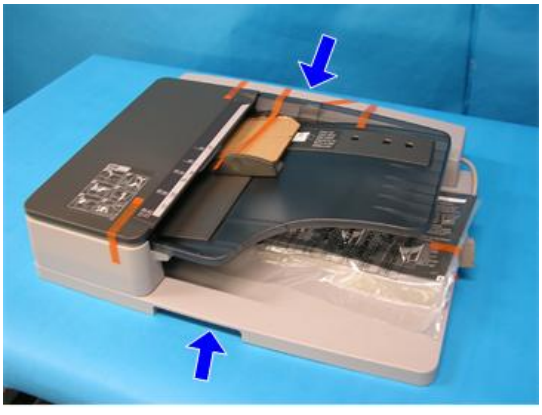
Installation Procedure

C2791011

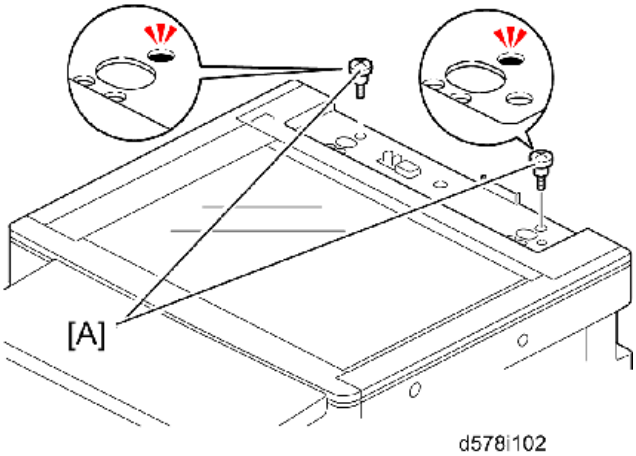
1. Remove the strips of tape.

Note

- When unloading the ADF from a pallet, hold the front and rear sides of the ADF .

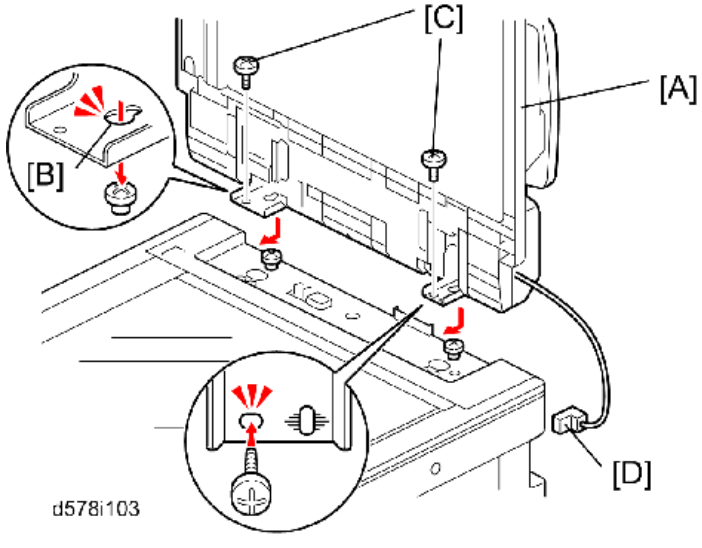


C2791036



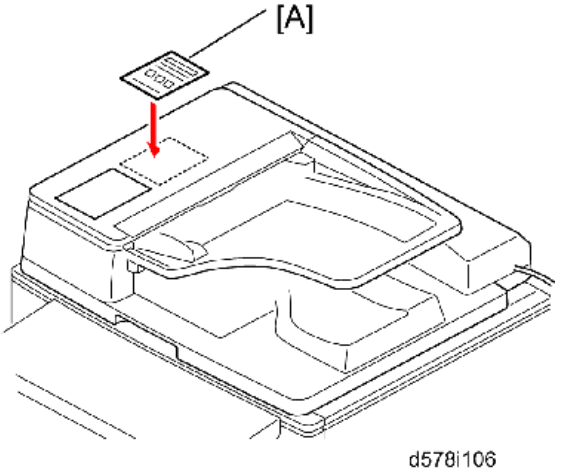
d578i102

2. Insert the two stud screws [A] on the top of the machine.



d578i103

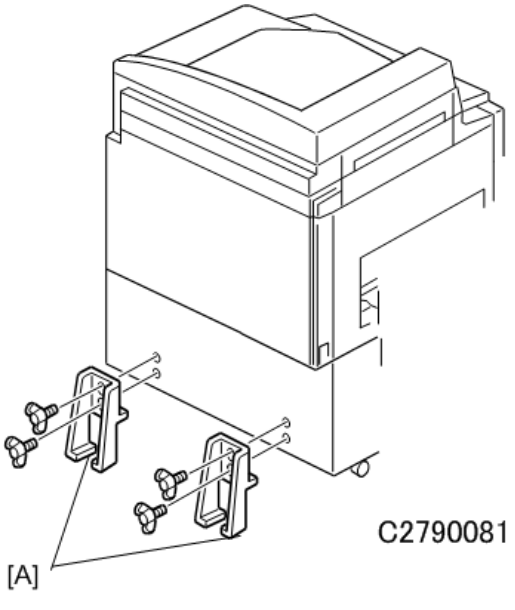
3. Mount the ADF [A] by aligning the screw keyholes [B] of the ADF support plate over the stud screws.
4. Slide the ADF toward the front of the machine.
5. Secure the ADF with the two knob screws [C].
6. Attach the interface cable [D] to the inlet of the machine.



d578i106

7. Attach the original setting and ADF exposure glass cleaning decal [A] to the top cover as shown.
8. Plug in and turn on the main power switch, and then check the ADF operation.

ADF Stabilizer Installation



1. Attach the two stabilizer brackets [A] to the back of the table using the thumbscrews (x 4).

⚠CAUTION

- This procedure must be done to prevent the machine from falling backwards when the ADF is open.

Configuration of Options

SP6-2 Main-scan position - ADF

Adjust the image position of the ADF in the main scanning direction.

1. Make a copy in platen mode at 90 rpm (speed 3).
2. Measure the difference between the center of the main-scan on the original and on the print.
3. Access SP6-02, input the 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.

SP6-4 Scan start position – ADF

1. Input SP8-10 (Test patterns) and enter "6", then press the start key.
2. Exit the SP mode, then make copies of the test pattern printed, in platen mode at 90 rpm (speed 3). Use the 10th print for the adjustment.
3. The length of the 8 squares in the feed direction should be 130 mm.
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 SP6-06, input the calculated ratio, and press the Enter key.
6. Check again to make sure that the ratio is correct.

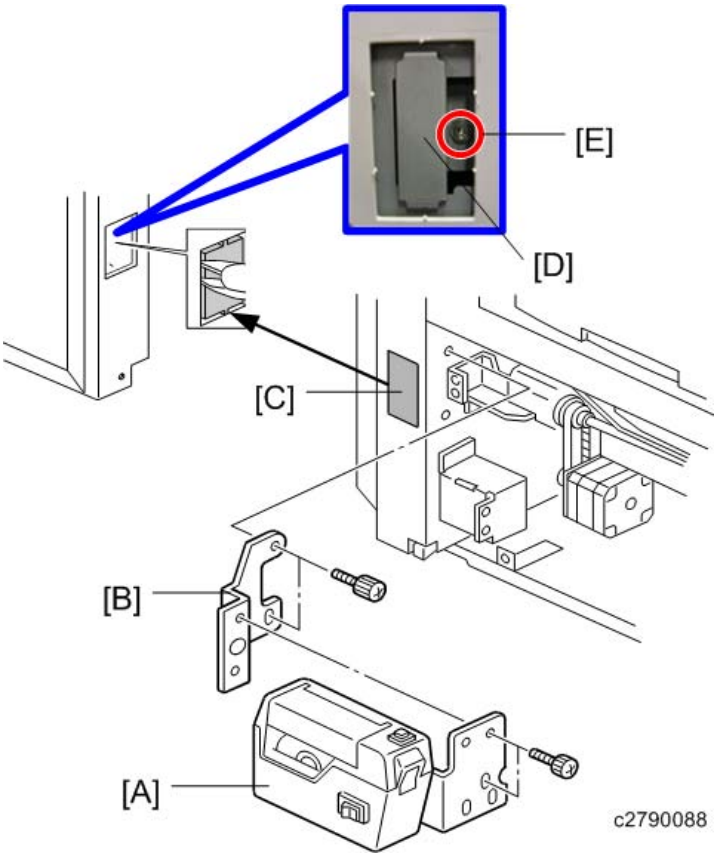
Tape Dispenser (C651)

Accessory Check

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

No.	Description	Quantity
1	Knob Screw (For C210, C217, C218, C219, C222, C223, C225, C228, C238, C237, C238, C248, C249, C264, C267, C272, C276, C278, and C279)	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)	1
5	Auxiliary Bracket (For C238, C247 and C249)	1
6	Auxiliary Bracket (For C269)	1
7	Auxiliary Bracket (For C264 C272, C276, C278, and C279)	1
8	Screw M4 x 8 (For C226, C238, C247, C249, C264, C267 C272, C276, C278, and C279)	4
9	Lock Washer (For C226 only)	1
10	Lock Washer (For all except C267)	1
11	Tape	1

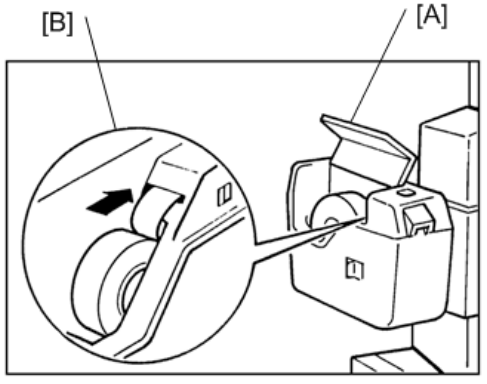
Installation Procedure



1. Turn off the main switch and unplug the power cord.
2. Remove the paper delivery plate.
3. Install the auxiliary bracket [B] on the tape dispenser[A] with M4 x 8 screws (accessories).
4. Cut off the cover [C] in the rear cover, as shown.
5. Remove the connecter cover [D].
6. Remove the screw that is beside the connector [E].
7. Install the tape dispenser on the main body with two knob screws (accessories) in the two outer holes in the tape dispenser bracket.

   Note

   - Install the lock washer (accessories) with the lower of the two knob screws.
   - Tighten the knob screws with a screwdriver to prevent them from coming loose.
8. Reinstall the paper delivery plate.



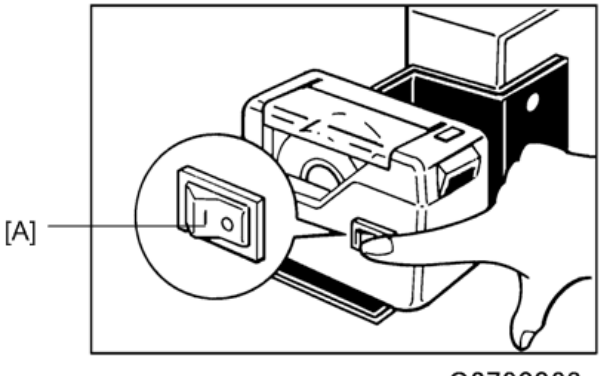
C2790062

9. Open the tape dispenser cover [A]. Then, insert the leading edge of the tape into the tape entrance until it stops as shown in the illustration [B].

Note

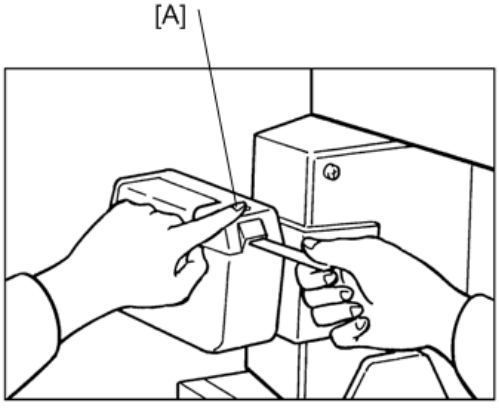
- Be sure that the tape is installed in the proper direction. If it is not, the tape marker will not work correctly.

10. Turn on the main switch of the main body.



C2790063

11. Turn on the tape dispenser switch [A].

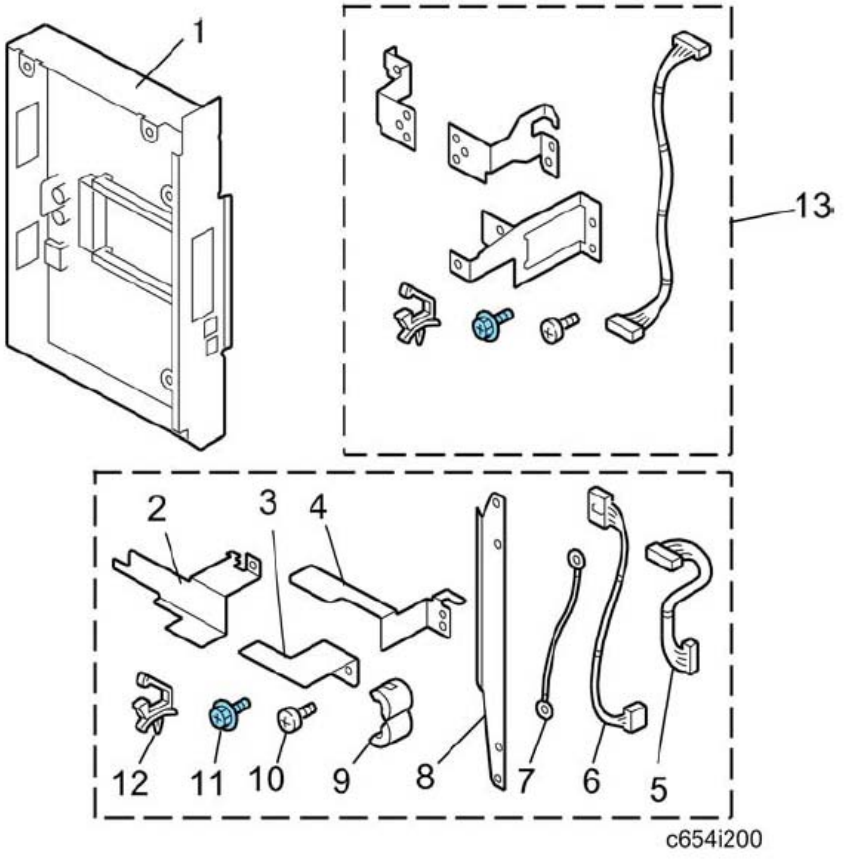


C2790064

12. Press the tape cut button [A] to cut off the leading edge of the tape.
13. Check the tape dispenser operation using the Memory/Class modes of the main body.

Network Controller (C654)

Accessory Check



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

No.	Description	Quantity
1	ACU Board (with Case)	2
2	Top Right Bracket	2
3	Bottom Bracket	2
4	Top Left Bracket	1
5	Short Harness	1

No.	Description	Quantity
6	Long Harness	1
7	Ground Cable	1
8	Cover	1
9	Ferrite Core	1
10	Screw: M3x4	5
11	Screw: M3x6	4
12	Clamp	1
13	Attachment Kit for HP4R2.5*1	1

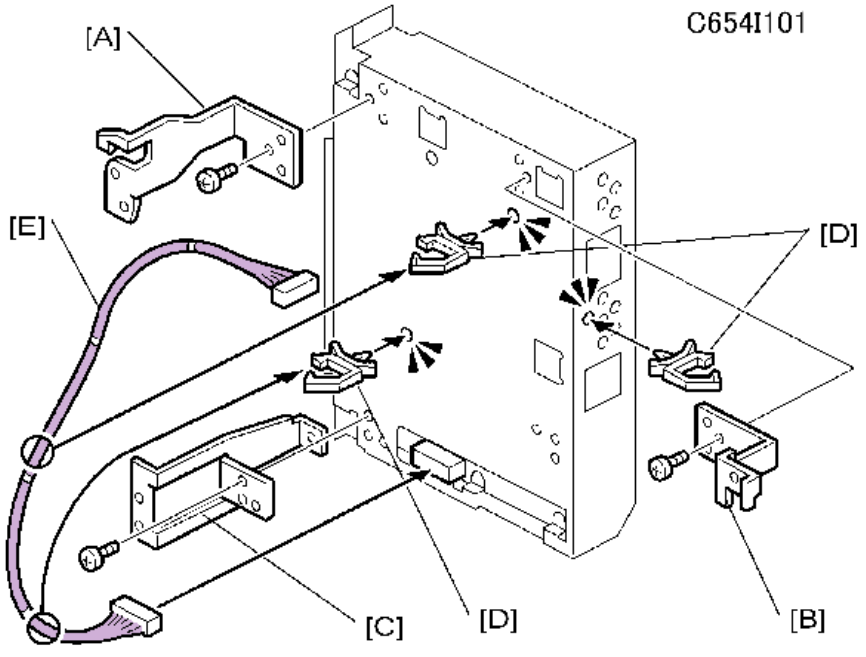
*1This item is not used for this machine.

Note

- This circuit operates on a +5V circuit.

Installation Procedure

Prepare to install the board: Stage 1



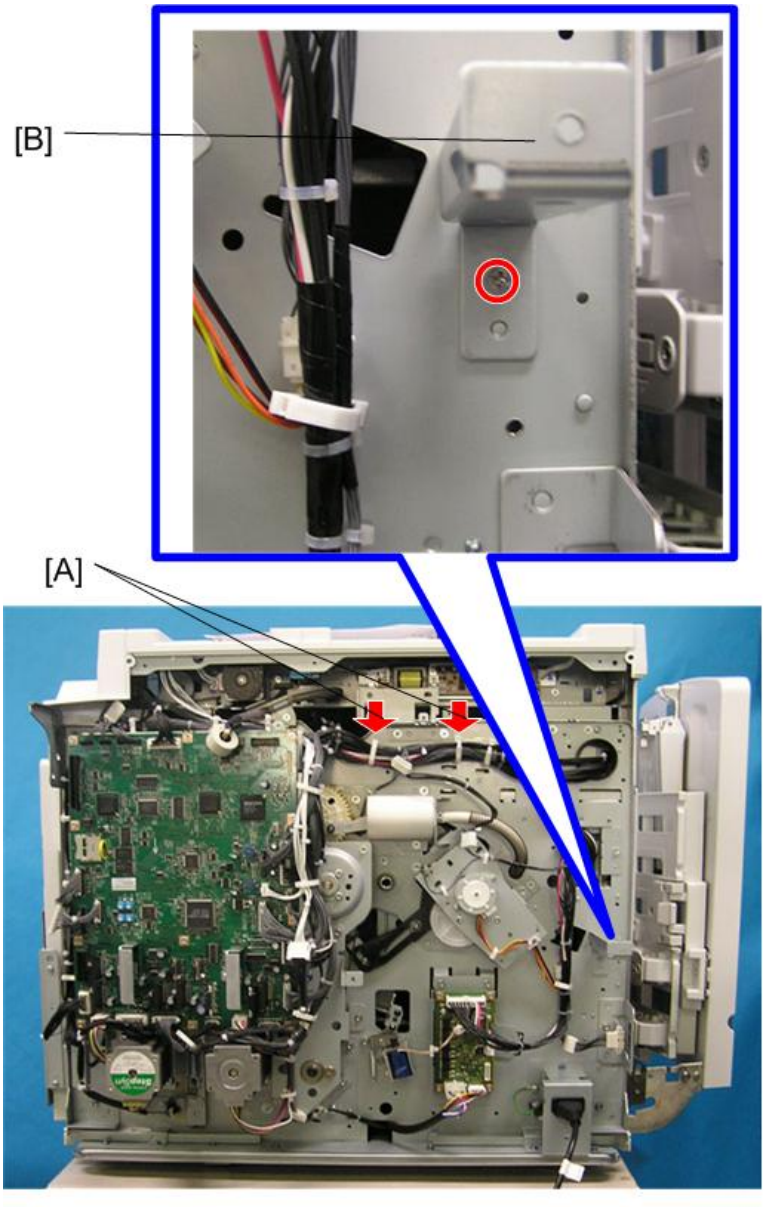
1. Attach the three brackets [A], [B], [C] (×3).
2. Install the clamps [D] (× 3).
3. Attach the harness [E] (× 2, × 1).

Prepare to install the board: Stage 2

1. 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.
2. Check whether "SP2-7" (Vendor Selection) is set to the correct value. If necessary, change it to the correct vendor setting. (☛ Appendices – Main SP Tables)

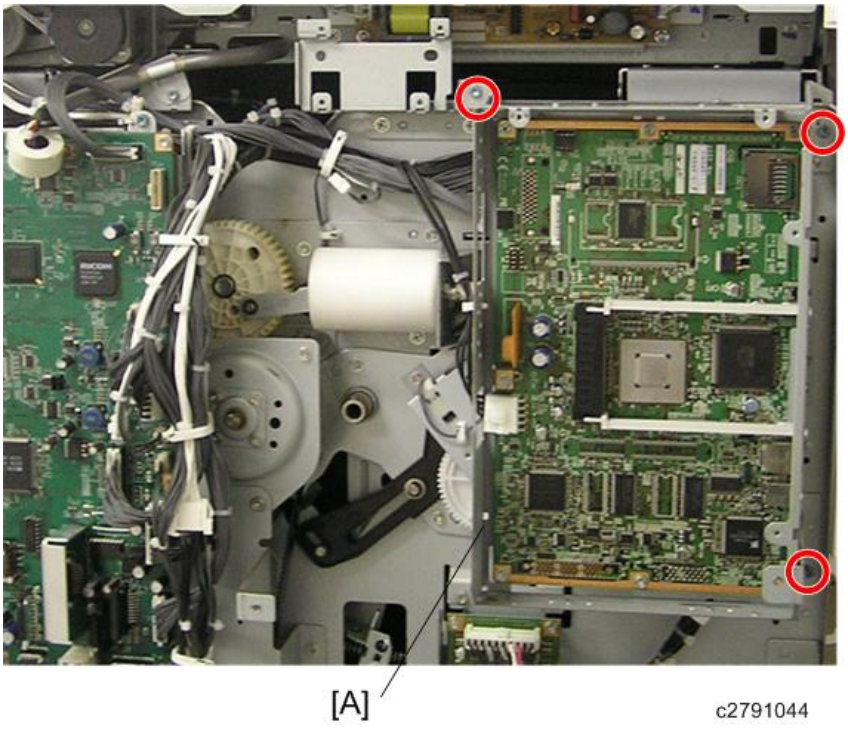
Install the controller in the main machine

1. Rear cover. (☛ p.74 "Rear Cover")

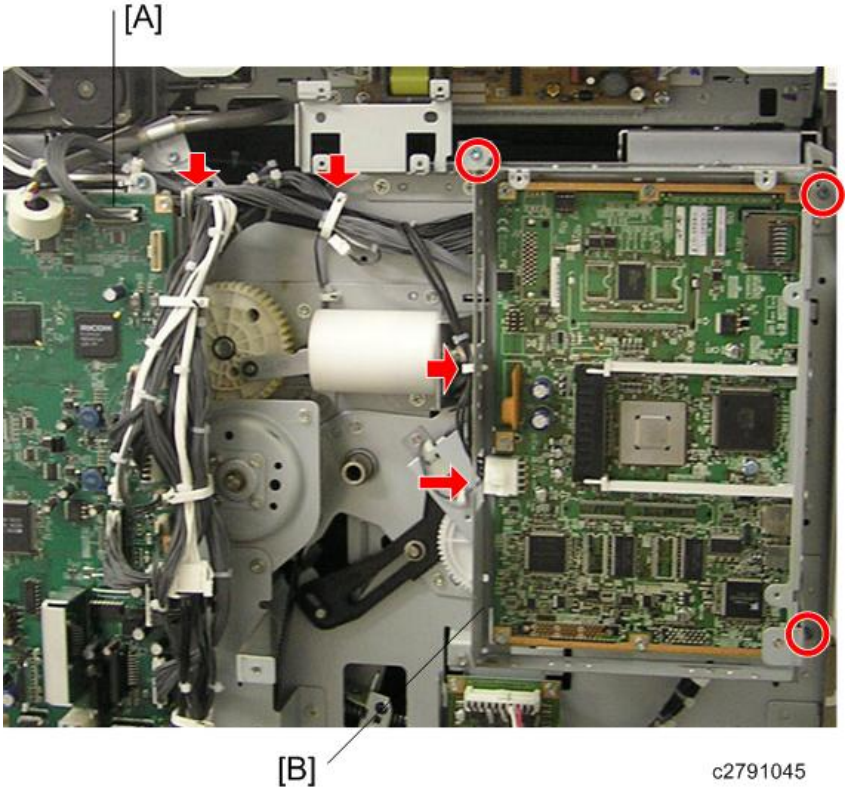


c2791043

2. Open the two clamps to release this part of the harness [A], which will be connected to the controller.
3. Remove the bracket [B] (× 1).



4. Attach the board [A] (× 3).

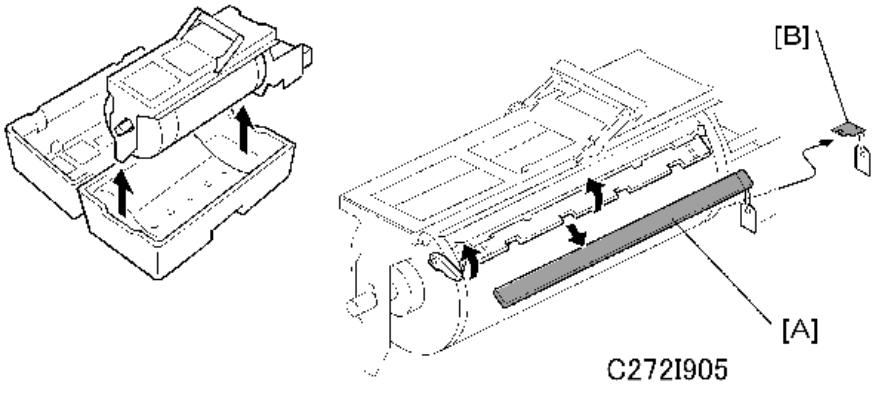


5. Connect the harness [A][B] (× 2, × 3).

Note

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

Optional Drums (C618/C619/C620)



There are three types of optional drum units:

A3 Size: Color drum

B4 Size: Color drum

A4 Size: Black drum (Black ink only)

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

   Note

   - The color drum indicator (or A4 drum indicator) on the operation panel stays lit when a drum is mounted in the machine.
8. Remove the ink cartridge cap.
9. Insert the ink cartridge in the ink holder.

3. Preventive Maintenance

Maintenance Tables

See “Appendices” for the following information.

- Appendix: PM Tables
- Appendix: Service Call Conditions
- Appendix: Service Program Mode

4. Replacement and Adjustment

Beforehand

⚠CAUTION

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

Before you start to work on the machine, please do the following:

If there are printer jobs in the machine, print out all jobs in the printer buffer.

Turn off the main switch and disconnect the power cord and the network cable.

Special Tools

The following are the special tools used for service.

Part Number	Description	Quantity
B645 5010	SD Card	1
B645 6705	PCMCIA Card Adapter	1
B645 6830	USB Reader/Writer	1
A006 9104	Scanner positioning pins (4 pins as a set)	1
A0699502	Alvania 2 Grease	1

Image Adjustment

Adjusts the image position on prints by changing the SP settings.

Adjust the following in the given order.

SP6-10: Master writing speed

SP6-100 to 107: Paper registration

SP6-05: Scanning speed - platen

SP6-06: Scanning speed - ADF mode

SP6-03: Scan start position - platen

SP6-04: Scan start position - ADF

SP6-01: Main scan position - platen

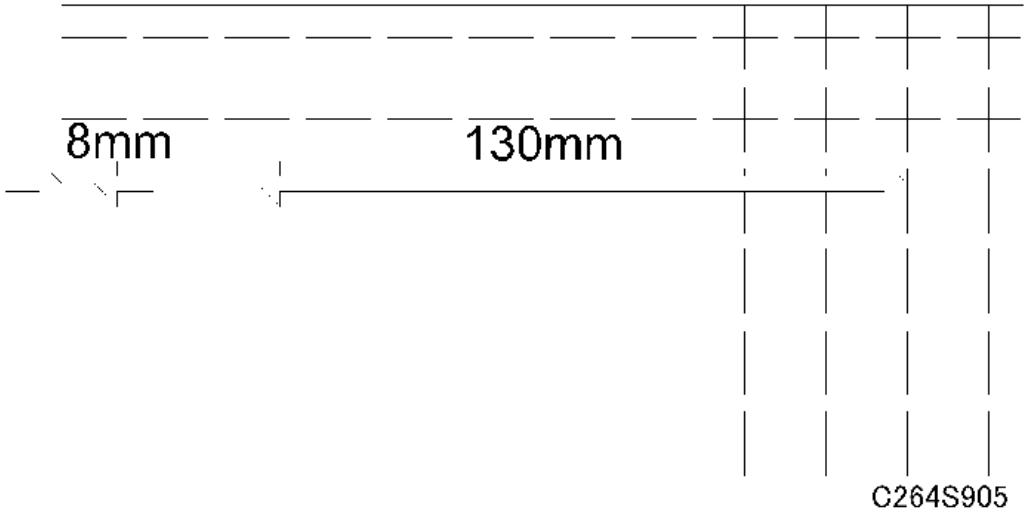
SP6-02: Main scan position - ADF

SP6-20: Standard white execution (CCD calibration)

When correcting errors made when printing with the controller, use only the first two steps.

When correcting errors made when printing with scanned originals, do all adjustments in the given order.

SP6-10: Master Writing Speed



1. Input SP8-10 (Test patterns) and enter "6", then press the Start key.
2. Exit the SP mode, then print 10 copies at 90 rpm (speed 3). Use the 10th print for the adjustment.
3. The length of the 8 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.

SP6-100 to 107: Paper Registration

1. Input SP8-10 (Test patterns) and enter "6", then press the Start key.
2. Exit the SP mode, then print 10 copies at 90 rpm (speed 3). 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 SP6-100 to 107, 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.

SP6-05, 6-06: Scanning Speed – Platen, ADF

1. Make copies of the test pattern printed during the previous adjustments (☛p.67 "Image Adjustment"), in platen mode at 90 rpm (speed 3). Use the 10th print for the adjustment.
2. The length of the 8 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.

SP6-03, 6-04: Scanning Start Position – Platen, ADF

1. Make copies of the test pattern printed during the previous adjustments (☛p.67 "Image Adjustment"), in platen mode at 90 rpm (speed 3). 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.

SP6-01, 6-02: Main Scan Position – Platen, ADF

1. Make a copy in platen mode at 90 rpm (speed 3).
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: Standard White Execution

Do this after one of the following is replaced:

- RAM on the MPU
- White plate located behind the original scale.

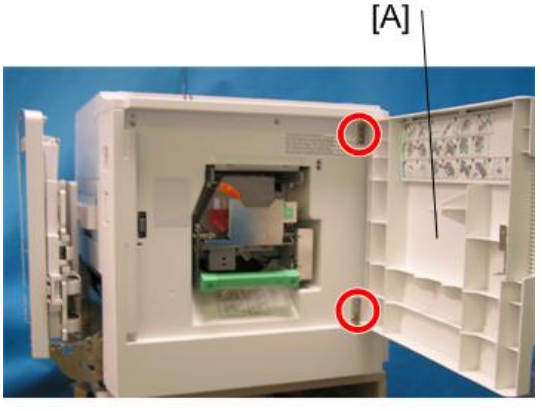
Do it at the end of the image adjustment procedure

1. Place a stack of 10 sheets of paper on the exposure glass.
2. Access SP6-20 and then press the Enter key to start the auto calibration.

Covers and Boards

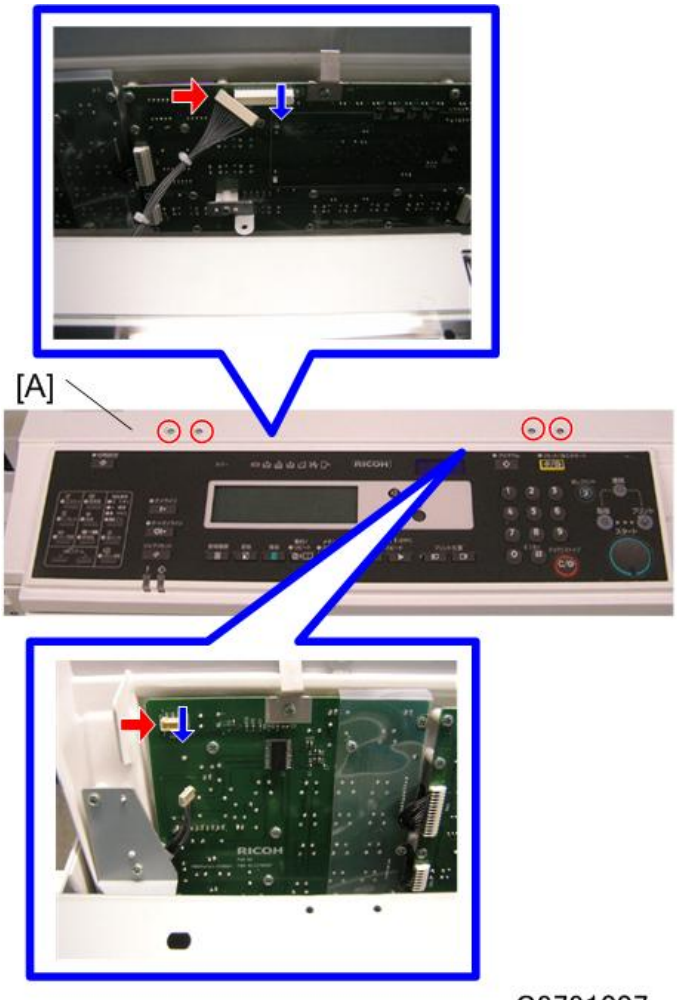
Front Cover, Operation Panel

1. Right cover (☛ p.72 "Right Cover")
2. Left cover (☛ p.73 "Left Cover")



C2791013

3. **Remove the screws on the front door [A] (x 2).**



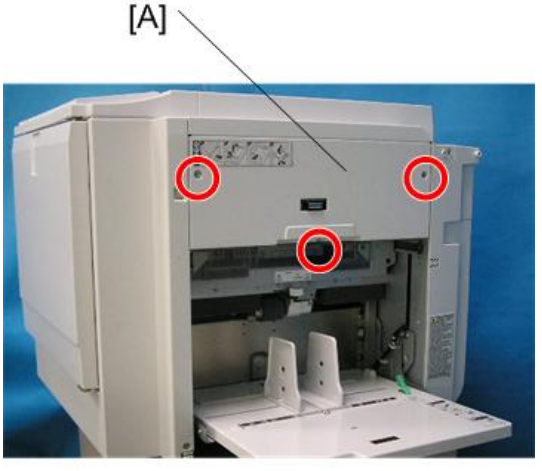
4. **Remove the screws on the operation panel [A] and the connectors on the back side of the operation panel. (×2 × 4)**

CAUTION

- It might be difficult to remove the panel due to projections inside the front cover. Be careful not to damage the cover or other parts when removing the cover from inside the front cover.

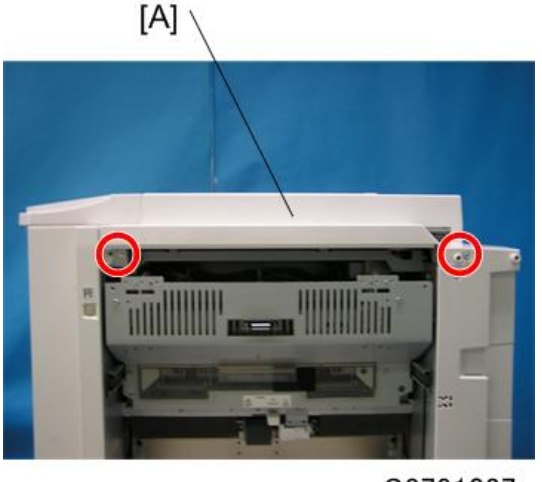
Right Cover

1. Rear cover. (☛p.74 "Rear Cover")



C2791006

2. Master Making Unit (☛p.102 "Master Making Unit")

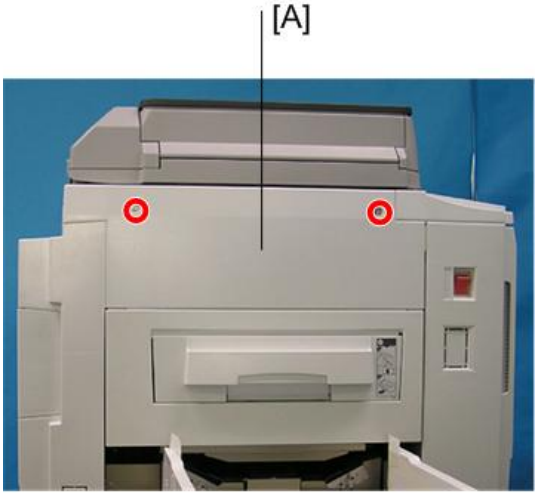


C2791027

3. Right cover [A]. (× 2)

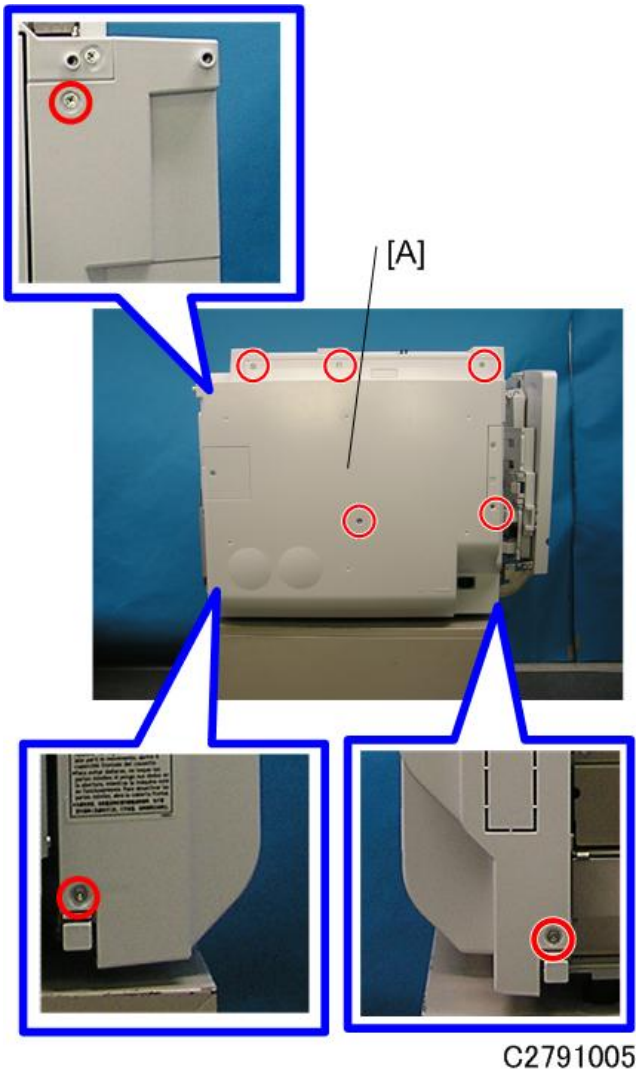
Left Cover

1. Rear cover. (☛p.74 "Rear Cover")



2. Left cover [A]. (× 2)

Rear Cover

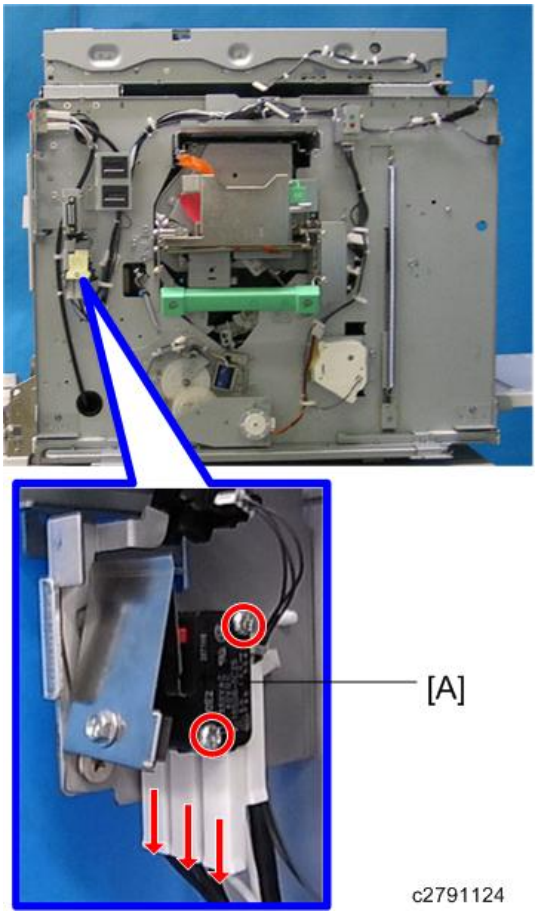


[A]: Rear cover (× 8)

Front Door Safety Switch

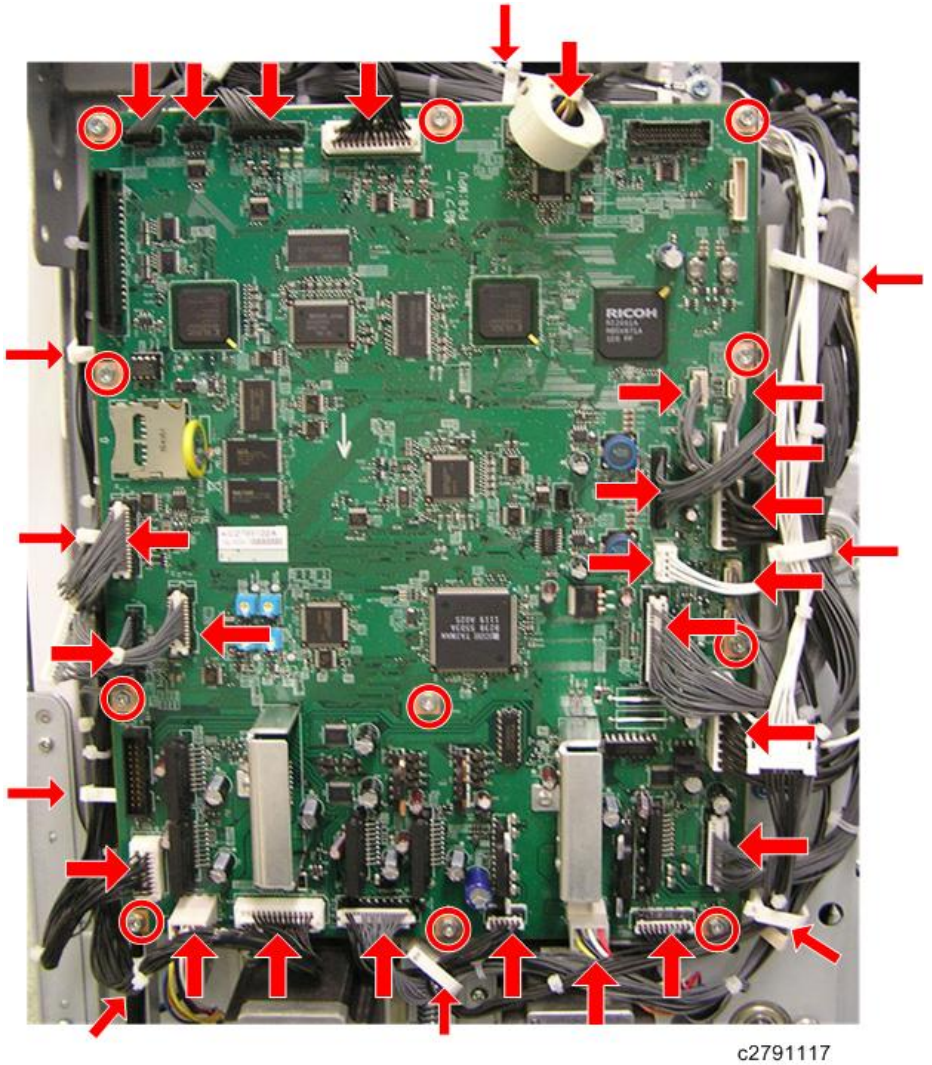
1. Front Cover. (☛ p.70 "Front Cover, Operation Panel")

2. **Front Door Safety Switches. (× 3, × 2)**



MPU

1. **Rear cover. (☛p.74 "Rear Cover")**



c2791117

2. MPU [A] (× 25, × 11, × 9)

c2791116

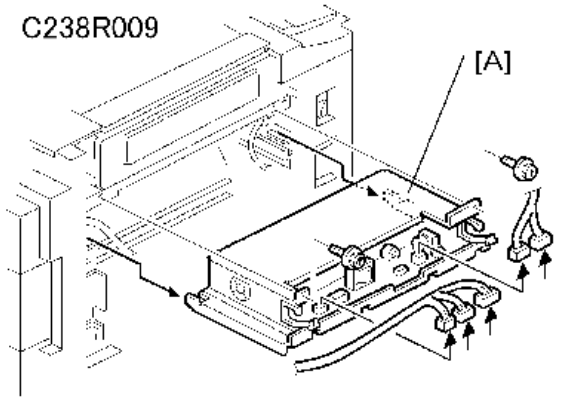
3. NVRAM [A]

⚠CAUTION

- Adjust the master end sensor, duct jam sensor, master edge sensor, and 2nd drum master sensor (☛ Master Feed –p.110 "Duct Jam Sensor Adjustment", p.111 "Master Edge Sensor Adjustment", p.112 "2nd Drum Master Sensor Adjustment" and p.113 "Master End Sensor Adjustment") after installing the new MPU.
- If you install a new RAM, you must do the image adjustments (☛ p.67 "Image Adjustment").

PSU

1. **Left cover (☛ p.73 "Left Cover")**
2. **Master eject unit (☛ p.96 "Master Eject Unit")**



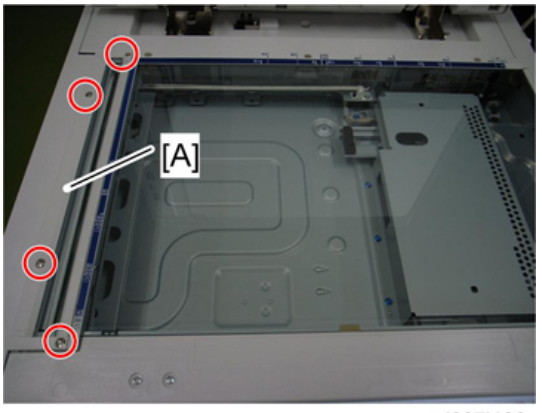
[A]: PSU (× 5, × 2, × 2)

When the PSU is replaced, the thermal head voltage returns to the default. Adjust the thermal head voltage (☛ p.114 "Thermal Head Voltage Adjustment") after installing the new board.

Scanner Unit

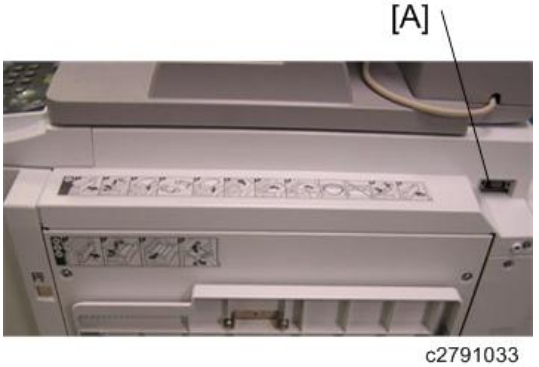
Exposure Glass

1. Open the ADF or platen cover.



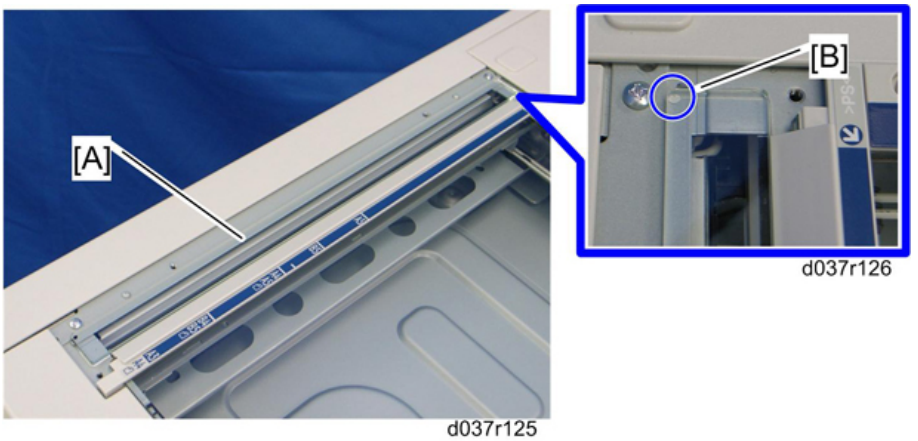
d037i128

2. Glass cover [A] (× 4)



c2791033

3. Disconnect the DF I/F cable [A]



d037r126

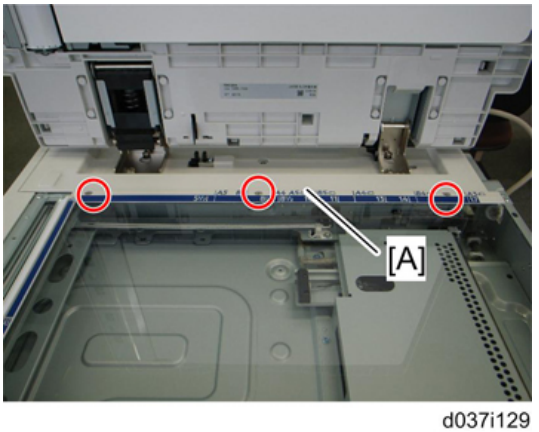
d037r125

4

4. ADF exposure glass [A]

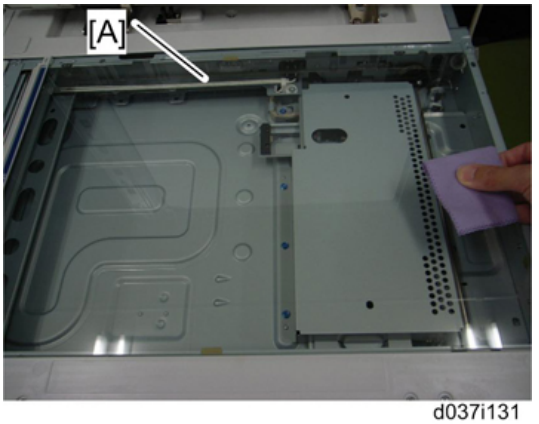
Note

- Position the white marker [B] at the rear left corner when you reattach the ADF exposure glass.



d037i129

5. Rear scale [A] (× 3)



d037i131

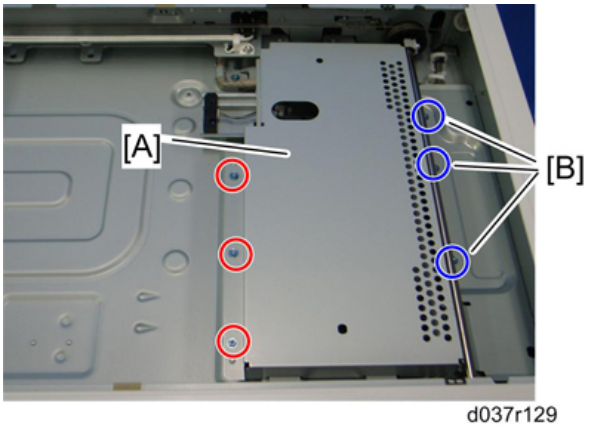
6. Exposure glass [A] with left scale

Note

- Position the marker at the front left corner when you reattach the exposure glass.

Original Length Sensors

1. Exposure glass with left scale (p.79 "Exposure Glass")

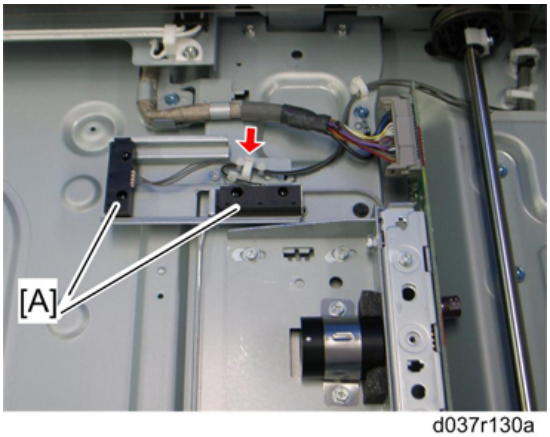


d037r129

2. SBU cover [A] (× 6)

Note

- The three screws [B] do not need to be fully removed. Just loosen them to remove the SBU cover.

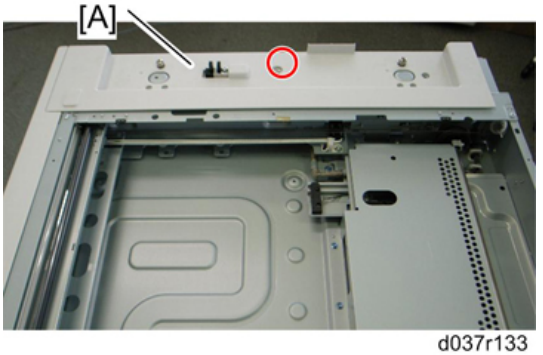


d037r130a

3. Original length sensors [A] (hooks, ×1, × 1 each)

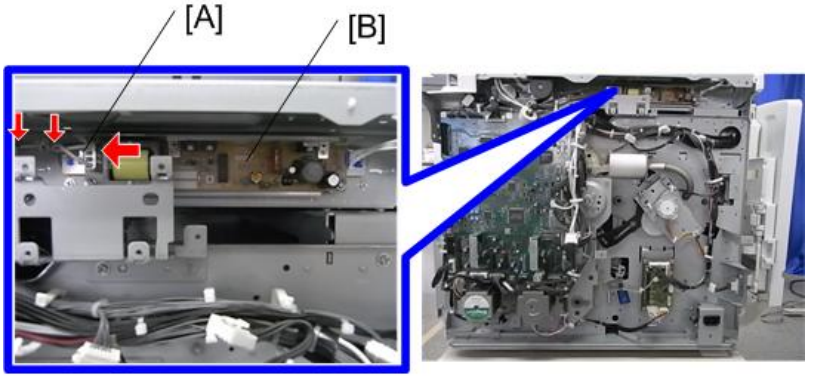
Exposure Lamp

1. Rear cover(☛ p.74 "Rear Cover")
2. Operation panel (☛ p.70 "Front Cover, Operation Panel")
3. Exposure glass (☛ p.79 "Exposure Glass")



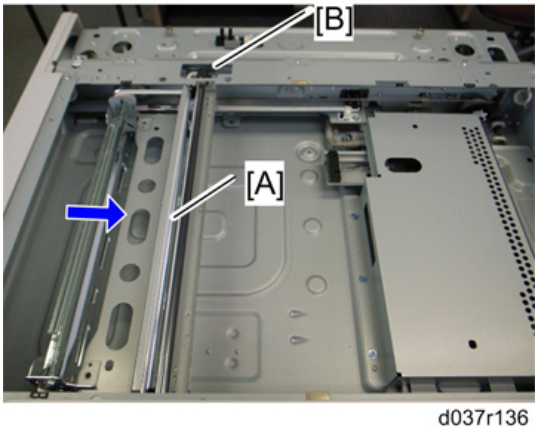
d037r133

4. Scanner rear cover [A] (× 1)



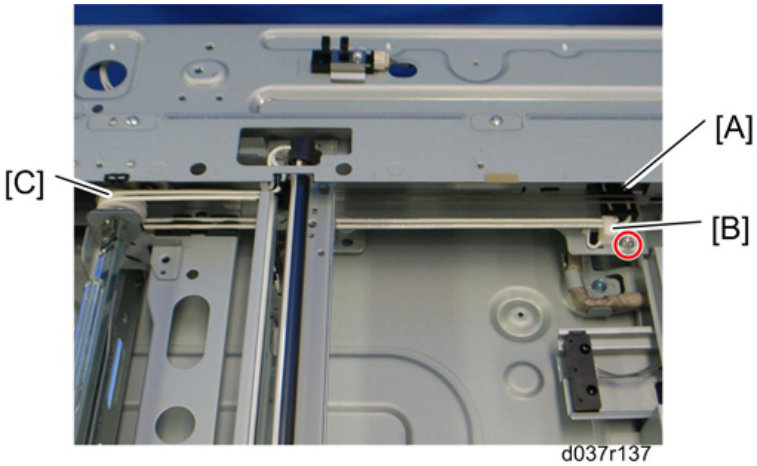
C2791034

5. Disconnect the connector [A] from the lamp stabilizer [B].



d037r136

6. Move the carriage unit [A] to the cutout position [B].



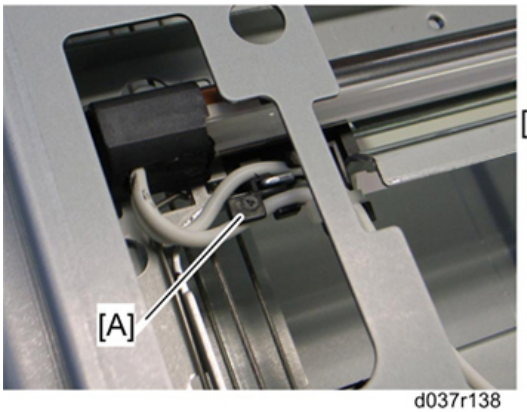
d037r137

7. Cable guide [A] (hooks)

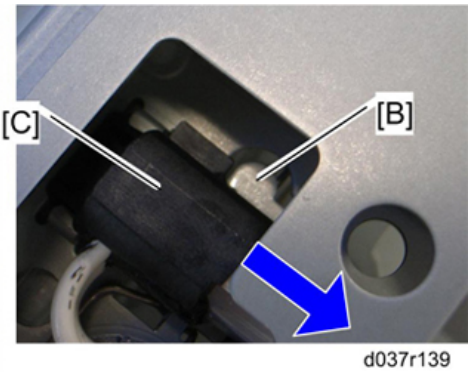
Note

- Keep the cable guide for reassembling.

8. Adjustor clamp [B] (× 1)
9. Pulley [C]

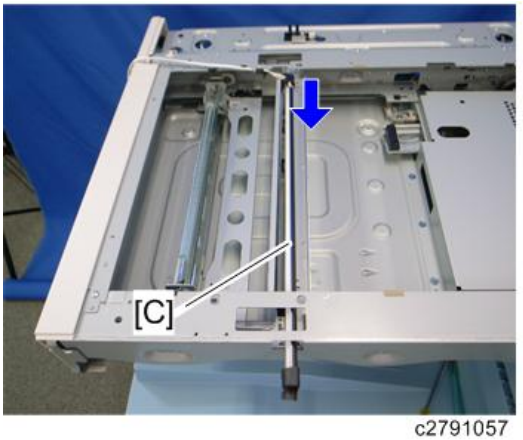


d037r138



d037r139

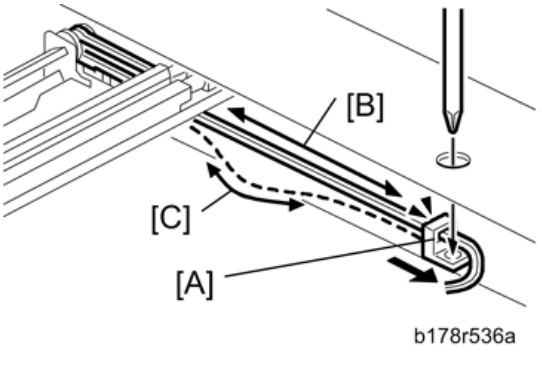
10. Release the cable clamp [A] (one hook under the cable clamp) at the rear edge of the exposure lamp.
11. Hold down the snap [B], and then slide the exposure lamp [C] to the front side.



c2791057

12. Exposure lamp [C]

Reassembling



b178r536a

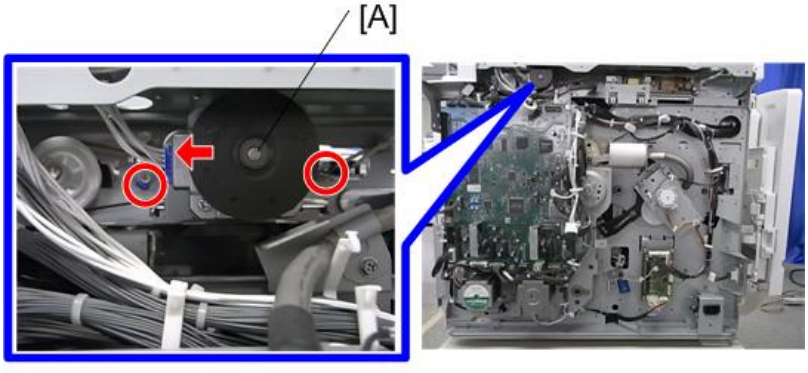
Run the cable so there is no slack. Slide the adjustor clamp [A] to adjust the cable slack.

Note

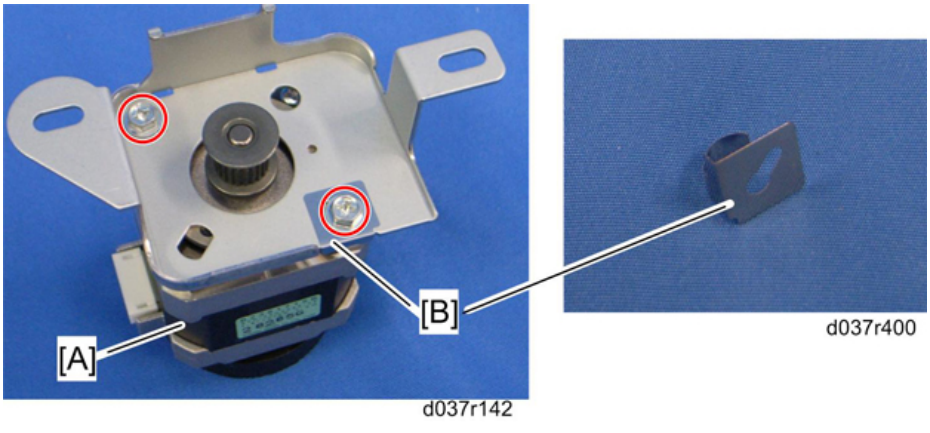
- [B]: Good
- [C]: Not good

Scanner Motor

1. Rear cover (p.74 "Rear Cover")



2. Scanner motor assembly [A] (× 2, spring × 1, × 1, timing belt × 1)



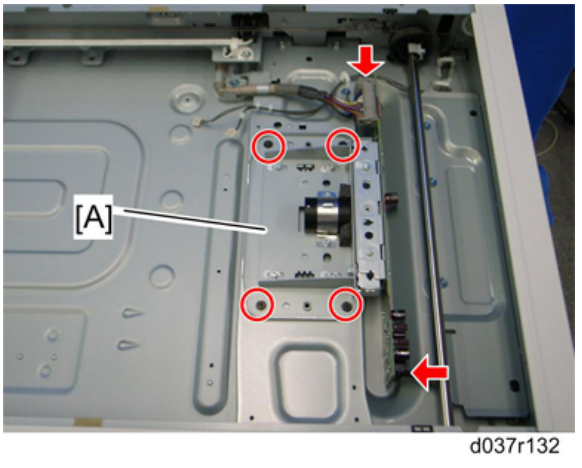
3. Scanner motor [A] (× 2, ground plate [B] × 1)

Note

- Make sure that the ground plate [B] is attached when installing the scanner motor in the scanner motor bracket.
- Do the scanner image adjustment after replacing the scanner motor

Sensor Board Unit (SBU)

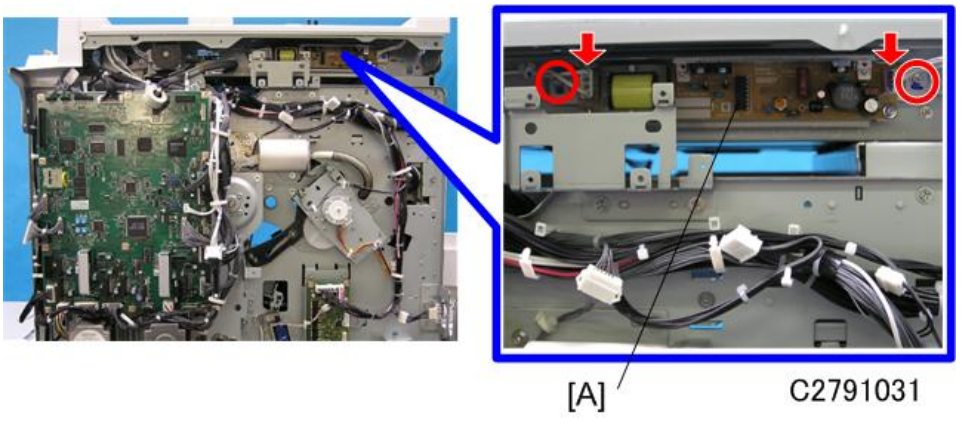
1. Exposure glass (☛p.79 "Exposure Glass")
2. Original length sensor assembly (× 2, ×2, × 2)



3. Sensor board unit [A] (× 4, ground screw × 1, × 2)

Exposure Lamp Stabilizer

1. Rear cover (☛p.74 "Rear Cover")

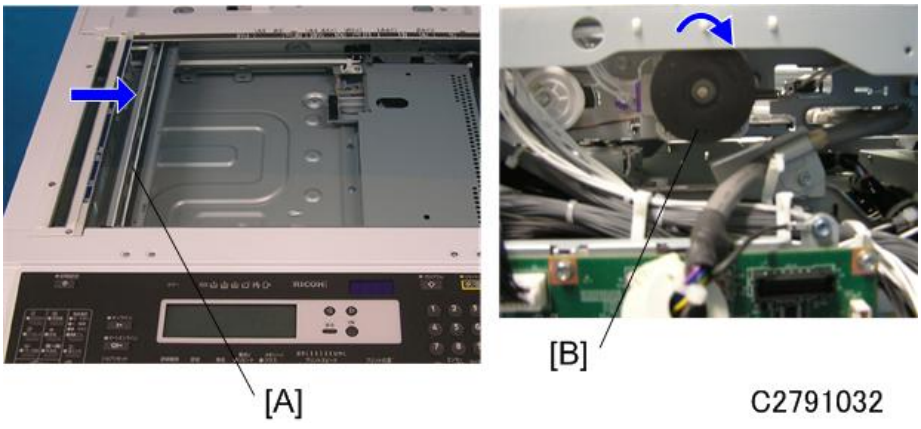


2. Exposure lamp stabilizer assembly [A] (× 2, × 2)

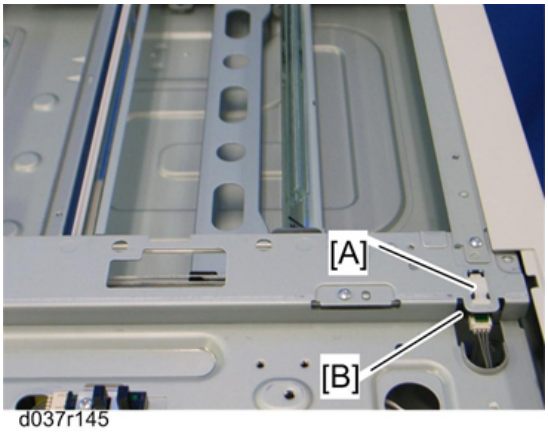
Scanner HP Sensor

1. Rear cover (☛p.74 "Rear Cover")

2. Scanner rear cover (☛p.82 "Exposure Lamp")



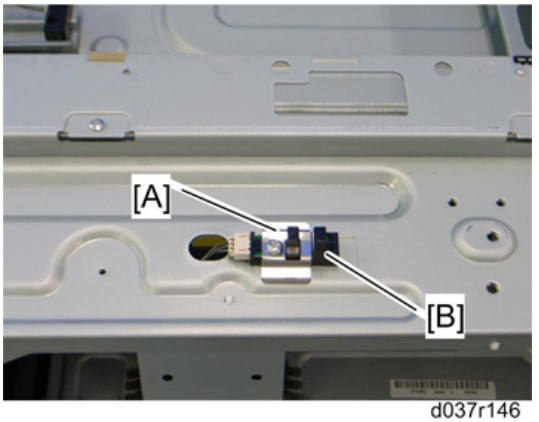
3. Move the 1st scanner carriage [A] to the right side by rotating the scanner motor [B] clockwise.



4. Remove the mylar [A].
5. Remove the scanner HP sensor [B] (× 1, hooks).

Platen Cover Sensor

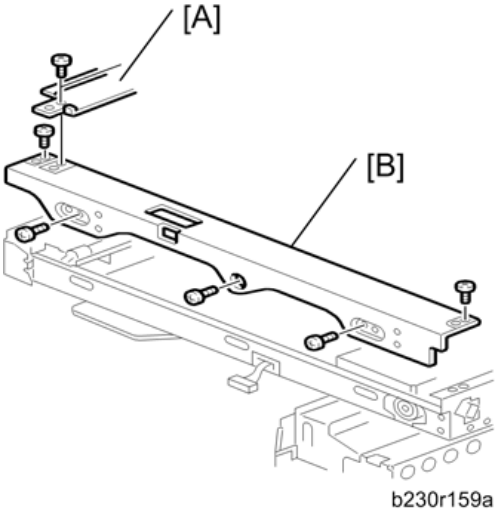
1. Scanner rear cover (☛p.82 "Exposure Lamp")



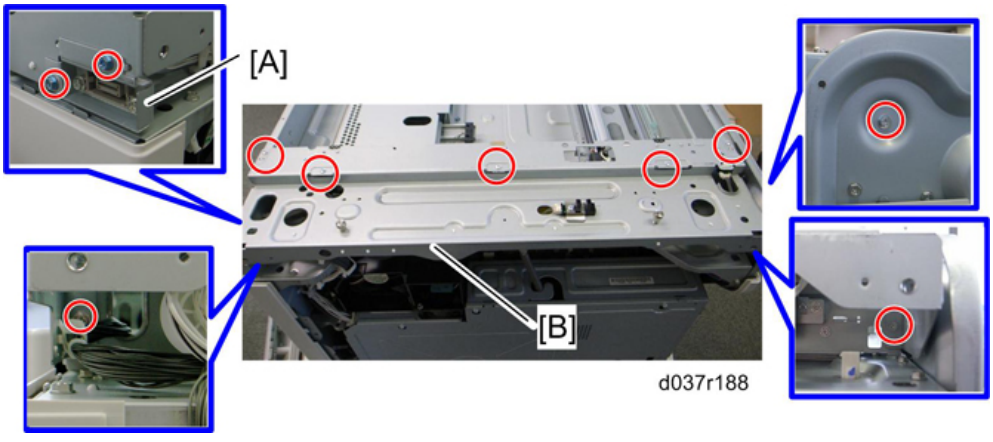
2. Holder bracket [A] (× 1)
3. Platen cover sensor [B] (× 1)

Front Scanner Wire

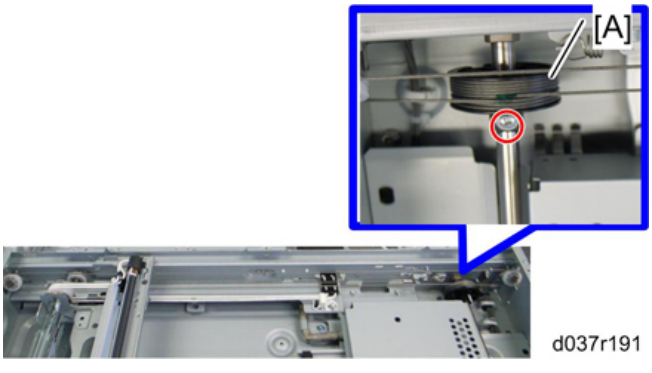
1. Rear cover (☛ p.74 "Rear Cover")
2. Operation panel (☛ p.70 "Front Cover, Operation Panel")
3. Exposure glass (☛ p.79 "Exposure Glass")
4. Left cover (☛ p.73 "Left Cover")



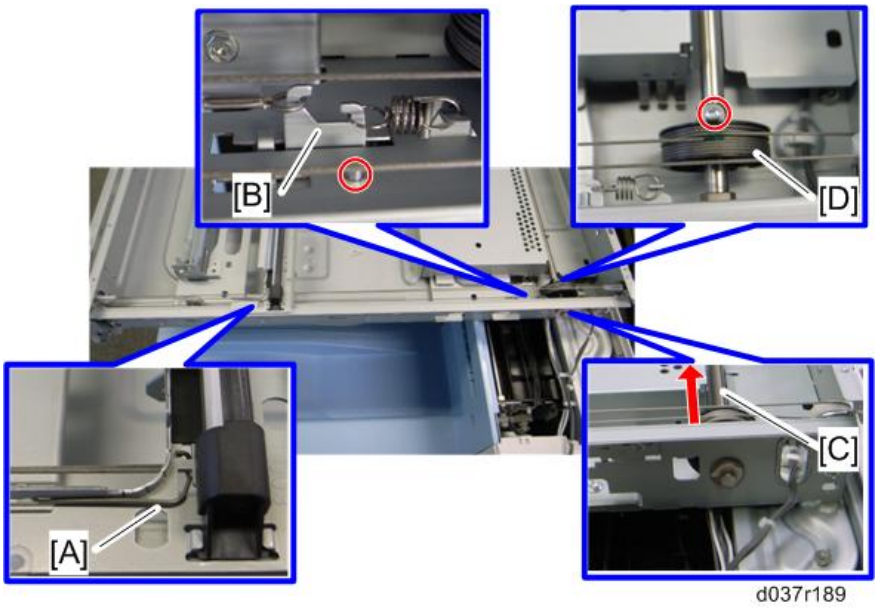
5. Scanner left stay [A] (× 3)
6. Scanner front frame [B] (× 5, × 3)



7. Take aside the connector bracket [A] (× 2).
8. Scanner rear frame [B] (× 8, × all, × all)
9. Scanner motor assembly (p.85 "Scanner Motor")

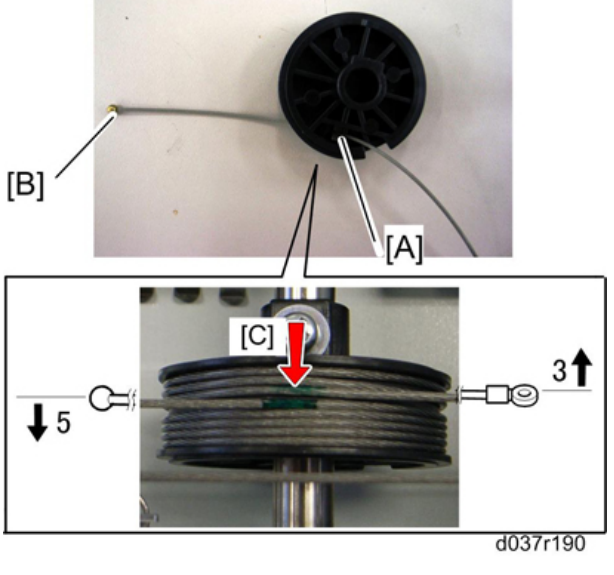


10. Rear scanner drive pulley [A] (× 1)



11. Front scanner wire clamp [A]
12. Loosen the front scanner wire bracket [B] (× 1)
13. Front scanner wire.
14. Move the shaft [C] in the red arrow direction (× 1: at front), and remove the scanner drive pulley [D] (× 1).

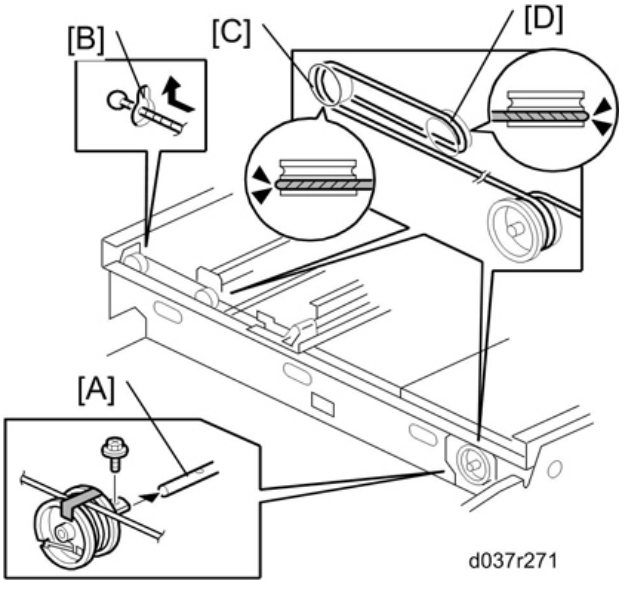
Reinstalling the Front Scanner Wire



1. Position the center ball [A] in the middle of the forked holder.
2. Pass the right end (with the ball) [B] through the square hole. Pass the left end (with the ring) through the notch.
3. Wind the right end counterclockwise (shown from the machine's front) five times. Wind the left end clockwise three times.

Note

- The two green marks [C] come together when you have done this. Stick the wire to the pulley with tape. This lets you easily handle the assembly at the time of installation.

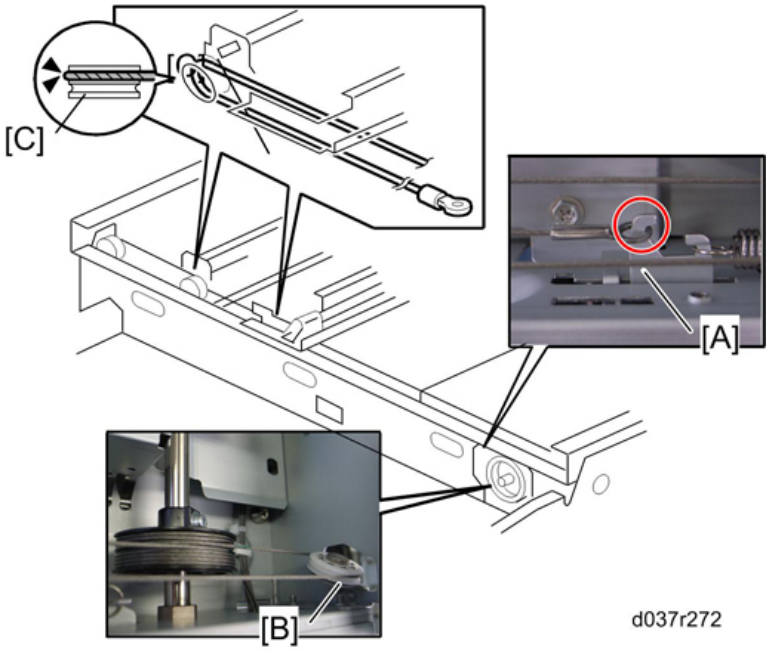


4. Install the drive pulley on the shaft [A] (× 1, × 1).

Note

- Do not attach the pulley to the shaft with the screw at this time.

5. Insert the left end into the slit [B]. The end should go via the rear track of the left pulley [C] and the rear track of the movable pulley [D].

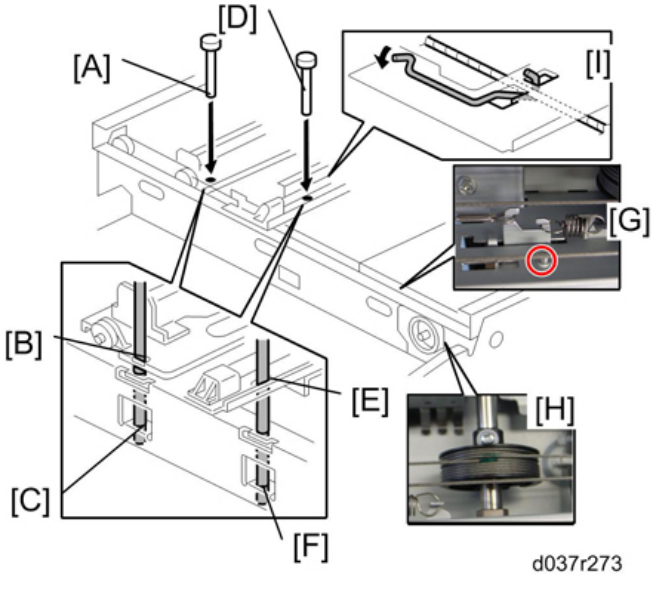


6. Hook the right end onto the front scanner wire bracket [A]. The end should go via the rear track of the right pulley [B] and the rear track of the movable pulley [C].

Note

- Do not attach the scanner wire bracket with the screw at this time.

7. Remove the tape from the drive pulley.



8. Insert a scanner positioning pin [A] through the 2nd carriage hole [B] and the left holes [C] in the front rail. Insert another scanner positioning pin [D] through the 1st carriage hole [E] and the right holes in the front rail [F].
9. Insert two more scanner positioning pins through the holes in the rear rail.
10. Screw the drive pulley to the shaft [G].
11. Screw the scanner wire bracket to the front rail [H].
12. Install the scanner wire clamp [I].
13. Pull out the positioning pins.

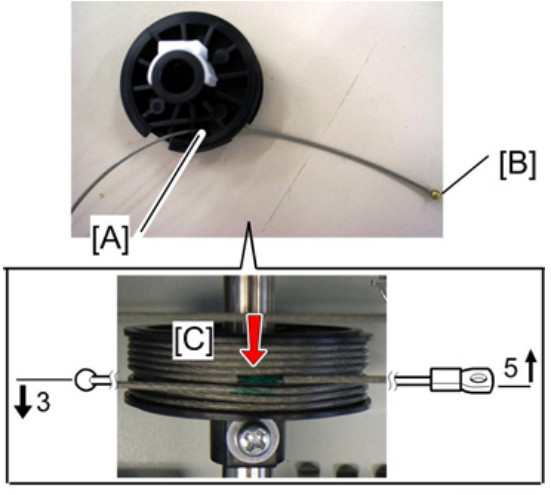
Note

- Make sure the 1st and 2nd carriages move smoothly after you remove the positioning pins. Do steps 8 through 13 again if they do not.

Rear Scanner Wire

1. Rear cover (☛ p.74 "Rear Cover")
2. Operation panel (☛ p.70 "Front Cover, Operation Panel")
3. Exposure glass (☛ p.79 "Exposure Glass")
4. Left cover (☛ p.73 "Left Cover")
5. Scanner front frame(☛ p.88 "Front Scanner Wire")
6. Scanner left stay (☛ p.88 "Front Scanner Wire")
7. Scanner rear frame (☛ p.88 "Front Scanner Wire")
8. Follow steps 10 through 14 in the Front Scanner Wire procedure. You can remove the rear scanner wire in the same way as replacing the front scanner wire.

Reinstalling the Rear Scanner Wire



1. Position the center ball [A] in the middle of the forked holder.
2. Pass the left end (with the ball) [B] through the drive pulley notch. Pass the right end (with the ring) through the drive pulley hole.
3. Wind the left end [B] clockwise (shown from the machine's front) five times. Wind the right end counterclockwise three times.

   Note

   - The two green marks [C] come together when you do this. Attach the wire to the pulley with tape. This lets you easily handle the assembly at the time of installation.
4. Install the drive pulley on the shaft.

   Note

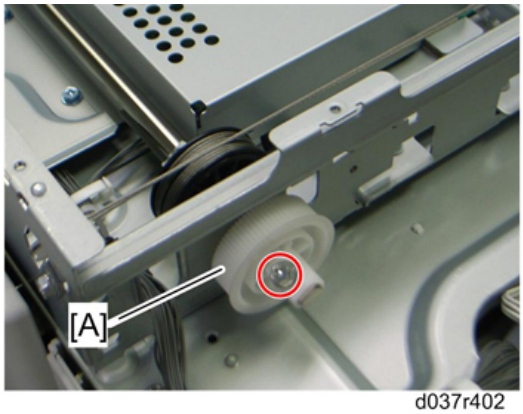
   - Do not attach the pulley on the shaft with the screw at this time.
5. Install the wire.

   Note

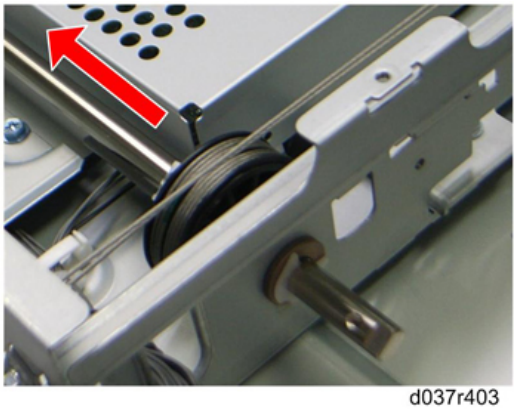
   - The winding of the wire on the three pulleys at the rear of the scanner should be the same as the winding on the three pulleys at the front. This must show as a mirror image.

Example: At the front of the machine, the side of the drive pulley with the three windings must face the front of the machine. At the rear of the machine, it must face the rear.

Do steps 7 through 13 from the "Reinstalling the Front Scanner Wire"(☛ p.88 "Front Scanner Wire")



d037r402



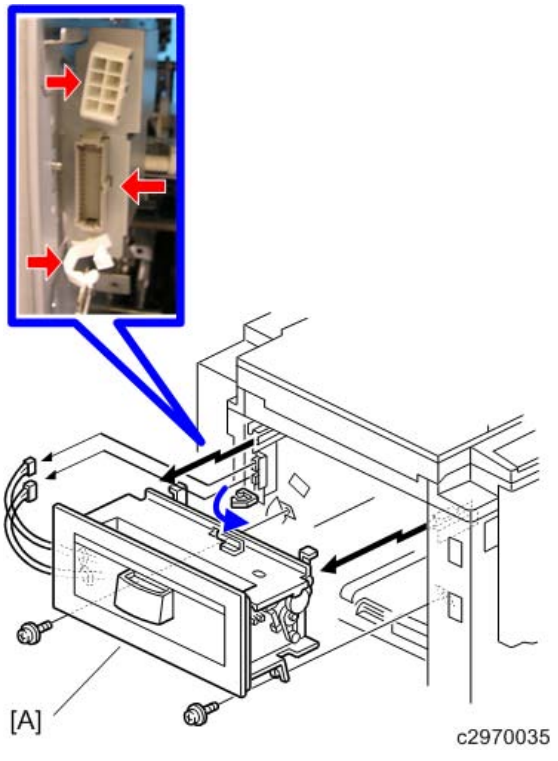
d037r403

Note

- When removing the rear scanner wire, removing the timing pulley [A] is required before moving the shaft (× 1).

Master Eject Unit

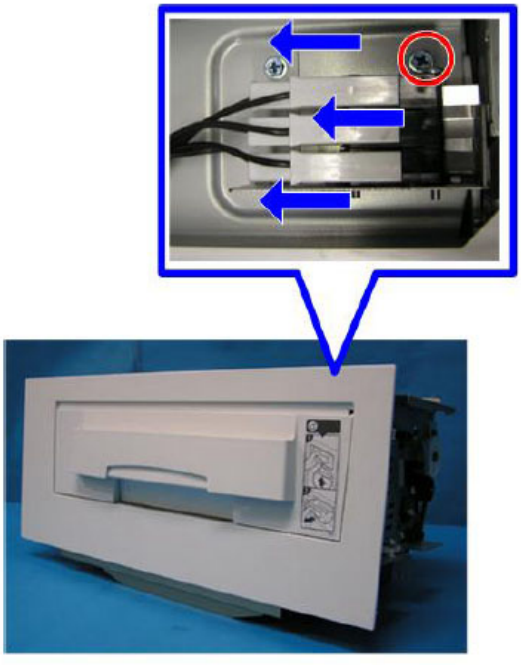
Master Eject Unit



[A]: Master eject unit (×1, × 2, × 1)

Master Eject Safety Switch

1. Master Eject Unit(☛p.96 "Master Eject Unit").

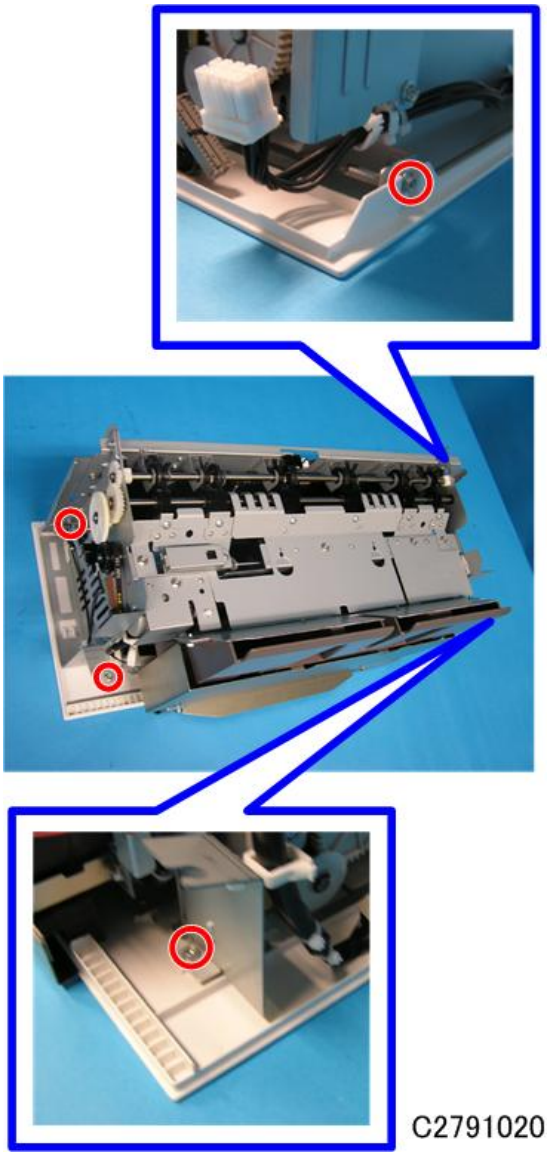


c2791106

2. Remove the Master Eject Safety Switch. (× 1, × 1)

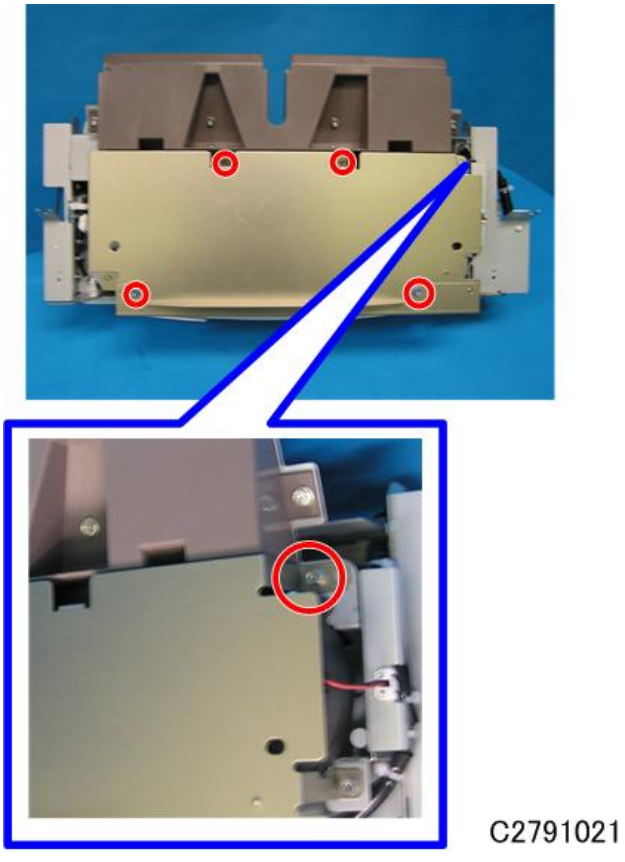
Eject Box Set Switch

1. Remove the Master Eject Unit. (☛ p.96 "Master Eject Unit").



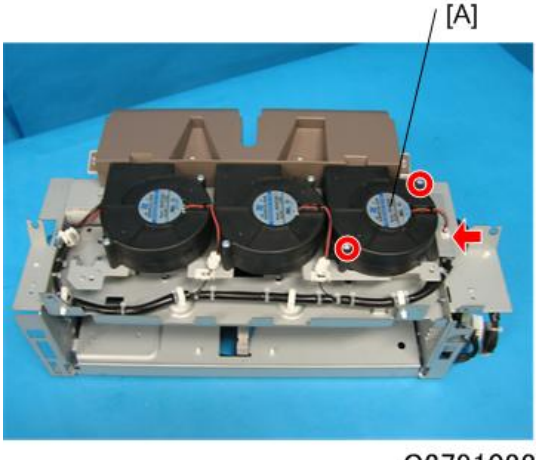
C2791020

2. Remove the cover. (× 4)



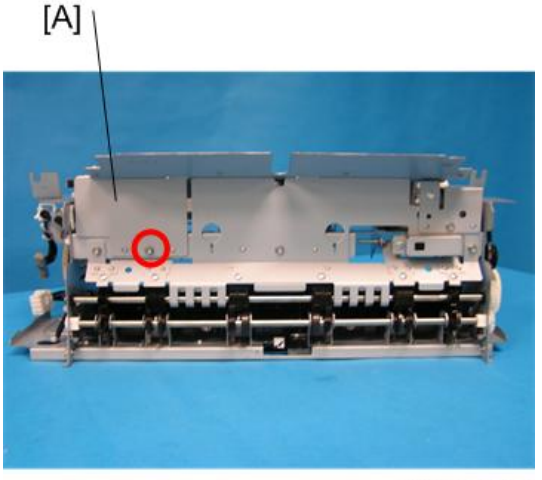
C2791021

3. Remove the face plates (× 5)



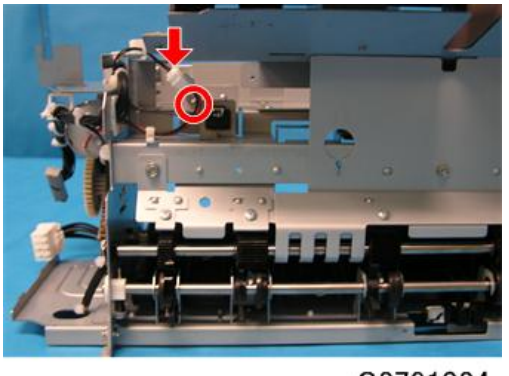
C2791022

4. Remove the Air Knife Fan [A]. (× 1, × 2)



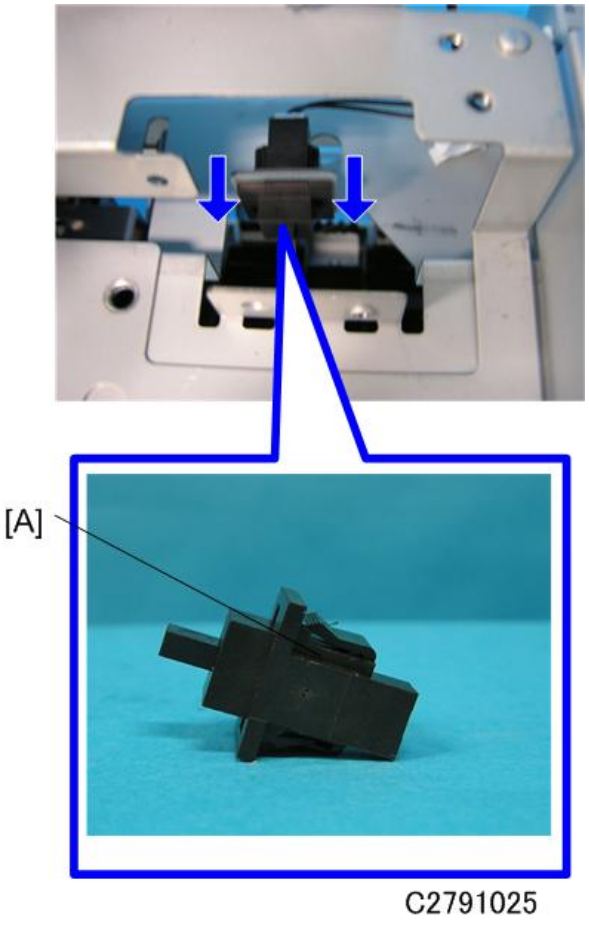
C2791023

5. Remove the plate [A].(× 1)



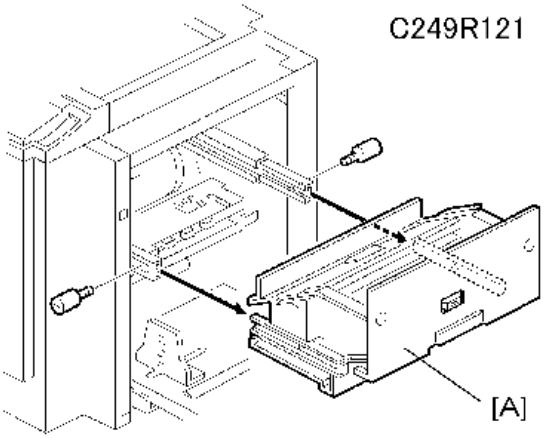
C2791024

6. Remove the Eject Box Set Switch(× 1, × 1).


[A]
C2791025

Master Feed

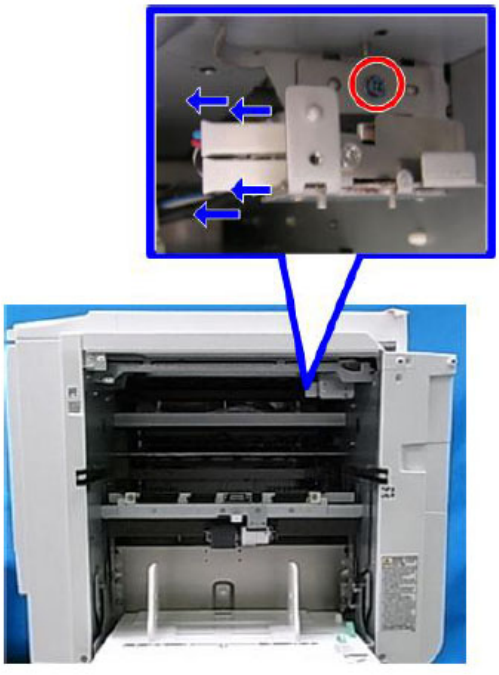
Master Making Unit



[A]: Master making unit (× 2)

Plotter Safety Switch

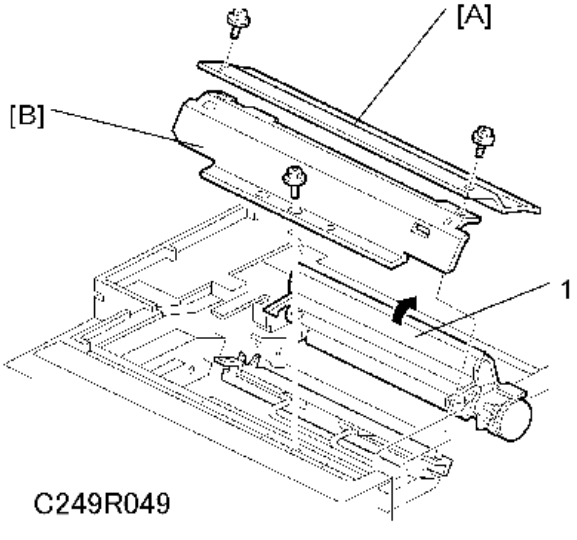
1. Master Making Unit (p.102)
2. Remove the Plotter safety switch. (× 4, × 1)



c2791105

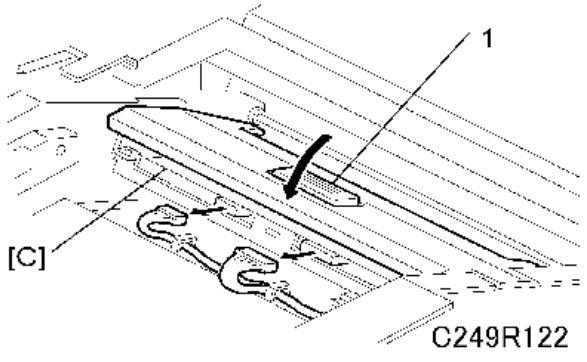
Thermal Head

1. Remove the master making unit (☛p.102 "Master Making Unit")

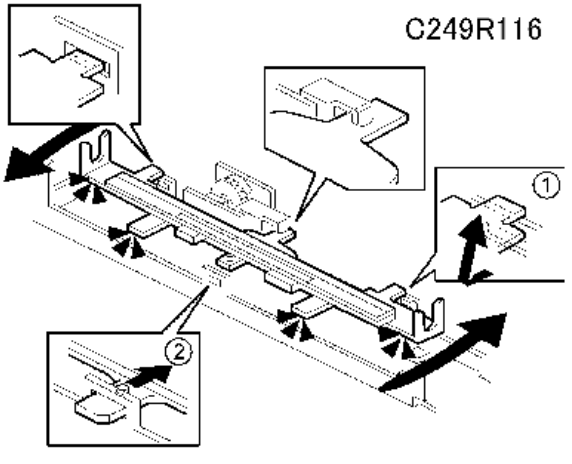


C249R049

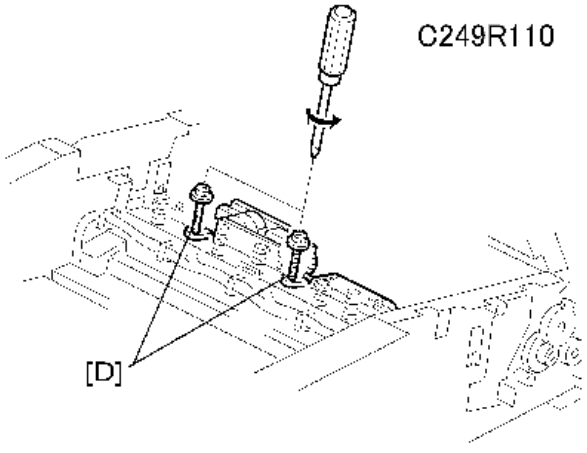
2. Open the platen roller unit [1].
3. Remove the following:
   [A]: T/H upper cover (× 2)
   [B]: T/H side cover (× 1)



4. Close the platen roller unit [1].
5. Remove the thermal head [C] (× 2).



6. Turn the thermal head clockwise and remove a tab (1).
7. Turn the thermal head counterclockwise, and remove a tab (2).

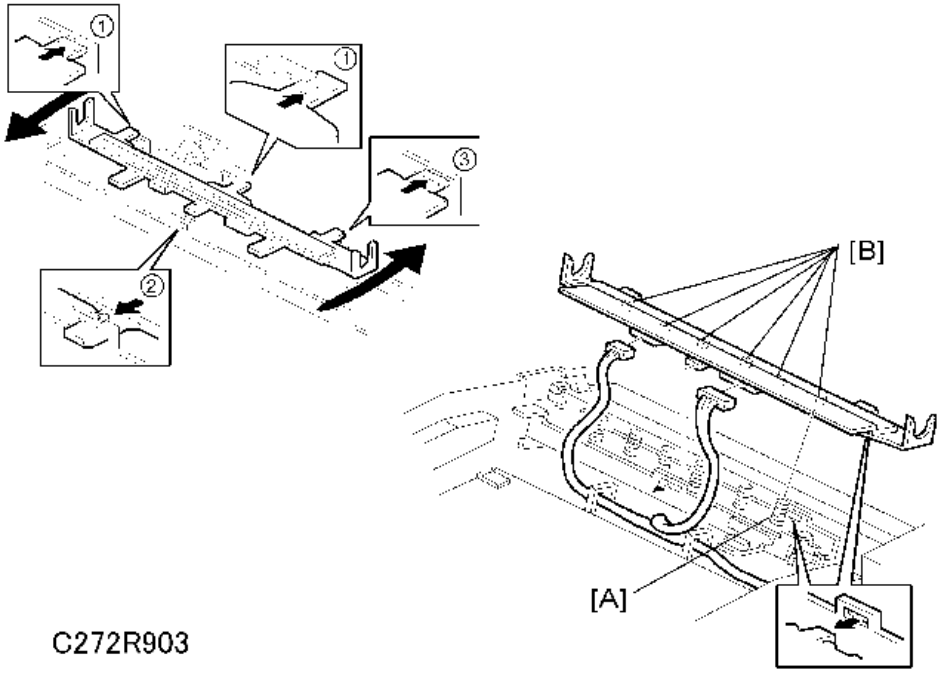


8. Remove the thermal head slowly.

Note

- If you cannot access SP modes, open the master making unit and loosen the 2 screws [D].

Installation



1. Insert the tabs (1) at the operation side and the middle.
2. Turn the thermal head counterclockwise and insert the tab (2) at the front.

3. Turn the thermal head clockwise and insert the tab (3) at the non-operation side.

Make sure to follow the above procedure or the thermal head will not be installed correctly.

Note

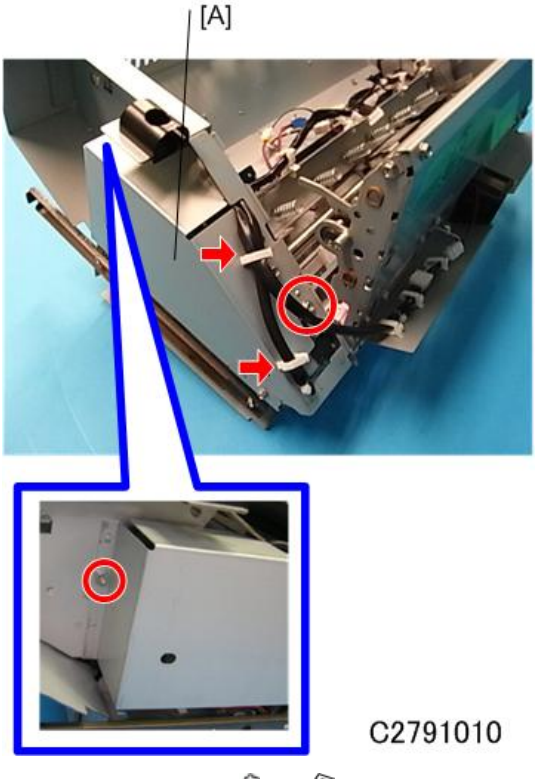
- Fit the base's springs [A] over the protrusions [B] on the underside of the thermal head (6 points).
- While fitting the tops of the springs [A] over the protrusions on the underside of the thermal head, make sure that all protrusions are properly fitted into the springs.

⚠CAUTION

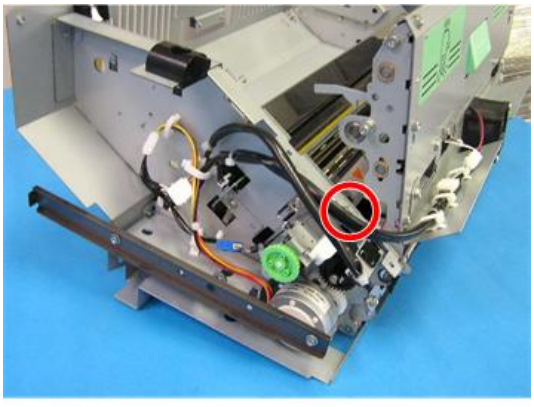
- Adjust the thermal head voltage (☛p.114 "Thermal Head Voltage Adjustment") after installing the new thermal head

Duct Plate HP Sensor, Duct Plate Motor

1. Master making unit (☛p.102 "Master Making Unit")

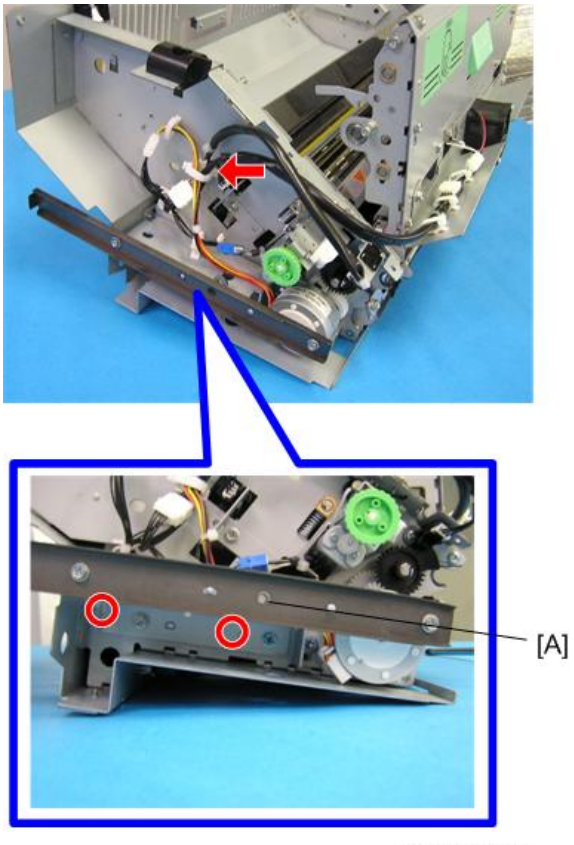


2. Remove the cover [A] (× 2, × 2)



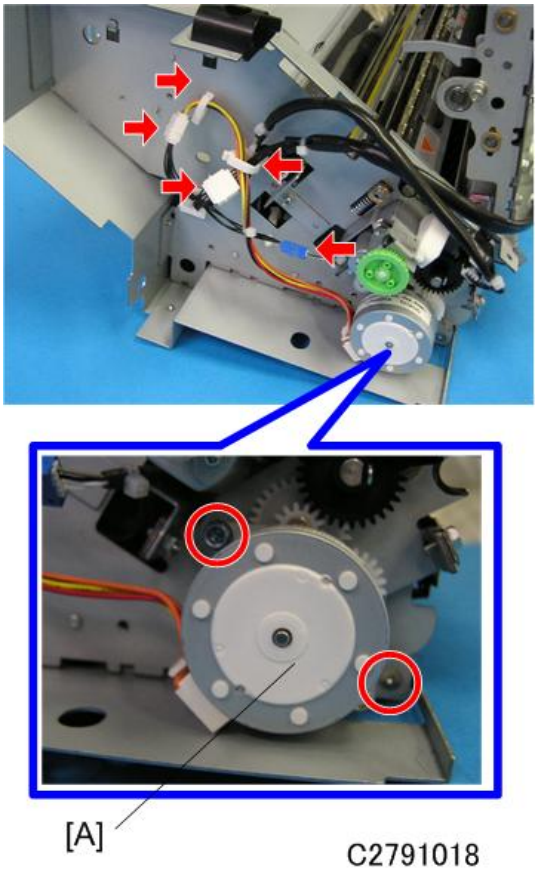
C2791030

3. Remove the duct plate HP sensor (× 1)



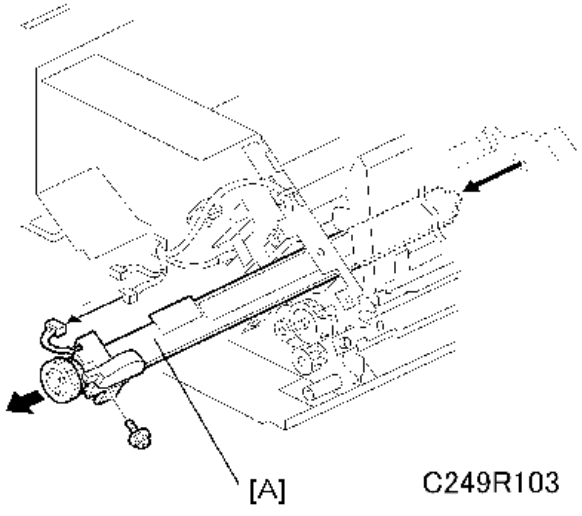
C2791017

4. Remove the rear rail bracket [A] (× 2, × 1)



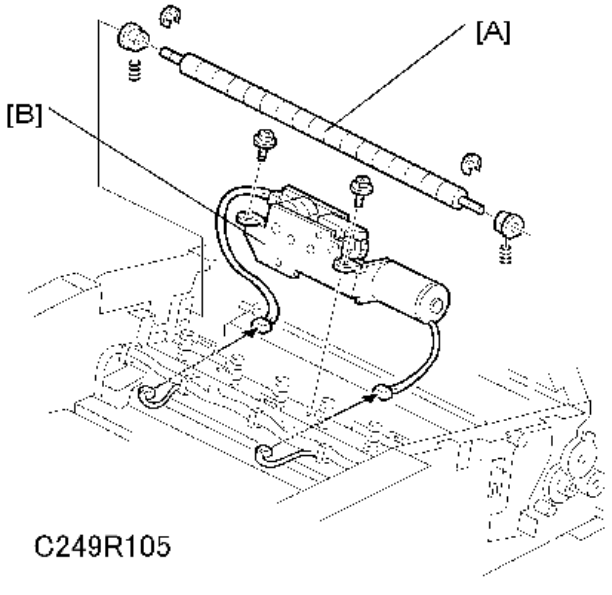
5. Remove the duct plate motor [A] (× 3, × 2, × 2)

Cutter Unit



[A]: Cutter unit (× 1, × 1)

Thermal Head Driving Unit



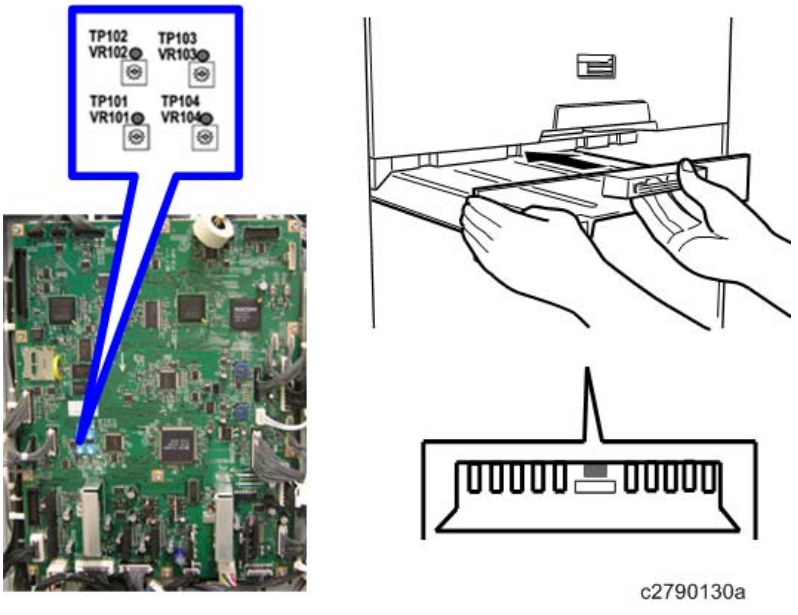
- Thermal head (☛p.103 "Thermal Head")
- Rear cover (☛p.74 "Rear Cover")
- Cutter unit (☛p.109 "Cutter Unit")

[A]: Anti-static roller

[B]: Thermal head driving unit (× 2, × 2)

Duct Jam Sensor Adjustment

Ensures that the sensor detects when a master remains in the duct.



Standard: 0.5 volts (within "+0.1" and "-0.1"volts)

Tools: Circuit tester

- Rear cover (☛ p.74 "Rear Cover")

1. Check if a master remains in the duct. If a master remains in the duct, remove the master from the duct.
2. Connect the terminals of a circuit tester to TP102 and a grounded place (e.g. iron base)
3. Connect the power plug, and turn on the main switch to access SP mode.
4. Select SP6-52 (Duct jam sensor voltage).
5. Press the Print Start key.
6. Measure the voltage with the circuit tester, and turn VR102 until the value becomes between "-0.1" and "+0.1" volts from the standard value (0.5 volts)

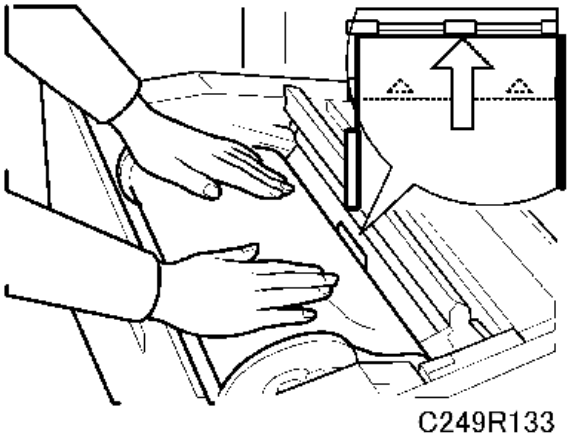
Note

- When the voltage cannot be adjusted to the standard value, adjust the threshold level of the duct jam sensor. (SP6-52: Duct jam sensor voltage)

Standard Value Master present	Threshold level (SP6-52)	Standard Value Master not present
Above 2.0V	2.0V	0.5 +-0.1V

Master Edge Sensor Adjustment

Ensures that the sensor detects the leading edge of the master.



Standard: 2.0 volts (within "+0.1" and "-0.1"volts)

Tools: Circuit tester

- Rear cover (☛p.74 "Rear Cover")

1. Connect the terminals of a circuit tester to TP103 and a grounded place (e.g. iron base)
2. Connect the power plug, and turn on the main switch to access SP mode.
3. Select SP6-51 (Master edge sensor voltage).
4. Remove the lower master tray.
5. Pull out the master-making unit from the machine and open the master set cover.
6. Insert the leading edge of the master under the master tension roller, then close the master set cover and reinstall the master-making unit in the machine.

RTB 10 Modified

7. Measure the voltage with the circuit tester, and turn VR103 until the value becomes between "-0.1" and "+0.1" volts from the standard value (3.0 volts).

Note

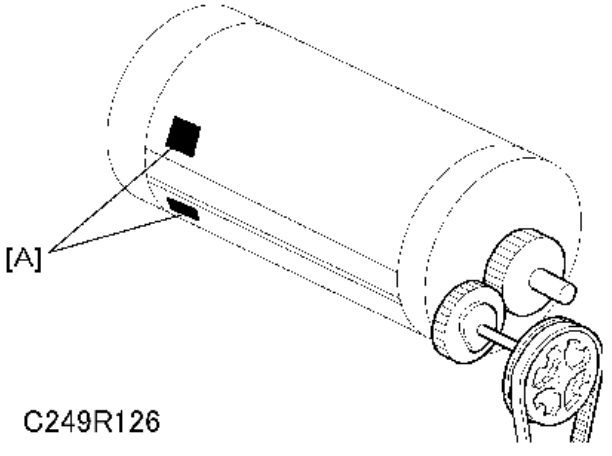
- When the voltage cannot be adjusted to the standard value, adjust the threshold level of the master edge sensor. (SP6-51: Master edge sensor voltage)

RTB 10
Modified

Standard Value Master present	Threshold level (SP6-51)	Standard Value Master not present
3.0V+-0.1V	2.8V	Above 3.0V

2nd Drum Master Sensor Adjustment

Ensures that the sensor detects if there is a master on the drum.



Standard: 2.2 volts (within "+0.1" and "-0.1"volts)

Tools: Circuit tester

- Rear cover (☛p.74 "Rear Cover")

1. Check that there is a master wrapped on the drum.
2. Connect the terminals of a circuit tester to TP104 and a grounded place (e.g. iron base)
3. Connect the power plug, and turn on the main switch to access SP mode.
4. Select SP6-53 (2nd drum master sensor voltage) and press the master-making key.
5. Measure the voltage with the circuit tester, and turn VR104 until the value becomes between "-0.1" and "+0.1" volts from the standard value (2.2 volts).
6. Turn off the main switch, then remove the master that is wrapped around the drum and install the drum in the main body.
7. Turn on the main switch to access SP mode.
8. Select SP6-53 (2nd drum master sensor voltage) and press the master-making key.
9. Check if the value of the voltage becomes below 0.8 volts.
10. If the voltage is not correct, clean the black patch [A] on the screen.

Note

- When the voltage cannot be adjusted to the standard value, adjust the threshold level of the 2nd drum master sensor. (SP6-53: 2nd drum master sensor voltage)

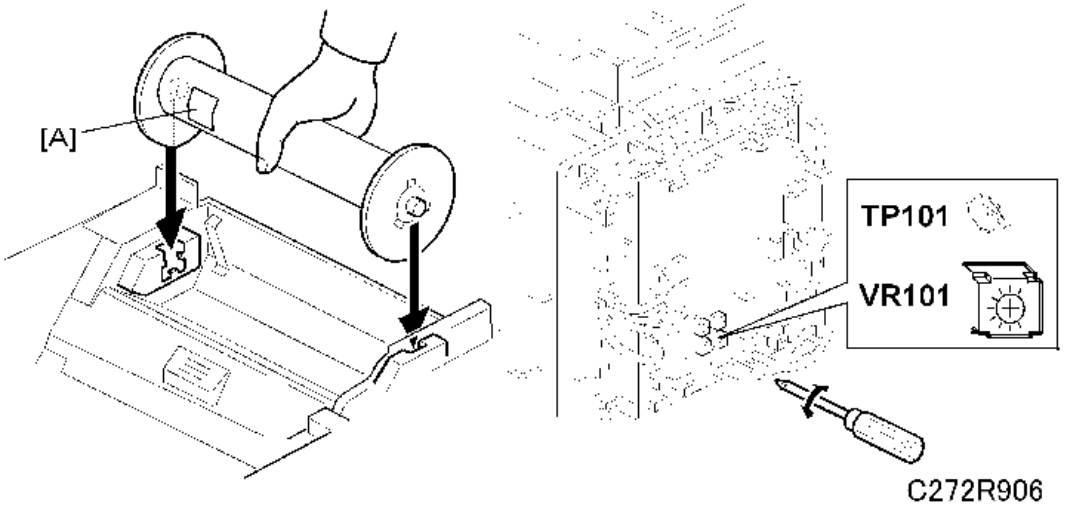
Standard Value Master present	Threshold level (SP6-53)	Standard Value Master not present
2.2V+-0.1V	1.0V	Below 0.8V

Master End Sensor Adjustment

Ensures that the sensor detects the end mark (a solid black area) on the master roll.

Standard: 1.8 volts (within "+0.1" and "-0.1" volts)

Tools: Circuit tester, the core of a used master roll (the core has no master)



- Rear cover (☛ p.74 "Rear Cover")

1. Connect the terminals of a circuit tester to TP101 and to a grounded place (e.g. iron base).
2. Put a piece of master [A] on the used master roll.
3. Place the core of the used master roll inside the master-making unit, and close the master-making unit.

Note

- Insert the core so that the piece of master [A] faces towards the master end sensor.

4. Connect the power plug, and turn on the main switch.

5. Measure the voltage with the circuit tester, and turn VR101 until the value becomes between "-0.1" and "+0.1" volts from the standard value (1.8 volts).

Note

- Please refer to the following table for the standard voltages.
- If the voltage cannot be adjusted to the standard value, do not change the threshold level using SP6-50 (Master end sensor voltage).

When set a new roll (master present)	Standard value Master end (4 layers of master on the core)	End mark only
Above 3.0V	Below 2.0V	Below 0.8V

Thermal Head Voltage Adjustment

⚠CAUTION

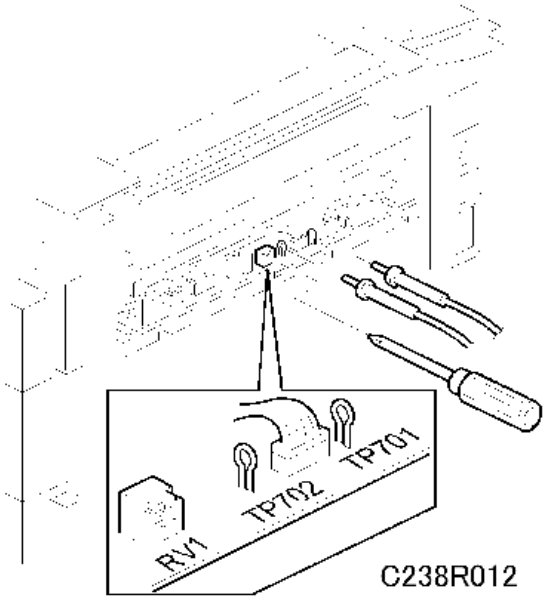
- This adjustment is always required when the thermal head or PSU has been replaced.

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



- Left cover (☛p.73 "Left Cover")
- Read the voltage value on the decal on the thermal head.

1. Slide out the master making unit.

⚠CAUTION

- Never turn VR1 clockwise rapidly while the master making unit is connected. The T/H will be damaged if too much voltage is supplied suddenly.

2. Connect the positive terminal of a circuit tester to TP701 and the negative terminal to TP702.

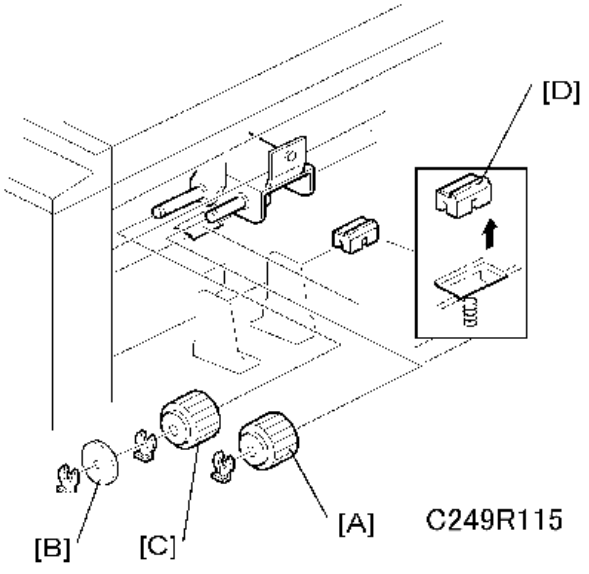
⚠CAUTION

- If the output and ground terminals touch each other, the board will be damaged.

3. Connect the power plug, and turn on the main switch to access SP mode.
4. Select SP5-12 (VHD signal).
5. Press the Start key. Power is continuously supplied to the thermal head, so press the Stop key if you cannot finish the adjustment quickly.
6. A beeper sounds while the power is being supplied.
7. Measure the voltage, and turn RV1 so that the value becomes between "+0" and "-0.1" volts from the value on the thermal head decal.

Paper Feed

Pick-Up Roller, Paper Feed Roller, Friction Pad



- Lower the paper table.

[A]: Pick-up roller (× 1)

[B]: Paper guide (× 1)

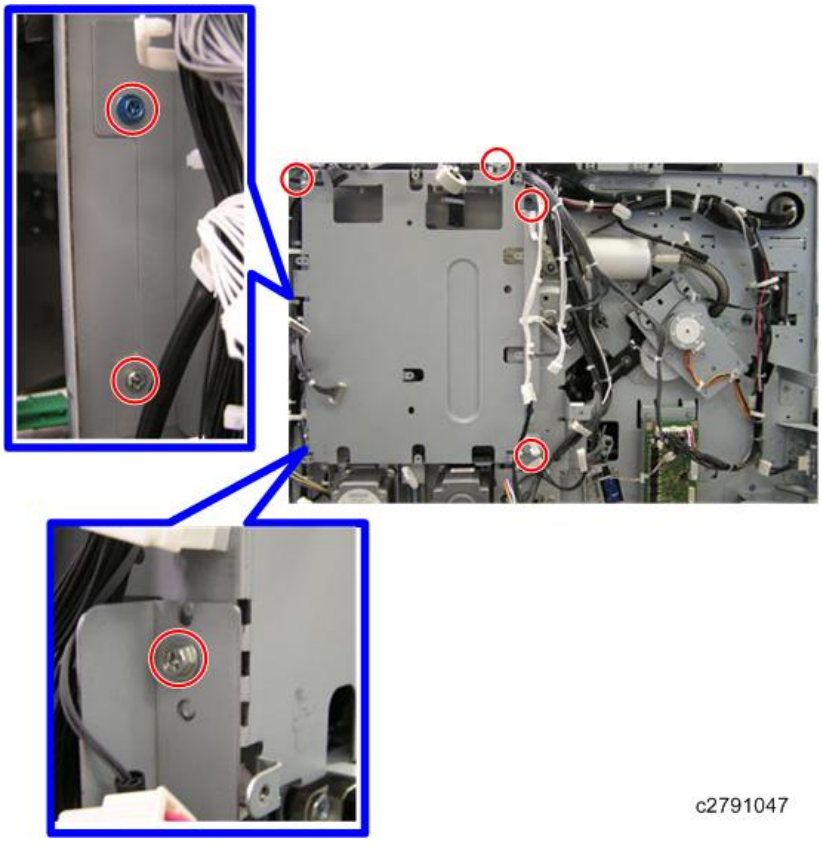
[C]: Feed roller (× 1)

[D]: Friction pad

Paper Feed Safety Cover

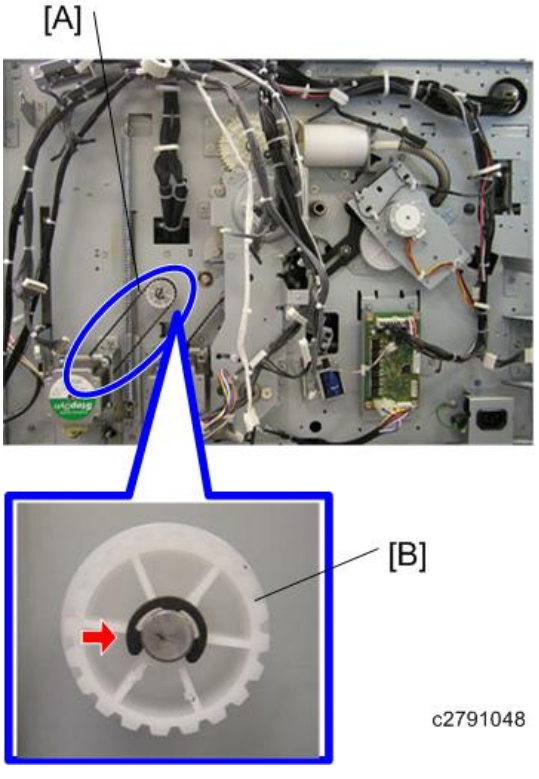
1. Pick-Up Roller. (☛p.116 "Pick-Up Roller, Paper Feed Roller, Friction Pad")
2. Paper Feed Roller. (☛p.116 "Pick-Up Roller, Paper Feed Roller, Friction Pad")
3. Friction Pad. (☛p.116 "Pick-Up Roller, Paper Feed Roller, Friction Pad")
4. Rear Cover. (☛p.74 "Rear Cover")

5. MPU. (☛p.76 "MPU")

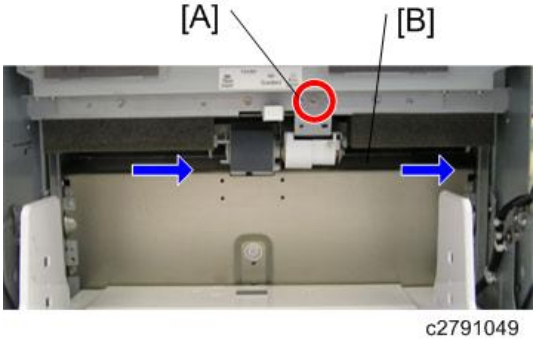


c2791047

6. MPU Cover. (×7)

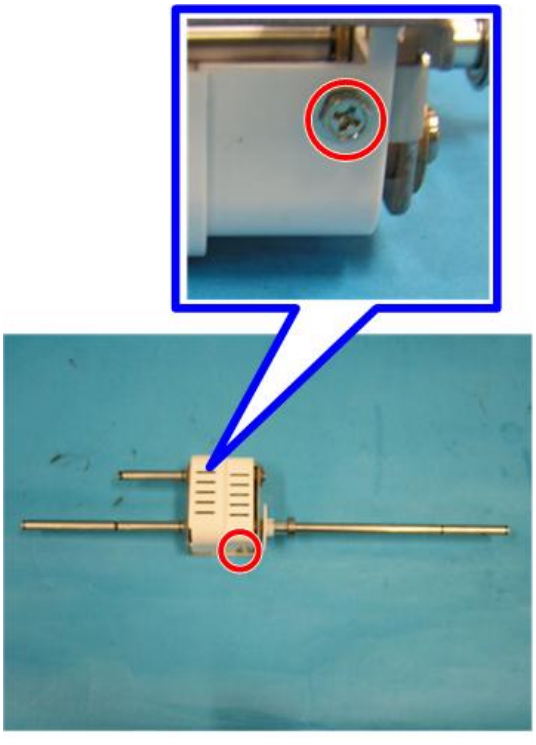


7. Remove the Wire [A].
8. Remove the Pulley [B](×1)



9. Loosen the screws [A].

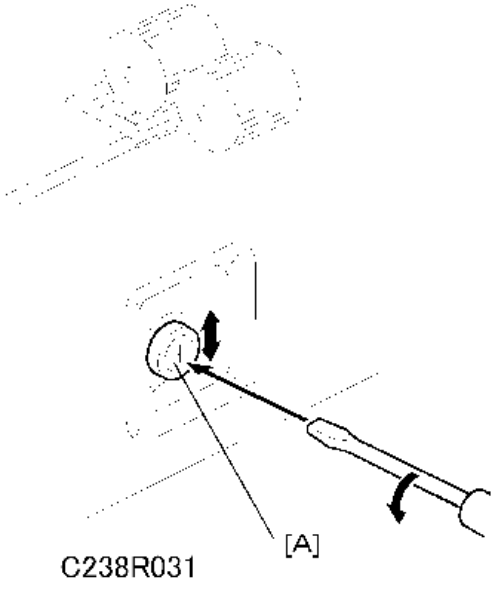
10. Remove the Shaft [B] by sliding it to the right.



c2791050

11. Remove the paper feed safety cover. (×2)

Paper Separation Pressure Adjustment



Purpose: To ensure that the friction pad exerts sufficient pressure for smooth printing paper separation.

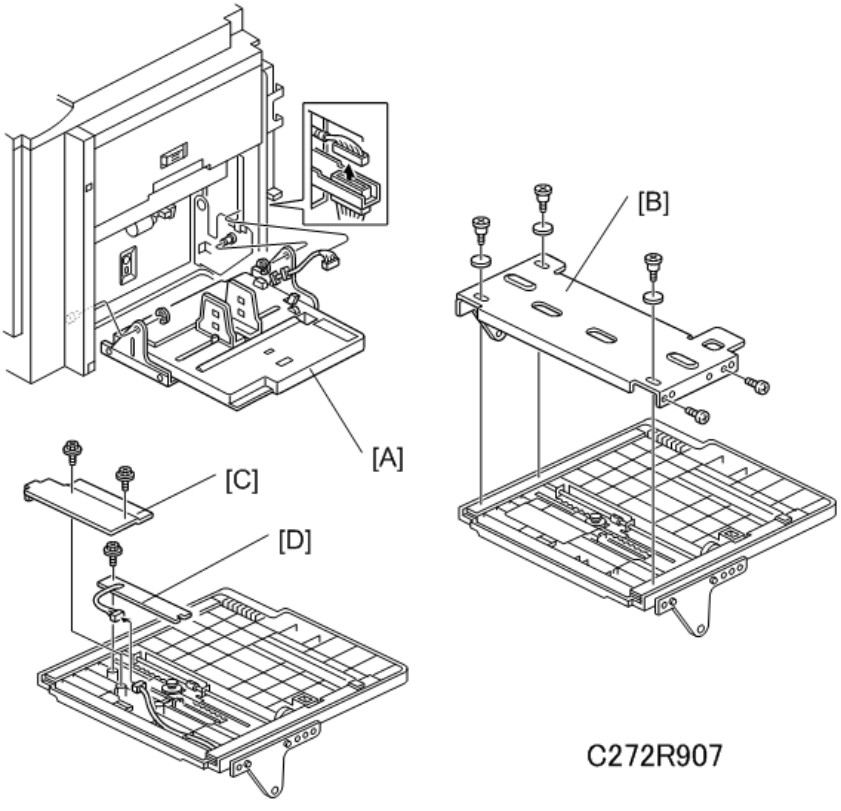
Default: The next position to the top.

Adjust the separation pressure by loosening and moving the screw [A] up or down.

- Moving up the screw → Increases the paper separation pressure
- Moving down the screw → Decreases the paper separation pressure

Tighten the screw after the adjustment

Paper Width Detection Board



- Lower the paper table.

[A]: Paper table (× 1, × 2)

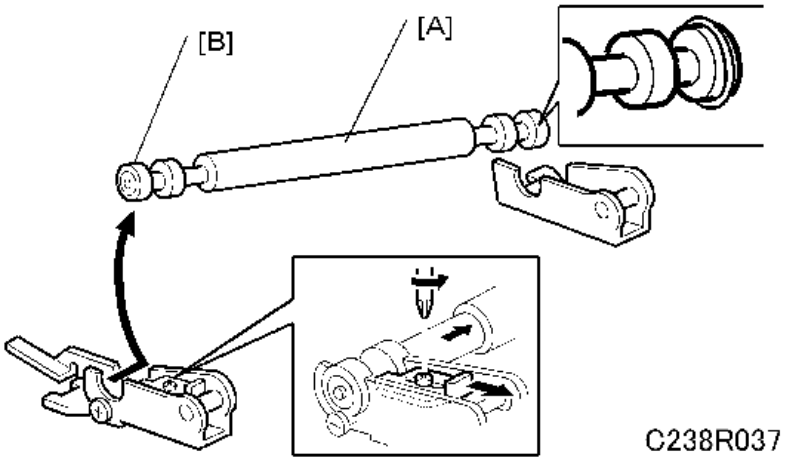
[B]: Table cover (×5, 3 washers)

[C]: Sensor cover (× 2)

[D]: Paper width detection board (× 1, × 1)

Printing

Press Roller



⚠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 (× 1)

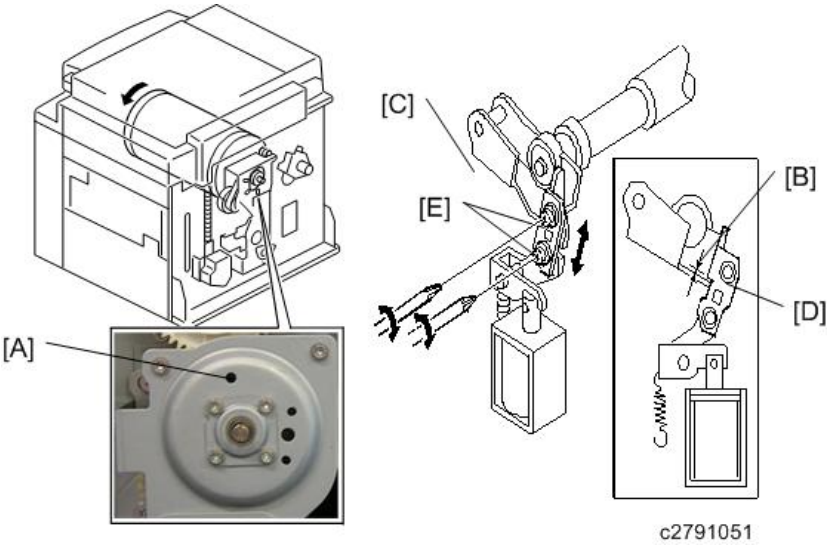
The bearings on the rear and front differ. During installation, ensure that the bearing with the stopper [B] is positioned towards the rear of the machine.

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: 0.6 to 1.2 mm

Tools: A thickness gauge



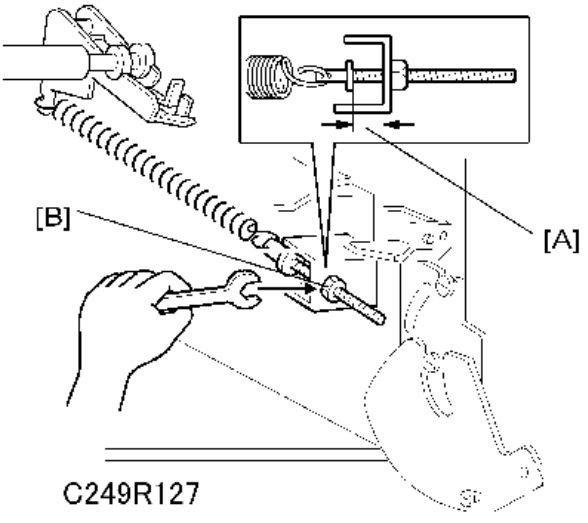
- Front cover (☛ p.70 "Front Cover, Operation Panel")
- Rear cover (☛ p.74 "Rear Cover")

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.
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 0.6 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

Improves print results without decreasing the run length.

Standard: Within 17 +-0.2 mm



- Paper delivery unit (☛ p.137 "Paper Delivery ")

1. Adjust the distance [A] to 17 +-0.2 mm by turning the adjusting bolt [B].
2. Repeat the same procedure for the printing pressure spring at the non-operation side.

Note

- This is the adjustment for the standard printing pressure.
- If print density is incorrect, you can also adjust printing pressure with SP 2-35 or SP 6-70 to 6-87 (☛ Appendices – Main SP Tables).

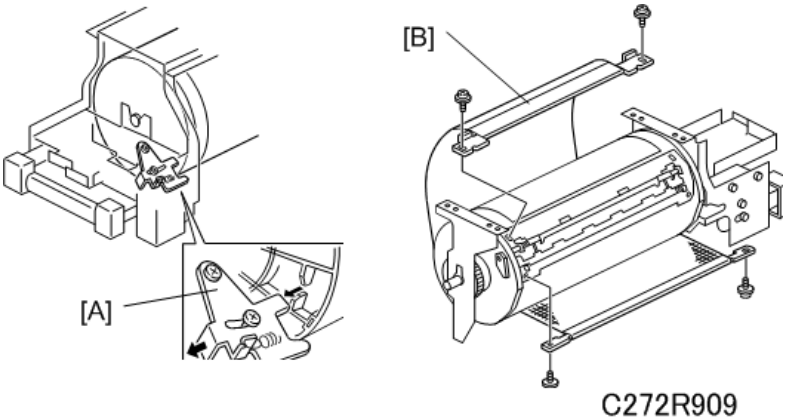
Drum

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 board) to OFF, and feed paper until ink ends.

After finishing the required procedures in this section, do not forget to return SP2-10 to the default (Ink detection board ON).

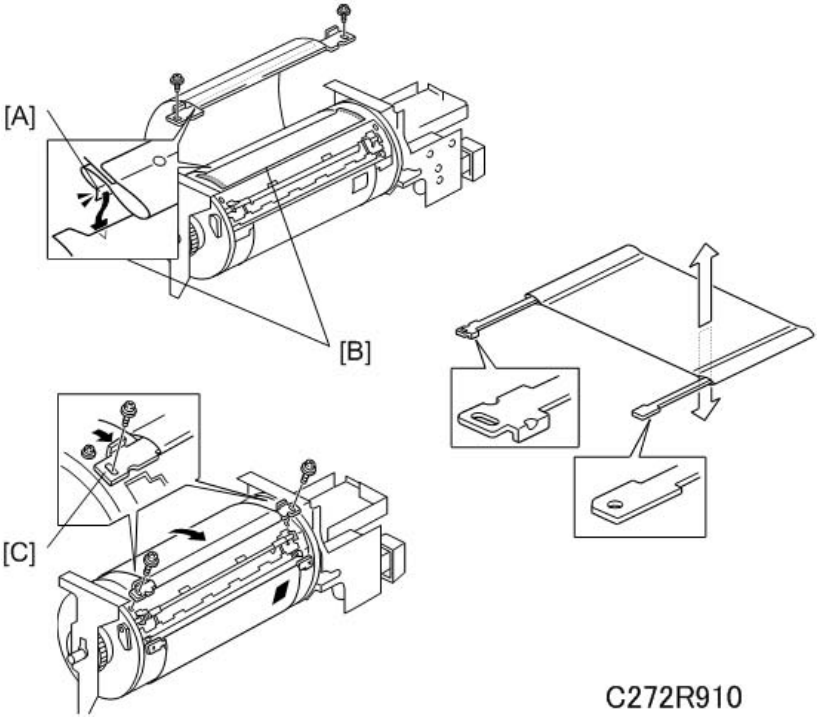
Cloth Screen



- Remove the drum.

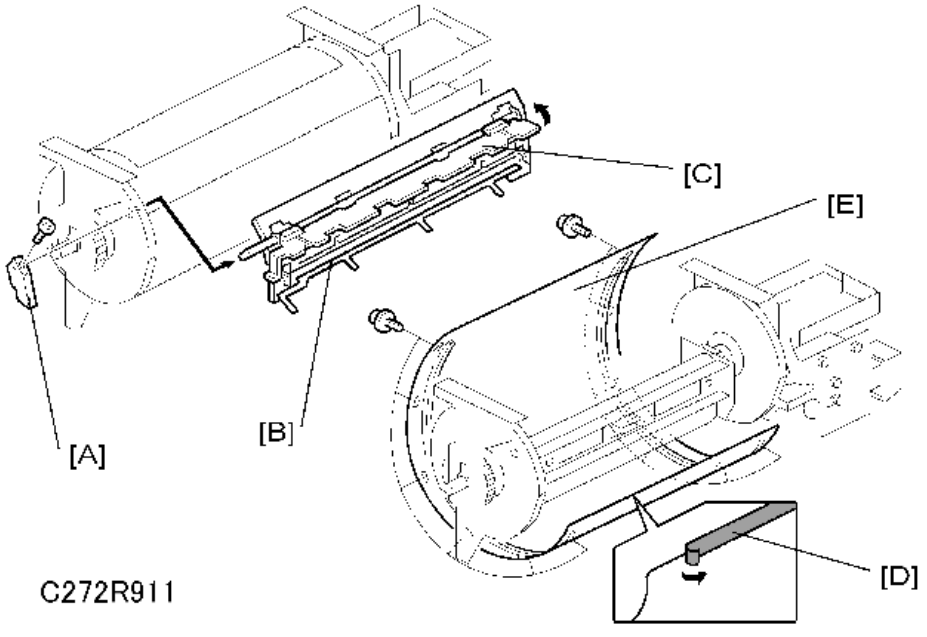
1. Remove the drum upper bracket (× 4).
2. Release the stopper [A], then rotate the drum until the master clamper faces top.
3. Remove the cloth screen [B] (× 4).

Installation



- Do not scratch the cloth screen or metal screen.
- Properly insert the edge of the belt cloth [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 of the screen is facing up. In addition, make sure that the stays for securing the cloth screen are positioned correctly. (Refer to the upper right illustration.)
- When replacing the cloth screen, spread the screen around the metal screen while strongly 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, Metal Screen



- Remove the drum

Cloth screen (☛ p.125 "Cloth Screen")

[A]: Clamper lever (1 hexagon screw)

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

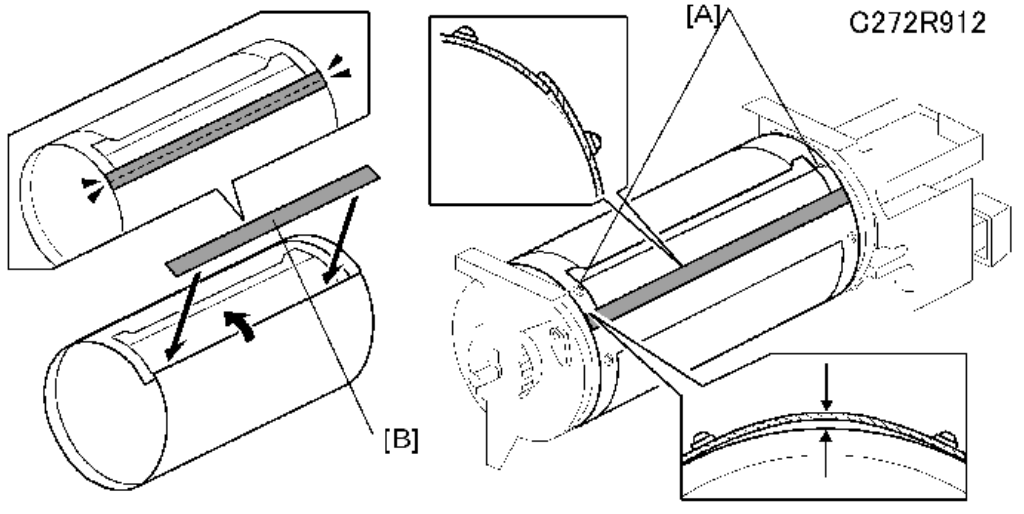
Note

- Do not allow ink to get on the inside of the clamping plate [C]. If it is dirty with ink, 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. The clamping force of the magnet will be weakened.

[D]: Tape (do not lose it)

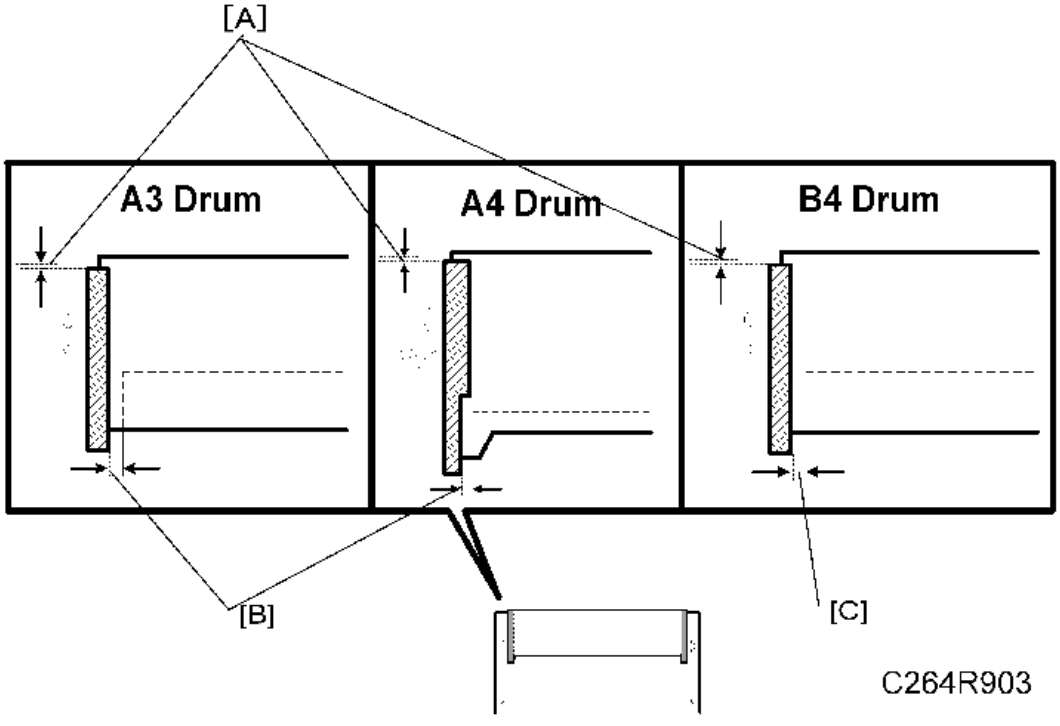
[E]: Metal screen (× 12)

Installation



- 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.)
- Do not scratch the cloth screen or metal screen.
- If there is no filament tape [B] where the metal screen is overlapping, replace the filament tape. (W: 19mm × L: 355mm)

Mylar Seal



[A]: -0.5 to 0.5 mm

[B]: 5.6 to 7.2 mm

[C]: 4.9 to 6.5 mm

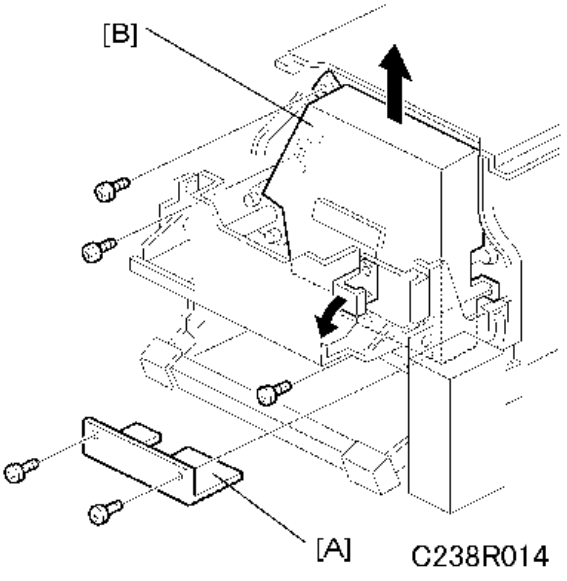
Attach the mylar seal at the attachment position on the metal screen as shown above.

Note

- Clean the attachment position using isopropyl alcohol.

Ink Pump Adjustment

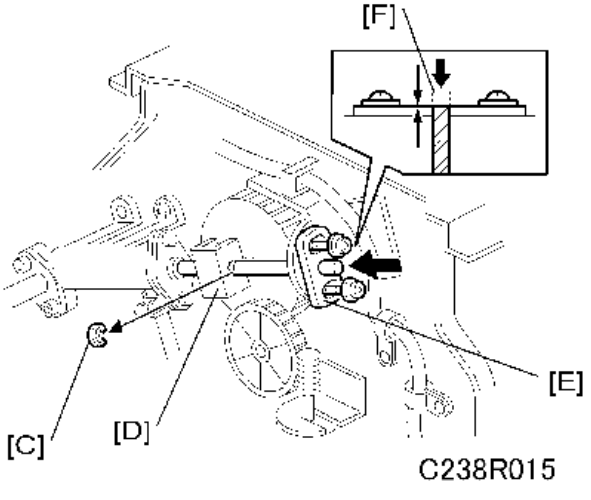
Purpose: To ensure the smooth operation of the ink pump plunger by properly positioning its holder.



- Remove the drum

[A]: Lower pump cover (× 2)

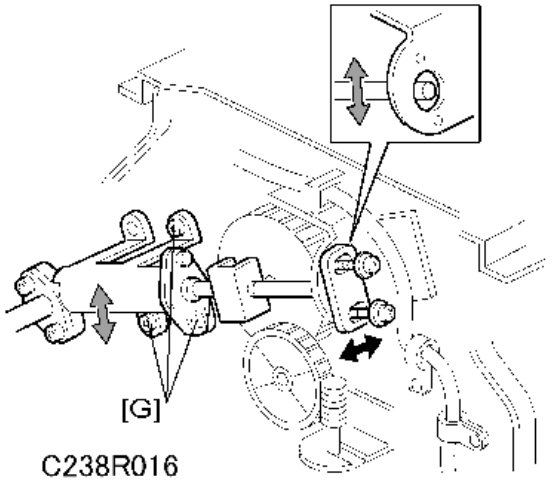
[B]: Upper pump cover (× 3)



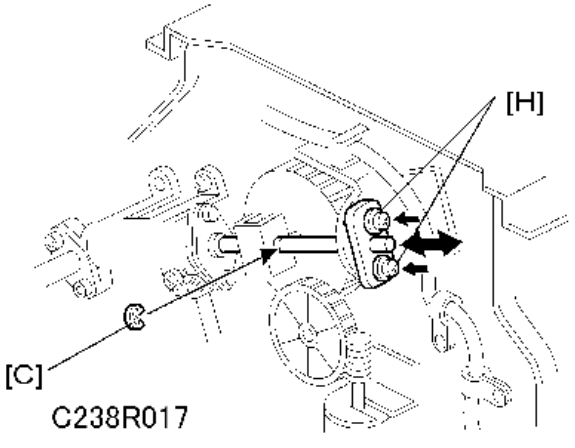
1. Remove the E-ring [C] to free the plunger from the pump drive slider [D].
2. Loosen the two screws securing the holder [E]. (Do not remove the holder.)
3. Push the plunger [F] until it reaches the bottom.

Note

- The end of the plunger [F] must not stick out from the holder [E].

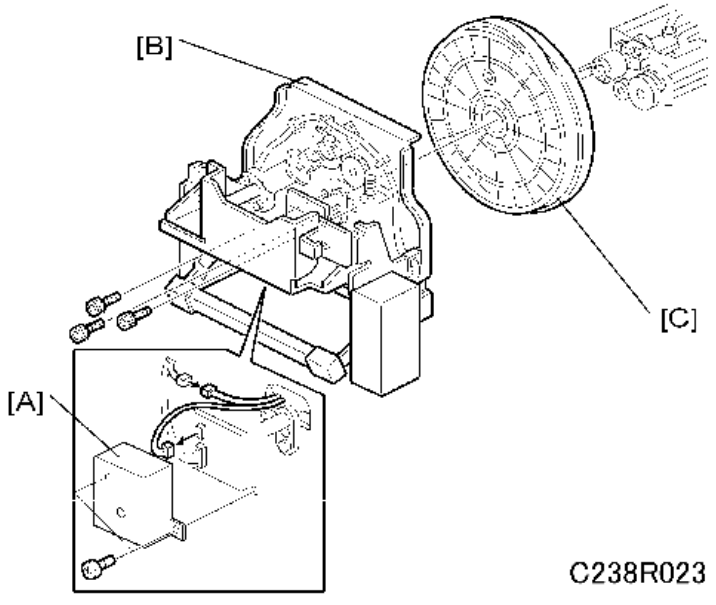


4. Check that the piston motion is smooth.
5. If the motion is stiff, loosen the pump screws [G] and adjust the pump position.
6. After tightening, repeat step 4 and step 3.



7. Re-tighten the two screws [H].
8. Check that the piston motion is smooth.
9. Reinstall the E-ring [C].

Ink Roller Unit, Ink Roller One-Way Clutch

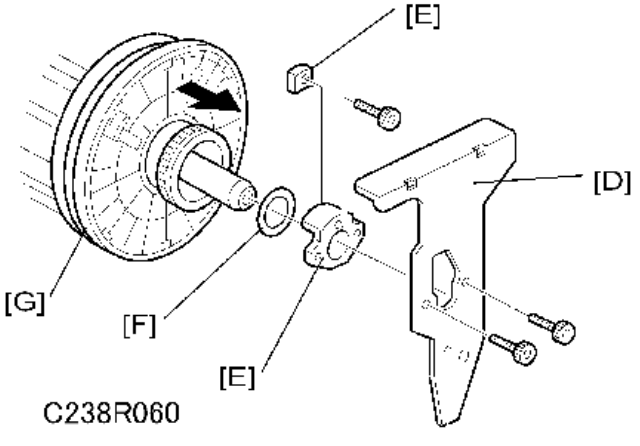


- Metal screen (☛ p.127 "Clamper, Metal Screen")
- Pump covers (☛ p.129 "Ink Pump Adjustment")

[A]: Board cover (× 2)

[B]: Front stay (× 2, × 3)

[C]: Front flange

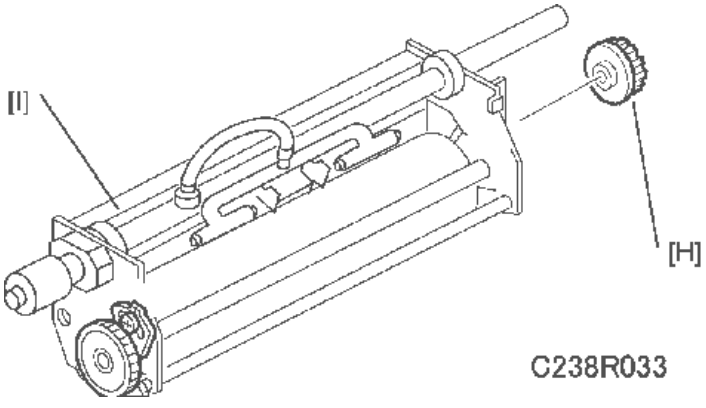


[D]: Rear stay (× 2)

[E]: Rear stoppers (× 1)

[F]: Ring

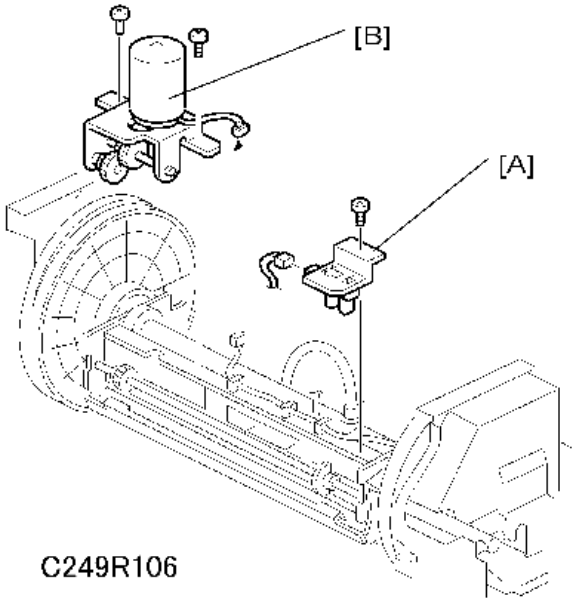
[G]: Rear flange



[H]: Ink roller unit

[I]: Ink roller one-way clutch

Idling Roller Motor, Idling Roller HP Sensor



- Cloth Screen (☛ p.125 "Cloth Screen")
- Clamper, Metal Screen (☛ p.127 "Clamper, Metal Screen")

[A]: Idling roller HP sensor (× 1, × 1)

[B]: Idling roller motor (× 1, × 2)

Doctor Roller Gap Adjustment

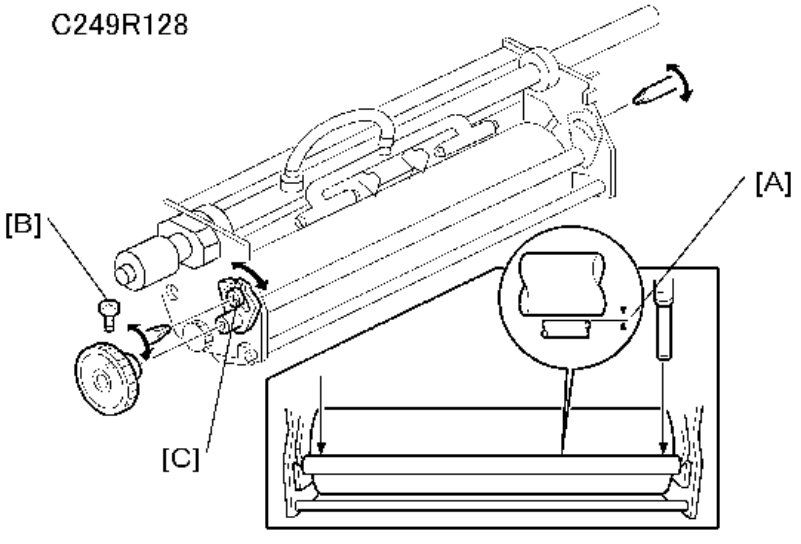
Controls ink thickness around the ink roller.

Standard: 0.07 mm gauge passes, 0.09 mm gauge does not.

Tools: Thickness gauge

⚠CAUTION

- 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.



- Ink roller unit (☛ p.132 "Ink Roller Unit, Ink Roller One-Way Clutch")

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.

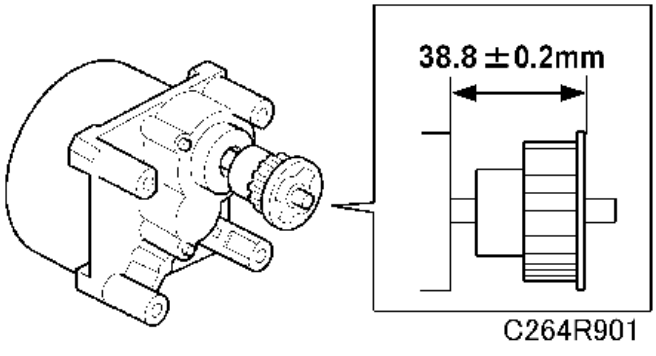
Ink Detection Adjustment

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

⚠CAUTION

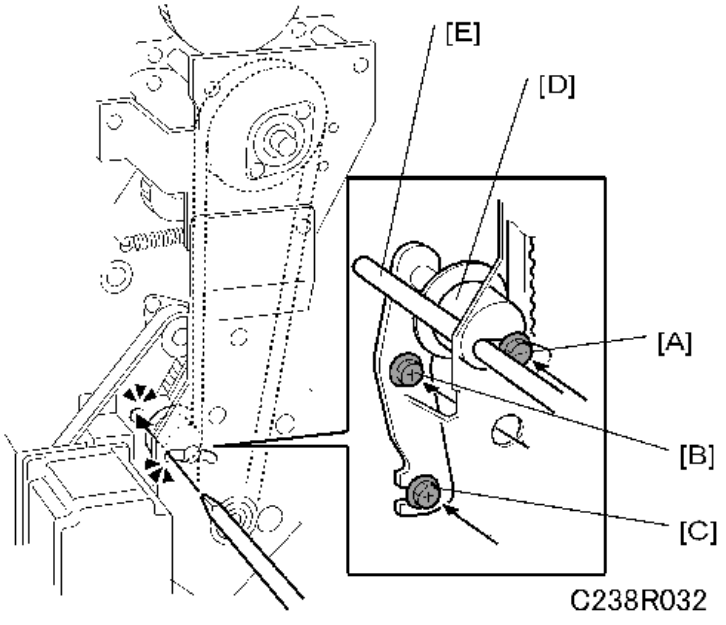
- Before attempting this procedure, wipe off the ink around the ink roller. To do this, set SP2-10 (ink detection board) to OFF, and feed paper until ink ends.
- After finishing this procedure, do not forget to return SP2-10 to the default (ink detection board on).
- SP6-40 Ink detection adjustment (☛Appendices - Main SP Tables)

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.

Main Drive Timing Belt Adjustment



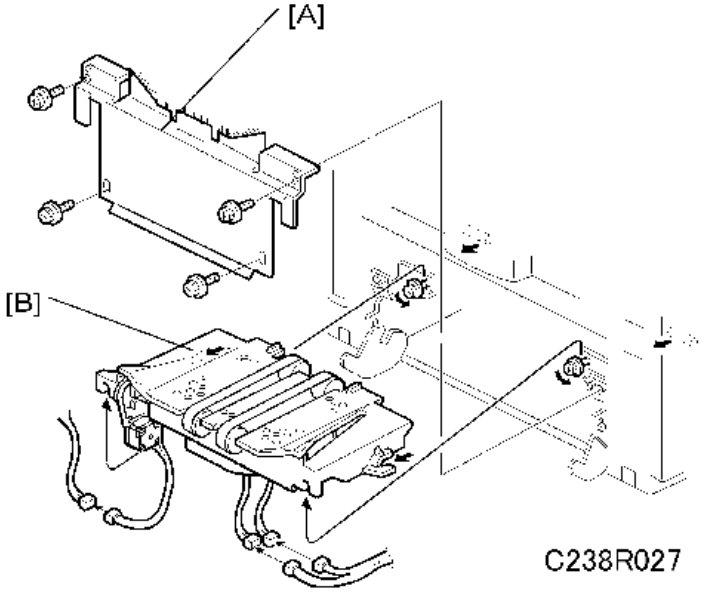
Purpose: After the timing belt is replaced, correct belt tension must be applied.

- Rear covers (☛p.74 "Rear Cover")
- MPU (☛p.76 "MPU")

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.

Paper Delivery

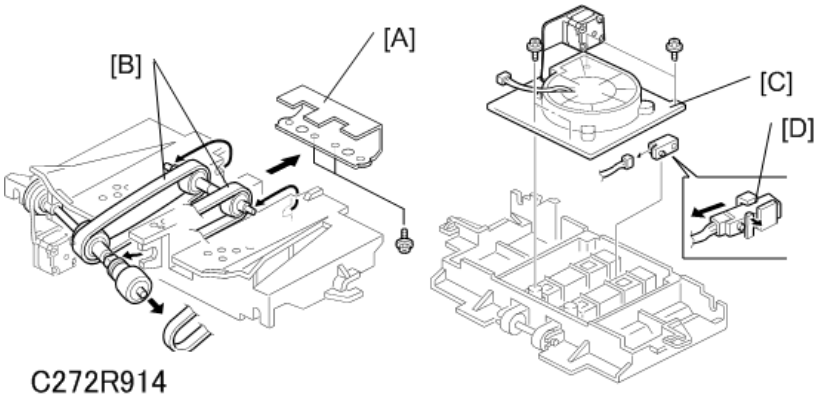
Paper Delivery Unit



[A]: Paper delivery cover (×4)

[B]: Paper delivery unit (× 3, × 2)

Fan Motor, Exit Sensor



- Paper delivery unit (p.137 "Paper Delivery ")

[A]: Paper guide (× 2)

[B]: Delivery belts

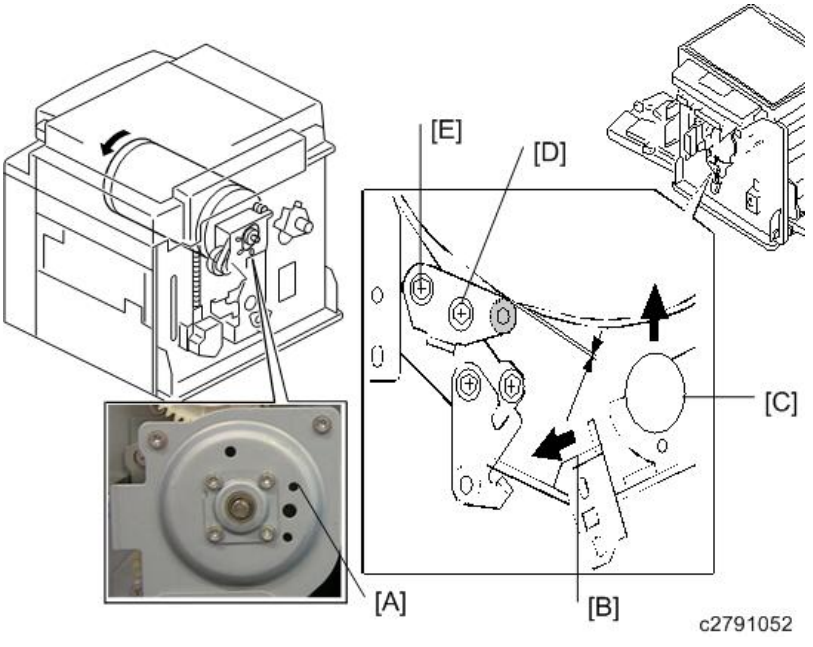
[C]: Vacuum fan motor (× 1, × 4)

[D]: Paper exit sensor (× 1)

Exit Pawl Adjustment

Ensures that the exit pawls can move out of the way of the drum master clamper while the drum is rotating.

Timing Adjustment



Note

- When releasing the stoppers from the brackets, note that the press roller goes up quickly.

1. Turn the drum manually until the recess in the drum drive gear meets the positioning hole[A] in the bracket, as shown.
2. Release the stopper at the operation side [B] from the pressure arm [C].

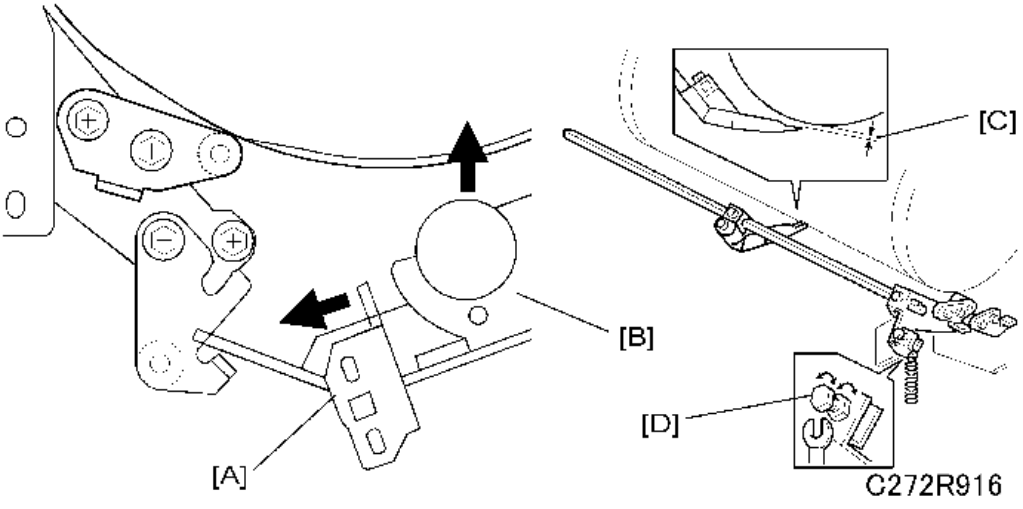
Note

- Slide the stopper [B] to the left, and then lift the pressure arm [C].

3. Loosen screws [D] and [E]. Then measure the gap between the cam follower and cam face (front drum flange). It should be 0 to 0.5 mm. Then re-tighten the two screws while pushing the cam follower against the cam face.
4. Lock the stopper on the operation side with the lock bracket to keep the press roller in its correct position.
5. Do the clearance adjustment (see the next page).

Clearance Adjustment

- Do this after the timing adjustment.



Standard: Within 0.80 +- 0.15 mm

- Front cover (p.70 "Front Cover, Operation Panel")

1. Release the stopper at the operation side [A] from the pressure arm [B].

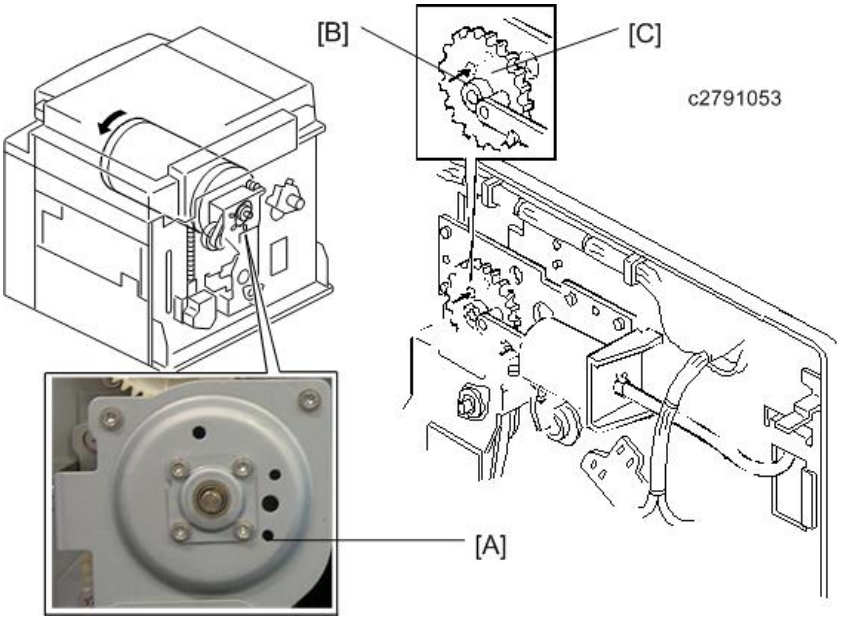
Note

- Slide the stopper [A] to the left, and then lift the pressure arm [B].

2. Using a gap gauge, measure the clearance [C] between the drum surface and the exit pawls. It should be 0.80 +-0.15 mm.
3. If the clearance is not correct, adjust the clearance by turning the bolt [D].
4. Lock the stopper on the operation side with the lock bracket to keep the press roller in its correct position.

Air Pump Adjustment

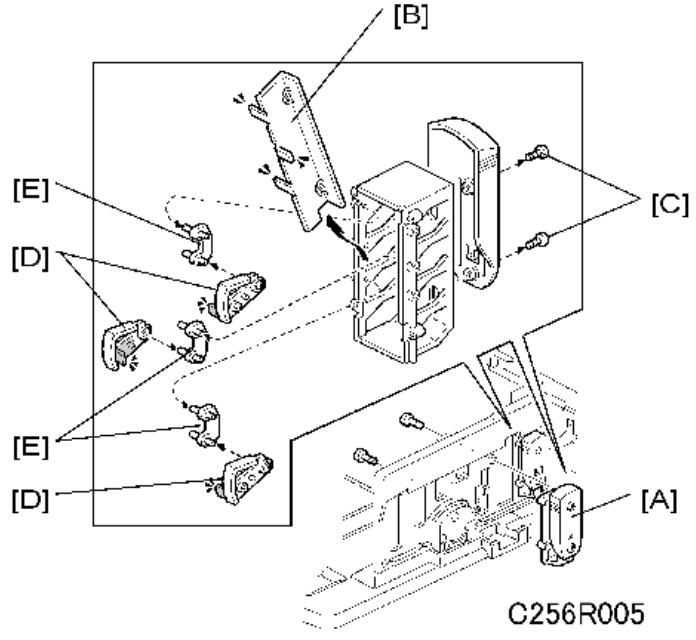
Purpose: To ensure that the exit pawl produces a jet of air at the proper time.

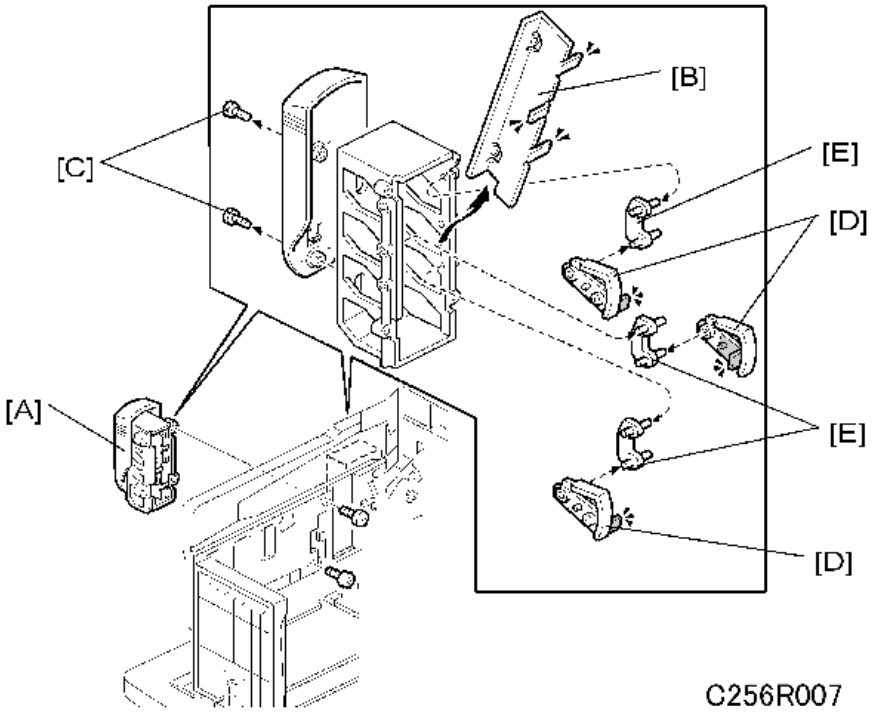


- Rear covers (☛p.74 "Rear Cover")

1. Check the recess in the drum drive gear meets the positioning hole [A] in the bracket, as shown.
2. Check whether the hole [B] in the pump drive gear is aligned with the hole [C] in the air pump unit bracket.
3. If the alignment is incorrect, remove the air pump unit and re-position the gear.

Chocks





[A]: Chocks (× 2)

[B]: Buffer fin bracket (× 2 [C]) – Normally, do not disassemble parts [B] to [E] in the field.

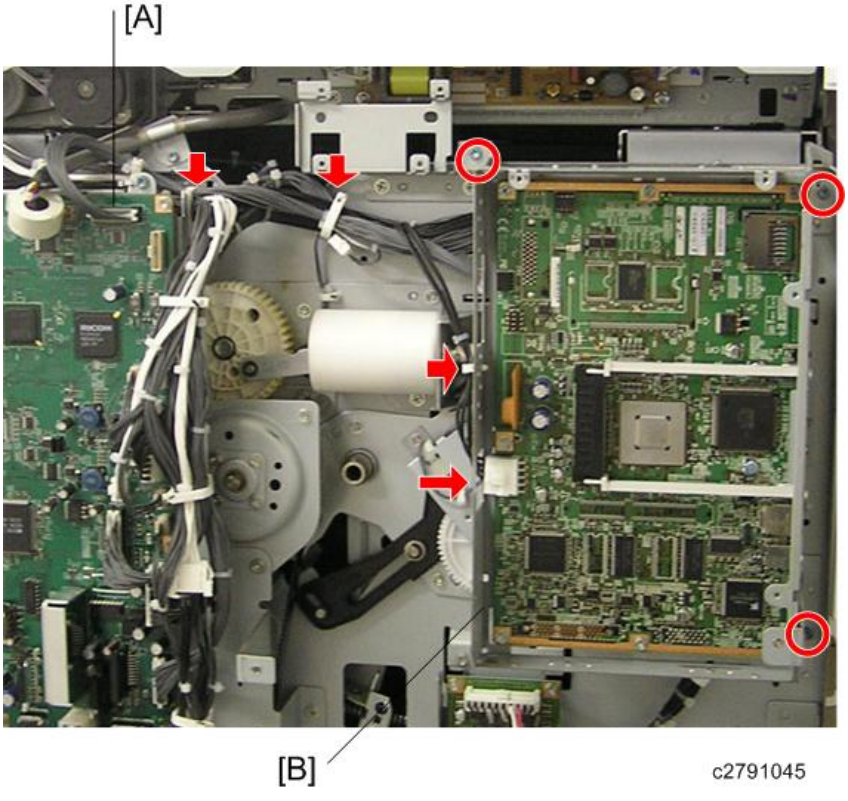
[D]: Buffer fin

[E]: Buffer fin link

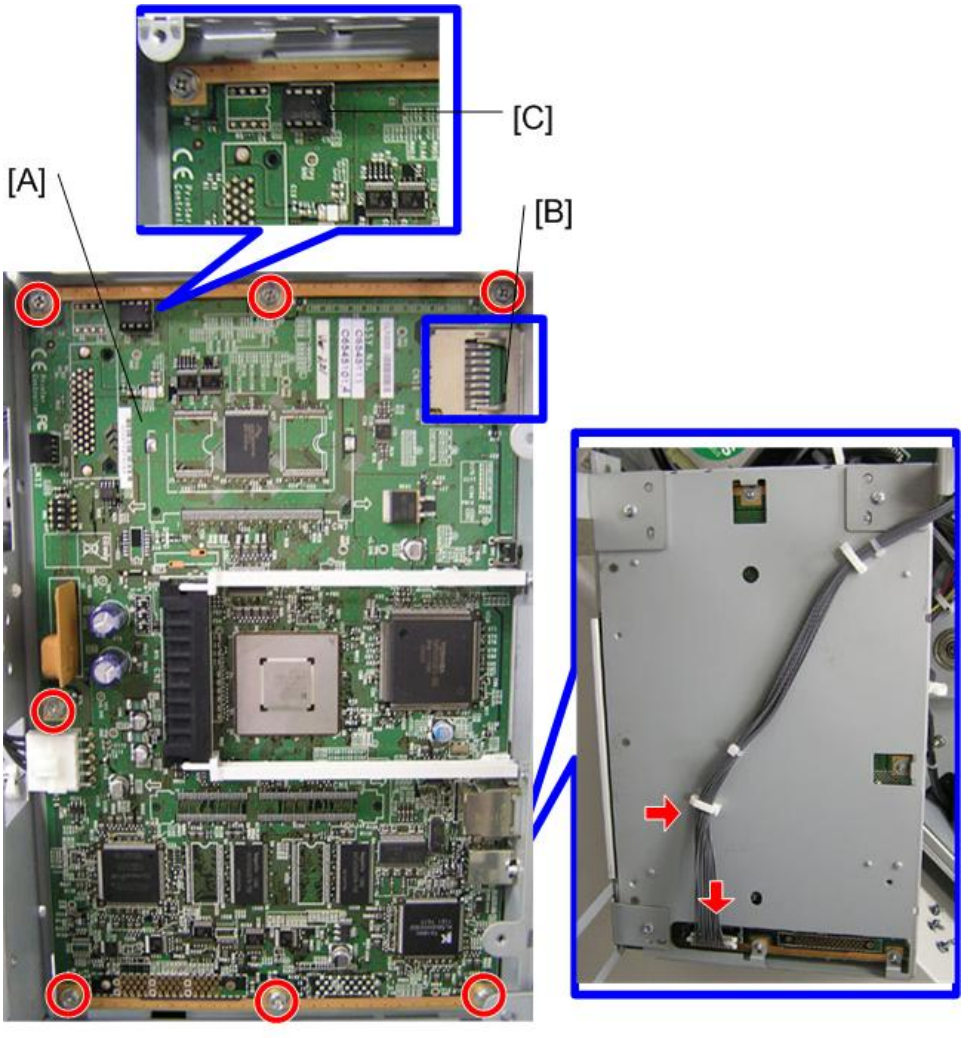
Network Printer Controller

Printer Board

1. Rear cover (☛p.74 "Rear Cover")



2. Remove the printer board with case. (× 3, × 2, × 3).



3. Remove the printer board [A] from the case (× 7, × 1).

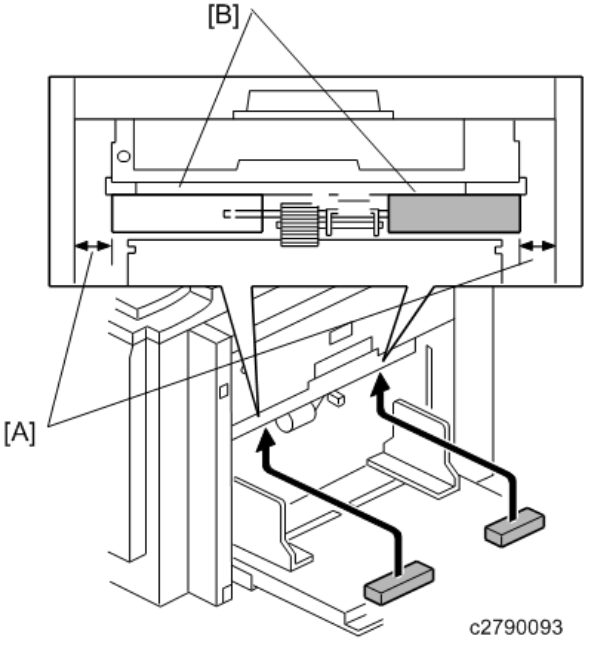
Note

- Remove the SD card [B] before you remove the printer board, if there is an SD card in the board.
- When you replace the printer board, remove the NVRAM [C] from the old printer board and install it on the new printer board. Otherwise, all the controller settings (such as the IP address) will be lost.

Sound-proofing Cushions

The following are the attachment positions of the soundproofing cushions.

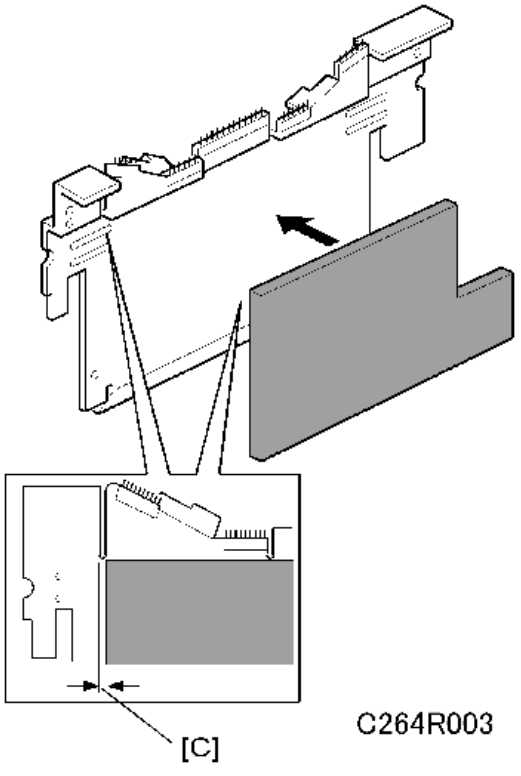
Paper Feed Left, Paper Feed Right



[A]: 10.0 mm to 12.0 mm

[B]: 0.0 mm

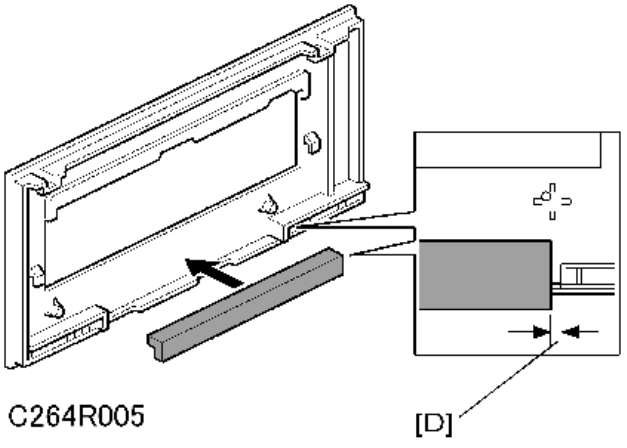
Paper Exit



[C]: 0.0 mm

Master Eject Cover

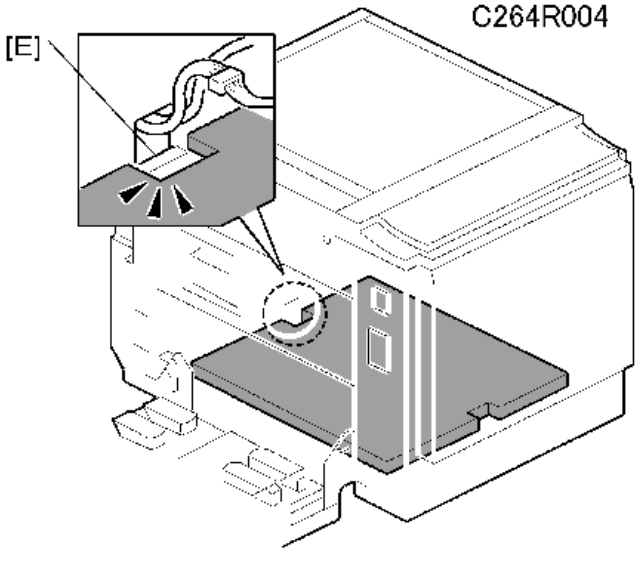
Master eject cover (× 4)



[D]: 0.0mm to 2.0mm

Base

Paper delivery cover (× 4) (p.137 "Paper Delivery ")



Note

- Insert the soundproofing cushion from the paper delivery side, and push it towards the inside of the machine.
- The cushion has a short side and a long side, as shown above. Insert the cushion from the short side, and secure the cushion inside the machine at [E].
- The soundproofing for the base does not have double-sided tape.

Fuse, LED, VR, DIP-SW, AND TP Tables

Blown Fuse Conditions

PSU

No.	Rate	Symptom
FU700	6.3 A	The machine does not turn on
FU701,	6.3 A	E-41 is displayed, and the output mode in SP mode does not turn anything on except the main motor.
FU702	6.3 A	E-12 is displayed, and the output mode in SP mode does not turn anything on except the main motor.
FU703, 704	6.3 A	E-06 is displayed.

LED'S

MPU

No.	Function
LED1	Monitors the paper feed circuit in the MPU. Usually, this LED is blinking at intervals of 2 seconds.
LED2	Monitors the OPU2:FPGA. Usually, this LED is blinking at intervals of 1 second.
LED3	Monitors the CPU operation. Usually, this LED is blinking at intervals of 1 second.
LED4	Monitors the master end sensor. When the sensor detects a master, this LED is lit. (☛ p.113 "Master End Sensor Adjustment")
LED5	Monitors the master edge sensor. When the sensor detects a master, this LED is lit. (☛ p.111 "Master Edge Sensor Adjustment")

No.	Function
LED6	Monitors the duct jam sensor. When the sensor detects a master, this LED is lit. (☛p.110 "Duct Jam Sensor Adjustment")
LED7	Not used.
LED8	Monitors the GATC2:FPGA. Usually, this LED is blinking at intervals of 1 second.

Controller Board

No.	Function
LED1	Monitor the CPU operation. This LED is blinking in the normal condition.

VR's

MPU

No.	Function
VR101	Adjusts the master end sensor (☛p.113 "Master End Sensor Adjustment")
VR102	Adjusts the duct jam sensor (☛p.110 "Duct Jam Sensor Adjustment")
VR103	Adjusts the master edge sensor (☛p.111 "Master Edge Sensor Adjustment")
VR104	Adjusts the 2nd drum master sensor (☛p.112 "2nd Drum Master Sensor Adjustment")

PSU

No.	Function
RV1	Adjusts the thermal head voltage. (☛p.114 "Thermal Head Voltage Adjustment")

Ink detection board

No.	Function
VR1	Adjustment for the ink detection. (☛p.129 "Ink Pump Adjustment")

Dip Switches

Ink detection board

No.	Normal drum	Color drum	A4 black drum
SW1	OFF	OFF	ON
SW2	OFF	ON	OFF
SW3	OFF	OFF	OFF
SW4	OFF	OFF	OFF

Controller Board

SW2	OFF	ON
1	ROM boot	SD card boot
2	Normal machine operation	Boot only ROM monitor
3	Not used	Not used
4	Not used	Not used

Number	SW	Setting
SW3	Push Switch	When the main switch is turned on while pushing SW3, the controller board will go to the detailed self-check mode.

Test Points

MPU

No.	Function
TP101	Measures the master end sensor voltage. (☛p.113 "Master End Sensor Adjustment")
TP102	Measures the duct jam sensor voltage. (☛p.110 "Duct Jam Sensor Adjustment")
TP103	Measures the master edge sensor voltage. (☛p.111 "Master Edge Sensor Adjustment")
TP104	Measures the 2nd drum master sensor voltage. (☛p.112 "2nd Drum Master Sensor Adjustment")

PSU

No.	Function
TP701 TP702	Measures the thermal head voltage. (☛p.114 "Thermal Head Voltage Adjustment")

5. System Maintenance Reference

Service Program Mode

⚠CAUTION

- Make sure that the data-in LED (⇦) is not on before you go into the SP mode. This LED indicates that some data is coming to the machine. When the LED is on, wait for the copier to process the data.

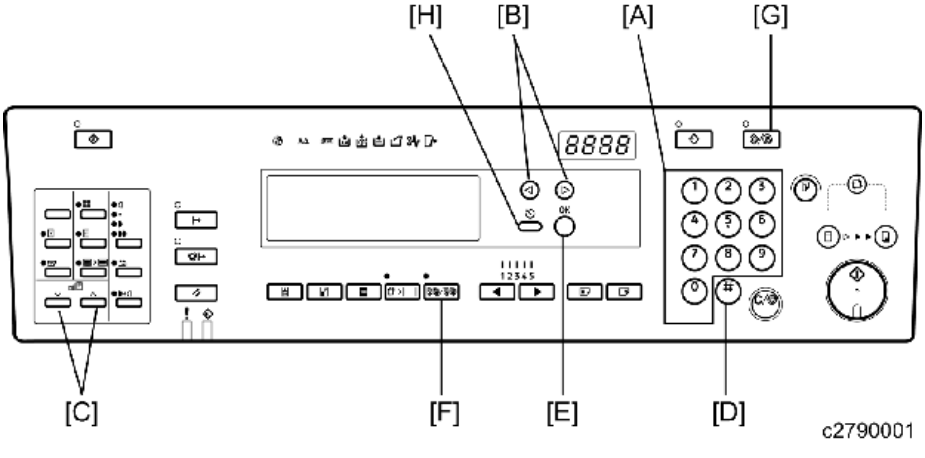
Using Service Program Modes

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

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.

How to Select a Program Number



1. Using the number keys [A] or the ◁▷ keys [B] or the zoom keys [C], enter the desired main menu number (listed below), then press the Enter key [D] or the OK key [E].

   Main menu number list:

   1. Copy data, 2. Basic settings, 3. System settings, 4. Input mode

5. Output mode, 6. Adjustment, 7. Memory clear, 8. System test

2. Using the number keys or the ◁▷ keys or the zoom 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 [F] 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.
5. Follow the "Change Adjustment Values or Modes" procedure below.

Note

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

6. Troubleshooting

Firmware Update

To update the firmware for the machine, you must have the new version of the firmware.

There are three types of firmware: Main, ADF and controller (FV-Lt).

Type of Firmware

There are two types of main firmware. One type is for A3 models, and the other is for B4 models. Download the firmware that corresponds to the model you are using.

Type of firmware	Function	Location of firmware
Main firmware (A3 model)	Engine	Main board (MPU)
Main firmware (B4 model)	Engine	Main board (MPU)
ADF firmware	Engine	Main board (MPU)
Controller (FV-Lt) firmware	Printer Controller	Printer board

Before You Begin

An SD card is a precision device. Always observe the following precautions when you handle SD cards:

- Always switch the machine off before you insert an SD card. Never insert the SD card into the slot with the power on.
- Do not remove the SD card from the slot after the power has been switched on.
- Never switch the machine off while the firmware is downloading from the SD card.
- Keep SD cards in a safe location where they are not exposed to high temperature, high humidity, or exposure to direct sunlight.
- Always handle SD cards with care. Do not bend or scratch them. Do not let the SD card get exposed to shock or vibration.
- Make sure that the write protection of an SD card is unlocked when you download an application to it.

Keep the following points in mind when you use the firmware update software:

- “Download” means to send data from the SD card to the machine.

- Make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress before you start the firmware update procedure.

Preparing To Download Firmware

1. **Create a folder named "romdata" on the SD card (this step is only necessary when the SD card is used for the first time).**
2. **Create one of the following folders inside the "romdata" folder. Make sure to create the correct folder for the model you are using.**

   Main or ADF

   - A3 model: "C279" folder
   - B4 model: "C277" folder

   Controller(FV-Lt)

   - "C654" folder

   Note

   - The SD card can be shared with other files (firmware for other duplicators, MFPs, etc.).
   - The speed of displaying the right firmware on the operation panel will slow down if there are many files in the SD card.
3. **Store the firmware in the "C279" ,"C277",or "C654" folder.**

   File storage location

Type of firmware	File name	File storage location
Main firmware (A3)	C279****X_#_sd.bin	/romdata/C279
Main firmware (B4)	C276****X_#_sd.bin	/romdata/C277
ADF (A3)	D5785390X.fwu	/romdata/C279
ADF (B4)		/romdata/C277
Controller(FV-Lt)	C654****X_#_sd.bin	/romdata/C654

   ***: Part number X: suffix #: version No.
4. **Wait until the data is transferred completely.**

   CAUTION

   - Do not remove the SD card from the PC until after all data is transferred (at this time, the PC says that it is safe to remove the card).

5. **Compare the size of the file on the PC and the file on the SD card. If the sizes are different, the data was not transferred completely.**

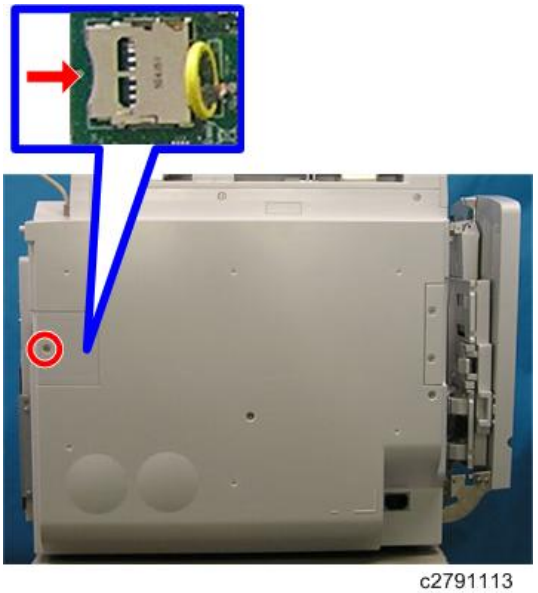
⚠CAUTION

- Do not take out the SD card until after you turn off the PC or disconnect the USB Reader/ Writer.

Download Main/ADF firmware

Updates the main firmware using an SD card.

1. **Before downloading new firmware, check the firmware version number(Main) with SP1-70 or file suffix number (ADF) with SP 1-78 (☛Appendices - Main SP Tables).**
2. **Prepare an SD card with the latest firmware.**
3. **Turn off the main switch and disconnect the power cord.**



c2791113

4. **Remove the rear card cover.**
5. **Plug the SD card into the connector on the MPU.**
6. **Connect the power cord, then turn on the main switch.**
7. **Access SP8-1(ADF: SP8-2) 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 "Completed" is displayed.**
10. **Turn off the main switch, and remove the SD card.**

11. After downloading the firmware, turn on the main power and enter SP mode to confirm that the download is complete.

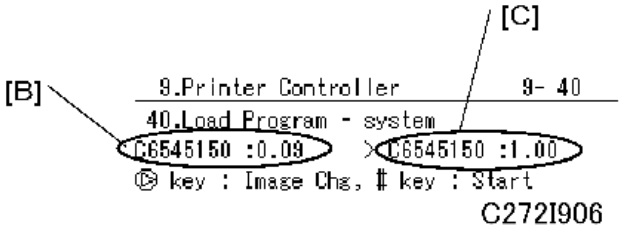
Download FV-Lt firmware

1. Before downloading new firmware, check the firmware version number with SP9-5 (☛ Appendices - Main SP Tables).
2. Turn off the main switch.

c2791115

3. Rear Cover. (☛ p.74 "Rear Cover")
4. Put the SD card in the slot of the ACU board.
5. Turn on the main switch again.

6. **Enter the SP mode (SP9-40: Load Program – System).**

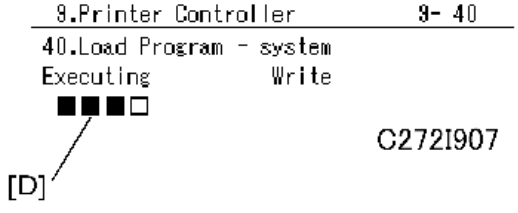


On the left [B], you can see the firmware version that is now in the machine.

On the right [C], you can see the firmware version on the SD card.

More than one version can be stored on the card. Use the Image Chg button "▷" to select the version that you want to download.

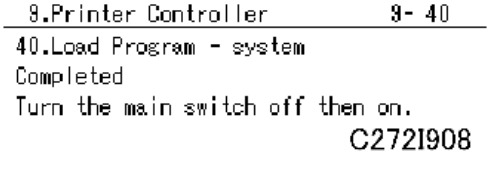
After selecting, push the '#' button to start downloading.



The approximate downloading time is 10 minutes.

Note

- The number of "■" signs [D] increases during the downloading.
- If the downloading did not finish correctly, an error message will be shown on the operation panel.
- If an error occurred during the download, do the download again when the display panel shows the SP mode screen. If this is not possible, the ACU board (Printer controller board) must be replaced.



7. **Turn off the main switch after the operation panel changes from "Executing" to "Completed".**
8. **Take out the SD card if you finished downloading.**

9. **After downloading the firmware, turn on the main power and enter SP mode to confirm that the download is complete.**

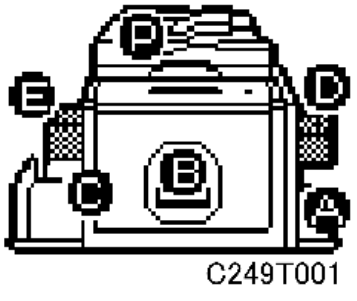
Note

- Do not insert or extract the SD card when the machine power is on.
- Do not shut off the power when the firmware is downloading.

Electrical Component Defects

Jams which occur because of a sensor error are shown below.

error	jam
Paper feed error	"A" jam
Drum error	"B" jam
Paper Exit error	"C" jam
2nd drum error	"D" jam
Eject Box error	"E" jam
ADF error	"P" jam



C249T001

Sensors

Component	Condition	Symptom
Master Eject Position (HP) Sensor	Open	E-23 is displayed whenever the drum rotates.
	Shorted	
Paper Exit Timing Sensor	Open	E-21 is displayed whenever the drum rotates.
	Shorted	
Feed Start Timing Sensor	Open	E-24 is displayed whenever the drum rotates.
	Shorted	

Component	Condition	Symptom
2nd Feed Timing Sensor	Open	E-22 is displayed whenever the drum rotates.
	Shorted	
Drum Sensor (connecter)	Connect	No display even if the drum is extracted and E-06 is displayed when printing or master making.
	OPEN	"No drum" is displayed when initialization is finished.
Drum Ink Sensor (Detection pin)	ON	The print images blur because the ink pump is not ON.
	OFF	"Ink end" is displayed when printing or master making, and cannot be canceled. No Ink LED is on. Ink leak occurs in the drum because ink supply is performed every time the door is door opened and closed.
Drum Ink Temperature Sensor (Harness)	Shorted	E-17 is displayed whenever the start button is pushed.
	Wire Snapping	E-18 is displayed whenever the start button is pushed.
Pressure Plate Limit Sensor	Open	"Master eject is full" is displayed.
	Shorted	E-12 is displayed.
Pressure Plate HP Sensor	Open	E-12 is displayed when the pressure plate is activated.
	Shorted	
Drum Master Sensor	There is a master on the drum.	The master eject does not occur and the "D" jam indicator is lit whenever a master is made.
	No master	The "No master" indicator is not lit if there is no master. The "B" jam indicator is lit and is not cancelled when a master is not on the drum and master making is started.

Component	Condition	Symptom
2nd Feed Sensor	reflected light / There is a paper	The "C" jam indicator is lit.
	No paper	The "B" jam indicator is lit whenever a copy is made.
Master Eject Sensor	Open	The "B" jam indicator is lit.
	Shorted	The "BE" jam indicator is lit.
Clamper Open Sensor	Open	E-00 is displayed whenever the clamper operates.
	Shorted	E-00 is displayed
Clamper Close Sensor	Open	E-00 is displayed
	Shorted	E-00 is displayed whenever the clamper operates.
Table Lower Sensor	Open	The paper table goes down below the sensor, and E-02 is displayed.
	Shorted	The paper table doesn't go down.
Platen Cover Sensor	Open	The image is treated using center/edge erase mode.
	Shorted	The master is made normally if the Start button is pushed twice.
Original Length Sensor	Reflected light	If paper which should not be detected by the sensor is set, it will be detected. Depending on the set paper when a master is made in this state, there may be a size disagreement warning, auto rotation or Reduce/Enlarge.
	No reflected light	
Scanner HP Sensor	Open	E-13 is displayed when scanner HP is running.
	Shorted	E-13 is displayed when the start button is pushed and the scanner returns to HP.

Component	Condition	Symptom
Original Length / Width Sensor	ON	The correct original size is undetectable if original does not match the sensor pattern of the original size. Depending on the set paper when a master is made in this state, there may be a size disagreement warning, auto rotation or Reduce/Enlarge
	OFF	
Master Set Cover Sensor	Open	The "D" jam indicator is lit and cannot be canceled.
	Shorted	The "D" jam indicator is lit when the Master Set Cover is open.
Master End Sensor	There is a master on the drum.	The "D" jam indicator is lit when there is no master. The Jam LED is on. Cannot detect Master End. Roll-up jam, image, solid image, dirty press roller occurred when the master was torn off the master roll and it was twisted around the drum.
	No master	The "load new master roll" indicator is lit and the "load new master roll" LED is on.
Paper Height Sensor	Open	The paper table goes up over the sensor, and E-02 is displayed
	Shorted	The "A" jam indicator is lit whenever a copy is made.
Registration Sensor	reflected light / There is a paper	The "A","B" jam indicator is lit and cannot be canceled.
	No paper	The "A" jam indicator is lit whenever a copy is made.
Paper End Sensor	reflected light / There is a paper	Printing can begin even if there is no paper, but the "A" jam indicator will be lit.
	No paper	The "load more paper" indicator is lit. The paper table moves down to the lower position, if it is not at the lower position.

Component	Condition	Symptom
Cutter HP Sensor	ON	E-01 is displayed.
	OFF	
Paper Size Sensor	ON	The correct paper size is undetectable if paper does not match the paper size sensor pattern. A size different from the set paper or "*" is displayed. When a master is made in this state, there may be a size disagreement warning or solid image.
	OFF	
Paper Length Sensor	Reflected light	If paper which should not be detected by the sensor is set, it is detected, and a size different from the set paper is displayed. The press roller becomes dirty whenever the paper is shorter than the image.
	No paper length	If the paper detected by the sensor is set, it will not be detected, and a size different from the set paper is displayed. Long images will be cut because the machine does not detect the presence of long paper sizes on the table.
Ink Idling Roller HP Sensor	ON	E-41 is displayed.
	OFF	
Printing Pressure HP Sensor	Open	E-43 is displayed.
	Shorted	
2nd Drum Master Sensor	Reflected light / There is a master on the drum.	Even if a clamp error occurs, the Master Push Mylar is pressed and becomes dirty. The “D” jam indicator is lit.
	No master	The Master Push Mylar is not pressed. Cut errors cannot be detected.

Component	Condition	Symptom
Duct Jam Sensor	There is a master on the drum.	The "D" jam indicator is lit.
	No master	There is a master in the lower master tray, but the duct jam sensor does not detect a master, the master vacuum fans do not pull the master, and E-01 is displayed.
Duct Plate HP sensor	ON	E-42 is displayed.
	OFF	
Master Edge Sensor	There is a master on the drum.	The "D" jam indicator is lit.
	No master	
Thermal Head HP Sensor	increase the pressure	E-47 is displayed.
	release the pressure	
Thermal Head Temperature Sensor	Open	E-09 is displayed whenever the start button is pushed.
	Shorted	E-04 is displayed whenever the start button is pushed.
ADF Original Detection	Open	The original is fed even if the ADF does not have an original. Therefore the "P" jam indicator is lit The Jam LED is ON. The machine cannot shift to the energy-saving mode at the correct time.
	Shorted	The Platen Cover is scanned even if the ADF has an original Even if the original is set in the ADF in energy-saving mode, it cannot return from energy-saving mode.

Component	Condition	Symptom
ADF Skew Correction	ON: reflected light	The “P” jam indicator is lit.
	OFF: No reflected light	The “P” jam indicator is lit when paper is fed-in from ADF.
ADF Registration	ON: reflected light	The “P” jam indicator is lit.
	OFF: No reflected light	The “P” jam indicator is lit when paper is fed-in from ADF.
ADF Org Exit	ON: reflected light	The “P” jam indicator is lit.
	OFF: No reflected light	The “P” jam indicator is lit when paper is fed-in from ADF.
ADF Org Feed Cover	Open	The “close the ADF cover” indicator is lit.
	Shorted	The original is fed, even if the ADF cover is open. Therefore the “P” jam indicator is lit
ADF Lift Up	Open	The Platen Cover is read even if the ADF has an original and the ADF is not lifted.
	Shorted	The original is fed, even if the ADF cover is open. Therefore the “P” jam indicator is lit

Switches

Component	Condition	Symptom
Front Door Safety Switch	Open	The “open cover” indicator is lit. The “open cover” LED is on.
	Close	Main unit error (“A”,”B”,”C” jam and No ink) cannot be canceled. Drum information is not updated even if drums are exchanged with the main switch on. An SC occurs if you make a master. The Interlock SW (door cover side) is OFF when the door cover is open, and an SC will occur when a master is made.
Main Switch	OFF	The machine does not turn on.
	ON	The machine does not turn off. E-61 is displayed when you shut off the machine.
Master Making Unit Set Switch	Connect	The “Lower Master Tray is Open” indicator is lit; even though, the master making unit is not set. Cannot be canceled.
	Open	The “No Master Making Unit” indicators are lit and cannot be canceled.
Eject Box Set Switch	ON	The master is fed to the eject box, even if there is no eject box.
	OFF	The “No eject box” indicators are lit and cannot be canceled.
Lower Master Tray Set Switch	ON	Master making begins, but the lower master tray is open, the master vacuum fans do not pull the master, and E-01 is displayed.
	OFF	The “Lower Master Tray is Open” indicator is lit.

Component	Condition	Symptom
Interlock Switch	ON	Can operate the Vacuum fan, clamper, Blower fan motor, Eject roller, Pressure plate and drum if there is no Eject box.
	OFF	An SC is displayed for the clamper, pressure plate, or drum when the main switch is turned on.

Power Supplies

Component	Condition	Symptom
+5v (CN102-4)	No supply	The machine does not turn on.
+5v (CN102-2, 3)	No supply	The machine does not turn on, but LED103 on the MPU blinks.
+12v (CN102-9)	No supply	Black stripes in the image.
-12v (CN102-8)	No supply	The LCD/LEDs on the operation panel do not indicate.
+24v (CN111-3, 4, 5, 6)	No supply	E-47 is displayed, and the output mode in SP mode does not turn anything on except the main motor.
+24v (CN111-1)	No supply	E-12 is displayed, and SP5-13, 14, 15 (master eject motor/ pressure plate motor output mode) do not turn the motor on.
Motor drive board FUSE	FUSE	The “open cover” indicator is lit.
FU700(PSU)	FUSE	The machine does not turn on.
FU701 (PSU)	FUSE	E-41 is displayed, and the output mode in SP mode does not turn anything on except the main motor.
FU702(PSU)	FUSE	E-12 is displayed, and the output mode in SP mode does not turn anything on except the main motor.
FU703,FU704(PSU)	FUSE	E-06 is displayed.

Controller

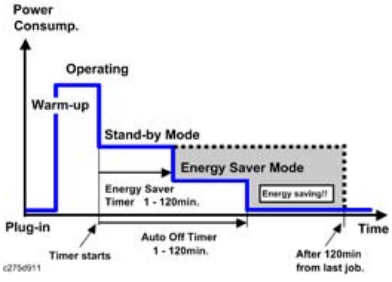
Component	Condition	Symptom
CPU	Count Registration Error	CPU error
	Cashless error	
	TLB error	
ASIC	DMA error	ASIC error
	Timer error	
	Registration error	
SDRAM	ROM monitor usage area error	RAM error
	1 bit shift error	
	All area error	
SSCG	ACK error	ASIC error
NVARM	ROM monitor using area error	NVRAM error
	All area error	
NIC	NIC error	NIC error
Interrupt	ASIC interrupt registration check error	CPU error
ROM	ROM monitor CRC error	ROM error
	Kernel CRC error	
	ROMFSCRC error	

7. Energy Saving

Energy Save

Energy Save

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: 1 minute
- Auto off timer (1 – 120 min): Off

  Default settings:

C279	1min.

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.

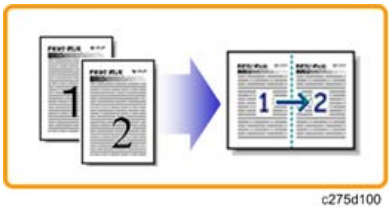
Paper Save

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.

C279

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.

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

MEMO

Model PD-D1
Machine Code: C279

Appendices

3 February, 2012

TABLE OF CONTENTS

1. Appendix: General Specifications

Specifications

Main frame

Configuration:	Stand-alone
Master Process:	Digital with 400 dpi thermal head (Fine mode: 400 × 600 dpi)
Scanning (Pixel Density):	600 × 400 dpi (Fine mode: 600 × 600 dpi)
Originals:	Sheet/Book
Printing process:	Fully automatic one-drum stencil system
Original Size:	Maximum 297 × 432 mm / 11.7" × 17.0"
Copy Paper Size:	Maximum: 297 × 432 mm / 11.7" × 17.0" Minimum: 70 × 148 mm / 2.8" × 5.8"
Copy Paper Weight:	47.1 – 209.3 g/m^2, 12.5 – 55.6 lb.
Printing Area:	A3 drum: 290 × 410 mm / 11.4" × 16.1" B4 drum: 251 × 355 mm/ 9.9" × 14" A4 black drum: 200 × 290 mm / 7.9" × 11.4"
Printing Speed:	60, 75, 90, 105, 130 sheets/minute (5 steps) *A6 SEF, A5 LEF, and indeterminate forms (length of 170 mm or less) can be processed at rates of 60, 75, 90, and 105 sheets/minute.
Master Eject Box Capacity:	65 masters (A3, B4 drum) 70 masters (A4 drum) *Normal conditions

Reproduction Ratios:	3 enlargements and 4 reductions		
		A3 version	**DLT version**
	Enlargement	141% 122% 115%	155% 129% 121%
	Full Size	100%	100%
	Reduction	93% 87% 82% 71%	93% 77% 74% 65%

Zoom:	50 to 200%, in 1% steps
Power Source:	America: 120 V, 60 Hz Europe, Asia: 220 – 240 V, 50/60 Hz
Noise Emission	

	Sound Power Level	**Operating Position Sound Power Level**
Standby:	Not more than 45 dB (A)	Not more than 31 dB (A)
Copying 60 rpm:	Not more than 73 dB (A)	Not more than 59 dB (A)
Copying 90 rpm:	Not more than 76 dB (A)	Not more than 62 dB (A)
Copying 130 rpm:	Not more than 81.5 dB (A)	Not more than 66 dB (A)

Note

- The above measurements were made in accordance with ISO 7779 standard.

Dimensions (W x D x H)	Tables closed: 805 × 705 × 638 mm (31.7" × 27.8" × 25.1") Tables opened: 1370 × 705 × 638 mm (53.9" × 27.8" × 25.1") **Note** • Measurement Conditions • 1) Without the ADF • 2) Without the table
Weight:	America, Europe, Asia (Except for Chinese Version): 87 kg (191.8 lb) China: 89 kg (196.21 lb) (Excluding ADF, platen cover, ink, and master)
Master Process Time:	Less than 23 seconds (A4 copying) Less than 27 seconds (A3 copying) Less than 26 seconds (B4 machine) Less than 24 seconds (B4 machine-A4 copying) **Note** • Measurement Conditions 1. 100% size 2. Normal mode (Not fine mode)
Paper Table Capacity:	1,000 sheets (64 g/m^2, 17 lb)
Paper Delivery Table Capacity:	1,000 sheets (64 g/m^2, 17 lb)
Leading Edge Margin:	5 ± 3 mm
Trailing Edge Margin:	2 mm
Side Registration Adjustable Range:	± 10 mm
Vertical Registration Adjustable Range:	± 15 mm

Master Type:	Thermal master roll type: 320 mm width, 110 m/roll (A3 master roll) 280 mm width, 110 m/roll (B4 master roll) Yield: 200 masters/roll (A3 Drum) 220 master/roll (B4 Drum) 315 masters/roll (A4 Drum) Maximum run length per master: 4,000 prints
Master Storage Conditions:	Temperature: 0 to 40 °C Humidity: 10 to 95% RH Recommended maximum storage period: One year after production date Note: Avoid locations exposed to direct sunlight.
Ink Type:	600 ml cartridge type Available colors: Black, Red, Blue, Green, Brown, Purple, Yellow, Navy, Maroon, Orange, Teal, Gray, Reflex blue, Hunter green, Burgundy, and Violet
Ink Storage Conditions:	Temperature: -5 to 40 °C (Optimal conditions: 15 to 25 °C) Humidity: 10 to 95% RH (Optimal conditions: 20 to 70% RH) Recommended maximum storage period: 18 months after production date Note: Avoid locations exposed to direct sunlight.

Supported Paper Sizes

Paper Feed (mainly Europe and Asia)

Paper sizes	Size (W × L)
A3 SEF	297 × 420 mm
B4 JIS SEF (Japanese Industrial Standard)	257 × 364 mm

Paper sizes	Size (W × L)
A4 LEF	297 × 210 mm
A4 SEF	210 × 297 mm
B5 JIS LEF	257 × 184 mm
B5 JIS SEF	184 × 257 mm
A5 SEF	148 × 210 mm
B6 JIS SEF	128 × 182 mm
A6 SEF	105 × 148 mm
F LEF	13" × 8"
Others	Vertical: 148 - 432 mm, Horizontal: 70 - 297 mm

Paper Feed (mainly North America)

Paper sizes	Size (W x L)
Ledger	17" × 11"
Legal LEF	14" × 8.5"
Letter LEF	11" × 8.5"
Letter SEF	8.5" × 11"
Half Letter LEF	8.5" × 5.5"
Half Letter SEF	5.5" × 8.5"
Others	Vertical: 5.8" - 17", Horizontal: 2.8" - 11.7"

1

Software Accessories

The printer drivers and utility software are provided.

Printer Drivers

The following OS are supported (Only 32 bit)

- Windows XP Professional Edition (*)
- Windows XP Home Edition
- Windows 2003 Server Standard Edition (*)
- Windows 2003 Web Edition (*)
- Windows 2003 R2 (*)
- Windows Vista Home Basic
- Windows Vista Home Premium
- Windows Vista Home Enterprise (*)
- Windows Vista Home Ultimate (*)
- Windows Server 2008 (*)
- Windows Server 2008 R2 (*)
- Windows 7 Starter
- Windows 7 Home Premium
- Windows 7 Professional
- Windows 7 Ultimate

(*)Exclude Cluster and Terminal

Utility Software

Software	Description
Smart Device Monitor for Admin	• Switch to / come out of Energy Saver mode • Monitor multiple printers in use / Create groups • Display the printer status / settings • Make printer settings • Check print job histories of documents identified by user codes

Software	Description
Web Image Monitor	• Display the printer status / settings • Check print job status and history, or deleting the print job • Make printer settings • Network protocol settings • Security settings
Desktop Binder – Smart Device Monitor	• Peer-to-Peer print function • Display an error / a completion message • Monitor multiple printers in use • Display up to 100 print jobs

Optional Equipment

Auto Document Feeder

Paper Size/Weight:	Size	A3 to A5, DLT to HLT
	Weight	40 to 128 g/m^2 (10 to 34 lb.)
Table Capacity:	50 sheets (80 g/m^2, 20 lb)	
Power Consumption:	50W	
Power Source	DC24V±10%, DC5V±5%, DC5VE±5% From mainframe	
Dimensions (W x D x H):	550 × 496 × 120 mm (21.7" × 19.5" × 4.7")	
Weight:	10 kg (22 lb.)	

Tape Dispenser

Tape feed length	250 mm
	9.8 inch
Tape feed speed	100 mm/s
	3.9 inch/s

Power Consumption	15W
Power Source	From mainframe
Dimension(WxDxH)	155 × 105 × 60mm
	6.1" × 4.1" × 2.4"
Weight	700 g
	1.5lb

Network Printer Controller (Printer Unit Type 4545A)

Printer language	RPCS
Host interface	USB 2.0
Network interface	100Base-TX/10Base-T
Protocol	TCP/IP
Engine interface	LUVI
On board memory	64MB
Optional PostScript	Not available
Supported resolutions	400 dpi
Job history check	By user ID identified on printer driver
Web Image Monitor	Available

2. Appendix: PM Tables

PM 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. For maintenance items with entries in both of them, use whichever comes first.

C: Clean, R: Replace, L: Lubricate

Interval / Item	Time				EM	NOTE
	6M	1Y	Print Counter	Any time		
Scanner						
Exposure Glass	C	C		C		Dry Cloth
Exposure Lamp						Dry Cloth
Master Feed						
Thermal Head				C		Cloth and alcohol
Cutter Unit						
Original Feed Roller						
Platen Roller		C				Damp cloth (water) and dry cloth
Drum Master Sensor		C				Damp cloth (water) and dry cloth
Drum						
Ink container cradle		C				Damp cloth (water) and dry cloth
Drum Master Sensor		C				Dry cloth
Drum Master Sensor Black Decal	C	C		C		Dry cloth
Ink Roller One-way clutch						
Drum Removable Gear		L				

Interval / Item	Time				EM	NOTE
	6M	1Y	Print Counter	Any time		
Paper Feed						
Feed Start Timing Sensor	C	C				Alcohol and dry cloth
Registration Roller	C	C				Alcohol and dry cloth
Separation Pad	C	C/R	1200k			Alcohol and dry cloth
Paper Table	C	C		C		Alcohol and dry cloth
Paper Pick-up Roller/ Paper Feed Roller [A]	C	C/R	1200k	C		Dry cloth
Paper Exit						
Paper Exit Sensor	C	C				Dry cloth
Printing Pressure						
Press Roller		(R)	1200k	C		Damp cloth (water) and dry cloth (R): If continuously printing the same small size
Drive Unit						
Drum Drive Gears		L				

Other Yield Parts

The parts mentioned in these tables have a target yield. However, the total copy/print volume made by the machine will not reach the target yield within the machine's targeted lifetime if the machine is used under the target usage conditions (ACV, color ratio, P/J, and C/O). So, these parts are categorized not as PM parts but as yield parts (EM parts).

ADF (D578)

Item	EM	80K (Original)	NOTE
Pick-up Roller	C	R	Clean with water
Feed Belt	C	R	Clean with water
Separation Roller	C	R	Clean with water
Other Rollers	C	C	Clean with water
Gears	L		Lubricate, if necessary
Platen Sheet	C	C	Clean with water or alcohol

3. Appendix: Service Call Conditions

Service Call Conditions

Service Call

No.	Symptom	Possible cause
E-00	Clamper error 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
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 turn on.	Table Drive Table motor Table height sensor Table lower sensor
E-04	Thermal Head Overheat The temperature of the thermal head is grater than 54C when the Start key is pressed.	Overheat (wait for the thermal head to cool down) Thermal head
E-06	Main Motor error The CPU cannot detect the master eject position sensor (drum HP) signal within 5.0 seconds after the main motor turn 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 2.82 volts.	Thermal head thermistor Thermal head connector

No.	Symptom	Possible cause
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 signal is not detected within 6.0 seconds after the pressure plate motor turn on.	Pressure plate drive Pressure plate motor Plate position sensors
E-13	Scanner error The scanner HP sensor does not turn on within 15.0 seconds after the main switch turns on. On the Initial Movement, the Scanner HP sensor does not turn off when the scanner moves 22.2 mm towards the scanning position. On the Initial Movement, the scanner HP sensor does not turn on within 2.0 seconds after the main switch turns on.	Scanner drive Scanner HP sensor Scanner motor
E-14	SBU Error SBU errors are most often caused by a SBU element or lamp that is in poor condition.	SBU
E-17	Drum Thermistor Open The thermistor output voltage is over 2.67 volts.	Thermistor connector Thermistor
E-18	Drum Overheat The temperature of the drum is greater than 54C when the Start key is pressed.	Drum overheat Thermistor
E-21	Paper Exit Timing Sensor error The paper exit timing sensor does not activate before the master eject position sensor activates.	Drum sensors Feeler
E-22	2nd Feed Timing Sensor error The 2nd feed timing sensor does not activate before the paper exit timing sensor activates.	Drum sensors Feeler
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

No.	Symptom	Possible cause
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.	Thermal head MPU Thermal head connector disconnected
E-41	Ink Idling roller HP sensor remains on or off The idling roller HP sensor does not change status within 4.0 seconds after the idling roller motor on signal is generated.	Idling roller HP sensor Ink idling motor
E-42	Duct plate error The duct plate HP sensor does not change status within 4.0 seconds after the duct plate motor on signal is generated.	Duct plate HP sensor Duct plate motor
E-43	Printing Pressure error The printing pressure HP sensor does not change status within 4.0 seconds after the printing pressure motor on signal is generated.	Printing pressure HP sensor Printing pressure motor
E-44	MSU error When error signal is received from the MPU board.	MPU
E-47	Thermal head driving error The thermal head HP sensor does not change status within 4.0 seconds after the thermal head driving motor on signal is generated.	Thermal head HP sensor Thermal head driving motor
E-50	Insufficient NVRAM data The data in the NVRAM is not the expected data for this machine (version update error)	NVRAM (MPU)
E-51	Flash ROM error Data cannot process correctly when the firmware is downloaded or an original is stored in the machine.	Flash ROM (MPU)

No.	Symptom	Possible cause
E-52	Registration motor Drive IC error If the Driver IC detects an over-current or overheating condition, the machine outputs the FAULT signal. If the FAULT signal is detected, this SC appears on the display. If the same SC repeatedly appears on the display, the Driver IC may be damaged.	Registration motor MPU
E-53	Paper feed motor If the Driver IC detects an over-current or overheating condition, the machine outputs the FAULT signal. If the FAULT signal is detected, this SC appears on the display. If the same SC repeatedly appears on the display, the Driver IC may be damaged.	Paper feed motor MPU
E-54	Ri2000A Configuration error Turn on the Main switch, come out of Enegry Saving	MPU
E-55	GATC2 (FPGA) Configuration error	MPU
E-56	GATC2 (FPGA) Configuration writing error	MPU *See: Error Code (Display:E42)
E-61	Auto Off Switch error The main switch does not turn off for more than 6.0 seconds.	Auto off switch Auto off switch connector disconnected
E-70	DF Gate network error 10 seconds have passed since the original moved from the registration position, but the DF gate signal has not turned on. Note: DF gate has nothing to do with the DF (document feeder)	Network
E-71	DF connect error ADF model code that is different from the code for this machine is received."	Harness Main board
(*)	OPU2 (FPGA) Configuration error Configuration does not end normally when the main switch is turned on.	MPU

(*)When this error occurs, the Energy Saving mode LED blinks at intervals of 0.1 seconds. An error code is not displayed.

Program Download Error Codes

Display	Symptom	Possible cause
E24	SD Card Access error.	1. Re-insert the SD card 2. Replace the SD card
E35	Does not match the module.	
E36	Other reasons, the module does not exist.	Rewrite the correct ROM data in the SD card.
E40	Engine download execution failure(main)	Replace the MPU
E41	Engine download execution failure(sub)	Replace the MPU
E42	Engine download execution failure (FPGA Configuration error)	Replace the MPU

4. Appendix: Service Program Mode Tables

SP Table

Service Program Mode

Reading SP mode tables

SP table reads as follows.

SP No	SP name		
	Detailed explanation of SP No.		
Branch number	Menu item	Category*	[Max to Min / **Default** / variation]
	Detailed explanation of branch number.		

Note

- "Categories" on the right of the asterisk (*) SP have been described, the settings are stored in NVRAM.
- "SP name" and "Menu item" after the (SSP) SP has been described as the super-service mode is SP.

SP mode tables

1	Copy data		
	Display data log such as number of prepress numbers and printing.		
1-1	Total master counter		
1-20	Total print counter		
1-21	C/O 1		
1-22	C/O 2 to 3		
1-23	C/O 4 to 5		

1-24	C/O 6 to 10		
1-25	C/O 11 to 20		
1-26	C/O 21 to 50		
1-27	C/O 51 to 70		
1-28	C/O 71 to 100		
1-29	C/O 101 to 200		
1-30	C/O 201 to 500		
1-31	C/O 501 to 1000		
1-32	C/O 1001 to 2000		
1-33	C/O 2001 to 3000		
1-34	C/O 3001 to 4000		
1-35	C/O 4001 to		
1-50	D - master clamp jam		
	Display frequency and incidence.		
1-51	E - master eject jam		
	Display frequency and incidence.		
1-52	E - master compressing jam		
	Display frequency and incidence.		
1-53	A - paper non-feed jam		
	Display frequency and incidence.		
1-54	A - paper registration jam		
	Display frequency and incidence.		
1-55	B - paper wrapping jam		
	Display frequency and incidence.		

1-56	C - paper delivery jam		
	Display frequency and incidence.		
1-57	P - original feed-in jam		
	Display frequency and incidence.(Using ADF)		
1-58	P - original feed-out jam		
	Display frequency and incidence.(Using ADF)		
1-59	D - master feed jam		
	Display frequency and incidence.		
1-60	D - master cut jam		
	Display frequency and incidence.		
1-61	D - mater duct jam		
	Display frequency and incidence.		
1-70	Main firmware part number		
	Displays the main firmware parts number and the suffix.		
1-72	Serial number		
1-73	Main firmware version		
1-75	Serial number (Factory)		
1-78	ADF ROM part number		
1-80	Error code history		
	Displays the latest 40 SC codes. Use the ◁▷ key to view the records.		
1-81	Telephone number display		

1-83	SBU hard error location display		
	This function shows where a SBU error has occurred. • bit 7: 0 (not used) • bit 6: 0 (not used) • bit 5: GASBU-N Id error • bit 4: VSP5100 reset error • bit 3: GASBU-N reset error • bit 2: Serial communication error • bit 1: Power ON/reset clear error • bit 0: Connect detection error		
1-84	SBU adjust error location display		
	This function shows where a SBU error has occurred. • bit 7: 0 (not used) • bit 6: 0 (not used) • bit 5: Re error (Gain error) • bit 4: Ro error (Gain error) • bit 3: Ge error (Gain error) • bit 2: Go error (Gain error) • bit 1: Be error (Gain error) • bit 0: Bo error (Gain error)		
1-85	SBU level error location display		
	This function shows where a SBU error has occurred.		
	• bit 15: Ge error(Lamp error) • bit 14: Go error (Lamp error) • bit 13: 0 (not used) • bit 12: 0 (not used) • bit 11: 0 (not used) • bit 10: 0 (not used) • bit 9: Ge error (Black level error) • bit 8: Go error (Black level error) • bit 7: 0 (not used) • bit 6: 0 (not used) • bit 5: 0 (not used) • bit 4: 0 (not used) • bit 3: Ge error (White level error) • bit 2: Go error (White level error) • bit 1: 0 (not used) • bit 0: 0 (not used)		

1-160	Not used		
1-161	Key counter setting check		
1-162	Key card setting check		

2	Basic setting		
	Set the initial value of printing speed, ink detection, and international machine settings.		
2-1	Default print speed		[1 to 5 / **3** / 1]
	Set the initial value of printing speed when you turn on and mode clear. • 1: 1st Point(60rpm) • 2: 2nd Point(75rpm) • 3: 3rd Point(90rpm) • 4: 4th Point(105rpm) • 5: 5th Point(130rpm)		
2-2	Default image position		[-15.0 to 15.0 / **0.0** / 0.1 mm]
	Set the initial value of "top-and-bottom position" when you turn on and mode clear.		
2-4	Destination code		[0 to 9,- / - / -]
	Set the Destination code.		
2-5	Not used		[0 to 2 / **0** / -]
2-6	Image position display		[0 to 2 / **1** / 1]
	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. • 0:SLOW(1.5 seconds) • 1:NORMAL (1.0 second) • 2:FAST(0.5 second)		

2-7	Vendor Selection		[*1 / **2** / Ricoh]
	Brands depend on the destination. *1 Displays only brand that can be set. RICOH / TTEC / KMBJ / NRG / Nashuatec /RexRotary / Gestetner / Lanier / Savin / Standard *2 If the model code has not been set, if there are multiple brands of a single model code, "RICOH" has been set.		
2-10	Ink detection board		[ON-OFF / **ON** / -]
	Sets whether to detect the ink in the drum. • ON: Detect the ink. • OFF: The ink is considered always exist. ("OFF" is used in the test or if the ink be removed from the drum..)		
2-11	Paper end sensor		[ON-OFF / **ON** / -]
	Set whether to detect the presence of the paper. • ON: Detect the presence of the paper. • OFF: The paper is considered always exist.(Used in the test)		
2-12	Drum master sensor		[ON-OFF / **ON** / -]
	Set whether to detect the presence of the drum master. • ON: Detect the presence of the drum master. • OFF: The drum master is considered always exist.(Used in the test)		
2-13	Platen cover sensor		[ON-OFF / **ON** / -]
	Set whether to detect the presence of the platen cover. • ON: Detect the presence of the platen cover. • OFF: The platen cover is considered always exist.(Used in the test)		
2-15	Paper length sensor		[ON-OFF / **ON** / -]
	Set whether to detect the presence of the paper length sensor on the master feed unit. • ON: Detect the presence of the paper length sensor. • Always assumed to be the largest(mm:420mm, inch:432mm). (Used in the test)		

2-21	Ink setting		[0 to 1 / **0** / 1]
2-22	Double count-up (A3)		[0 to 2 / **0** / 1]
	When using A3 Drum, electromagnetic counter (master, paper) count up every 2 / print. • 0: As usual, one count increase. • 1: Two counts increase only master. Paper increase one count. • 2: Two counts increase both master and the paper.		
2-23	Key card count setting		[0 to 2 / **0** / 1]
	This function is used to specify the number of sheets to be printed per Key Card counter count. • 0:Master • 1:Only Print number(Master revision) • 2: Only Print number(Number conversion)		
2-24	Key card master count conv.		[0 to 20 / **1** / 1Print]
	This function is valid only if the key card count setting is 1. Example: If this SP is set to 20 (in other words, if you decide that the cost of one master is 20 times the cost of one print), every time one master is made, the print count increases by 20.		
2-25	Key card print count setting		[0 to 3 / **1** / 1Print]
	This function is valid only if the key card count setting is 2. The number of sheets to be printed per print counter count.		
2-28	Idling after less than 3 prints		[YES - NO / **NO** / -]
	Ensures that the first print has sufficient ink density if the machine was not used for a long time. Also, when the customer continuously prints small numbers (1 to 3 prints), ink leaks occur from the trailing edge of the drum. When SP 2-38 is on, the idling roller motor turns to press the drum idling roller against the inner surface of the drum screen after printing. Then, the idling motor turns to remove the ink leaks. The idling motor action depends on the settings of SP 2-28 and 2-29.		

2-29	Idling after how many prints		[1 to 5 / **3** / 1 Print]
	• If SP 2-28 is set to 'YES', the idling motor turns if 3 or more prints were made. • If SP 2-28 is set to 'NO', the idling motor turns if the number of prints made is the same as or more than the setting of SP 2-29.		
2-31	Ink Auxiliary Supply		[0:After 1:Before 2:No / **0:After** / -]
2-32	Ink supply after trial		[ON-OFF / **OFF** / -]
	Ink is detected and supplied after the trial print when this SP is on.		
2-33	Re-Feeding setting		[ON-OFF / **ON** / -]
	When the machine performs re-feeding, the paper registration position can be up to 5mm out of range. If this 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.		
2-34	Slow starting mode		[30rpm / 45rpm / **45rpm** /-]
	Increase the image density of trial prints. The figures below are drum-rotating speeds. A setting of "30rpm" will increase the image density of trial prints. This mode was added because trial print images are lighter than with other models.		
	<30rpm> • Trial Print: 30rpm • 1st Print: 45rpm • 2nd Print: 60rpm • 3rd Print: 75rpm • 4th Print: 90rpm • 5th Print: 105rpm • 6th Print: 130rpm	<45rpm> • Trial Print: 45rpm • 1st Print: 60rpm • 2nd Print: 75rpm • 3rd Print: 90rpm • 4th Print: 105rpm • 5th Print: 130rpm • 6th Print: 130rpm	
2-35	Print pressure fixing mode		[ON - OFF / **ON** / -]
	This function is used to specify whether the print pressure point is set to automatic or fixed. • Auto: Decide on Sp6-70 to 87 • Fixed: Decide on SP2-36 SP2-37setting is not reflected.		

2-36	Print pressure in fixing mode		[1 to 5 / **4** / 1]
	When the print pressure point for SP2-35 is set to fixed, this field is used to specify the value at which it is fixed.		
2-37	Printing pressure adjust		[-2 to 2 / **0** / 1]
	Changes the printing pressure of all printing speeds (60 to 130 rpm). When you adjust printing pressure for each printing speed or temperature, use SP6-70 to 87.		
2-38	Ink idling roller setting		[0 to 2 / **1** / 1]
	Ensures that the first print has sufficient ink density if the machine was not used for a long time. The idling roller motor turns to press the drum idling roller against the inner surface of the drum screen. • 0: OFF • 1: The machine enters the drum idling mode after the master is ejected. • 2: The machine enters the drum idling mode after the master is made.		
2-39	Paper delivery motor speed		[-55 to 55% / **0** / 1%]
	Feeding 15rpm,30rpm,45rpm will only affect.		
2-40	Idling after print		[ON-OFF / **ON** / -]
	Set whether to detect the idling after printing • ON: To the idling(To press the idling roller) • OFF: Don't idling(Not to press the idling roller)		
2-41	T/H control by temp: color		[ON-OFF / **ON** / -]
	Set the ink temperature compensation when use color ink. whether to detect the idling after printing • OFF: Temperature inside the drum takes a constant value irrespective.		
2-42	T/H control by temp: black		[ON-OFF / **ON** / -]
	Set the ink temperature compensation when use black ink. • OFF: Temperature inside the drum takes a constant value irrespective.		

2-43	T/H energy control		[0 to 50% / **7** / 1%]
	The default is 7%. This means that during normal printing mode, the thermal head energy is 93% of the maximum possible (100 – 7).		
2-44	T/H energy control - eco		[0 to 50% / **15** / 1%]
	The default is 10%. This means that in economy printing mode, the thermal head energy is reduced by another 10%. With the default settings, this means that the thermal head energy is 83% of maximum power (100-7-10).		
2-45	T/H control by temp: A4		[ON-OFF / **ON** / -]
	Set the ink temperature correction in the A4 drum. • OFF: Temperature inside the drum takes a constant value irrespective.		
2-46	T/H energy control: A4 drum		[0 to 50% / **12** / 1%]
	Initial value is 12%.In this case, that means thermal head energy can be up to 88% in printing mode (100-12=88%).		
2-47	T/H energy control: A4 eco		[0 to 50% / **15** / 1%]
	Initial value is 15%.In this case, in economy printing mode (A4) means that an additional 15% reduction will be thermal head energy. Thermal head energy in 78% maximum. (100-7-15=78%)		
2-50	T/H swinging mode		[ON-OFF / **OFF** / -]
	Sets whether to enable the shift of the thermal head writing position. • ON: Shift the values specified in the SP2-51(T/H swinging quantity).		
2-51	T/H swinging quantity		[±1 to 5mm / **2** / -]
	Set the shift amount of the thermal head writing position.		
2-52	T/H Control by Temp: Color (Fine)		[ON-OFF / **ON** / -]
	Set the ink temperature correction in the color ink density mode. • OFF: Temperature inside the drum takes a constant value irrespective.		
2-53	T/H Control by Temp: Black (Fine)		[ON-OFF / **ON** / -]
	Set the ink temperature correction in the black ink density mode. • OFF: Temperature inside the drum takes a constant value irrespective.		

2-54	T/H Energy Control: (Fine)		[0 to 50% / **7** / 1%-]
	Initial value is 7%.In this case, that means thermal head energy can be up to 93% in printing mode(density) (100-7=93%).		
2-55	T/H Energy Control -Eco (Fine)		[0 to 50 / **15** / 1%]
	Initial value is 15%.In this case, in economy printing mode (density) means that an additional 15% reduction will be thermal head energy. Thermal head energy in 78% maximum. (100-7-15=78%)		
2-56	T/H Control by temp: A4 (Fine)		[ON-OFF / **ON** / -]
	Set the ink temperature correction in the A4 drum density mode. • OFF: Temperature inside the drum takes a constant value irrespective.		
2-57	T/H Energy Control: A4 (Fine)		[0 to 50 / **7** / 1%]
	Initial value is 7%.In this case, that means thermal head energy can be up to 93% in printing mode(A4 density) (100-7=93%).		
2-58	T/H Energy Control: Eco: A4 (Fine)		[0 to 50 / **15** / 1%]
	Initial value is 15%.In this case, in economy printing mode (A4 density) means that an additional 15% reduction will be thermal head energy. Thermal head energy in 78% maximum. (100-7-15=78%)		
2-60	Bold letter mode		[ON-OFF / **OFF** / -]
	Makes a bold outline of a letter-mode image.		
2-61	Scanning shade on margin adj		[0 to 1 / **0** / 1]
	This function specifies whether to remove shades from the original when scanning. • 0: If an original is scanned while it is being pressed, This produces the same level of image quality as when the predecessor unit is used. • 1: If an original is scanned while it is not being pressed, shades are output. This produces the same level of image quality as when the predecessor unit is used.		

2-95	Paper table standby pos		[fall slightly/ normal / normal / -]
	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 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.		
2-100	Master making without printing		[ON-OFF / **OFF** / -]
	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. 1. Access SP2-100 (Make master without printing). Then press "OK". 2. Press the "Start" key while holding down the "#" key.		
2-101	Drum Master Out&wrap Setting		[ON-OFF / **OFF** / -]
	This function allows users to remove and wrap the master on the drum. The following keypad operations become available. Remove: Press the "Reset key" for more than three seconds Wrap: Press the "Master Making" key while pressing the "#" key. Do not leave the drum without a master for more than a day, or the surface of the drum will become dry.		
	Set whether to detect the presence of the master feed time. • OFF: Master feed time is invalid • ON: Master feed time is enable.		

2-115	Reg Improvement for 1st Prt		[ON-OFF / **OFF** / -]
2-120	Master Compression Time - A3		[0-3 / **0** / -]
2-121	Master Compression Time - B4		[0-3 / **0** / -]
2-122	Master Compression Time - A$		[0-3 / **0** / -]
2-130	5th Speed Paper Limit		[ON-OFF / **OFF** / -]
	This function is used to suppress printing at the 5th speed if the feed direction length of the paper is less than 170 mm. • ON: Suppress printing at the 5th speed if the feed direction length of the paper is less than 170 mm. • OFF: Don't suppress at the 5th speed by the paper size. The accuracy of the image is degraded.		

3	System settings
	Set the time, key card/key counter settings.

3-1	Input the present time		[yy.mm.dd hh.mm.ss / **-** / -]
	Input the year, the month / date, and the time in the following order. Press the Enter (#) key between each one. 1. Input the last two digits of the present year (two-digit number). 2. Input the present month (two-digit number). 3. Input the present date (two-digit number). 4. Input the present hour (two-digit number). 5. Input the present minute (two-digit number). 6. Input the present second (two-digit number). Example: 2003/January/27th/13:00:00 1. Input 03 then press Enter (#). 2. Input 01 then press Enter (#). 3. Input 27 then press Enter (#). 4. Input 13 then press Enter (#). 5. Input 00 then press Enter (#). 6. Input 00 then press OK		
3-2	Input Tel number		[0 to 9(19-digit) / **0** / -]
	Input the phone number to display when service call		
3-3	Input serial number		[0 to 9, A to Z(19-digit) / **0** / -]
	Input the machine number. • 0 to 9: Numeric key • A to Z: Print speed key • - :Memory/Class key		

3-4	Input installation date		[yy.mm.dd / **00.1.1** / -]
	Input the installation date as shown below. Press the Enter (#) key between each one. 1. Input the last two digits of the present year (two-digit number). 2. Input the present month (two-digit number). 3. Input the present date (two-digit number). Example: 2003/January/27th/13:00:00 1. Input 03 then press Enter (#). 2. Input 01 then press Enter (#). 3. Input 27 then press OK		
3-9	Key counter setting		[YES - NO / **NO** / -]
	Set whether connect the key counter.		
3-10	Key card setting		[YES - NO / **NO** / -]
	Set whether connect the key card.		

4	Input mode		
	Checks the input of sensors.		
4-1	Scanner HP sensor		
4-2	Platen cover sensor		
4-3	Original Length Sensor1		
4-4	Original Length Sensor2		
4-5	Thermal head HP sensor		
4-6	Master making unit set SW		
4-7	Master set cover sensor		
4-8	Cutter HP switch		
4-9	Master end sensor		
4-10	Master edge sensor		

4-11	Duct plate HP sensor		
4-12	Lower master tray switch		
4-13	Duct jam sensor		
4-14	Eject box set switch		
4-15	Master eject sensor		
4-16	Pressure plate HP sensor		
4-17	Pressure plate limit SN		
4-18	Ink detection signal		
4-19	Color drum signal		
4-20	A4 drum signal		
4-21	Drum set signal		
4-22	Clamper open sensor		
4-23	Clamper close sensor		
4-24	Drum master sensor		
4-25	Master eject position SN		
4-26	Paper exit timing sensor		
4-27	Printing pressure HP sensor		
4-28	2nd drum master sensor		
4-30	Table lowering switch		
4-31	Table lower sensor		
4-32	Paper height sensor		
4-33	Paper end sensor		
4-34	Paper length sensor		
4-35	Paper width signal 0		

4-36	Paper width signal 1		
4-37	Paper width signal 2		
4-38	Paper width signal 3		
4-39	Paper width signal 4		
4-40	Paper width signal 5		
4-41	Registration sensor		
4-42	Feed start timing sensor		
4-43	2nd feed timing sensor		
4-44	Paper exit sensor		
4-50	Door safety sensor		
4-51	Main motor error signal		
4-70	Key counter signal		
4-71	Key card signal		
4-90	Ink idling roller HP sensor		
4-91	Ink temperature		
4-120	ADF Original Length 1 (B5)		
4-121	ADF Original Length 2 (A4)		
4-122	ADF Original Length 3 (LG)		
4-123	ADF Original Width S		
4-124	ADF Original Width M		
4-125	ADF Original Width L		
4-126	ADF Original Width LL		
4-127	ADF Original Detection		
4-128	ADF Rear Edge Detection		

4-129	ADF Skew Correction		
4-130	ADF Registration		
4-131	ADF Org Exit		
4-132	ADF Org Feed Cover		
4-133	ADF Lift Up		

5	Output mode		
	Checks the output of motors. Check the output of the selected operation is performed while pressing the Start key.		
5-1	Exposure lamp (xenon lamp)		
5-2	Scanner motor - scan		
5-3	Scanner motor - return		
5-4	Scanner to HP		
5-5	Duct plate motor - close		
5-6	Duct plate motor - open		
5-7	Duct plate motor: to HP		
5-8	Duct fan motor		
5-9	Blower fan motor		
5-10	Master feed motor-Forward		
5-11	Master feed motor Backward		
5-12	VHD signal		
5-13	Cutter motor - forward		
5-14	Cutter motor - reverse		
5-15	Master re-setting		
5-16	Master push Mylar - push		
5-17	Master push Mylar - free		

5-18	T/H driving motor - up		
5-19	T/H driving motor - down		
5-20	Master eject motor		
5-21	Pressure plate motor:limit		
5-22	Pressure plate motor:to HP		
5-23	Main motor: 15 rpm		
5-24	Main motor: 30 rpm		
5-25	Main motor: 45 rpm		
5-26	Main motor: 60 rpm		
5-27	Main motor: 75 rpm		
5-28	Main motor: 90 rpm		
5-29	Main motor: 105 rpm		
5-30	Main motor: 130 rpm		
5-31	Main motor to HP		
5-32	Main motor to Master clamp		
5-33	Clamper motor: to open		
5-34	Clamper motor: to close		
5-35	Ink pump motor		
5-36	Pressure release solenoids		
5-37	Ink idling motor		
5-38	Ink idling roller: down		
5-39	Ink idling roller: up		
5-40	Table motor - down		
5-41	Table motor - up		

5-42	Paper feed motor: 15 rpm		
5-43	Paper feed motor: 30 rpm		
5-44	Paper feed motor: 45 rpm		
5-45	Paper feed motor: 60 rpm		
5-46	Paper feed motor: 75 rpm		
5-47	Paper feed motor: 90 rpm		
5-48	Paper feed motor: 105 rpm		
5-49	Paper feed motor: 130 rpm		
5-50	Registration motor: 15 rpm		
5-51	Registration motor: 30 rpm		
5-52	Registration motor: 40 rpm		
5-53	Registration motor: 60 rpm		
5-54	Registration motor: 75 rpm		
5-55	Registration motor: 90 rpm		
5-56	Registration motor: 105rpm		
5-57	Registration motor: 130rpm		
5-58	Air knife fan motors		
5-59	Vacuum fan motor		
5-60	Paper delivery motor - low		
5-61	Paper delivery motor - middle		
5-62	Paper delivery motor - high		
5-63	Paper counter		
5-64	Master counter		
5-65	Key counter signal		

5-66	Key card signal		
5-80	Printing pressure motor HP		
5-81	Move to pressure 1		
5-82	Move to pressure 2 (HP)		
5-83	Move to pressure 3		
5-84	Move to pressure 4		
5-85	Move to pressure 5		
5-100	All indicators on the panel		
5-101	Drum Home Position LED		
5-111	Auto OFF solenoid		
5-120	ADF Feed Motor Forward		
5-121	ADF Feed Motor Reverse		
5-122	ADF Transfer Motor Forward		
5-123	ADF Transfer Motor Reverse		
5-124	ADF Feed Clutch		
5-125	ADF Feed Solenoid		
5-126	ADF Reverse Solenoid		
5-128	ADF FGATE ON		

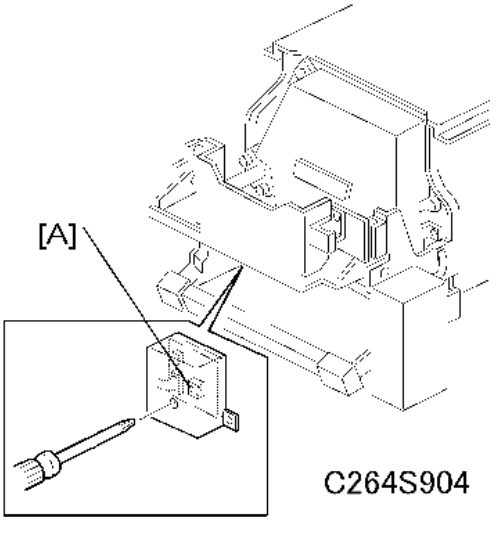
6	Adjustment		
	Adjust the threshold and operation of the sensors.		
6-1	Main-scan position -platen		[-5.0 to 2.0 mm / **0.0** / 0.1mm]
	Adjust the image position of the scanner to the main scanning direction.		

6-2	Main-scan position - ADF		[-5.0 to 5.0 mm / **0.0** / 0.1mm]
	Adjust the image position of the ADF to the main scanning direction. Main Scan Position - Platen, ADF 1. Make a copy in platen mode at 90 rpm (speed 3). 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.		
6-3	Scan start position-platen		[-2.0 to 5.0 mm / **1.0** / 0.1mm]
	Adjust the scan start position of the scanner.		
6-4	Scan start position - ADF		[-5.0 to 5.0 mm / **0.0** / 0.1mm]
	Adjust the scan start position of the ADF		
	1. Make copies of the test pattern printed during the previous adjustments (previous page), in platen mode at 90 rpm (speed 3). Use the 10th print for the adjustment. 2. The length of the 8 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.		
6-5	Scanning speed - platen		[-5.0 to 5.0 % / **0.5** / 0.1%]
	Adjust the scanning speed of the scanner.		
6-6	Scanning speed - ADF mode		[-5.0 to 5.0 % / **0.0** / 0.1%]

	Adjust the scanning speed of the ADF. Scanning speed (platen/ADF) 1. Make copies of the test pattern printed during the previous adjustments (previous page), in platen mode at 90 rpm (speed 3). Use the 10th print for the adjustment. 2. The length of the 8 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.		
6-7	Skew Correction - ADF		[-5.0 to 5.0 mm / **0.0** / 0.1mm]
	Adjust the skew correction of the ADF.		
6-8	Scale shadow mask -platen		[2.0 to 10.0 mm / **2.0** / 0.1mm]
	Adjust the scale shadow mask of the scanner.		
6-10	Master writing speed		[-5.0 to 5.0 % / **-0.4** / 0.1%]
	1. Input SP8-10 (Test patterns) and enter "6", then press the Start key. 2. Exit the SP mode, then print 10 copies at 90 rpm (speed 3). Use the 10th print for the adjustment. 3. The length of the 8 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.		
6-11	Master writing length		[-5.0 to 5.0 % / **0.0** / 0.1%]
	Adjust the whiting length of the master making unit.		

6-12	Registration buckle 60 to 105rpm		[0 to 100 / **18** / PLS]
	Adjust the flexible volume of the paper feed. The larger the number, the greater the amount of deflection flexible volume. • ON: Detection of the ADF. • OFF: The ADF is considered always exist.(Used in the test)		
6-13	Registration buckle 130rpm		[0 to 100 / **1** / PLS]
	Adjust the flexible volume of the paper feed. The larger the number, the greater the amount of deflection flexible volume. • ON: Detection of the ADF. • OFF: Always be considered the maximum. (Used in the test)		
6-14	Paper regist position 60rpm		[-5.0 to 5.0mm / **1.0** / 0.5mm]
6-15	Paper regist position 75rpm		[-5.0 to 5.0mm / **1.0** / 0.5mm]
6-16	Paper regist position 90rpm		[-5.0 to 5.0mm / **1.0** / 0.5mm]
6-17	Paper regist position 105rpm		[-5.0 to 5.0mm / **1.0** / 0.5mm]
6-18	Paper regist position 130rpm		[-5.0 to 5.0mm / **2.0** / 0.5mm]
	Paper regist position adjusting of the use of adjusted values 60rpm (Preliminary). 1. The space between the leading edge and the next line should be 8 mm.If you have missed, access SP mode, and adjust within the range of ± 5.0mm displacement minutes. Example: If the value is 16mm, 16-8=8 2. Exit the SP mode. Reproduct and check the test patterns(SP8-10 "6" cross") again		
6-19	Assist pulse 130rpm		[1 to 120PLS / **80** / PLS]
	Adjust the number of the assist pulse. When paper registration is not good, then adjust this. The larger the number, the greater the amount of paper feed motor feed.		
6-20	Standard white execution		
	Adjust the standard white execution. Press the Enter key to start the adjustment. Results after adjustment (success / failure) are displayed.		

6-21	Standard white confirmation		
	Check the adjustment of the standard white execution. Press the Enter key to start the check. Results after adjustment (success / failure) are displayed.		
6-22	Standard white adjusted value		[-128 to 127PLS / **0** / -]
	Display/Change the standard white adjusted value. Display the adjustment results to the range of failure (-512 to 511).		
6-23	Master making density-Pencil		[0 to 2 / **1** / -]
6-24	Master making density-Tint		
6-25	Master making density-Photo		
6-26	Master making density-LtrPht		
6-27	Master making density-Letter		
6-28	MTF filter - Letter:M		[0 to 7 / **1** / -]
6-29	MTF filter - Letter:S		[0 to 7 / **1** / -]
6-30	MTF filter -Letter/Photo:M		[0 to 7 / **4** / -]
6-31	MTF filter -Letter/Photo:S		[0 to 7 / **4** / -]
6-32	MTF filter - Photo:M		[0 to 7 / **1** / -]
6-33	MTF filter - Photo:S		[0 to 7 / **1** / -]

	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). • 0:*0 • 1:*1/32 • 2:*1/16 • 3:* 1/8 • 4:* 1/4 • 5:* 1/2 • 6:* 2 • 7:* 4
6-40	Ink detection adjustment With no ink drum, the drum and adjust VR to adjust the display to be 6.7(6.7us). When the drum has ink inside, the machine displays "----". • Before running this mode, please wipe off the ink around the ink roller. • 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)  Access SP6-40, and open the door cover. Then turn VR1 on the ink detection board until the display becomes "3.0 u" (3 us).

6-50	Master end sensor voltage		[0.5 to 3.5 / **1.90** / V]
6-51	Master edge sensor voltage		[1.5 to 3.5 / **2.80** / V]
6-52	Duct jam sensor voltage		[0.5 to 3.5 / **2.00** / V]
6-53	2nd drum master sensor voltage		[0.5 to 3.5 / **1.00** / V]
6-60	Master returning value		[0 to 200 / **100** / 0.1mm]
	The auto adjustable master set mechanism automatically moves the leading edge of the master to the correct position after the user installs a master roll. This position can be adjusted with SP 6-60. This SP adjusts the amount that the machine feeds the master after it detects the leading edge of the master. Bigger number: increases feeding Smaller number: decreases feeding		
6-61	Master length - A3 drum		[4200 to 6000 / **5400** / 0.1mm]
6-63	Master length - A4 drum		[3000 to 6000 / **3400** / 0.1mm]
6-64	Master pushing value		[0 to 100 / **50** / pulse]
	This adjusts the pressure between the master push Mylar and the drum. Bigger number: increases the pressure Smaller number: decreases the pressure		
6-70	Trial pressure:low temp		[1 to 5 / **2** / -]
6-71	60 rpm pressure:low temp		[1 to 5 / **1** / -]
6-72	75 rpm pressure:low temp		[1 to 5 / **3** / -]
6-73	90 rpm pressure:low temp		[1 to 5 / **4** / -]
6-74	105rpm pressure:low temp		[1 to 5 / **5** / -]
6-75	130rpm pressure:low temp		[1 to 5 / **5** / -]
Adjust the pressure each print speed in low temperature (below 15 °C).			
6-76	Trial pressure:normal temp		[1 to 5 / **2** / -]

6-77	60rpm pressure:normal temp		[1 to 5 / **1** / -]
6-78	75rpm pressure:normal temp		[1 to 5 / **2** / -]
6-79	90rpm pressure:normal temp		[1 to 5 / **3** / -]
6-80	105rpm pressure:normal temp		[1 to 5 / **4** / -]
6-81	130rpm pressure:normal temp		[1 to 5 / **5** / -]
Adjust the pressure each print speed in normal temperature (15 to 28 °C).			
6-82	Trial pressure:high temp		[1 to 5 / **2** / -]
6-83	60 rpm pressure:high temp		[1 to 5 / **1** / -]
6-84	75 rpm pressure:high temp		[1 to 5 / **1** / -]
6-85	90 rpm pressure:high temp		[1 to 5 / **2** / -]
6-86	105rpm pressure:high temp		[1 to 5 / **3** / -]
6-87	130rpm pressure:high temp		[1 to 5 / **5** / -]
Adjust the pressure each print speed in high temperature (over 28 °C).			
6-90	Analog Gain Adjustment:RED		[0 to 7 / **0** / -]
6-91	Analog Gain Adjustment:GREEN		[0 to 7 / **0** / -]
6-92	Analog Gain Adjustment:BLUE		[0 to 7 / **0** / -]
Display the SBU adjustment(AGC)result when turn on.			
6-93	Digital Gain Adjustment:RE		[0 to 1023 / **81** / -]
6-94	Digital Gain Adjustment:RO		[0 to 1023 / **81** / -]
6-95	Digital Gain Adjustment:GE		[0 to 1023 / **70** / -]
6-96	Digital Gain Adjustment:GO		[0 to 1023 / **70** / -]
6-97	Digital Gain Adjustment:BE		[0 to 1023 / **73** / -]
6-98	Digital Gain Adjustment:BO		[0 to 1023 / **73** / -]
Display the SBU adjustment(AGC)result when turn on.			

6-100	Paper registration 15rpm		[-40 to 40 / **0** / pulse]
6-101	Paper registration 30rpm		
6-102	Paper registration 45rpm		
6-103	Paper registration 60rpm		
6-104	Paper registration 75rpm		
6-105	Paper registration 90rpm		
6-106	Paper registration 105rpm		
6-107	Paper registration 130rpm		

Paper registration

1. Set SP2-34 (Printing pressure adjust) to a value of "30 rpm" (print from 30 rpm).
2. Set SP8-10 (Test patterns) to a value of "6", then press the Start key.
3. Access SP4-91 (Ink temperature), and check the ink temperature.
4. Make 6 copies at speed 5 (finishing with 130 rpm). Perform the adjustment below for all 6 copies.

   Trial print: 30 rpm -> 1st print: 45 rpm -> 2nd print: 60 rpm ->3rd print: 75 rpm

   -> 4th print: 90 rpm -> 5th print: 105 rpm -> 6th print: 130 rpm

   When the ink temperature is low (below 15 degrees) or high (28 degrees or above), you can adjust the machine to make only 6 copies (change SP 8-23 to 'On'). Then, the 2nd print will not be made, because it is the same speed as the first print.

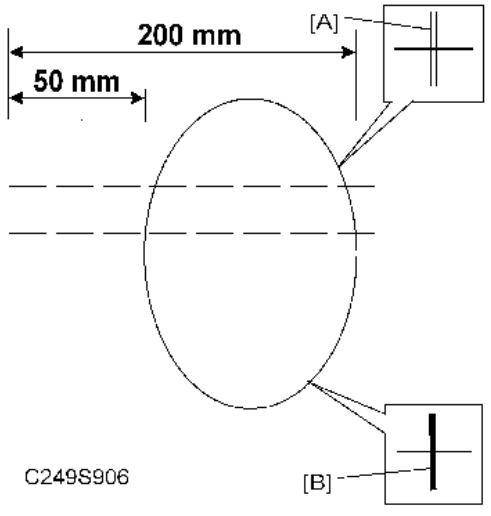
   Trial print: 30 rpm ->1st print: 45 rpm ->2nd print: 45 rpm ->3rd print: 60 rpm

   ->4th print: 75 rpm ->5th print: 90 rpm ->6th print: 105 rpm ->7th print: 130 rpm
5. The distance between the leading edge and first line should be 8mm, as shown below.
6. If this distance is not 8 mm, access SP6-101 to 107 and then input a value to adjust the distance (range: -40 to 40, step: 1) for each of 6 copy 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 0.58mm. Input the value that will bring the distance to 8mm.
7. Perform the adjustment again for any of the samples that are still outside the 8mm standard.
8. Return SP2-34 (Printing pressure adjust) to the value it was at before the adjustment.

6-108	Paper Regist:skip:15rpm		[-40 to 40 / **0** / mm]
6-109	Paper Regist:skip:30rpm		
6-110	Paper Regist:skip:45rpm		
6-111	Paper Regist:skip:60rpm		
6-112	Paper Regist:skip:75rpm		
6-113	Paper Regist:skip:90rpm		
6-114	Paper Regist:skip:105rpm		
6-115	Paper Regist:skip:130rpm		
6-116	Paper middle bulge: 15rpm		[-100 to 100 / **0** / mm]
6-117	Paper middle bulge: 30rpm		
6-118	Paper middle bulge: 45rpm		
6-119	Paper middle bulge: 60rpm		
6-120	Paper middle bulge: 75rpm		
6-121	Paper middle bulge: 90rpm		
6-122	Paper middle bulge: 105rpm		
6-123	Paper middle bulge: 130rpm		

Paper middle bulge



Adjusts doubled [A] or blurred [B] images (e.g. bold lines, text) for each printing speed (15, 30, 60,75, 90, 105, 130 rpm), by changing SP settings.

1. Set SP2-34 (Printing pressure adjust) to a value of "30 rpm" (print from 30rpm).
2. Set SP8-10 (Test patterns) to a value of "6", then press the Start key.
3. Access SP4-91 (Ink temperature), then check the ink temperature.
4. Make 6 copies at speed 5 (finishing with 130 rpm). Perform the adjustment below for all 6 copies.

   Trial print: 30 rpm -> 1st print: 45 rpm -> 2nd print: 60 rpm ->3rd print: 75 rpm

   -> 4th print: 90 rpm -> 5th print: 105 rpm -> 6th print: 130 rpm

   When the ink temperature is low (below 15 degrees) or high (28 degrees or above), you can adjust the machine to make only 6 copies (change SP 8-23 to 'On'). Then, the 2nd print will not be made, because it is the same speed as the first print.

   Trial print: 30 rpm ->1st print: 45 rpm ->2nd print: 45 rpm ->3rd print: 60 rpm

   ->4th print: 75 rpm ->5th print: 90 rpm ->6th print: 105 rpm ->7th print: 130 rpm
5. Check the area from the leading edge to about 50 to 200 mm down for any doubled or blurred images.
6. If any are present, access SP6-117 to 123 and then input a value to adjust the doubled or blurred images (range: -100 to 100, step: 1) for each of 6 copies samples

   To adjust the distance for 30 cpm, use SP 6-117.

   To adjust the distance for 45 cpm, use SP 6-118.

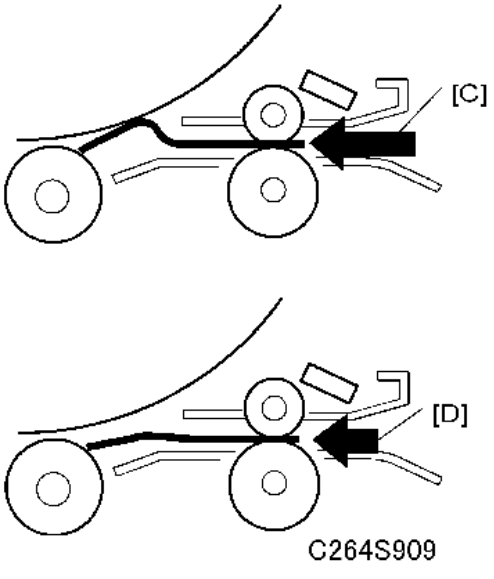
   To adjust the distance for 60 cpm, use SP 6-119.

   To adjust the distance for 75 cpm, use SP 6-120.

   To adjust the distance for 90 cpm, use SP 6-121.
7. Perform the adjustment again where necessary.
8. Return SP2-34 (Printing pressure adjust) to the value it was at before the adjustment.

6-124	Paper front bulge: 15rpm		[-90 to 8 / **0** / mm]
6-125	Paper front bulge: 30rpm		
6-126	Paper front bulge: 45rpm		
6-127	Paper front bulge: 60rpm		
6-128	Paper front bulge: 75rpm		
6-129	Paper front bulge: 90rpm		
6-130	Paper front bulge: 105rpm		
6-131	Paper front bulge: 130rpm		

Paper front bulge



1. Set SP2-34 (Printing pressure adjust) to a value of "30 rpm" (print from 30rpm).
2. Set SP8-10 (Test patterns) to a value of "6", then press the Start key.
3. Access SP4-91 (Ink temperature), then check the ink temperature.
4. Make 6 copies at speed 5 (finishing with 130 rpm). Perform the adjustment below for all 6 copies.

   Trial print: 30 rpm -> 1st print: 45 rpm -> 2nd print: 60 rpm ->3rd print: 75 rpm

   -> 4th print: 90 rpm -> 5th print: 105 rpm -> 6th print: 130 rpm

   When the ink temperature is low (below 15 degrees) or high (28 degrees or above), you can adjust the machine to make only 6 copies (change SP 8-23 to 'On'). Then, the 2nd print will not be made, because it is the same speed as the first print.

   Trial print: 30 rpm ->1st print: 45 rpm ->2nd print: 45 rpm ->3rd print: 60 rpm

   ->4th print: 75 rpm ->5th print: 90 rpm ->6th print: 105 rpm ->7th print: 130 rpm
5. Check the area from the leading edge to about 30mm down for any doubled or blurred images.
6. If any are present, access SP6-125 to 131 and then input a value to adjust the doubled or blurred images (range: -90 to 8, step: 1) for each of 6 copies samples

   To adjust the distance for 30 cpm, use SP 6-125.

   To adjust the distance for 45 cpm, use SP 6-126.

   To adjust the distance for 60 cpm, use SP 6-127.

   To adjust the distance for 75 cpm, use SP 6-128.

   To adjust the distance for 90 cpm, use SP 6-129.

   To adjust the distance for 105 cpm, use SP 6-130.

   To adjust the distance for 130 cpm, use SP 6-131.

   Higher values ([C]): Blurred images improve, doubled images tend to be more noticeable.

   Lower values ([D]): Doubled images improve, blurred images tend to be more noticeable.
7. Perform the adjustment again where necessary.
8. Return SP2-34 (Printing pressure adjust) to the value it was at before the adjustment.

6-132	Paper Regist:A4drum:15		[-40 to 40 / **0** / pulse]
6-133	Paper Regist:A4drum:30		
6-134	Paper Regist:A4drum:45		
6-135	Paper Regist:A4drum:60		
6-136	Paper Regist:A4drum:75		
6-137	Paper Regist:A4drum:90		
6-138	Paper Regist:A4drum:105		
6-139	Paper Regist:A4drum:130		
6-140	Paper Regist:skip:A4:15		[-40 to 40 / **0** / pulse]
6-141	Paper Regist:skip:A4:30		
6-142	Paper Regist:skip:A4:45		
6-143	Paper Regist:skip:A4:60		
6-144	Paper Regist:skip:A4:75		
6-145	Paper Regist:skip:A4:90		
6-146	Paper Regist:skip:A4:105		
6-147	Paper Regist:skip:A4:130		
6-148	Paper middle bulge:A4:15		[-100 to 100 / **0** / mm]
6-149	Paper middle bulge:A4:30		
6-150	Paper middle bulge:A4:45		
6-151	Paper middle bulge:A4:60		
6-152	Paper middle bulge:A4:75		
6-153	Paper middle bulge:A4:90		
6-154	Paper middle bulge:A4:105		
6-155	Paper middle bulge:A4:130		

6-156	Paper front bulge:A4:15		[-90 to 8 / 0 / mm]
6-157	Paper front bulge:A4:30		
6-158	Paper front bulge:A4:45		
6-159	Paper front bulge:A4:60		
6-160	Paper front bulge:A4:75		
6-161	Paper front bulge:A4:90		
6-162	Paper front bulge:A4:105		
6-163	Paper front bulge:A4:130		

RTB 1a, 2a
SP 6-170 to
6-180 added

4

7	Memory clear		
	Date clear and Initialization performs.		
7-1	Factory settings clear		
	Done just prior to shipment from the factory. Disappear while pressing the o key and # key pressing.		
7-3	Total counter clear		
	Clear the total print counter of prepress numbers and printing numbers.		
7-4	Jam/Error data clear		
	Clears all of the transport number of misses. Regist jam(A) Resist remainig jam(A+B) Curling jam(B) Eject jam(C)		
7-11	Protect Code Clear		
	Default setting 5-7 "Default setting protect" Default: OFF Default setting 5-8 "Protect password" Default: OFF		

8	System test		
	Program download test, Reproduction test pattern.		
8-1	Download main firmware		
	Download the program from the SD card into the machine. Start by pressing the "# "key.		
8-2	Download DF firmware		
	Download the program from the SD card into the machine.		
8-3	Report(LOG DATA/SC/JAM)		
8-4	Report(BASIC SETTING		
8-5	Report(ADJUSTMENT VALUES)		
8-6	Report(INPUT/OUTPUT TESTS)		
8-10	Test patterns		[1 to 9 / **6** / 1]
	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, but do not use them except for number "6". 1: Grid, 2: Vertical, 3: Horizontal gray, 4: Vertical gray, 5: 16 grays, 6: Cross, 7: Diagonal grid, 8: 256 grays, 9: 64 grays		

8-18	Temporary security off		[ON-OFF / **OFF** / -]
	This function cancels "Security Mode" when the engineer repairs/inspects the machine. The technician must cancel security mode in order to take out the drum. It is not necessary to cancel security mode in order to make prints; put an original on the exposure glass and make a new master. But if the customer does not want you to waste a master, and is not concerned about security for the master on the drum, then you can cancel security mode and make prints with the master that is on the drum. When this SP8-18 is "ON", security mode is cancelled and the drum rotates to the home position. You can pull the drum unit out of the machine. At this time, the display on the operation panel is reversed (see the illustration below). "Security Mode" is used to prevent others from accessing the master on the drum and making prints of confidential documents. When you set "Security Mode": • You cannot press the "Proof" key or the "Start" key while the previous master is on the drum. • You cannot pull out the drum unit when the machine is in standby mode. • Printing will not start until you set a new original and press the "Start" key. • You cannot clear "Security Mode" by turning off the main switch.		
8-19	Free run - ADF		[50 to 200 / **100** / 1%]
	Free running the ADF.		
8-20	Free run - scanner		[50 to 200 / **100** / 1%]
	Free running the scanner.		
8-21	Paper feed at 15 rpm		[ON-OFF / **OFF** / -]
	Feeds paper at the lowest speed (15 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 Start key. 5. To exit this mode, turn off the main switch.		

8-22	Free run-Paper feed(15rpm)		[ON-OFF / **OFF** / -]
	Drives the paper feed mechanism at the lowest speed (15 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 Start key. To exit this mode, turn off the main switch.		
8-23	30->45->60 rpm print mode		[ON-OFF / **OFF** / -]
	This SP affects the operation of SP 6-100-107, SP 6-116-123, and SP 6-124-131, if the temperature is low (below 15 degrees) or high (28 degrees or above). SP 8-23 automatically goes back to 'Off' after you turn the main switch off/on.		
8-30	All indicators on the panel		
	Perform all of the LED lights on the control panel. All control panel lights up each time you press the Enter key. Off when released.		
8-31	LCD data download setting		[ON-OFF / **OFF** / -]
8-902	Download main firmware		

9	Print controller		
	To set the printer controller.		
9-1	Output Data Print		[Normal-Hexdump-SDcard / Normal / -]

	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: • O: 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. 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. Do not take out the SD card before you turn off the main switch and set the SP Mode to "Normal".		
9-2	Service Summary Print		
	Print the summary service.		
9-3	NIB Summary Print		
	Print the network information.		

9-4	Firmware part number		
	Display the firmware numbers on the operation panel.		
9-5	Firmware version		
	Display the firmware versions on the operation panel.		
9-30	Clear Printer setting		
	Initialization the printer system settings.		
9-31	Clear NIB NVRAM setting		
	Initialization the NIB NVRAM setting.		
9-40	Load Program - system		
	Select and run programs that can be downloaded from the SD card.		

MEMO