Model HP4-R2.5
Machine Code: C272
Field Service Manual

Important Safety Notices

Prevention of Physical Injury

1. Before disassembling or assembling parts of the printer and peripherals, make sure that the power cord is unplugged.
2. The wall outlet should be near the printer 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.

Health Safety Conditions

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

Observance of Electrical Safety Standards

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

⚠CAUTION

- The RAM has a lithium battery which can explode if handled incorrectly. Replace only with the same type of RAM. Do not recharge or burn this battery. Used RAM's must be handled in accordance with local regulations.

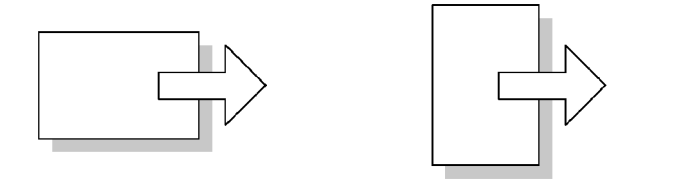
Safety and Ecological Notes for Disposal

1. Dispose of replaced parts in accordance with local regulations.
2. Used ink and masters should be disposed of in an environmentally safe manner and in accordance with local regulations.
3. When keeping used lithium batteries (from the main processing units) in order to dispose of them later, do not store more than 100 batteries (from the main processing units) per sealed box. Storing larger numbers or not sealing them apart may lead to chemical reactions and heat build-up.

Symbols, Abbreviations and Trademarks

This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations are as follows:

☛	See or Refer to
	Clip ring
	Screw
	Connector
	Clamp
	E-ring
SEF	Short Edge Feed
LEF	Long Edge Feed



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

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5. System Maintenance Reference

6. Troubleshooting

1. Product Information

Specifications

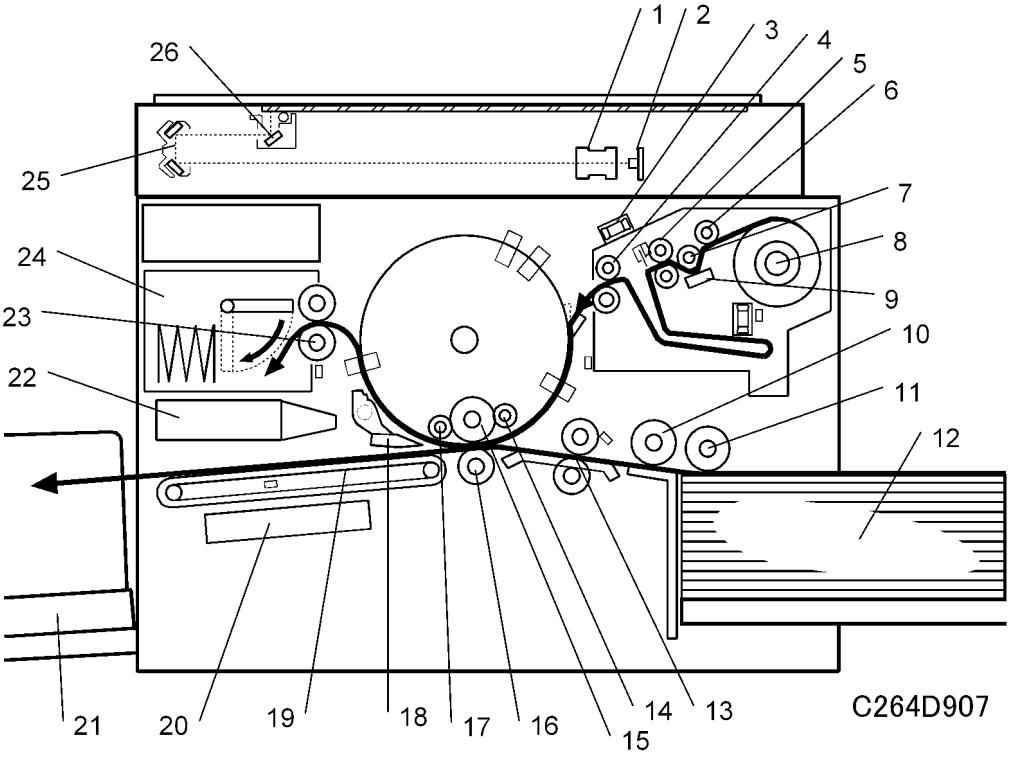
See "Appendices" for the following information:

- General specifications
- Network Printer Controller - Specifications

Mechanism Overview

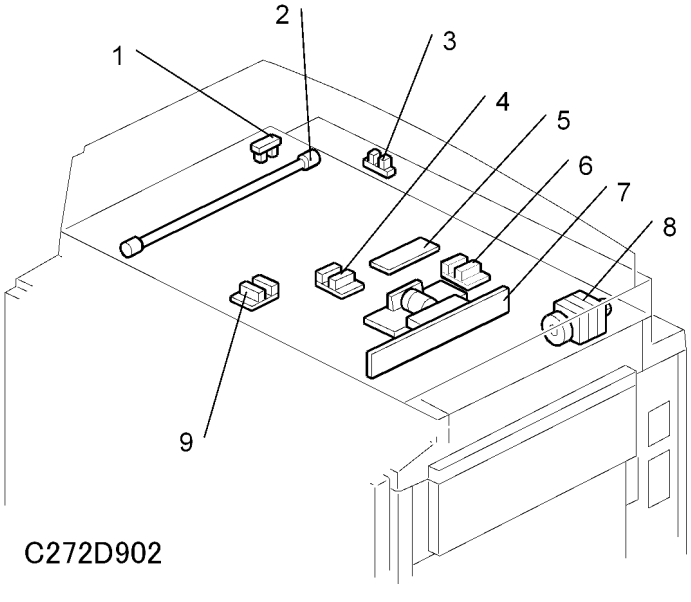
1

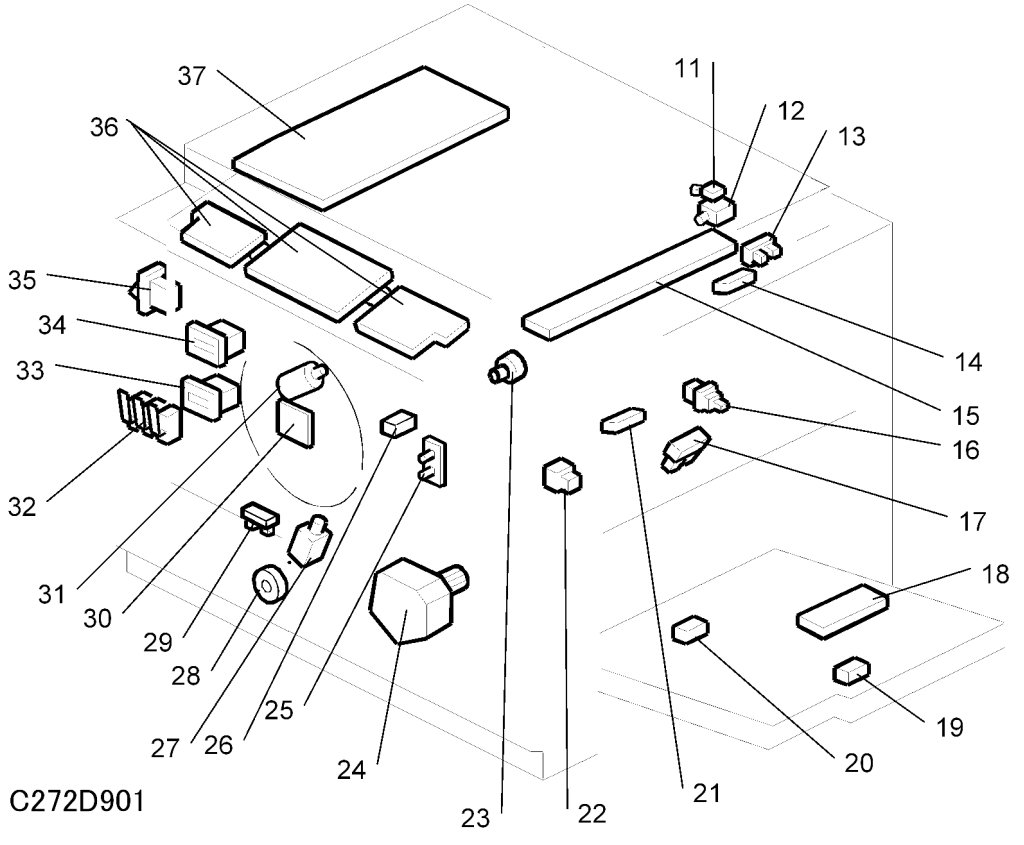
Component Layout



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

Electrical Component Layout

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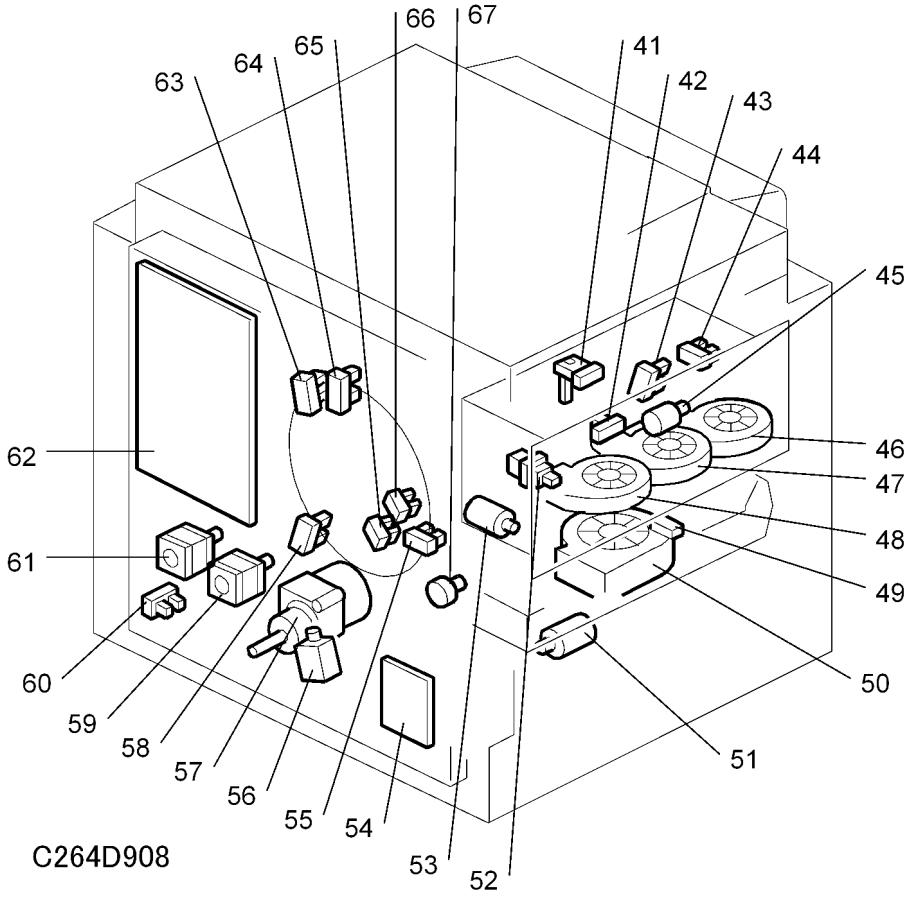
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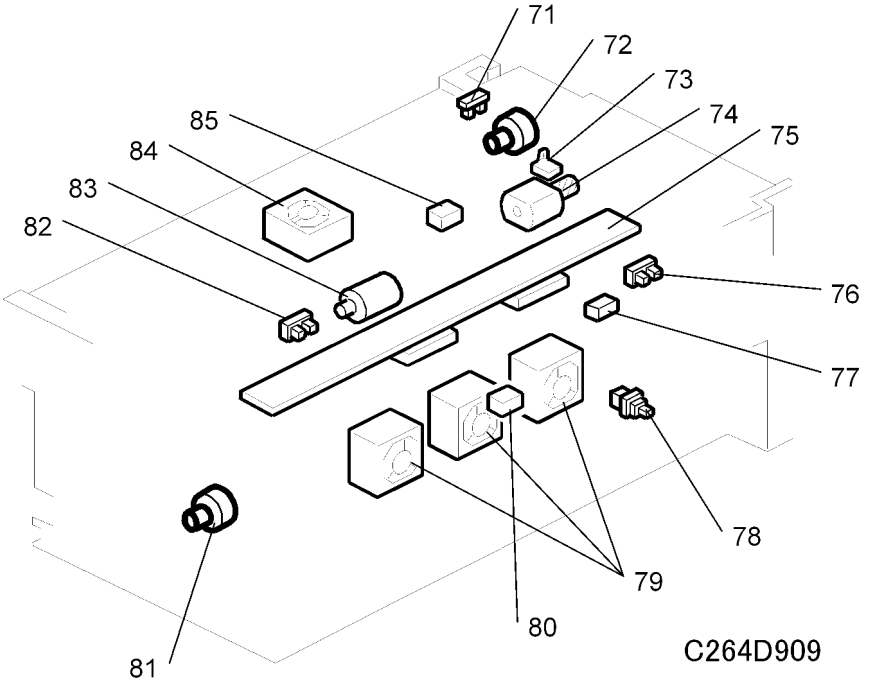
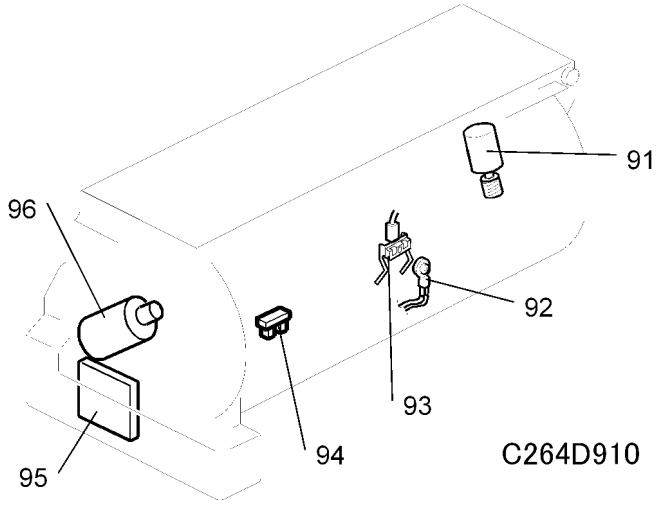




Boards

No.	Component	Function
5	Lamp Stabilizer	This supplies power to the exposure lamp.
7	CCD and SBU	Outputs a video signal to the MPU.

No.	Component	Function
18	Paper Width Detection Board	Sends data about the paper width on the paper table to the MPU.
29	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.

Motors

No.	Component	Function
8	Scanner Motor	Drives the scanner.
12	Cutter Motor	Cuts the master.
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.
41	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.

No.	Component	Function
61	Paper Feed Motor	Feeds the paper from the paper table.
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.
6	Original Special Size Sensor 1, 2	
9	Original Width Sensor 1, 2	Detects the width of the original on the exposure glass.
11	Cutter HP Sensor	Detects when the cutter is at the home position.
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.

No.	Component	Function
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.
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
26	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.
52	Eject Box Set Switch	Checks if the master eject box is installed.
78	Lower master tray set switch	Checks if the lower master tray is installed.

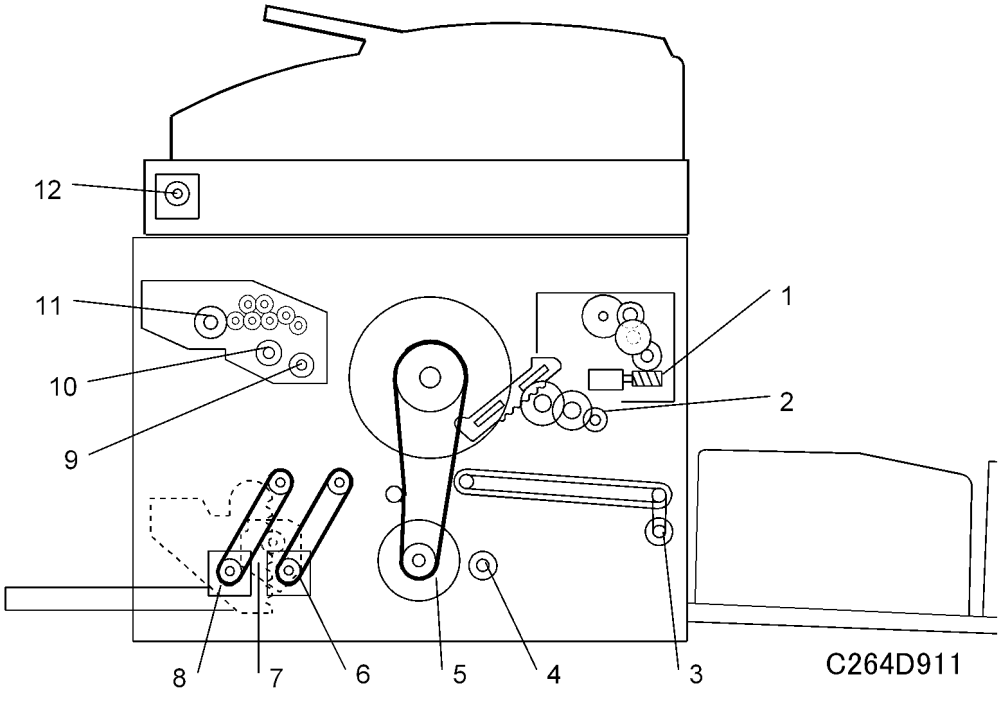
Counters

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.
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

Guidance for Those Who are Familiar with Predecessor Products

1

Machine C272 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

	C272	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

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

2. Installation

Installation Requirements

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

Optimum Environmental Condition

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

Environments to Avoid

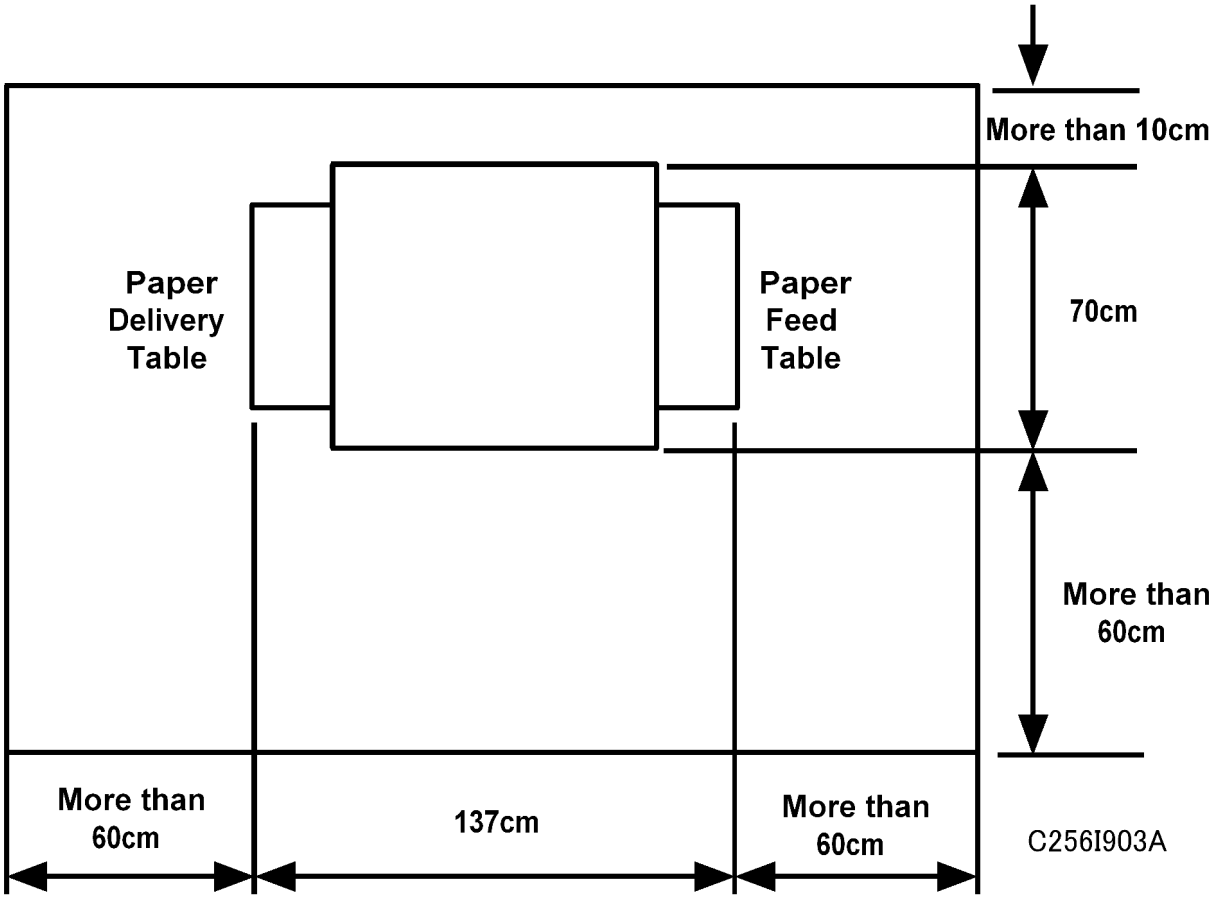
1. Locations exposed to direct sunlight or strong light (more than 1,500 lux).
2. Dusty areas
3. Areas containing corrosive gases.
4. Locations directly exposed to cool air from an air conditioner or reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause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

Power Connection

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

Machine Access

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

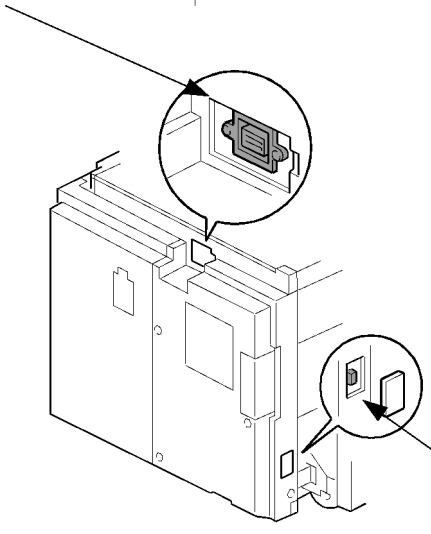


Power Sockets for Peripherals

⚠CAUTION

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

ADF
″Rating Voltage of Output Connector for Accessory: Max. DC 24V



TAPE DISPENSER
″Rating Voltage of Output Connector for Accessory: Max. DC 24V

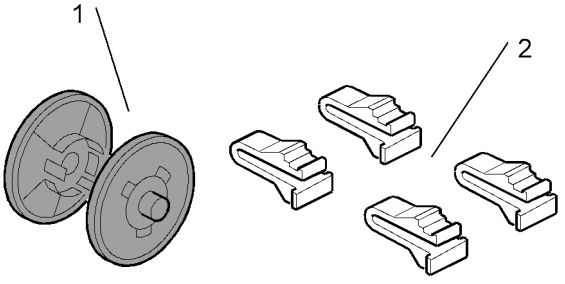
C264I004

Installation Procedure

Main Unit

2

Accessory Check

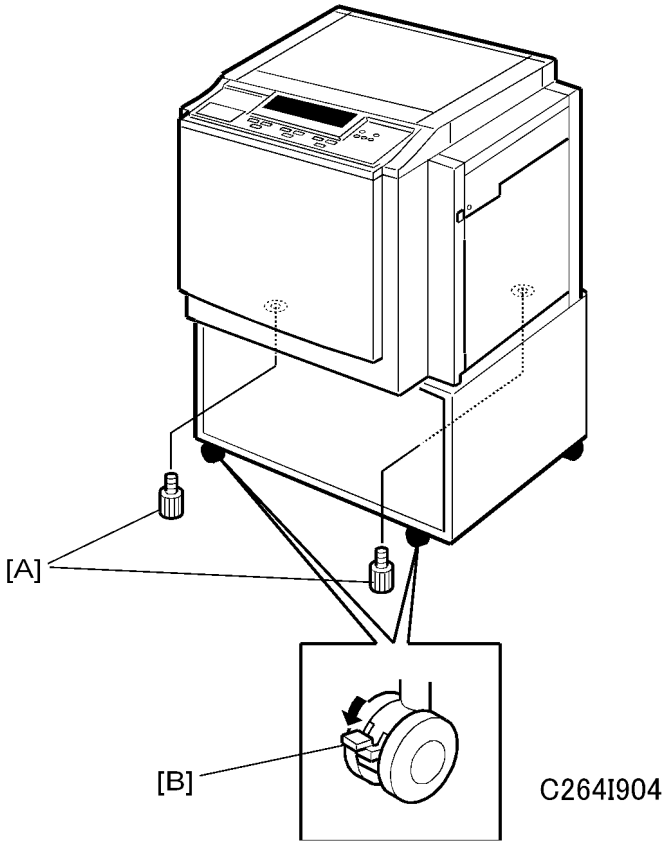


C264I907

Make sure that you have all the accessories listed below:

Description	Quantity
1. Master Spool	2
2. Carrying Handle Stoppers	4
3. Operating Instructions (sheet) (Excluding C272-53)	1
4. Operating Instructions (CD-ROM) (C272-53 only)	1
5. NECR (C272-52 only)	1
6. Emblem Cover	1
7. Bundled Items List (C272-50, -95 only)	1

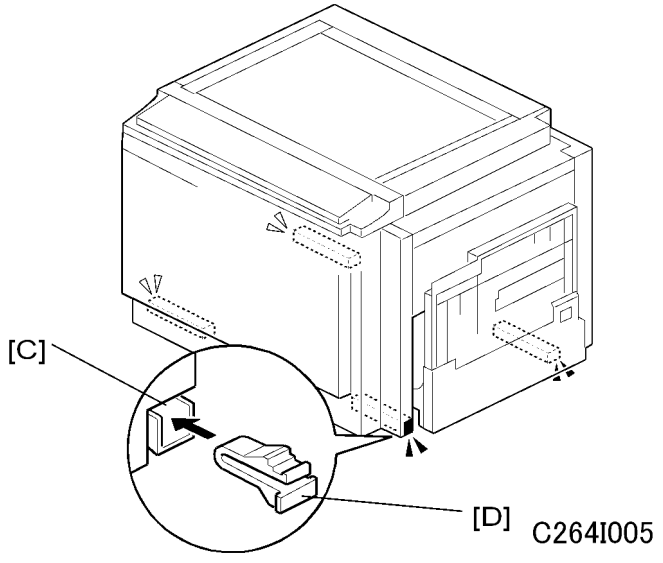
Installation Procedure



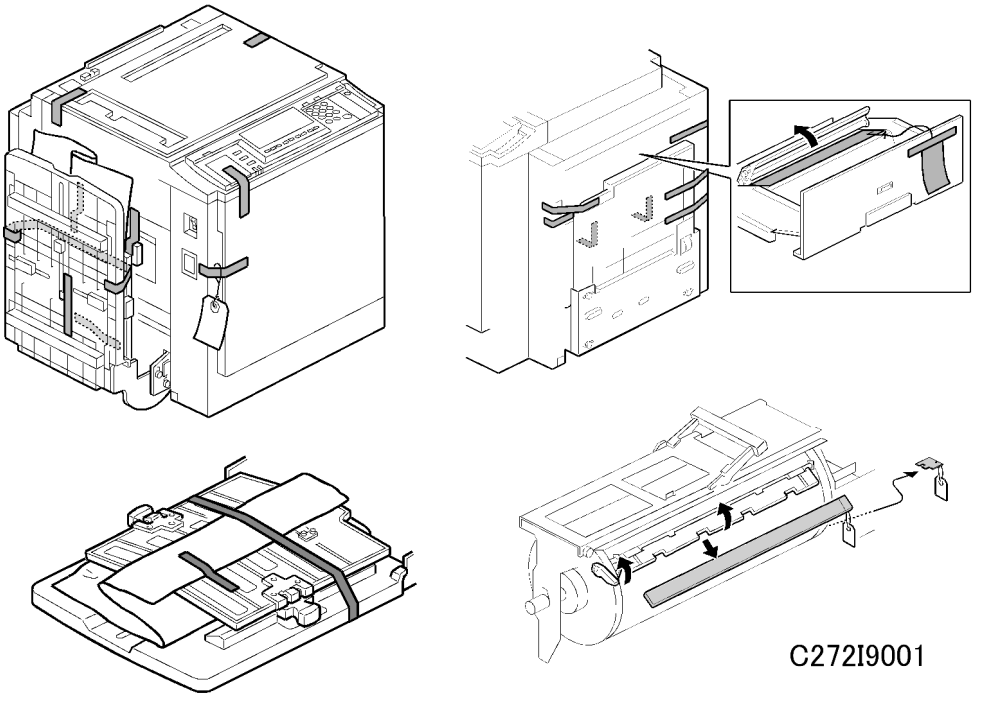
1. Unpack the box. When installing the optional table, mount the machine as shown (there are 2 screws [A] packed with the table).

⚠CAUTION

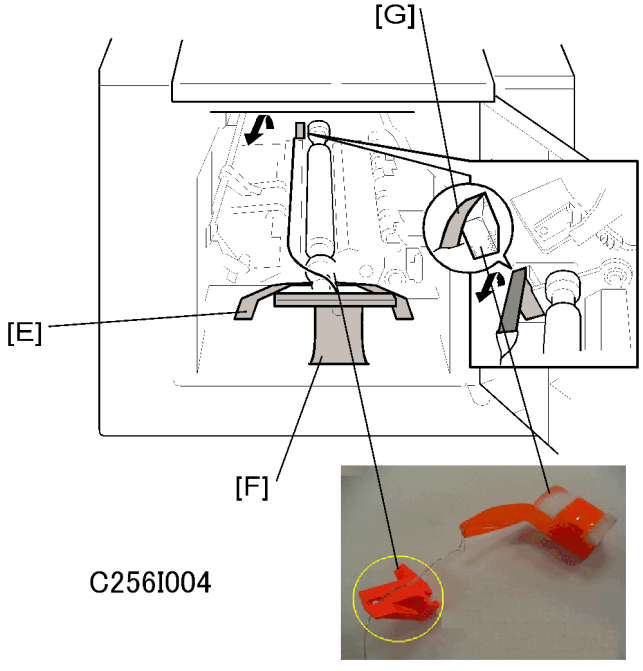
- Only lift with the carrying handles on the bottom corners of the machine.
- Secure the machine on the table with the 2 screws [A] provided. This prevents the machine from falling from the table when the platen cover is open.
- Lock the casters of the table as shown [B], to prevent the machine from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



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



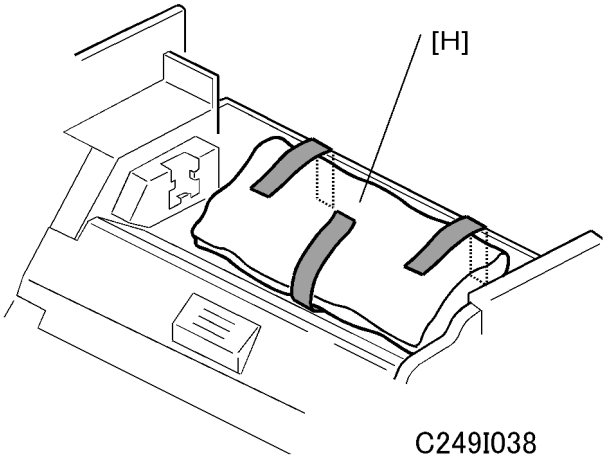
3. Remove the filament tape and string securing the covers and units as shown above.



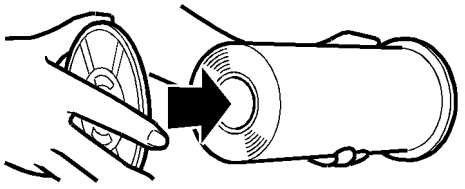
4. Remove the front tape [E], the tag [F], and the rear tape [G].

Note

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

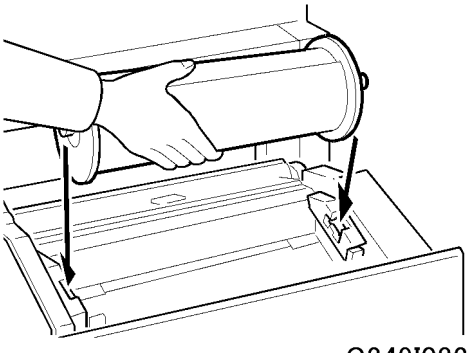


5. Pull out the master making unit, and take out the accessory bag [H].



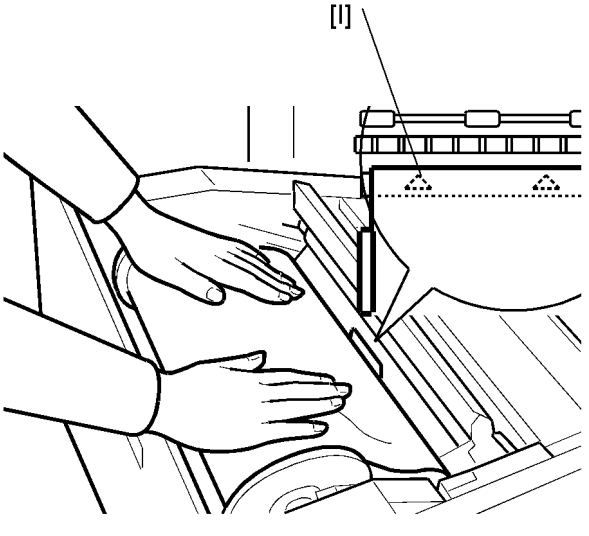
C249I030

6. Insert both spools into a new master roll.



C249I032

7. Install the master roll as shown above.



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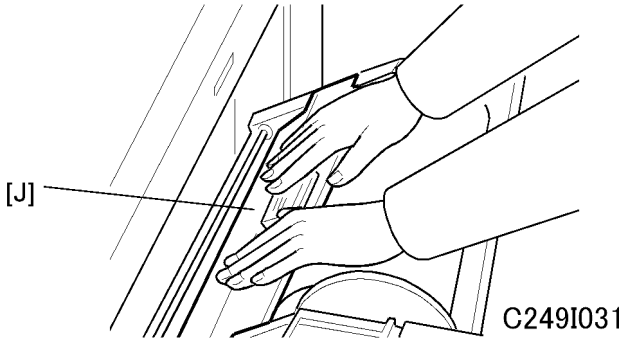
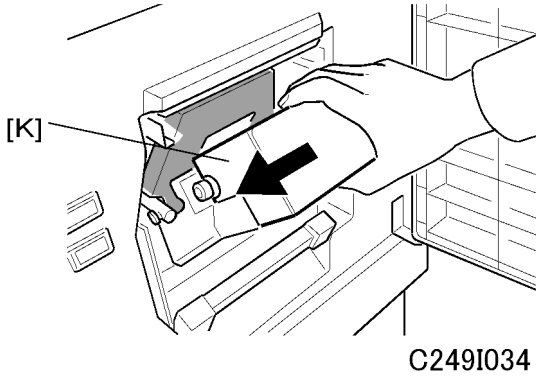
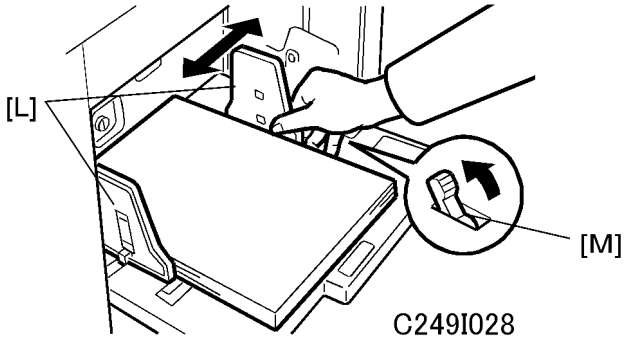
8. Insert the leading edge of the master roll under the platen roller. The arrows [I] indicate the correct position of the master leading edge.



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



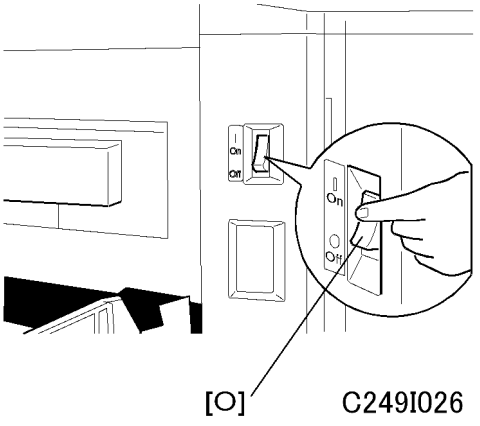
11. Open the door, and insert a new ink cartridge [K].



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

14. Raise the paper delivery table [N] slightly, then gently lower it.

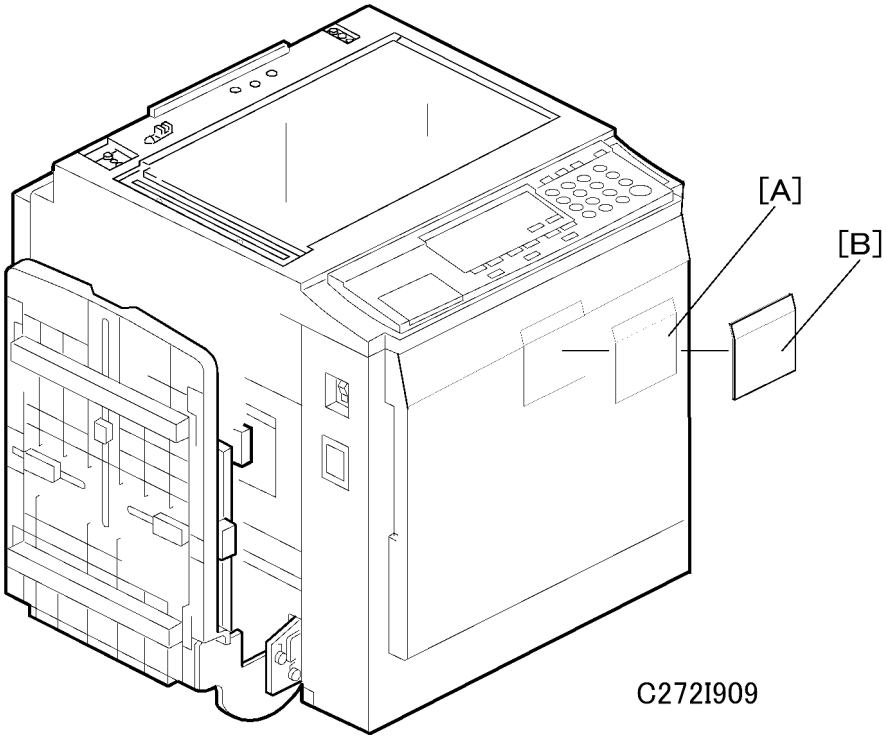
15. Lift the side plates and the end plate, and adjust them to the paper size.



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 [O].
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].
2. Select your brand in the SP mode.

   Access SP2-7 (Vendor Selection) and choose your brand.

Optional Installation

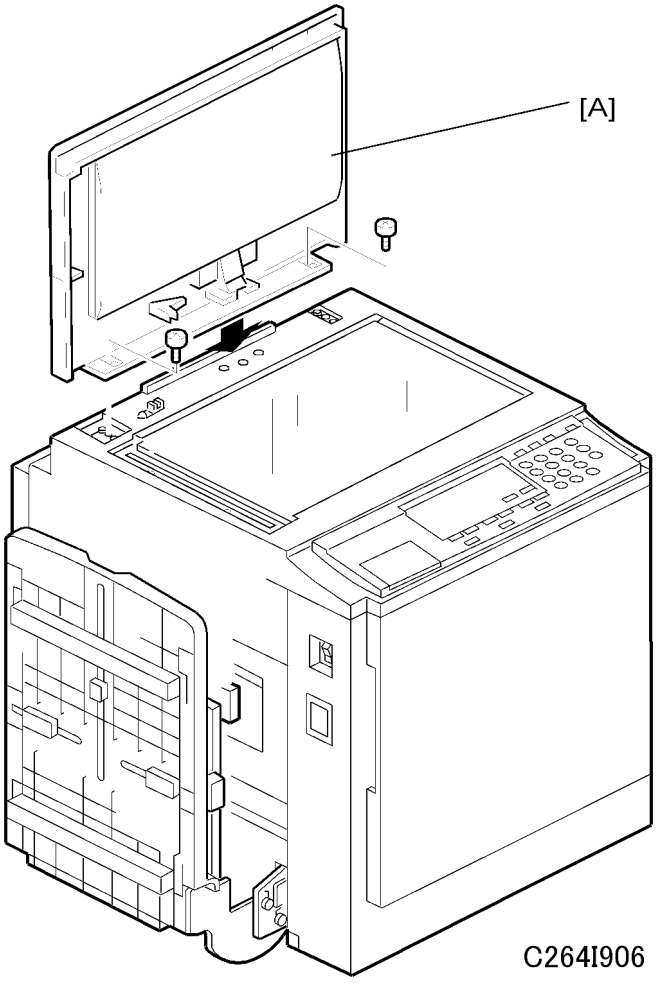
Platen Cover Installation (Option)

Accessory Check

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

Description	Quantity
Stepped Screw	2

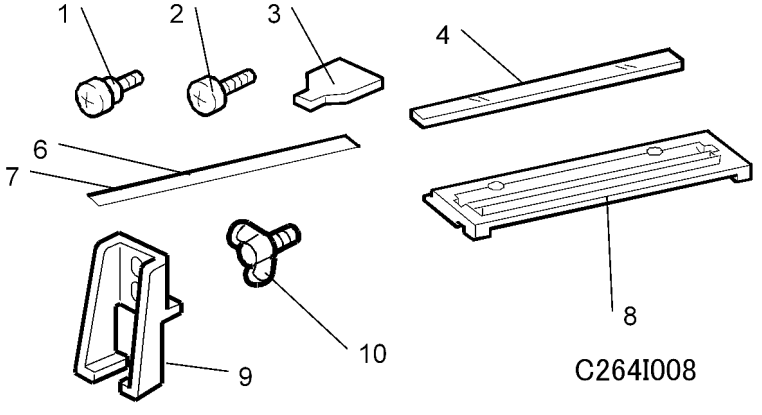
Installation Procedure



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

ADF Installation (Option)

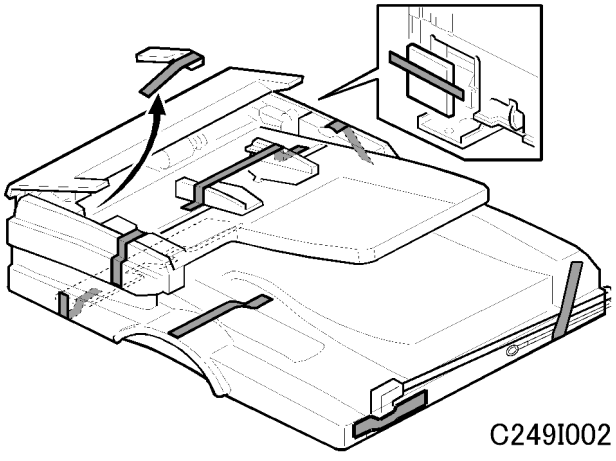
Accessory Check



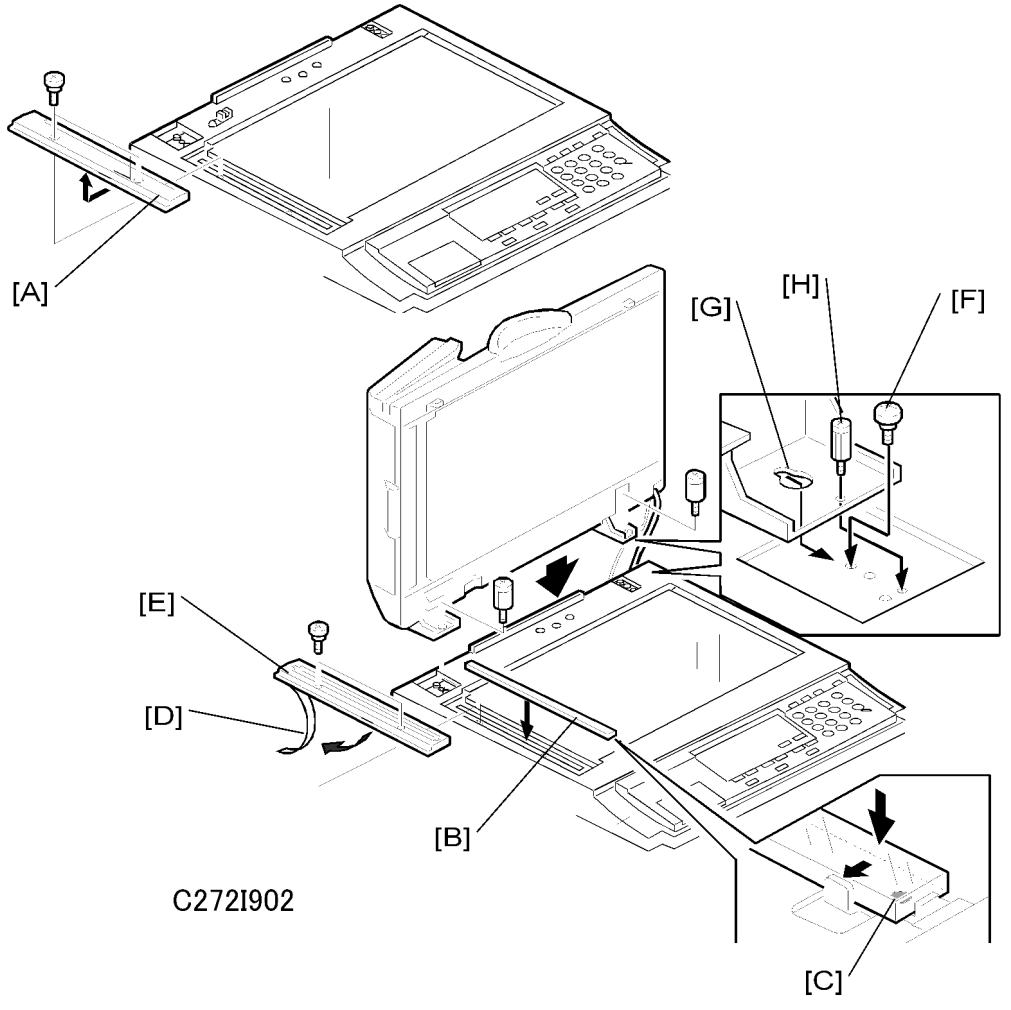
Check the quantity and condition of the accessories in the box against the following list:

Description	Quantity
1. Stepped Screw	2
2. Screws	3
3. Screwdriver	1
4. DF Exposure Glass	1
5. Decal - Exposure Glass	1
6. Decal - Scale – mm	1
7. Decal - Scale – inch	1
8. Scale Guide	1
9. Stabilizer Bracket	2
10. Thumbscrew	4
11. Caution Label	1

Installation Procedure



1. Remove the strips of tape.

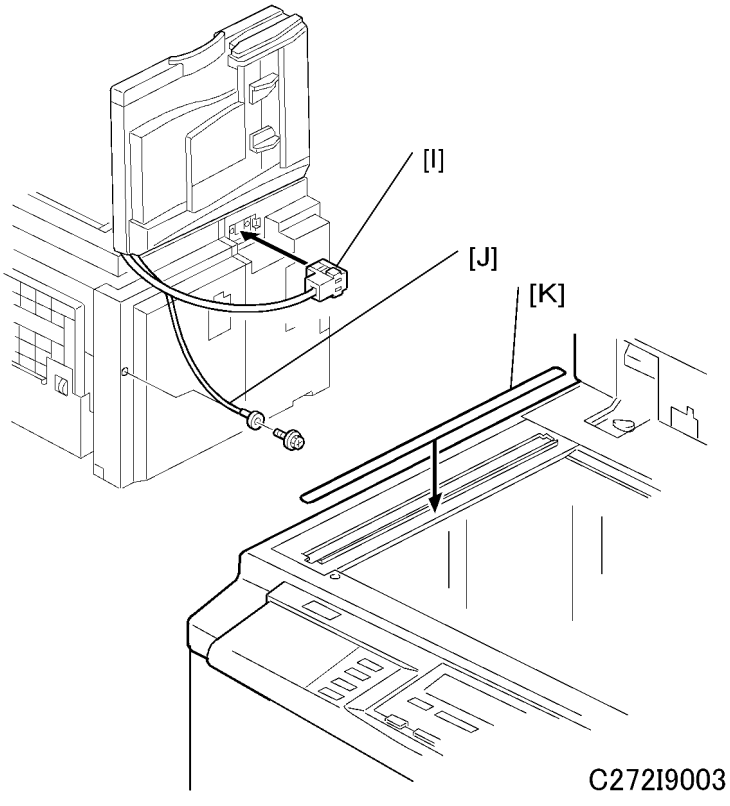


2. Remove the left scale [A] (2 screws).
3. Place the DF exposure glass [B] on the glass holder.

Note

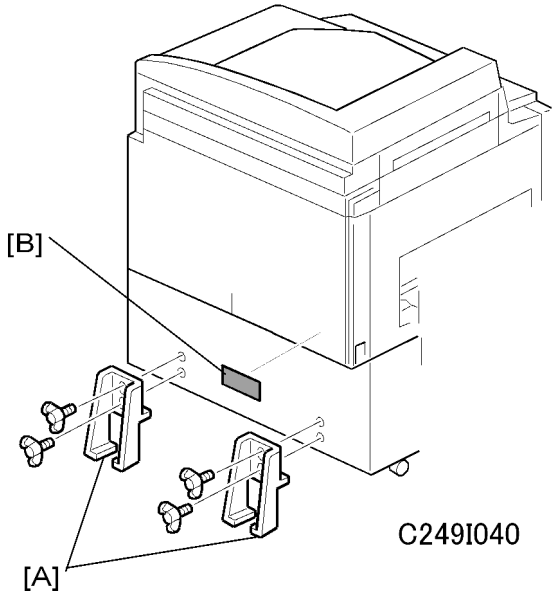
- When installing the DF exposure glass, make sure that the white point [C] is positioned at the lower front side, as shown.

4. Peel off the backing of the double-sided tape [D] attached to the rear side of the scale guide [E], then install the scale guide (2 screws removed in step 2).
5. Install the two stud screws [F].
6. Mount the DF by aligning the holes [G] in the DF with the stud screws, then slide the DF to the front as shown.
7. Secure the DF unit with two screws [H].



8. Connect the cables [I] and [J] to the main body.
9. Attach the scale decal [K] as shown.
10. Plug in the power cord, then turn the main switch on.
11. Make a full size copy using the ADF. Then check to make sure the side-to-side and leading edge registrations are correct. If they are not, adjust their values (do the adjustment procedures in the "Image Adjustment" section.

ADF Stabilizer Installation



1. Attach the two stabilizer brackets [A] to the back of the table using the thumbscrews (4 screws).
2. Attach the caution label [B], as shown.

⚠CAUTION

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

Tape Dispenser Type 20 (Option)

Accessory Check

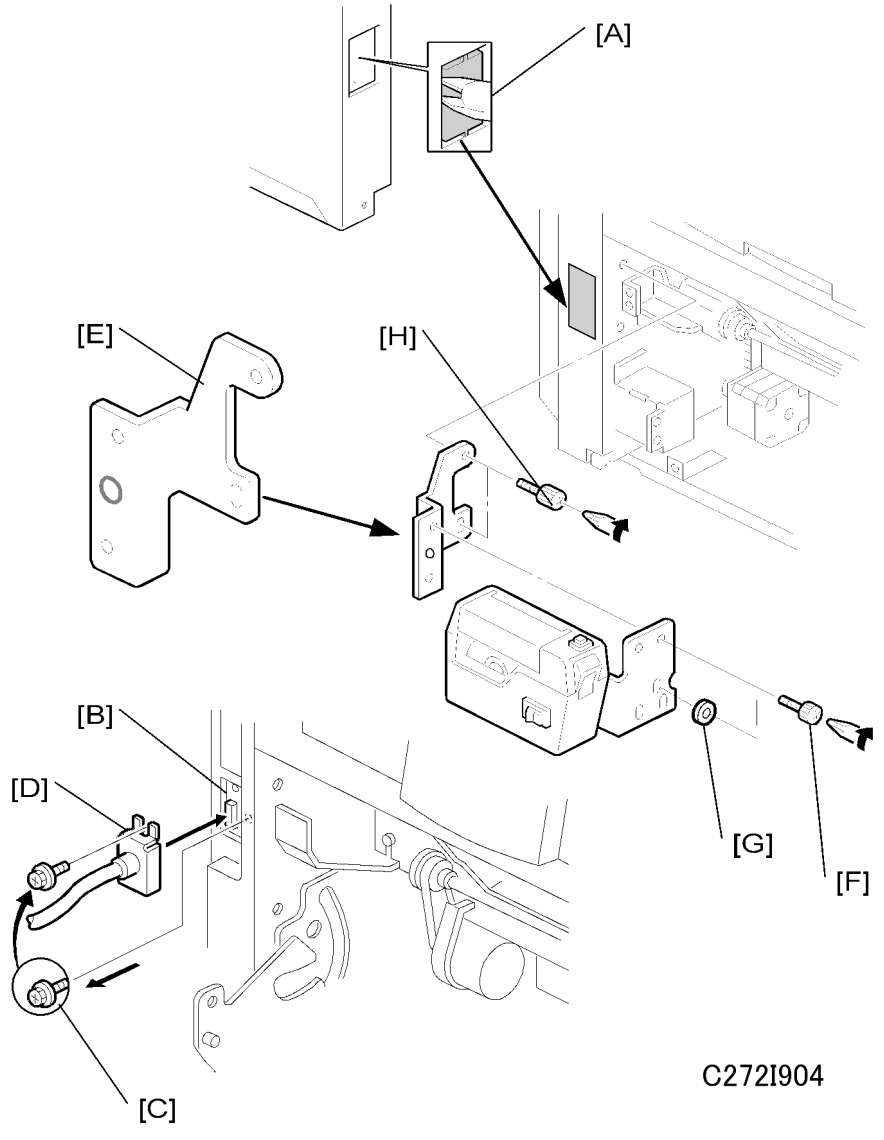
Check the quantity and condition of the accessories in the box against the following list:

Description	Quantity
1. Knob Screw (For C210, C217, C218, C219, C222, C223, C225, C228, C238, C237, C238, C248, C249, C264, C267 and C272)	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 and C272)	1
8. Screw M4 x 8 (For C226, C238, C247, C249, C264, C267 and C272)	4
9. Lock Washer (For C226 only)	1
10. Lock Washer (For all except C267)	1
11. Tape	1

2

Installation Procedure



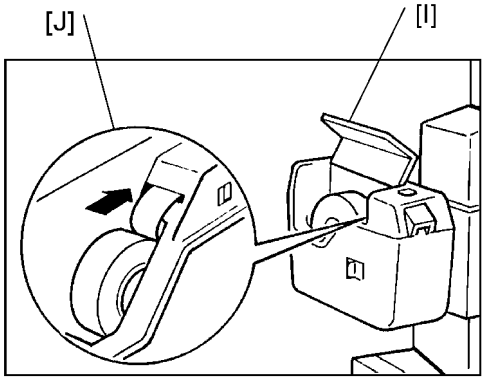
1. Turn off the main switch and unplug the power cord.
2. Remove the paper delivery plate (4 screws).
3. Cut off the cover [A] in the rear cover, as shown.
4. Connect the harness of the tape dispenser to the connector [B].
5. Remove the screw [C] that is beside the connector [B]. Reuse the screw to secure the bracket [D], as shown.
6. Install the auxiliary bracket [E] on the tape dispenser with M4 x 8 screws (accessories) [F].

7. Install the tape dispenser on the main body with two knob screws [H] (accessories) in the two outer holes in the tape dispenser bracket.

Note

- Install the lock washer [G] (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.

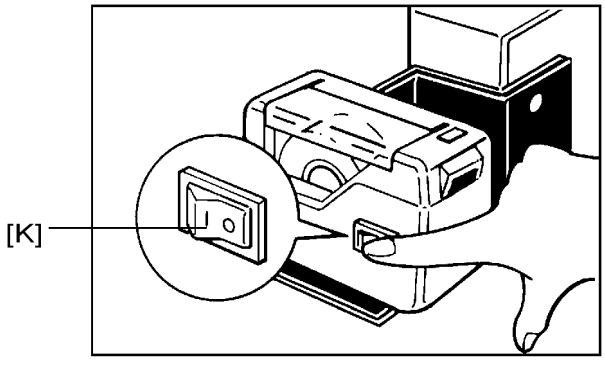


C238I519

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

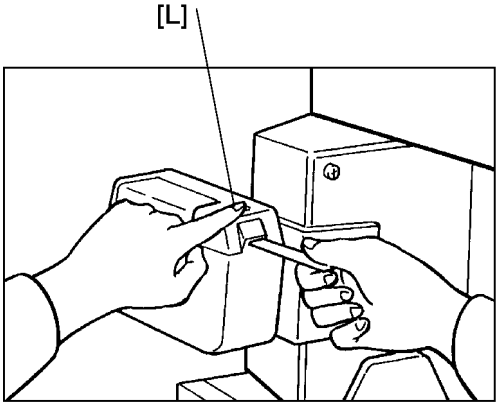
Note

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



C238I520

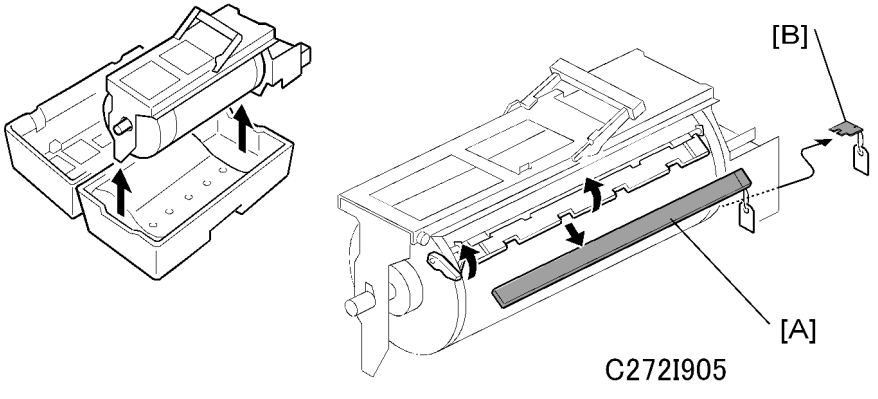
10. Turn on the main switch of the main body.
11. Turn on the tape dispenser switch [K].



C238I521

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

Optional Drums



C272I905

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.

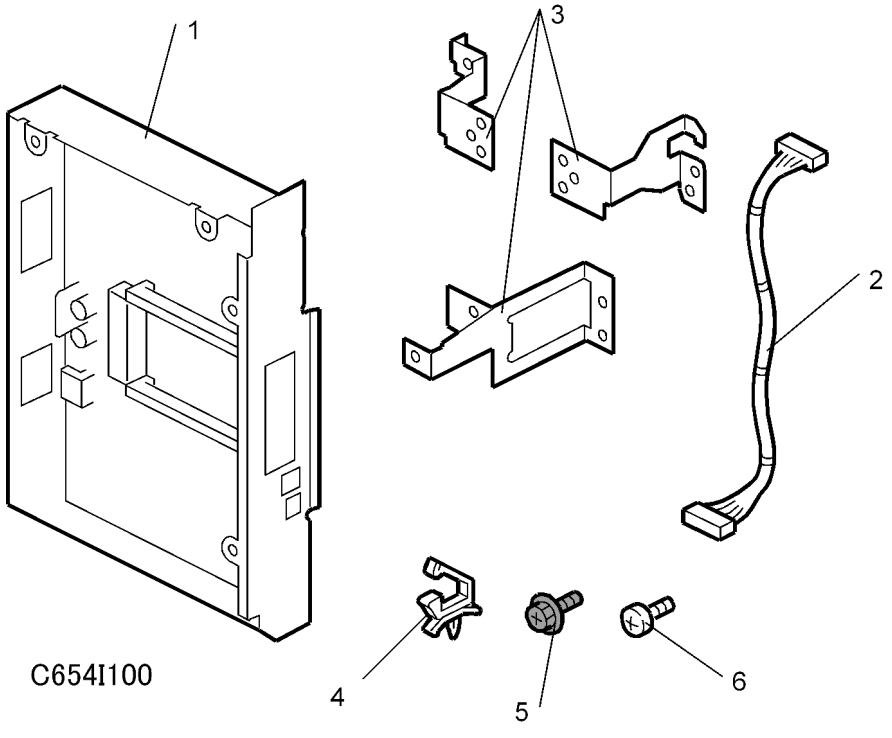
Note

- 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.

Network Printer Controller (Printer Board – FV-Lt)

Accessory Check



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

Description	Quantity
1. ACU Board (with Case)	1

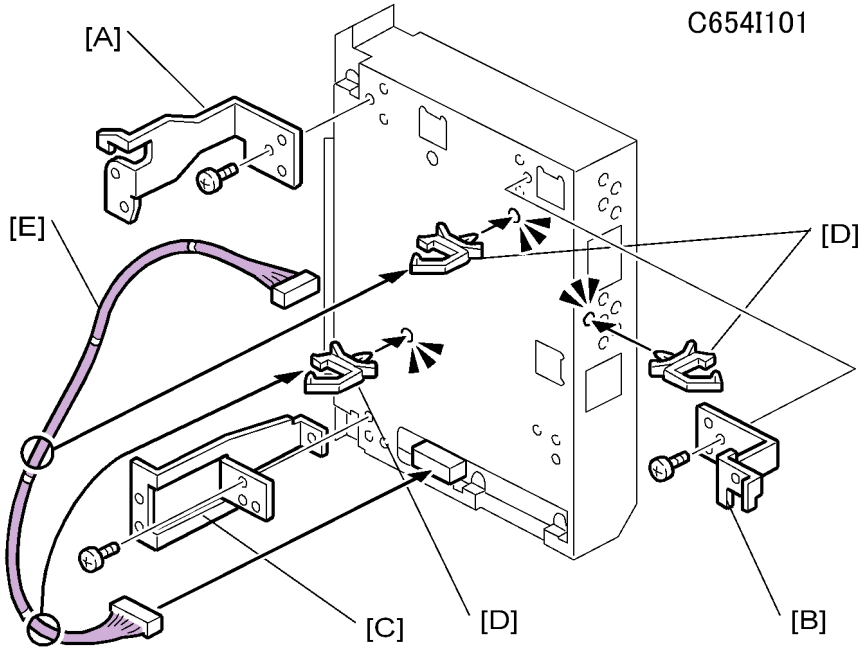
2. Cable	1
3. Brackets	3
4. Cable Clamper	3
5. Screw (for installing the board)	3
6. Screw (for brackets)	3

Note

- This circuit operates on a +5V circuit.

Installation procedure

Prepare to install the board: Stage 1



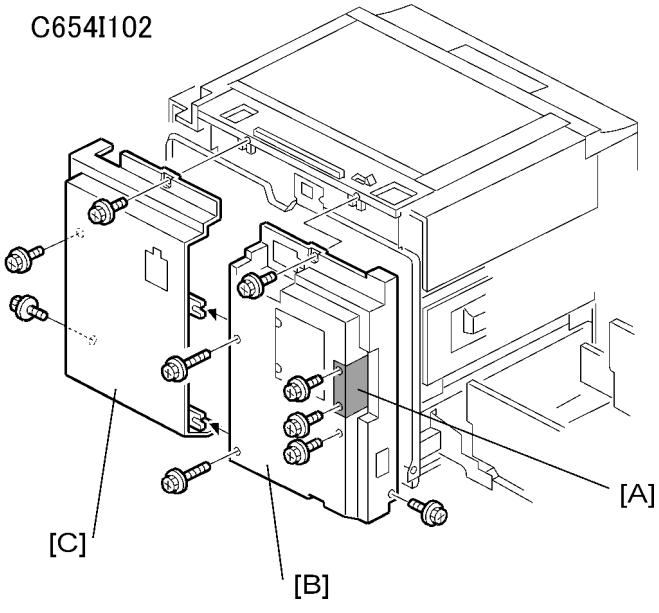
1. Attach the three brackets [A], [B], [C] (x 3).
2. Install the clamps [D] (x 3).
3. Attach the harness [E] (x 2, x 1).

Prepare to install the board: Stage 2

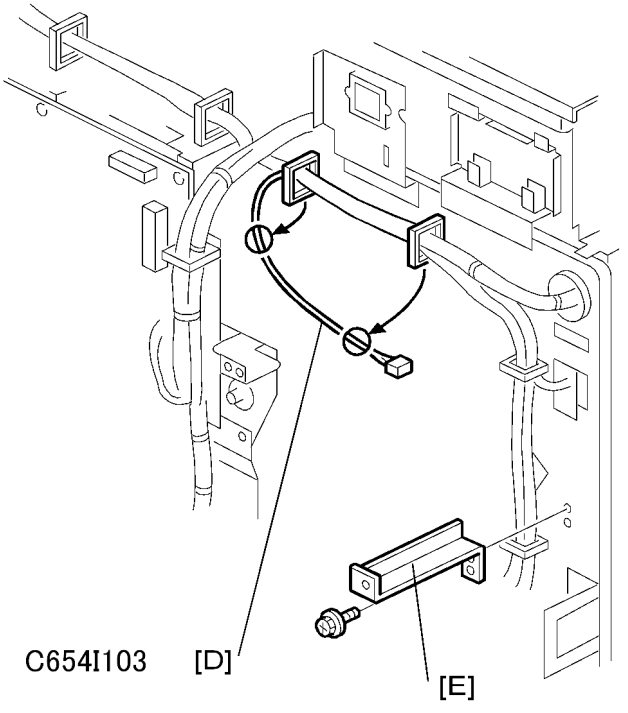
1. Check whether the "mm/inch" setting in the User Tools (System – mm/inch) is set to the correct value. If necessary, change it to the correct "mm/inch" setting.

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

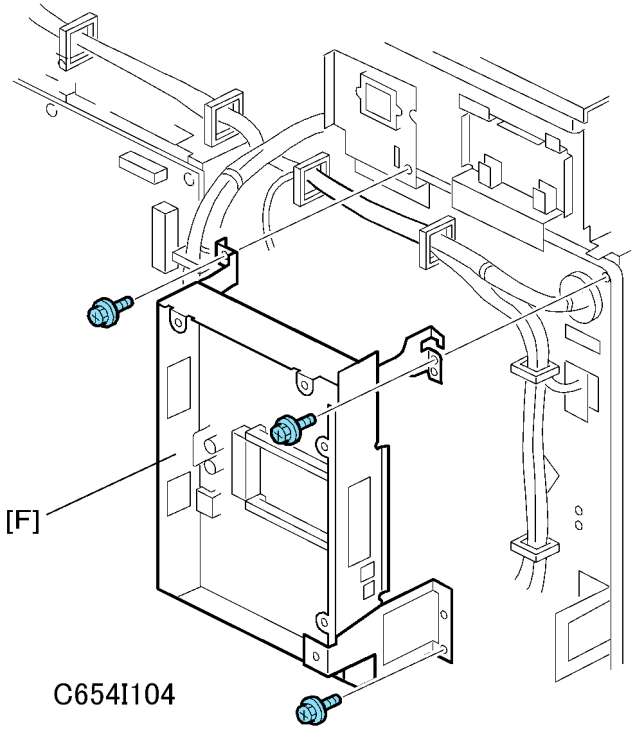
Install the controller in the main machine



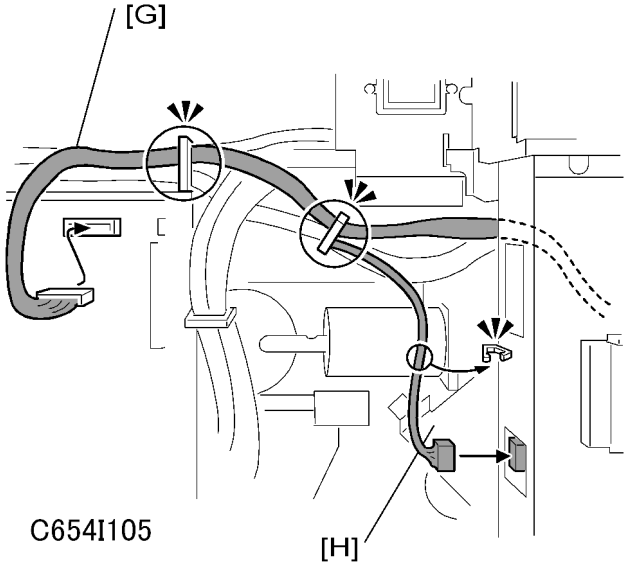
1. Open the controller cover [A].
2. Remove the rear covers [B], [C].



3. Open the two clamps to release this part of the harness [D], which will be connected to the controller.
4. Remove the bracket [E].



5. Attach the board [F] (x 3).



6. Connect the harness [G], [H] (x 2, x 3).

Note

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

3. Preventive Maintenance

Maintenance Tables

See "Appendices" for the following information:

- Maintenance table

4. Replacement and Adjustment

General Caution

⚠CAUTION

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

Symbols

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

☛: See or refer to

: screw

: connector

: E-ring

: clip

: clamp

Beforehand

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	Q'ty
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
N8036701	Flash memory card	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

SP6-21: Paper registration position

SP6-05: Scanning speed - platen

SP6-06: Scanning speed - ADF

SP6-03: Scanning start position - platen

SP6-04: Scanning start position - ADF

SP6-01: Main scan position - platen

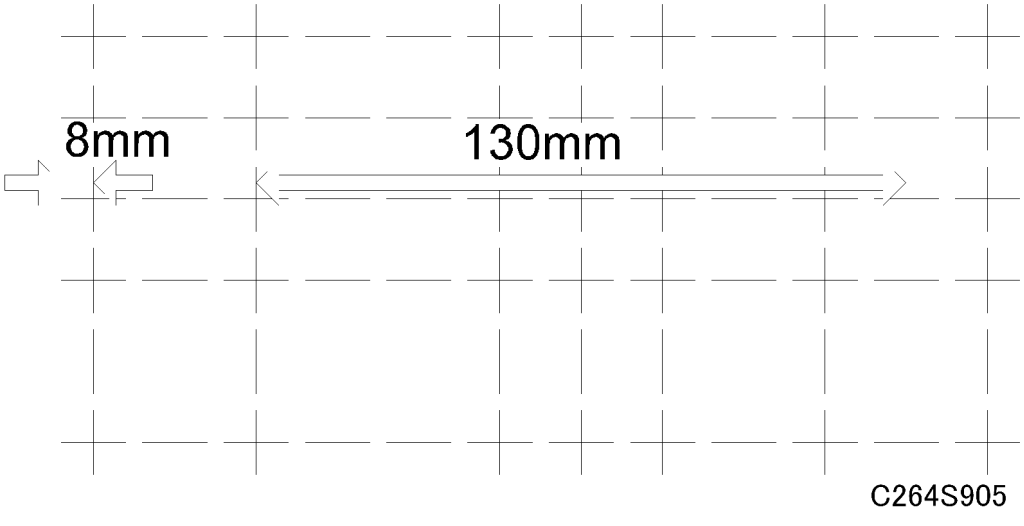
SP6-02: Main scan position - ADF

SP6-31: SBU 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.

SP6-21: Paper Registration Position

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 SP6-21, input the difference and press the Enter key.

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

SP6-05, 6-06: 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.

SP6-03, 6-04: Scanning Start Position – 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 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.

SP6-31: SBU Calibration

Do this after one of the following is replaced:

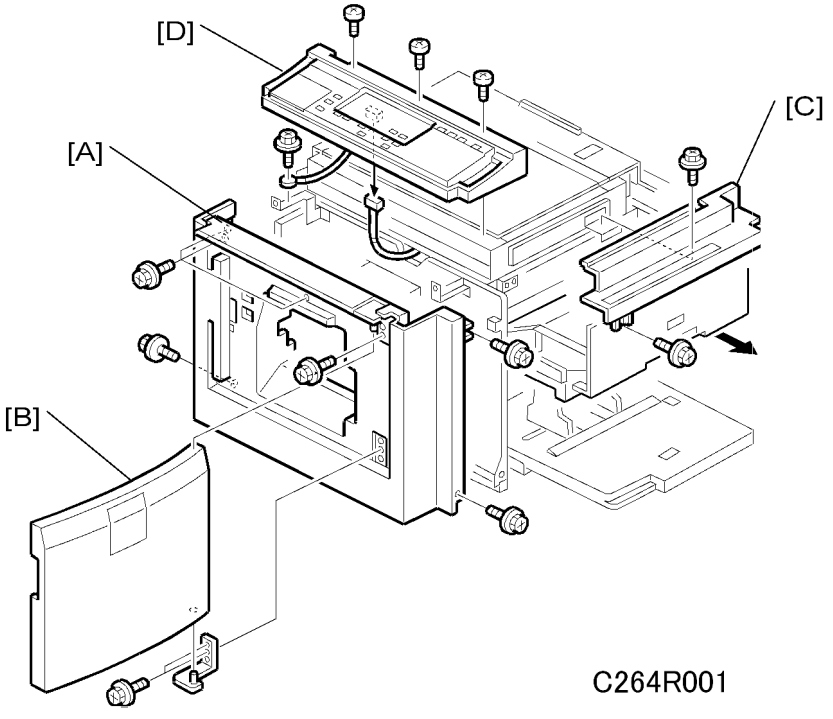
- RAM on the MPU
- White plate located behind the original scale.

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 SP6-31 and then press the Enter key to start the auto calibration.

Covers and Boards

Front Cover, Operation Panel



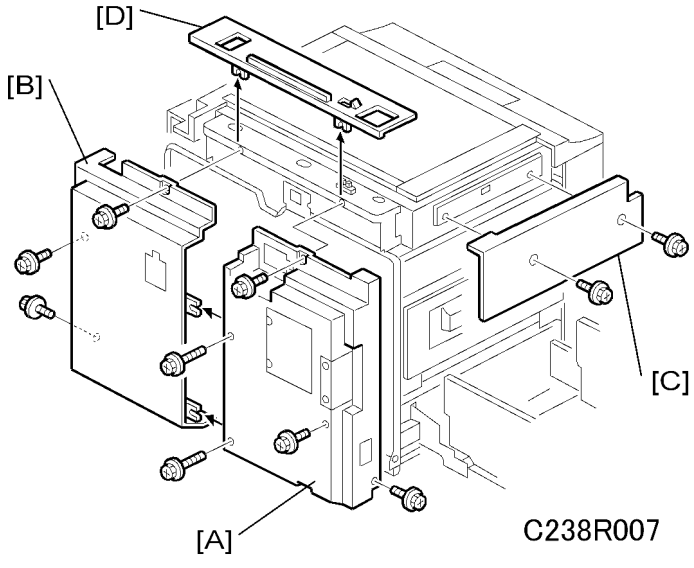
[A]: Front cover (x 7)

[B]: Front door (x 4)

[C]: Upper right cover (x 2)

[D]: Operation panel (x 4, x 1)

Rear Covers



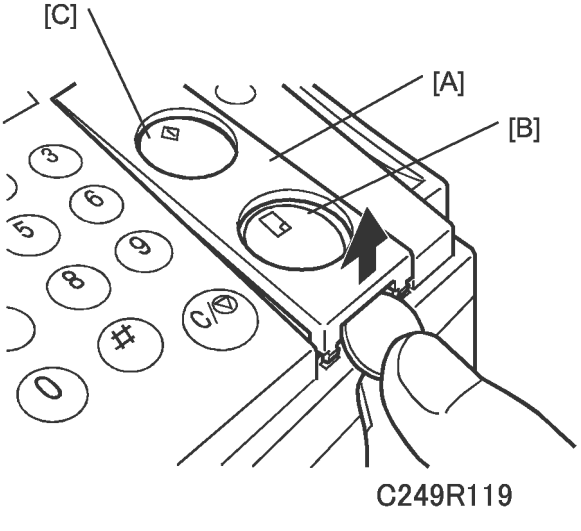
[A]: Rear left cover (x 5)

[B]: Rear right cover (x 3)

[C]: Upper left cover (x 2)

[D]: Rear upper cover

Print Key, Master Making Key

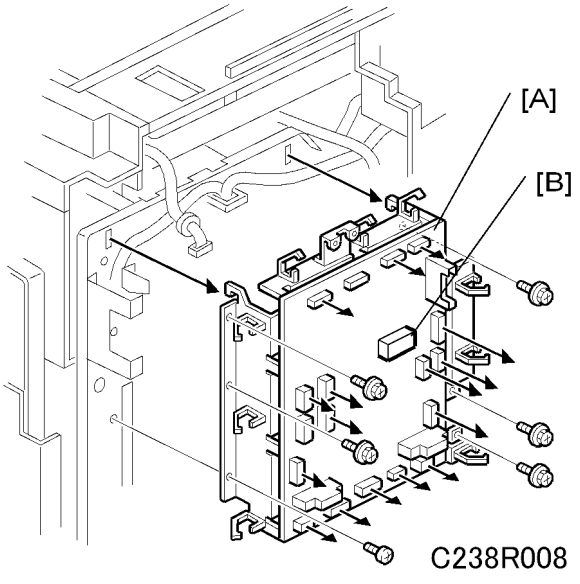


[A]: Key Cover

[B]: Print start key

[C]: Master making key

MPU



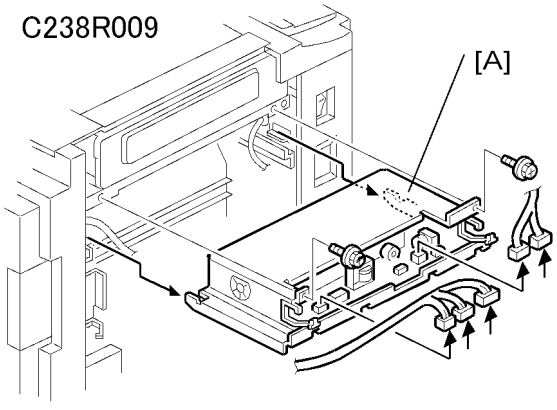
Rear left cover, Rear right cover (☛ Rear Cover)

[A]: MPU (x 17, x 6, 9 clamps)

⚠CAUTION

- Move the RAM [B] from the old board to the new one, so that the SP mode settings will be transferred to the new board
- Adjust the master end sensor, duct jam sensor, master edge sensor, and 2nd drum master sensor (☛ Master Feed – Duct Jam Sensor Adjustment, Master Edge Sensor Adjustment, 2nd Drum Master Sensor Adjustment and Master End Sensor Adjustment) after installing the new MPU.
- If you install a new RAM, you must do the image adjustments (☛ Image Adjustment).

PSU



Upper left cover (☛ Rear Covers)

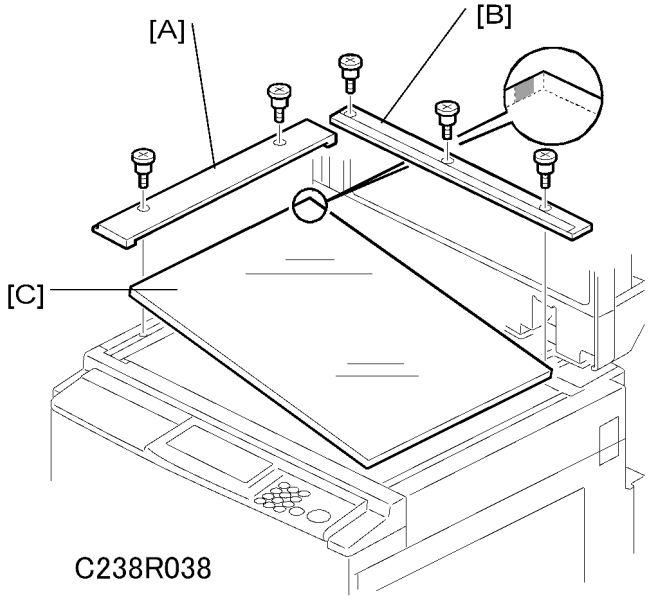
Master eject unit (☛ Master Eject Unit)

[A]: PSU (x 5, x 2, 2 clamps)

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

Scanner

Exposure Glass, Scales

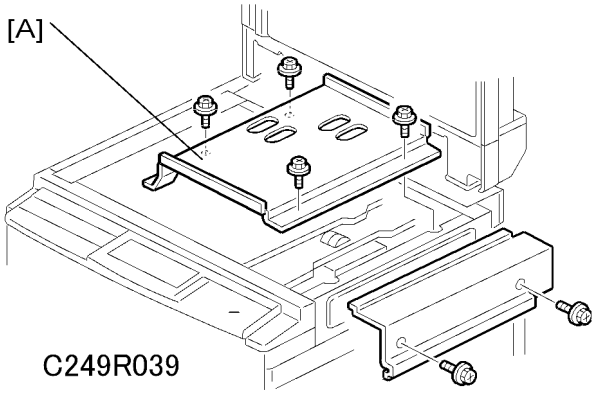


[A]: Left scale (x 2)

[B]: Upper scale (x 3)

[C]: Exposure glass

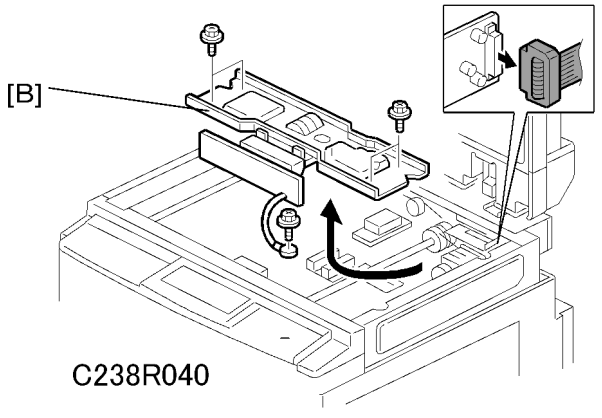
SBU and Lamp Stabilizer, Scanner Motor



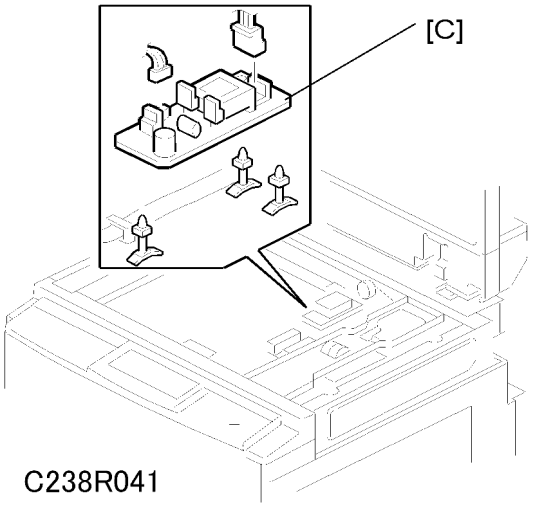
Left scale, Upper scale, Exposure glass (☛ Exposure Glass / Scales)

Upper right cover (☛Covers / Boards - Rear Covers)

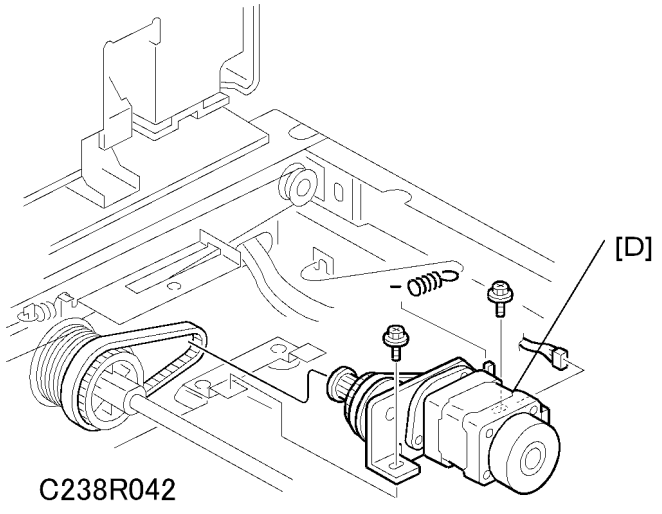
[A]: SBU cover (x 4)



[B]: SBU (x 1, x 5)

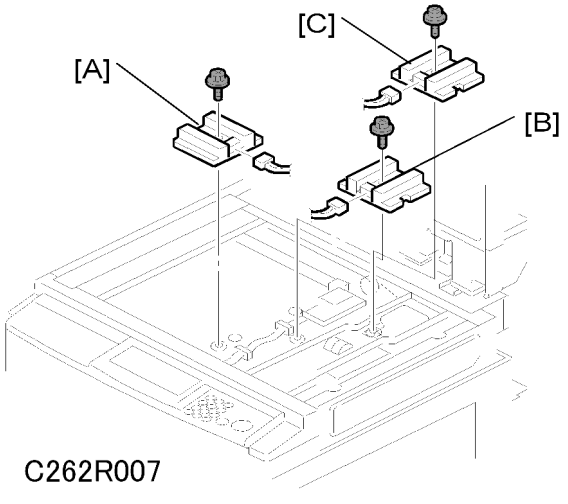


[C]: Lamp stabilizer (x 2, x 5)



[D]: Scanner motor (x 2, 1 spring)

Original Size Sensors



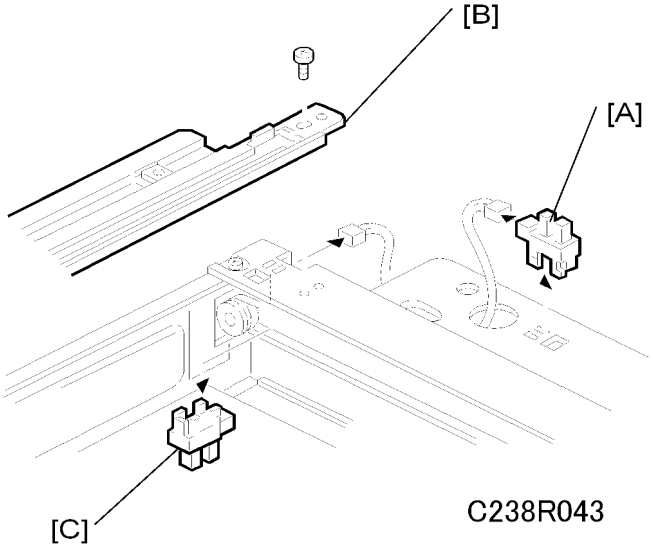
- Left scale, Upper scale, Exposure glass (☛Exposure Glass, Scales)
- Right scanner cover (☛SBU and Lamp Stabilizer, Scanner Motor)
- SBU cover (☛SBU and Lamp Stabilizer, Scanner Motor)

[A] Original width sensor (x 1, x 1)

[B] Original length sensor (x 1, x 1)

[C] Original special size sensor (x 1, x 1)

Scanner H.P. Sensor, Platen Cover Sensor



Left scale, Upper scale, Exposure glass (☛ Exposure Glass / Scales)

Operation panel (☛Covers / Boards - Front Cover / Panel)

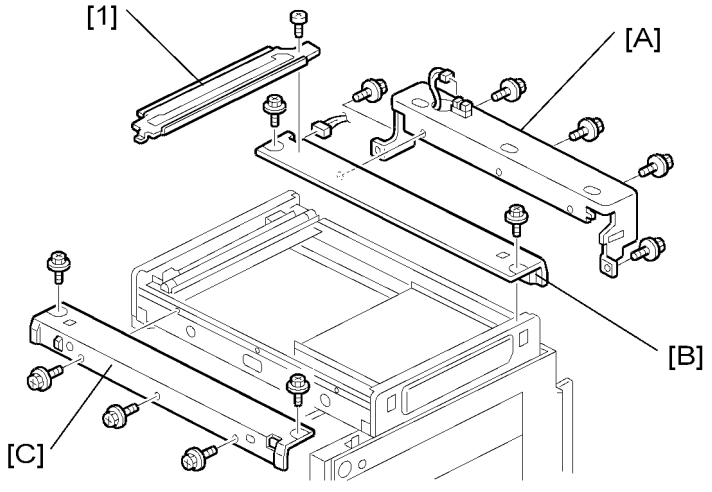
Rear upper cover (☛Covers / Boards - Rear Covers)

[A]: Platen cover sensor (x 1)

[B]: Left stay (x 1)

[C]: Scanner H.P. sensor (x 1)

Exposure Lamp (Xenon Lamp)



Move the first scanner next to the opening in the frame.

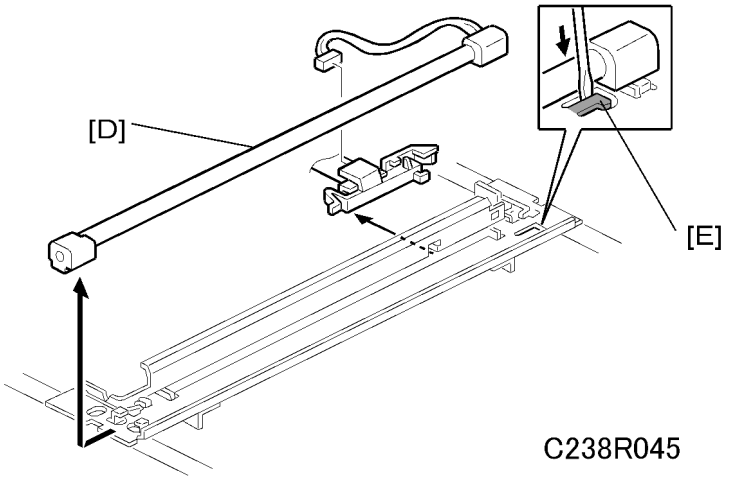
Exposure glass (☛ Exposure Glass / Scales)

[1]: Left stay (☛ Scanner H.P. Sensor / Platen Cover Sensor)

[A]: Platen base (x 1, x 5)

[B]: Rear frame (x 1, x 2)

[C]: Front frame (x 5)



[D]: Exposure lamp (x 1)

After installing the lamp, press the lamp holder [E] up to the original position so that it can hold the lamp properly.

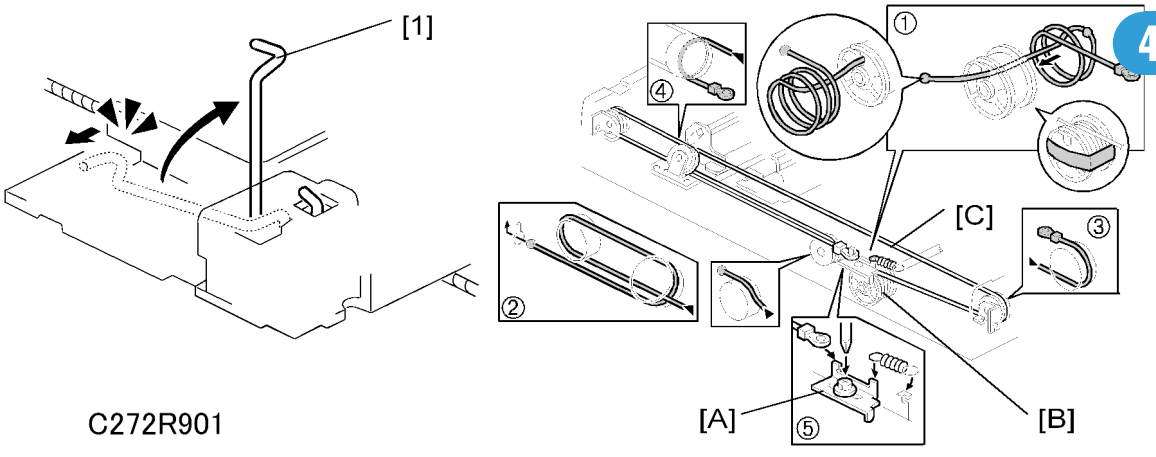
Scanner Wires

Move the first scanner next to the opening in the frame.

Exposure glass (☛ Exposure Glass / Scales)

SBU cover (☛ SBU and Lamp Stabilizer / Scanner Motor)

Left stay (☛ Scanner H.P. Sensor / Platen Cover Sensor)



1. First scanner ([1]: 2 pins)

Note

- The drawings show only the front side. Repeat to remove components on the other side.

[A]: Wire tension brackets (2 springs, x 2)

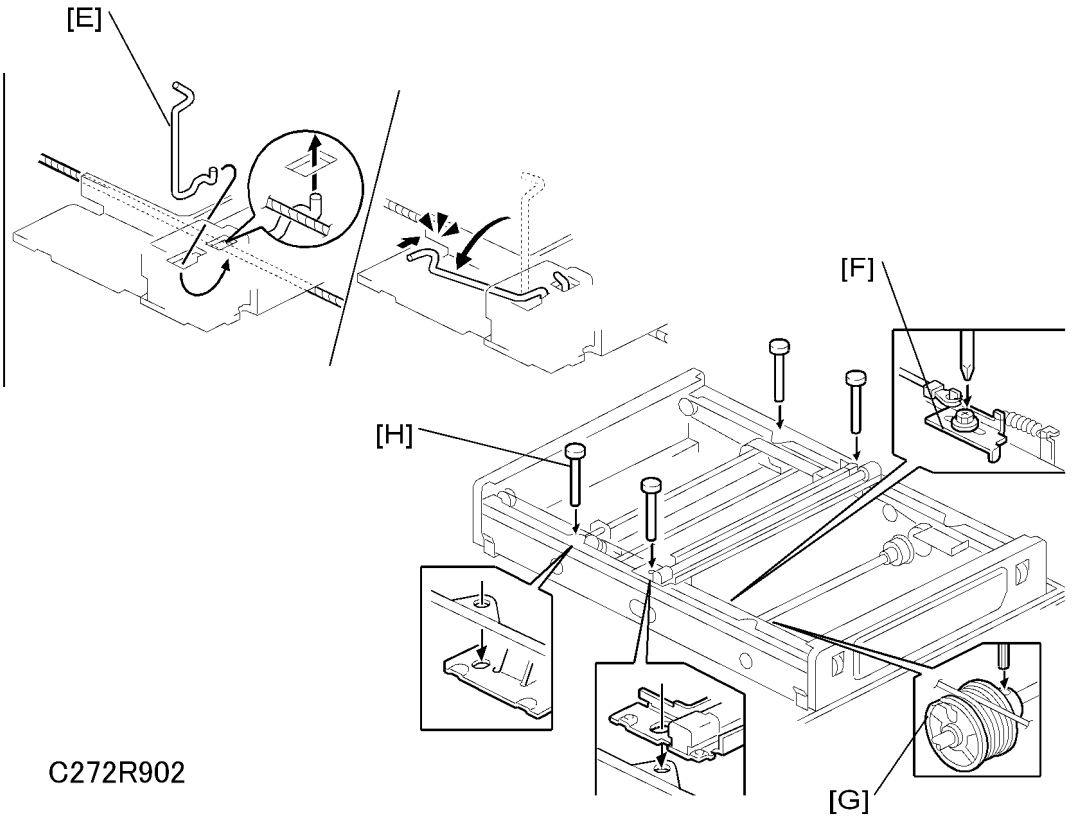
[B]: Scanner drive pulleys (2 Allen screws)

[C]: Scanner wires

Installation

1. Wrap the new scanner wire around the pulley as shown ①, then temporarily secure the pulley with tape.
2. Re-install the first scanner. Then secure the first and second scanner with the scanner positioning pins (P/N A0069104), as shown in the illustration below.
3. Wind the new scanner wire around the scanner drive pulley in the correct way, as shown.
4. Wind the end of the new wire with the ball as shown in the illustration above ②.
5. Wind the end of the new wire with the ring as shown ③ ④ ⑤.
6. Connect the tension spring to the wire tension bracket ⑤.

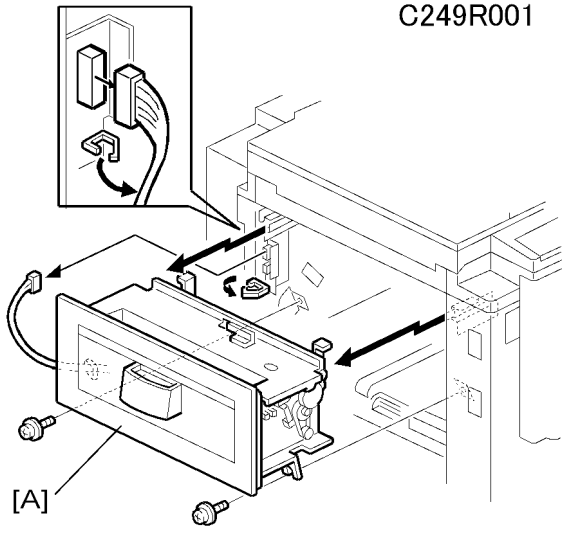
7. Wind the new scanner wire for the other side as well.



8. Secure the first scanner with the pins [E].
9. Tighten the screw securing the tension bracket [F].
10. Secure the scanner drive pulley [G] (1 Allen screw).
11. Remove the scanner positioning pins [H] (P/N: #A0069104).
12. Slide the scanner to the left and right several times, then set the scanner positioning pins to check the clamp position and wire tension bracket position again.

Master Eject

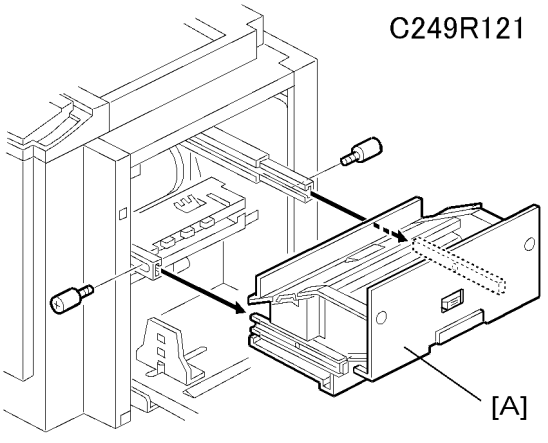
Master Eject Unit



[A]: Master eject unit (x 1, x 2, 1 clamp)

Master Feed

Master Making Unit



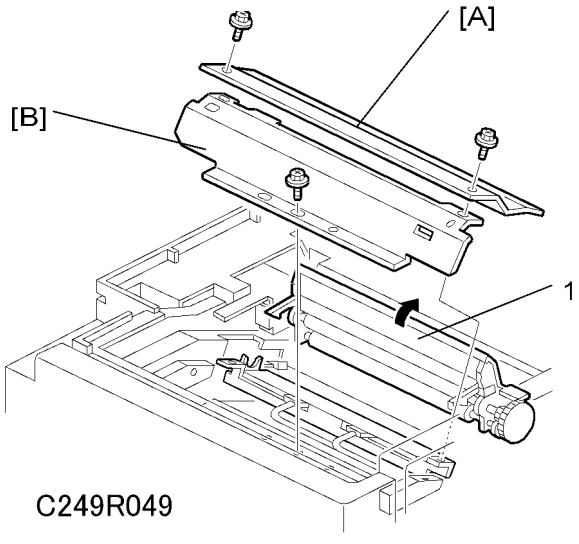
[A]: Master making unit (🔩 x 2)

Thermal Head

1. Connect the power plug. Then turn on the main switch to access SP mode.
2. Select SP5-74 (T/H driving motor - up), then press the enter (#) key and turn off the main switch.

Note

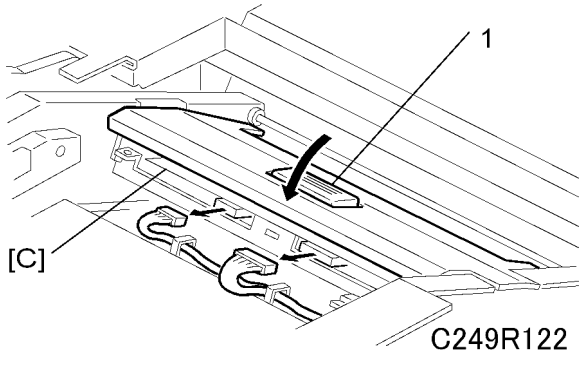
- 1) The thermal head is released after about 2 seconds. (There is almost no sound of operation.)
- 2) The thermal head does not separate, unless it releases as mentioned above.



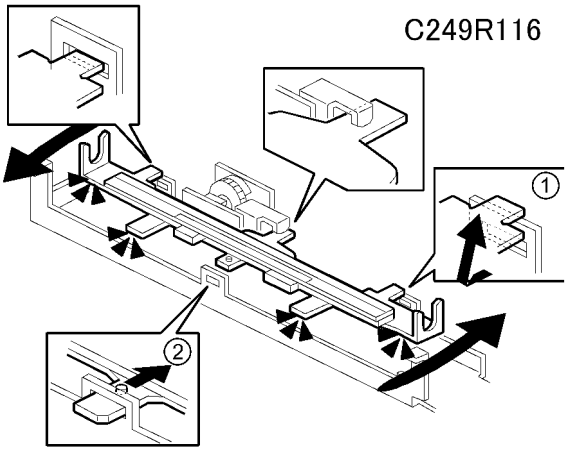
3. Remove the master making unit (☛ Master Making Unit)
4. Open the platen roller unit [1].
5. Remove the following:

   [A]: T/H upper cover (x 2)

   [B]: T/H side cover (x 1)



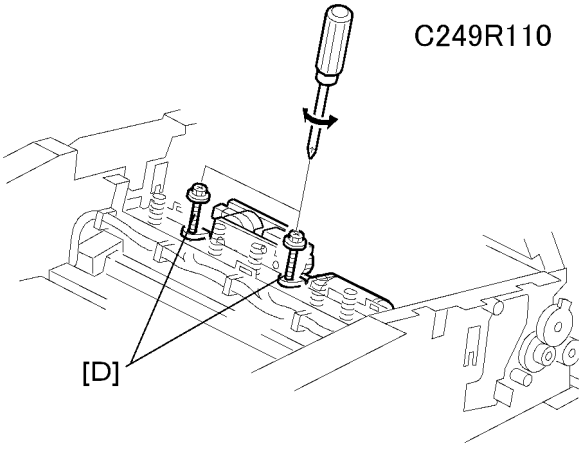
6. Close the platen roller unit [1].
7. Remove the thermal head [C] (x 2).



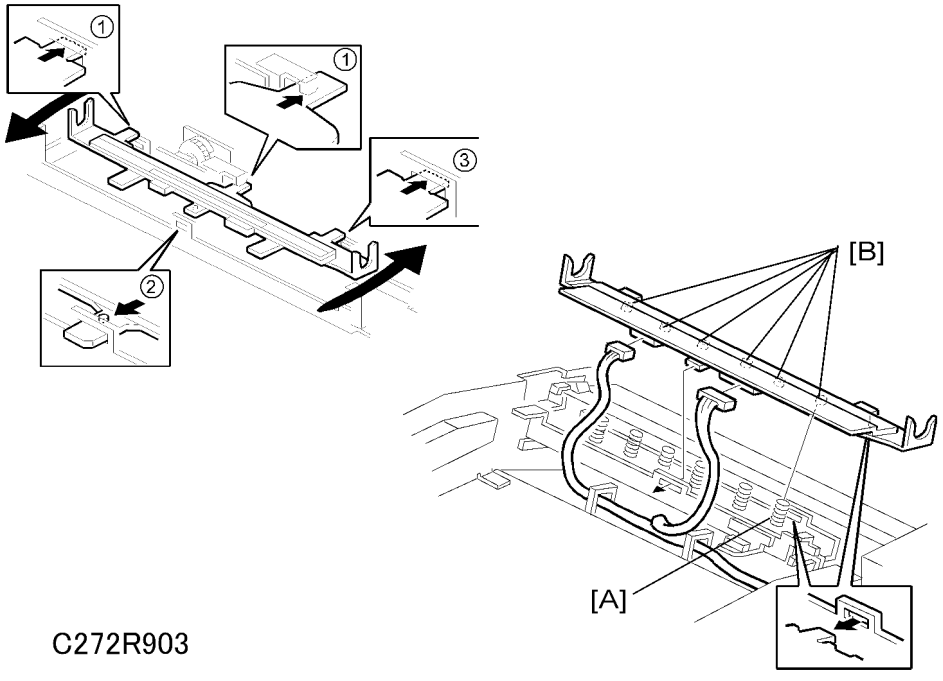
8. Turn the thermal head clockwise and remove a tab (1).
9. Turn the thermal head counterclockwise, and remove a tab (2).
10. Remove the thermal head slowly.

Note

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



Installation



C272R903

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.

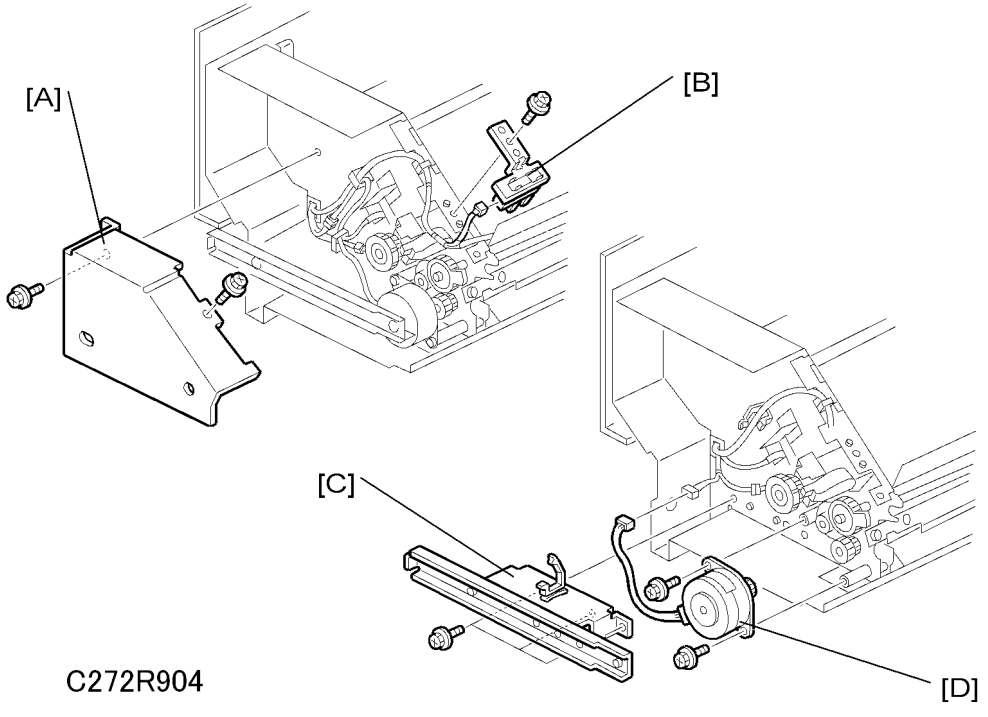
Note

- 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 (☛ Thermal Head Voltage Adjustment) after installing the new thermal head

Duct Plate HP Sensor, Duct Plate Motor



Master making unit (☛ Master Making Unit)

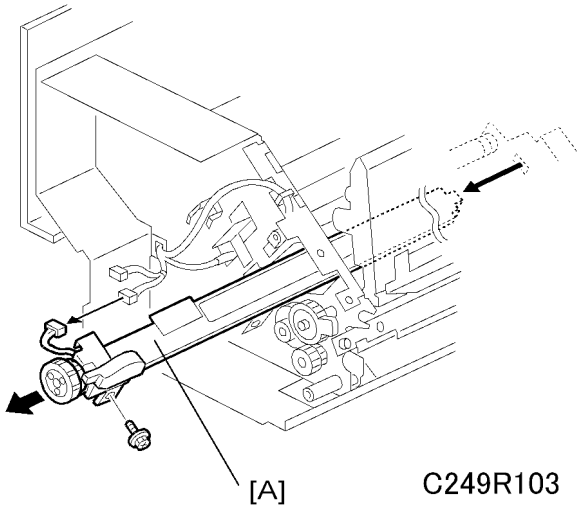
[A]: Rear cover (x 2)

[B]: Duct plate HP sensor (x 1, x 1)

[C]: Rear rail bracket (x 2)

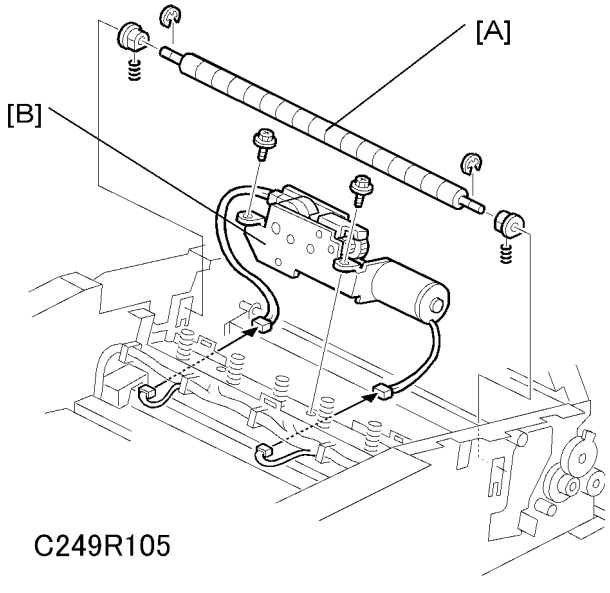
[D]: Duct plate motor (x 1, x 2)

Cutter Unit



[A]: Cutter unit (x 1, x 1)

Thermal Head Driving Unit



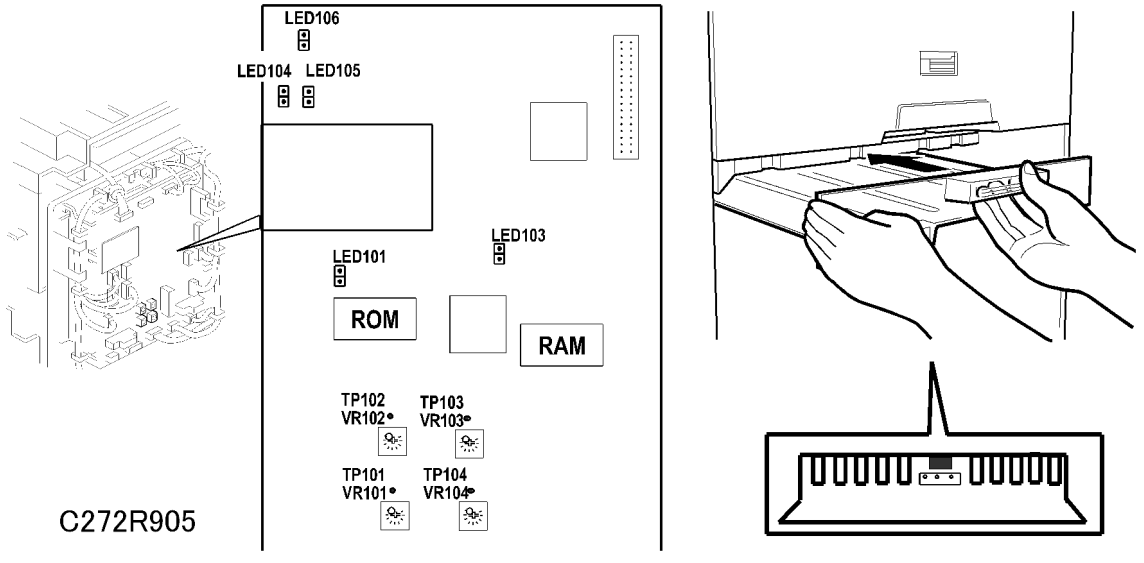
- Thermal head (☛ Thermal Head)
- Rear cover (☛ Covers / Boards - Rear Cover)
- Cutter unit (☛ Cutter Unit)

[A]: Anti-static roller (ℂ x 2)

[B]: Thermal head driving unit (x 2, x 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 (☛Covers / Boards - Rear Covers)

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)

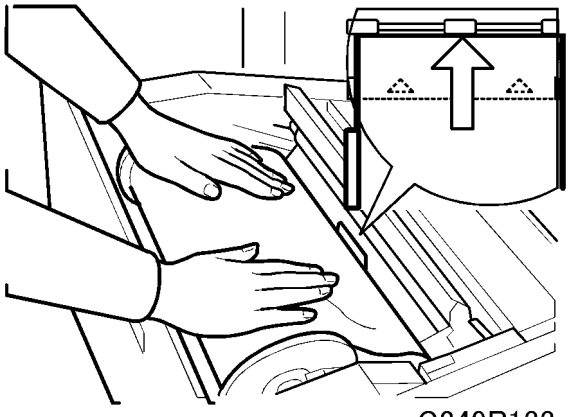
Note

- 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.



C249R133

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

Tools: Circuit tester

- Rear cover (☛Covers / Boards - 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.
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 (2.0 volts).

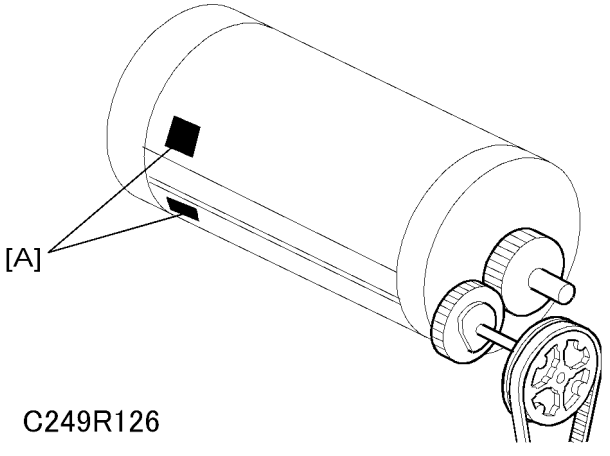
Note

- 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)

Standard Value Master present	Threshold level (SP6-51)	Standard Value Master not present
2.0V+-0.1V	2.8V	Above 3.3V

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 (☛Covers / Boards - 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)

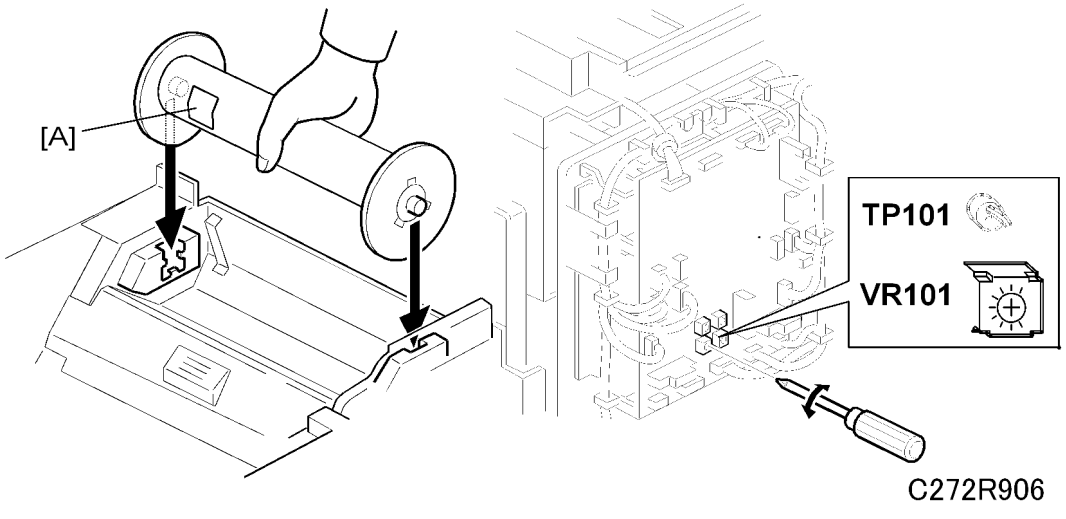
Standard Value Master present	Threshold level (SP6-53)	Standard Value Master not present
2.2V+-0.1V	1.0V	Below 0.8V

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 (☛ Covers / Boards - Rear Covers)

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.

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

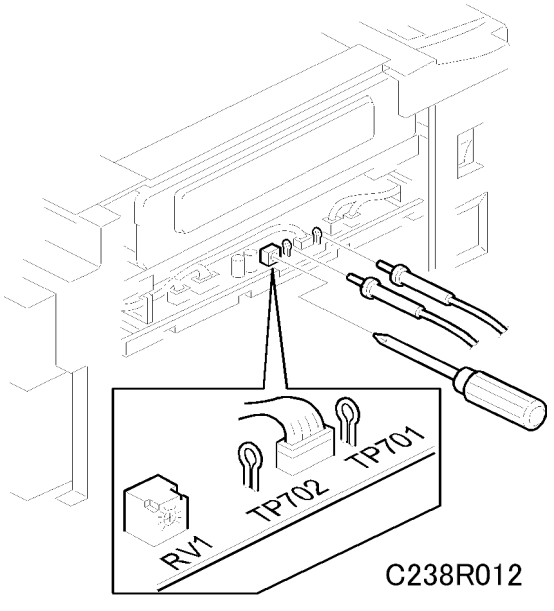
- This adjustment is always required when the thermal head or PSU has been replaced.

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



- Upper left cover (☛Covers / Boards - Rear Covers)

- 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.

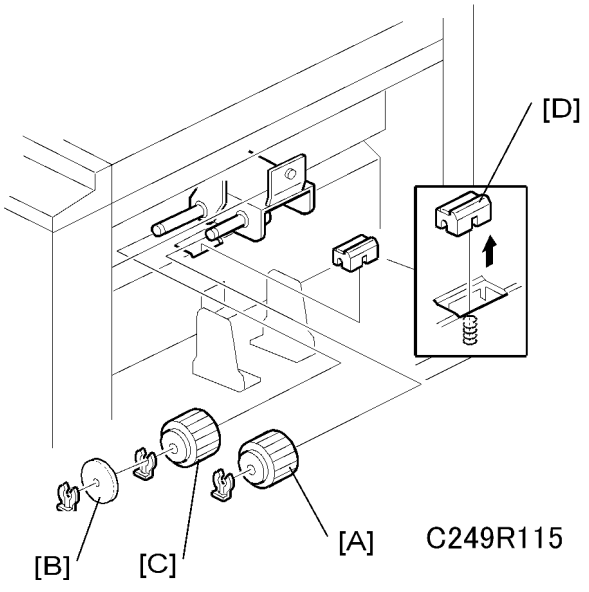
⚠CAUTION

- 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: Thermal head signal output).
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.

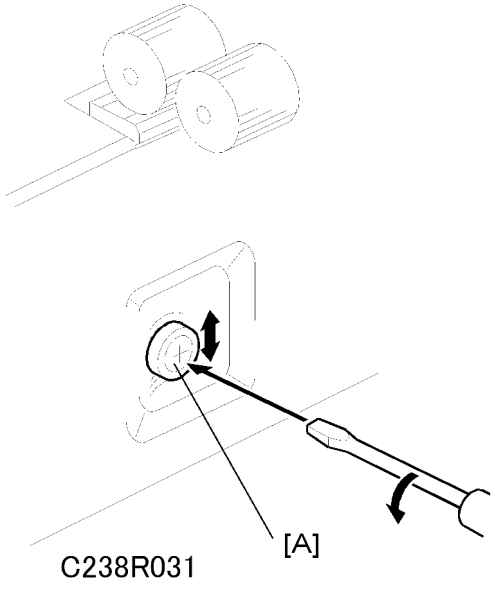
[A]: Pick-up roller (x 1)

[B]: Paper guide (x 1)

[C]: Feed roller (x 1)

[D]: Friction pad

Paper Separation Pressure Adjustment



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

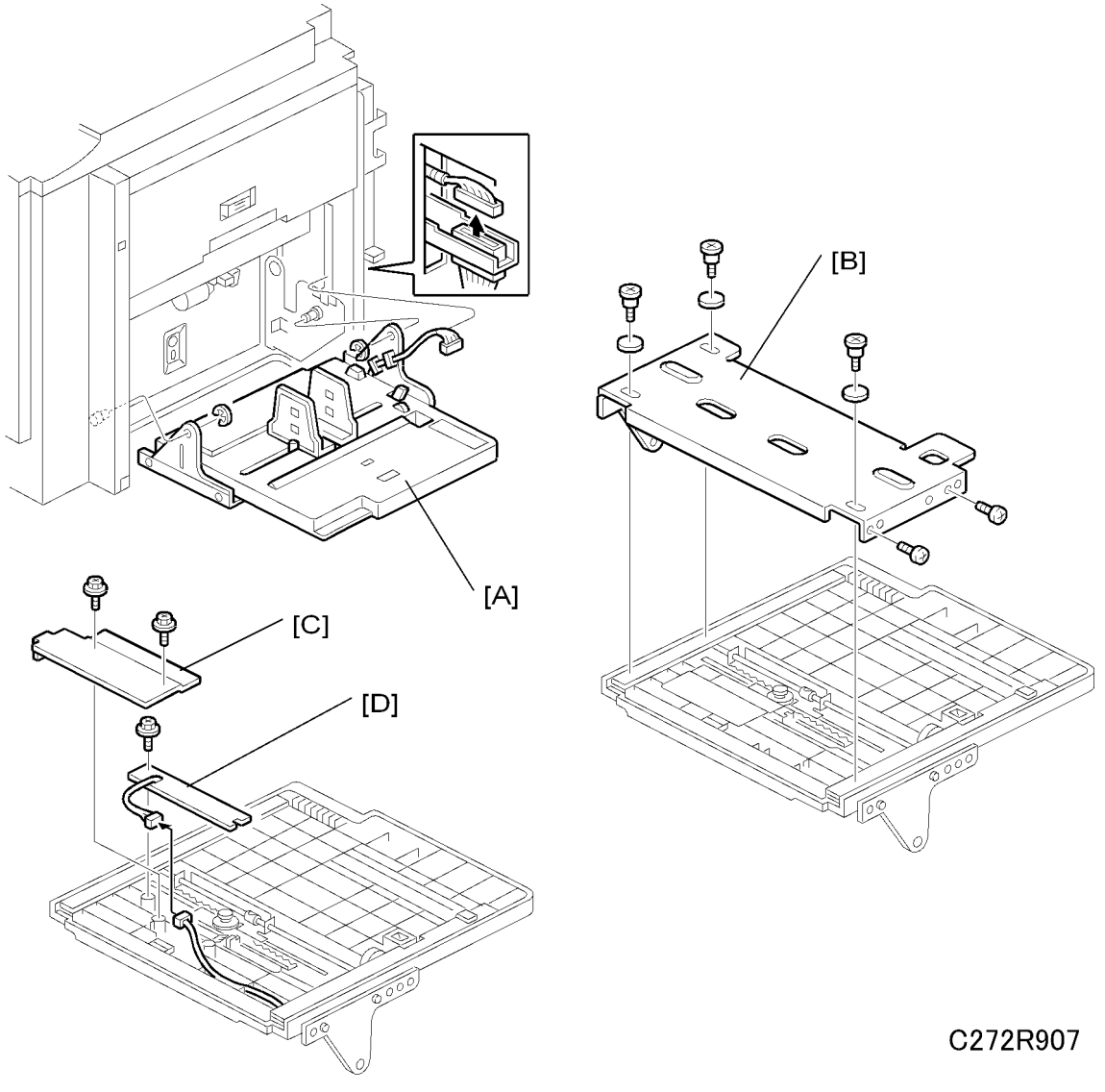
Default: The next position to the top.

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 (x 1, x 2)

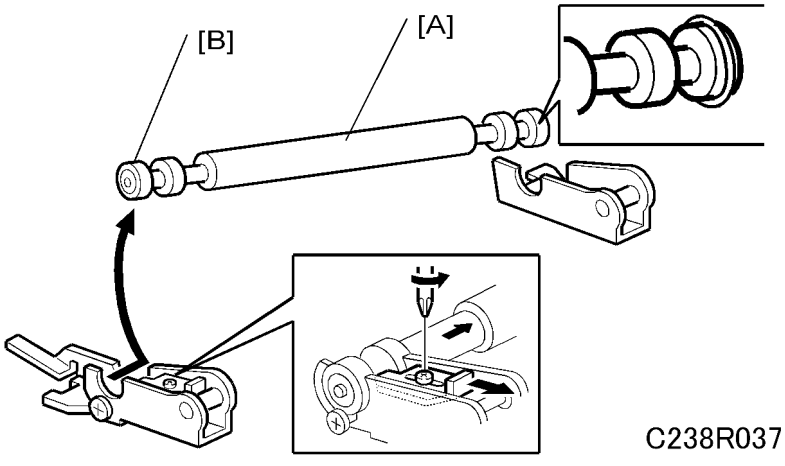
[B]: Table cover (x 5, 3 washers)

[C]: Sensor cover (x 2)

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

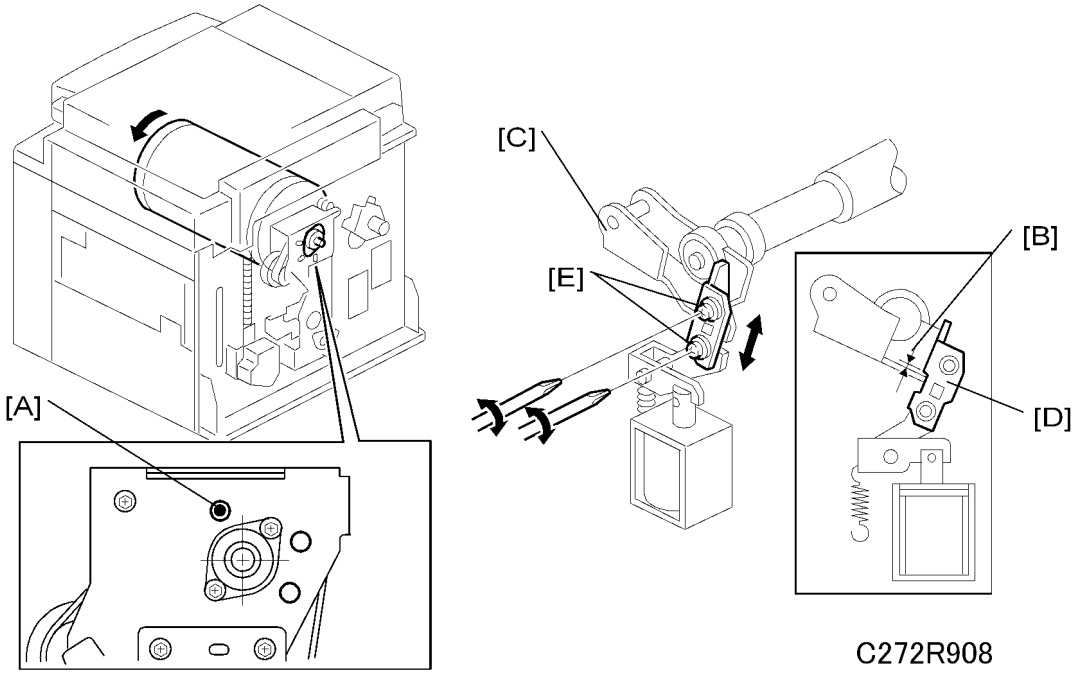
The bearings on the rear and front differ. During installation, ensure that the bearing with the stopper [B] is positioned towards the rear of the machine.

Press Roller Release Lever Adjustment

Purpose: To maintain the correct clearance between the press roller arms and press roller lock levers. This ensures that the press roller is correctly released and pressed against the drum when the press roller release solenoid is energized.

Standard: 0.7 to 1.2 mm

Tools: A thickness gauge



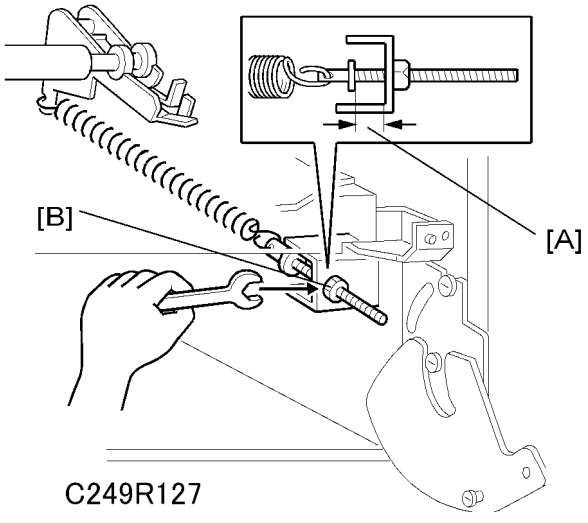
- Front cover (☛ Covers / Board – Front Cover / Panel)
- Rear covers (☛ Covers / Board – Rear Covers)

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 0.7 and 1.2 mm.
3. If it is not correct, adjust the position of the press roller lock lever after loosening the two screws [E].
4. Repeat steps 2 and 3 for the front side.

Printing Pressure Adjustment

Improves print results without decreasing the run length.

Standard: Within 17 +-0.2 mm



- Paper delivery unit (☛ Paper Delivery – Paper Delivery Unit)

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 (☛ Appendix – SP mode tables – Basic Settings or Adjustment).

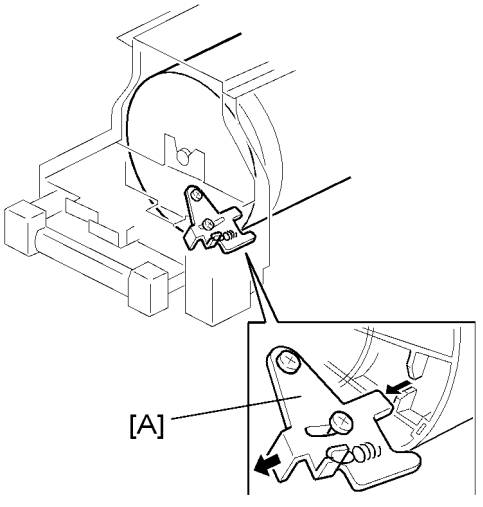
Drum

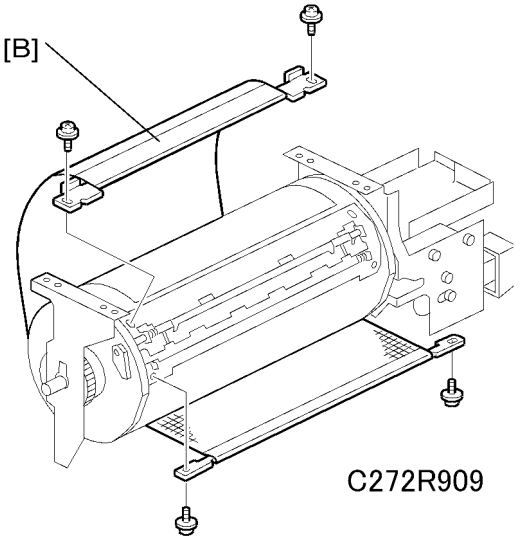
Preparation

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

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

Cloth Screen

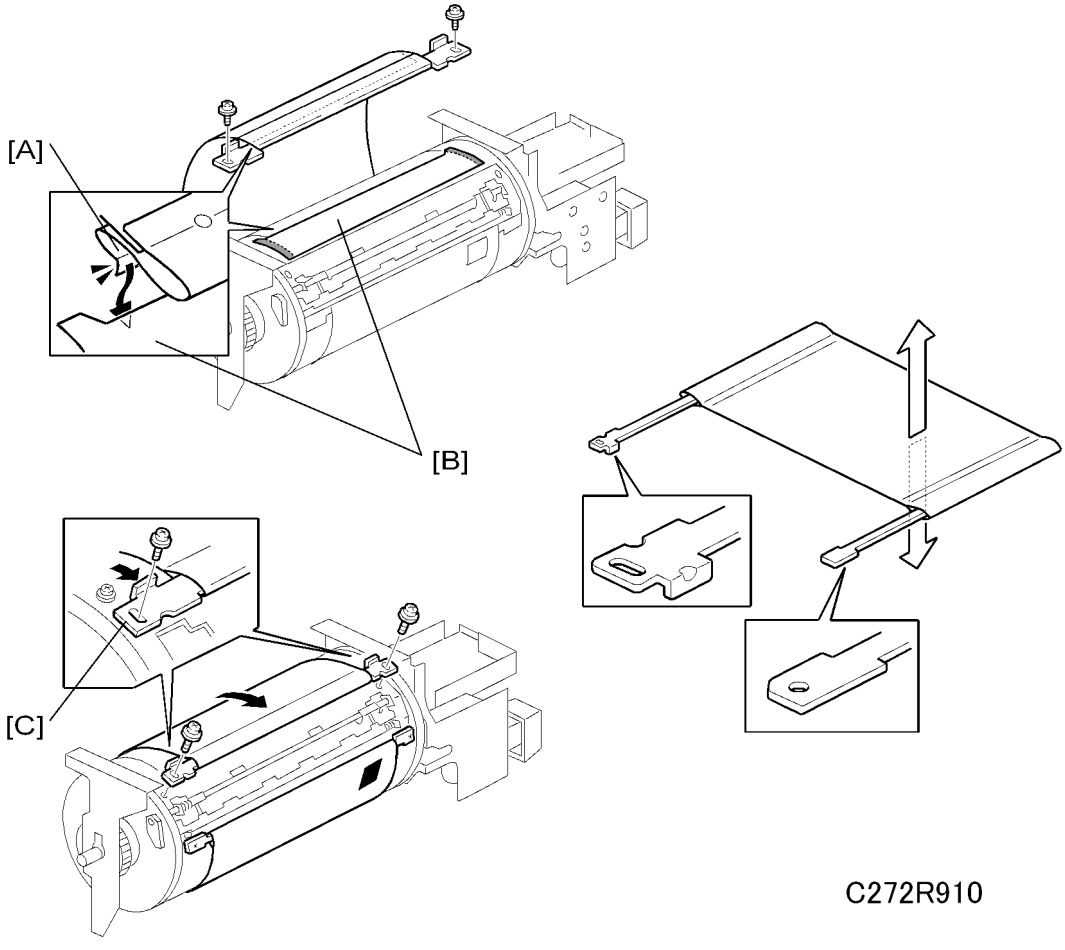




- Remove the drum

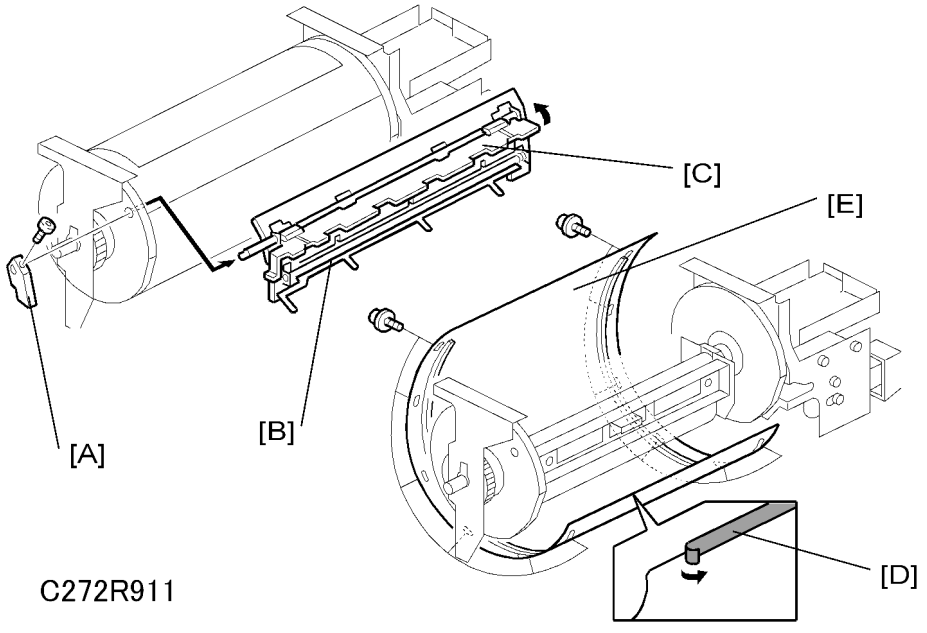
1. Remove the drum upper bracket (x 4).
2. Release the stopper [A], then rotate the drum until the master clamper faces top.
3. Remove the cloth screen [B] (x 4).

Installation



- Do not scratch the cloth screen or metal screen.
- Properly insert the edge of the 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 (☛ Cloth Screen)

[A]: Clamper lever (1 hexagon screw)

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

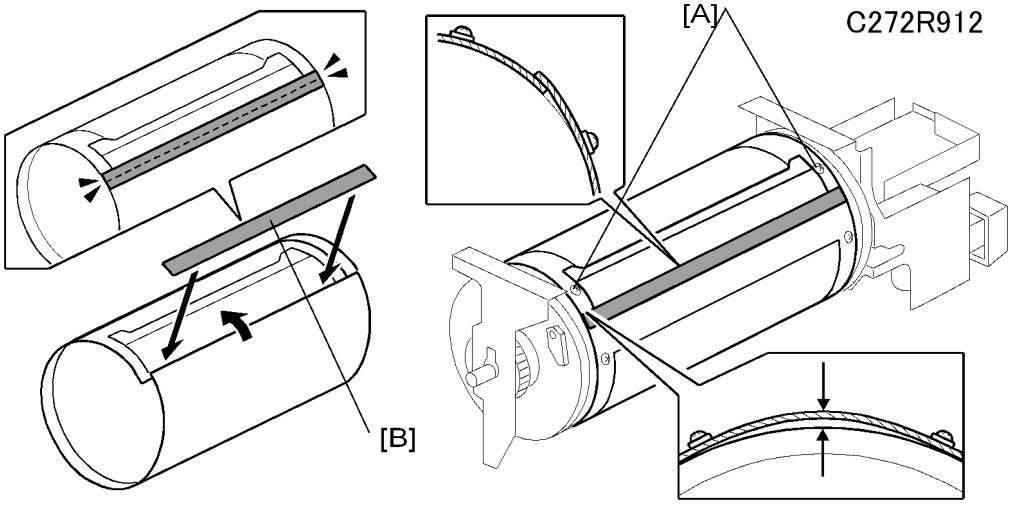
Note

- 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)

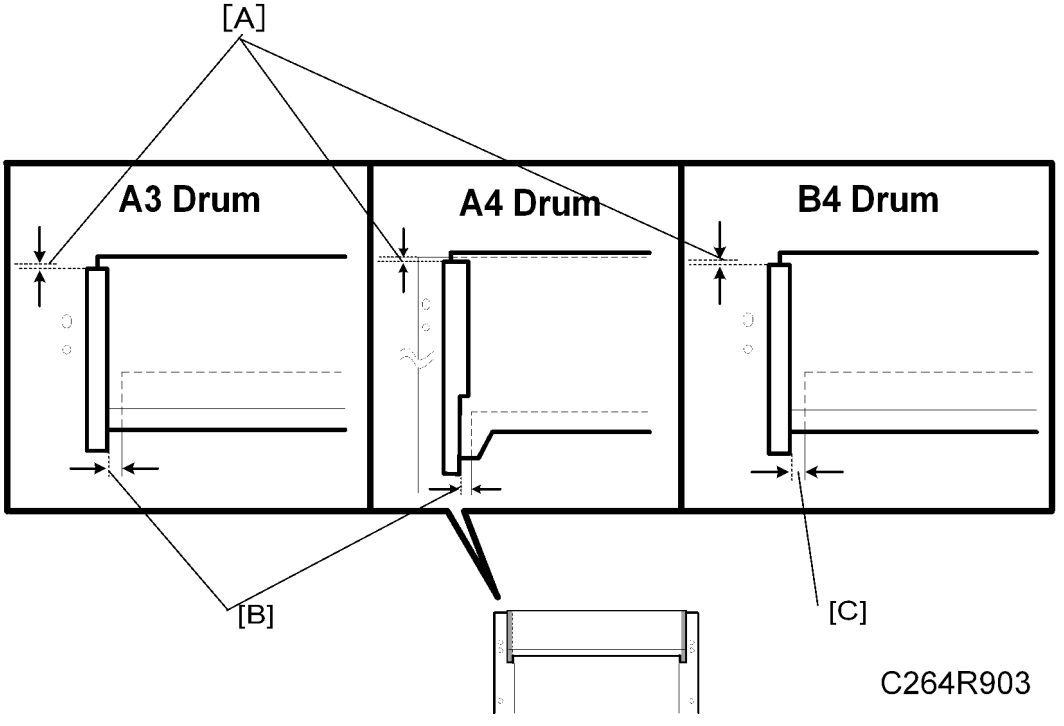
[E]: Metal screen (x 12)

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 x 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

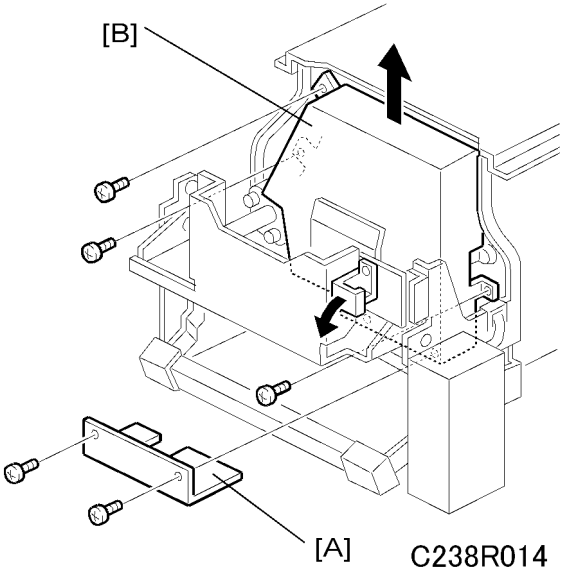
Attach the mylar seal at the attachment position on the metal screen as shown above.

Note

- Clean the attachment position using isopropyl alcohol.

Ink Pump Adjustment

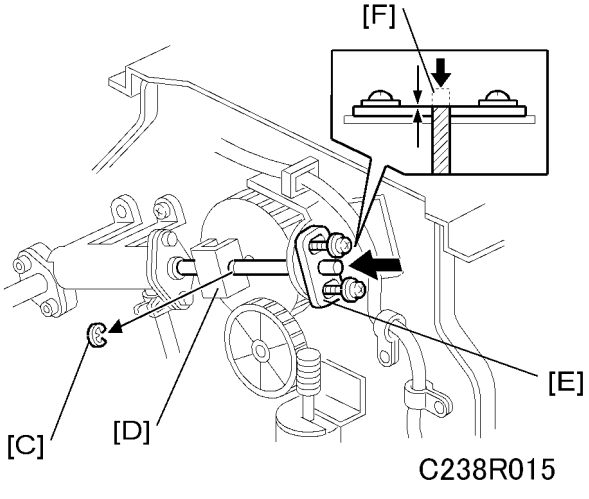
Purpose: To ensure the smooth operation of the ink pump plunger by properly positioning its holder.



- Remove the drum

[A]: Lower pump cover (🔩 x 2)

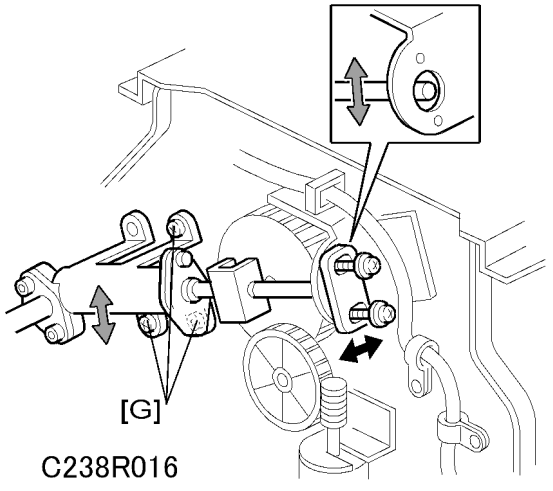
[B]: Upper pump cover (🔩 x 3)



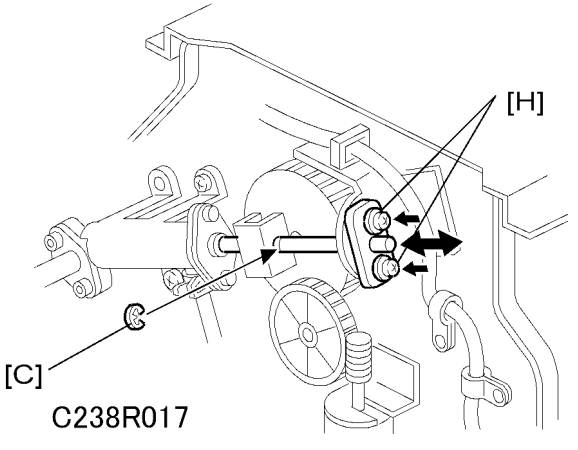
1. Remove the E-ring [C] to free the plunger from the pump drive slider [D].
2. Loosen the two screws securing the holder [E]. (Do not remove the holder.)
3. Push the plunger [F] until it reaches the bottom.

Note

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

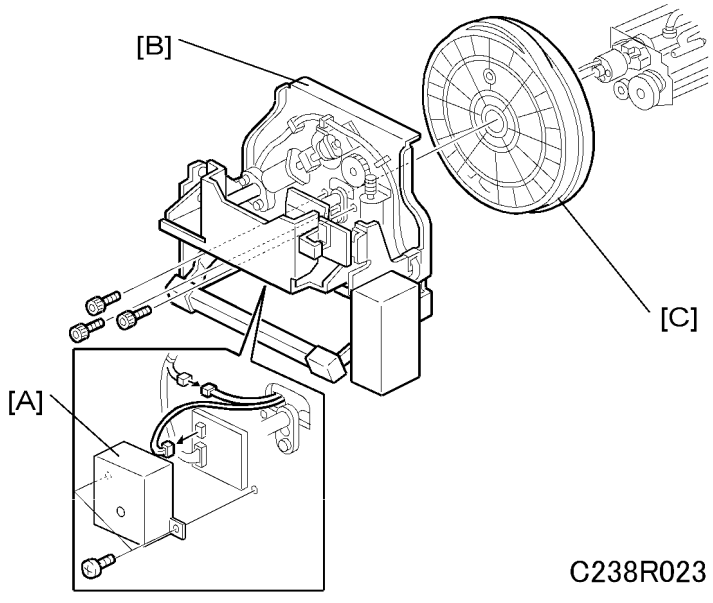


4. Check that the piston motion is smooth.
5. If the motion is stiff, loosen the pump screws [G] and adjust the pump position.
6. After tightening, repeat step 4 and step 3.



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

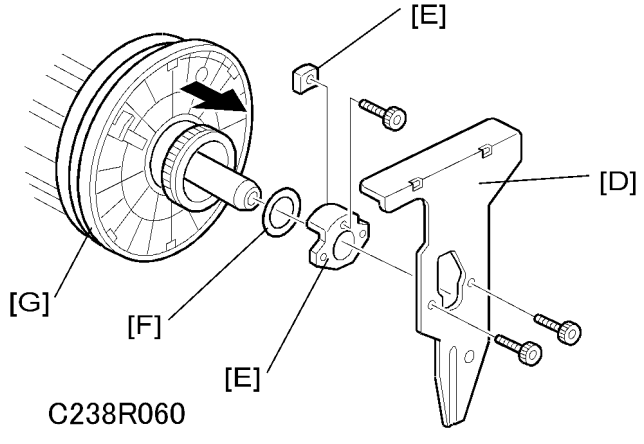


- Metal screen (☛ Clamper / Metal Screen)
- Pump covers (☛ Ink Pump Adjustment)

[A]: Board cover (🔩 x 2)

[B]: Front stay (✋ x 2, 🔩 x 3)

[C]: Front flange

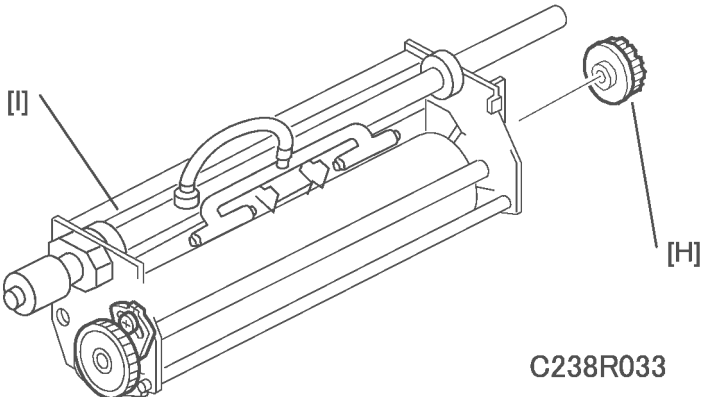


[D]: Rear stay (🔩 x 2)

[E]: Rear stoppers (🔩 x 1)

[F]: Ring

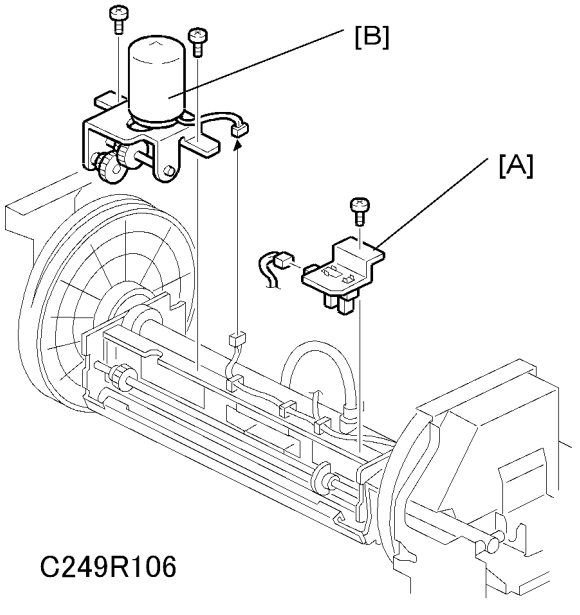
[G]: Rear flange



[H]: Ink roller unit

[I]: Ink roller one-way clutch

Idling Roller Motor, Idling Roller HP Sensor



- Cloth Screen (☛ Cloth Screen)
- Clamper, Metal Screen (☛ Clamper / Metal Screen)

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

[B]: Idling roller motor (x 1, x 2)

Doctor Roller Gap Adjustment

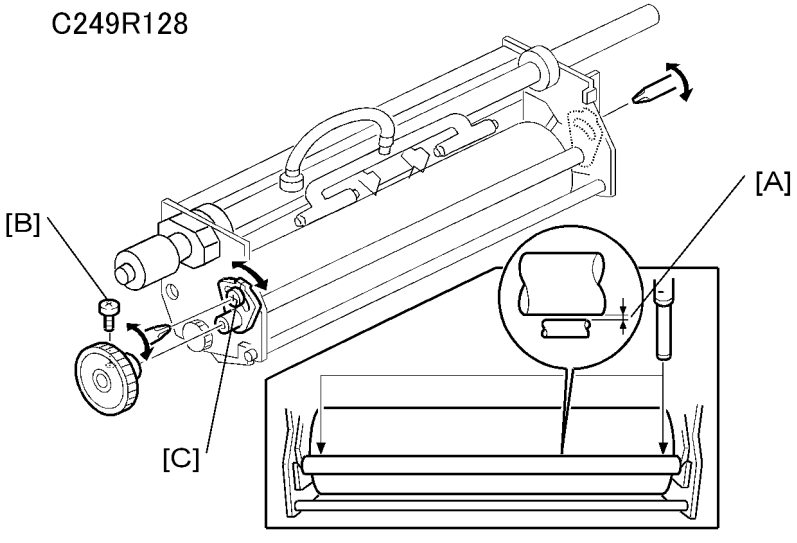
Controls ink thickness around the ink roller.

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 (☛ 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.

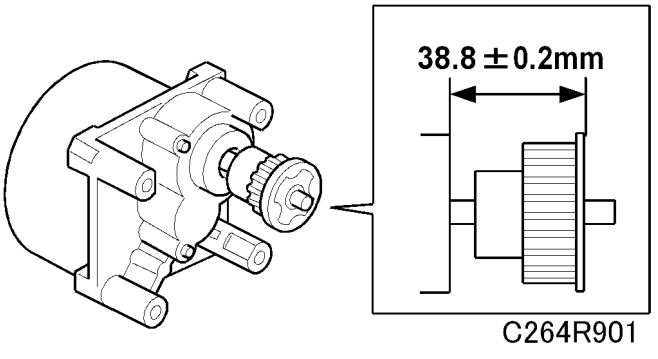
Ink Detection Adjustment

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

⚠CAUTION

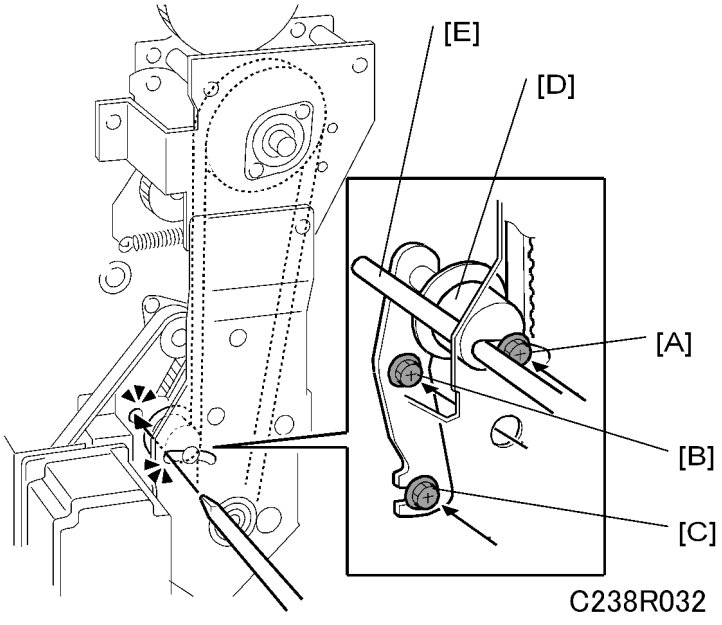
- Before attempting this procedure, wipe off the ink around the ink roller. To do this, set SP2-10 (ink detection) to OFF, and feed paper until ink ends.
- After finishing this procedure, do not forget to return SP2-10 to the default (ink detection on).
- SP6-40 Ink detection adjustment (☛ Appendix –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

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



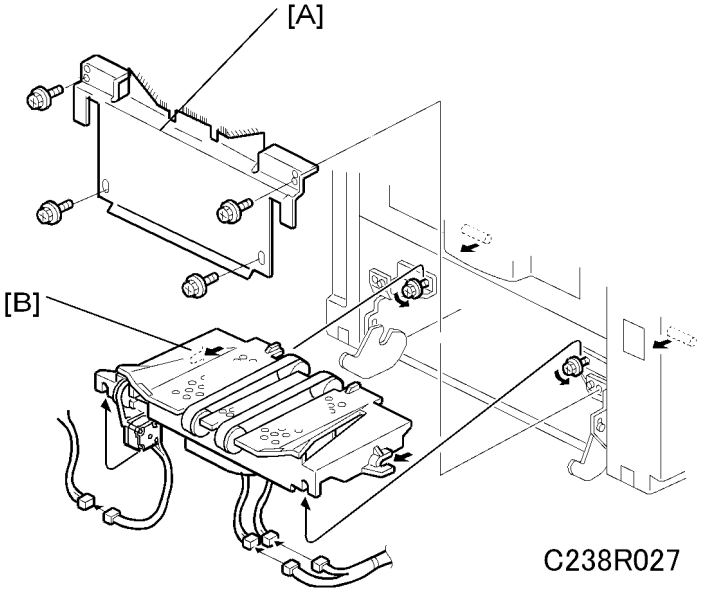
Purpose: After the timing belt is replaced, correct belt tension must be applied.

- Rear covers (☛ Covers / Boards – Rear Covers)
- MPU (☛ Covers / Boards - 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

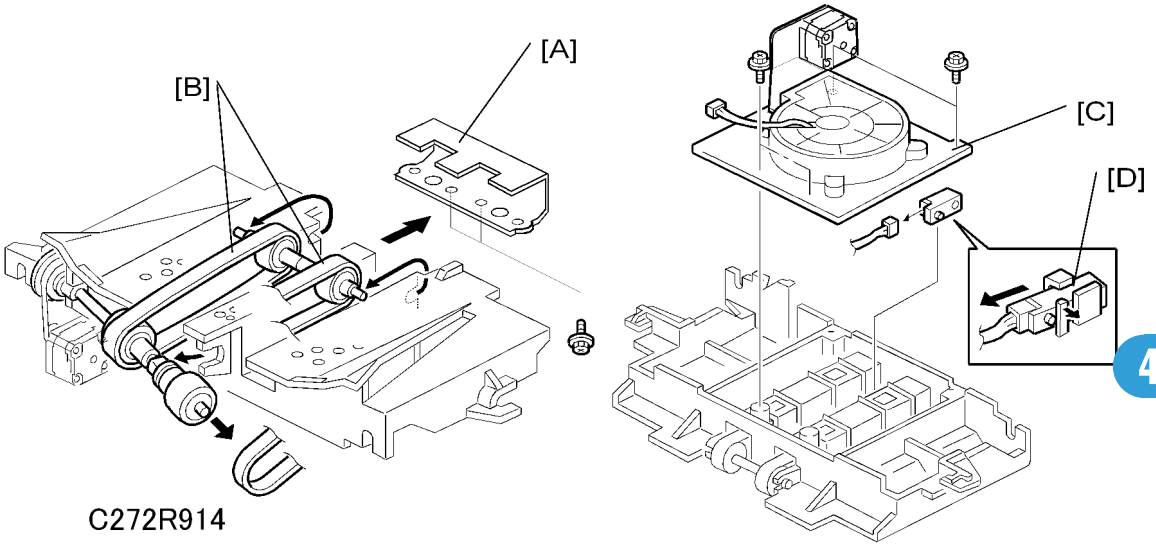
Paper Delivery Unit



[A]: Paper delivery cover (x 4)

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

Fan Motor, Exit Sensor



- Paper delivery unit (☛ Paper Delivery Unit)

[A]: Paper guide (✋ x 2)

[B]: Delivery belts

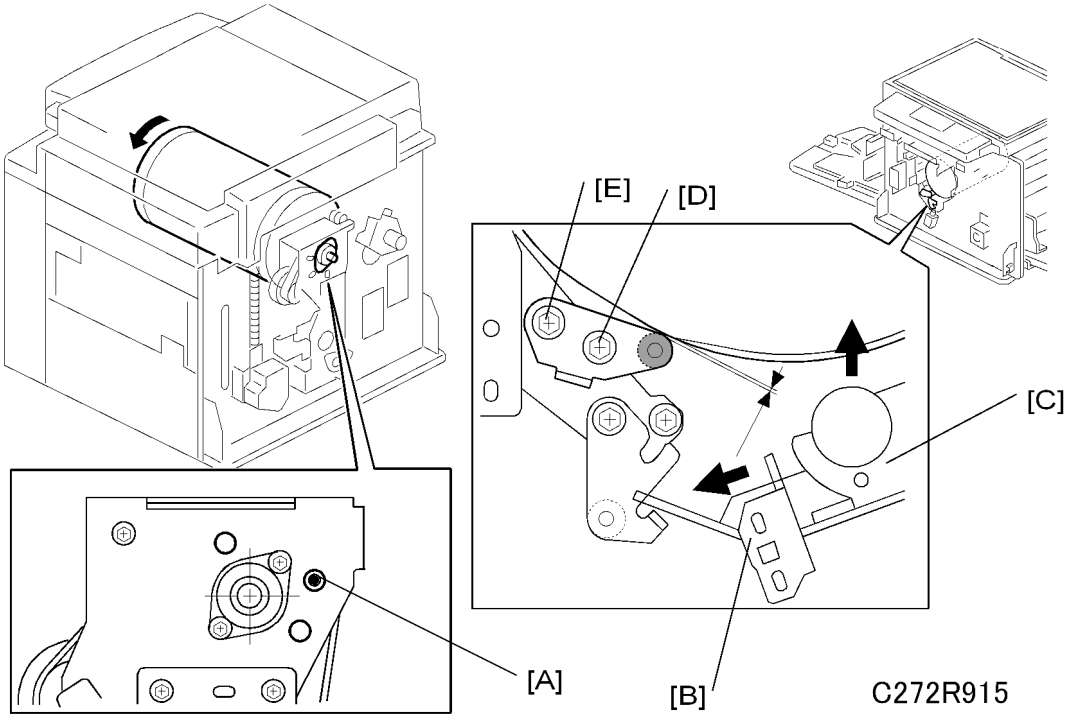
[C]: Vacuum fan motor (✋ x 1, 🔧 x 4)

[D]: Paper exit sensor (✋ x 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.

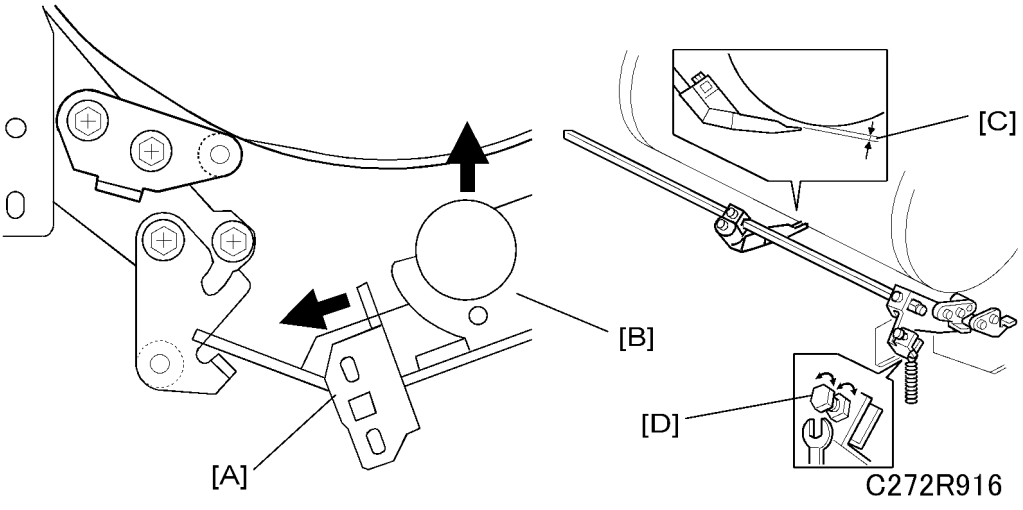
1. Turn the drum manually until the recess in the drum drive gear meets the positioning hole[A] in the bracket, as shown.
2. Release the stopper at the operation side [B] from the pressure arm [C].

   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 (☛ Covers / Boards – Front Cover / Panel)

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

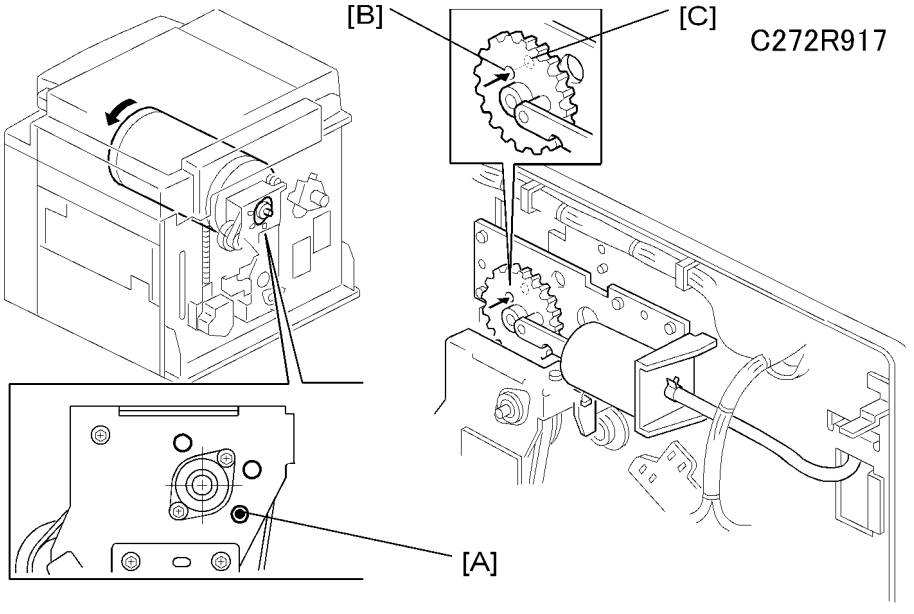
   Note

   - 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

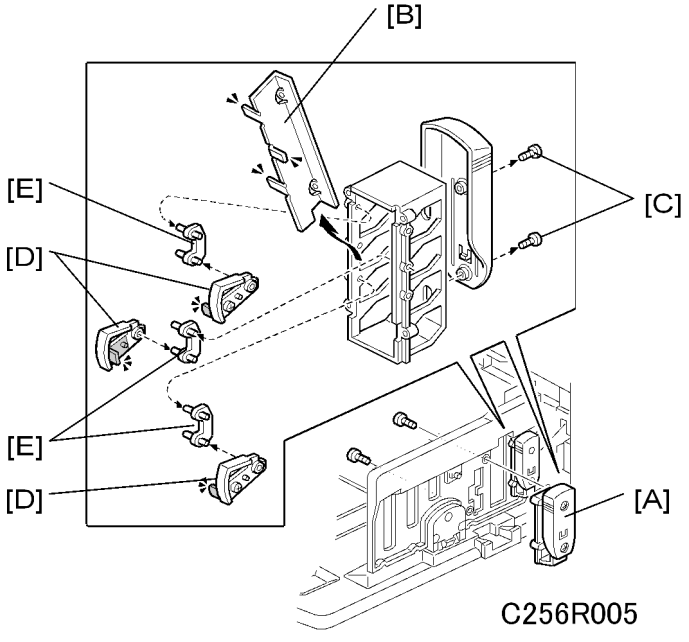
Purpose: To ensure that the exit pawl produces a jet of air at the proper time.

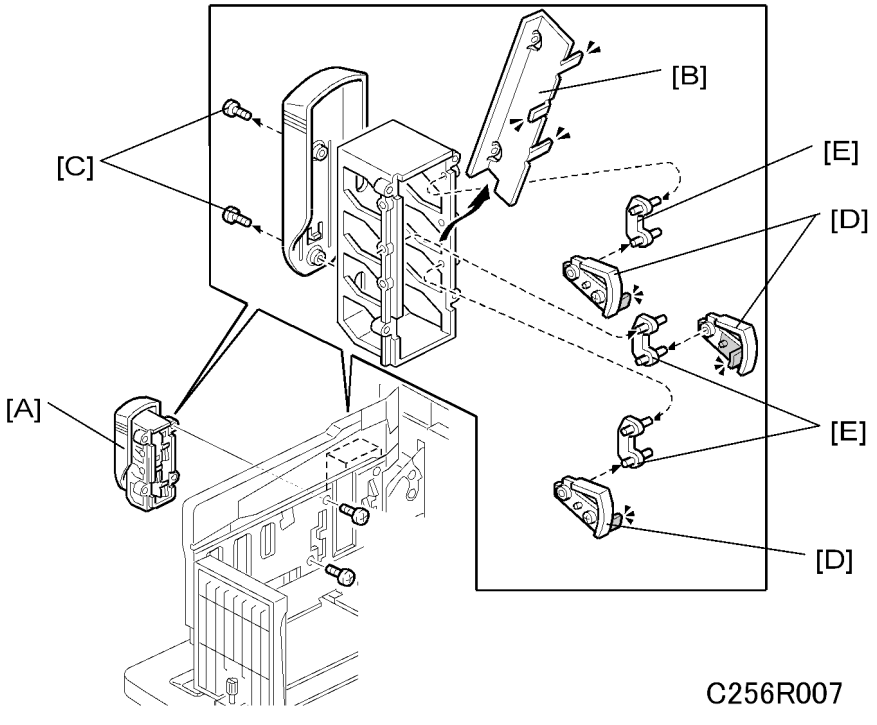


- Rear covers (☛ Covers / Boards – Rear Covers)

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 (x 2)

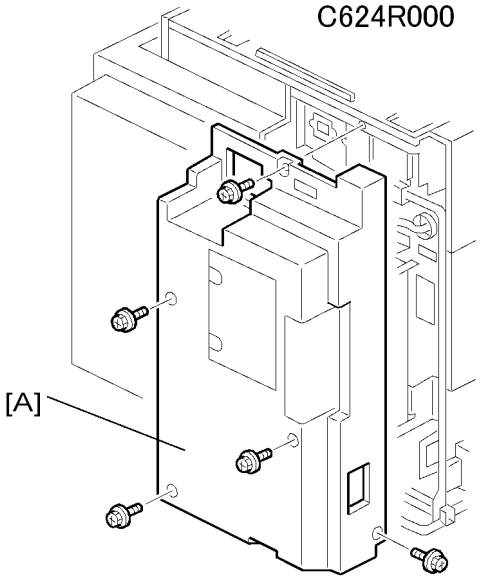
[B]: Buffer fin bracket (x 2 [C]) – Normally, do not disassemble parts [B] to [E] in the field.

[D]: Buffer fin

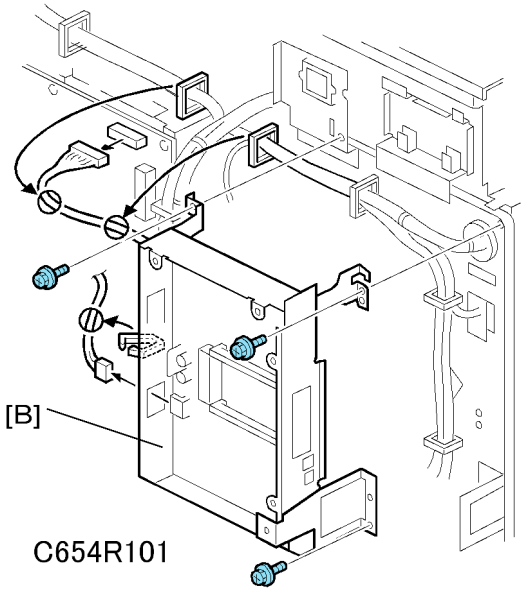
[E]: Buffer fin link

Network Printer Controller

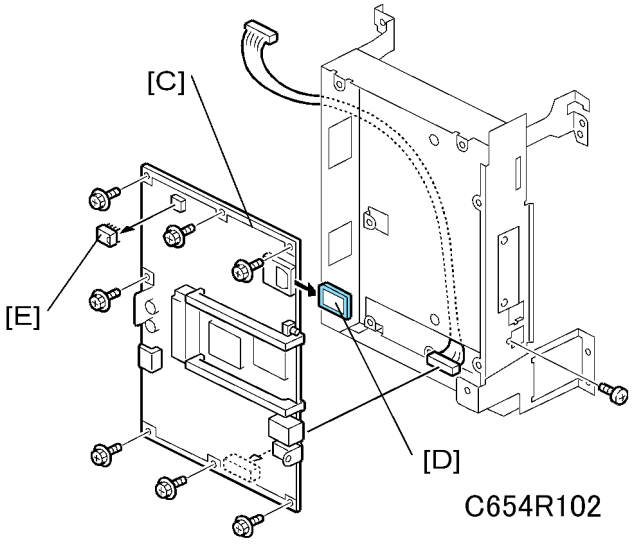
Printer Board (FV-Lt)



1. Remove the left cover [A] (x 5).



2. Remove the printer board with case [B] (x 3, x 2, x 3).



3. Remove the printer board [C] from the case (x 8, x 1).

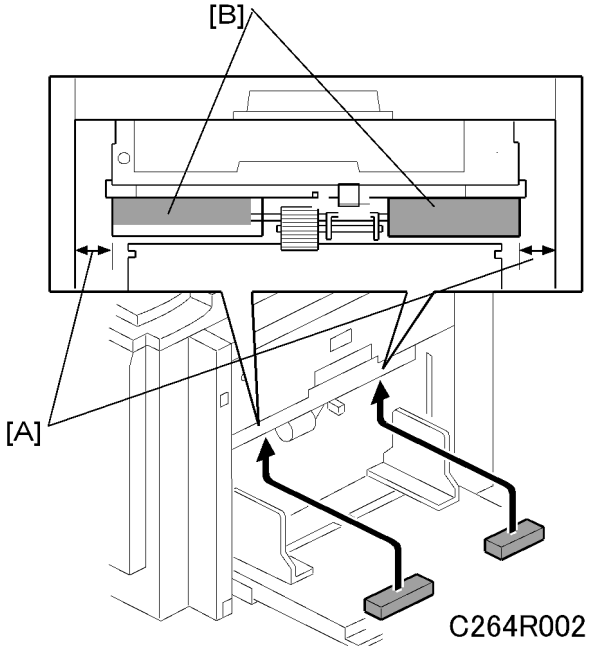
Note

- Remove the SD card [D] before you remove the printer board, if there is an SD card in the board.
- When you replace the printer board, remove the NVRAM [E] 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.

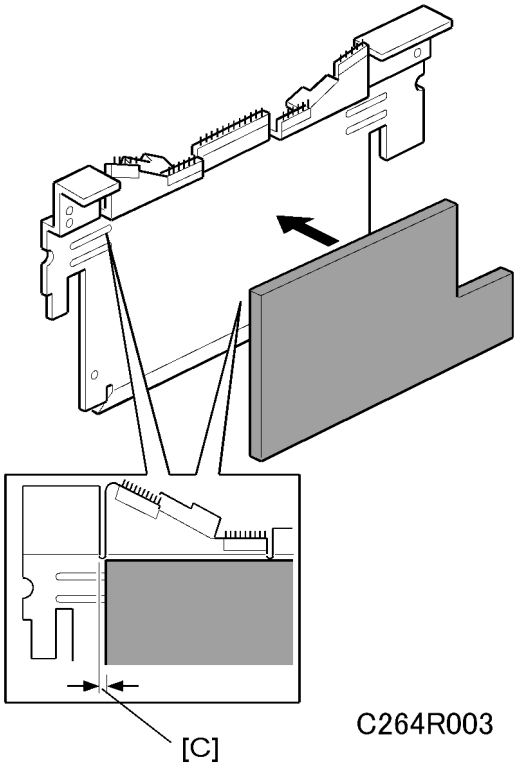
Paper Feed Left, Paper Feed Right



[A]: 10.0 mm to 12.0 mm

[B]: 0.0 mm

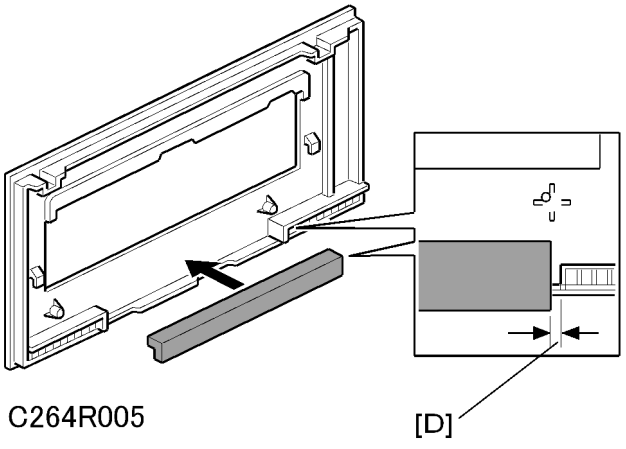
Paper Exit



[C]: 0.0 mm

Master Eject Unit Cover

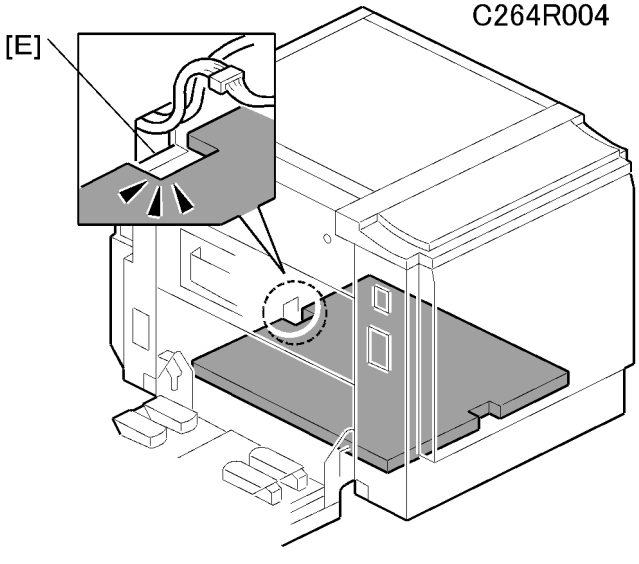
Master eject cover (x 4)



[D]: 0.0mm to 2.0mm

Base

Paper delivery cover (x 4) (☛ Paper Delivery - Paper Delivery Unit)



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.

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.

SP Tables

See "Appendices" for the following information

- SP Mode Tables

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.

Accessing SP Modes

Entering SP Mode

1. Press the following sequence of keys.

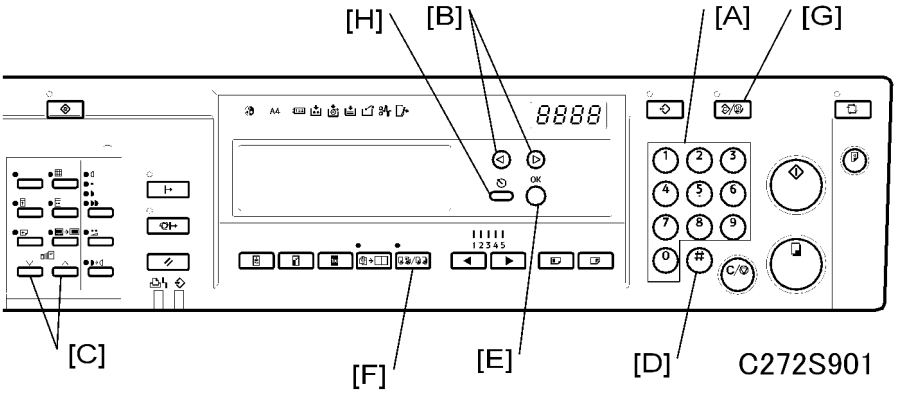
⇨/⏻ → 1 → 0 → 7 → C/⊘

- Hold the C/⊘ key down for longer than 3 seconds.

Leaving SP Mode

Press the ⇨/⏻ key one or more times.

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]

Firmware Update

To update the firmware for the machine, you must have the new version of the firmware downloaded onto a flash memory card.

To update the firmware for the controller (FV-Lt), you must have the new version of the firmware downloaded onto an SD card.

Type of Firmware

There are two types of firmware as shown below.

Type of firmware	Function	Location of firmware
Main*	Engine control	Main board (MPU)
Controller (Option)	Printer control	Printer board (FV-Lt)

There are three types of main firmware, depending on the destination and the drum size.

- Main USA, ASI, CHN_A3: Japanese, English, French, Spanish, Traditional Chinese, Simplified Chinese
- Main EUR_A3: Japanese, English, French, German, Spanish, Italian, Dutch, Russian, Turkish
- Main B4 (Only Chinese model): Japanese, English, French, Spanish, Traditional Chinese, Simplified Chinese

Before You Begin

A Flash memory card / SD card is a precision device. Always observe the following precautions when you handle SD cards:

- Always switch the machine off before you insert a Flash memory card / SD card. Never insert the Flash memory card / SD card into the slot with the power on.
- Do not remove the Flash memory card / SD card from the slot after the power has been switched on.
- Never switch the machine off while the firmware is downloading from the Flash memory card / SD card.
- Keep Flash memory card / SD cards in a safe location where they are not exposed to high temperature, high humidity, or exposure to direct sunlight.
- Always handle Flash memory card / SD cards with care. Do not bend or scratch them. Do not let the Flash memory card / 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:

- "Upload" means to send data from the machine to the Flash memory card. "Download" means to send data from the Flash memory card / 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.

Download Main Firmware (SP8-1)

Updates the main firmware using a flash memory card.

1. Before downloading new firmware, check the current part number and suffix with SP 1-70, or check the version with SP1-73 (☛ Appendix – Copy data – Main firmware parts number).
2. Prepare a flash memory card with the latest firmware.
3. Turn off the main switch and disconnect the power cord.
4. Remove the rear card cover.
5. Plug the flash memory card into the connector on the MPU.
6. Connect the power cord, then turn on the main switch.
7. Access SP8-1 and press the OK key. Press the "Enter(#)" key.
8. Press the Enter key. (It takes about 2.0 minutes to complete.)
9. Check that "Completed" is displayed.
10. Turn off the main switch, and remove the flash memory card.

Upload Main Firmware (SP8-2)

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

1. Refer to steps 3 to 5 of section: System Maintenance Reference – Firmware Update – Download main firmware (SP8-1)
2. Connect the power cord, then turn on the main switch while holding the Clear modes key.
3. Access SP8-2 and press the OK key. Press the "Enter(#)" key.
4. Press the Enter key. (It takes about 2.0 minutes to complete.)
5. Check that "Completed" is displayed.
6. Turn off the main switch, and remove the flash memory card.

Download Controller Firmware (SP9-40)

Overview

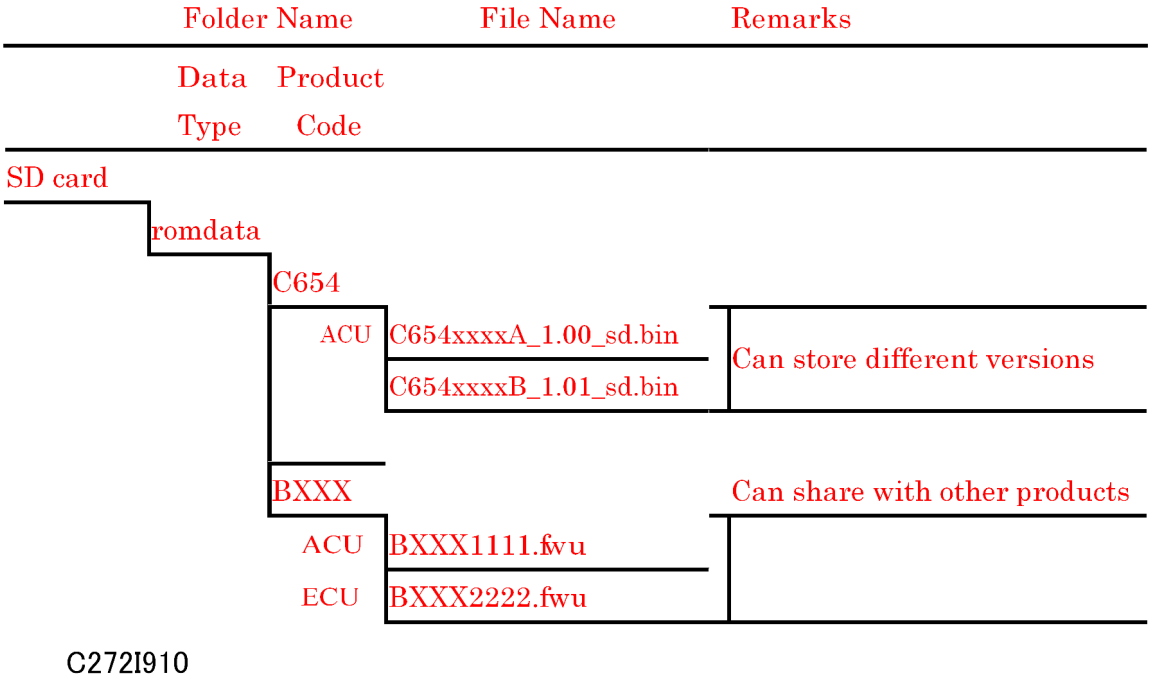
The FV-Lt (Controller) uses an SD card as the media for new firmware

Note

- The ECU (MPU) uses a flash memory card as the media for new firmware.

Preparing To Download Firmware

1. Make a folder called "romdata" on the SD card (this step is only necessary when the SD card is used for the first time).
2. Make a folder called "C654" inside the "romdata" folder (this step is not necessary if this C654 folder already exists).



C272I910

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.

- Format of the file name:
- C654****X_#_sd.bin
- ****: Part number, X: suffix, #: Version No.

1. Transfer the firmware files into the "C654" folder

Note

- If different versions of the firmware are stored on the SD card, the machine displays all versions of the firmware on the operation panel. Then, you can upgrade by selecting the necessary firmware.
- The firmware should always be in the "C654" folder (Second level) - "romdata" folder (First Level). If not, the machine cannot find the firmware.
- Put C654 firmware in the "C654" folder.

2. 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).

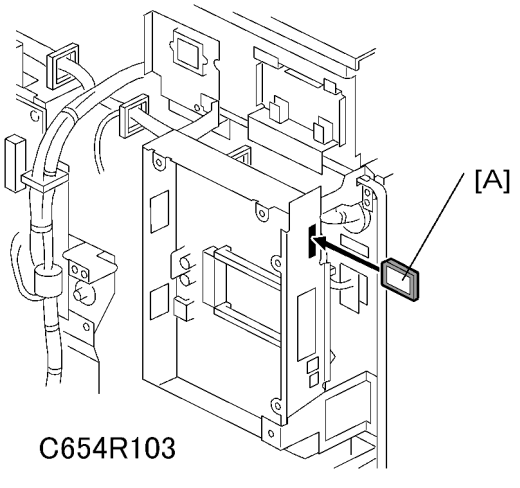
3. Compare the size of the file on the PC and the file on the SD card. If the sizes are different, the data was not transferred completely.

CAUTION

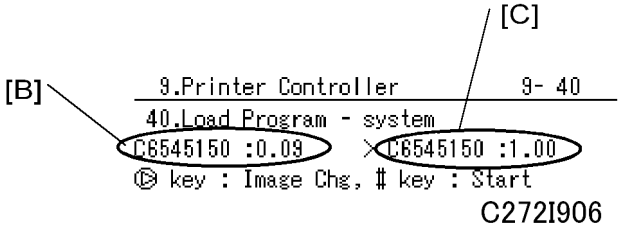
- Do not take out the SD card until after you turn off the PC or disconnect the USB Reader/Writer.

Downloading the Firmware to the Machine

1. Turn off the power
2. Open the back cover



3. Put the SD card [A] in the slot of the ACU board.
4. Turn on the power again
5. Enter the SP mode (SP9-40: Load Program – System).



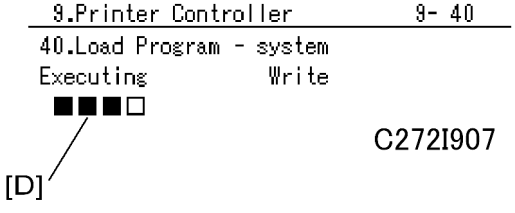
C272I906

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.

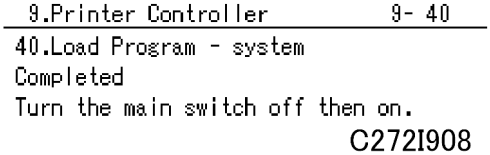


C272I907

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.



C272I908

6. Shut down the main switch after the operation panel changes from "Executing" to "Completed"
7. Take out the SD card if you finished downloading.

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.

6. Troubleshooting

Service Call Conditions

See "Appendices" for the following information:

- SC tables

Electrical Component Defects

See "Appendices" for the following information:

- Electrical component defects

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

See "Appendices" for the following information:

- Fuse table
- LED table
- VR table
- DIP switch table
- Test point (TP) table

MEMO

Model HP4-R2.5
Machine Code: C272

Appendices

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1. Appendix: Specifications

General Specifications

Main Frame

Configuration:	Stand-alone
Master Process:	Digital with 400 dpi thermal head (Fine mode: 400dpi x 600dpi)
Scanning (Pixel Density):	600 dpi x 400dpi (Fine mode: 600dpi x 600dpi)
Originals:	Sheet/Book
Printing process:	Fully automatic one-drum stencil system
Original Size:	Maximum 300.0 x 432 mm / 11.8" x 17.0"
Copy Paper Size:	Maximum: 297 x 432 mm / 11.6" x 17.0" Minimum: 70 x 148 mm / 2.8" x 5.9"
Copy Paper Weight:	47.1 – 209.3 g/m^2, 12.5 – 55.6 lb.
Printing Area:	A3 drum: 290 x 410 mm / 11.4" x 16.1" B4 drum: 251 x 355 mm/ 9.88" x 13.98" A4 black drum: 200 x 290 mm / 7.8" x 11.4"
Printing Speed:	60, 75, 90, 105, 120 sheets/minute (5 steps)
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 120 rpm:	Not more than 79 dB (A)	Not more than 65 dB (A)

Note

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

Dimensions (W x D x H)	Tables closed: 790 x 700 x 640 mm (31.1" x 27.6" x 25.2") Tables opened: 1370 x 700 x 640 mm (53.9" x 27.6" x 25.2") **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 24 seconds (A4 copying) Less than 29 seconds (A3 copying) Less than 28 seconds (B4 machine) Less than 26 seconds (B4 machine-A4 copying) **Note** • Measurement Conditions 1. 100% size 2. Normal mode (Not fine mode)
Paper Table Capacity:	1,000 sheets (80 g/m^2, 20 lb)
Paper Delivery Table Capacity:	1,000 sheets (80 g/m^2, 20 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 °C 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 °C to 40 °C (Optimal conditions: 15 °C 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.
Optional Equipment:	• Platen cover • Automatic document feeder • A3 color drum • B4 color drum (China only) • A4 black drum • Tape dispenser • Network printer controller (FV-Lt) (Except China model)

Network Printer Controller (Printer Unit Type 4545)

Specifications

General specifications

Printer language	RPCS
Host interface	USB 2.0
Network interface	100Base-TX/10Base-T
Protocol	TCP/IP, NetBEUI
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

Software Accessories

The printer drivers and utility software are provided

Printer Drivers

The following OS are supported. (Only 32 bit)

- Windows 2000 Professional
- Windows Server 2000 Standard Edition (*)
- Windows XP Professional Edition
- Windows XP Home Edition
- Windows 2003 Server Standard Edition (*)
- Windows 2003 Server Web Edition (*)
- Windows Vista Home Basic

- Windows Vista Home Premium
- Windows Vista Business
- Windows Vista Enterprise (*)
- Windows Vista Ultimate (*)
- Windows Server 2008 (*)

(*) 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
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

2. Appendix: Maintenance Tables

Maintenance Table

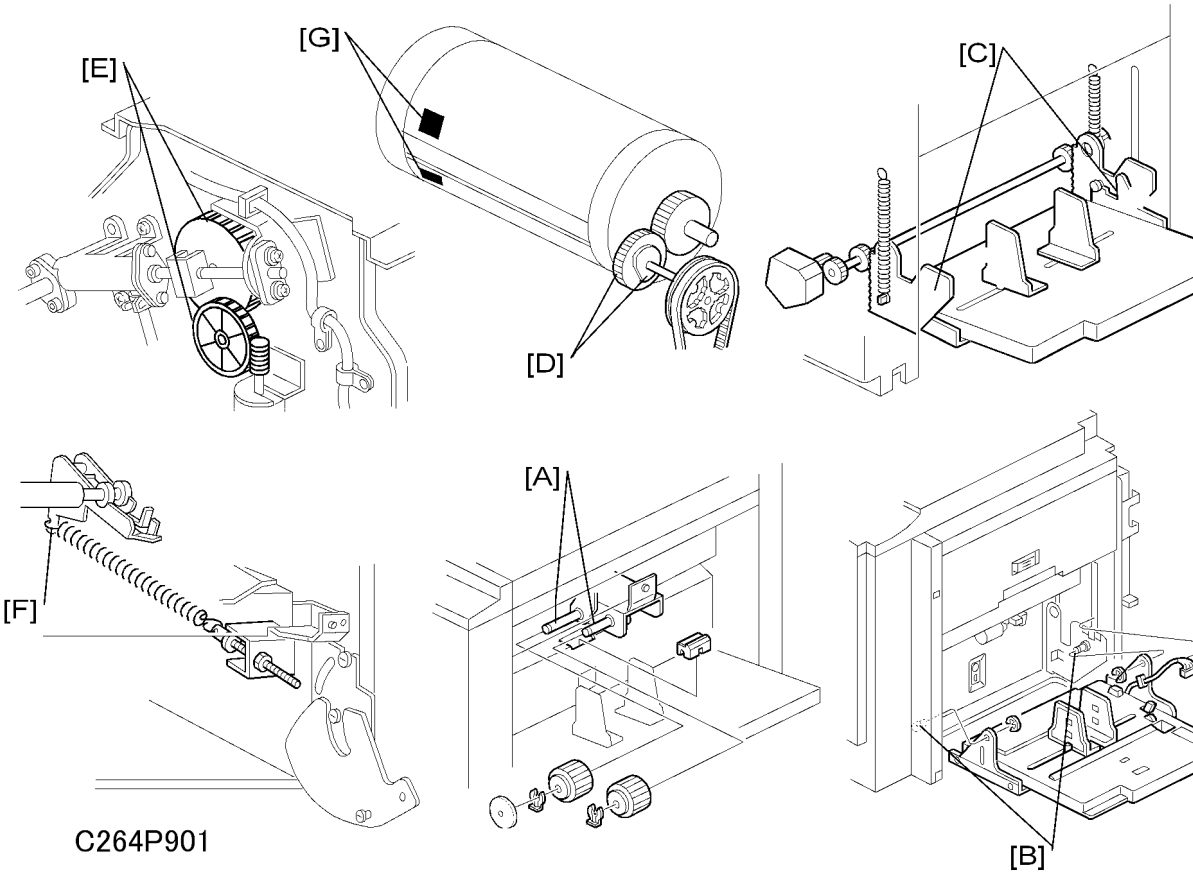
The following items should be maintained periodically. There are two sets of intervals - one based on time and the other based on print count. For maintenance items with entries in both of them, use whichever comes first.

C: Clean, R: Replace, L: Lubricate, A: Adjust

Interval / Item	Time				Print Counter					EM	NOTE
	6M	1Y	2Y	3Y	1M	1.2M	2M	2.4M	3M		
Scanner/Optics											
Exposure Lamp	C	C	C	C							Dry Cloth
Mirror/Reflector	C	C	C	C							Soft Cloth
Scanner Guide Rail	C	C	C	C							Dry Cloth
Platen Cover / White Plate	C	C	C	C							Damp Cloth
Exposure Glass	C	C	C	C							Dry Cloth
Master Feed											
Thermal Head										C	Alcohol
Platen Roller	C	C	C	C							Damp cloth and water
Master Eject Rollers	C	C	C	C							Alcohol
Drum Master Sensor										C	Dry Cloth
Paper Feed											
Paper Pick-up Roller	C	C	R	C		R		R			Damp Cloth
Paper Feed Roller	C	C	R	C		R		R			Damp Cloth

Interval / Item	Time				Print Counter					EM	NOTE
	6M	1Y	2Y	3Y	1M	1.2M	2M	2.4M	3M		
Pick-up Roller/Feed Roller Shafts [A]		L	L	L							Motor Oil (SAE #20)
Friction Pad	C	C	R	C		R		R			Damp Cloth
Press Roller	C	C	R	C		R		R			Alcohol
Table Fulcrum Shafts [B]		L	L	L							Motor Oil (SAE #20)
Table Racks [C]		L	L	L							Grease (Alvania #2)
Paper Delivery Transport Belts			R			R		R			
Paper End Sensor	C	C	C	C							Dry Cloth
Registration/Exit Sensors	C	C	C	C							Dry Cloth
Registration Roller	C	C	C	C							Dry Cloth
Drum and Ink Supply											
Cloth Screen			R			R		R			
Ink Roller One-way Clutch									R		
Drum Drive Gears and Cam [D]		L	L	L							Grease (Alvania #2)
Ink Pump Gears [E]		L	L	L							Motor Oil (SAE #20)
In/Outside of Drum	C	C	C	C							Alcohol
Ink Nozzle	C	C	C	C							Alcohol

Interval / Item	Time				Print Counter					EM	NOTE
	6M	1Y	2Y	3Y	1M	1.2M	2M	2.4M	3M		
Black Patch [G]	C	C	C	C							Dry Cloth
Others											
Main Drive Timing Belt Tension			A								
Printing Pressure Spring Hooks [F]		L	L	L							Grease (Alvania #2)
Press Roller Release Lever Position			A								
ADF (Option)											
DF Feed Rollers	C	C	C	C							Dry Cloth


[E]
[G]
[D]
[C]
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C264P901

3. Appendix: Service Call Condition

SC tables

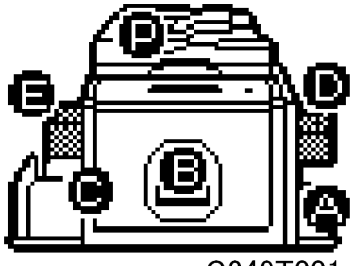
No.	Symptom	Possible cause
E-00	Clamper error The MPU cannot detect the clamper position sensor signal (open or closed) within 3.0 seconds after the clamper motor turns on.	Clamper drive Clamper sensors Clamper motor
E-01	Cutter error The cutter HP sensor does not turn on within 3.0 seconds after the 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 4.9 volts.	Thermal head thermistor Thermal head connector
E-10	Thermal Head Energy Pulse error The CPU detects an abnormal ID signal from the thermal head energy control pulse.	Thermal head connector Thermal head MPU
E-12	Pressure Plate error The pressure plate home position sensor signal is not detected within 15.0 seconds after the pressure plate motor turn on.	Pressure plate drive Pressure plate motor Plate position sensors

No.	Symptom	Possible cause
E-13	Scanner error The scanner HP sensor does not turn on after the scanner motor has moved for more than 7.0 seconds back to home position after scanning. The scanner cannot leave the home position within 2.0 seconds of power on. Just after switching the power on, the scanner cannot return to the home position within 2.0 seconds of leaving.	Scanner drive Scanner HP sensor Scanner motor
E-17	Drum Thermistor Open The thermistor output voltage is over 4.9 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
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

No.	Symptom	Possible cause
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)
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

4. Appendix: Electrical Component Defects

Electrical Component Defects



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	
2nd Feed Timing Sensor	Open	E-22 is displayed whenever the drum rotates.
	Shorted	
Pressure Plate Limit Sensor	Open	The “master eject” indicator is lit.
	Shorted	E-12 is displayed.
Pressure Plate HP Sensor	Open	E-12 is displayed when the pressure plate is activated.
	Shorted	

Component	Condition	Symptom
Drum Master Sensor	Open	The master eject does not occur and the The "D" jam indicator is lit whenever a master is made.
	Shorted	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.
Paper Exit Sensor	Open	The "C" jam indicator is lit.
	Shorted	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.
Scanner HP Sensor	Open	E-13 is displayed.
	Shorted	

Component	Condition	Symptom
Original length / Width sensor	Open	The printed image shifts when Auto Reduce/ Enlarge, image rotation, or image report is used.
	Shorted	The printed image shifts when Auto Reduce/ Enlarge, image rotation, or image report is used.
Master Set Cover Sensor	Open	The "D" jam indicator is lit
	Shorted	The "open cover" and "D" indicators are lit.
Master End Sensor	White	Master making can start even if there is no master roll, but the "D" jam indicator will be lit.
	Black	The "load new master roll" indicator is lit.
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	Open	The "AB" jam indicator is lit.
	Shorted	The "A" jam indicator is lit whenever a copy is made.
Paper End Sensor	Open	Printing can begin even if there is no paper, but the "A" jam indicator will be lit.
	Shorted	The "load more paper" indicator is lit.
Cutter HP Sensor	Open	The cutter cuts the master only half way, and the E-01 jam indicator is lit.
	Shorted	E-01 is displayed.
Paper Length Sensor	Open	The press roller becomes dirty whenever the paper is shorter than the image.
	Shorted	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	Open	E-41 is displayed.
	Shorted	

Component	Condition	Symptom
Printing Pressure HP Sensor	Open	E-43 is displayed.
	Shorted	
Duct Jam Sensor	Open	The "D" jam indicator is lit.
	Shorted	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	Open	E-42 is displayed.
	Shorted	
Master Edge Sensor	Open	The "D" jam indicator is lit.
	Shorted	
Thermal Head HP Sensor	Open	E-47 is displayed.
	Shorted	

Switches

Component	Condition	Symptom
Door Safety Switch	Open	The "open cover" indicator is lit.
	Shorted	The "open cover" indicator is not lit even if the door is opened.
Main Switch	Open	The machine does not turn on.
	Shorted	The machine does not turn off.
Master Making Unit Set Switch	Open	The "the open cover" indicators are lit and cannot be canceled.
	Shorted	The "the open cover" indicators are not lit; even though, the master making unit is not set.

Component	Condition	Symptom
Eject Box Set Switch	Open	The master is fed to the eject box, even if there is no eject box.
	Shorted	The "the open cover" are lit.
Lower Master Tray Set Switch	Open	Master making begins, but the lower master tray is open, the master vacuum fans do not pull the master, and E-01 is displayed.
	Shorted	The "Lower Master Tray is Open" indicator is lit.

Power Supplies

Component	Condition	Symptom
+5v (CN102-4)	Wire (or PSU) broken	The machine does not turn on.
+5v (CN102-2, 3)		The machine does not turn on, but LED103 on the MPU blinks.
+12v (CN102-9)		The LCD/LED on the operation panel does not indicate and LED103 on the MPU blinks.
-12v (CN102-8)		The machine makes an image of many black stripes.
+24v (CN111-3, 4, 5, 6)		E-47 is displayed, and the output mode in SP mode does not turn anything on except the main motor.
+24v (CN111-1)		E-13 is displayed, and SP5-13, 14, 15 (master eject motor/ pressure plate motor output mode) do not turn the motor on.

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	

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, 702	6.3 A	E-47 is displayed, and the output mode in SP mode does not turn anything on except the main motor.
FU703, 704	6.3 A	The "close the covers" indicator is lit.

LED'S

MPU

No.	Function
LED101	Monitors the paper feed circuit in the MPU. Usually, this LED is blinking at intervals of 2 seconds.
LED102	Not used.
LED103	Monitors the CPU operation. Usually, this LED is blinking at intervals of 1 second.
LED104	Monitors the master end sensor. When the sensor detects a master, this LED is lit. (☛ Replacement and Adjustment - Master Feed - Master End Sensor Adjustment)
LED105	Monitors the master edge sensor. When the sensor detects a master, this LED is lit. (☛ Replacement and Adjustment - Master Feed - Master Edge Sensor Adjustment)
LED106	Monitors the duct jam sensor. When the sensor detects a master, this LED is lit. (☛Replacement and Adjustment - Master Feed – Duct Jam Sensor Adjustment)

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 (☛ Replacement and Adjustment - Master Feed - Master End Sensor Adjustment)
VR102	Adjusts the duct jam sensor (☛ Replacement and Adjustment - Master Feed – Duct Jam Sensor Adjustment)
VR103	Adjusts the master edge sensor (☛ Replacement and Adjustment - Master Feed - Master Edge Sensor Adjustment)
VR104	Adjusts the 2nd drum master sensor (☛ Replacement and Adjustment - Master Feed – Duct Jam Sensor Adjustment)

PSU

No.	Function
RV1	Adjusts the thermal head voltage. (☛ Replacement and Adjustment - Master Feed – Thermal Head Voltage Adjustment)

Ink detection board

No.	Function
VR1	Adjusts the ink detection. (☛ Service Table – Adjustment – Ink Detection 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. (☛Replacement and Adjustment - Master Feed - Master End Sensor Adjustment)

No.	Function
TP102	Measures the duct jam sensor voltage. (☛Replacement and Adjustment - Master Feed – Duct Jam Sensor Adjustment)
TP103	Measures the master edge sensor voltage. (☛Replacement and Adjustment - Master Feed - Master Edge Sensor Adjustment)
TP104	Measures the 2nd drum master sensor voltage. (☛Replacement and Adjustment - Master Feed – 2nd Drum Master Sensor Adjustment)

PSU

No.	Function
TP701 TP702	Measures the thermal head voltage. (☛Replacement and Adjustment - Master Feed – Thermal Head Voltage Adjustment)

5. Appendix: SP Mode Tables

Copy Data

SP Table

No.	Menu Items	Function
1-1	Total master counter	
1-20	Total print counter	
1-21	C/O 1	
1-22	C/O 1-3	
1-23	C/O 4-5	
1-24	C/O 6-10	
1-25	C/O 11-20	
1-26	C/O 21-50	
1-27	C/O 51-70	
1-28	C/O 71-100	
1-29	C/O 101-200	
1-30	C/O 201-500	
1-31	C/O 501-1000	
1-32	C/O 1001-2000	
1-33	C/O 2001-3000	
1-34	C/O 3001-4000	
1-35	C/O 4001-	
1-50	D - master clamp jam	
1-51	E - master eject jam	

No.	Menu Items	Function
1-52	E - master compressing jam	
1-53	A - paper non-feed jam	
1-54	A - paper registration jam	
1-55	B - paper wrapping jam	
1-56	C - paper delivery jam	
1-57	P - original feed - in jam	
1-58	P - original feed - out jam	
1-59	D - master feed jam	
1-60	D - master cut jam	
1-61	D - mater duct jam	
1-70	Main firmware part number	☛ Explanation Below
1-71	I/O ROM part number	
1-72	Serial number display	
1-73	Main firmware version	
1-75	Serial number display (Factory)	
1-80	Error code history	☛ Explanation Below
1-81	Service telephone number display	
1-160	Not used	
1-161	Key counter setting check	

SP1-70: Main firmware parts number

Displays the main firmware parts number and the suffix.

SP1-80: Error code history

Displays the latest 40 SC codes. Use the ◁▷ key to view the records.

Basic Settings

SP Table

No.	Menu Items	Default	Settings
2-1	Default print speed	3	1 to 5
2-2	Default image position	0.0	-15.0mm to +15.0mm
2-4	Destination code	272-XX	
2-5	Not used	0	0 to 2
2-6	Image position display	1	0:Slow 1:Normal 2:Fast (☛ Explanation Below)
2-7	Vendor Selection	Ricoh	Brands depend on the destination (☛ Explanation Below)
2-10	Ink detection board	On	Off/On (Off is used for tests, and for removing ink from the drum (☛ FSM - Replacement and Adjustment – Drum – Preparation
2-11	Paper end sensor	On	Off/On (Off is used for tests.)
2-12	Drum master sensor	On	Off/On (Off is used for tests.)
2-13	Platen cover sensor	On	Off/On (Off is used for tests.)
2-14	ADF cover sensor	On	Off/On (Off is used for tests.)
2-15	Paper length sensor	On	Off/On
2-20	Destination setting	Other	Other/Japan
2-22	Double count-up (A3)	0	0: Not used, 1: Master counter only, 2: Master counter and print counter
2-28	Idling after less than 3 prints		(☛Explanation Below)
2-29	Idling after how many prints		(☛Explanation Below)
2-31	Ink Auxiliary Supply (Not used)	0	0:After 1:Before 2:No

No.	Menu Items	Default	Settings
2-32	Ink supply after trial	Off	Off/On (☛Explanation Below)
2-33	Re - Feeding setting	On	Off/On (☛Explanation Below)
2-34	Slow starting mode	45rpm	30rpm/45rpm (☛Explanation Below)
2-35	Printing pressure adjust	0	-2 to 2 (☛Explanation Below)
2-36	Ink idling roller setting	1	0 to 2 (☛Explanation Below)
2-37	Paper delivery motor speed	0	-55 to 55%
2-38	Idling after print	On	Off/On (☛Explanation Below)
2-39	T/H control by temp: color	On	Off/On
2-40	T/H control by temp: black	On	Off/On
2-41	T/H energy control	7	0 to 50% (☛Explanation Below)
2-42	T/H energy control - eco	15	0 to 50% (☛Explanation Below)
2-43	T/H control by temp: A4	On	Off/On
2-44	T/H energy control: A4 drum	12	0 to 50%
2-45	T/H energy control: A4 eco	15	0 to 50%
2-50	T/H swinging mode (Not used)	On	Off/On
2-51	T/H swinging quantity (Not used)	2	±1 to 5mm
2-52	T/H Control by Temp: Color (Fine)	ON	ON/OFF
2-53	T/H Control by Temp: Black (Fine)	ON	ON/OFF
2-54	T/H Energy Control: (Fine)	7	0~50%
2-55	T/H Energy Control -Eco (Fine)	15	0~50%
2-56	T/H Control by temp: A4 (Fine)	ON	ON/OFF
2-57	T/H Energy Control: A4 (Fine)	7	0~50%
2-58	T/H Energy Control: Eco: A4 (Fine)	15	0~50%
2-60	Bold letter mode	Off	Off/On (☛Explanation Below)

No.	Menu Items	Default	Settings
2-95	Paper table standby pos.	Low	High/Low
2-100	Master making without printing	OFF	Off/On (☛Explanation Below)
2-101	Make And Eject Master Setting Mode	OFF	ON/OFF(☛Explanation Below)

RTB 1
SP 2-115, 120, 121, 122 added - A3 models: F/W Suffix D

SP2-6: Image Position Display

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

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

5

SP2-7: Vendor Selection

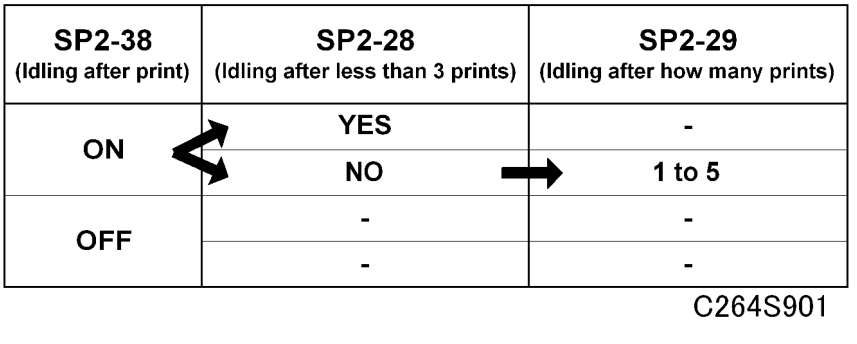
Select your brand

SP2-28, 2-29, 2-38: Idling After Printing

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.

- 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.



SP2-32: Ink Supply After Trial

Ink is detected and supplied after the trial print when this SP is on.

SP2-33: Re-Feeding Setting

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

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

OFF: Re-feeding is off.

SP2-34: Slow Starting Mode

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.

Setting	Trial Print	1st Print	2nd Print	3rd Print	4th Print	5th Print	6th Print
30rpm	30rpm	45rpm	60rpm	75rpm	90rpm	105rpm	120rpm
45rpm	45rpm	60rpm	75rpm	90rpm	105rpm	120rpm	120rpm

SP2-35: Printing Pressure Adjustment

Changes the printing pressure of all printing speeds (60 to 120 rpm).

Note

- When you adjust printing pressure for each printing speed or temperature, use SP6-70 to 87.

SP2-36: Ink Idling Roller Setting

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.

SP2-41, 2-42: Thermal Head Energy Control

2-41: The default is 7%. This means that during normal printing mode, the thermal head energy is 93% of the maximum possible (100 – 7).

2-42: 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).

SP2-60: Bold Mode: Letter Mode Only

Makes a bold outline of a letter-mode image.

SP2-95: Paper Table Standby Pos.

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

Low: The standard position

Note

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

SP2-100: Make Master without Printing

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

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

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

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

Procedure:

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

SP2-101: Make and Eject Master Setting Mode

This function allows users to remove and wrap the master on the drum. The following keypad operations become available.

Remove: Press the "Mode Clear key" for more than three seconds

Wrap: Press the "Master Making" key while pressing the "#" key.

⚠CAUTION

- Do not leave the drum without a master for more than a day, or the surface of the drum will become dry.

System Settings

SP Table

No.	Menu Items	Default	Settings
3-1	Input the present time	-	☛Explanation Below
3-2	Input Tel number	-	
3-3	Input serial number	-	
3-4	Input installation date	-	☛ Explanation Below
3-10	Key counter setting	No	No/Yes

SP3-1: Input the Present Time

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

SP3-4: Input Installation Date

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

Input

SP Table

No.	Menu Items	No.	Menu Items
4-1	Scanner HP sensor	4-35	Paper width signal 0
4-2	Platen cover sensor	4-36	Paper width signal 1
4-3	Original Length Sensor1	4-37	Paper width signal 2
4-4	Original Length Sensor2	4-38	Paper width signal 3
4-5	Original Width Sensor1	4-39	Paper width signal 4
4-6	Original Width Sensor2	4-40	Paper width signal 5
4-7	Original Special Size Sensor1	4-41	Registration sensor
4-8	Original Special Size Sensor2	4-42	Feed start timing sensor
		4-43	2nd feed timing sensor
4-9	Thermal head HP sensor	4-44	Paper exit sensor
4-10	Master making unit set switch		
4-11	Master set cover sensor	4-50	Door safety switch
4-12	Cutter HP switch		
4-13	Master end sensor	4-60	ADF connecting signal
4-14	Eject box set switch	4-61	ADF cover sensor
4-15	Master eject sensor	4-62	ADF registration sensor
4-16	Pressure plate HP sensor	4-63	ADF original trailing SN
4-17	Pressure plate limit SN	4-64	ADF original set sensor
4-19	Color drum signal	4-65	ADF original length SN 1
4-20	A4 drum signal	4-66	ADF original length SN 2
4-21	Drum set signal	4-67	ADF original width sensor 1

No.	Menu Items	No.	Menu Items
4-22	Clamper open sensor	4-68	ADF original width sensor 2
4-23	Clamper close sensor	4-69	ADF open sensor
4-24	Drum master sensor		
4-25	Master eject position SN	4-70	Key counter signal
4-26	Paper exit timing sensor		
4-27	Printing pressure HP sensor	4-80	Master edge sensor
4-28	2nd drum master sensor	4-81	Duct plate HP sensor
		4-82	Lower master tray switch
4-30	Table lowering switch	4-83	Duct jam sensor
4-31	Table lower sensor		
4-32	Paper height sensor	4-90	Ink idling roller HP sensor
4-33	Paper end sensor	4-91	Ink temperature
4-34	Paper length sensor		

Output Mode

SP Table

No.	Menu Items	No.	Menu Items
5-1	Exposure lamp (xenon lamp)	5-43	Registration motor: 90 rpm
5-2	Scanner motor - scan	5-44	Registration motor: 105 rpm
5-3	Scanner motor - return	5-45	Registration motor: 120 rpm
5-4	Scanner to HP	5-46	Air knife fan motors
5-5	Duct plate motor - close	5-47	Vacuum fan motor
5-6	Duct plate motor - open	5-48	Paper delivery motor - low
5-7	Duct plate motor: to HP	5-49	Paper delivery motor - high
5-8	Duct fan motor	5-50	Paper counter
5-9	Master feed motor - Backward	5-51	Master counter
5-10	Master feed motor – Forward		
5-11	Cutter motor – forward	5-60	ADF motor
5-12	VHD signal	5-61	ADF feed clutch
5-13	Master eject motor	5-62	ADF pick-up solenoid
5-14	Pressure plate motor: limit	5-63	Key counter signal
5-15	Pressure plate motor: to HP	5-64	Not used
5-16	Main motor: 15 rpm		
5-17	Main motor: 30 rpm	5-70	Master re-setting
5-18	Main motor: 60 rpm	5-71	Master push Mylar - push
5-19	Main motor: 75 rpm	5-72	Master push Mylar - free
5-20	Main motor: 90 rpm	5-73	Cutter motor - reverse
5-21	Main motor: 105 rpm	5-74	T/H driving motor - up

No.	Menu Items	No.	Menu Items
5-22	Main motor: 120 rpm	5-75	T/H driving motor - down
5-23	Clamper motor: to open	5-76	Blower fan motor
5-24	Clamper motor: to close		
5-25	Ink pump motor	5-80	Printing pressure motor HP
5-26	Pressure release solenoids	5-81	Move to pressure 1
5-27	Ink idling motor	5-82	Move to pressure 2 (HP)
5-28	Ink idling roller: down	5-83	Move to pressure 3
5-29	Ink idling roller: up	5-84	Move to pressure 4
5-30	Table motor - down	5-85	Move to pressure 5
5-31	Table motor - up		
5-32	Paper feed motor: 15 rpm	5-90	Main motor to HP
5-33	Paper feed motor: 30 rpm	5-91	Main motor to Master clamp
5-34	Paper feed motor: 60 rpm	5-92	Main motor : 45rpm
5-35	Paper feed motor: 75 rpm	5-93	Paper feed motor : 45rpm
5-36	Paper feed motor: 90 rpm	5-94	Registration motor : 45rpm
5-37	Paper feed motor: 105 rpm		
5-38	Paper feed motor: 120 rpm	5-100	All indicators on the panel
5-39	Registration motor: 15 rpm	5-101	Drum Home Position LED
5-40	Registration motor: 30 rpm		
5-41	Registration motor: 60 rpm	5-111	Auto Off solenoid
5-42	Registration motor: 75 rpm		

Adjustment

SP Table

No.	Menu Items	Default	Settings
6-1	Main-scan position - platen	0.0	-5.0 to 2.0 mm (☛ Explanation Below)
6-2	Main-scan position - ADF	0.0	-5.0 to 5.0 mm (☛Explanation Below)
6-3	Scan start position - platen	0.0	-2.0 to 5.0 mm (☛Explanation Below)
6-4	Scan start position - ADF	0.0	-5.0 to 5.0 mm (☛Explanation Below)
6-5	Scanning speed - platen	0.0	-5.0 to 5.0 % (☛Explanation Below)
6-6	Scanning speed - ADF mode	0.0	-5.0 to 5.0 % (☛Explanation Below)
6-10	Master writing speed	0.0	-5.0 to 5.0 % (☛Explanation Below)
6-11	Master writing length (Not used)	0.0	-5.0 to 5.0 %
6-20	Registration buckle	18	0 to100 pulses (☛Explanation Below)
6-21	Paper registration position	0.0	-5.0 to 5.0 mm (☛Explanation Below)
6-26	Master making density - Pencil	1	0: Pale, 1: Normal, 2: Dark
6-27	Master making density - Tint	1	0: Pale, 1: Normal, 2: Dark
6-28	Master making density - Photo	1	0: Pale, 1: Normal, 2: Dark
6-29	Master making density - LtrPht	1	0: Pale, 1: Normal, 2: Dark
6-30	Master making density - Letter	1	0: Pale, 1: Normal, 2: Dark
6-31	SBU calibration	–	Start with # key (☛Explanation Below)

No.	Menu Items	Default	Settings
6-32	MTF filter - Letter : M	1	0 to 7 (☛Explanation Below)
6-33	MTF filter - Letter : S	1	0 to 7 (☛Explanation Below)
6-34	MTF filter – Letter/Photo : M	4	0 to 7 (☛Explanation Below)
6-35	MTF filter – Letter/Photo : S	4	0 to 7 (☛Explanation Below)
6-36	MTF filter - Photo : M	1	0 to 7 (☛Explanation Below)
6-37	MTF filter - Photo : S	1	0 to 7 (☛Explanation Below)
6-40	Ink detection adjustment	–	(☛Explanation Below)
6-50	Master end sensor voltage	–	0.5 to 3.5V (☛ Replacement and Adjustment – Master end sensor adjustment)
6-51	Master edge sensor voltage	–	1.5 to 3.5V (☛ Replacement and Adjustment – Master edge sensor adjustment)
6-52	Duct jam sensor voltage	–	0.5 to 3.5V (☛ Replacement and Adjustment – Duct jam sensor adjustment)
6-53	2nd drum master sensor voltage	-	0.5 to 3.5V (☛ Replacement and Adjustment – 2nd drum master sensor adjustment)
6-60	Master returning value	100	0 to 200 [0.1mm] (☛Explanation Below)
6-61	Master length - A3 drum (Not used)	5400	4200 to 6000 [0.1mm]
6-63	Master length – A4 drum (Not used)	3400	3000 to 6000 [0.1mm]
6-64	Master pushing value (Not used)	50	0 to 100 [pulses] (☛Explanation Below)
6-70	Trial pressure: low temp	2	1 to 5
6-71	60rpm pressure: low temp	1	1 to 5

No.	Menu Items	Default	Settings
6-72	75rpm pressure: low temp	3	1 to 5
6-73	90rpm pressure: low temp	4	1 to 5
6-74	105rpm pressure: low temp	5	1 to 5
6-75	120rpm pressure: low temp	5	1 to 5
6-76	Trial pressure: normal temp	2	1 to 5
6-77	60rpm pressure: normal temp	1	1 to 5
6-78	75rpm pressure: normal temp	2	1 to 5
6-79	90rpm pressure: normal temp	3	1 to 5
6-80	105rpm pressure: normal temp	4	1 to 5
6-81	120rpm pressure: normal temp	5	1 to 5
6-82	Trial pressure: high temp	2	1 to 5
6-83	60rpm pressure: high temp	1	1 to 5
6-84	75rpm pressure: high temp	1	1 to 5
6-85	90rpm pressure: high temp	2	1 to 5
6-86	105rpm pressure: high temp	3	1 to 5
6-87	120rpm pressure: high temp	5	1 to 5
6-100	Paper registration 15rpm	0	-40 to 40 (☛Explanation Below)
6-101	Paper registration 30rpm	0	-40 to 40 (☛Explanation Below)
6-102	Paper registration 45rpm	0	-40 to 40 (☛Explanation Below)
6-103	Paper registration 60rpm	0	-40 to 40 (☛Explanation Below)
6-104	Paper registration 75rpm	0	-40 to 40 (☛Explanation Below)
6-105	Paper registration 90rpm	0	-40 to 40 (☛Explanation Below)
6-106	Paper registration 105rpm	0	-40 to 40 (☛Explanation Below)
6-107	Paper registration 120rpm	0	-40 to 40 (☛Explanation Below)

No.	Menu Items	Default	Settings
6-108	Paper Regist: skip:15rpm	0	-40 to 40
6-109	Paper Regist: skip: 30pm	0	-40 to 40
6-110	Paper Regist: skip: 45rpm	0	-40 to 40
6-111	Paper Regist: skip: 60rpm	0	-40 to 40
6-112	Paper Regist: skip: 75rpm	0	-40 to 40
6-113	Paper Regist: skip: 90rpm	0	-40 to 40
6-114	Paper Regist: skip: 105rpm	0	-40 to 40
6-115	Paper Regist: skip: 120rpm	0	-40 to 40
6-116	Paper middle bulge: 15rpm (Not used)	0	-100 to 100 (☛Explanation Below)
6-117	Paper middle bulge: 30rpm (Not used)	0	-100 to 100 (☛Explanation Below)
6-118	Paper middle bulge: 45rpm (Not used)	0	-100 to 100 (☛Explanation Below)
6-119	Paper middle bulge: 60rpm (Not used)	0	-100 to 100 (☛Explanation Below)
6-120	Paper middle bulge: 75rpm (Not used)	0	-100 to 100 (☛Explanation Below)
6-121	Paper middle bulge: 90rpm (Not used)	0	-100 to 100 (☛Explanation Below)
6-122	Paper middle bulge: 105rpm (Not used)	0	-100 to 100 (☛Explanation Below)
6-123	Paper middle bulge: 120rpm (Not used)	0	-100 to 100 (☛Explanation Below)
6-124	Paper front bulge: 15rpm (Not used)	0	-90 to 8 (☛Explanation Below)
6-125	Paper front bulge: 30rpm (Not used)	0	-90 to 8 (☛Explanation Below)
6-126	Paper front bulge: 45rpm (Not used)	0	-90 to 8 (☛Explanation Below)
6-127	Paper front bulge: 60rpm (Not used)	0	-90 to 8 (☛Explanation Below)
6-128	Paper front bulge: 75rpm (Not used)	0	-90 to 8 (☛Explanation Below)
6-129	Paper front bulge: 90rpm (Not used)	0	-90 to 8 (☛Explanation Below)
6-130	Paper front bulge: 105rpm (Not used)	0	-90 to 8 (☛Explanation Below)
6-131	Paper front bulge: 120rpm (Not used)	0	-90 to 8 (☛Explanation Below)
6-132	Paper Regist: A4 drum 15 (Not used)	0	-40 to 40

No.	Menu Items	Default	Settings
6-133	Paper Regist: A4 drum 30 (Not used)	0	-40 to 40
6-134	Paper Regist: A4 drum 45 (Not used)	0	-40 to 40
6-135	Paper Regist: A4 drum 60 (Not used)	0	-40 to 40
6-136	Paper Regist: A4 drum 75 (Not used)	0	-40 to 40
6-137	Paper Regist: A4 drum 90 (Not used)	0	-40 to 40
6-138	Paper Regist: A4 drum 105 (Not used)	0	-40 to 40
6-139	Paper Regist: A4 drum 120 (Not used)	0	-40 to 40
6-140	Paper Regist: skip: A4: 15 (Not used)	0	-40 to 40
6-141	Paper Regist: skip: A4: 30 (Not used)	0	-40 to 40
6-142	Paper Regist: skip: A4: 45 (Not used)	0	-40 to 40
6-143	Paper Regist: skip: A4: 60 (Not used)	0	-40 to 40
6-144	Paper Regist: skip: A4: 75 (Not used)	0	-40 to 40
6-145	Paper Regist: skip: A4: 90 (Not used)	0	-40 to 40
6-146	Paper Regist: skip: A4: 105 (Not used)	0	-40 to 40
6-147	Paper Regist: skip: A4: 120 (Not used)	0	-40 to 40
6-148	Paper middle bulge: A4: 15 (Not used)	0	-100 to 100
6-149	Paper middle bulge: A4: 30 (Not used)	0	-100 to 100
6-150	Paper middle bulge: A4: 45 (Not used)	0	-100 to 100
6-151	Paper middle bulge: A4: 60 (Not used)	0	-100 to 100
6-152	Paper middle bulge: A4: 75 (Not used)	0	-100 to 100
6-153	Paper middle bulge: A4: 90 (Not used)	0	-100 to 100
6-154	Paper middle bulge: A4: 105 (Not used)	0	-100 to 100
6-155	Paper middle bulge: A4: 120 (Not used)	0	-100 to 100
6-156	Paper front bulge: A4: 15 (Not used)	0	-90 to 8
6-157	Paper front bulge: A4: 30 (Not used)	0	-90 to 8

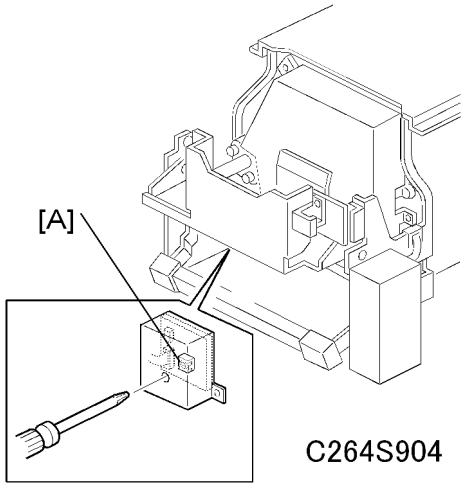
No.	Menu Items	Default	Settings
6-158	Paper front bulge: A4: 45 (Not used)	0	-90 to 8
6-159	Paper front bulge: A4: 60 (Not used)	0	-90 to 8
6-160	Paper front bulge: A4: 75 (Not used)	0	-90 to 8
6-161	Paper front bulge: A4: 90 (Not used)	0	-90 to 8
6-162	Paper front bulge: A4: 105 (Not used)	0	-90 to 8
6-163	Paper front bulge: A4: 120 (Not used)	0	-90 to 8

SP6-40: Ink Detection Adjustment

Ensures that the CPU detects a no ink condition.

⚠CAUTION

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



Access SP6-40, and open the door cover. Then turn VR1 [A] on the ink detection board until the display becomes "3.0 u" (3 us).

Note

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

Image Adjustment (SP6-10, -21, -5, -3, and -1)

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

Adjust the following in the given order.

SP6-10: Master writing speed

SP6-21: Paper registration position

SP6-05: Scanning speed - platen

SP6-06: Scanning speed - ADF

SP6-03: Scanning start position - platen

SP6-04: Scanning start position - ADF

SP6-01: Main scan position - platen

SP6-02: Main scan position - ADF

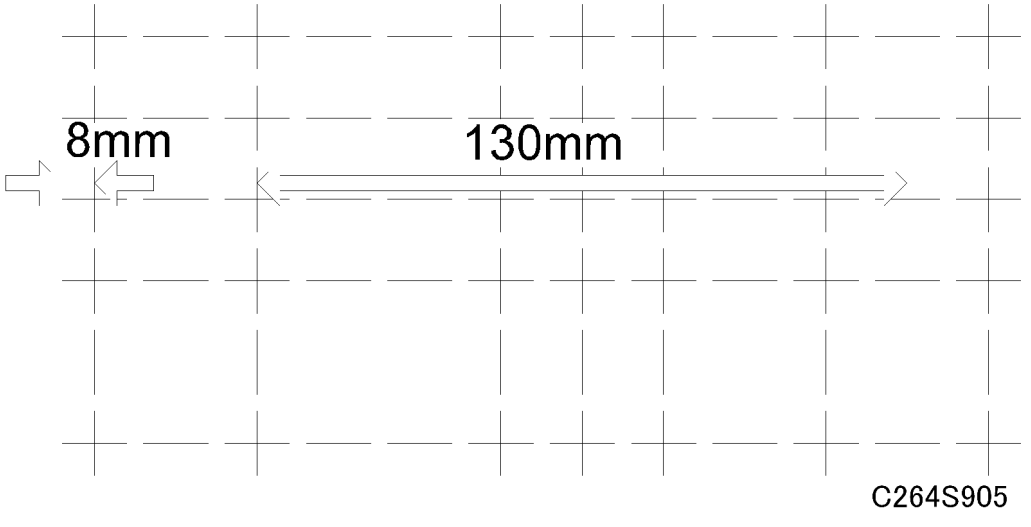
SP6-31: SBU calibration (☛ SP6-31: SBU Calibration)

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

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

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

SP6-10: Master writing speed



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.

SP6-21: Paper Registration Position

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 SP6-21, input the difference and press the Enter key.

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

SP6-05, 6-06: 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.

SP6-03, 6-04: Scanning Start Position – 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 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.

SP6-31: SBU Calibration

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 (☛ Image adjustment)

1. Place a stack of 10 sheets of paper on the exposure glass.
2. Access SP6-31 and then press the Enter key to start the auto calibration.

SP6-32 to 37: MTF Filter

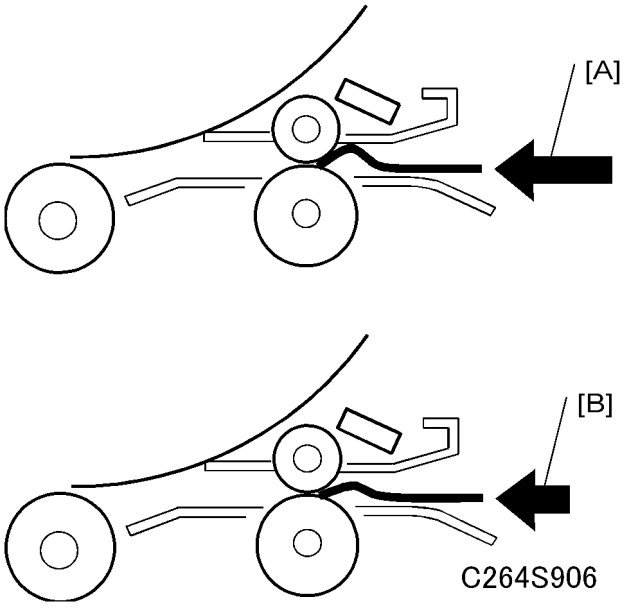
Sharpens the image, but moiré can become more apparent.

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

Value	Strength of Filter
7	X 4
6	X 2
0	X 1
5	X 1/2
4	X 1/4
3	X 1/8
2	X 1/16
1	X 1/32

SP6-20: Registration Buckle (Not Used)

Adjusts the paper skew and the paper registration slippage.



[A]: Increases the value

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

[B]: Decreases the value

The paper registration position is more likely to be correct.

SP6-60: Master Return Value

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

One unit: 0.1 mm

SP6-64: Master Pushing Value (Not Used)

This adjusts the pressure between the master push Mylar and the drum.

Bigger number: increases the pressure

Smaller number: decreases the pressure

SP6-100 to 107: Paper Registration - Each Speed

The following procedure allows the image position to be adjusted for each speed (15, 30, 60, 90 and 120 rpm)

Note

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

1. Set SP2-34 (Slow starting mode) 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 120 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

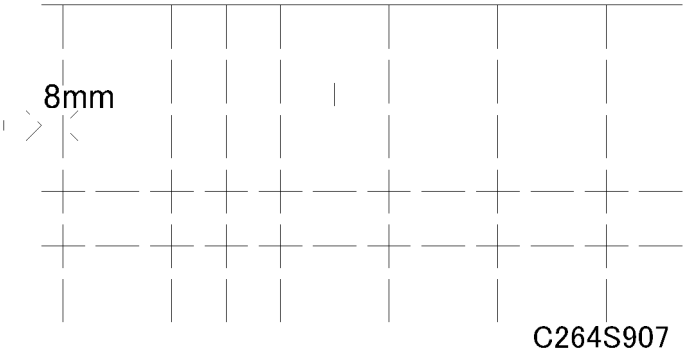
   6th print: 120 rpm

   Note

   - 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: 120 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.

   To adjust the distance for 30 cpm, use SP 6-101.

   To adjust the distance for 45 cpm, use SP 6-102.

   To adjust the distance for 60 cpm, use SP 6-103.

   To adjust the distance for 75 cpm, use SP 6-104.

   To adjust the distance for 90 cpm, use SP 6-105.

   To adjust the distance for 105 cpm, use SP 6-106.

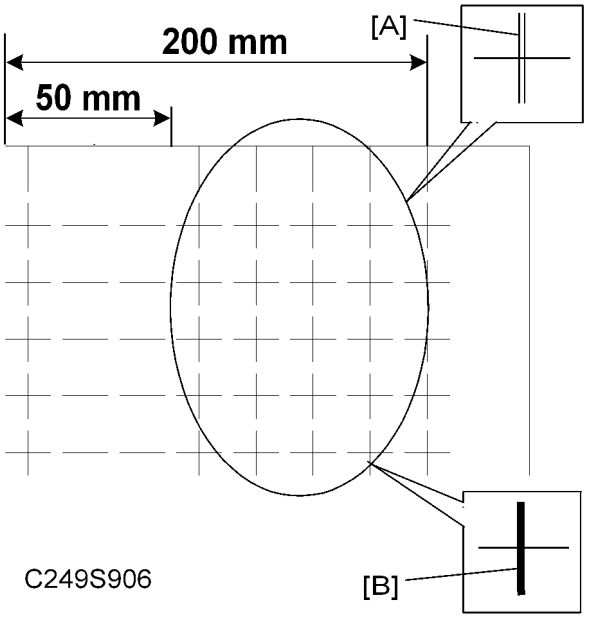
   To adjust the distance for 120 cpm, use SP 6-107.

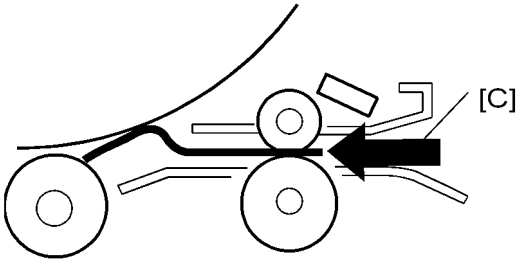
   The higher the value, the narrower the distance between the leading edge and 1st line becomes (and vice-versa). Also, each step corresponds to approximately 0.58mm. Input the value that will bring the distance to 8mm.

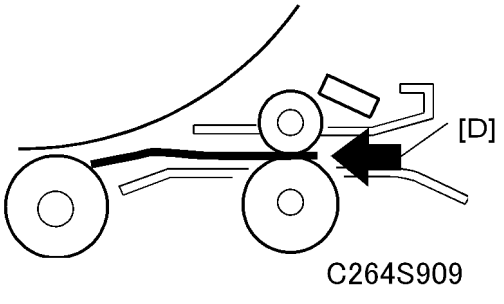
7. Perform the adjustment again for any of the samples that are still outside the 8mm standard.
8. Return SP2-34 (Slow starting mode) to the value it was at before the adjustment.

SP6-116 to 123: Paper Middle Buckle (Not Used)

Adjusts doubled [A] or blurred [B] images (e.g. bold lines, text) for each printing speed (15, 30, 60, 75, 90, 105, 120 rpm), by changing SP settings.







1. Set SP2-34 (Slow starting mode) 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 120 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: 120 rpm

Note

- 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: 120 rpm

5. Check the area from the leading edge to about 50 to 200mm 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.

   To adjust the distance for 105 cpm, use SP 6-122.

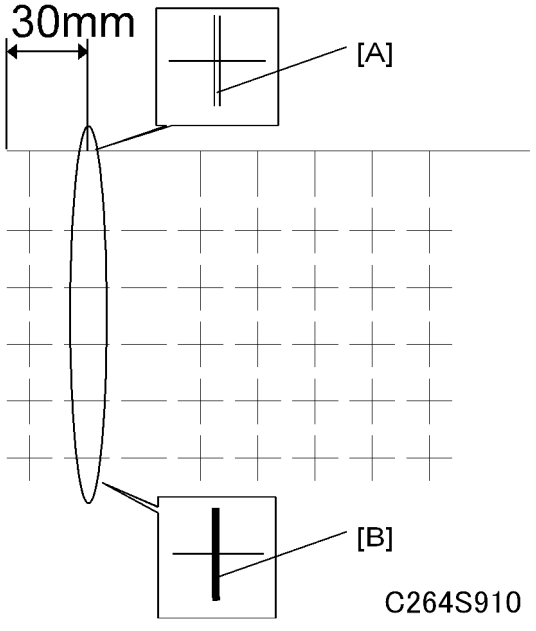
   To adjust the distance for 120 cpm, use SP 6-123.

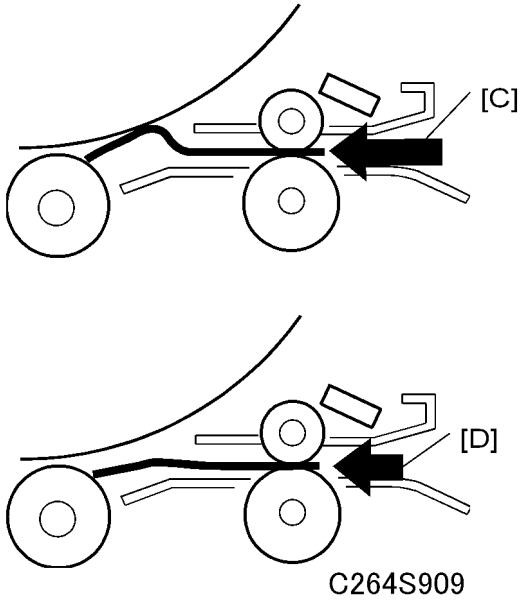
   Higher values ([C]): Blurred images improve, doubled images tend to be more noticeable.

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

SP6-124 to 131: Paper Front Buckle (Not Used)

Adjusts doubled [A] or blurred [B] images (e.g. bold lines, text) for each printing speed (15, 30, 60, 75, 90, 105, 120 rpm), by changing SP settings.





1. Set SP2-34 (Slow starting mode) 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 120 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: 120 rpm

   Note

   - 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: 120 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 120 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 (Slow starting mode) to the value it was at before the adjustment.

Memory Clear

SP Table

No.	Menu Items	Default	Settings
7-1	Factory settings clear	-	Hold 0 & push # to clear (☛Explanation Below)
7-3	Total counter clear	-	Hold 0& push # to clear
7-4	Jam/Error data clear	-	Hold 0 & push # to clear
7-11	Protect Code Clear	-	Hold 0 & push # to clear

SP7-1: Factory Settings Clear

This resets all SP settings except for the following SP numbers.

- SP2-20: Destination settings
- SP3-01: Present time
- SP6-All: Adjustments

SP7-11: Protect Code Clear

The Protect Code is an administrator-mode user tool setting. This code prevents the initial (User Tools) menu being accessed by users other than the administrator.

System Test

SP Table

No.	Menu Items	Default	Settings
8-1	Download main firmware	-	Start with the # key (☛ System Maintenance Reference – Firmware update – Download main firmware (SP8-1))
8-2	Upload main firmware	-	Start with the # key (☛ System Maintenance Reference – Firmware update – Upload main firmware (SP8-2))
8-10	Test patterns	6	Pattern 6 (1-9) A4 start with # (☛Explanation Below)
8-18	Temporary security off	Off	Off/On
8-19	Free run - ADF	100%	50 to 200%
8-20	Free run - scanner	100%	50 to 200%
8-21	Paper feed at 15 rpm	Off	Off/On (☛Explanation Below)
8-22	Free run - Paper feed (15 rpm)	Off	Off/On (☛Explanation Below)
8-23	30->45->60 rpm print mode	Off	Off/On (☛Explanation Below)
8-30	All indicators on the panel	-	Active when start press
8-31	Not used	Off	Off/On

SP8-10: Test Patterns

Makes prints without using the scanner.

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

Other numbers are as shown below, 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

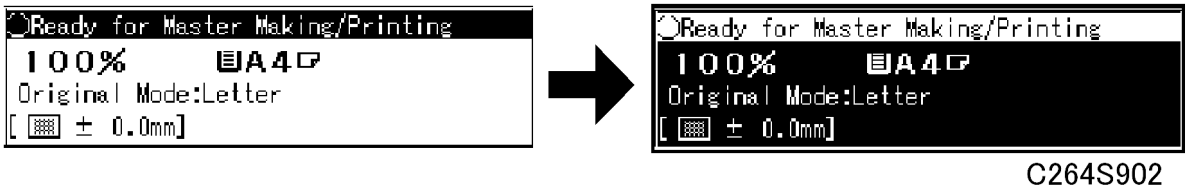
SP 8-18: Temporary Security Off

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).



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Note

- Set SP8-18 to "OFF", after you repair/inspect the machine.

"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 "Print" 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.

SP8-21: Paper Feed Test (15 rpm)

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 Print key.
5. To exit this mode, turn off the main switch.

SP8-22: Free Run Paper Feed (15 rpm)

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 Print key.

To exit this mode, turn off the main switch.

SP8-23: 30-45-60 RPM Print Mode

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).

Note

- For details on these SPs, see sections: No. 6 Adjustment – SP6-100 to 107: Paper registration-Each Speed, SP6-116 to 123: Paper Middle Buckle (not used) and SP6-124 to 131: Paper front buckle (not used).
- If SP 8-23 is set to 'Off', the machine makes 7 test copies at different speeds, including two at 45 rpm.

If SP 8-23 is set to 'On', the machine makes 6 test copies at different speeds, and omits one of the copies that are made at 45 rpm.

SP 8-23 automatically goes back to 'Off' after you turn the main switch off/on.

Print Controller

SP Table

No.	Menu Items	Default	Settings
9-1	Output Data Print	0	0:Normal, 1:Hex dump, 2:SD Card
9-2	Service Summary Print	-	-
9-3	NIB Summary Print	-	-
9-4	Firmware Part Number	-	-
9-5	Firmware Version	-	-
9-30	Clear Printer Setting	-	-
9-31	Clear NIB NVRAM – System	-	-
9-40	Load Program - System	-	☛ System Maintenance Reference – Firmware update – Download Controller firmware (SP9-40)

SP9-1: Output Data Print

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

There are three settings:

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.

⚠CAUTION

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

SD Card

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

Procedure:

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

⚠CAUTION

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

MEMO

MEMO