Model TITANIUM3

Machine Code: C274

Field Service Manual

March 2009

Subject to change

Important Safety Notices

Responsibilities of the Customer Engineer

Customer Engineer

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

Reference Material for Maintenance

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

Before Installation, Maintenance

Shipping and Moving the Machine

⚠CAUTION

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

Power

⚠WARNING

- Always disconnect the power plug before doing any maintenance procedure. After switching off the machine, power is still supplied to the main machine and other devices. To prevent

electrical shock, switch the machine off, wait for a few seconds, then unplug the machine from the power source.

- Before you do any checks or adjustments after turning the machine off, work carefully to avoid injury. After removing covers or opening the machine to do checks or adjustments, never touch electrical components or moving parts (gears, timing belts, etc.).
- After turning the machine on with any cover removed, keep your hands away from electrical components and moving parts. Never touch the cover of the fusing unit, gears, timing belts, etc.

Installation, Disassembly, and Adjustments

⚠CAUTION

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

Special Tools

⚠CAUTION

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

During Maintenance

General

⚠CAUTION

- Before you begin a maintenance procedure: 1) Switch the machine off, 2) Disconnect the power plug from the power source.

Safety Devices

⚠WARNING

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

Organic Cleaners

⚠CAUTION

- During preventive maintenance, never use any organic cleaners (alcohol, etc.) other than those described in the service manual.
- Make sure the room is well ventilated before using any organic cleaner. Use organic solvents in small amounts to avoid breathing the fumes and becoming nauseous.
- Switch the machine off, unplug it, and allow it to cool before doing preventive maintenance. To avoid fire or explosion, never use an organic cleaner near any part that generates heat.
- Wash your hands thoroughly after cleaning parts with an organic cleaner to contamination of food, drinks, etc. which could cause illness.
- Clean the floor completely after accidental spillage of silicone oil or other materials to prevent slippery surfaces that could cause accidents leading to hand or leg injuries. Use "My Ace" Silicone Oil Remover (or dry rags) to soak up spills. For more details, please refer to Technical Bulletin "Silicone Oil Removal" (A024-50).

Power Plug and Power Cord

⚠WARNING

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

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

After Installation, Servicing

Points to Confirm with Operators

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

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

Safety Instructions for this Machine

Prevention of Physical Injury

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

Health Safety Conditions

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

Observance of Electrical Safety Standards

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

Safety and Ecological Notes for Disposal

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

Symbols

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

☛	See or Refer to
CT	Core tech manual

	Clip ring
	E-ring
	Screw
	Connector

TABLE OF CONTENTS

5. System Maintenance Reference

6. Troubleshooting

1. Product Information

Specifications

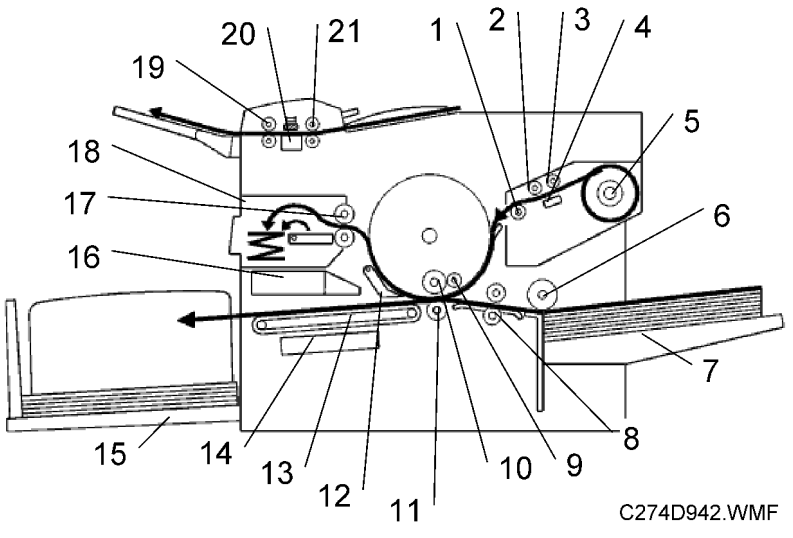
See "Appendices" for the following information:

- General specifications

Mechanism Overview

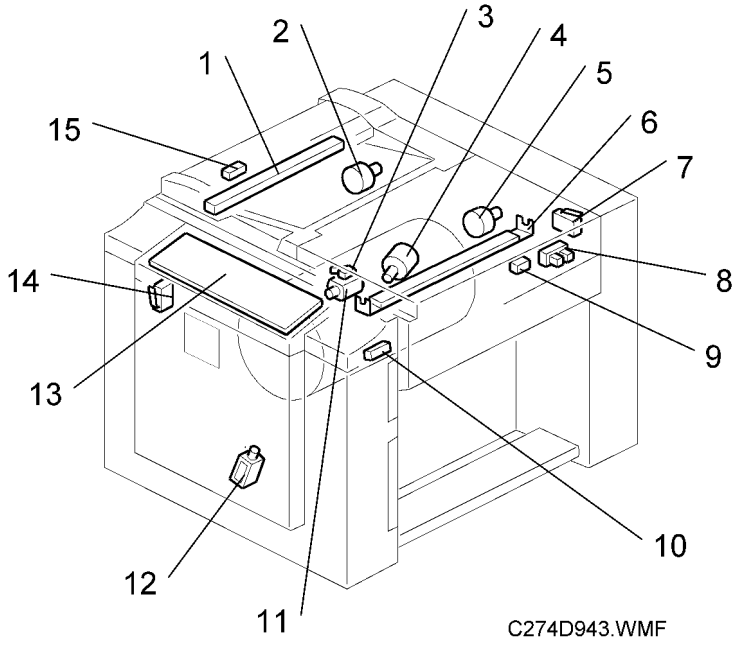
1

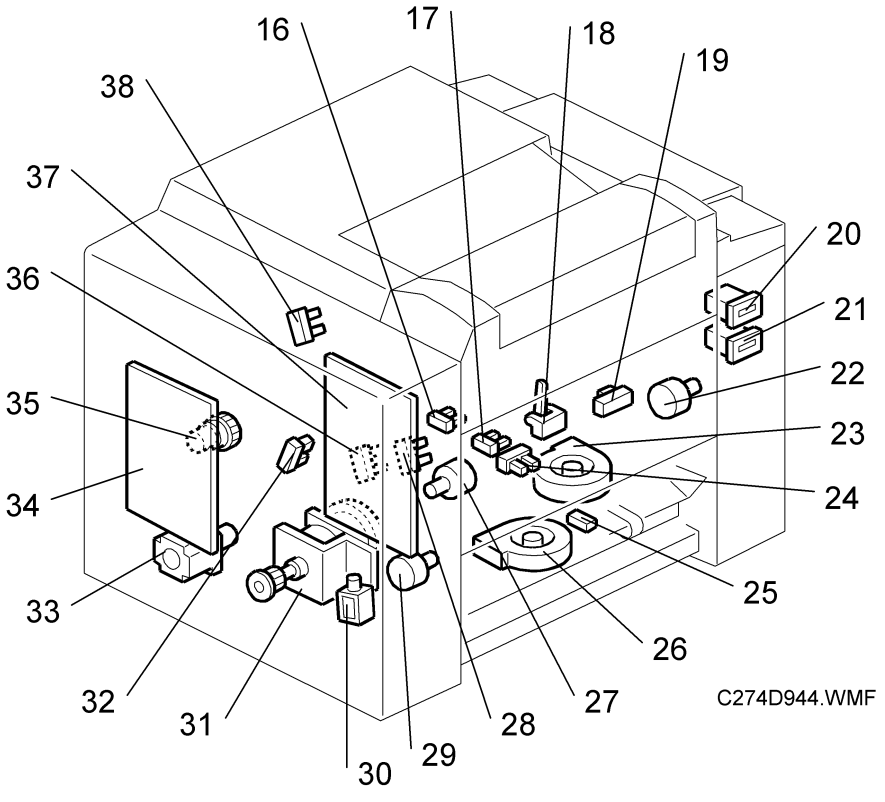
Component Layout



1. Tension roller	12. Exit pawl
2. Master feed roller	13. Transport belts
3. Platen roller	14. Vacuum fan motor
4. Thermal head	15. Paper delivery table
5. Master roll	16. Air knife fan motor
6. Paper feed roller	17. Master eject rollers
7. Paper table	18. Master eject box
8. Registration rollers	19. 2nd feed roller
9. Doctor roller	20. CIS (Contact Image Sensor)
10. Ink roller	21. 1st feed rollers
11. Press roller	

Electrical Component Layout





Boards

No.	Component	Function
13	Operation Panel Board	This board controls the operation panel.
34	Main Processing Unit (MPU)	Controls all machine functions, both directly and through other boards.
37	Power Supply Unit (PSU)	Provides dc power to the machine.

Motors

No.	Component	Function
2	Scanner Motor	Drives the scanner.
4	Ink Pump Motor	Drives the ink pump.
5	Master Feed Motor	Feeds the master to the drum.
11	Cutter Motor	Cuts the master.

No.	Component	Function
22	Master Eject Motor	used masters into the master eject box.
23	Air Knife Fan Motor	Rotates the fan to provide air to separate the leading edge of the paper from the drum.
26	Vacuum Fan Motor	Provides suction so that paper is held firmly on the transport belt.
27	Pressure Plate Motor	Drives the pressure plate.
29	Clamper Motor	Opens or closes the master clamper on the drum.
31	Main Motor	Rotates the drum, paper feed roller and transport belts.
33	Registration Motor	Feeds the paper to align it with the master on the drum.

Switches

No.	Component	Function
7	Right Side Cover Set Switch	Checks if the right side cover is closed.
14	Door Safety Switch	Checks whether the front door is properly closed.

Solenoids

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

Counters

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

Sensors

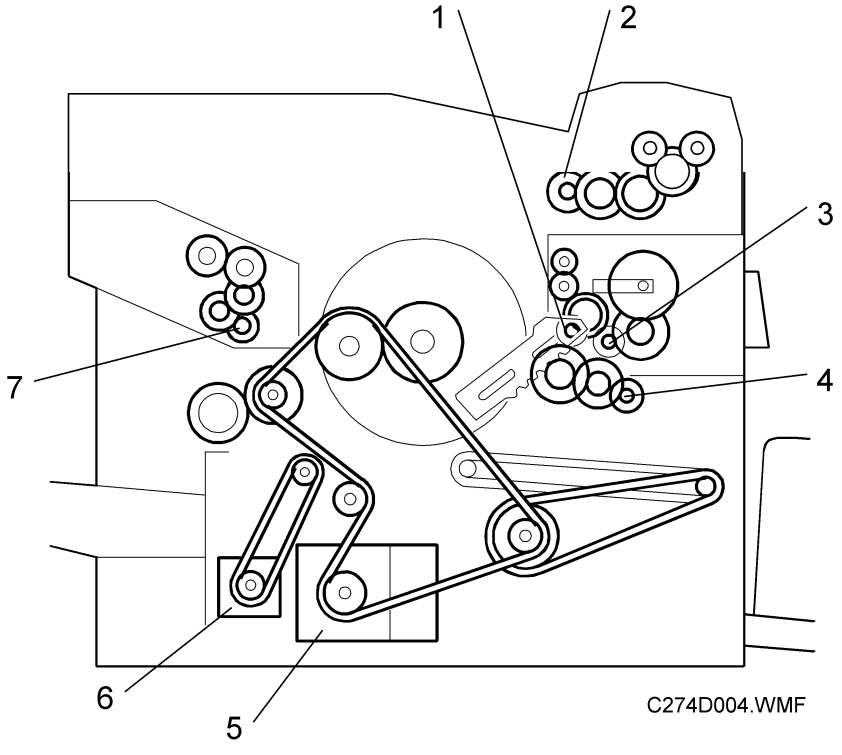
No.	Component	Function
3	Cutter HP Sensor	Detects when the cutter is at the home position.

No.	Component	Function
8	Master Set Cover Sensor	Checks if the master set cover is properly set.
9	Master End Sensor	Detects when the master making unit runs out of master roll.
10	Registration Sensor	Detects paper approaching the registration roller.
15	Document Sensor	Detects the leading edge of the original to determine when to turn off the scanner motor. Checks for original misfeeds.
16	Pressure Plate HP Sensor	Detects when the pressure plate is at the home position.
17	Pressure Plate Limit Sensor	Detects when the pressure plate is in the lowest position.
18	Master Eject Sensor	Detects used master misfeeds.
19	Drum Master Sensor	Detects if there is a master on the drum.
24	Eject Box Set Sensor	Checks if the master eject box is installed.
25	Paper Exit Sensor	Detects paper misfeeds at the exit.
28	Clamper Open Sensor	Detects if the clamper is in the open position.
32	Feed Start Timing Sensor	Determines the paper feed start timing.
36	Clamper Closed Sensor	Detects if the clamper is in the closed position.
38	MasterEject Position (Drum HP) Sensor	Detects when the drum is at the master eject position.

Others

No.	Component	Function
1	Contact Image Sensor (CIS)	This sensor reads and converts the light reflected from the document into an analog video signal.
6	Thermal Head	Burns the image onto the master.
35	Paper Feed Clutch	Transmits main motor drive to the paper feed rollers at the appropriate time.

Drive Layout



1. Master eject motor
2. Scanner motor
3. Pressure plate motor
4. Clamper motor
5. Main motor
6. Registration motor
7. Master feed motor

Guidance for Those Who are Familiar with Predecessor Products

1

Machine C274 is a successor model to Machine C261. 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

	C274	C261
Drum pump adjustment	No *1	Yes

Note

- *1 This model uses the trochoid pump unit that is used in the C267 series.

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.)

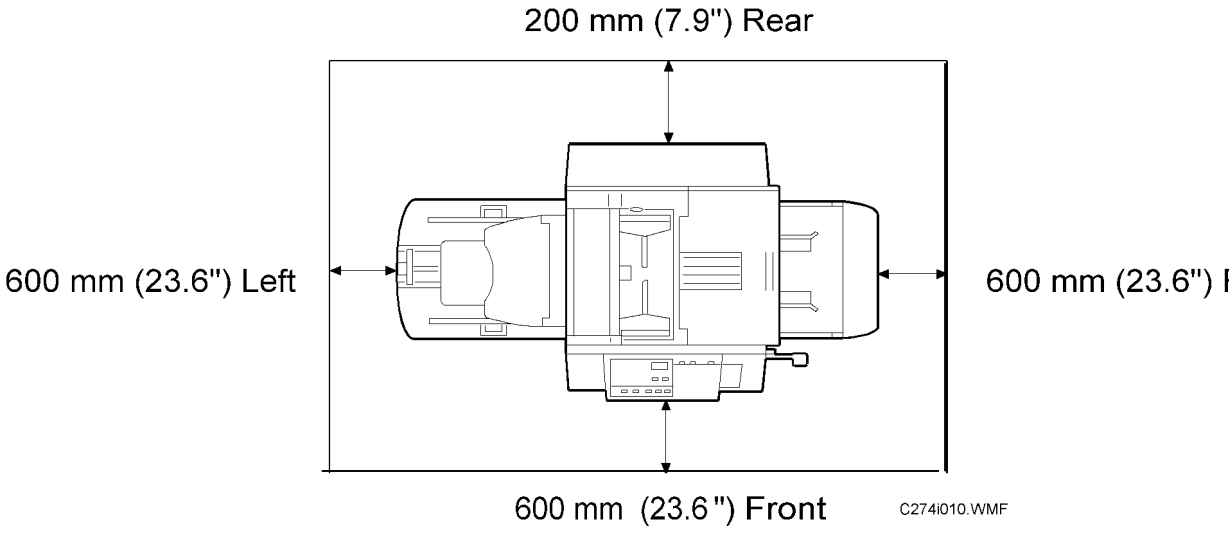
Power Connection

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.

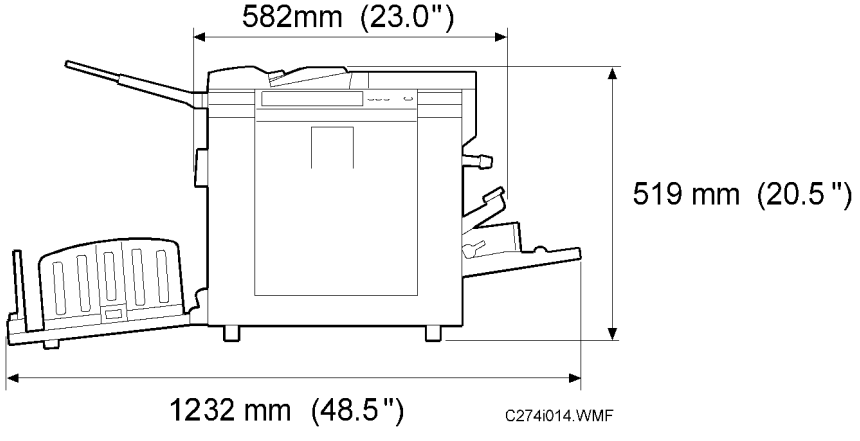
Machine Access

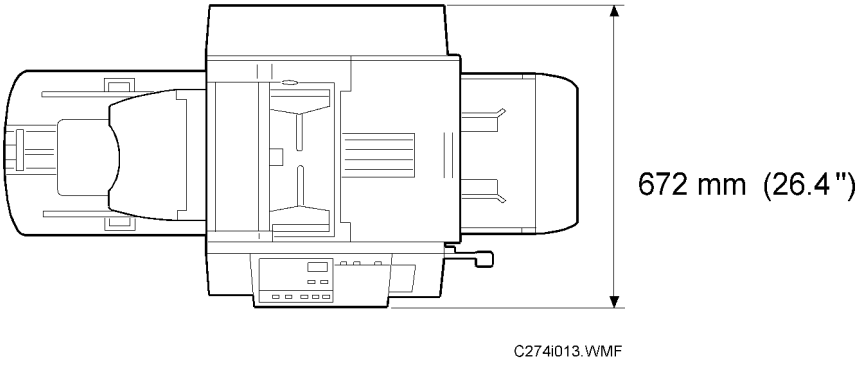
Place the machine near a power source, providing minimum clearance as shown below.

2



Dimensions

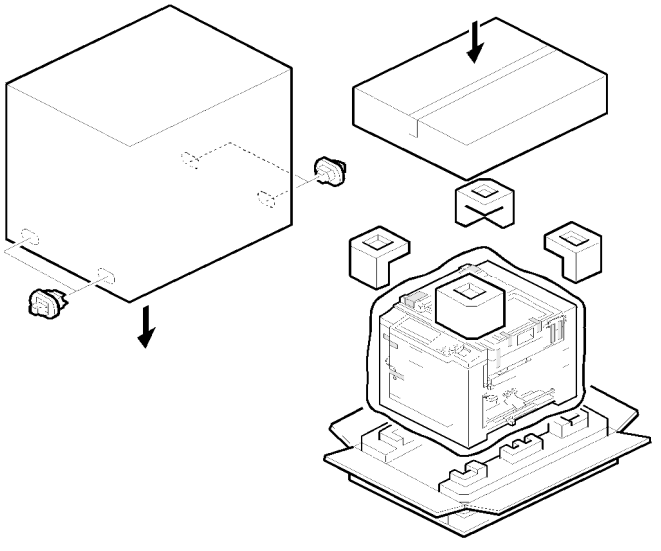




Installation Procedure

Main Unit

Accessory Check



C274i001.WMF

Make sure that you have all the accessories listed below.

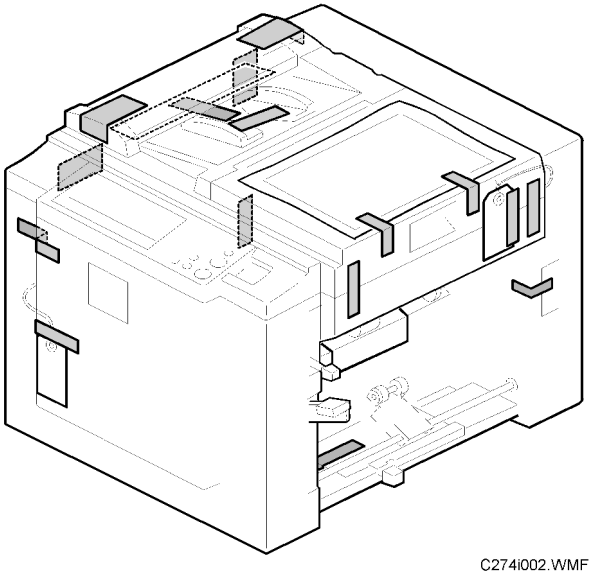
Description	Q'ty
1. Master Spool	2
2. Paper Feed Side Pad	2
3. Operating Instructions	1
4. NECR (Ricoh version only)	1 set
5. Model Name Plate (C274-77)	1 set
6. Paper Table	1 set
7. Paper Delivery Table	1 set
8. Easy Operation Guide	1
9. Safety Information (C274-93 and C274-94 only)	1

Description	Q'ty
10. Bundled Items List (C274-76 and C274-78 only)	1

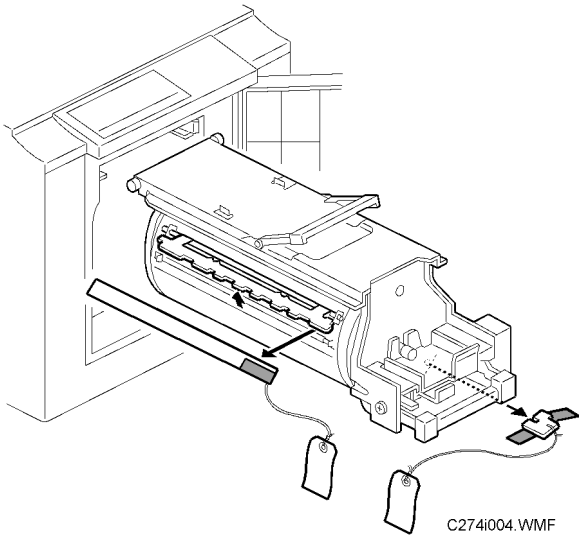
Installation Procedure

⚠CAUTION

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

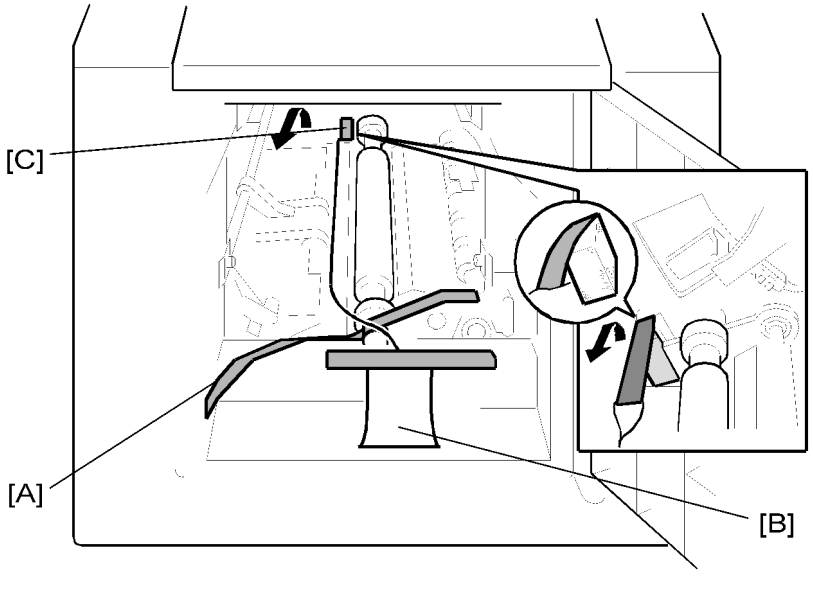


C274i002.WMF



C274i004.WMF

1. Unpack the machine and remove all the wrapping.
2. Remove all filament tape and string securing the covers and units as shown above.

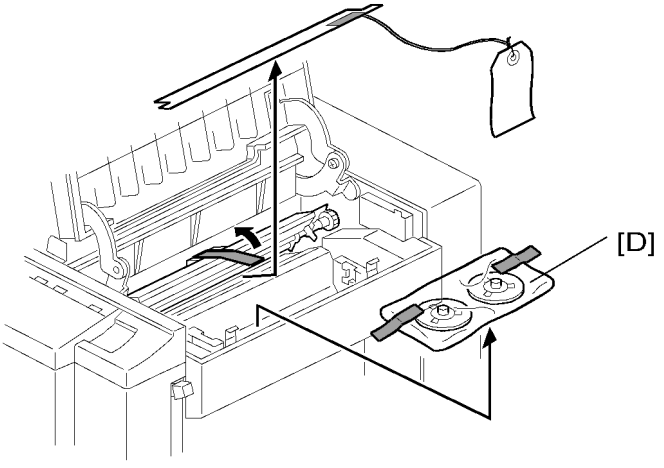


C274i901.WMF

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

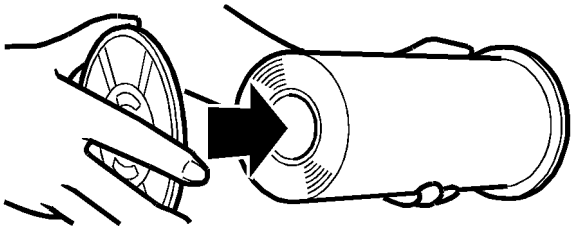
Note

- To remove the rear tape, pull the portion shown in the diagram toward the front of the machine.These tapes were also used in the Titanium2 (C261).



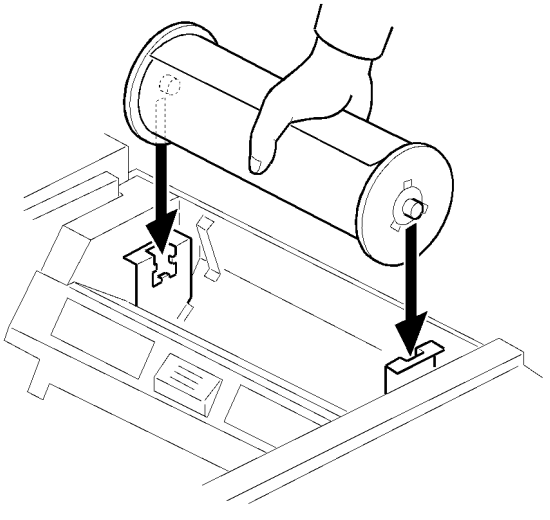
C274i009.WMF

4. Open the right side cover, and take out the accessory bag [D].



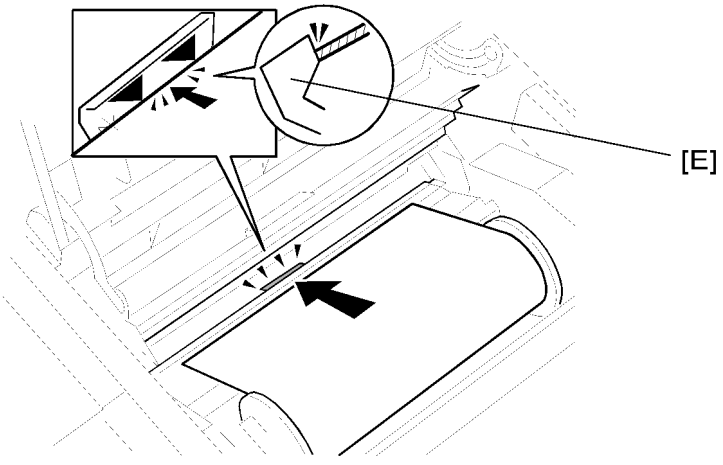
C274i902.WMF

5. Insert both spools into a new master roll.



C274i018.WMF

6. Install the master roll.

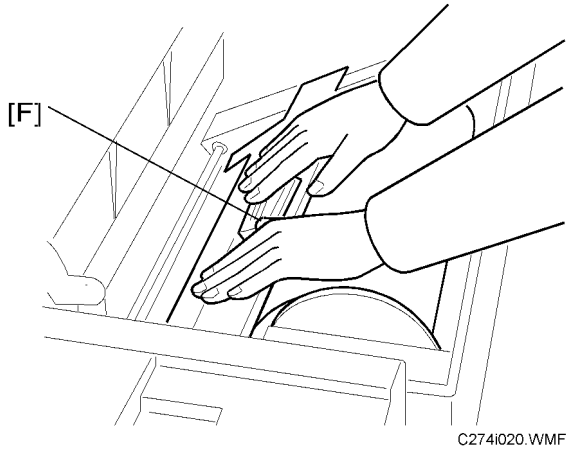


C274i001.WMF

7. Open the master making unit cover, and insert the leading edge of the master roll under the platen roller. The arrows [E] indicate the correct position of the master leading edge.

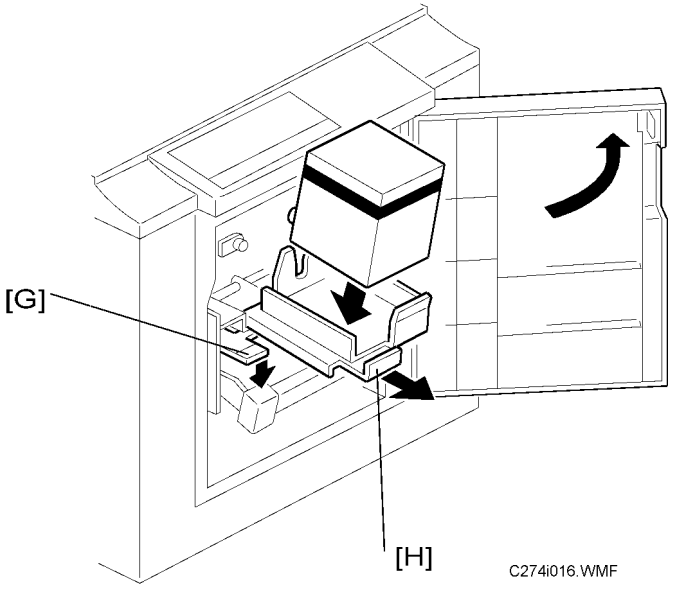
Note

- The leading edge of the master does not enter the interior of the master making unit, because the part at the arrows [E] is convex.

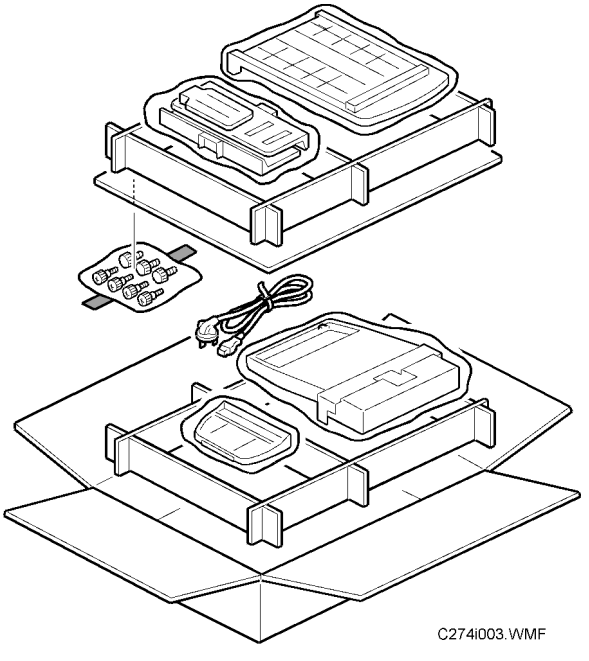


C274i020.WMF

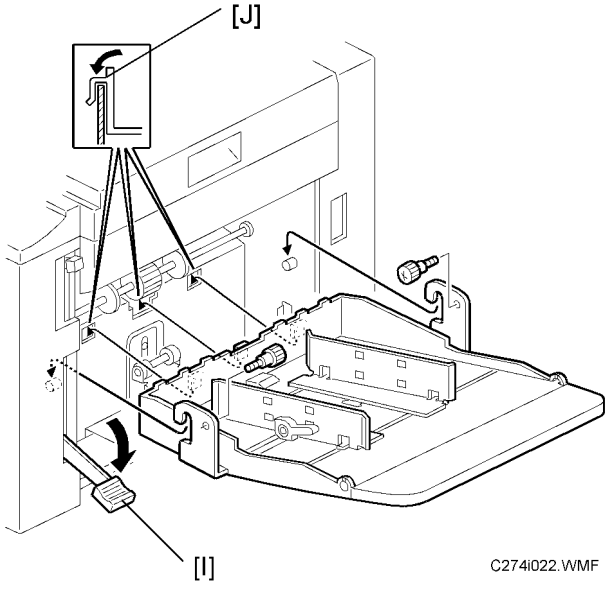
8. Close the master making unit cover [F] using both hands until it clicks into place.
9. Close the right side cover.



10. Open the front door.
11. Release the ink holder lock lever [G] and pull out the ink holder [H].
12. Insert a new ink cartridge.



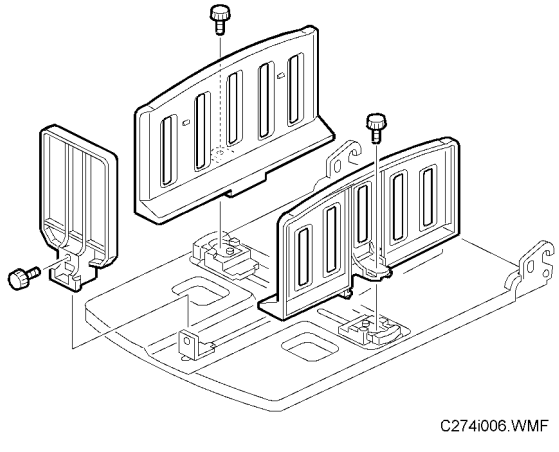
13. Take the paper table and paper delivery table out of the box.



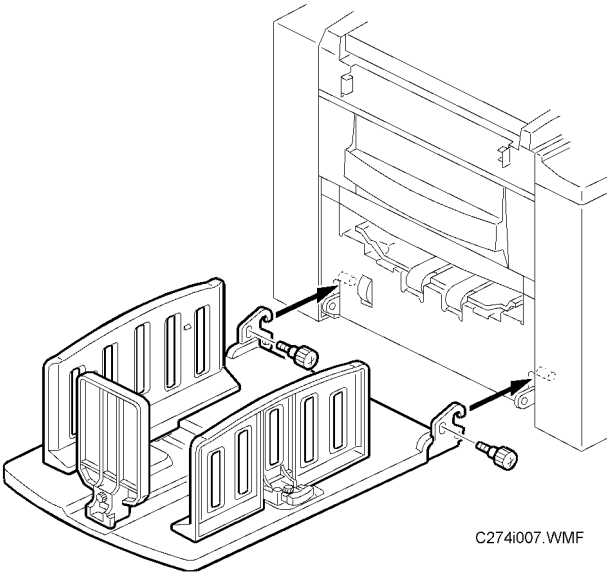
14. Lower the paper feed tray adjustment lever [I], and install the paper table.(x 2)

Note

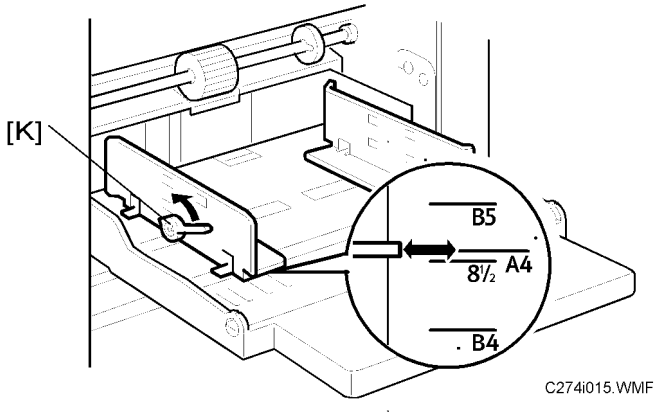
- When installing the paper table, make sure that the hooks [J] are set firmly.
- Two side fence friction pads are included as accessories. They are not used normally, but if paper multi-feed frequently occurs or thin paper is used, the side fence friction pads can be installed to apply stopping pressure to the paper.



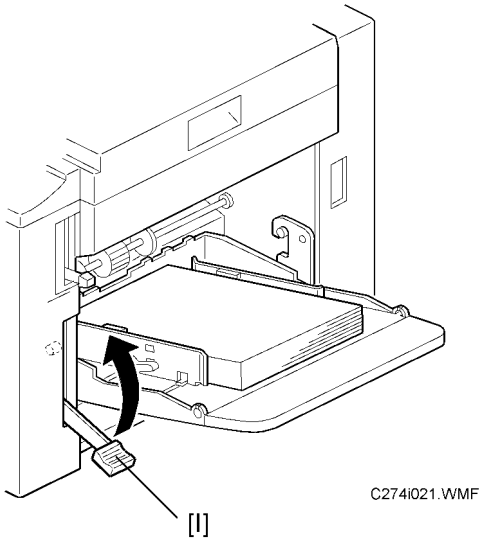
15. Attach the side and end fences, as shown. (x 3)



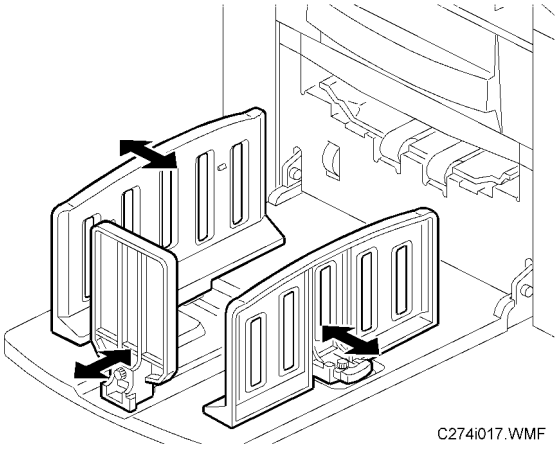
16. Install the paper delivery table. (x 2)



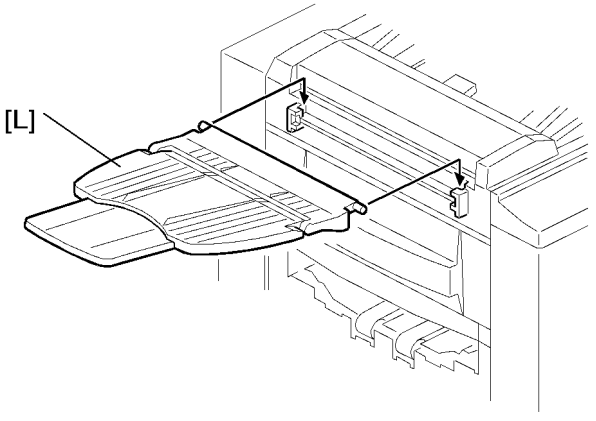
17. Release the paper feed side plate lock levers [K] and adjust the side plates to match the paper size.



18. Load paper into the paper table.
19. Shift the paper feed tray adjustment lever [I] up to the paper feeding position.



20. Adjust the side and end fences of the paper delivery table to match the paper size.

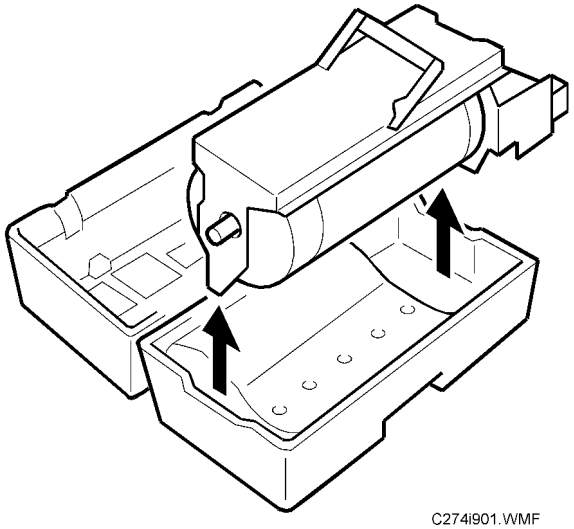


C274i008.WMF

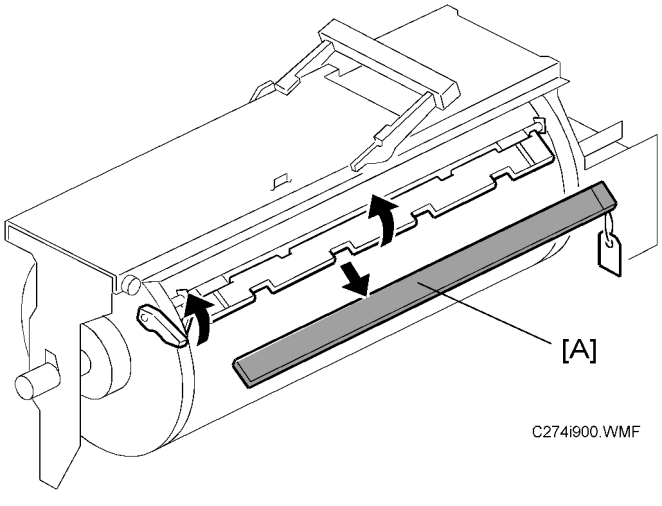
21. Attach the original table [L].
22. Firmly insert the power plug in the outlet.
23. Turn on the main switch.
24. Press the clear/stop key while holding down the 0 key, to supply ink to the drum.
25. Make some test copies.

Optional Installation

Additional Drums



C274i901.WMF



C274i900.WMF

There are two types of drum units:

B4 size Color Drum: Color Drum Type 20 (M)

LG size Color Drum: Color Drum Type 20 (S)

1. Remove the protective sheet [A] from the drum unit.
2. Attach a color indicator decal to the drum case. The decal must be the same color as the ink in use.

3. Remove the drum unit.
4. Leave the master wrapped around the removed drum to protect the drum from dust and from drying.
5. Keep the removed drum unit in the drum case.
6. Install the drum unit.
7. Remove the ink cartridge cap.
8. Insert the ink cartridge in the ink holder.

Printer Unit VC-20 and Interface Board Type 20

⚠CAUTION

- The Interface board type 20 must be installed before you install the Printer Unit VC-20.

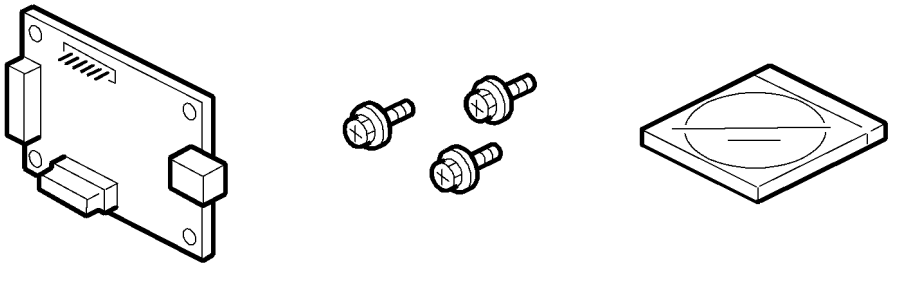
Accessory Check (Interface Board Type 20)

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

Description	Q'ty
1. Interface Board	1
2. Interface Cable	1
3. Bracket	2
4. Screw M3x6	6

Accessory Check (Printer Unit VC-20)

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



C274i025.WMF

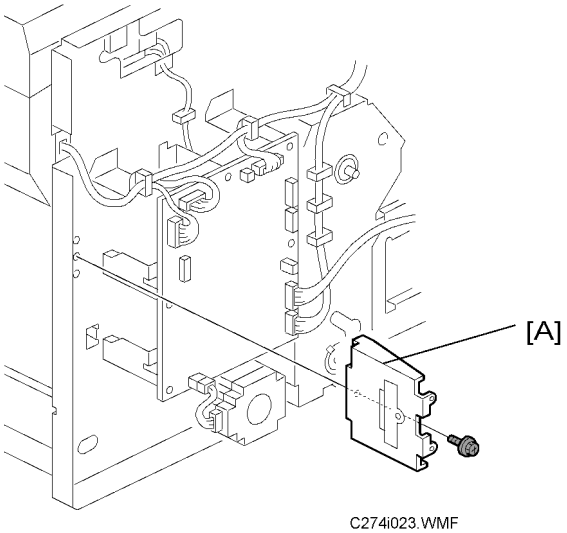
Description	Q'ty
1. Printer Controller Board	1
2. Screws	3
3. Installation CD	1
4. Quick Install Guide	1
5. Safety Information	1

Installation Procedure

⚠CAUTION

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

Remove the rear cover (☛ Replacement and Adjustment – Covers / Boards - Rear Cover)

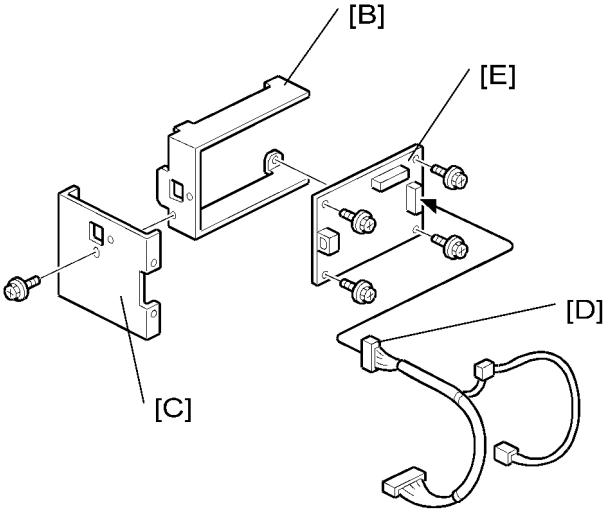


C274i023.WMF

1. Remove the bracket [A] (x1).

Note

- You do not need this bracket and its screws any more.

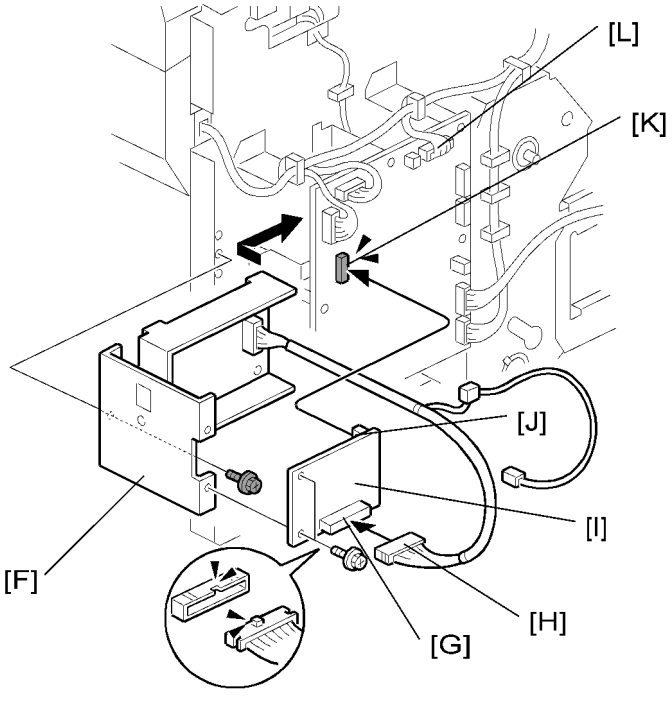


C274i024.WMF

1. Attach the printer controller board [E] to the bracket [B] (x4).
2. Attach the bracket [C] to the bracket [B] (x2).
3. Connect the connector [D] to the socket on the right side of the board [E].

Note

- Make sure that the connector is securely connected to the socket.



C274i026.WMF

4. Attach the bracket assembly [F] to the same place that the bracket [A] (Step 1) was installed (1 screw).

Important

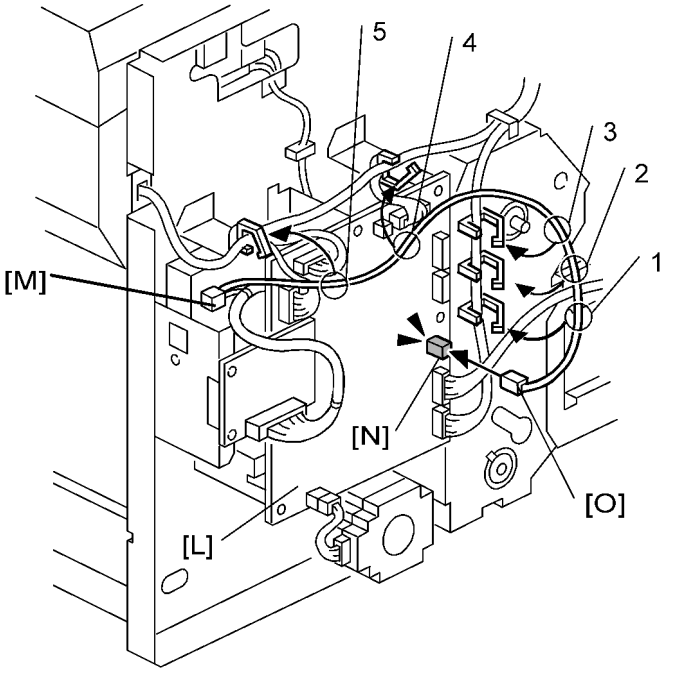
- **In this step, only use the M3x6 screw included with the Interface board Type 20.**

5. Connect the socket [J] on the interface board to CN108 [K] on the MPU [L].

Important

- **Make sure that the socket is securely connected to CN108.**

6. Connect the connector [H] to the socket [G] on the interface board.
7. Attach the interface board [I] to the bracket assembly [F] (x 2).



C274i027.WMF

8. Connect the connector [O] to CN102 on the MPU [N].

Important

- **Make sure that the connector is securely connected to CN102.**

9. Clamp the harness to the five places shown (#1-5) around the MPU (x5).

Important

- **Do not connect the connector [M] anywhere. Leave it unconnected.**

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.

Note

- This manual uses several symbols. The meaning of those symbols are as follows:
- This manual uses several symbols. The meaning of those symbols are as follows:
- ☛: See or refer to, : screw, : connector, : E-ring, : clip, : clamp

Special Tools

The following are the special tools used for service.

Part Number	Description	Q'ty
A0699502	Alvania 2 Grease	1

Image Adjustment

Adjusts the image position on prints by changing the DIP switch settings.

Adjust the following in the given order.

DIPSW103 No.5 to 8 – Master Feeding Speed Adjustment

DIPSW101 No.1 to 4 – Paper Registration Position Adjustment

DIPSW101 No.5 to 8 – Master Writing Position Adjustment

DIPSW102 No.1 to 3 – Thermal Head Energy Control

DIPSW103 No.1 to 4 – Scanning Speed Adjustment

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.

SP6-42: Image Adjustment Pattern Print

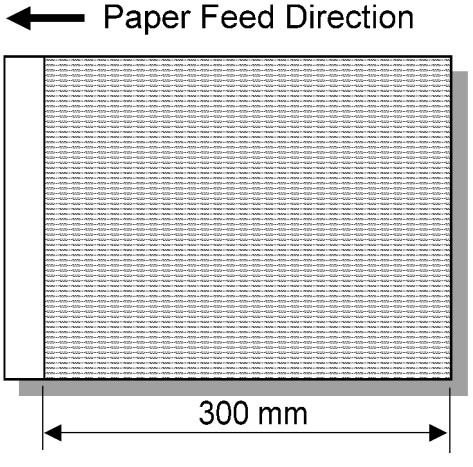
This test pattern is used for master feeding speed adjustment.

- Master Feeding Speed Adjustment: (☛ DIPSW103 No.5 to 8 – Master Feeding Speed Adjustment)

This test pattern is generated in the MPU, and does not use the scanner unit. So, this pattern can also be used to determine whether an image problem is caused by the scanner or the thermal head.

If there is an image problem during copying but the test print is OK, the problem could be in the scanner unit.

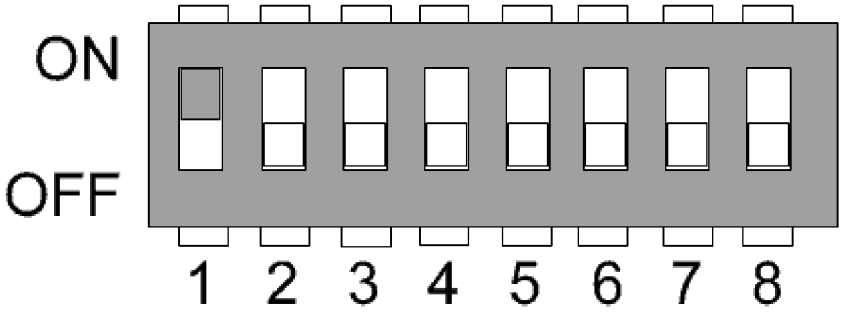
The print paper should be B4 or LG size when using this test pattern.



C274S902.WMF

DIP Switches

Overview



C274S901.WMF

DIPSW No.	Bit No.	Name	Settings
101	1 to 4	Paper Registration Position Adjust	(☛ DIPSW101 No.1 to 4 – Paper Registration Position Adjustment)
	5 to 8	Master Writing Position Adjust	(☛ DIPSW101 No.5 to 8 – Master Writing Position Adjustment)
102	1 to 3	Thermal Head Energy Control	(☛ DIPSW102 No.1 to 3 – Thermal Head Energy Control)
	4	Not used	-
	5	Drum Size Selection	ON: LG OFF: B4
	6	Size in Metric or Inch	ON: inch OFF: mm
	7	Panel Beeper	ON: Enabled OFF: Disabled (Default)
	8	Not used	-

DIPSW No.	Bit No.	Name	Settings
103	1 to 4	Scanning Speed Adjustment	(☛ DIPSW103 No.1 to 4 – Scanning Speed Adjustment)
	5 to 8	Master Feeding Speed Adjustment	(☛ DIPSW103 No.5 to 8 – Master Feeding Speed Adjustment)

DIPSW103 No.5 to 8 – Master Feeding Speed Adjustment

Purpose: To adjust the sub-scan magnification for the master by changing the speed of the master feed motor.

Inputting a positive value stretches the image on the master. Inputting a negative value shrinks it.

Adjust standard: 300 ± 0.5 mm

1. Access SP6-42 (Image Adjustment Pattern Print), and then press the master making key. (☛ SP6-42: Image Adjustment Pattern Print)
2. Exit the SP mode, print 5 copies at 90 cpm (speed "Fast"). Use the 5th print for the adjustment.
3. The black area should be 300 ± 0.5 mm in length.
4. If it is out of the standard, then adjust DIPSW103-5 to 103-8. {(300 – Value) / 300} x 100 = ± X.X %

DIPSW103-5	DIPSW103-6	DIPSW103-7	DIPSW103-8	difference
ON	ON	ON	ON	+1.4%
OFF	ON	ON	ON	+1.2%
ON	OFF	ON	ON	+1.0%
OFF	OFF	ON	ON	+0.8%
ON	ON	OFF	ON	+0.6%
OFF	ON	OFF	ON	+0.4%
ON	OFF	OFF	ON	+0.2%
OFF	OFF	OFF	ON	0
OFF	OFF	OFF	OFF	0
ON	ON	ON	OFF	-1.4%

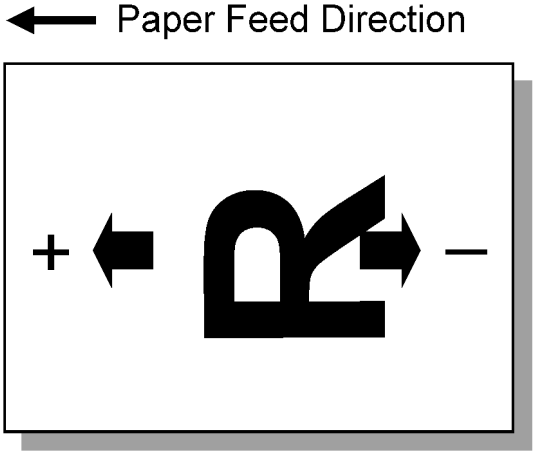
DIPSW103-5	DIPSW103-6	DIPSW103-7	DIPSW103-8	difference
OFF	ON	ON	OFF	-1.2%
ON	OFF	ON	OFF	-1.0%
OFF	OFF	ON	OFF	-0.8%
ON	ON	OFF	OFF	-0.6%
OFF	ON	OFF	OFF	-0.4%
ON	OFF	OFF	OFF	-0.2%

DIPSW101 No.1 to 4 – Paper Registration Position Adjustment

Purpose: To match the printing leading edge on the print paper with that on the original.

Adjustment standard: ±1.0 mm

The print position moves as shown below.



C274S903.WMF

Note

- The image position on a trial print, which is automatically made after making a master, tends to vary. Do not use the trial print when making adjustments.

DIPSW101-1	DIPSW101-2	DIPSW101-3	DIPSW101-4	Difference	Difference
ON	ON	ON	ON	+7 pulse	+3.563 mm
OFF	ON	ON	ON	+6 pulse	+3.054 mm

DIPSW101-1	DIPSW101-2	DIPSW101-3	DIPSW101-4	Difference	Difference
ON	OFF	ON	ON	+5 pulse	+2.545 mm
OFF	OFF	ON	ON	+4 pulse	+2.036 mm
ON	ON	OFF	ON	+3 pulse	+1.527 mm
OFF	ON	OFF	ON	+2 pulse	+1.018 mm
ON	OFF	OFF	ON	+1 pulse	+0.509 mm
OFF	OFF	OFF	ON	0	0
OFF	OFF	OFF	OFF	0	0
ON	ON	ON	OFF	-7 pulse	-3.563 mm
OFF	ON	ON	OFF	-6 pulse	-3.054 mm
ON	OFF	ON	OFF	-5 pulse	-2.545 mm
OFF	OFF	ON	OFF	-4 pulse	-2.036 mm
ON	ON	OFF	OFF	-3 pulse	-1.527 mm
OFF	ON	OFF	OFF	-2 pulse	-1.018 mm
ON	OFF	OFF	OFF	-1 pulse	-0.509 mm

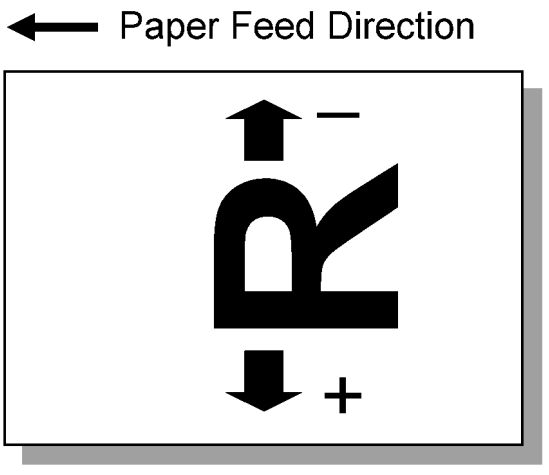
1 pulse = 0.509 mm

DIPSW101 No.5 to 8 – Master Writing Position Adjustment

Purpose: To match the printing side-to-side on the print paper with that on the original.

Adjustment standard: ±1.0 mm

The master writing position moves as shown below.



C274S904.WMF

Note

- The image position on a trial print, which is automatically made after making a master, tends to vary. Do not use the trial print when making adjustments.

DIPSW101-5	DIPSW101-6	DIPSW101-7	DIPSW101-8	Difference	Difference
ON	ON	ON	ON	-14dot	-1.185mm
OFF	ON	ON	ON	-12dot	-1.016mm
ON	OFF	ON	ON	-10dot	-0.847mm
OFF	OFF	ON	ON	-8dot	-0.677mm
ON	ON	OFF	ON	-6dot	-0.508mm
OFF	ON	OFF	ON	-4dot	-0.339mm
ON	OFF	OFF	ON	-2dot	-0.169mm
OFF	OFF	OFF	ON	0	0
OFF	OFF	OFF	OFF	0	0
ON	ON	ON	OFF	+14dot	+1.185mm
OFF	ON	ON	OFF	+12dot	+1.016mm
ON	OFF	ON	OFF	+10dot	+0.847mm
OFF	OFF	ON	OFF	+8dot	+0.677mm

DIPSW101-5	DIPSW101-6	DIPSW101-7	DIPSW101-8	Difference	Difference
ON	ON	OFF	OFF	+6dot	+0.508mm
OFF	ON	OFF	OFF	+4dot	+0.339mm
ON	OFF	OFF	OFF	+2dot	+0.169mm

1 dot = 0.085 mm

DIPSW102 No.1 to 3 – Thermal Head Energy Control

The default is -7%. This means that during printing mode, the thermal head energy is 93 % of the maximum power.

This can help to increase or decrease the image density. However, do not use this SP under normal circumstances.

DIPSW102-1	DIPSW102-2	DIPSW102-3	Settings
OFF	OFF	OFF	-7% (Standard)
OFF	ON	OFF	-5%
OFF	OFF	ON	-3%
OFF	ON	ON	0
ON	OFF	OFF	-10%
ON	ON	OFF	-15%
ON	OFF	ON	-20%

DIPSW103 No.1 to 4 – Scanning Speed Adjustment

Purpose: To adjust the sub-scan magnification for scanning by changing the speed of the scanner motor.

Inputting a positive value stretches the image on the master. Inputting a negative value shrinks it.

Adjustment standard: Within 100 ± 0.5 %

1. Make a copy at 90 cpm (speed "Fast")
2. Compare the image on the print with that on the original.
3. Make sure that the difference of the sub-scan magnification is within the standard.
4. If it is out of standard, then adjust DIPSW103-1 to 103-4.

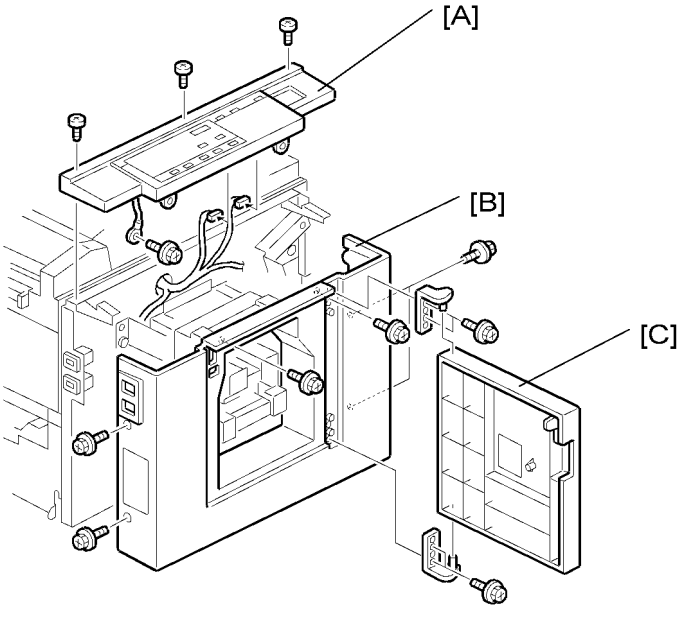
Note

- The image position on a trial print, which is automatically made after making a master, tends to vary. Do not use the trial print when making adjustments.

DIPSW103-1	DIPSW103-2	DIPSW103-3	DIPSW103-4	Difference
ON	ON	ON	ON	+1.4%
OFF	ON	ON	ON	+1.2%
ON	OFF	ON	ON	+1.0%
OFF	OFF	ON	ON	+0.8%
ON	ON	OFF	ON	+0.6%
OFF	ON	OFF	ON	+0.4%
ON	OFF	OFF	ON	+0.2%
OFF	OFF	OFF	ON	0
OFF	OFF	OFF	OFF	0
ON	ON	ON	OFF	-1.4%
OFF	ON	ON	OFF	-1.2%
ON	OFF	ON	OFF	-1.0%
OFF	OFF	ON	OFF	-0.8%
ON	ON	OFF	OFF	-0.6%
ON	OFF	OFF	OFF	-0.4%
OFF	ON	OFF	OFF	-0.2%

Covers and Boards

Front Cover, Operation Panel



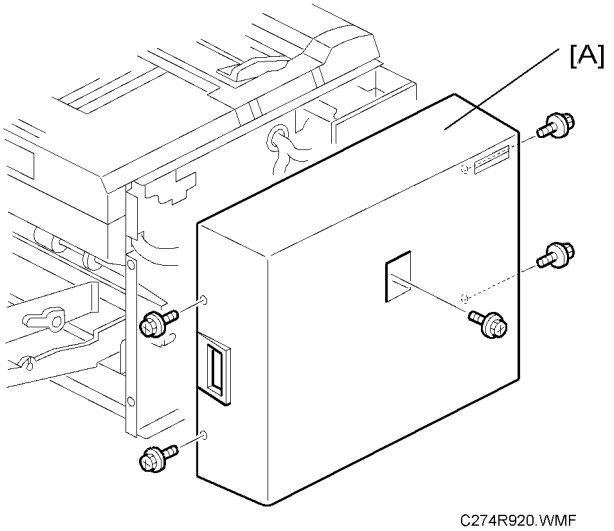
C274R001.WMF

[A]: Panel (x 4, x 2)

[B]: Front cover (x 6)

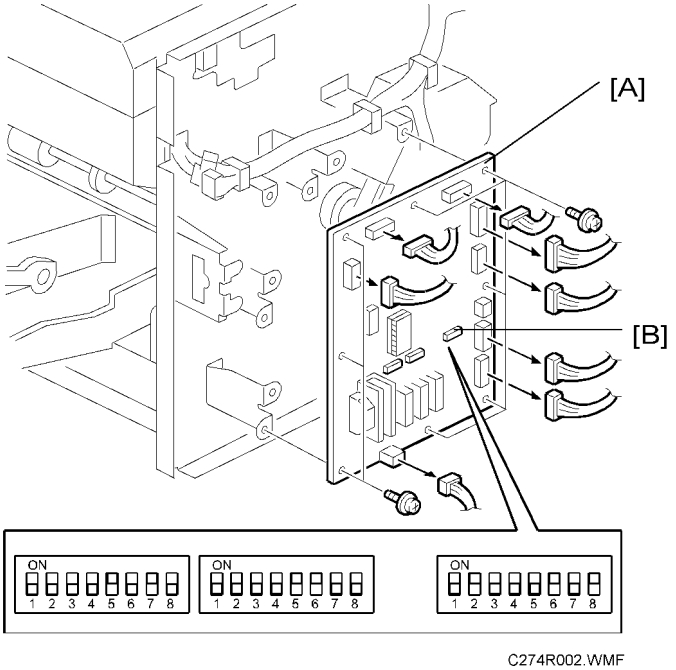
[C]: Front door (x 4)

Rear Cover



[A]: Rear cover (x 5)

MPU



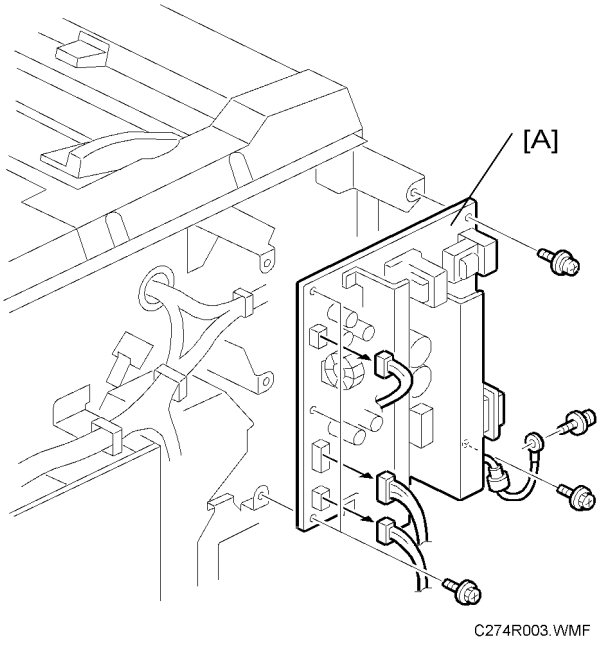
- Remove the rear cover (☛ Rear Cover)

[A]: MPU (x 8, x 8)

Note

- Check the dip switch settings on the old MPU and make the dip switch settings [B] the same on the new MPU.
- Adjust the master end sensor after installing the new MPU. (☛ Master Feed - Master End Sensor Adjustment)
- Adjust the ink detection after installing the new MPU. (☛ Drum - Ink Detection Adjustment)
- Ensure that the EPROM on the MPU contains the correct firmware.

PSU



- Remove the rear cover (☛Covers / Boards - Rear Cover)

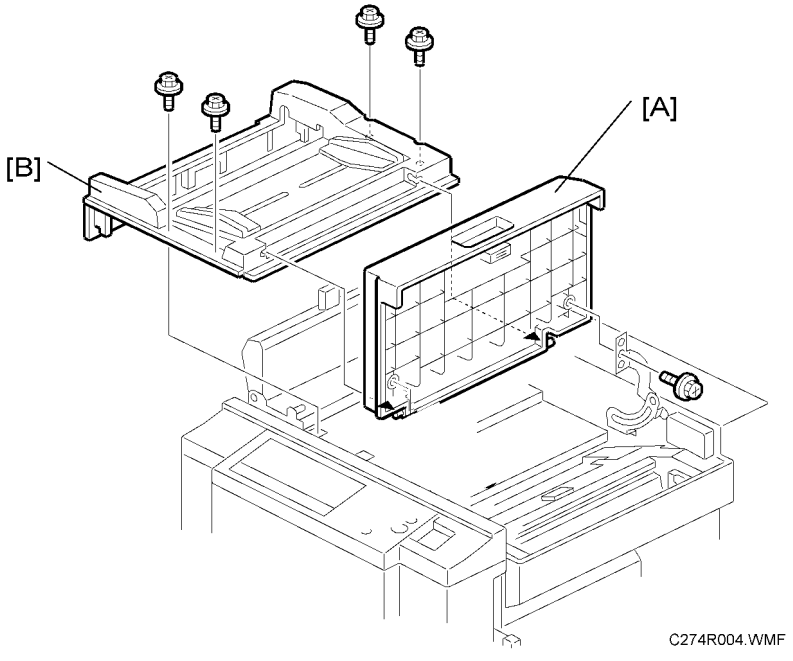
[A]: PSU (x 6, x 3)

Note

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

Scanner

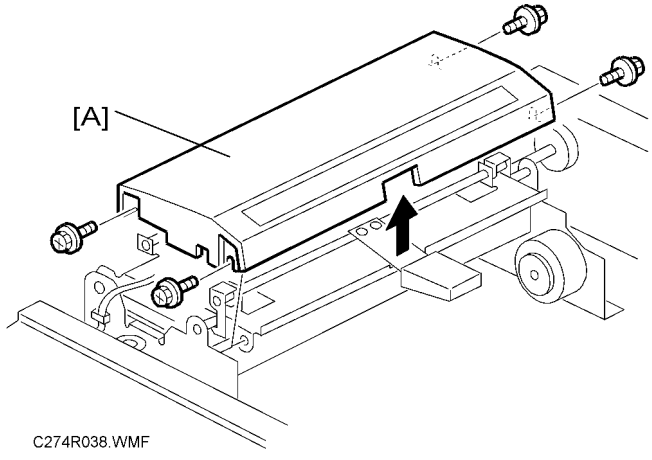
Covers

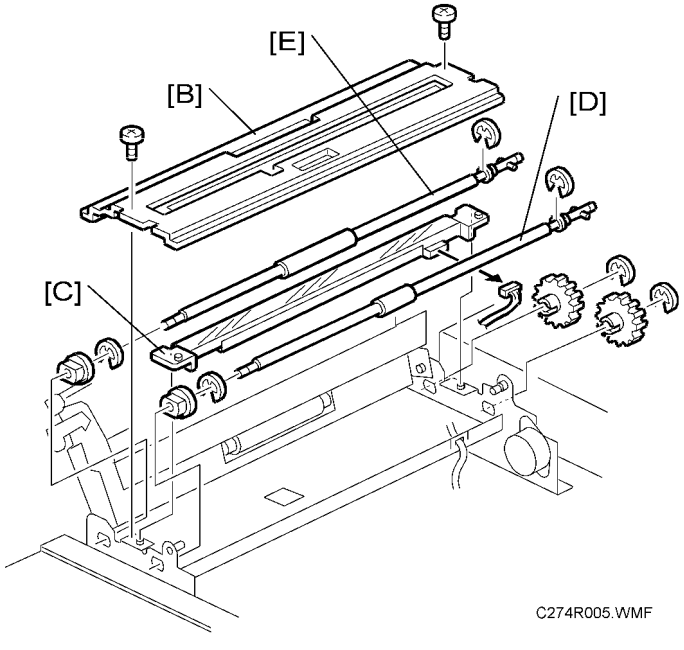


[A]: Right side cover (🔩 x 1)

[B]: Scanner cover (🔩 x 4)

1st and 2nd Feed Rollers, CIS (Contact Image Sensor)





[A]: Upper cover (x 4)

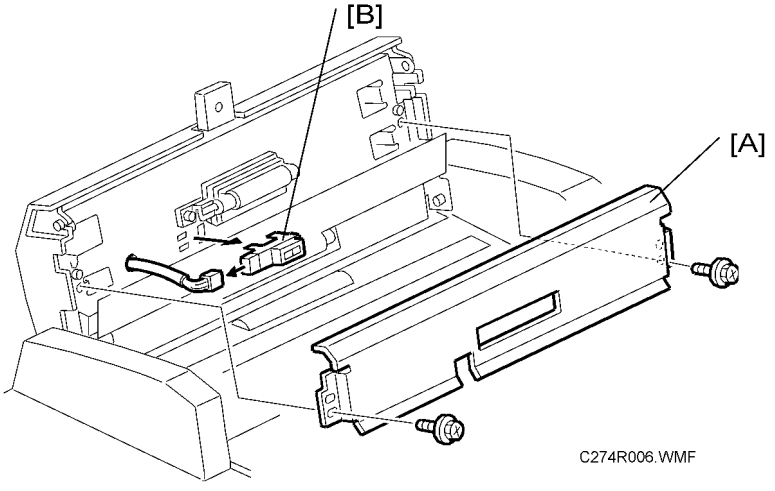
[B]: Guide plate (x 2)

[C]: CIS (x 1)

[D]: 1st feed roller (x 3)

[E]: 2nd feed roller (x 3)

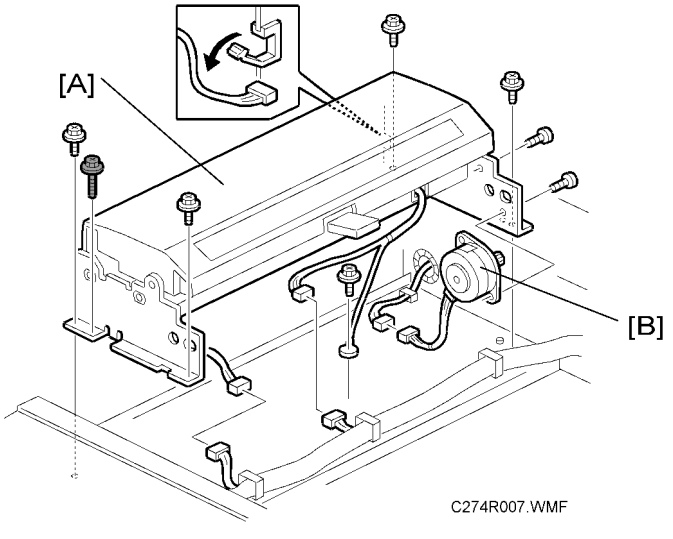
Document Sensor



[A]: Upper guide plate (x 2)

[B]: Document sensor (x 1)

Scanner Motor

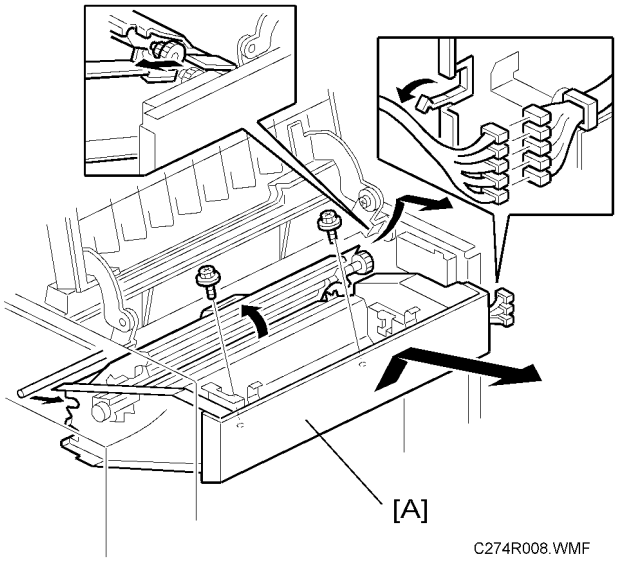


[A]: Scanner unit (x 5, x 3)

[B]: Scanner motor (x 2)

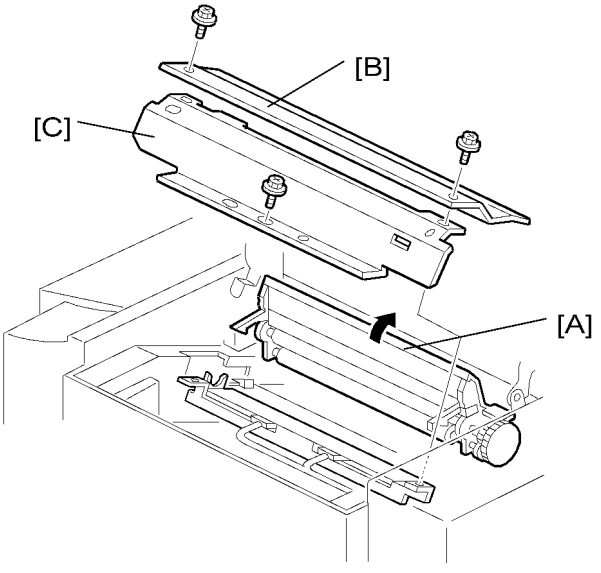
Master Feed

Master Making Unit



[A]: Master making unit (x 2, x 5)

Thermal Head



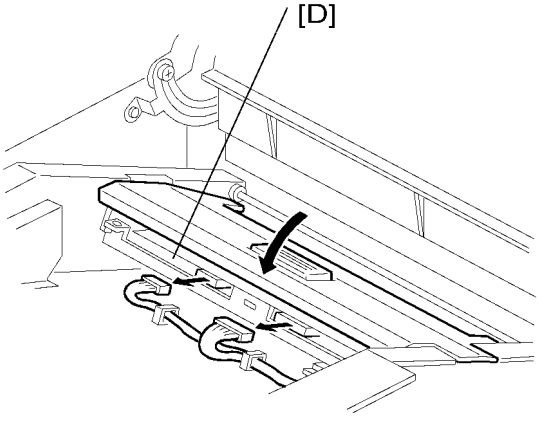
C274R009.WMF

- Master making unit (☛ Master Making Unit)

[A]: Open the platen roller unit.

[B]: Thermal head upper cover (🔩 x 2)

[C]: Thermal head side cover (🔩 x 1)

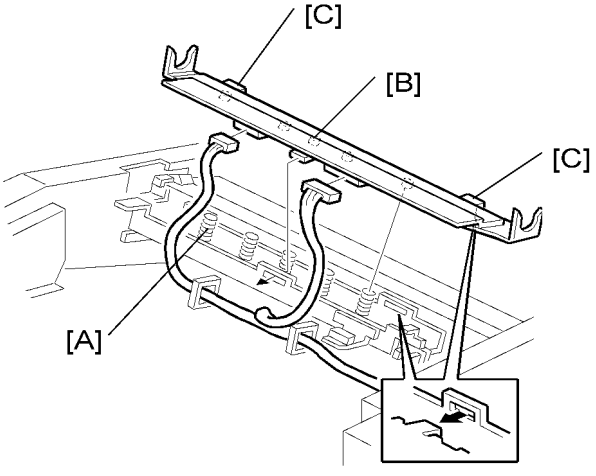


C274R010.WMF

- Close the platen roller unit.

[D]: Thermal head (✋ x 2)

Installation



C274R011.WMF

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

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

Note

- Adjust the thermal head voltage after installing the new thermal head. (☛ Thermal Head Voltage Adjustment)
- Don't touch the surface with bare hands. (If you touch it, clean the surface with alcohol.)
- Don't touch the terminals of the connectors with bare hands.

Thermal Head Voltage Adjustment

⚠CAUTION

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

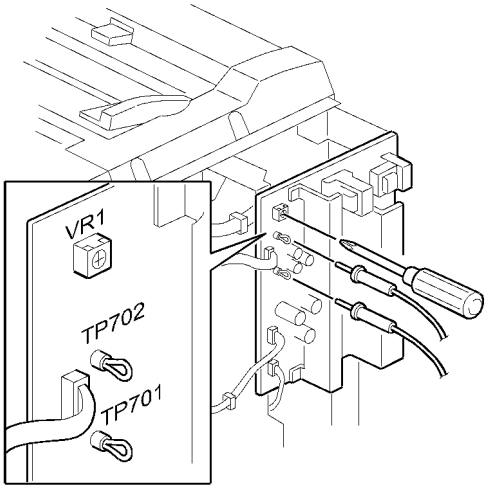
Purpose: To maintain master making quality and extend the lifetime of the thermal head.

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

- Remove the rear cover (☛ Covers / Boards - Rear Cover)
- Read the voltage value on the decal on the thermal head.



C274R012.WMF

1. Connect the positive terminal of a circuit tester to TP701 and the negative terminal to TP702 on the PSU.

   ⚠CAUTION

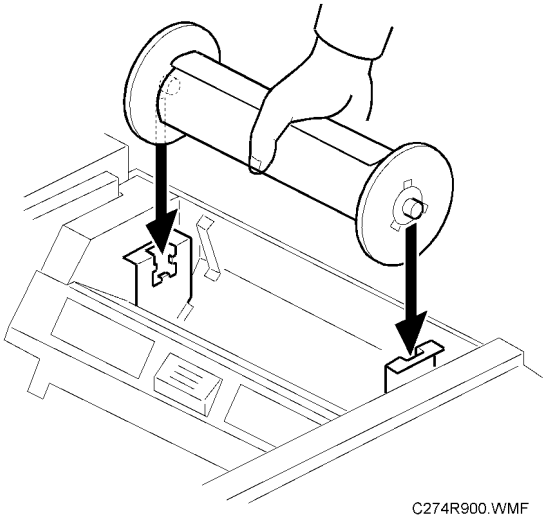
   - If the output and ground terminals touch each other, the board will be damaged.
2. Connect the power plug, and turn on the main switch to access SP mode.
3. Select SP2-41 (Thermal head signal output).
4. Press the # key. Power is continuously supplied to the thermal head, which could damage the thermal head, so press the clear/stop key if you cannot finish the adjustment quickly.
5. Measure the voltage, and turn VR1 on the PSU until the value is between "+0" and "-0.1" volts from the value on the thermal head decal.

Master End Sensor Adjustment

Purpose: To ensure that the sensor detects the end mark (a solid black area) on the master roll.

Standard: 2.0 ± 0.1 volts

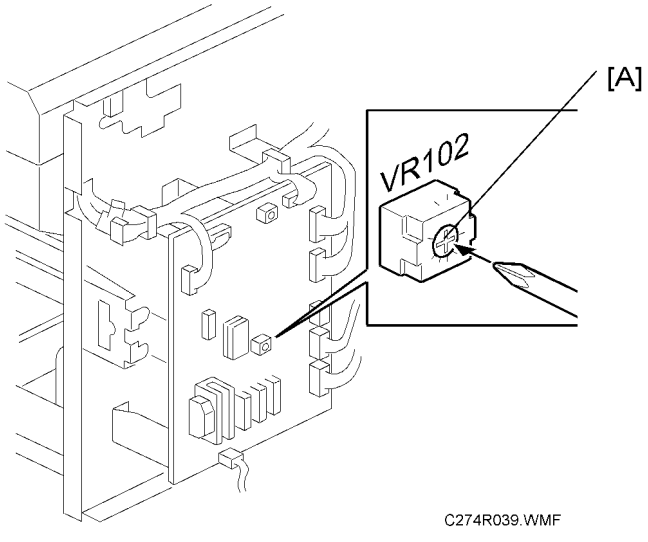
Tools: The core of a used master roll (the core just before a master end display appears)



C274R900.WMF

- Remove the rear cover (☛ Covers / Boards - Rear Cover)

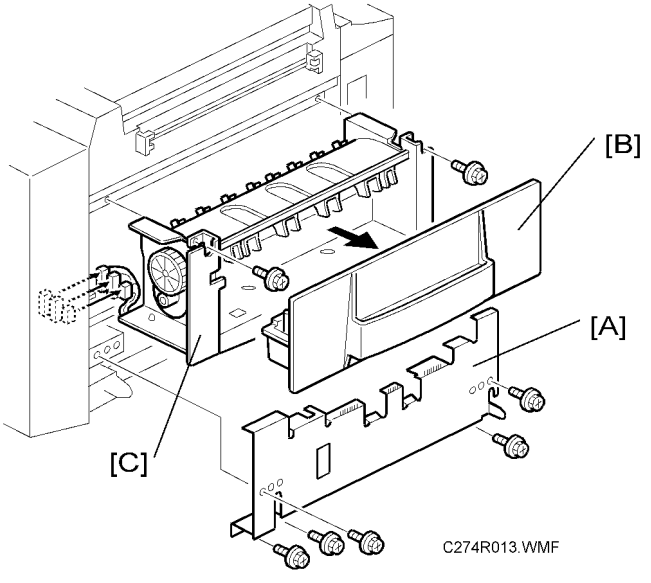
1. Place the core inside the master making unit, and close the master making cover.
2. Connect the power plug, and turn on the main switch.
3. Access SP6-41
4. Turn VR102 [A] on the MPU board until the display is 2.0 ± 0.1 volts.



C274R039.WMF

Master Eject

Master Eject Unit

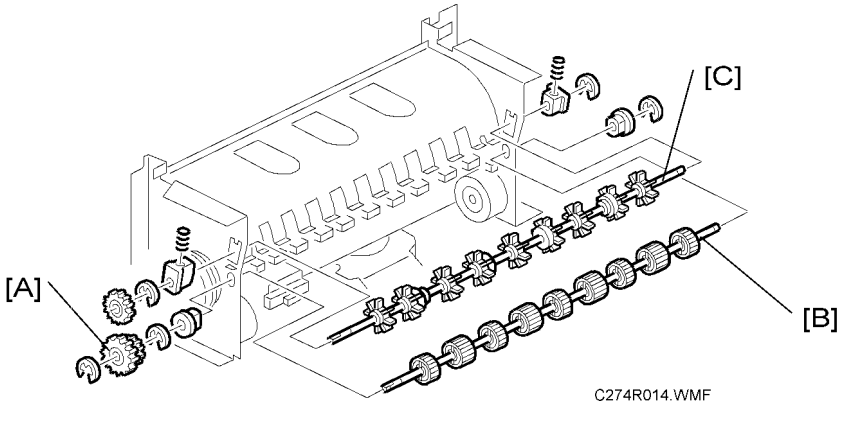


[A]: Paper delivery cover (x 5)

[B]: Master eject box

[C]: Master eject unit (x 2, x 3)

Master Eject Rollers



- Master eject unit (☛ Master Eject Unit)

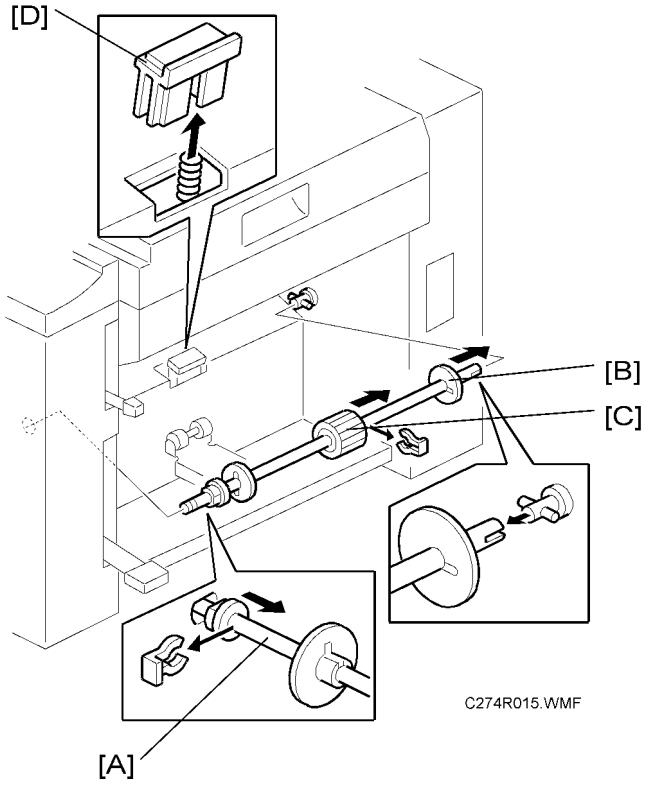
- [A]: Gears (€ x 1)

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

[C]: Upper master eject roller (€ x 2, spring)

Paper Feed

Paper Feed Roller / Friction Pad



[A]: Paper feed roller unit (x 1)

[B]: Paper guide

[C]: Paper feed roller (x 1)

[D]: Friction pad

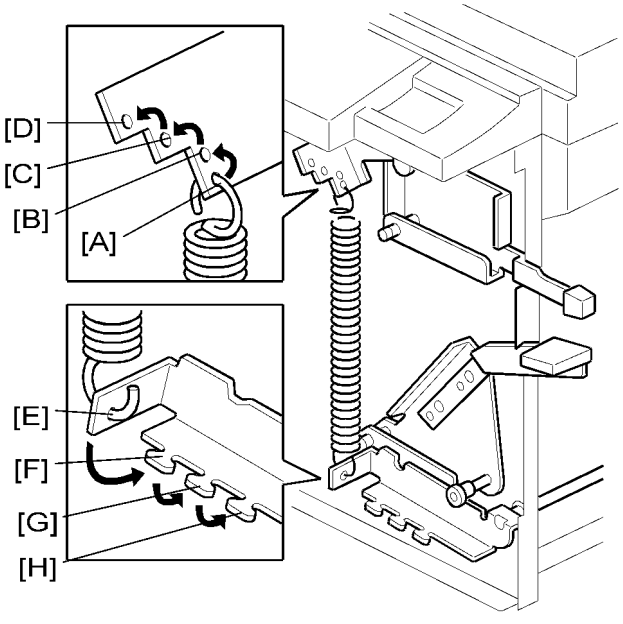
Paper Feed Pressure Adjustment

The position of the spring can be changed in order to change the amount of pressure exerted by the paper tray adjustment plate.

This adjustment can be done:

- When feeding special paper (especially thick paper and thin paper)

- When the customer is experiencing feed problems.



C274R016.WMF

- Front cover (☛ Covers / Boards – Front Cover, Operation Panel)

Increase the feed pressure: [A] → [B] → [C] → [D]

Decrease the feed pressure: [E] → [F] → [G] → [H]

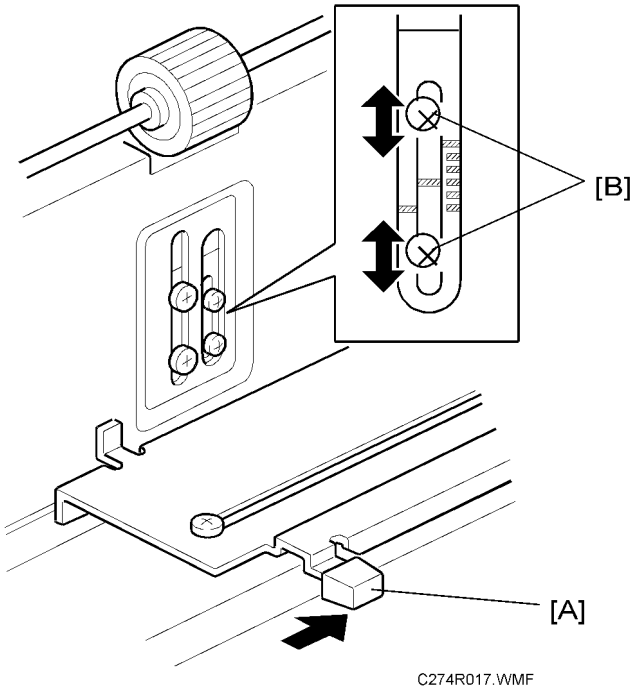
Default position: [A] and [E] positions

Paper Separation Pressure Adjustment

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

This adjustment can be done:

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



C274R017.WMF

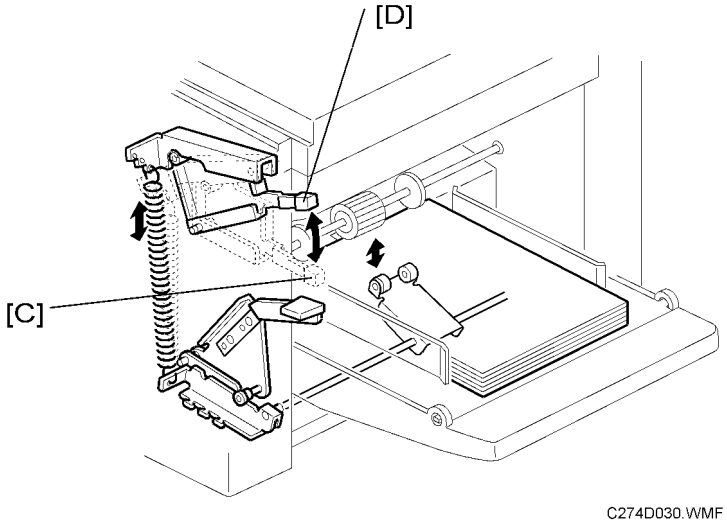
- Remove the paper table
- Move the separation pressure slider [A] to position 1 (right end).

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

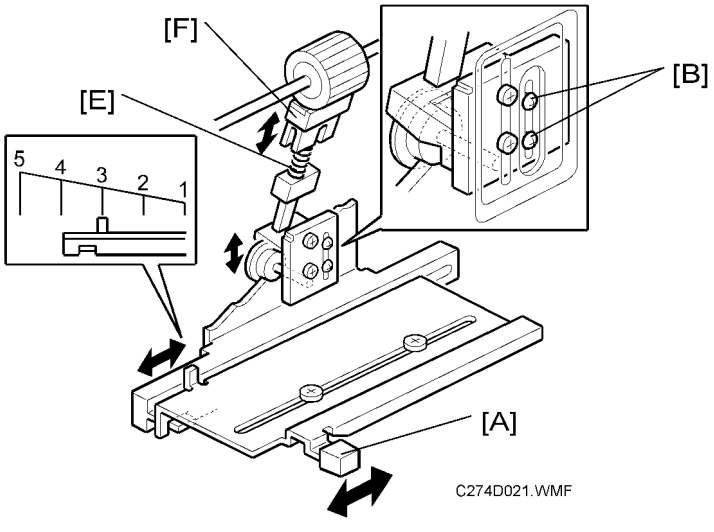
Decrease the paper separation pressure: Move down the screws [B]

Default position: lowest position

Adjustment Procedure



C274D030.WMF



C274D021.WMF

[C]: Standard position (35 to 81.5 g/m^2, 9.3 to 21.6 lb.)

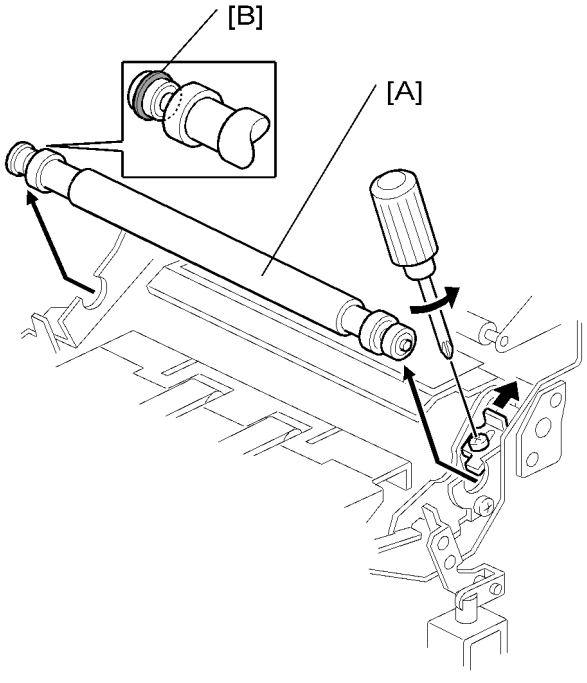
[D]: Thick paper position (81.6 to 127.9 g/m^2, 21.7 to 34.0 lb.)

- The user can change the feed roller pressure by changing the position of the pressure adjustment lever [C].
- If paper feed jams frequently occur, the lever should be moved to adjust the pressure.
- If non-feed or multi-sheet feed problems still occur, the paper separation pressure can also be adjusted using the separation pressure slider [A].
- The default position of the slider [A] is position 3.
- By loosening then moving the screws [B] up or down, the spring [E], which applies pressure to the friction pad block [F], moves up or down.

- The default position of the screw [B] is at the lowest position.

Printing

Press Roller



C274R018.WMF

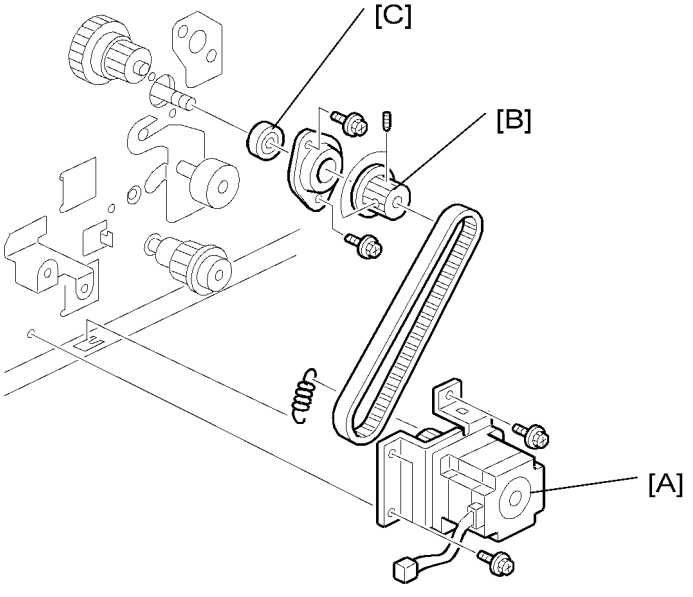
⚠CAUTION

- 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.

Paper Registration Roller



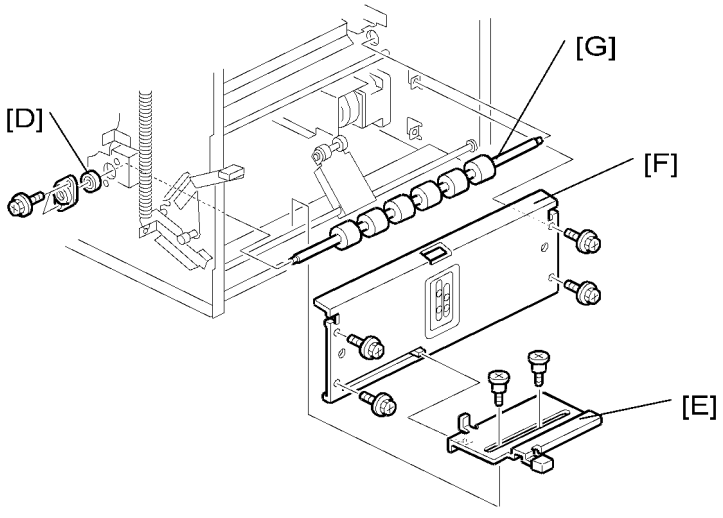
C274R020.WMF

- Remove the paper table
- Front cover (☛ Cover / Boards - Front Cover, Operation Panel)
- Rear cover (☛ Cover / Boards - Rear Cover)
- MPU (☛ Cover / Boards - MPU)

[A]: Registration motor (spring, 🔩 x 3, belt)

[B]: Gear

[C]: Bearing (🔩 x 2)



[D]: Bearing (x 2)

[E]: Slider bracket (x 2)

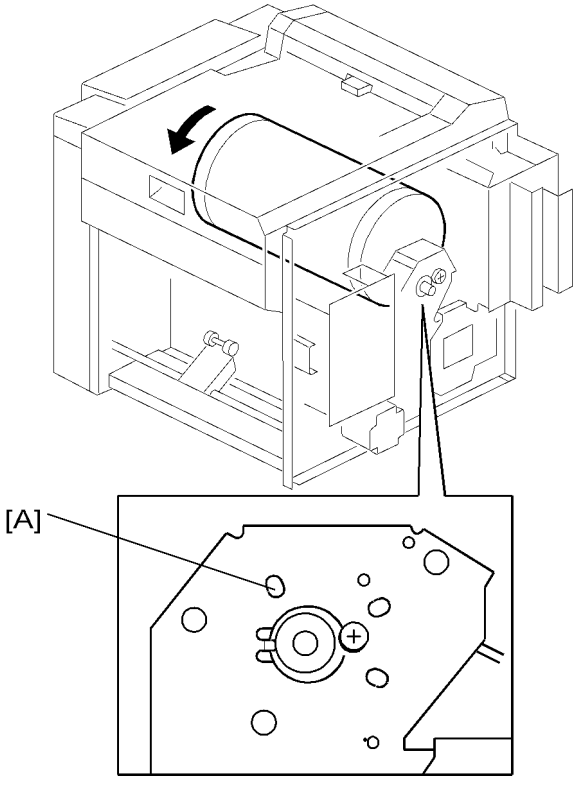
[F]: Plate (x 4)

[G]: Registration roller

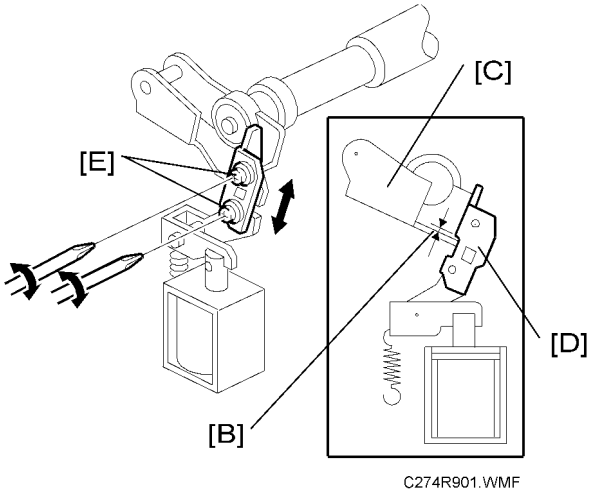
Press Roller Release Lever Adjustment

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



C274R022.WMF



C274R901.WMF

Tools: Thickness gauge

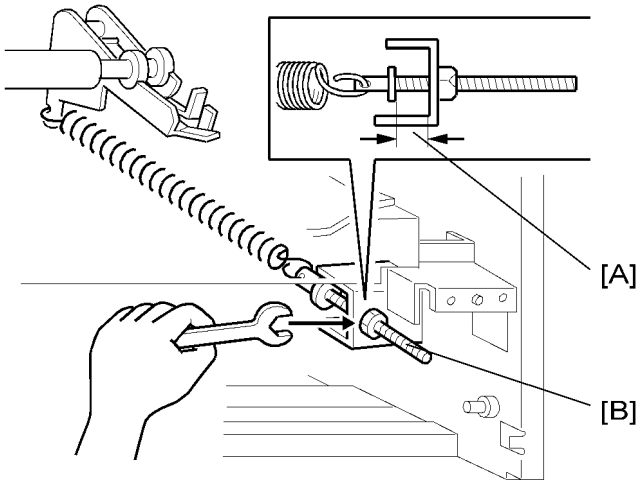
- Front cover (☛ Cover / Boards - Front Cover, Operation Panel)
- Rear cover (☛ Cover / Boards - Rear Cover)

1. Turn the drum manually until the drum master clamper on the drum moves into the lowest position. (This is when the high points of the cams on the drum flanges meet with the cam followers on both ends of the press roller.)
    - To find out the correct position of the drum for the adjustment, look at the rear end of the drum shaft. The recess on the drum drive gear meets the hole [A] in the bracket when the drum is in the correct position.
2. Using a thickness gauge, measure the clearance [B] between the press roller arm [C] and the press roller lock lever [D] (rear side). It should be between 0.7 and 1.2 mm
3. If it is not correct, adjust the position of the press roller lock lever after loosening the two screws [E].
4. Repeat steps 2 and 3 for the front side.

Printing Pressure Adjustment

Purpose: To make better print results without decreasing the run length.

Standard: Within 10 ± 0.5 mm



C274R023.WMF

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

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

Drum

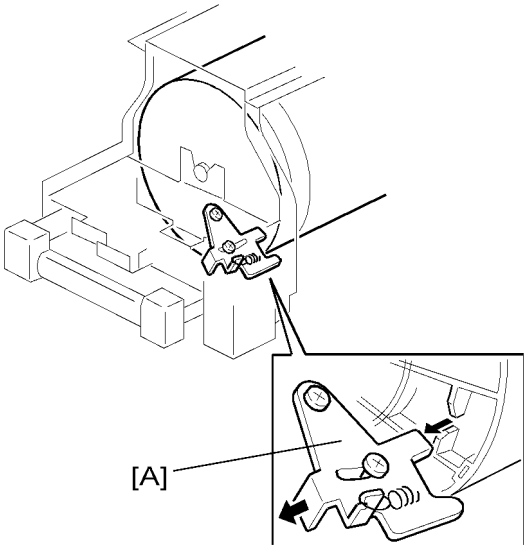
Preparation

Before attempting any of the procedures in this section, wipe off the ink around the ink roller. To do this, set SP3-6 (ink detection) to off, and feed paper until ink ends. The setting value returns to the default value when power is switched off/on.

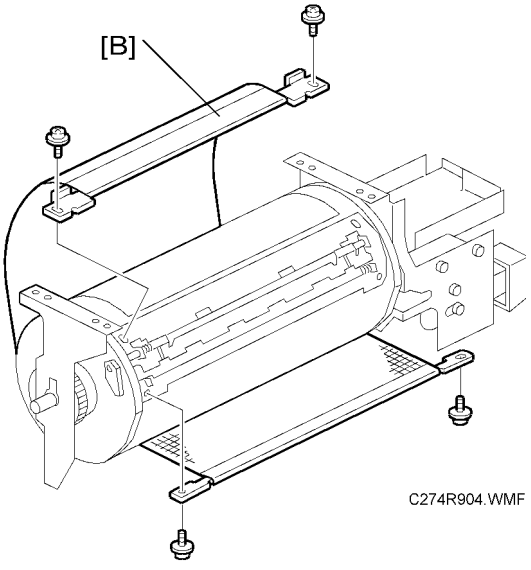
Cloth Screen

- Remove the drum

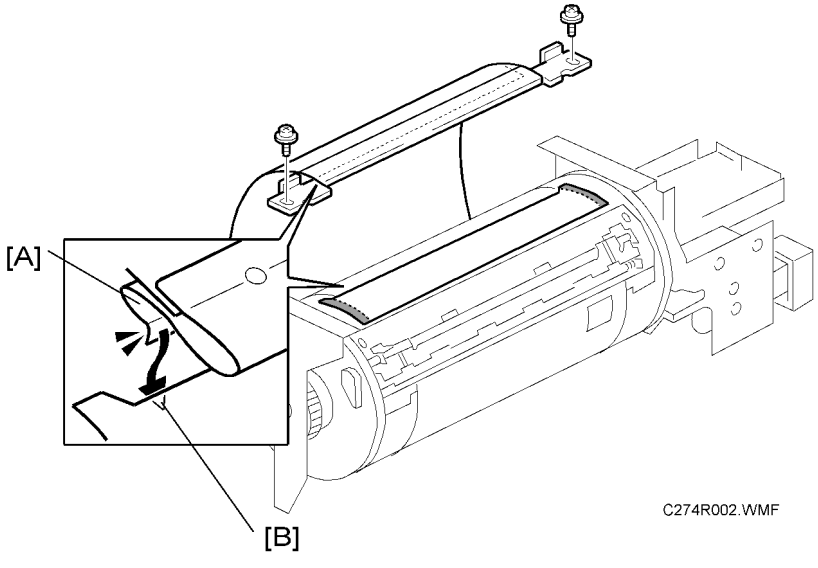
1. Remove the drum upper bracket (x 4).
2. Release the stopper [A], then rotate the drum until the master clamper faces top.
3. Remove the cloth screen [B] (x 4).

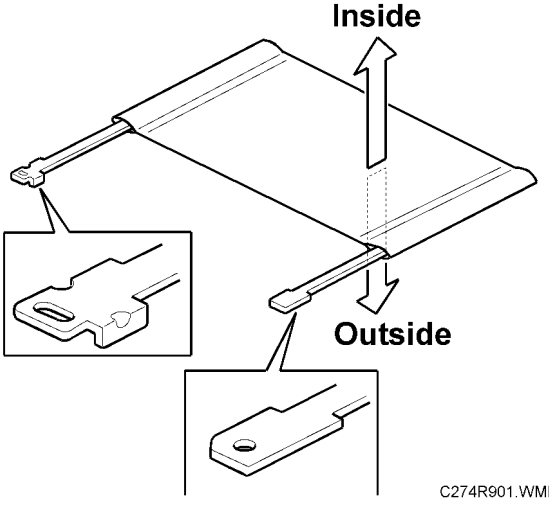


C274R905.WMF

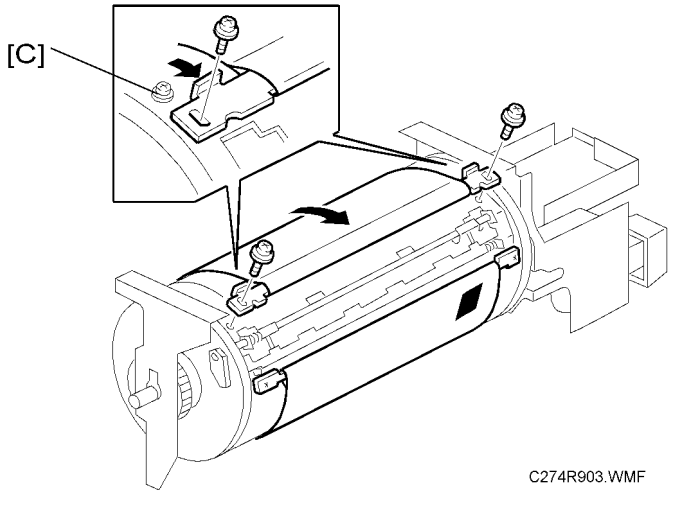


Installation





C274R901.WMF

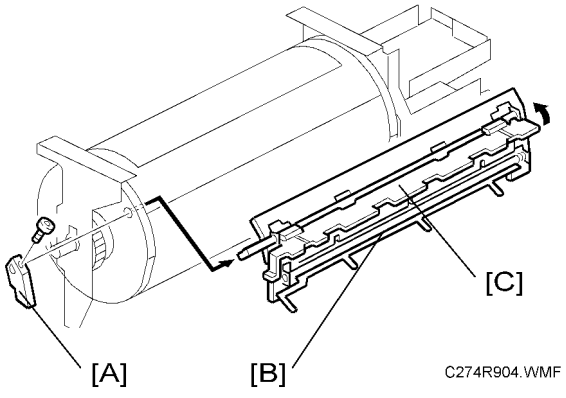


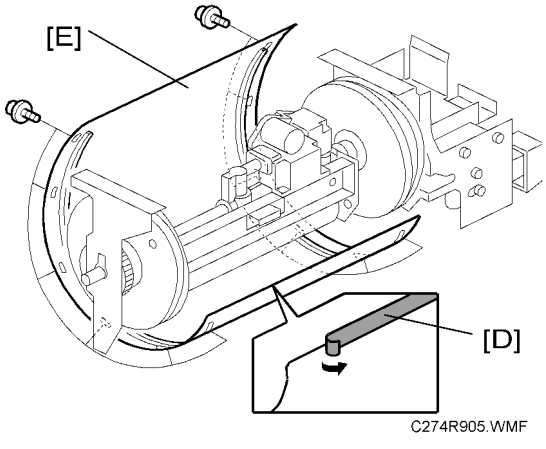
C274R903.WMF

- Do not scratch the cloth screen or metal screen.
- Properly insert the edge of the belt crossing [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 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.

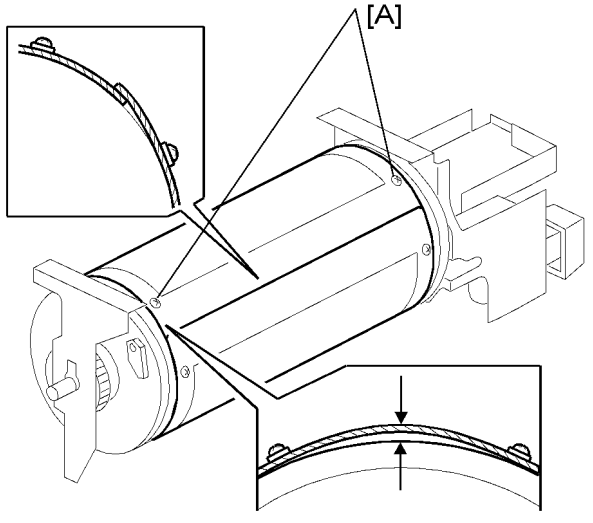
Note

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

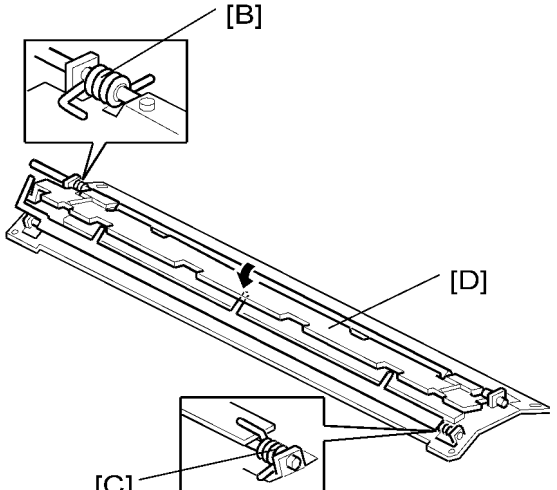
[D]: Tape (do not lose it)

[E]: Metal screen (🔩 x 12)

Installation



C274R906.WMF



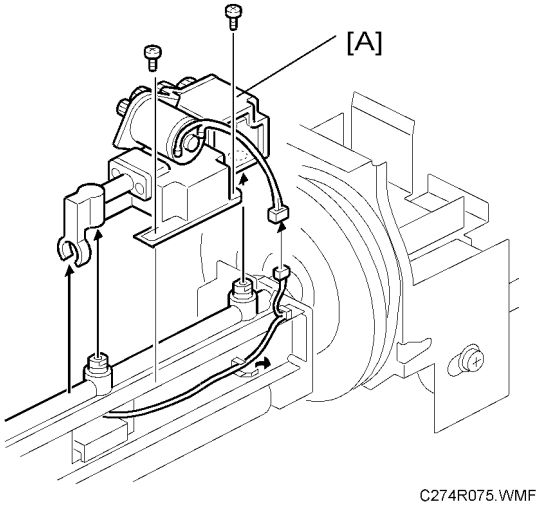
C274R907.WMF

- 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.)
- Secure the metal screen with filament tape.
- 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.)

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

Ink Pump Unit

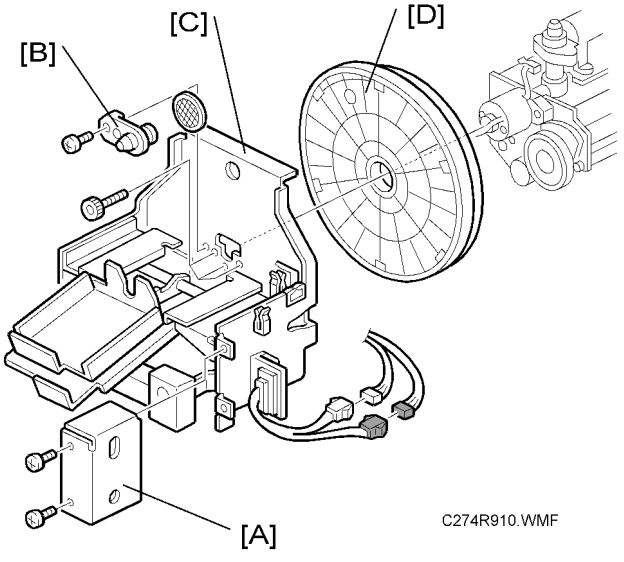


C274R075.WMF

- Remove the drum
- Cloth screen (☛ Cloth Screen)
- Clamper / Metal screen (☛ Clamper / Metal Screen)

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

Ink Roller Unit / Ink Roller One Way Clutch



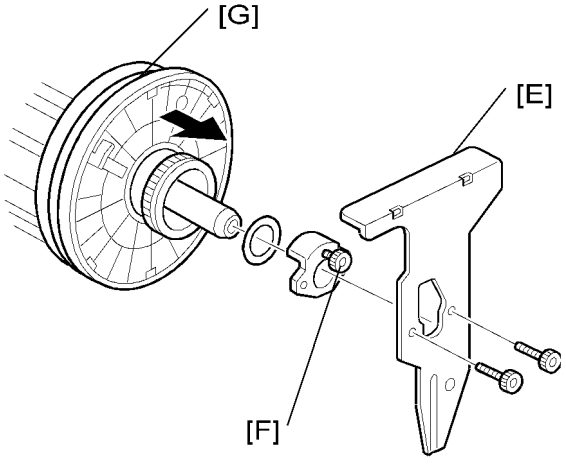
- Wipe off the ink around the ink roller beforehand (use SP3-6).
- Remove the drum
- Cloth screen (☛ Cloth Screen)
- Clamper / Metal screen (☛ Clamper / Metal Screen)

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

[B]: Ink socket (x 1)

[C]: Front drum bracket (x 3)

[D]: Front drum flange

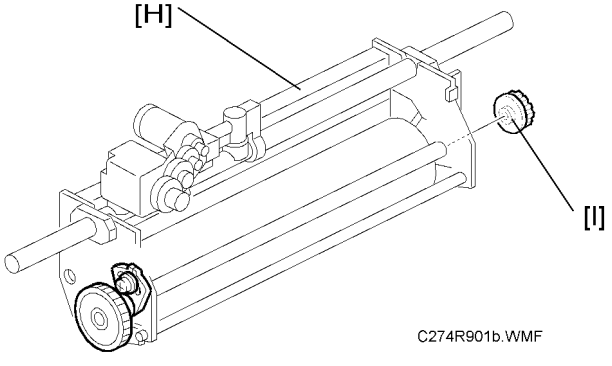


C274R911.WMF

[E]: Drum rear plate (🔩 x 2)

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

[G]: Drum rear flange



C274R901b.WMF

[H]: Ink roller unit

[I]: Ink roller one-way clutch

Doctor Roller Gap Adjustment

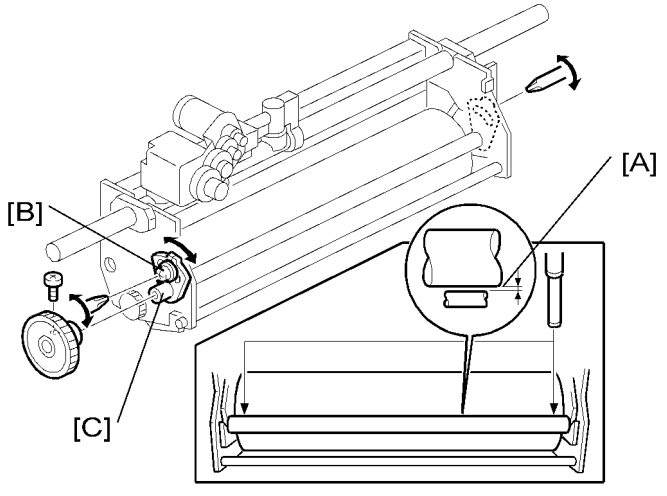
Purpose: To control the ink thickness around the ink roller.

Standard: A 0.07-mm gauge passes, but a 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.



C274R076.WMF

- Wipe off the ink around the ink roller beforehand. (Use SP3-6.)
- Remove the drum
- Remove the Ink roller unit

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

Note

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

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

Note

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

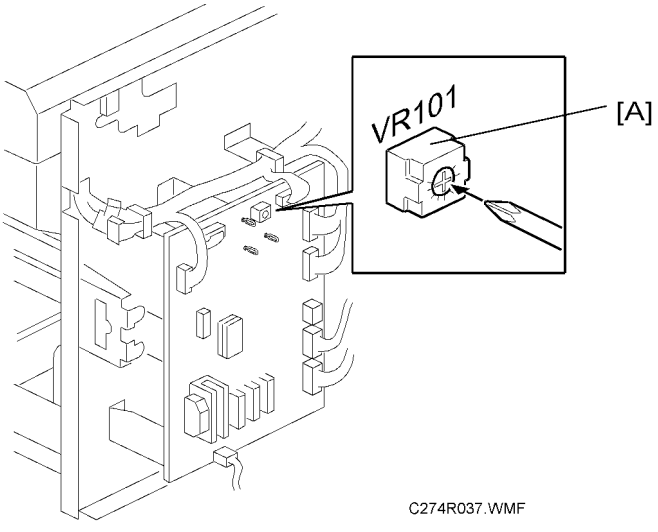
Ink Detection Adjustment

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 SP3-6 (Ink Detection) to OFF, and feed paper until ink ends. The setting value returns to default value if the power is switched off/on.

Standard: 4.0 ± 0.2µs



- Rear cover (☛ Covers / Boards – Rear Cover)

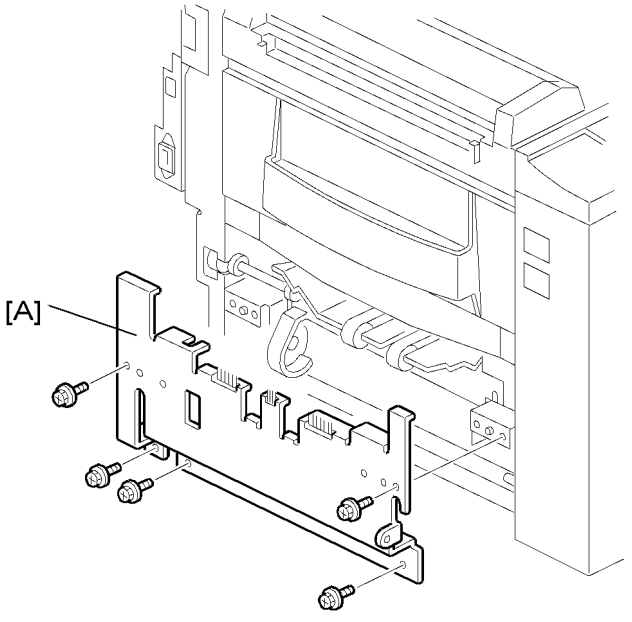
1. Access SP6-40.
2. Turn VR101 [A] on the MPU board until the display is "4.0 ± 0.2µ" (4.0 ± 0.2µs).

Note

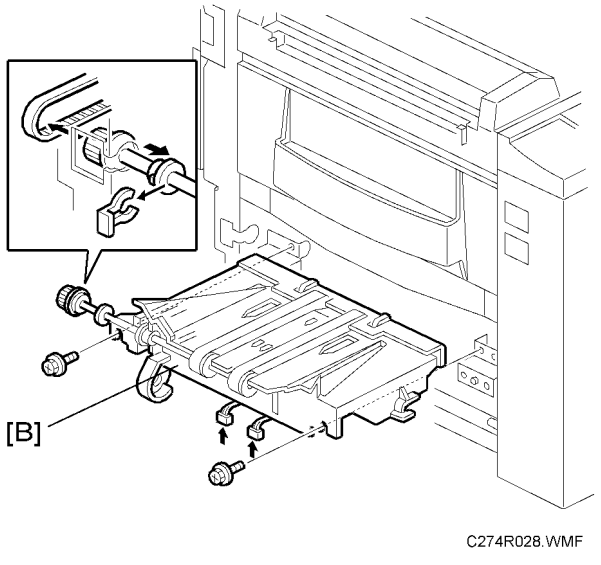
- When the drum has ink inside, the machine displays "----".

Paper Delivery

Paper Delivery Unit



C274R027.WMF



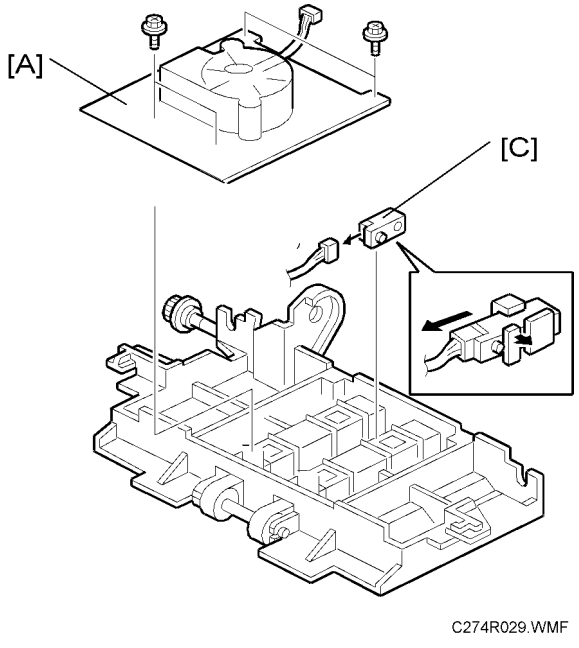
C274R028.WMF

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

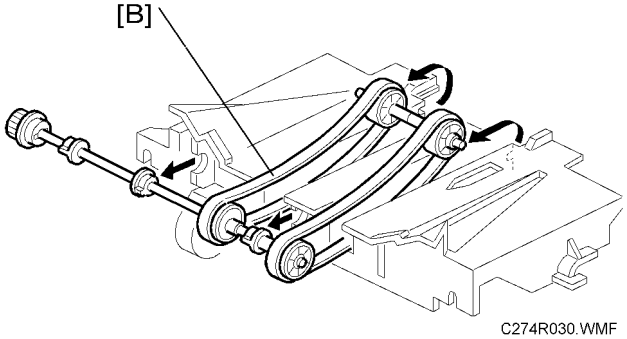
[A]: Paper delivery cover (🔩 x 5)

[B]: Paper delivery unit (x 2, x 2, x 1)

Delivery Belt / Paper Exit Sensor



C274R029.WMF



C274R030.WMF

- Paper delivery unit (☛ Paper Delivery Unit)

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

[B]: Delivery belts

[C]: Paper exit sensor (x 1)

Exit Pawl Adjustment

Purpose: To ensure that the exit pawls can move out of the way of the drum master clamper while the drum is rotating.

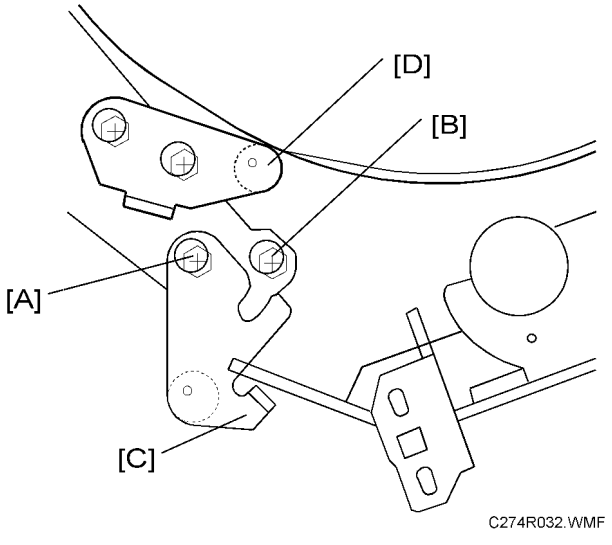
Clearance adjustment

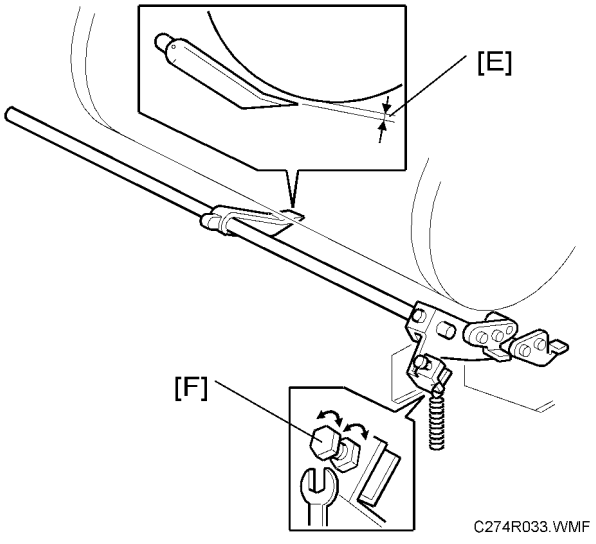
Note

- You must set the drum to home position before you do this adjustment.

Standard: Within 1.15 ± 0.15 mm

- Front cover (☛Covers / Boards - Front Cover, Operation Panel)
- Rear cover (☛Covers / Boards - Rear Cover)

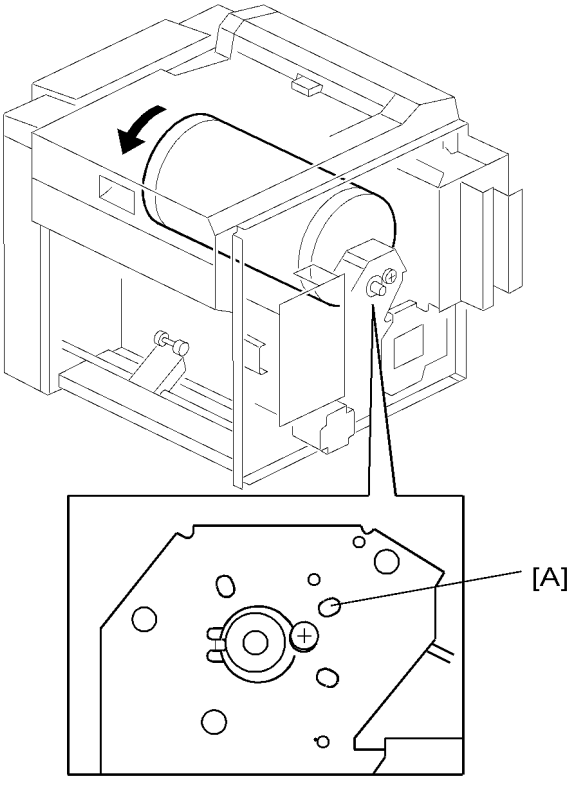




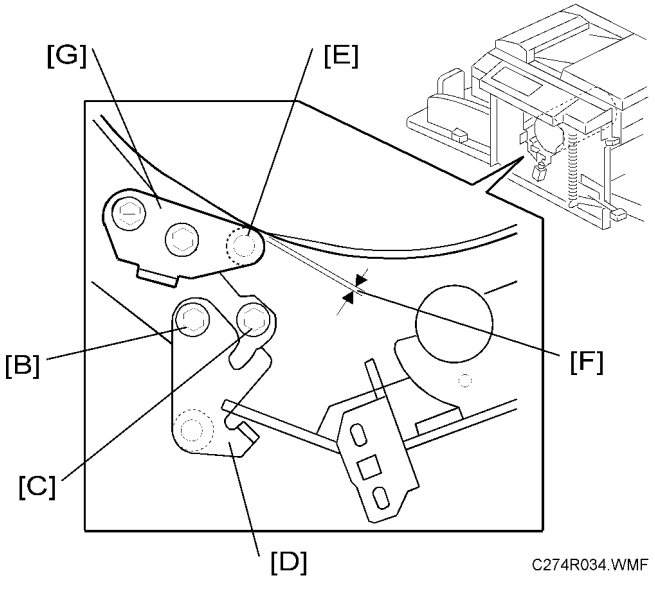
1. Loosen screw [A] then screw [B] in this order (do not remove them). Make sure that the bracket [C] becomes free from engagement and the cam follower [D] contacts the drum flange.
2. Using a gap gauge, measure the clearance [E] between the drum surface and the exit pawls. It should be 1.15 ± 0.15 mm.
3. If the clearance is not correct, adjust the clearance by turning the bolt [F].
4. Reposition the bracket [C] and tighten the screws [A] and [B].
5. Do the timing adjustment (see the next section).

Timing Adjustment

Standard: 0 or less than 0.5 mm



C274R022.WMF



C274R034.WMF

- Front cover (☛ Covers / Boards - Front Cover, Operation Panel)
- Rear cover (☛ Covers / Boards - Rear Cover)

Do this after the clearance adjustment (the procedure is on the next page).

1. Turn the drum manually until the recess in the drum drive gear meets the positioning hole [A] in the bracket, as shown.
2. Loosen screw [B] then screw [C] in that order (do not remove them). Make sure that the bracket [D] becomes free from engagement and the cam follower [E] contacts the drum flange.
3. Measure the gap [F] between the cam follower and cam face (front drum flange). It should be 0 to 0.5 mm.
4. If the gap is not correct, loosen the two screws securing the cam follower bracket [G].
5. Re-tighten the two screws while pushing the cam follower against the cam face. Make sure that the gap [F] is 0 or less than 0.5 mm.

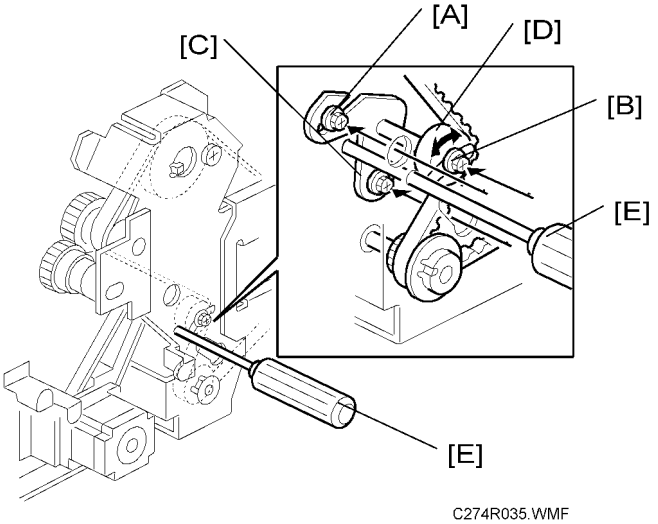
   Note

   - Do not push the cam followers too strongly against the cam.
6. Re-position the bracket [D] and tighten the screws [B] and [C].

Main Drive

Main Drive Timing Belt Adjustment

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



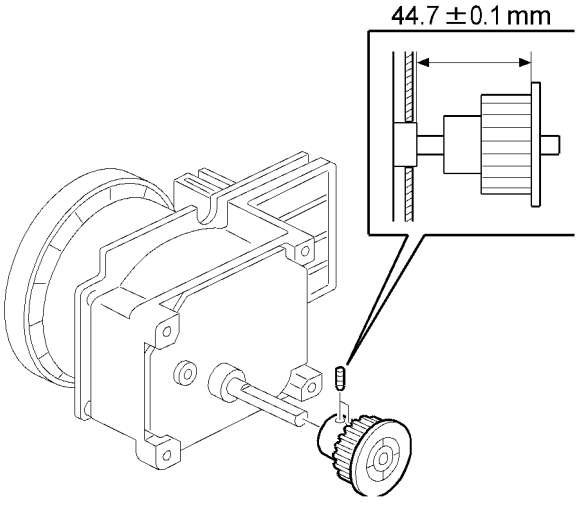
C274R035.WMF

- Rear cover (☛ Covers / Boards - Rear Cover)
- MPU (☛ Covers / Boards - MPU)
- PSU (☛ Covers / Boards - PSU)

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

Main Motor Pulley Position

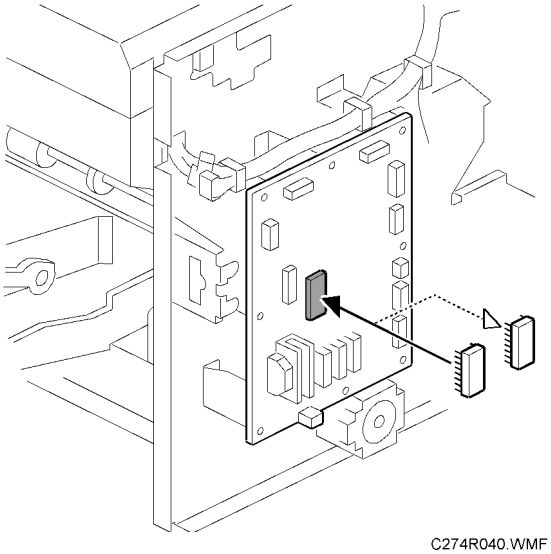
After putting the pulley back on the main motor shaft, refer to the above illustration for the correct position of the pulley.



C274R036.WMF

Firmware Update

The firmware in the EPROM on the MPU can be upgraded replacing the EPROM.



C274R040.WMF

1. Before upgrading the firmware, check the current suffix version with SP3-1.
2. Turn off the main switch and disconnect the power plug.
3. Remove the rear cover.
4. Replace the EPROM on the MPU.
5. Connect the power plug and turn on the main switch.
6. Access SP3-1 and confirm that the suffix version was changed.

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 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.

Entering SP Mode

1. Press the following sequence of keys.
   Clear Modes/Recovery → 1 → 0 → 7 → Clear/Stop
   Or
   Clear Modes/Recovery → Clear/Stop → Combine Key → #
2. Hold the Clear/Stop key down for longer than 3 seconds.
3. The SP number is displayed. (e.g. SP1)

Leaving SP Mode

To exit SP mode, press Clear Modes/Recovery.

Using the SP Mode

SP command numbers can be entered directly.

1. Using the number keys, enter the desired main-menu number, then press the Enter key.
2. Using the number keys, enter the desired sub-menu number, then press the Enter key.
3. Enter the desired value using the number keys.
4. Press the enter key to store the displayed setting.

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 Titanium3

Machine Code: C274

Appendices

March 2009

Subject to change

TABLE OF CONTENTS

1. Appendix: Specifications

General Specifications

Main Frame

Configuration	Desktop
Master Process	Digital with 300 dpi thermal head
Scanning (Pixel Density)	300 dpi
Originals	Sheet
Printing Process	Fully automatic one-drum stencil system
Original Size	Maximum: 275 x 395 mm / 10.8" x 15.6" Minimum: 90 x 140 mm / 3.5" x 5.5"
Original Weight	40.7 – 127.9 g/m^2
Copy Paper Size	Maximum: 275 x 395 mm / 10.8" x 15.6" Minimum: 90 x 140 mm / 3.5" x 5.5"
Copy Paper Weight	35.0 – 127.9 g/m^2 (10 to 30 °C)
Printing Speed	60, 90cpm (2 steps)
Reproduction Rations	Metric (%): 141, 122, 115, 93, 87, 82, 71 Inch (%): 155, 129, 121, 93, 77, 74, 65
Master Eject Box Capacity	30 masters
Paper Capacity	500 sheets (75 g/m^2, 20 lb)
Paper Delivery Tray Capacity	500 sheets (80 g/m^2, 20 lb)
Power Source	North America: 120 V, 60 Hz, 2.0 A Europe/Asia: 220 - 240 V, 50/60 Hz, 1.1 A
Power Consumption	110 - 120V: Less than 175W, Less than 2.9A 220 - 240V: Less than 175W, less than 1.3A

Noise Emission	**Operating Position Sound Power Level:** Standby: Not above 22.5 db Copying 60 rpm: Not above 64 db Copying 90 rpm: Not above 68 db **Sound Power Level:** Standby: Not above 31.2 db Copying 60 rpm: Not above 77 db Copying 90 rpm: Not above 80 db
Dimensions (W x D x H)	Set up: 1332 x 672 x 519 mm (52.5" x 26.4" x 20.5") Stored: 582 x 672 x 519 mm (23.0" x 26.4" x 20.5")
Weight	54 kg (119lb.)

Master Processing Time	Less than 40 seconds (A4⊐, 8½" x 14⊐)
First Print Time	Less than 42 seconds (A4⊐, 8½" x 14⊐)
Leading Edge Margin	5 mm ±3 mm
Side Registration Adjustable Range	+ 14mm to - 9mm
Vertical Registration Adjustable Range	±10 mm

Master	Master type	280 mm width (B4), 50 m/roll 240 mm width (LG), 50 m/roll
	Yield	100 masters/roll
	Maximum run length per master	2000 prints/master
	Storage conditions	0 to 40 °C, 10 to 95 %RH
	Storage period	One year after production date

Ink	Ink type	500 ml/pack (Black) 600 ml/pack (other colors)
	Available colors	Black, Red, Blue, Green, Brown, Yellow, Violet, Navy, Maroon, Orange, Hunter green
	Storage conditions	-5 to 40 °C, 10 to 95 %RH (Optimum conditions: 15 to 25°C, 20 to 70%RH)
	Storage period	One year after production date (-5 to 40 °C) 18 months after production date (15 to 25 °C)

Note

- Avoid locations exposed to direct sunlight.

1

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.

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

⚠WARNING

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

Internal Item	Time				Print Counter					EM	Note
	6M	1Y	2Y	5Y	150K	300K	600K	1.2 M	3M		
Scanner/Optics											
CIS	C	C	C	C						C	Dry Cloth
1st Feed Roller	C	C	C	C			C			C	Damp Cloth
2nd Feed Roller	C	C	C	C			C			C	Damp Cloth
Shading Plate (White Plate)	C	C	C	C							Dry Cloth, Expected life is 10k masters.
Master Feed											
Thermal Head	C	C	C	C			C				Alcohol
Platen Roller								C		C	Alcohol
Master End Sensor								C		C	Dry Cloth
Paper Feed											

Paper Feed Roller	C	R	R	R		C	R	R	R	C	Damp Cloth
Friction Pad	R	R	R	R		R	R	R	R		Water or Alcohol
Press Roller	C	C	R	C				R		C	Alcohol
Exit Sensor							C				Dry Cloth
Registration Sensor	C	C	C	C			C				Dry Cloth
Registration Rollers							C				Water or Alcohol
Paper Delivery Unit Bushings							C L			C L	Motor Oil (SAE #20)
Paper Feed Clutch									R		
Feed Start Timing Sensor							C				Dry Cloth
Drum and Ink Supply											
Cloth Screen			R					R			
Ink Nozzle	C	C	C	C				C			Damp Cloth
Drum Clamper Plate/Magnet	C	C	C	C							Water or Alcohol
Drum Master Sensor								C			Dry Cloth
Black Patch	C	C	C	C							Dry Cloth
Drum Drive Gear and Cam		L	L	L							Grease (Alvania# 2)

3. Appendix: Service Call Condition

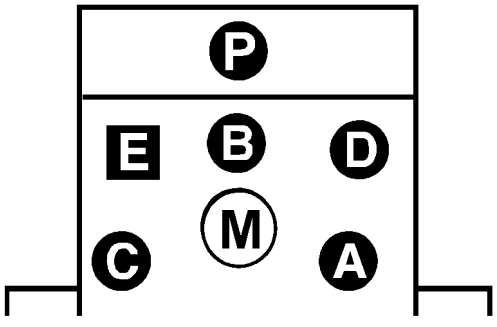
SC Tables

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-03	Thermal Head ID Error The CPU detects on abnormal ID signal from the thermal head.	Thermal head MPU
E-04	Thermal Head Overheat The temperature of the thermal head is greater than 54°C 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 2.5 seconds after the main motor turns on.	Main motor drive Main motor Motor drive board Master eject position SN
E-09	Thermal Head Thermistor Open The thermistor output voltage is over 4.9 volts.	Thermal head thermistor Thermal head connector
E-10	Thermal Heard Drive Failure The CPU detects an abnormal condition in the thermal head drive circuit.	Thermal head MPU Thermal head connector
E-12	Pressure Plate error The pressure plate home position sensor signal is not detected within 3.0 seconds after the pressure plate motor turns on.	Pressure plate drive Pressure plate motor Plate position sensors
E-14	IPU error Signal transmission error (from the IPU) occurred in the MPU	MPU

No.	Symptom	Possible cause
E-23	Master Eject Position Sensor (Drum HP) error The master eject position sensor does not activate before the feed start timing sensor activates.	Master eject position sensor Feed start timing sensor Feeler
E-24	Feed Start Timing Sensor error The feed start timing sensor does not activate before the master eject sensor activates.	Master eject position sensor Feed start timing sensor Feeler

4. Appendix: Electrical Component Defects

Electrical Component Defects



C274T900.WMF

Component	Condition	Symptom
Original Sensor	Open	The P jam indicator is lit whenever the main switch is on.
	Shorted	The P jam indicator is lit whenever a master is made.
Master Eject Sensor	Open	The E jam indicator is lit whenever the main switch is on.
	Shorted	The E jam indicator is lit whenever a used master is ejected.
Pressure Plate HP Sensor	Open	E-12 is displayed whenever the main switch is on.
	Shorted	
Pressure Plate Limit Sensor	Open	E-12 is displayed whenever the main switch is on.
	Shorted	The master eject indicator is lit whenever the main switch is on.
Feed Start Timing Sensor	Open	E-6 is displayed whenever the main switch is on.
	Shorted	E-24 is displayed whenever the main switch is on.

Component	Condition	Symptom
Master Eject Position (Drum HP) Sensor	Open	E-6 is displayed whenever the main switch is on.
	Shorted	E-23 is displayed whenever the main switch is on.
Drum Master Sensor	Open	The D jam indicator is lit whenever a proof print is made.
	Shorted	The D jam indicator is lit whenever a master is made. The M indicator is lit whenever a copy is made.
Paper Exit Sensor	Open	The C jam indicator is lit whenever the main switch is on.
	Shorted	The B jam indicator is lit whenever a copy is made.

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

Blown Fuse Conditions

MPU

No.	Rate	Possible cause
FU101	1 A	Ink pump motor

PSU

No.	Rate	Possible cause
FU700	6.3 A	AC Line
FU701	6.3 A	Main motor Main motor control board
FU702	6.3 A	Paper feed clutch Air knife fan motor Front/Rear pressure release solenoid Vacuum fan motor Ink pump motor Master eject motor Master/Paper counter Contact Image Sensor (CIS) Pressure plate motor Scanner motor Clamper motor Master feed motor

LED'S

MPU

No.	Function
LED103	OFF: Low ink condition ON: Sufficient ink condition

VR'S

MPU

No.	Function
VR101	Adjust the ink detection. (☛ Replacement and Adjustment – Drum - Ink Detection Adjustment)
VR102	Adjust the master end sensor. (☛ Replacement and Adjustment – Master Feed - Master End Sensor Adjustment)

PSU

No.	Function
VR1	Adjust the thermal head voltage. (☛ Replacement and Adjustment - Master Feed - Thermal Head Voltage Adjustment)

DIP Switches

MPU

DIPSW No.	Bit No.	Name	Settings
101	1 to 4	Paper Registration Position Adjust	(☛ Replacement and Adjustment – Image Adjustment - DIPSW101 No.1 to 4 – Paper Registration Position Adjustment)
	5 to 8	Master Writing Position Adjust	(☛ Replacement and Adjustment – Image Adjustment - DIPSW101 No.5 to 8 – Master Writing Position Adjustment)

DIPSW No.	Bit No.	Name	Settings
102	1 to 3	Thermal Head Energy Control	(☛ Replacement and Adjustment – Image Adjustment - DIPSW102 No.1 to 3 – Thermal Head Energy Control)
	4	Not used	-
	5	Drum Size Selection	ON: LG OFF: B4
	6	Size in Metric or Inch	ON: inch OFF: mm
	7	Panel Beeper	ON: Enabled OFF: Disabled
	8	Not used	-
103	1 to 4	Scanning Speed Adjustment	(☛ Replacement and Adjustment – Image Adjustment - DIPSW103 No.1 to 4 – Scanning Speed Adjustment)
	5 to 8	Master Feeding Speed Adjustment	(☛ Replacement and Adjustment – Image Adjustment - DIPSW103 No.5 to 8 – Master Feeding Speed Adjustment)

Test Points

MPU

No.	Function
TP101	GND
TP103	Measures the ink detection pulse
TP104	Measures the ink detection pulse (standard pulse)
TP113	GND

PSU

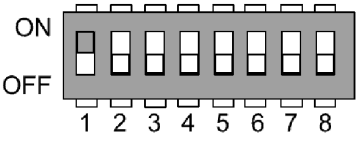
No.	Function
TP701	Thermal head voltage
TP702	GND

5. Appendix: SP Mode Tables

Input Mode

SP Table

No.	Name	Note
1-3	Original Sensor	
1-26	Master End Sensor	
1-27	Ink Detection Signal	
1-31	Pressure Plate Home Position Sensor	
1-32	Pressure Plate Limit Position Sensor	
1-33	Master Eject Box Set Sensor	
1-42	Paper Exit Sensor	
1-43	Master Eject Sensor	
1-44	Drum Master Sensor	
1-52	Door Safety Switch Master Making Unit Set Sensor	
1-53	Cutter Home Position Sensor	
1-56	Feed Start Timing Sensor	
1-59	Master Eject Position Sensor	
1-62	Drum Set Signal	
1-65	Clamper Close Sensor	
1-66	Clamper Open Sensor	
1-68	Paper Registration Sensor	
1-70	Master Set Cover Sensor	

No.	Name	Note
1-71	DIPSW 103-1	Use these SPs to test whether the DIP switches are working properly.  C274S903.WMF
1-72	DIPSW 103-2	
1-73	DIPSW 103-3	
1-74	DIPSW 103-4	
1-75	DIPSW 103-5	
1-76	DIPSW 103-6	
1-77	DIPSW 103-7	
1-78	DIPSW 103-8	
1-79	DIPSW 101-1	
1-80	DIPSW 101-2	
1-81	DIPSW 101-3	
1-82	DIPSW 101-4	
1-83	DIPSW 101-5	
1-84	DIPSW 101-6	
1-85	DIPSW 101-7	
1-86	DIPSW 101-8	
1-87	DIPSW 102-1	
1-88	DIPSW 102-2	
1-89	DIPSW 102-3	
1-90	DIPSW 102-4	

No.	Name	Note
1-91	DIPSW 102-5	
1-92	DIPSW 102-6	
1-93	DIPSW 102-7	
1-94	DIPSW 102-8	

Output Mode

SP Table

No.	Name	Note
2-3	Master Eject Motor	Press and hold the master making key to start the test. Release the key to stop the test.
2-6	Vacuum Fan Motor	
2-7	Air Knife Fan Motor	
2-9	Master Counter	
2-10	Paper Counter	
2-12	Ink Pump Motor	
2-14	Pressure Release Solenoids	
2-21	Exposure Lamp (Xenon Lamp)	
2-22	Cutter Motor: + direction	
2-23	Cutter Motor: to Home	
2-24	Cutter Motor: - direction	
2-27	Main Motor: to drum home position	
2-28	Main Motor: to master making position	
2-36	Master Feed Motor	
2-37	Scanner Motor	
2-41	Thermal Head Signal Output (VHD Signal) (☛ Explanation Below)	
2-42	Paper Feed Clutch	
2-44	Clamper Motor: to close	
2-45	Clamper Motor: to open	
2-46	Pressure Plate Motor: to limit	
2-47	Pressure Plate Motor: to home position	
2-48	Main Motor: 30rpm	
2-49	Main Motor: 60rpm	
2-50	Main Motor: 90rpm	
2-51	Paper Feed Motor: 30rpm	

No.	Name	Note
2-52	Paper Feed Motor: 60rpm	Press and hold the master making key to start the test. Release the key to stop the test.
2-53	Paper Feed Motor: 90rpm	

SP2-41: Thermal Head Signal Output (VHD Signal)

Applies thermal head voltage.

Power is applied by pressing the # key. To protect the thermal head, the voltage supply is automatically stopped after 30 seconds. It is also stopped by pressing the clear/stop key.

(☛ Replacement and Adjustment – Master Feed - Thermal Head Voltage Adjustment)

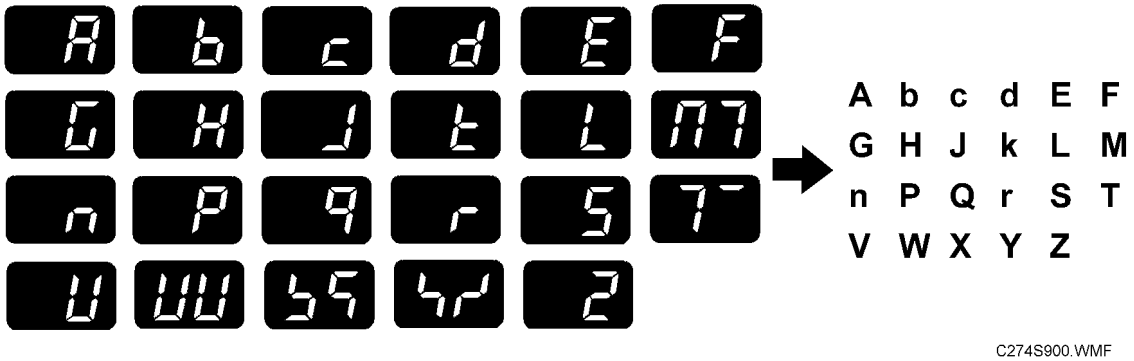
Test Mode

SP Table

No.	Name	Function
3-1	Firmware Suffix Information	(☛ Explanation Below)
3-4	All Indicators ON	Turns on all the indicators on the operation panel by pressing the master making key.
3-5	Test Pattern Print	Print the thermal head test pattern by pressing the master making key.
3-6	Ink Detection	Specifies whether ink detection is done. 0: OFF 1: ON (Default) The setting value returns to default value in power switch off.

SP3-1: Firmware Suffix Information

This model has no LCD, so the suffix is displayed as shown below instead of in Latin letters.



C274S900.WMF

Note

- The letters “i”, “o” and “u” are always skipped.

Adjustment Mode

SP Table

No.	Name	Function
6-40	Ink Detection Adjustment	(☛ Replacement and Adjustment – Drum - Ink Detection Adjustment)
6-41	Master End Sensor Adjustment	(☛ Replacement and Adjustment – Master Feed - Master End Sensor Adjustment)
6-42	Image Adjustment Pattern Print	(☛ Explanation below)

SP6-42: Image Adjustment Pattern Print

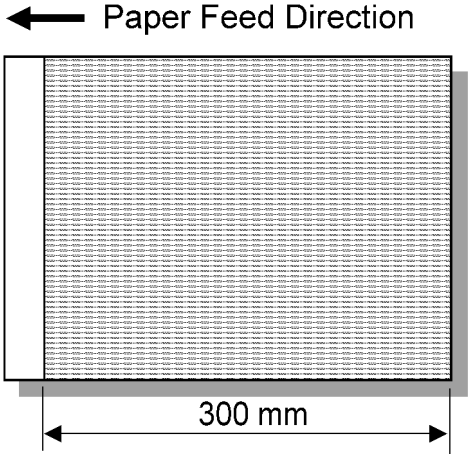
This test pattern is used for master feeding speed adjustment.

- Master Feeding Speed Adjustment: (☛ Replacement and Adjustment – Image Adjustment - DIPSW103 No.5 to 8 – Master Feeding Speed Adjustment)

This test pattern is generated in the MPU, and does not use the scanner unit. So, this pattern can also be used to determine whether an image problem is caused by the scanner or the thermal head.

If there is an image problem during copying but the test print is OK, the problem could be in the scanner unit.

The print paper should be B4 or LG size when using this test pattern.



C274S902.WMF