MODEL Platinum
(Machine Code: C267)
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.

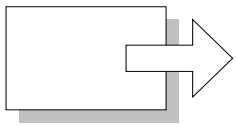
SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

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.

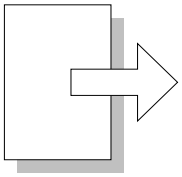
Symbols

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

☛	See or Refer to
CT	Core tech manual
	Clip ring
	E-ring
	Screw
	Connector



Short Edge Feed (SEF)



Long Edge Feed (LEF)

TABLE OF CONTENTS

1. INSTALLATION

1.1 INSTALLATION REQUIREMENTS

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

1.1.1 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.

1.1.2 ENVIRONMENTS TO AVOID

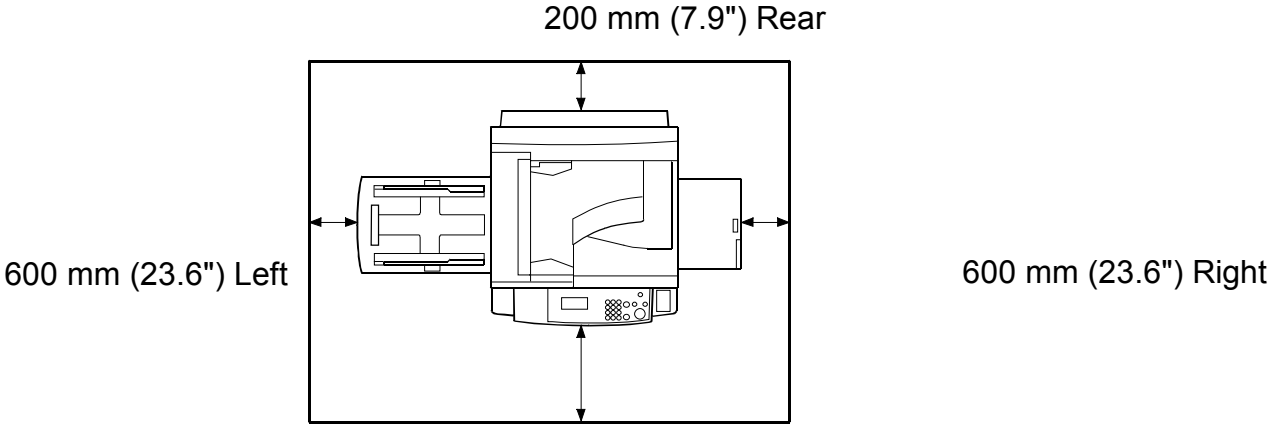
1. Locations exposed to direct sunlight or strong light (more than 1,500 lux).
2. Dusty areas
3. Areas containing corrosive gases.
4. Locations directly exposed to cool air from an air conditioner or reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause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

1.1.3 POWER CONNECTION

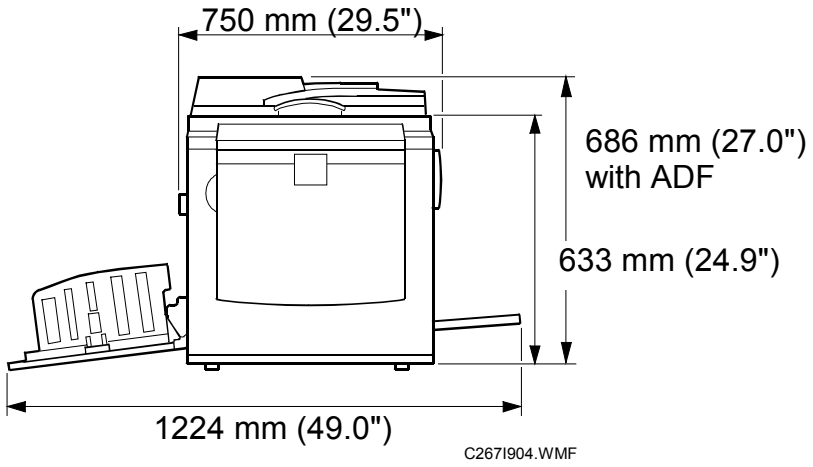
1. Securely connect the power cord to a power source.
2. Make sure that the wall outlet is near the machine and easily accessible.
3. Make sure the plug is firmly inserted in the outlet.
4. Avoid multi-wiring
5. Do not pinch the power cord.

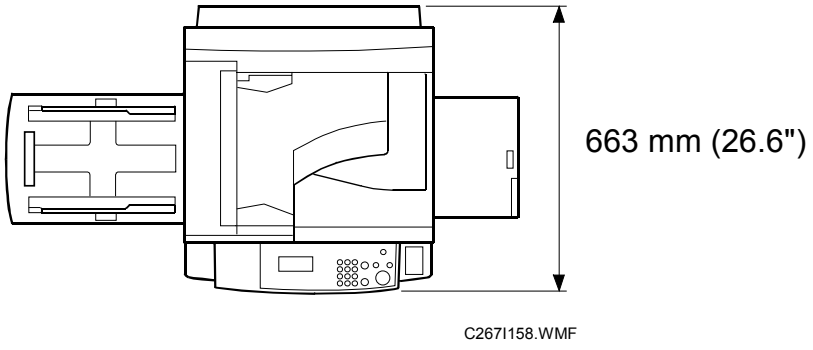
1.1.4 MINIMUM SPACE REQUIREMENTS

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



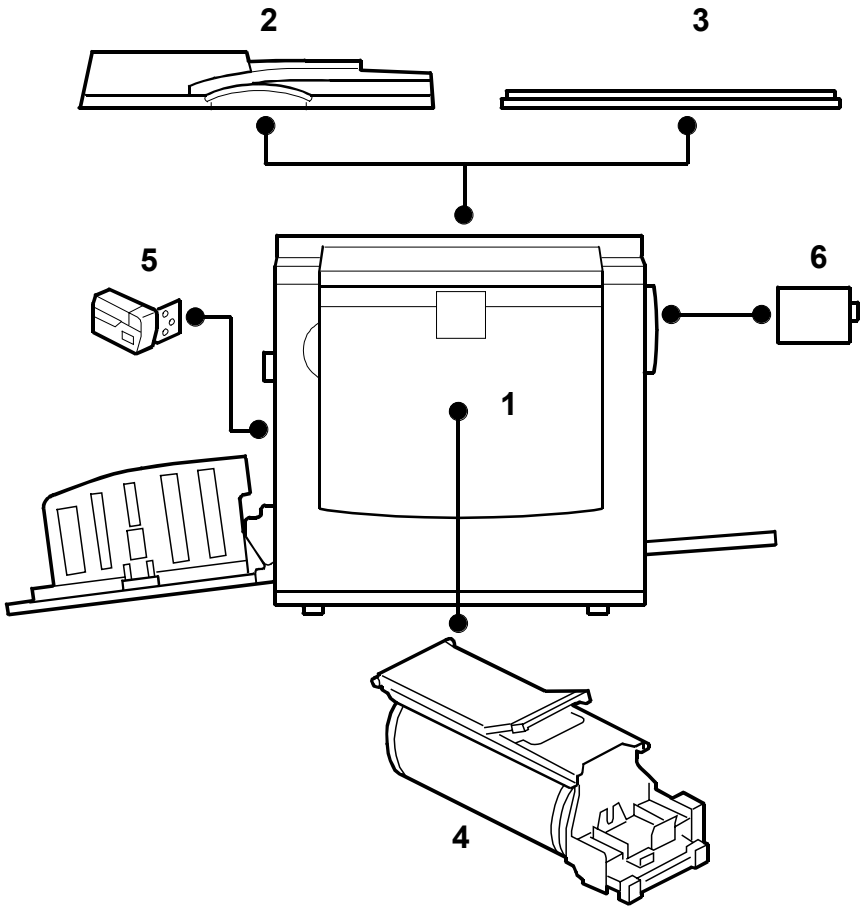
1.1.5 DIMENSIONS





1.1.6 MAIN BODY AND PERIPHERALS

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



C267I159.WMF

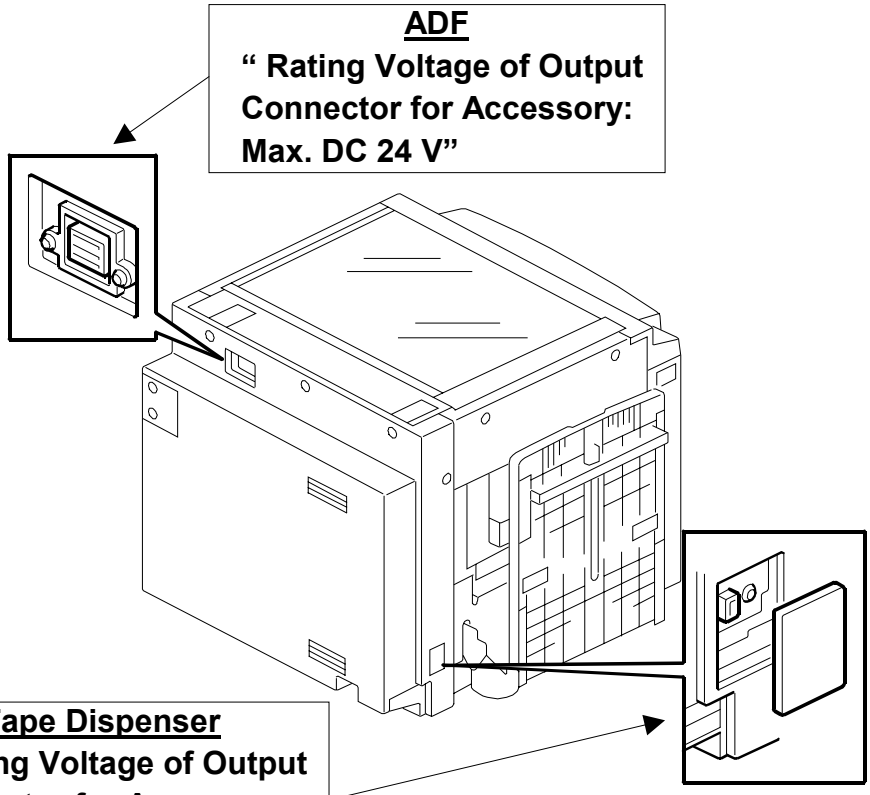
No.	Model	Name	Comments
1	C267	Digital duplicator	Main Machine
2	C642	ADF	Auto document feeder
3	B406	Platen cover	
4	C643/C647/C648	Color drum	Optional drum – A4/LG/B4
5	C651	Tape Dispenser	
6	C646	Printer unit VC-20	Printer controller unit

1.1.7 POWER SOCKETS FOR PERIPHERALS

⚠CAUTION

Rating Voltage for Peripherals

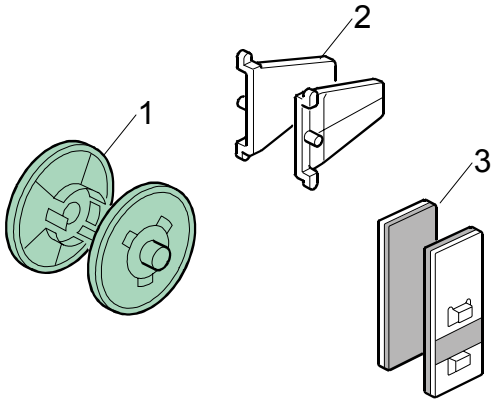
Make sure to plug the cables into the correct sockets.



1.2 INSTALLATION PROCEDURE

1.2.1 MAIN BODY

Accessory Check



C267I108.WMF

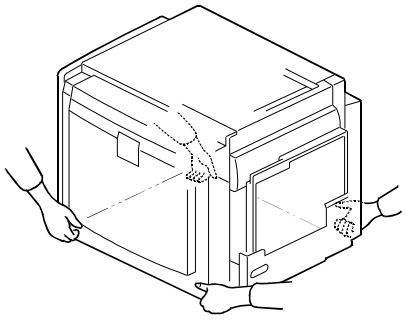
Make sure that you have all the accessories listed below.

Description	Quantity
1. Master Spool	2
2. Paper Delivery Table Side Plate Guide	2
3. Paper Feed Side Pad	2
4. Emblem Cover (C267-80, -83, -92, -93)	1
5. Emblem – Ricoh DX 3440 (C267-80)	1
6. Emblem – Gestetner DX 3440 (C267-80)	1
7. Warranty Letter on carton box (C267-76, -78)	1
8. Leaflet (C267-76, -78)	1
9. Operating Instructions (C267-61, -76, -78, -80, -92)	1
10. Easy Operation Guide (C267-61, -76, -78, -80, -92)	1
11. German Acoustic Statement – Ricoh (C267-83, -93)	1
12. German Acoustic Statement – Gestetner (C267-83, -93)	1
13. Bundled Items List (C267-76, -78)	1
14. NECR (C267-80, -92)	1

Installation Procedure

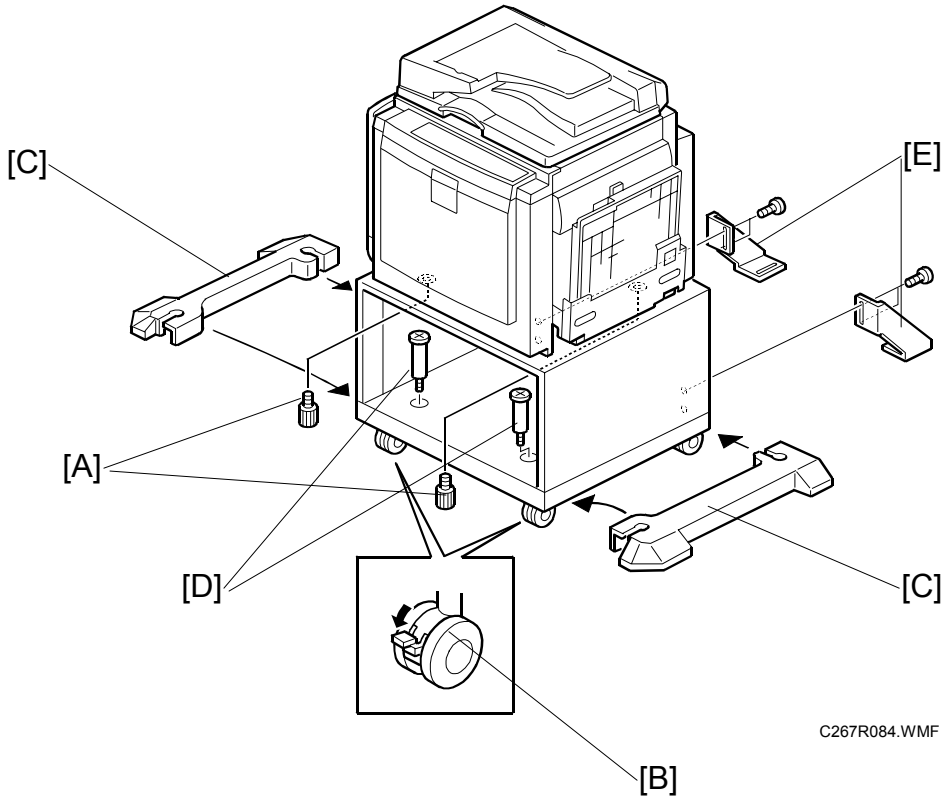
⚠CAUTION

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



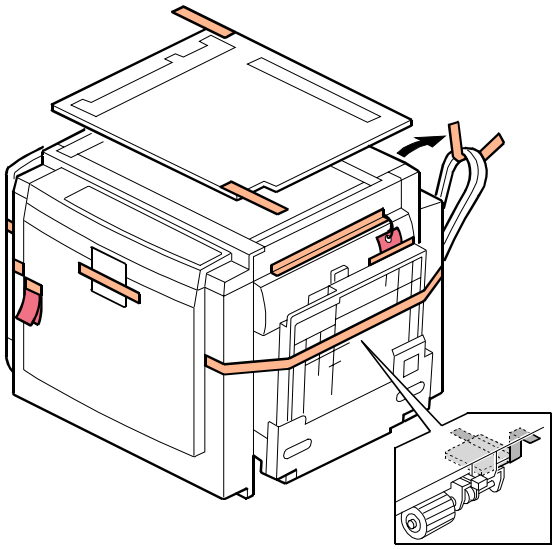
C267I102.WMF

1. Unpack the machine and remove all the wrapping.

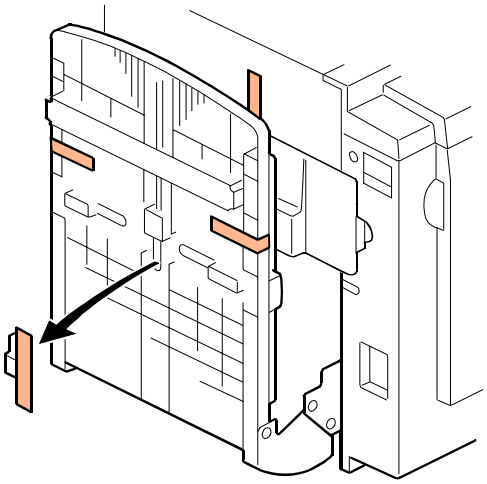


C267R084.WMF

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



C267I103.WMF



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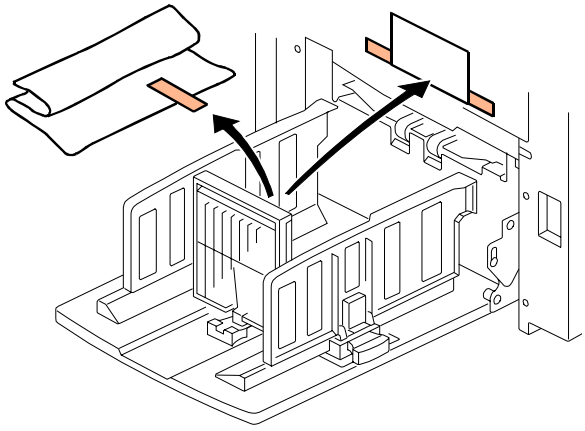
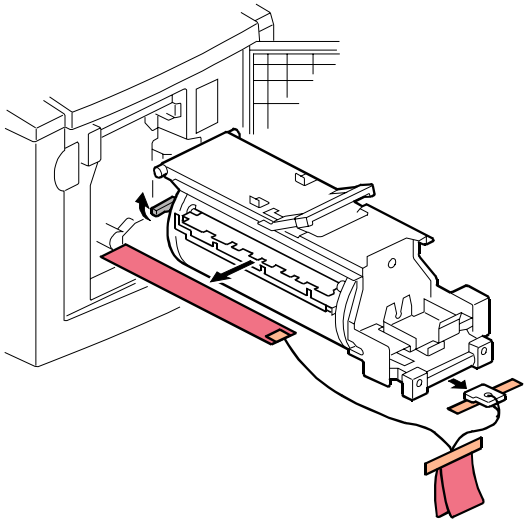


C267I106.WMF

3. Remove the filament tape as shown above.



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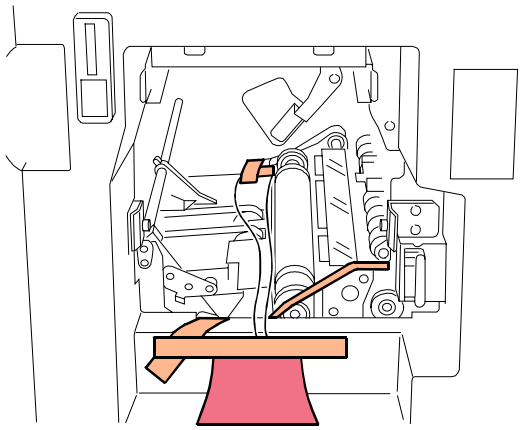
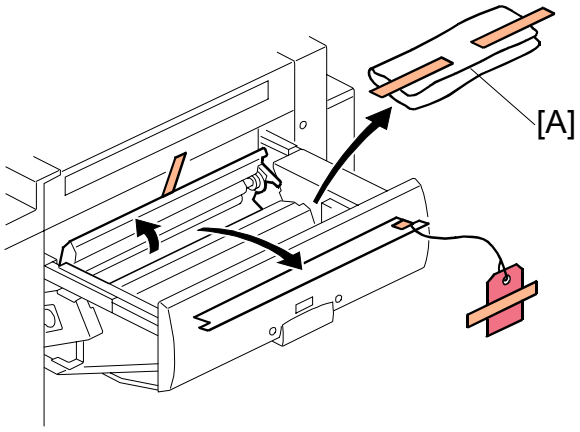


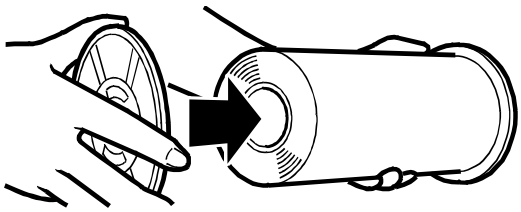
C267I151.WMF

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



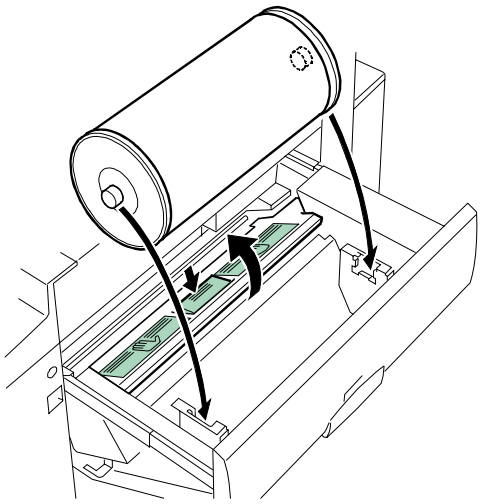
C267I110.WMF

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



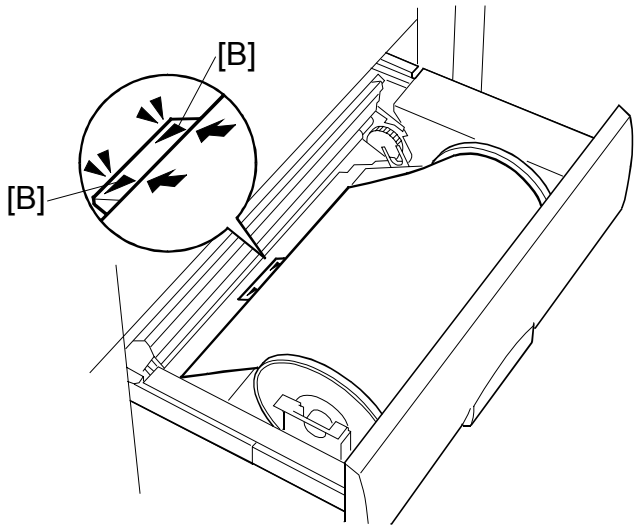
C267I907.WMF

8. Insert both spools into a new master roll.



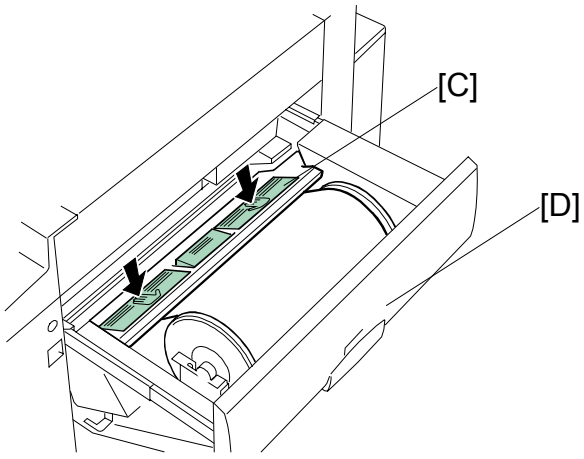
C267I152.WMF

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



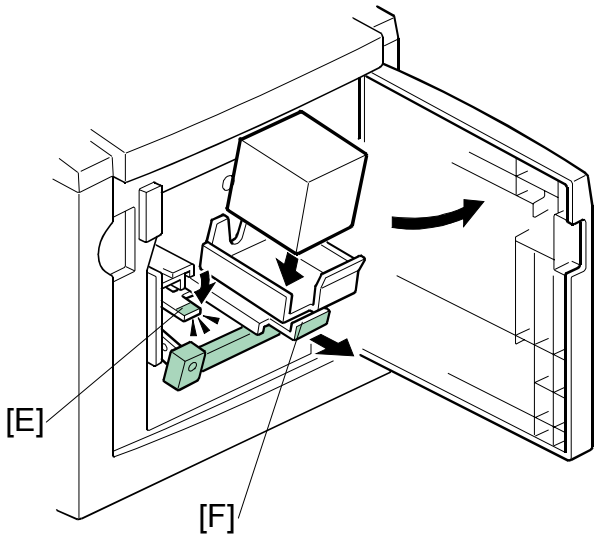
C267I153.WMF

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



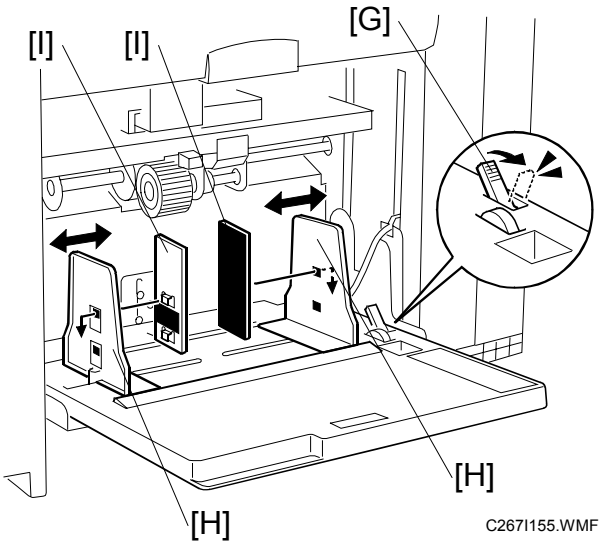
C267I154.WMF

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



C267I107.WMF

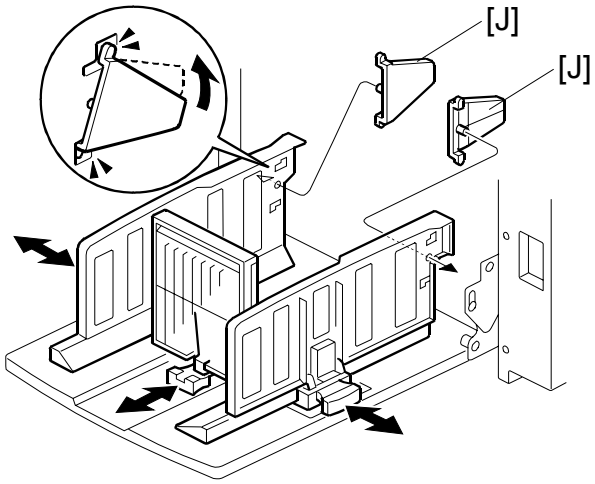
13. Open the front door.
14. Release the ink holder lock lever [E] and pull out the ink holder [F].
15. Remove the cap of the new ink cartridge, and insert a new ink cartridge into the ink holder.
16. Set the ink holder [F].



C267I155.WMF

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

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



C267I105.WMF

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

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

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

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

Changing the operation panel language

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

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

Date/Time Setting

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

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

SP Codes Setting

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

1.2.2 COLOR DRUM (OPTION)

Accessory Check

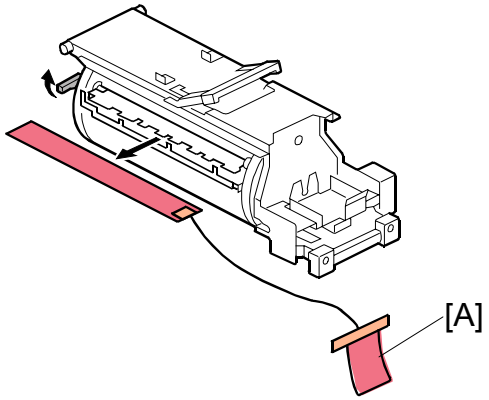
Check the quantity and condition of the accessories in the box against this list:

Description	Quantity
1. Color Indicator Decal	5

Installation Procedure

⚠CAUTION

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



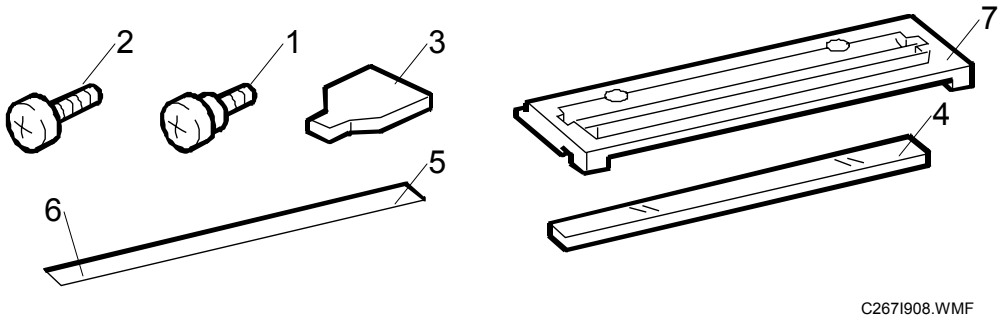
C267I900.WMF

1. Remove the protective sheets [A] from the drum.
2. Attach a color indicator decal to the drum case. The decal must be the same color as the ink in use.
3. Remove the drum from the machine.
4. Leave the master wrapped around the removed drum to protect the drum from dust and from drying.
5. Keep the removed drum in the drum case.
6. Install the color drum in the machine.
   NOTE: The color drum indicator on the operation panel stays lit when a drum is mounted in the machine.
7. Remove the ink cartridge cap.
8. Insert the ink cartridge in the ink holder.
9. After main body installation, firmly insert the power plug in the outlet.
10. Turn on the main switch.
11. Make a master and make 30 prints with this master. Do this at least three times, until the image quality is acceptable.

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

1.2.3 ADF (OPTION)

Accessory Check



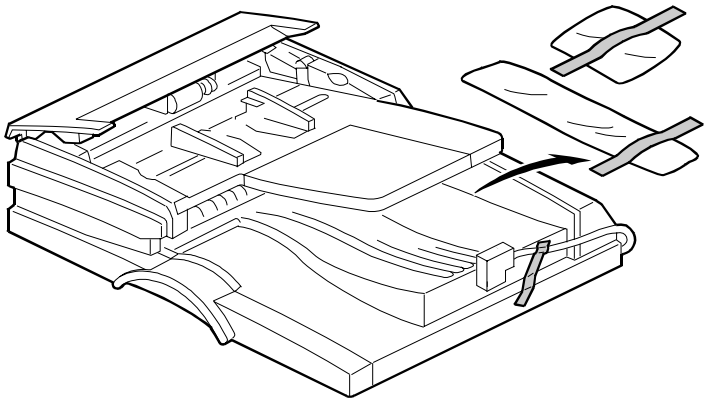
Check the quantity and condition of the accessories in the box against this list:

Description	Quantity
1. Stepped Screw	2
2. Screws	2
3. Screwdriver Tool	1
4. DF Exposure Glass	1
5. Decal - Scale – mm	1
6. Decal - Scale – inch	1
7. Scale Guide	1
8. Attention Label	1

Installation Procedure

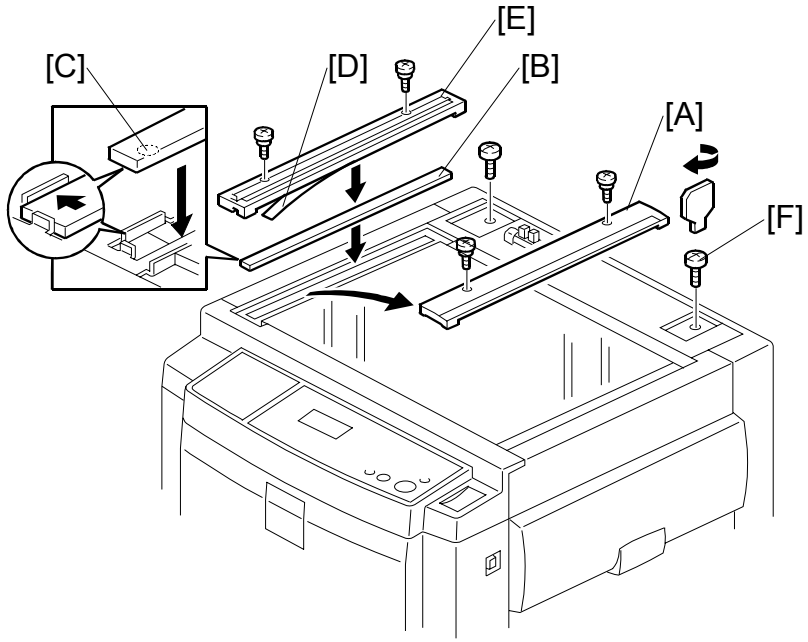
⚠CAUTION

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



C267I909.WMF

1. Remove the strips of tape.

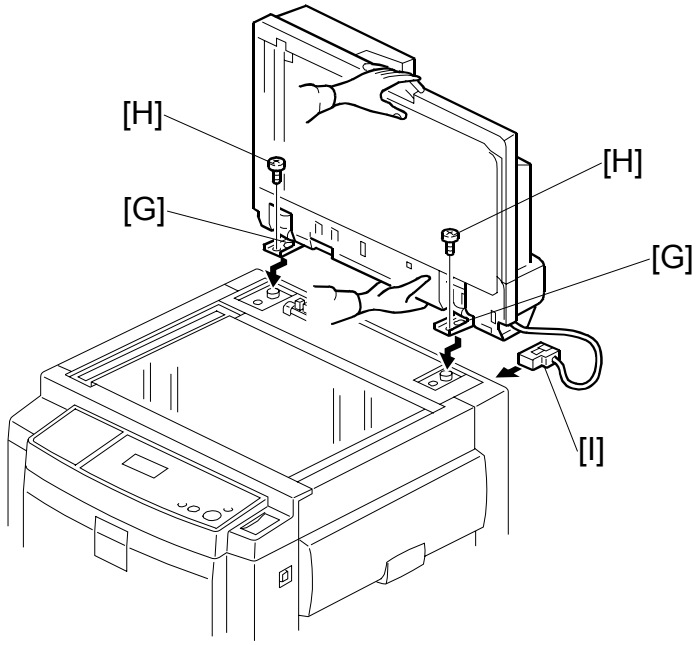


C267I202.WMF

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

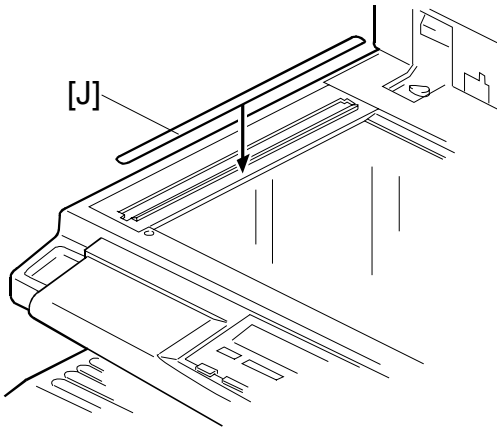
NOTE: When installing the DF exposure glass, make sure that the white dot [C] is positioned at the front side, as shown.

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



C267I203.WMF

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



C267I910.WMF

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

1.2.4 PLATEN COVER (OPTION)

Accessory Check

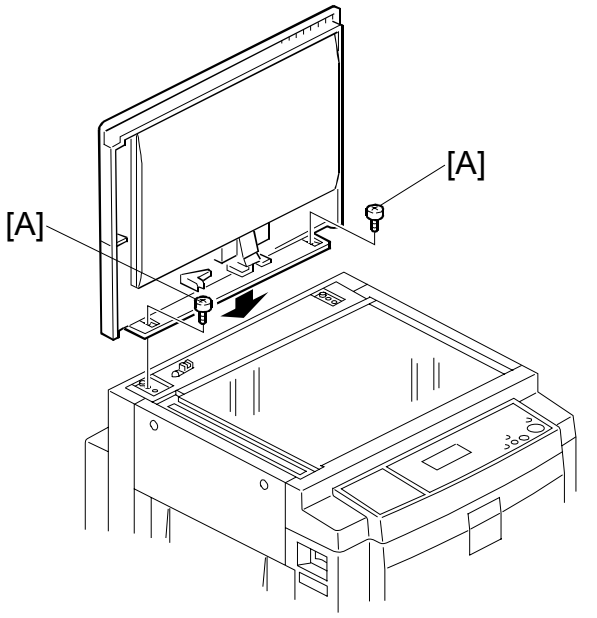
Check the quantity and condition of the accessories in the box against this list:

Description	Quantity
1. Stepped Screw	2

Installation Procedure

⚠CAUTION

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



C267I201.WMF

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

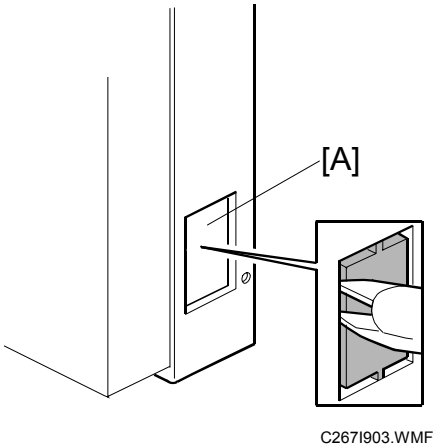
1.2.5 TAPE DISPENSER (OPTION)

Accessory Check

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

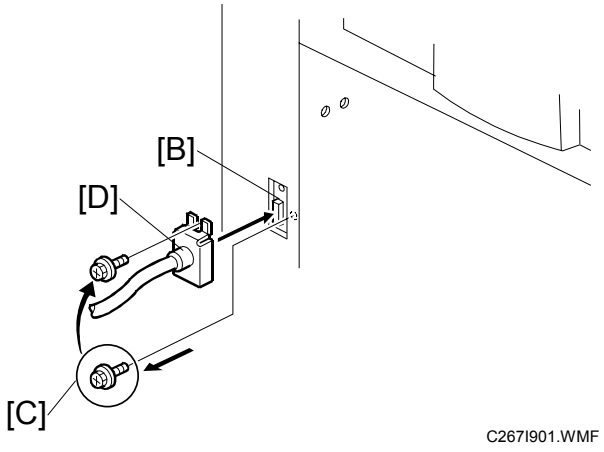
Description	Quantity
1. Knob Screw (For C210, C217, C218, C219, C222, C223, C225, C228, C238, C237, C238, C248, C249, C264 and C267)	2
2. Screw M4 x 25 (For C211, C212, C213, C214, C216, C224 and C226)	2
3. Hexagon Nut M4 (For C211, C212, C213, C214, C216, C224 and C226)	2
4. Auxiliary Bracket (For C226 and C267)	1
5. Auxiliary Bracket (For C238, C247 and C249)	1
6. Auxiliary Bracket (For C264)	1
7. Screw M4 x 8 (For C226, C238, C247, C249 and C267	4
8. Lock Washer (For C226 only)	1
9. Lock Washer (Without C267)	1
10. Tape	1

Installation Procedure

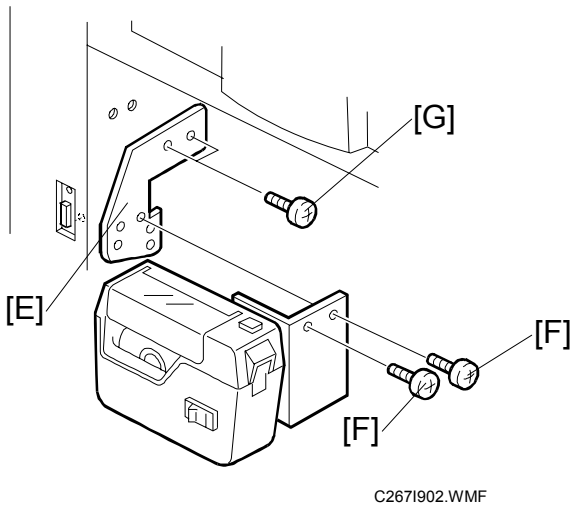


C267I903.WMF

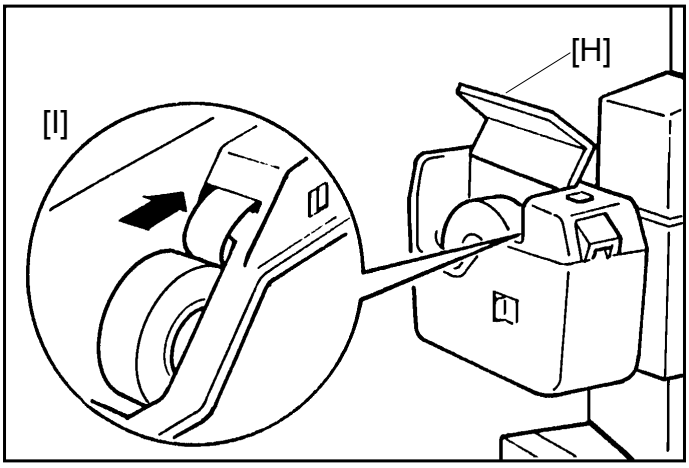
1. Turn off the main switch and unplug the power cord.
2. Remove the paper delivery cover (☞ x 5).
3. Remove the cutout [A] from the rear cover, as shown.



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



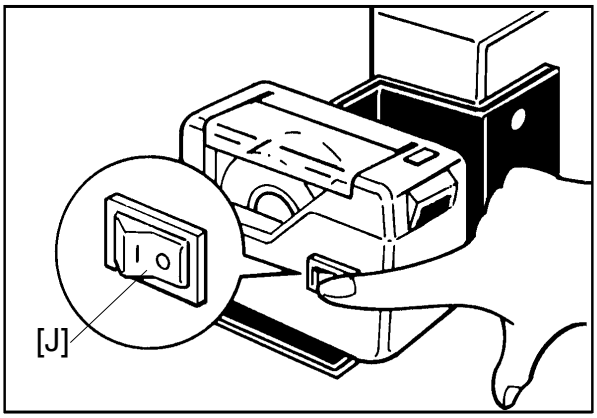
6. Open the master eject unit.
7. Install the auxiliary bracket [E] on the tape dispenser with M4x8 screws (accessories) [F].
8. Install the tape dispenser on the main body with two M4x8 screws [G] (accessories) in the two outer holes in the tape dispenser bracket.
9. Close the master eject unit. Reinstall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



C238I519.PCX

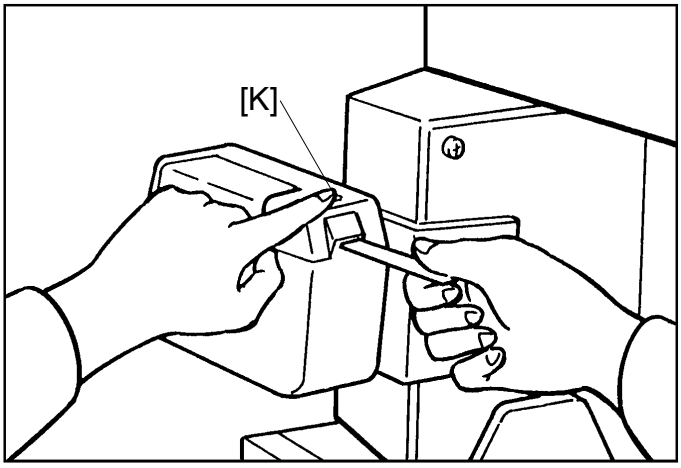
10. Open the tape dispenser cover [H]. Then, insert the leading edge of the tape into the tape entrance until it stops as shown in the illustration [I].

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



C238I520.PCX

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



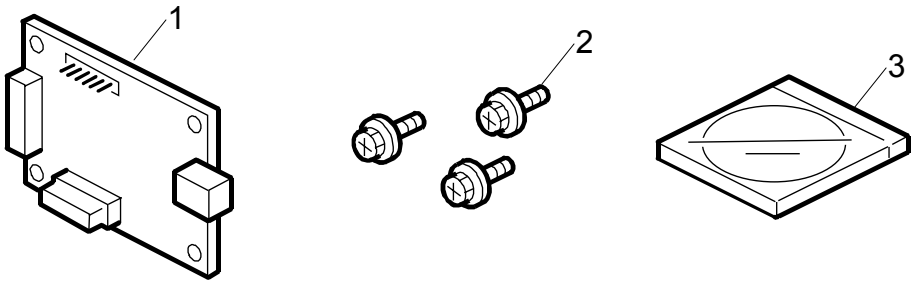
C238I521.PCX

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

1.2.6 PRINTER UNIT VC-20 (OPTION)

Accessory Check

Make sure that you have all the accessories listed below.



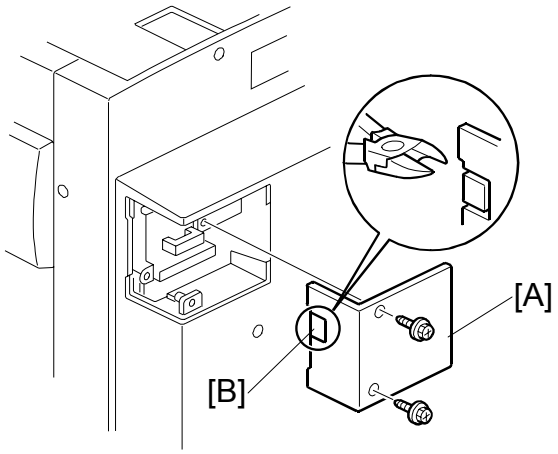
C267I906.WMF

Description	Quantity
1. VC-20 Interface Board	1
2. Screws	3
3. Installation CD	1
4. Quick Install Guide	1
5. Safety Information	1

Installation Procedure

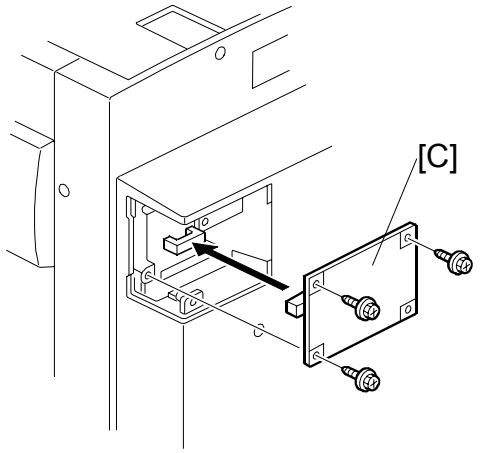
⚠CAUTION

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



C267I101.WMF

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



C267I101A.WMF

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

2. PREVENTIVE MAINTENANCE

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

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

⚠WARNING

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

Item \ Interval	Time				Print Counter				EM	Note
	6M	1Y	2Y	5Y	300K	600K	1.2M	3M		
Optics										
Exposure glass	C	C	C	C					C	Clean with water.
Platen cover	C	C	C	C					C	Clean with water.
White plate	C	C	C	C					C	Clean with water.
Master Feed										
Thermal head	C	C	C	C					C	Clean with alcohol.
Platen roller							C			Clean with alcohol.
Drum and Ink Supply										
Ink nozzle							C			Damp cloth
Drum master sensor							C			Dry cloth
Black patches	C	C	C	C					C	Dry cloth
Cloth screen							R			
Ink roller one-way clutch								R		
Drum master sensor							C			Dry cloth
Master clapper	C	C	C	C					C	Clean with water.
Paper Feed										
Paper feed roller	C	C	C	C		R			C	Dry or damp cloth
Pick-up roller	C	C	C	C		R			C	Dry or damp cloth
Friction pad	C	C	C	C		R			C	Clean with alcohol.
Registration rollers						C				Clean with alcohol.
Feed start timing sensor						C				Dry cloth
Registration sensor	C	C	C	C		C			C	Dry cloth

Interval / Item	Time				Print Counter				EM	Note
	6M	1Y	2Y	5Y	300K	600K	1.2M	3M		
Exit sensor						C				Dry cloth
Press roller	C	C	C	C			R		C	Dry or damp cloth
Paper delivery unit bushings						C L		R		Motor oil (SAE #20)
Drum drive gears						L				Grease (Alvania #2)
Paper feed clutch								R		
Paper delivery belts							R			

ADF

Interval / Item	Time				Original Counter	EM	Note
	6M	1Y	2Y	5Y	80K		
Feed belt	C	C	C	C	R	C	Clean with water or alcohol.
Separation roller	C	C	C	C	R	C	Clean with water or alcohol.
Pick-up roller	C	C	C	C	R	C	Clean with water or alcohol.
White plate	C	C	C	C		C	Clean with water or alcohol.
DF exposure glass	C	C	C	C		C	Clean with water.
Platen cover	C	C	C	C		C	Clean with water or alcohol.

3. REPLACEMENT AND ADJUSTMENT

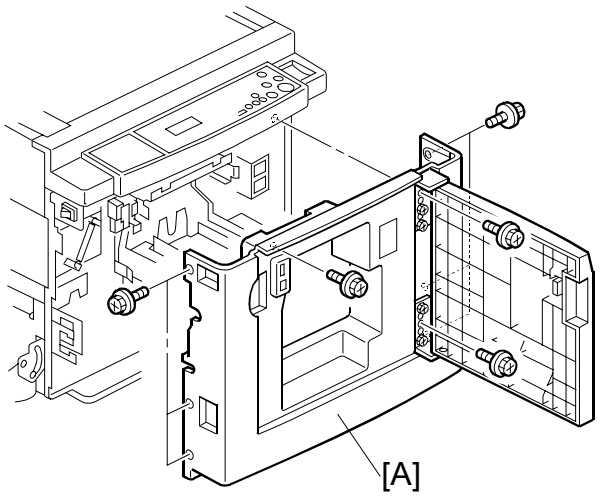
3.1 GENERAL CAUTION

⚠CAUTION

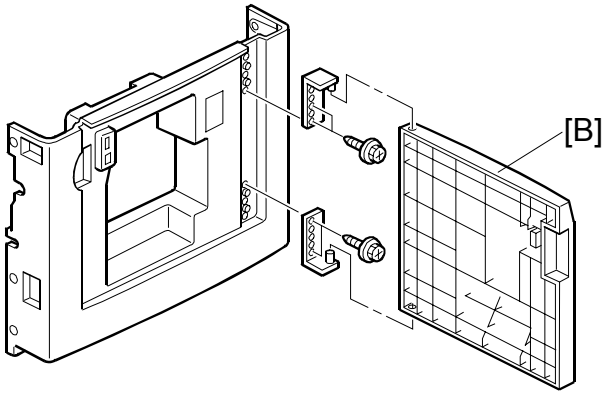
Turn off the main power switch and unplug the machine before attempting any of the procedures in this section.

3.2 COVERS

3.2.1 FRONT COVER / FRONT DOOR



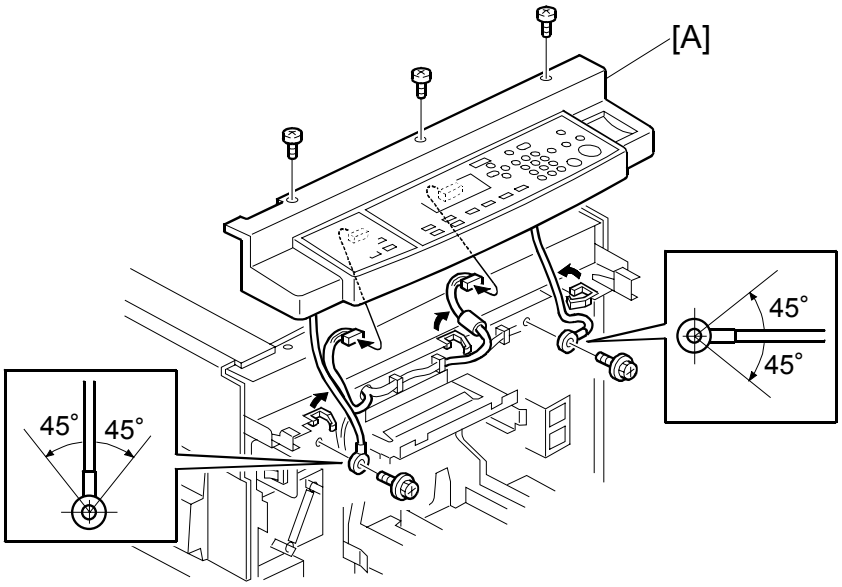
C267R001.WMF



C267R083.WMF

[A]: Front cover (🔩 x 9)
[B]: Front door (🔩 x 4)

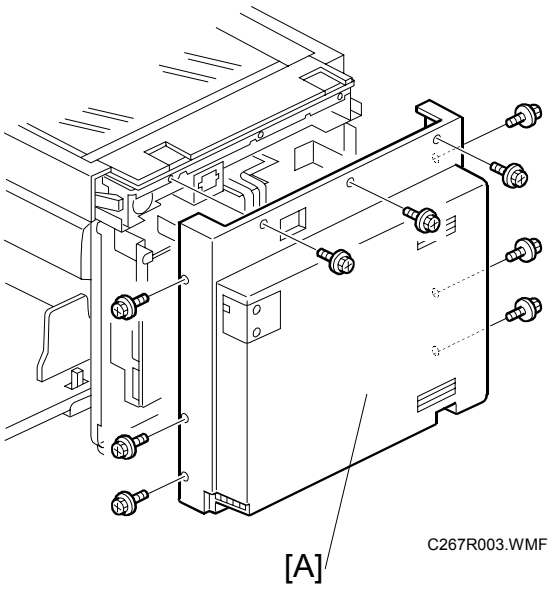
3.2.2 OPERATION PANEL



- Front cover (☛ 3.2.1)

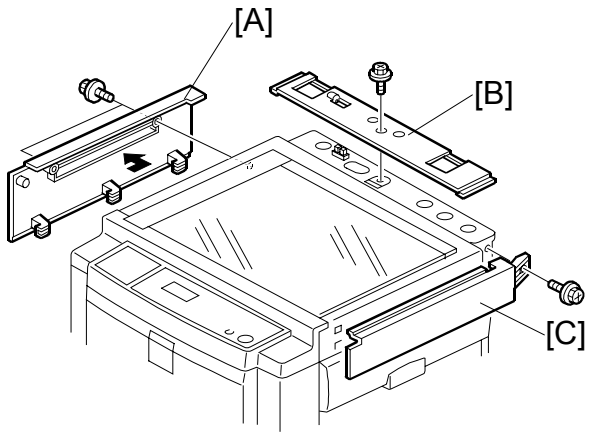
[A]: Operation panel (🔩 x 5, 🔌 x 2, 🔌 x 3)

3.2.3 REAR COVER



[A]: Rear cover (🔩 x 9)

3.2.4 UPPER COVERS



C267R004.WMF

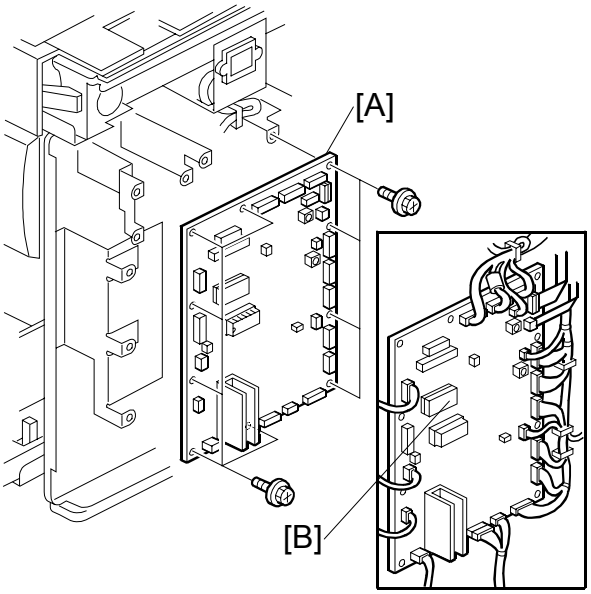
[A]: Left upper cover (☞ x 2)

[B]: Top rear cover (☞ x 1)

[C]: Right upper cover (☞ x 1)

3.3 BOARDS

3.3.1 MPU



C267R007.WMF

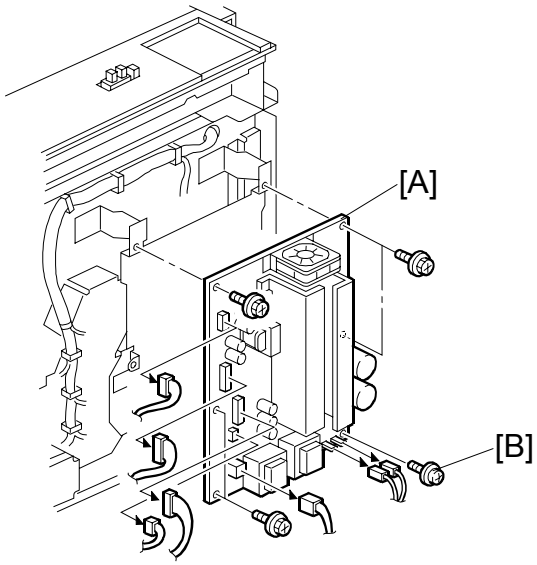
- Rear cover (☛ 3.2.3)

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

NOTE: 1) Take the NVRAM [B] from the old board and put it in the socket on the new board.
2) Adjust the master end sensor (☛ 3.5.4) after installing the new MPU.
3) Adjust the ink detection (☛ 3.9.6) after installing the new MPU.
4) If you must replace the MPU RAM, you must then do the image adjustments after you install the new RAM (see section 5.7.7. for the procedure).

3.3.2 PSU

NOTE: When the PSU is replaced, the thermal head voltage returns to the default. Adjust the thermal head voltage (☛ 3.5.7) after installing the new board.



C267R005.WMF

PSU board

- Rear cover (☛ 3.2.3)

[A]: PSU (🔩 x 6, ✋ x 7)

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

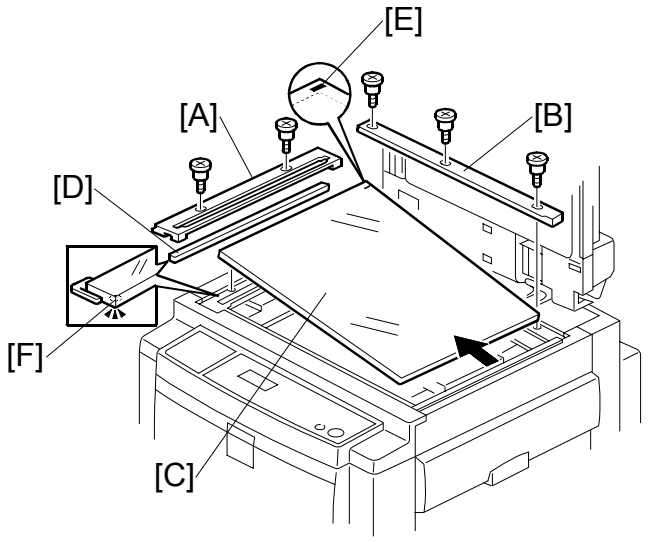
PSU board with bracket

- Rear cover (☛ 3.2.3)

[A]: PSU (🔩 x 5, ✋ x 7)

3.4 SCANNER

3.4.1 EXPOSURE GLASS/DF EXPOSURE GLASS, SCALES



C267R008.WMF

Exposure Glass

[A]: Left scale (🔩 x 2)

[B]: Rear scale (🔩 x 3)

[C]: Exposure glass

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

DF Exposure Glass

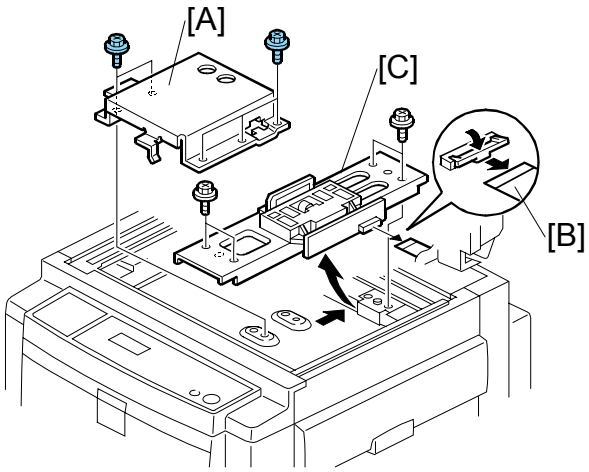
[A]: Left scale (🔩 x 2)

[D]: DF exposure glass

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

3.4.2 LENS BLOCK

CAUTION: 1) Do not touch the paint-locked screws on the lens block. The position of the lens assembly (black part) is adjusted before shipment.
2) Do not grasp the PCB or the lens assembly when handling the lens block. The lens assembly may slide out of position.



C267R009.WMF

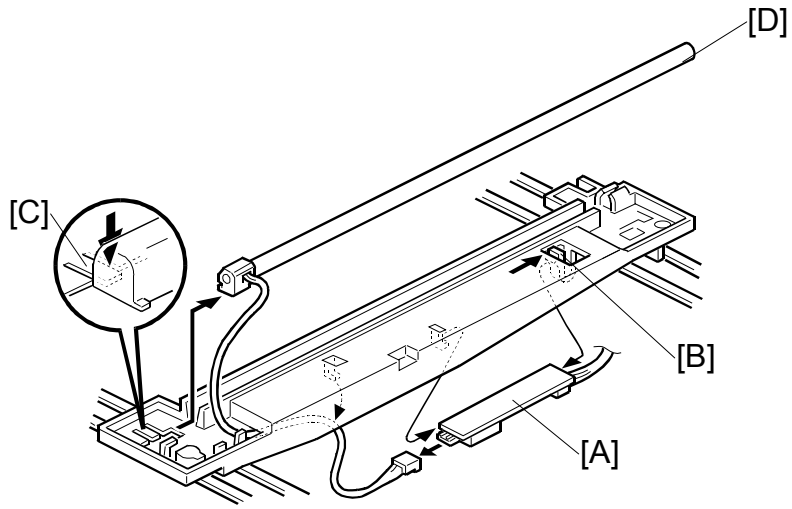
- Exposure glass (☛ 3.4.1)

[A]: Lens cover (🔩 x 5)

[B]: Ribbon cable

[C]: Lens block (🔩 x 4).

3.4.3 EXPOSURE LAMP, LAMP STABILIZER BOARD

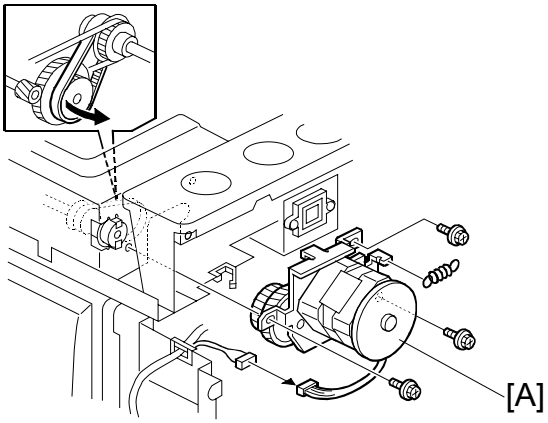


C267R902.WMF

- Exposure glass (☛ 3.4.1)

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

3.4.4 SCANNER MOTOR



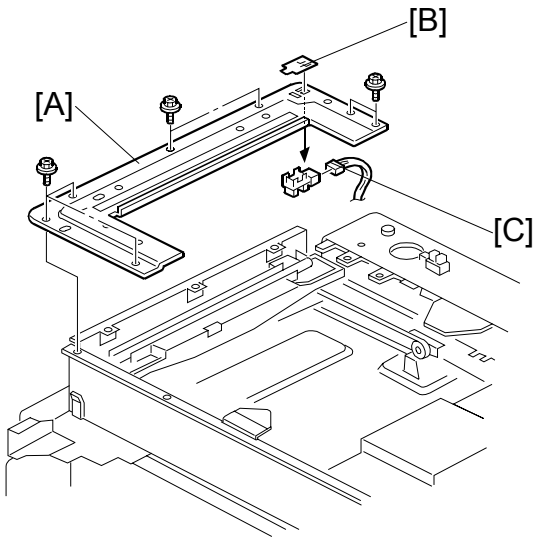
C267R010.WMF

- Rear cover (☛ 3.2.3)
- Exposure glass (☛ 3.4.1)

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

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

3.4.5 SCANNER HOME POSITION SENSOR



C267R078.WMF

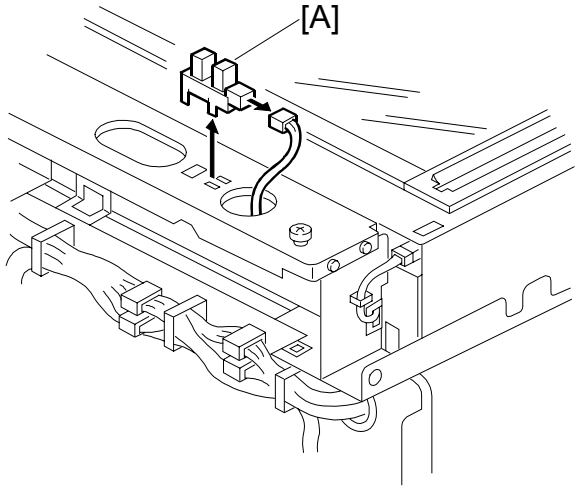
- Left upper cover (☛ 3.2.4)
- Top rear cover (☛ 3.2.4)
- Front cover (☛ 3.2.1)
- Operation panel (☛ 3.2.2)
- Exposure glass, DF exposure glass (if installed) (☛ 3.4.1)

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

[B]: Sensor tape

[C]: Scanner home position sensor

3.4.6 PLATEN COVER SENSOR



C267R082.WMF

- Top rear cover (☛ 3.2.4)

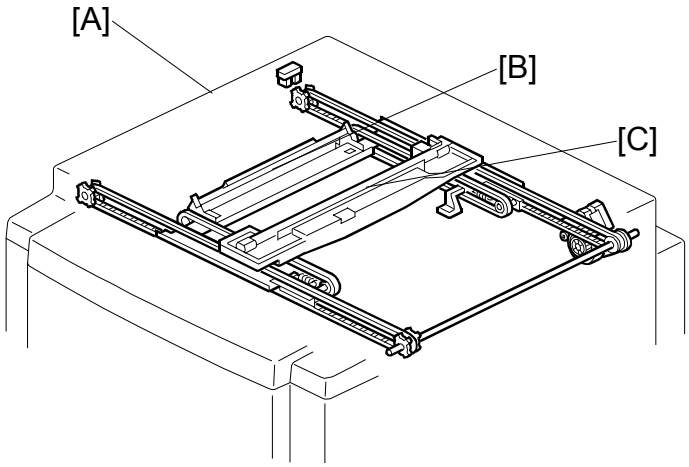
[A]: Platen cover sensor (🖑 x 1).

3.4.7 ADJUSTING THE SCANNER POSITION

⚠CAUTION

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

Overview



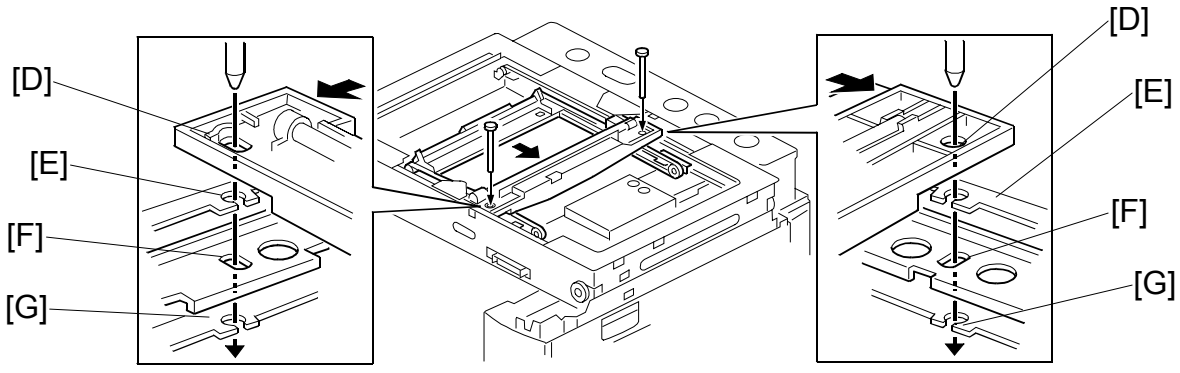
C267R903.WMF

Adjust the scanner positions at these times:

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

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

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



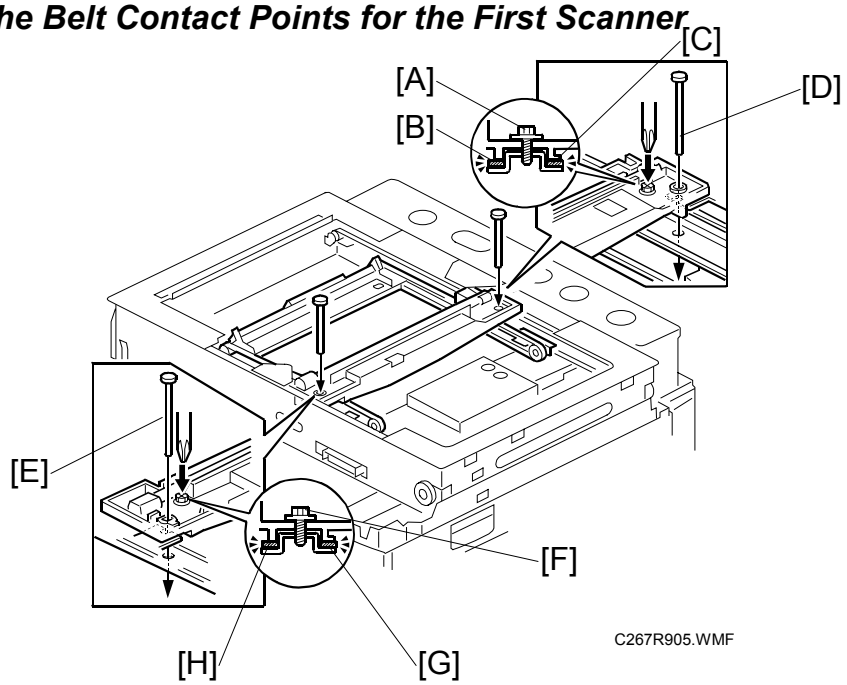
C267R087.WMF

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

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

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

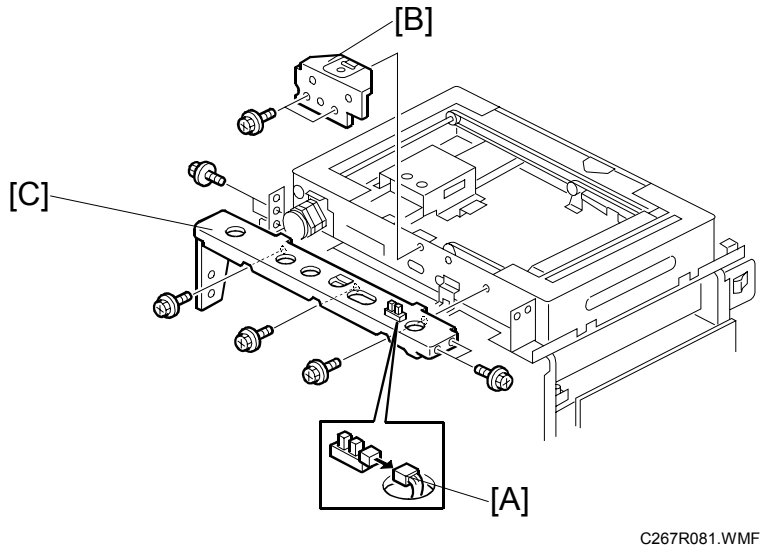
Adjusting the Belt Contact Points for the First Scanner



- ADF or platen cover
- Front cover (☛ 3.2.1)
- Operation panel (☛ 3.2.2)
- Rear cover (☛ 3.2.3)
- Top rear cover (☛ 3.2.4)
- Left upper cover (☛ 3.2.4)
- Exposure glass (☛ 3.4.1)

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

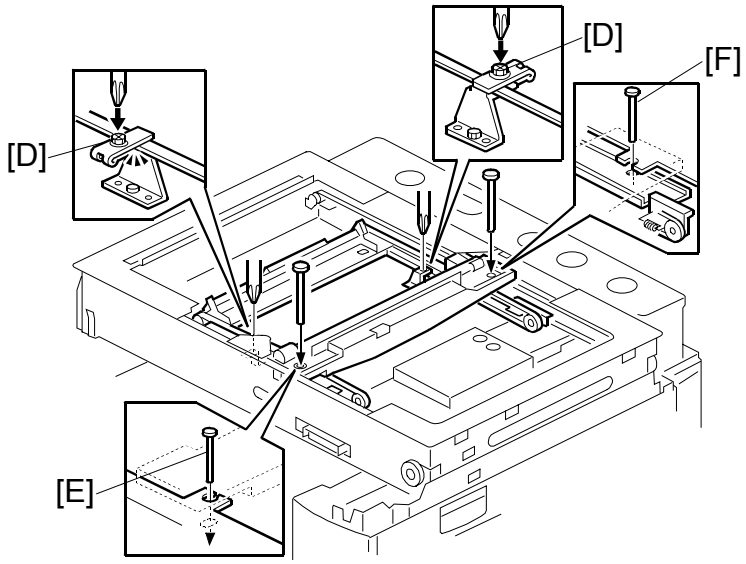
Adjusting the Belt Contact Points for the Second Scanner



- ADF or platen cover
- Front cover (☛ 3.2.1)
- Operation panel (☛ 3.2.2)
- Rear cover (☛ 3.2.3)
- Top rear cover (☛ 3.2.4)
- Left upper cover (☛ 3.2.4)
- Exposure glass (☛ 3.4.1)

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

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

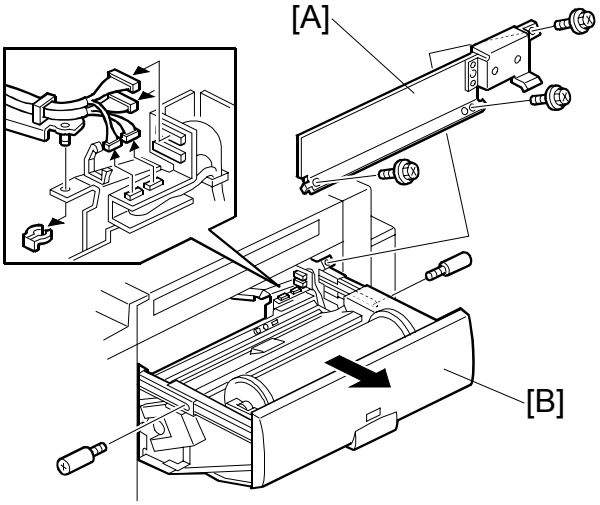


C267R906.WMF

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

3.5 MASTER FEED

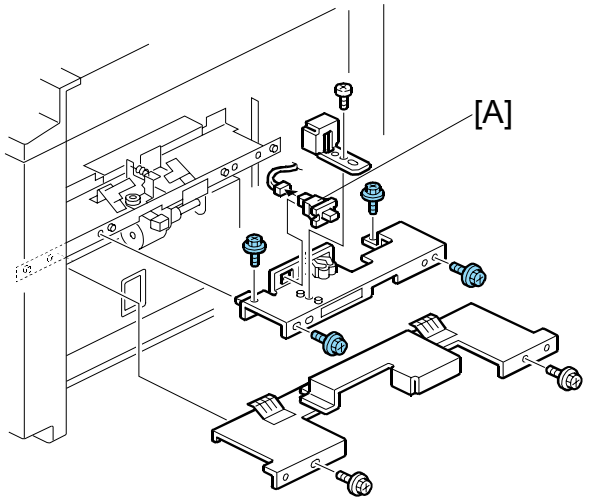
3.5.1 MASTER MAKING UNIT



C267R016.WMF

[A]: Master making unit cover (x 3)
[B]: Master making unit (x 2, x 4, x 1, x 1))

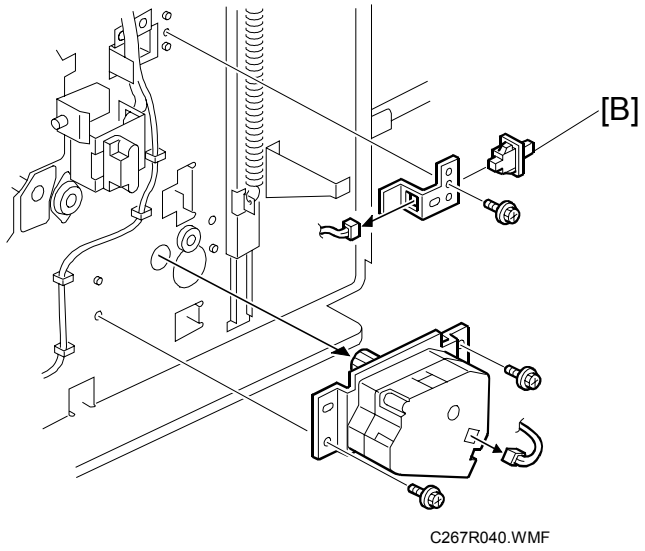
3.5.2 MASTER MAKING UNIT SET SWITCHES



C267R036.WMF

- Master making unit (☛ 3.5.1)

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

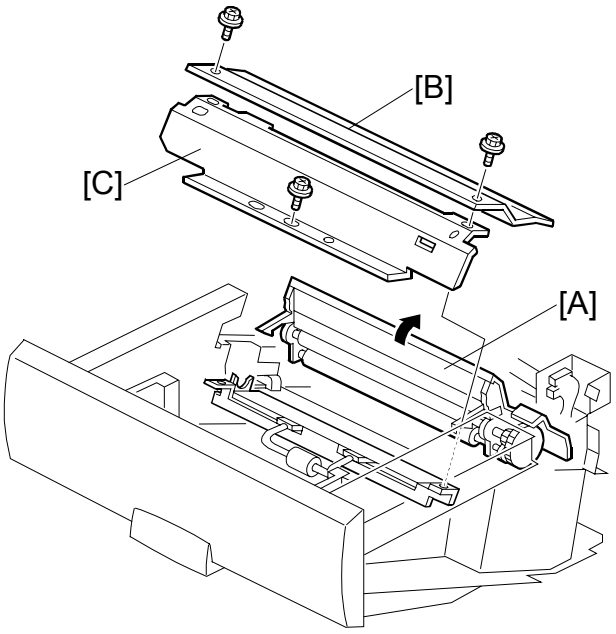


- Front cover (☛ 3.2.1)

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

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

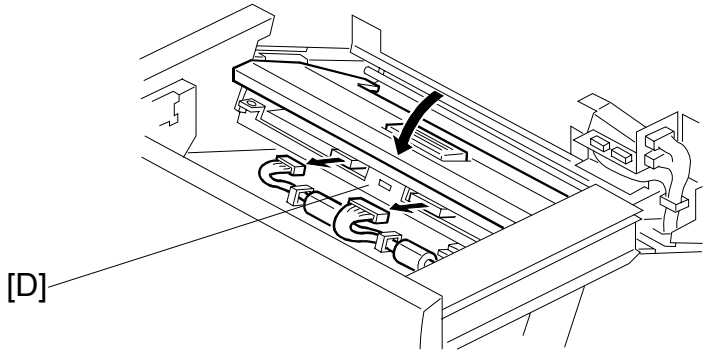
3.5.3 THERMAL HEAD



C267R054.WMF

- Master making unit (☛ 3.5.1)

[A]: Open the platen roller unit.
[B]: Thermal head upper cover (☞ x 2)
[C]: Thermal head side cover (☞ x 1)

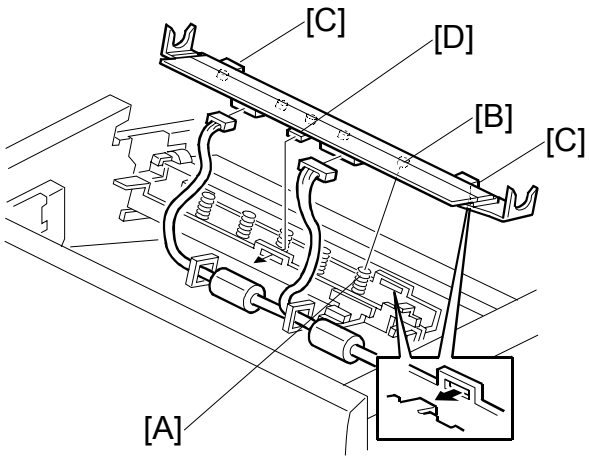


C267R055.WMF

- Close the platen roller unit.

[D]: Thermal head (✍ x 2)

Installation

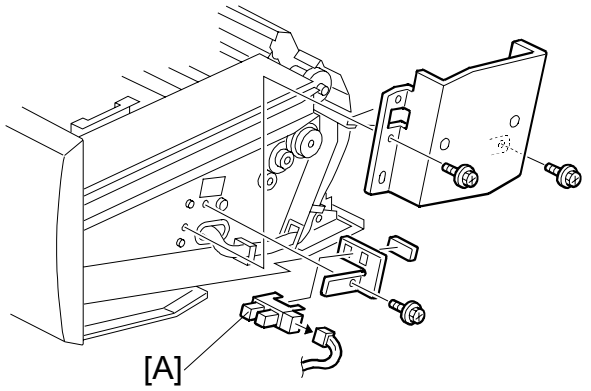


If the following remarks are not followed, the thermal head will be installed incorrectly.

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

NOTE: 1) Adjust the thermal head voltage (☛3.5.7) after installing the new thermal head.
2) Don't touch the surface with bare hands. (If you touch it, clean the surface with alcohol.)
3) Don't touch the terminals of the connectors with bare hands.

3.5.4 MASTER SET COVER SENSOR

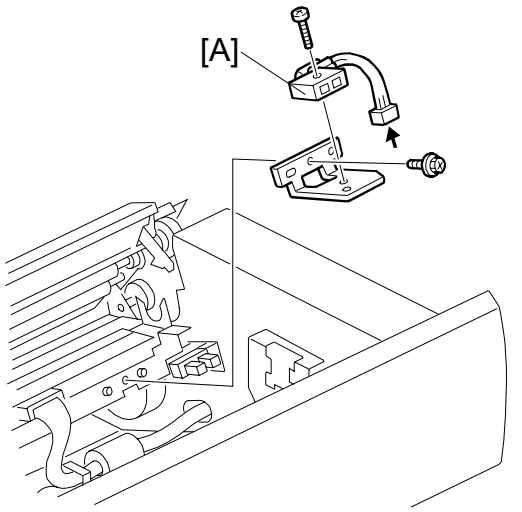


C267R057.WMF

- Master making unit (☛ 3.5.1)

[A]: Master set cover sensor (🔩 x 3, ✋ x 1)

3.5.5 MASTER END SENSOR



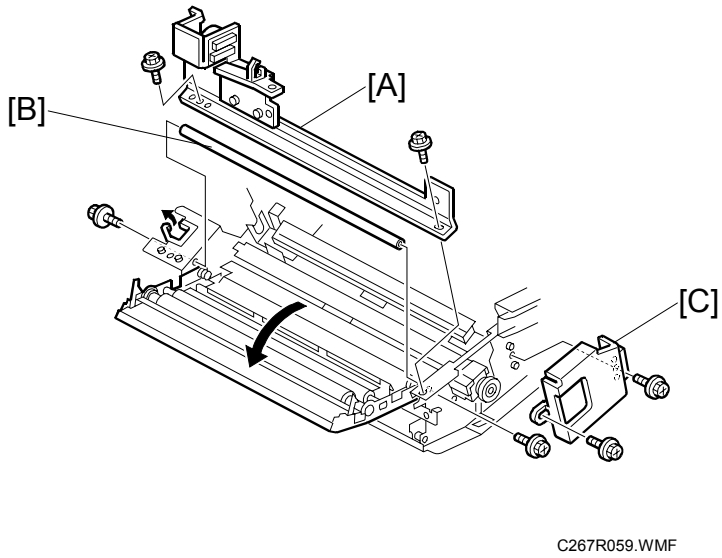
C267R058.WMF

- Master making unit (☛ 3.5.1)
- Thermal head upper cover (☛ 3.5.3)
- Thermal head side cover (☛ 3.5.3)

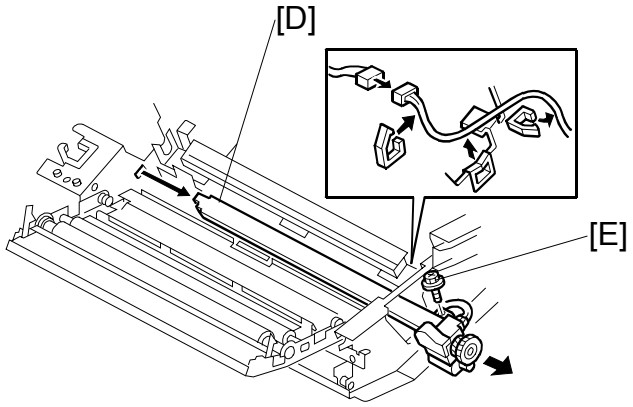
[A]: Master end sensor (🔩 x 2, ✋ x 1)

NOTE: Adjust the master end sensor (☛ 3.5.8) after installing a new sensor.

3.5.6 CUTTER UNIT



C267R059.WMF



C267R060.WMF

- Master making unit (☛ 3.5.1)

[A]: Bracket (🔩 x 2)

[B]: Shaft (🔩 x 2)

[C]: Bracket (🔩 x 2)

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

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

3.5.7 THERMAL HEAD VOLTAGE ADJUSTMENT

⚠CAUTION

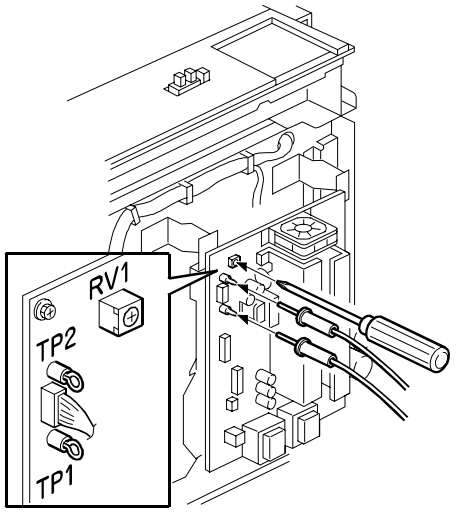
This adjustment is always required when the thermal head or PSU has been replaced.

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

Standard: Refer to the voltage value (X) printed on the thermal head. The value varies from one thermal head to another.
The adjustment voltage should be between X and X - 0.1 V.

Tools: Circuit tester

- Rear cover (☛ 3.2.3)
- Read the voltage value on the decal on the thermal head.



C267R013.WMF

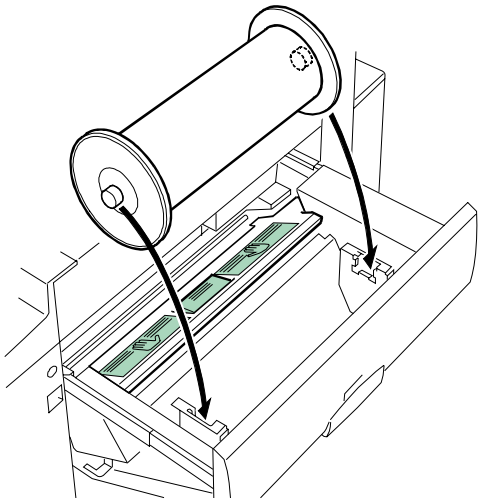
1. Connect the positive terminal of a circuit tester to TP1 and the negative terminal to TP2 on the PSU.
   CAUTION: If the output and ground terminals touch each other, the board will be damaged.
2. Connect the power plug, and turn on the main switch to access SP mode.
3. Select SP5-12 (Thermal head signal output).
4. Press the # key. Power is continuously supplied to the thermal head, which could damage the thermal head, so press the clear/stop key if you cannot finish the adjustment quickly.
   A beeper sounds while the power is being supplied.
5. Measure the voltage, and turn RV1 on the PSU until the value is between “+0” and “-0.1” volts from the value on the thermal head decal.

3.5.8 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

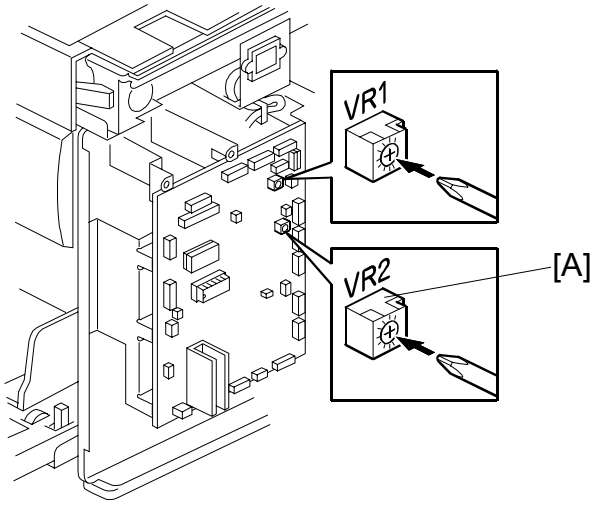
Tools: The core of a used master roll (the core just before a master end display appears)



C267R900.WMF

- Rear cover (☛ 3.2.3)

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

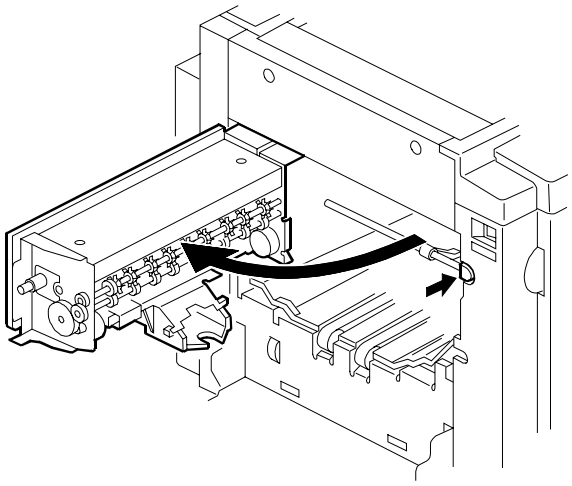


C267R015.WMF

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

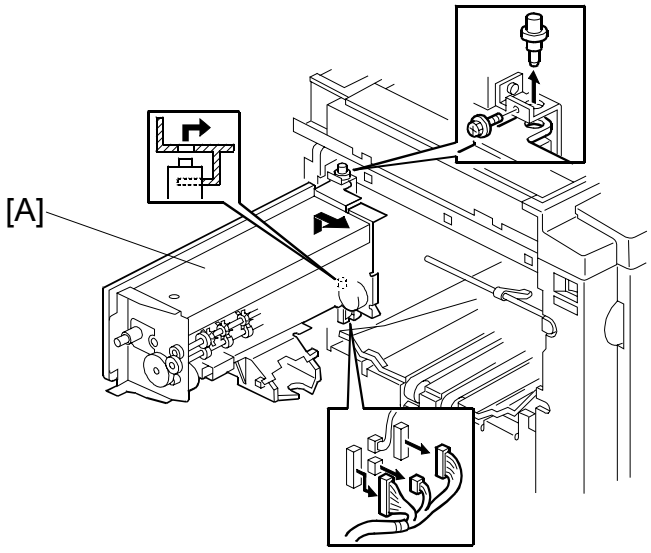
3.6 MASTER EJECT

3.6.1 MASTER EJECT UNIT



C267R017.WMF

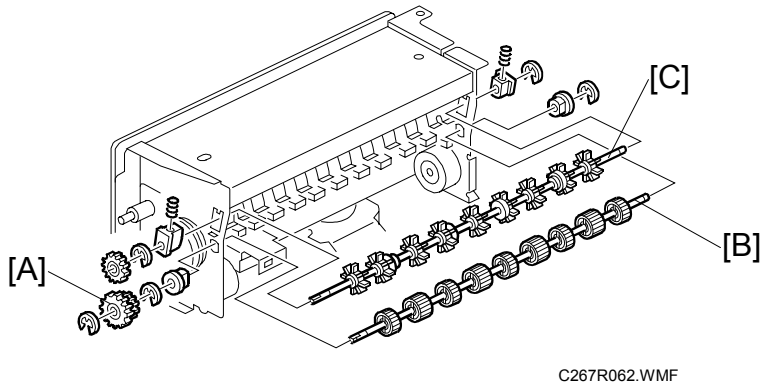
Open the master eject unit.



C267R018.WMF

[A]: Master eject unit (☞ x 3, 🔩 x 1)

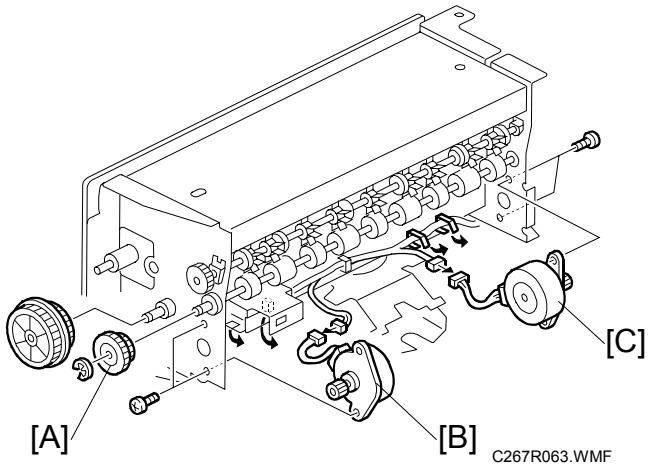
3.6.2 MASTER EJECT ROLLERS



- Master eject unit (☛ 3.6.1)

[A]: Gears (ℂ x 1)
[B]: Lower master eject roller (ℂ x 2)
[C]: Upper master eject roller (ℂ x 2, 2 springs)

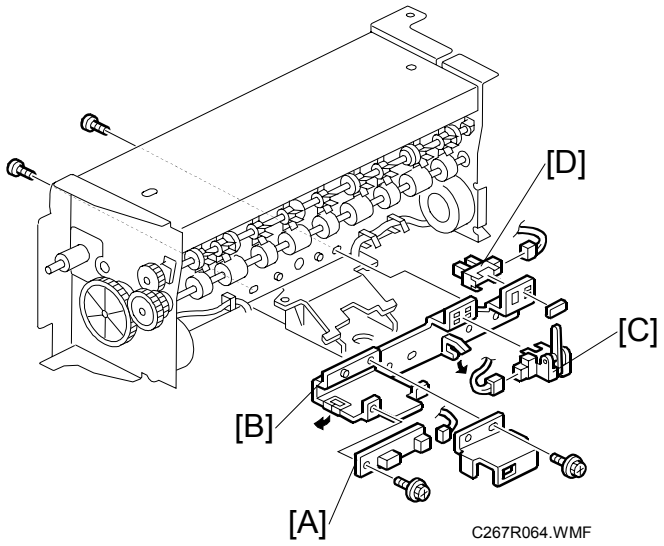
3.6.3 MASTER EJECT MOTOR / PRESSURE PLATE MOTOR



- Master eject unit (☛ 3.6.1)

[A]: Gears (ℂ x 1)
[B]: Master eject motor (x 2, x 1, x 2)
[C]: Pressure plate motor (x 2, x 1, x 2)

3.6.4 DRUM MASTER SENSOR / MASTER EJECT SENSOR / EJECT BOX SET SENSOR



- Master eject unit (☛ 3.6.1)
- Master eject box

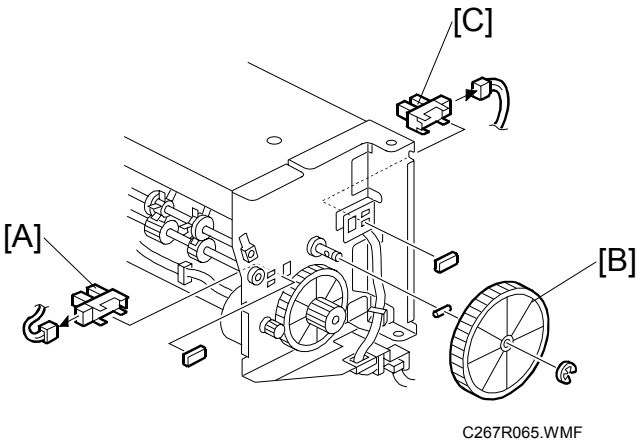
[A]: Drum master sensor (🔩 x 2, 🖐 x 1)

[B]: Bracket (🔩 x 2, 🔧 x 1)

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

[D]: Eject box set sensor (🖐 x 1)

3.6.5 PRESSURE PLATE HP SENSOR / PRESSURE PLATE LIMIT SENSOR



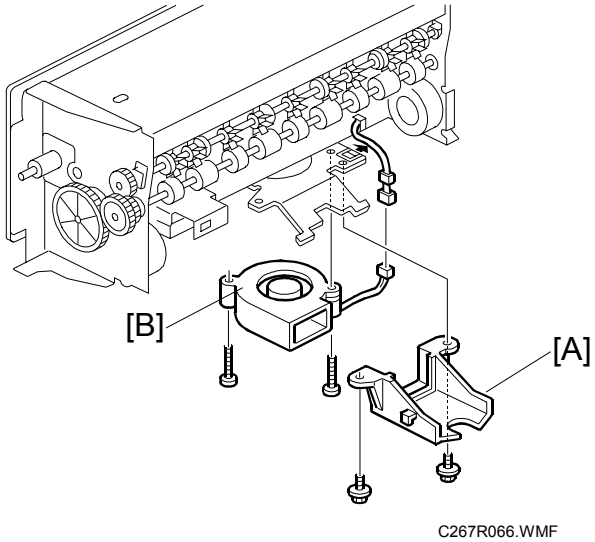
- Master eject unit (☛ 3.6.1)
- Master eject box

[A]: Pressure plate HP sensor (☞ x 1)

[B]: Gear (ℂ x 1, 1 pin)

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

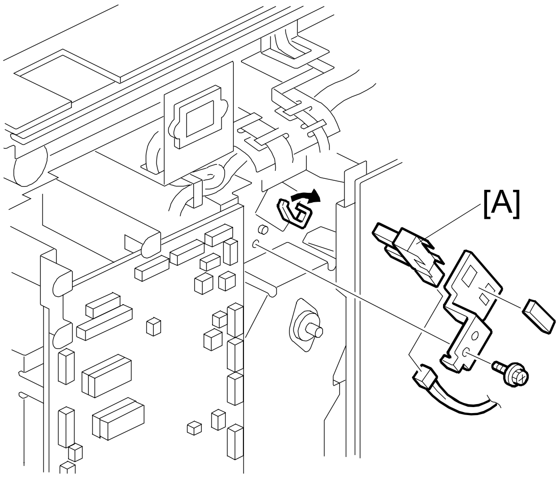
3.6.6 AIR KNIFE FAN MOTOR



[A]: Air knife fan duct (☞ x 2)

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

3.6.7 MASTER EJECT POSITION SENSOR

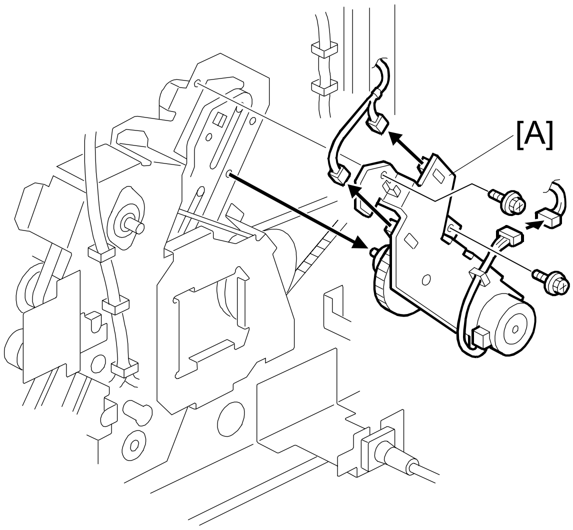


C267R035.WMF

- Rear cover (☛ 3.2.3)

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

3.6.8 MASTER CLAMPER OPENING UNIT



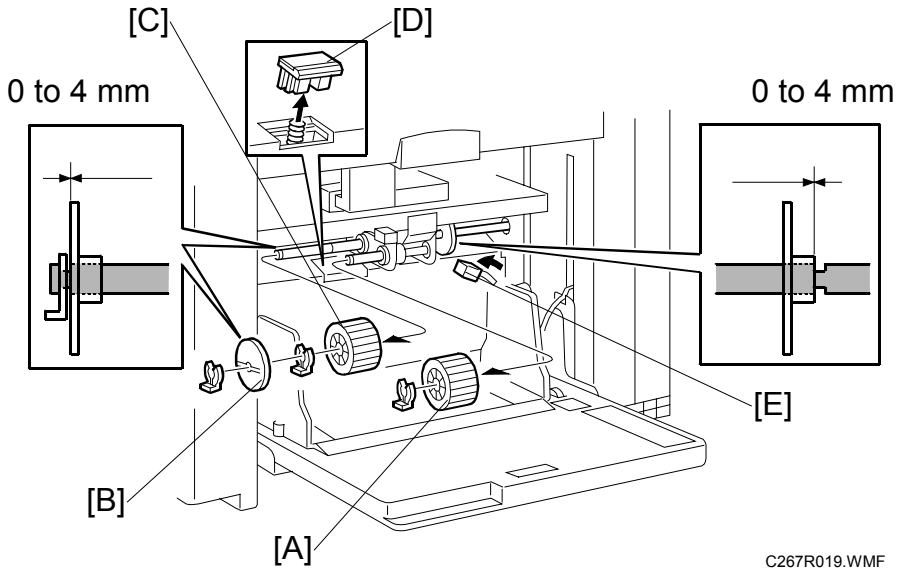
C267R023.WMF

- Rear cover (☛ 3.2.3)

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

3.7 PAPER FEED

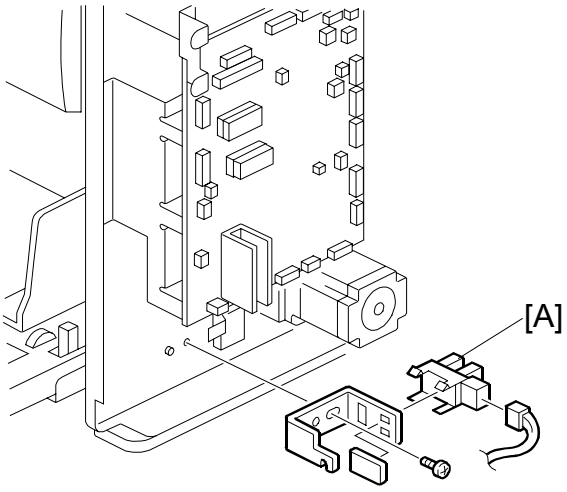
3.7.1 PICK-UP ROLLER / PAPER FEED ROLLER / FRICTION PAD



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

[A]: Pick-up roller (x 1)
[B]: Paper guide (x 1)
[C]: Paper feed roller (x 1)
[D]: Friction pad
NOTE: Do not change the position and direction of the paper guide [B].

3.7.2 PAPER TABLE LOWER LIMIT SENSOR

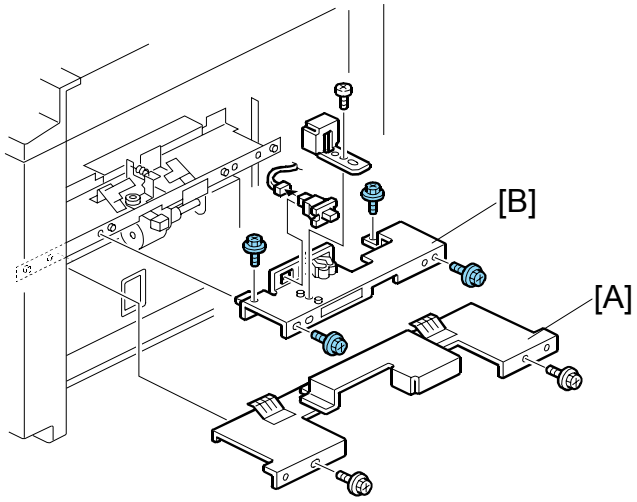


C267R034.WMF

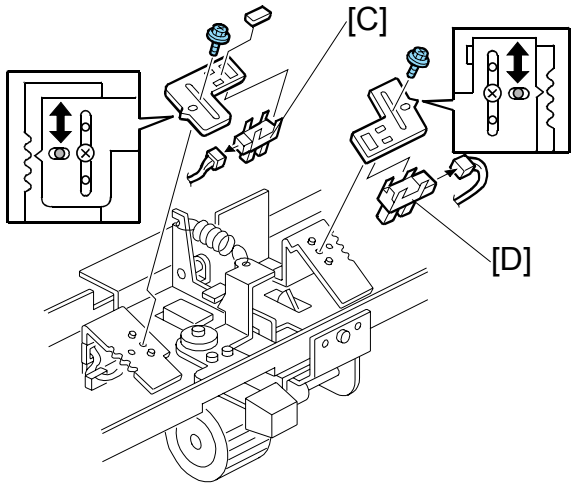
- Rear cover (☛ 3.2.3)

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

3.7.3 PAPER HEIGHT SENSOR 1 / 2



C267R036.WMF



C267R037.WMF

- Master making unit (☛ 3.5.1)

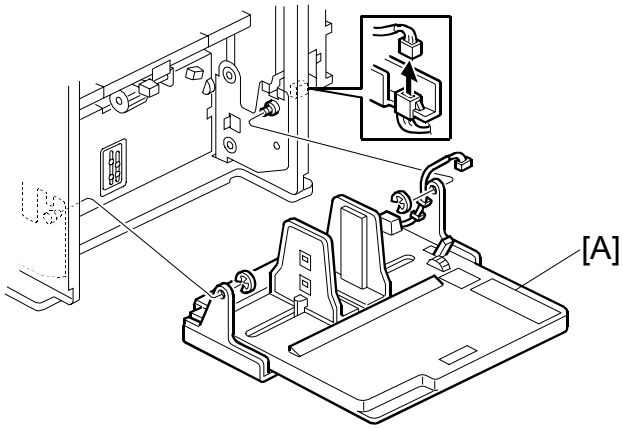
[A]: Paper feed unit cover (🔩 x 2)

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

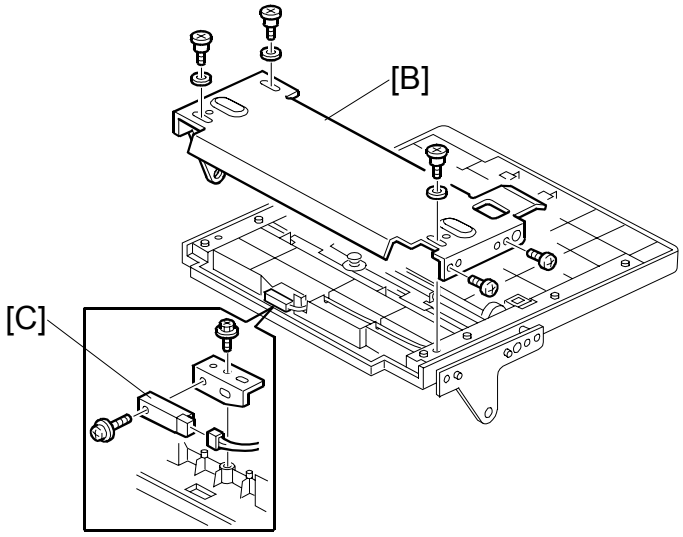
[C]: Paper height sensor 1 (🔩 x 1, 🖐 x 1)

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

3.7.4 PAPER END SENSOR



C267R029.WMF



C267R038.WMF

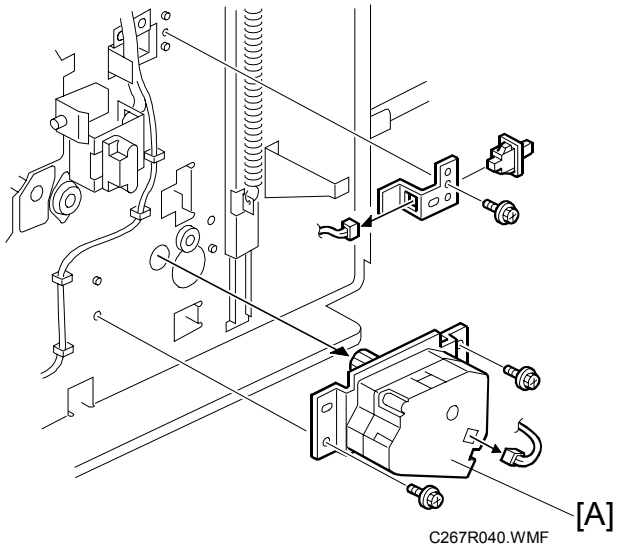
- Rear cover (☛ 3.2.3)

[A]: Paper table (🖐 x 1, ℂ x 2)

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

[C]: Paper end sensor (🔩 x 2, 🖐 x 1)

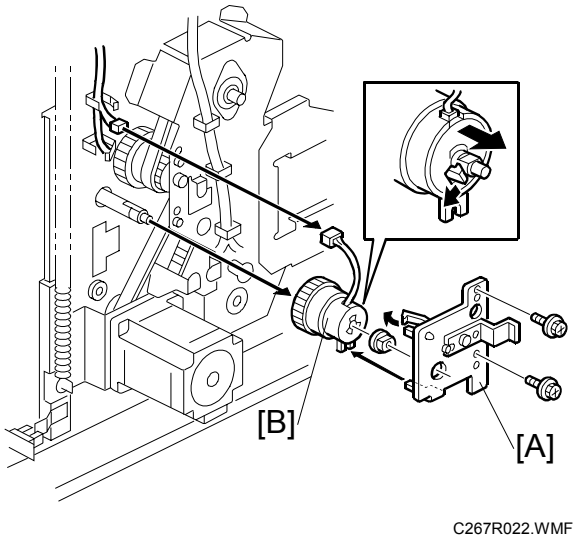
3.7.5 PAPER TABLE MOTOR



- Front cover (☛ 3.2.1)

[A]: Paper table motor (🔩 x 2, 🔌 x 1)

3.7.6 PAPER FEED CLUTCH



- Rear cover (☛ 3.2.3)
- MPU (☛ 3.3.1)

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

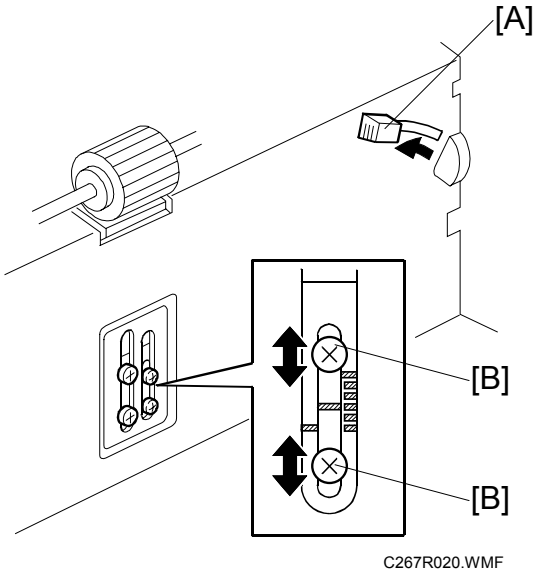
[B]: Paper feed clutch (🔧 x 1, 🔌 x 1)

3.7.7 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.



C267R020.WMF

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

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

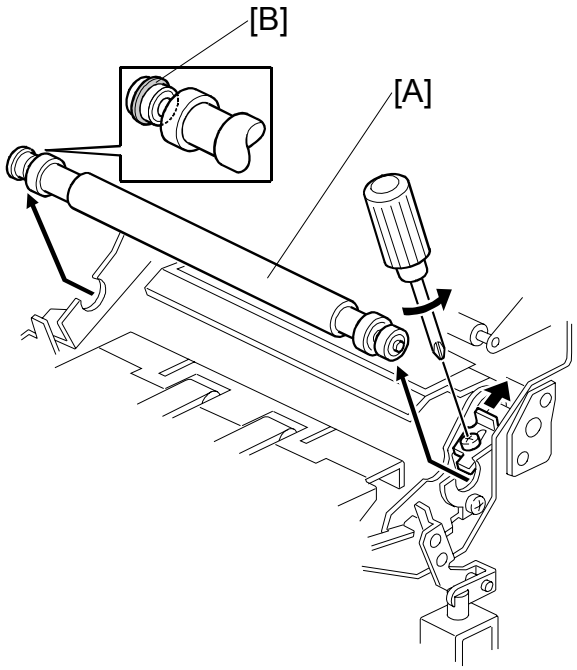
Decrease the paper separation pressure: Move down the screws [B]

Default position: lowest position

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

3.8 PRINTING

3.8.1 PRESS ROLLER



C267R907.WMF

⚠CAUTION

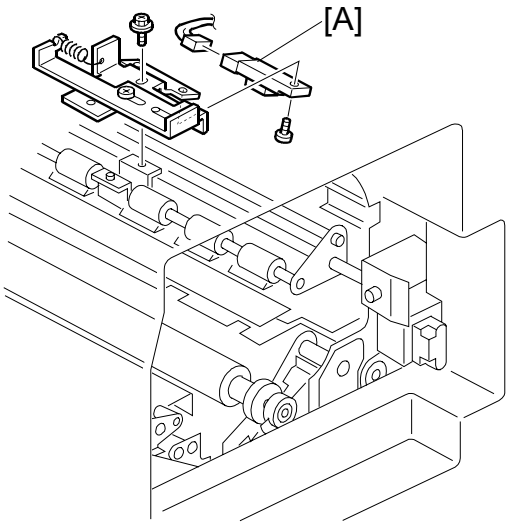
Take care to avoid possible injury. If the printing pressure release arms disengage, the press roller will be pulled upwards suddenly.

- 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.

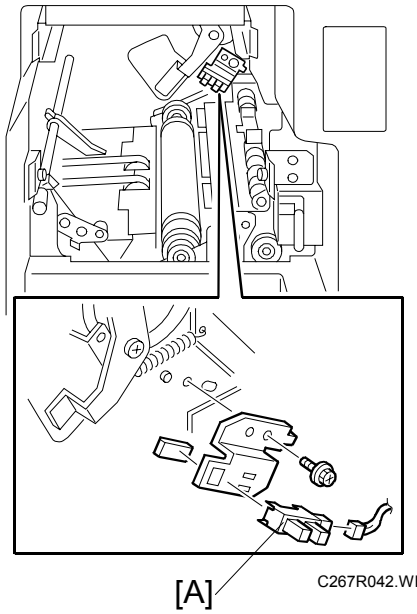
3.8.2 REGISTRATION SENSOR



C267R041.WMF

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

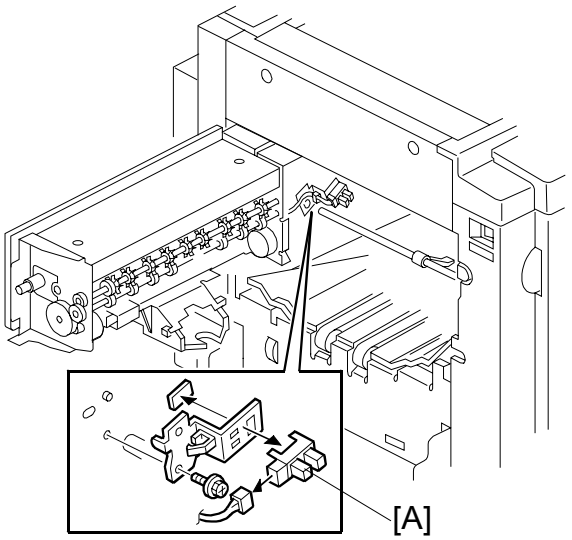
3.8.3 FEED START TIMING SENSOR



C267R042.WMF

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

3.8.4 2ND FEED TIMING SENSOR

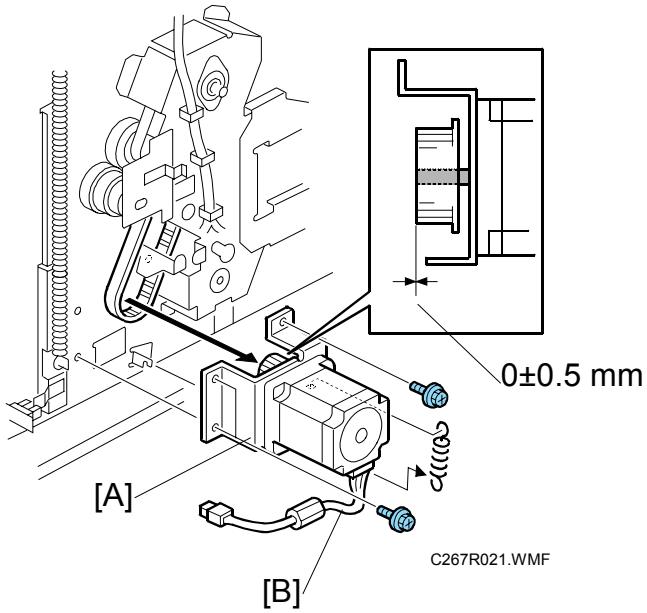


C267R043.WMF

- Open the master eject unit

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

3.8.5 REGISTRATION MOTOR

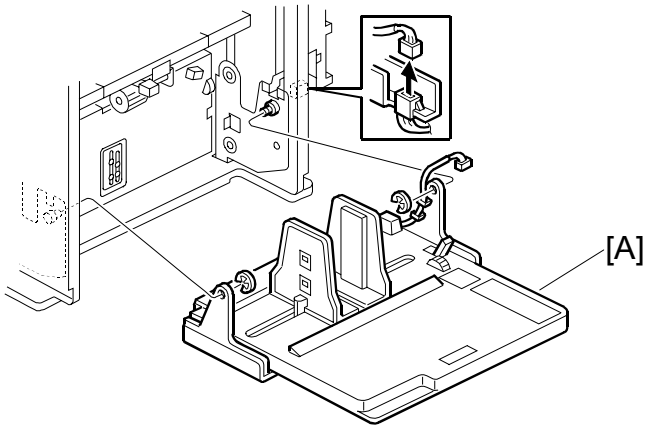


- Rear cover (☛ 3.2.3)
- MPU (☛ 3.3.1)

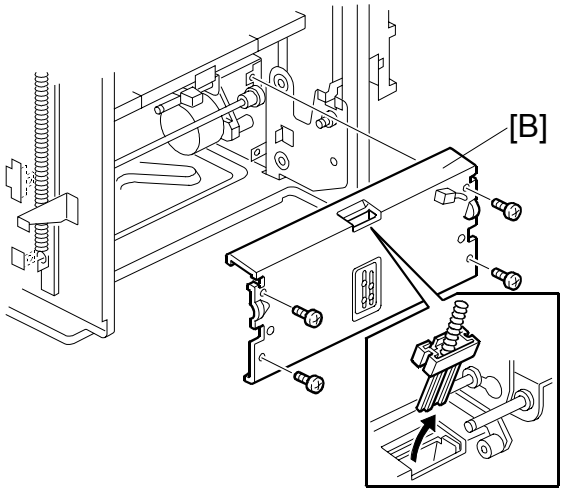
[A]: Registration motor (spring, 🔩 x3, belt, 🤚 x 1)

NOTE: 1) The side of the motor with the harness [B] should face downward, as shown in the diagram.
2) The flange of the gear should face towards the motor as shown in the diagram.

3.8.6 REGISTRATION ROLLER



C267R029.WMF



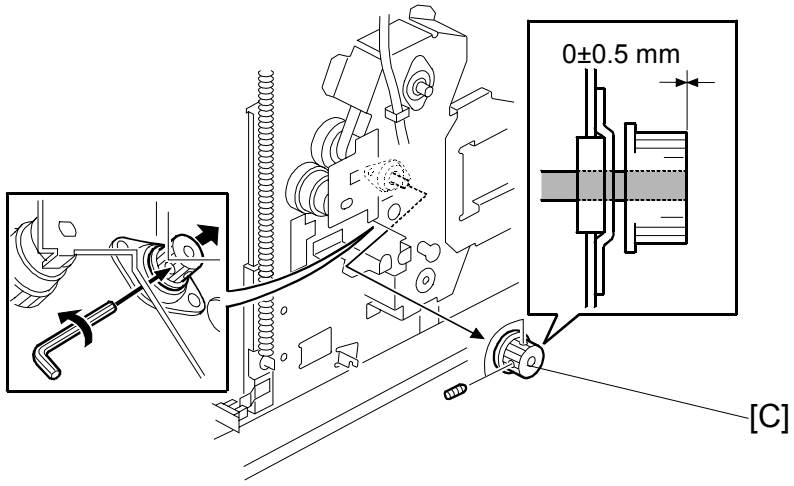
C267R030.WMF

- Front cover (☛ 3.2.1)
- Rear cover (☛ 3.2.3)

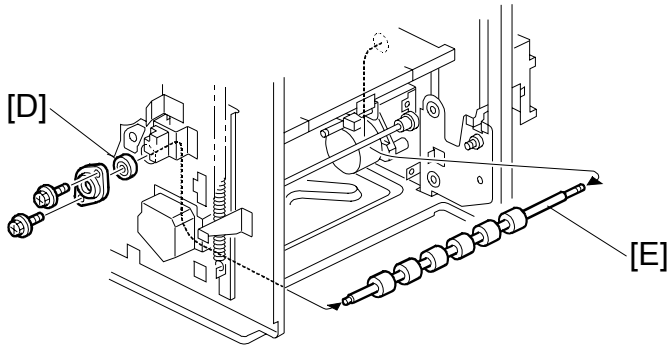
[A]: Paper table (✋ x 1, ℂ x 2)

[B]: Plate (🔧 x 4)

- MPU (☛ 3.3.1)
- PSU (☛ 3.3.2)
- Registration motor (☛ 3.8.5)



C267R028.WMF

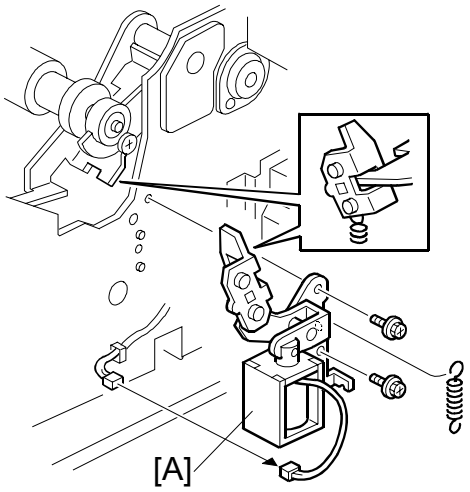


C267R031.WMF

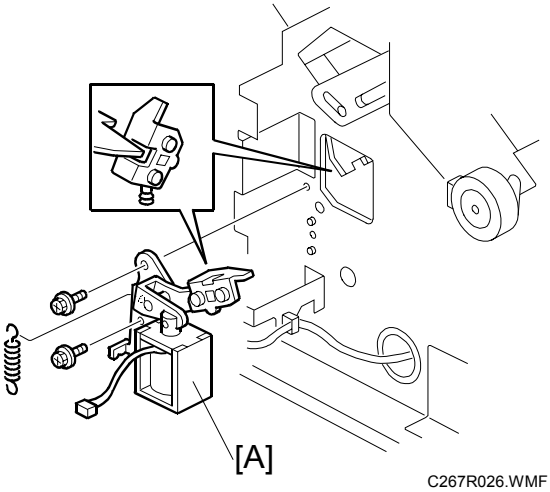
[C]: Gear
[D]: Bearing (x 2)
[E]: Registration roller

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

3.8.7 PRESS ROLLER RELEASE SOLENOIDS



C267R039.WMF



C267R026.WMF

- Front cover (☛ 3.2.1)
- Rear cover (☛ 3.2.3)

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

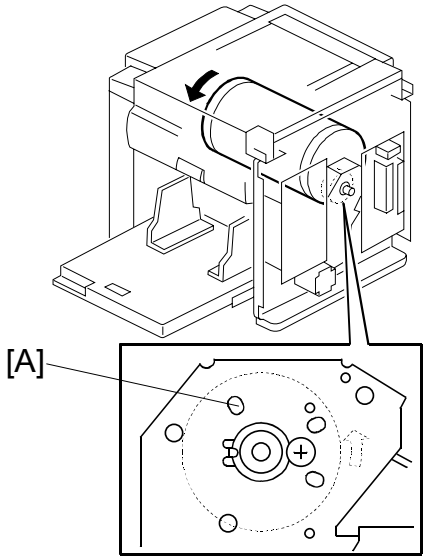
NOTE: Adjust the press roller release lever (☛ 3.8.8) after installing the new solenoid.

3.8.8 PRESS ROLLER RELEASE LEVER ADJUSTMENT

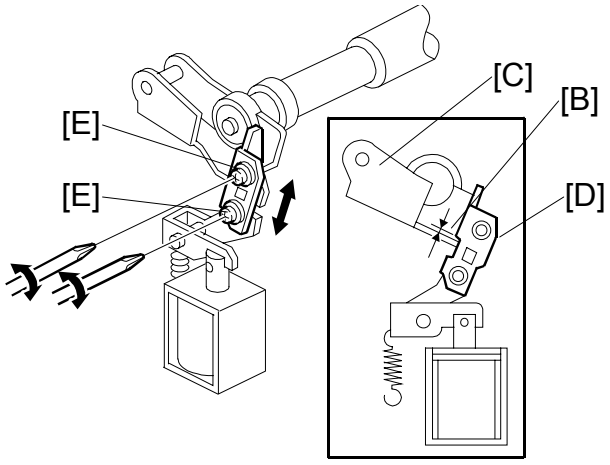
Purpose: To maintain the correct clearance between the press roller arms and press roller lock levers. This ensures that the press roller is correctly released and pressed against the drum when the press roller release solenoid is energized.

Standard: 0.7 to 1.2 mm

Tools: Thickness gauge



C267R044.WMF



C267R908.WMF

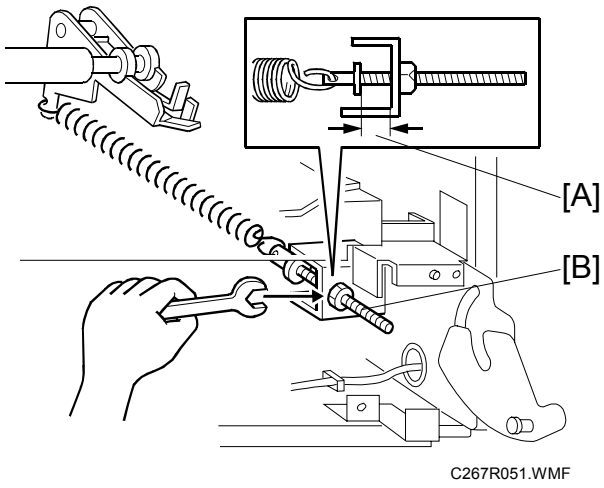
- Front cover (☛ 3.2.1)
- Rear cover (☛ 3.2.3)

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.

3.8.9 PRINTING PRESSURE ADJUSTMENT

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

Standard: Within 10 ± 0.5 mm



- Paper delivery unit (☛ 3.10.1)

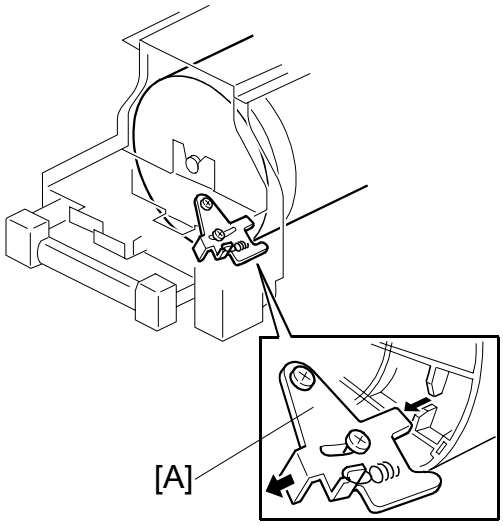
1. Adjust the distance [A] to 10 ± 0.5 mm by turning the adjusting bolt [B].
2. Repeat the same procedure for the printing pressure spring at the non-operation side.

3.9 DRUM

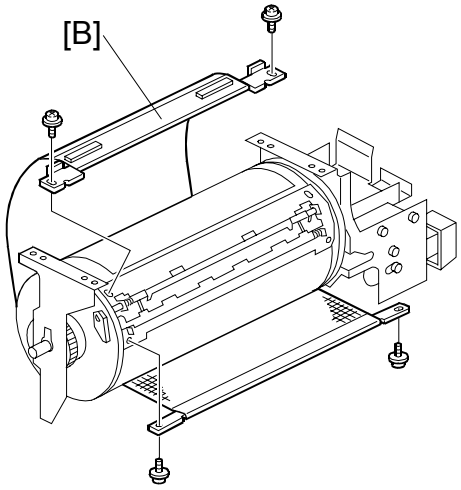
3.9.1 PREPARATION

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.

3.9.2 CLOTH SCREEN



C267R909.WMF

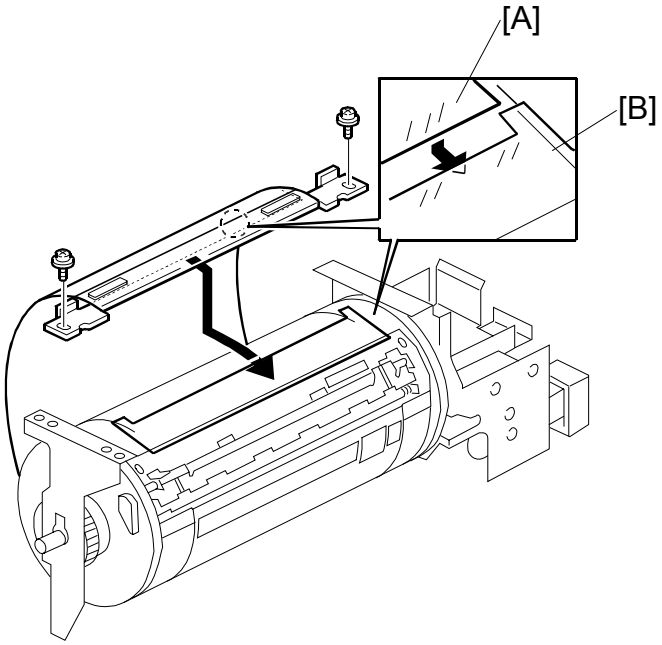


C267R073.WMF

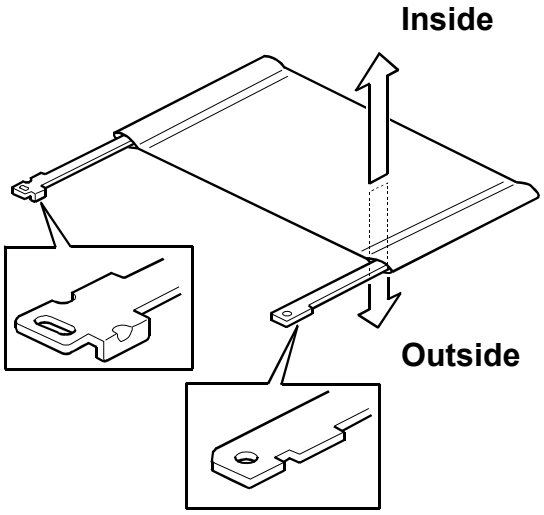
- Remove the drum

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).

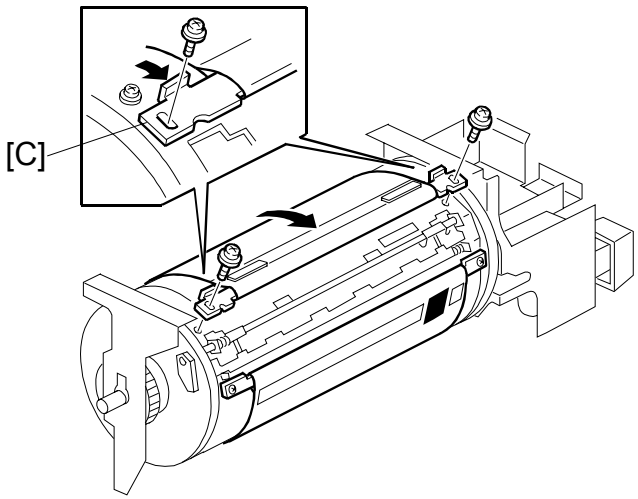
Installation



C267R068.WMF



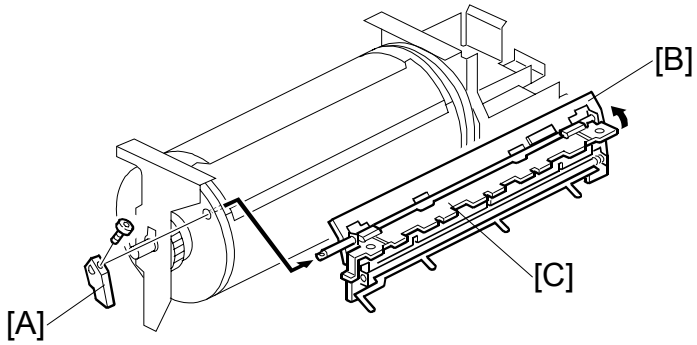
C267R070.WMF



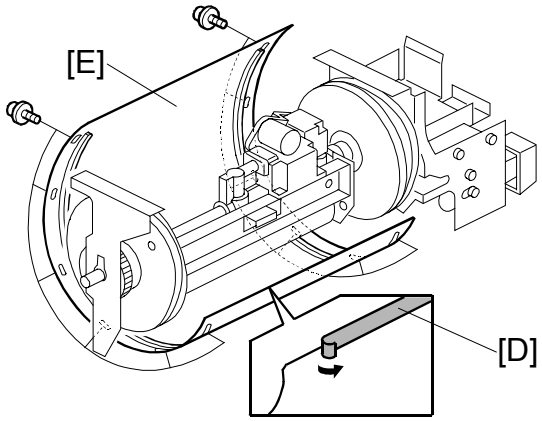
C267R067.WMF

- Do not scratch the cloth screen or metal screen.
- Properly insert the edge of the cloth screen [A] on the cloth screen under the mylar [B] on the metal screen, as shown above.
  Otherwise, ink will leak from the trailing edge of the master on the drum during a long printing run.
- Make sure that the correct side of the screen is facing up. In addition, make sure that the stays for securing the cloth screen are positioned correctly.
- When replacing the cloth screen, spread the screen around the metal screen while pulling the stay [C]. Adjust the stay so that it is parallel to the master clamper, then tighten the screws.
- Make sure that the cloth screen is not wrinkled while spreading it around the drum.

3.9.3 CLAMPER / METAL SCREEN



C267R069.WMF



C267R074.WMF

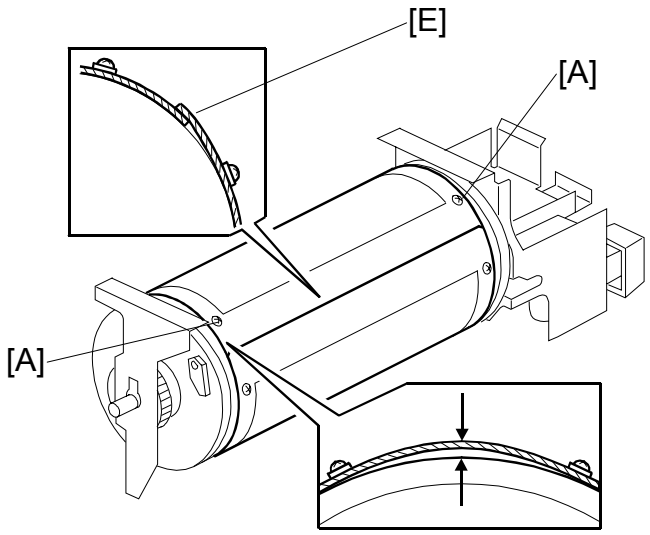
- Remove the drum
- Cloth screen (☛ 3.9.2)

[A]: Clamper lever (1 hexagon screw)
[B]: Clamper - open the clamping plate [C], then remove the clamper.

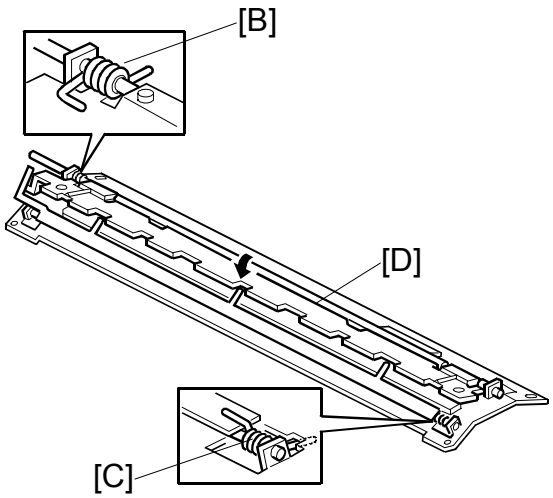
NOTE: 1) Do not allow ink to get on the inside of the clamping plate [C]. Otherwise, the master may slip off and the image position on the prints will move toward the trailing edge of the prints during a printing run.
2) Use a cloth dampened with water to clean the inside of the clamping plate [C]. Never 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



C267R071.WMF

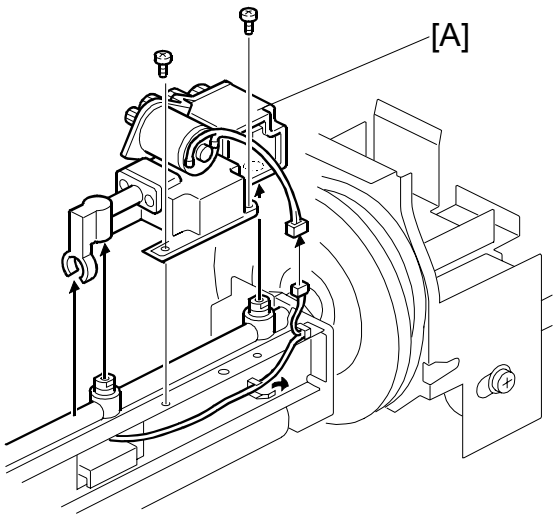


C267R072.WMF

- 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.)
- 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.

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

3.9.4 INK PUMP UNIT

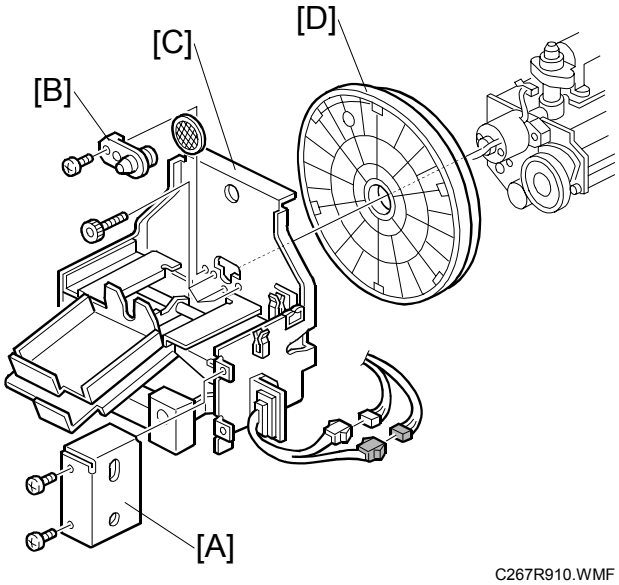


C267R075.WMF

- Remove the drum
- Cloth screen (☛ 3.9.2)
- Clamper / Metal screen (☛ 3.9.3)

[A]: Ink pump unit (✋ x 1, 🔩 x 2)

3.9.5 INK ROLLER UNIT / INK ROLLER ONE-WAY CLUTCH



C267R910.WMF

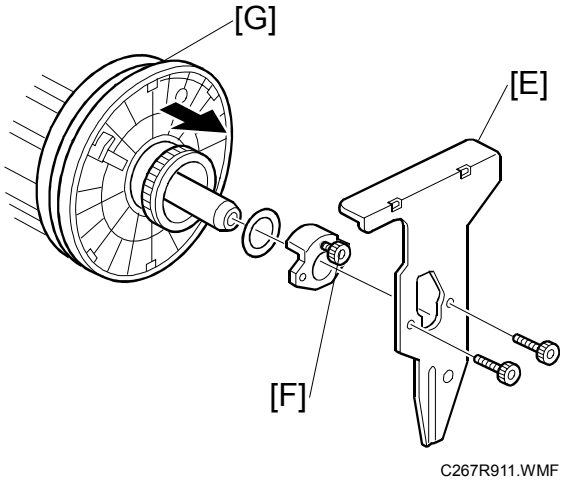
- Wipe off the ink around the ink roller beforehand (use SP2-10).
- Remove the drum
- Cloth screen (☛ 3.9.2)
- Clamper / Metal screen (☛ 3.9.3)

[A]: Connector cover (🔩 x 2, 🔩 x 2)

[B]: Ink socket (🔩 x 1)

[C]: Front drum bracket (🔩 x 3)

[D]: Front drum flange

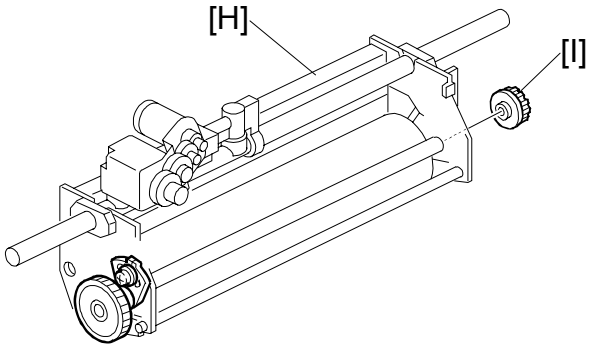


C267R911.WMF

[E]: Drum rear plate (🔩 x 2)

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

[G]: Drum rear flange



C267R901.WMF

[H]: Ink roller unit

[I]: Ink roller one-way clutch

3.9.6 DOCTOR ROLLER GAP ADJUSTMENT

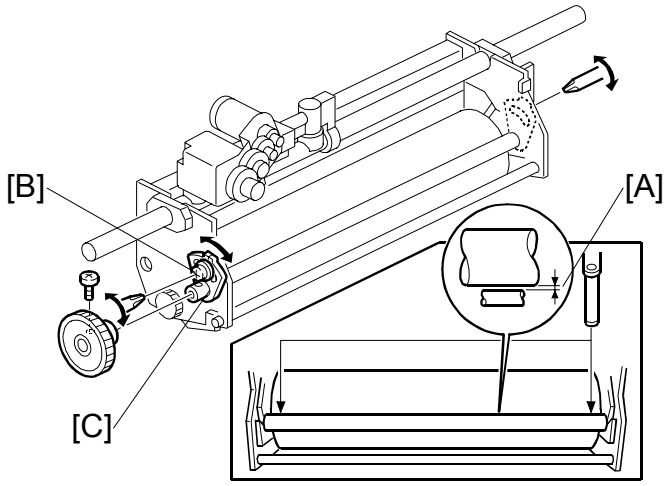
Purpose: To control the ink thickness around the ink roller.

Standard: A 0.07mm gauge passes, but a 0.09mm gauge does not.

Tools: Thickness gauge

⚠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.



C267R076.WMF

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

1. Make sure that a 0.07 mm gap gauge goes through the gap [A] between the ink and doctor rollers, and that a 0.09 mm gap gauge does not.
   NOTE: 1) 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.
   2) While the gap gauge is inserted, hold the doctor and ink rollers with your fingers in order to stop the rollers from rotating.
   3) 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.

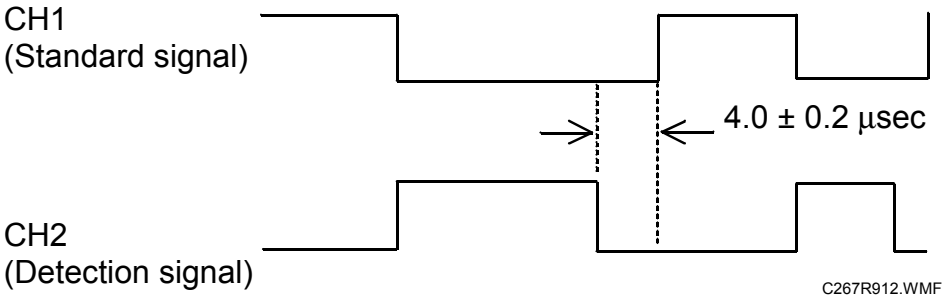
3.9.7 INK DETECTION ADJUSTMENT

Using an Oscilloscope

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

Standard: 4.0 ± 0.2 μsec

NOTE: 1) 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.
2) This adjustment is required every time the MPU has been replaced.
3) Normally, the simple method is sufficient. But, the oscilloscope method is more accurate. Use the oscilloscope method if you cannot adjust the sensor to the required value with the simple method, or if ink flooding problems occur after adjustment with the simple method.



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

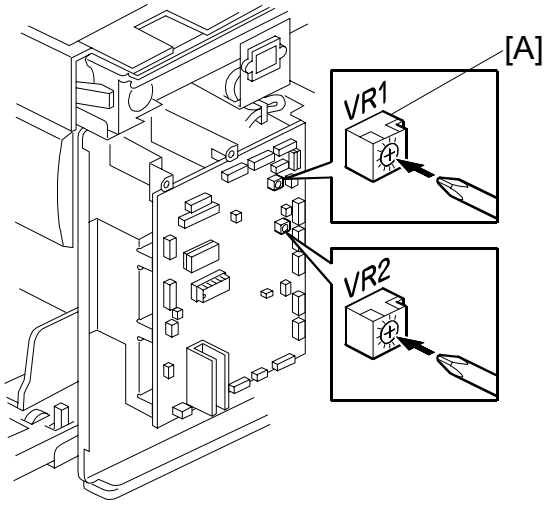
NOTE: 1) If the ink detection off mode has been selected with SP2-10, do not forget to return it to the default (detection on).

Simple Method

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

NOTE: 1) 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.
2) This adjustment is required every time the MPU has been replaced.
3) Normally, the simple method is sufficient. But, the oscilloscope method is more accurate. Use the oscilloscope method if you cannot adjust the sensor to the required value with the simple method, or if ink flooding problems occur after adjustment with the simple method.

Standard: 4.0 ± 0.2 μsec



C267R015.WMF

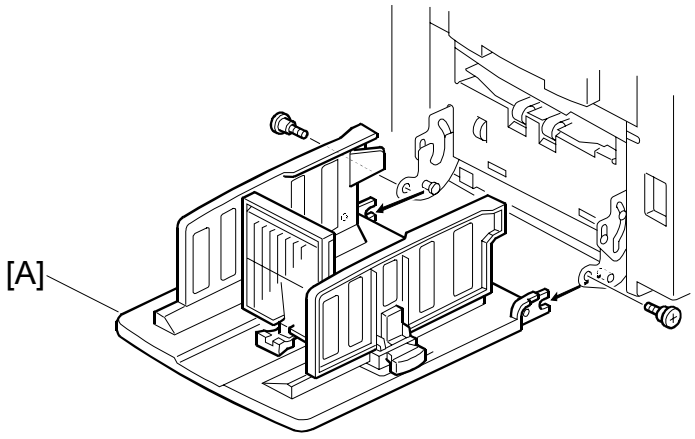
- Rear cover (☛ 3.2.3)

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

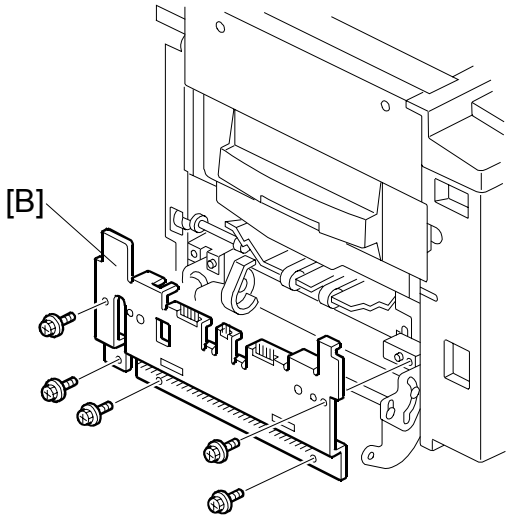
NOTE: If the simple method gives an inaccurate result (causing ink flooding, for example) , it is possible that too much ink will come out into the drum during printing. If this happens, repeat the adjustment, but use the oscilloscope method, because this is more accurate.

3.10 PAPER DELIVERY

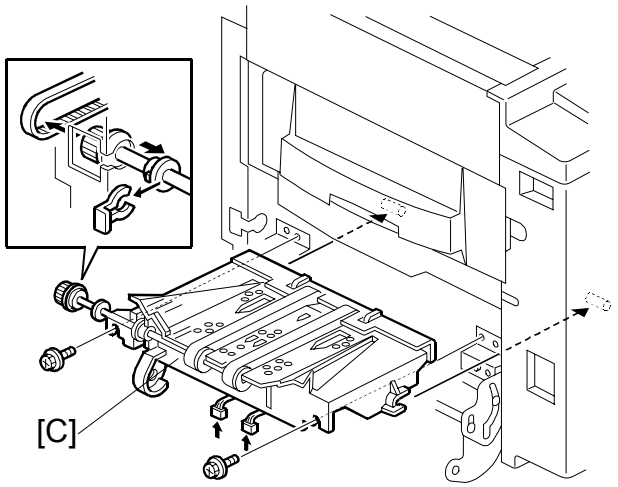
3.10.1 PAPER DELIVERY UNIT



C267R046.WMF



C267R047.WMF

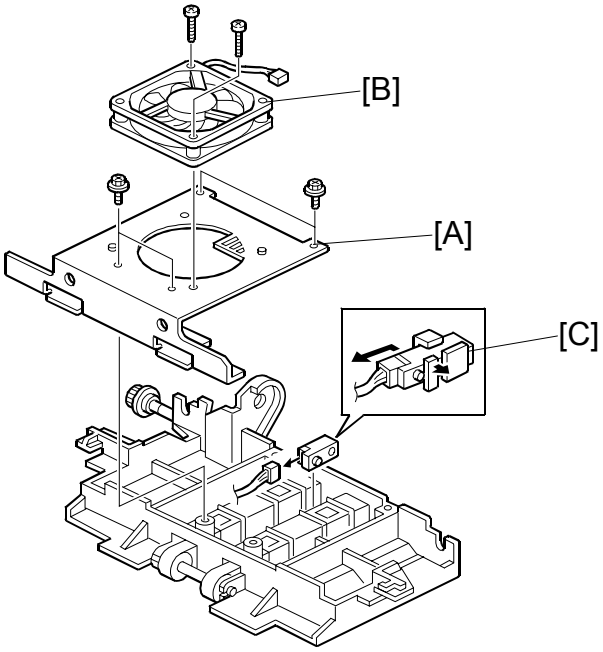


C267R048.WMF

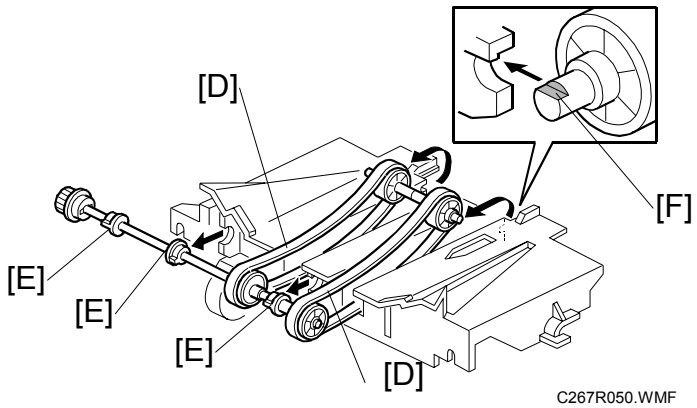
- Rear cover (☛ 3.2.3)

[A]: Paper table (🔩 x 2)
[B]: Paper delivery cover (🔩 x 5)
[C]: Paper delivery unit (🔩 x 2, 🔌 x 2, 🔘 x 1)

3.10.2 DELIVERY BELT / PAPER EXIT SENSOR / VACUUM FAN MOTOR / PAPER DELIVERY UNIT BUSHINGS



C267R049.WMF



C267R050.WMF

- Remove the paper delivery unit (☛ 3.10.1)

[A]: Vacuum fan motor bracket (☞ x 4)
[B]: Vacuum fan motor (☞ x 2)
[C]: Paper exit sensor (☞ x 1)
[D]: Delivery belts (ℂ x 1)
[E]: Paper delivery unit bushings

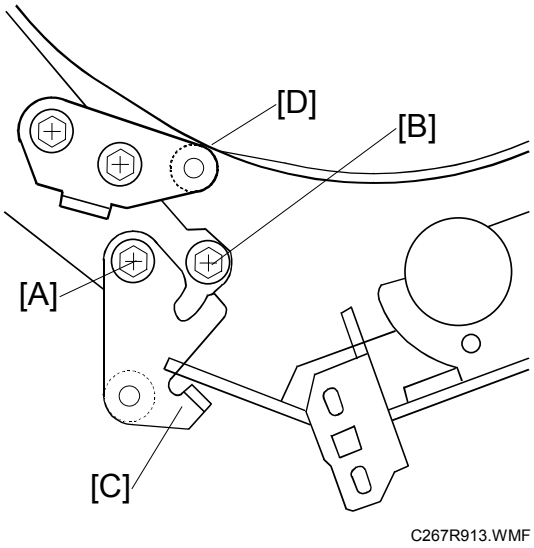
NOTE: 1) Make sure that you install the vacuum fan [B] the correct way around.
2) Install the delivery belt [D] the correct way around. The writing must be on the outside surface of the belt.
3) The flat part of the “D” shaped cutout in the shaft [F] must face upwards.

3.10.3 EXIT PAWL ADJUSTMENT

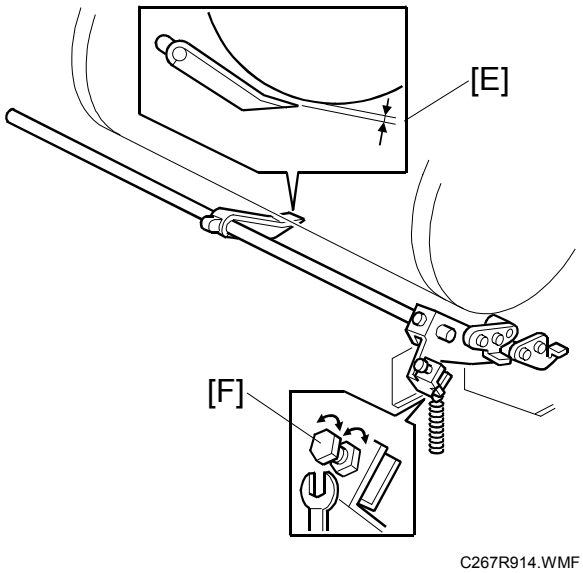
Purpose: To ensure that the exit pawls can move out of the way of the drum master clamper while the drum is rotating.

Clearance adjustment

Standard: Within 1.15 ± 0.15 mm



C267R913.WMF



C267R914.WMF

- Front cover (☛ 3.2.1)
- Rear cover (☛ 3.2.3)

1. Turn the drum to the drum home position.

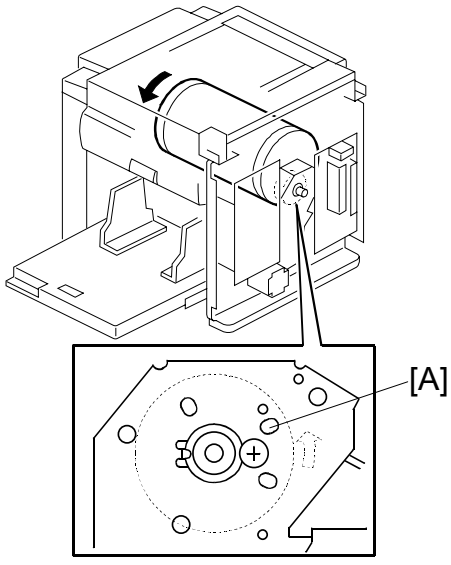
NOTE: The drum turns to home position automatically immediately after the power switch is turned on.

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

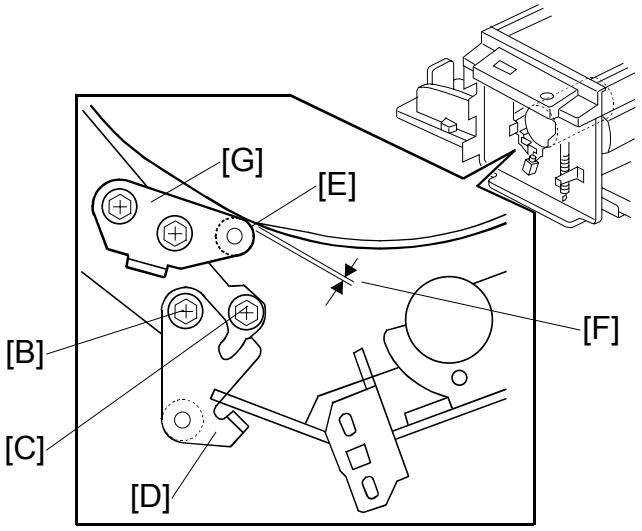
Timing adjustment

Do this after the clearance adjustment.

Standard: 0 or less than 0.5 mm



C267R044.WMF

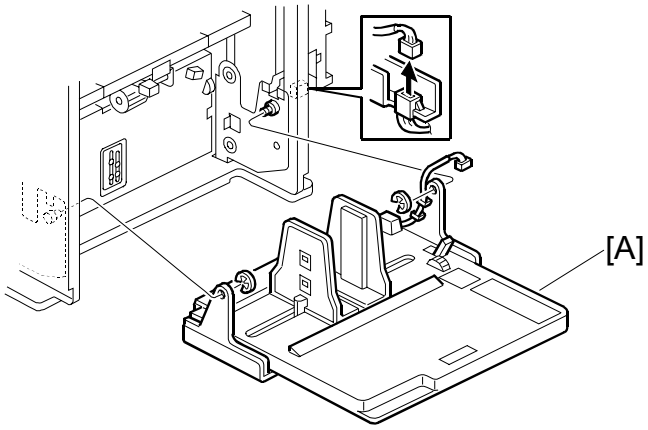


C267R052.WMF

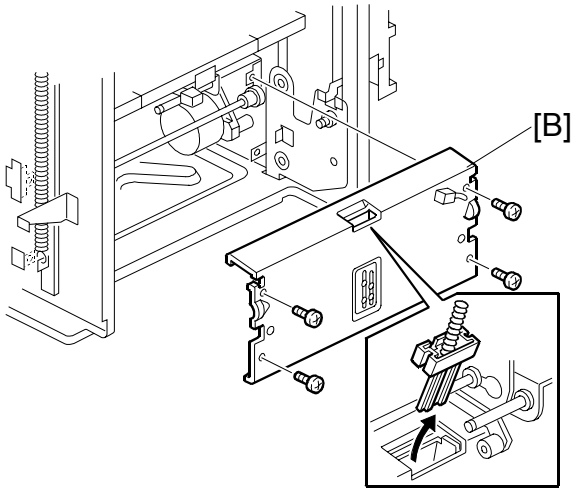
1. Turn the drum manually until the recess in the drum drive gear meets the positioning hole [A] in the bracket, as shown.
2. Loosen screw [B] then screw [C] in that order (do not remove them). Make sure that the bracket [D] becomes free from engagement and the cam follower [E] contacts the drum flange.
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].

3.11 MAIN DRIVE

3.11.1 MAIN MOTOR



C267R029.WMF

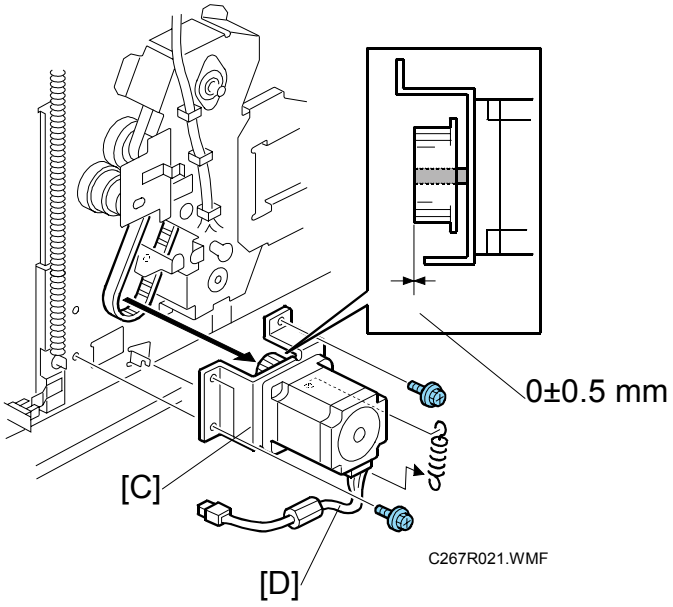


C267R030.WMF

- Rear cover (☛3.2.3)
- MPU (☛3.3.1)
- PSU (☛3.3.2)

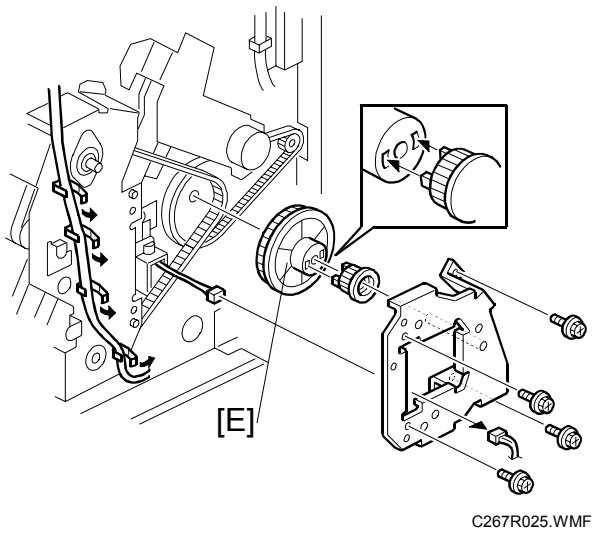
[A]: Paper table (☞ x 1, ℂ x 2)

[B]: Plate (🔩 x 4)

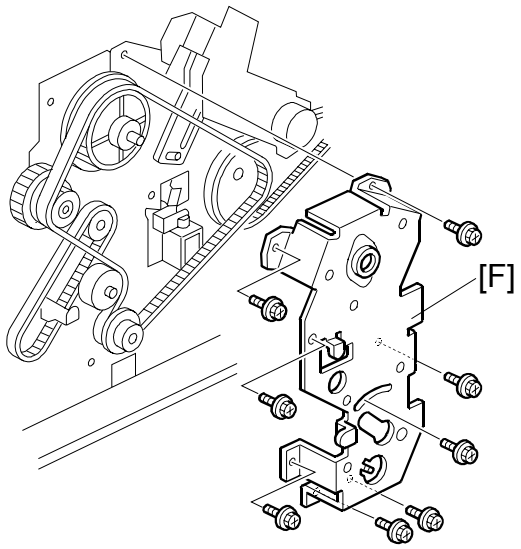


[C]: Registration motor (spring, x3, belt)

NOTE: 1) The side of the motor with the harness [D] should face downward, as shown in the diagram.
2) The flange of the gear should face towards the motor, as shown in the diagram.



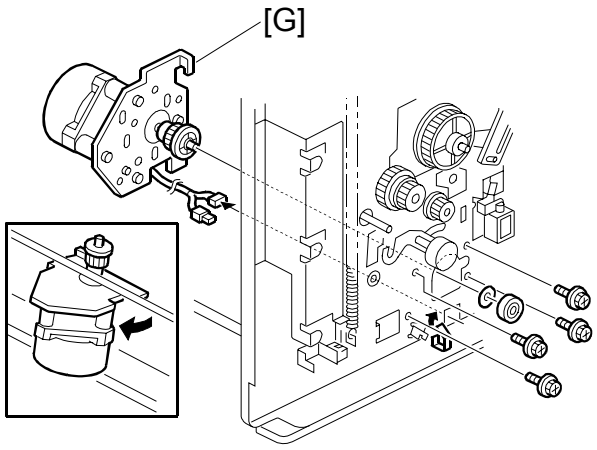
[E]: Gear (x 1, x 4, x 4)



C267R027.WMF

- Paper feed clutch (☛3.7.2)

[F]: Drive bracket (🔩 x 8)



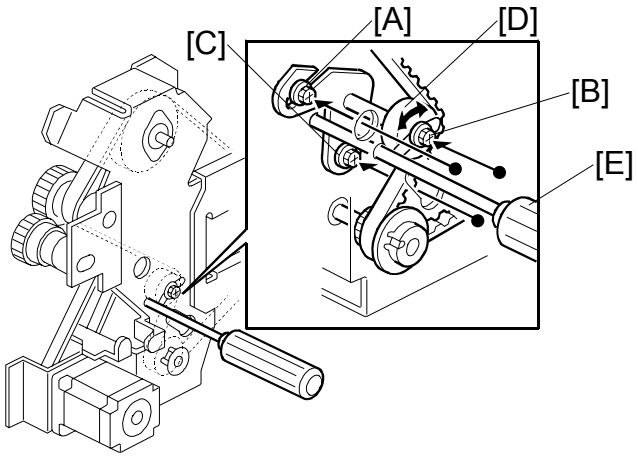
C267R032.WMF

[G]: Main motor (🔌 x 1, 🔩 x 4)

NOTE: Adjust the main drive timing belt (☛ 3.11.2) after installing the new main motor.

3.11.2 MAIN DRIVE TIMING BELT ADJUSTMENT

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



C267R053.WMF

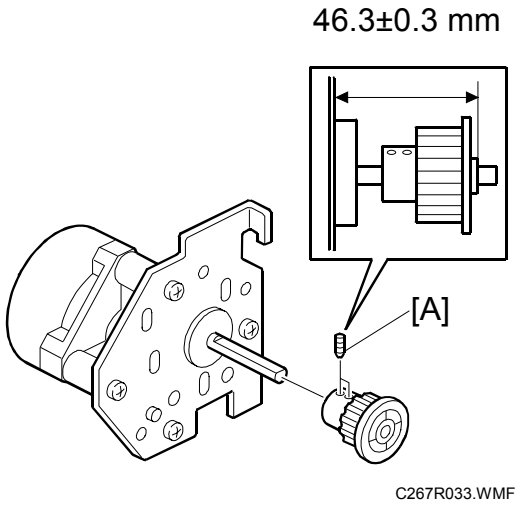
- Rear cover (☛ 3.2.3)
- MPU (☛ 3.3.1)

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.

3.11.3 MAIN MOTOR PULLEY POSITION

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

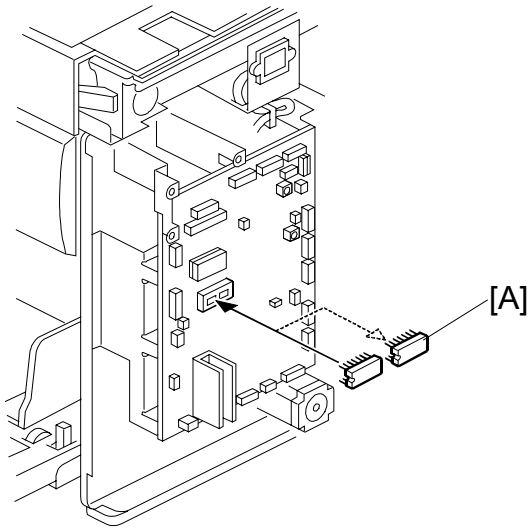
Standard: 46.3 ±0.3 mm



NOTE: Tight the screws alternately little by little. Do not tighten them completely one by one.

3.12 FIRMWARE UPDATE (I/O ROM)

The I/O control firmware in the EPROM on the MPU can be updated by replacing the EPROM.



C267R045.WMF

1. Before upgrading the I/O ROM firmware, check the current ROM version with SP1-74.
2. Turn off the main switch and disconnect the power plug.
3. Remove the rear cover.
4. Replace the EPROM [A] on the MPU.
5. Connect the power plug and turn on the main switch.
6. Access SP1-74 and confirm that the ROM version was changed.

NOTE: If you upgrade the main firmware, refer to section 5.9.2.

3.13 SPECIAL TOOLS

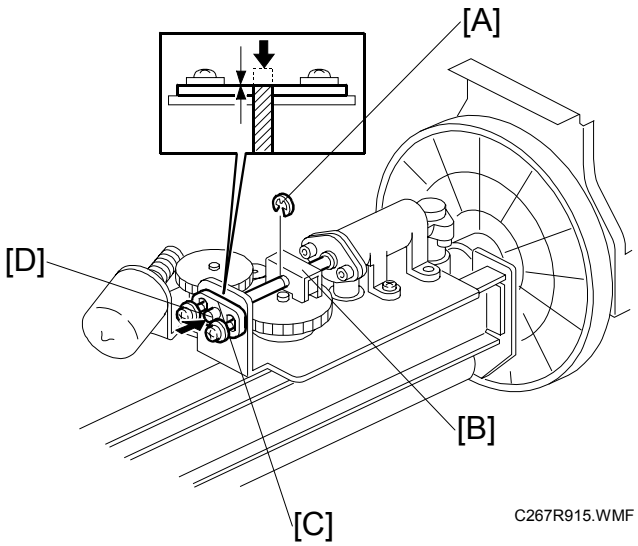
The following are the special tools used for service.

Description	Part number	Note
Scanner positioning pins (4 pins as a set)	A0069104	☛ 3.4.7
Flash memory card – 4MB	N8036701	☛ 5.9

3.14 COLOR DRUM

3.14.1 INK PUMP ADJUSTMENT

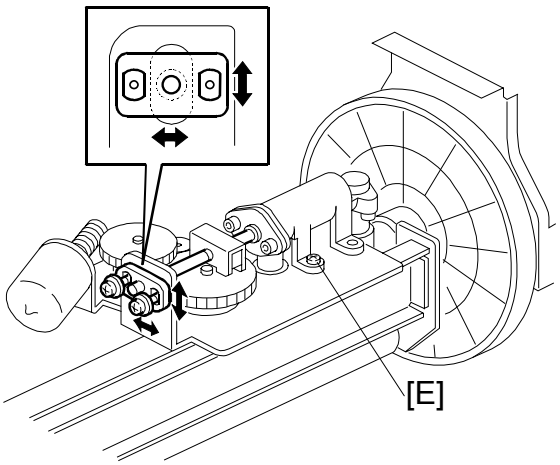
Purpose: To ensure the smooth operation of the ink pump plunger by properly positioning its holder.



- Remove the drum
- Cloth screen (☛ 3.9.2)
- Clamper / Metal screen (☛ 3.9.3)

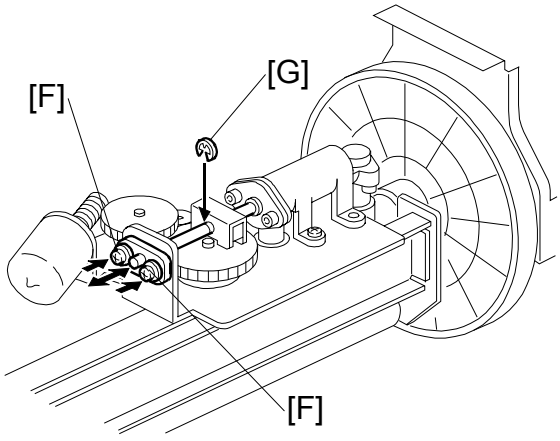
1. Remove the E-ring [A] to free the plunger from the pump drive slider [B].
2. Loose the two screws securing the holder [C]. (Do not remove the holder.)
3. Push the plunger [D] until it reaches the bottom.

NOTE: The end of the plunger [D] should not project outside from the holder [C].



C267R916.WMF

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



C267R917.WMF

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

4. TROUBLESHOOTING

4.1 SERVICE CALL CODES

NOTE: 1) If the problem concerns electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
2) If the problem concerns a motor lock, first check the mechanical load before replacing motors or sensors.

No.	Description/Definition	Points to Check
E-00	*Clamper Motor Failure* The MPU cannot detect the clamper position sensor signal (open or closed) within 3.0 seconds after the clamper motor turns on.	Clamper drive Clamper sensors Clamper motor MPU board Main motor encoder Master eject position sensor
E-01	Cutter error The cutter HP sensor does not turn on within 3.0 seconds after the cutter motor turns on.	Cutter drive Cutter switch Cutter motor
E-02	Paper Table Drive error The paper height sensor or the table lower limit sensor does not turn on within 7.5 seconds after the table motor turns on. Paper height sensor 1 or 2 does not turn on within 1 second after the paper height sensor 1 or 2 turn on.	Paper table drive Paper table motor Paper height sensor 1 or 2 Paper table lower limit sensor Gears Paper table spring
E-04	*Thermal Head Overheat* Temperature of the thermal head is greater than 65°C when the Start key is pressed.	Overheat (wait for the thermal head to cool down) Thermal head
E-06	*Main Motor Lock* The CPU cannot detect the master eject position sensor (drum HP) signal within 5.0 seconds after the main motor turns on.	Main motor drive Main motor Motor drive board Master eject position sensor
E-09	*Thermal Head Thermistor Open* The thermistor output voltage is over 4.432 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

No.	Description/Definition	Points to Check
E-12	Pressure Plate error The pressure plate home position sensor does not turn on within 6 seconds during initialization. Both the pressure plate home position and pressure plate limit sensors turn on when the main SW is turned on. The pressure plate home position sensor does not turn off when the pressure plate limit sensor does not turn on within 4.5 seconds when compressing the ejected master.	Pressure plate drive Pressure plate motor Plate position sensors Master eject error
E-13	Scanner error The scanner HP sensor does not turn on after the scanner motor has moved for more than 10 seconds back to home position after scanning. The scanner cannot leave the home position within 2.0 seconds of power on. Just after switching the power on, the scanner cannot return to the home position within 2.0 seconds of leaving.	Scanner drive Scanner HP sensor Scanner motor Scanner wire has come off
E-22	2nd Feed Start Timing Sensor error The 2nd feed start timing sensor does not activate before the master eject position sensor activates.	Drum sensors Feeler
E-23	Master Eject Position Sensor (Drum HP) error The master eject position sensor does not activate before the feed start timing sensor activates.	Drum sensors Feeler
E-24	Feed Start Timing Sensor error The feed start timing sensor does not activate before the 2nd feed timing sensor activates.	Drum sensors Feeler
E-40	Thermal Head ID error The CPU detects an abnormal ID signal from the thermal head.	Different thermal head MPU Thermal head connector disconnected
E-44	MSU error	Replace the MPU
E-50	NVRAM data version disagreement Data for the uploading NVRAM is not expected data for the machine.	Replace the MPU
E-51	Flash Rom error The data in the flash ROM is not complete.	Replace the MPU
E-61	Auto Off Switch error The main switch does not turn off for more than 6.0 seconds.	Auto off switch defective Auto off switch connector disconnected

4.2 ELECTRICAL COMPONENT DEFECTS

C267T900.WMF

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

4.2.1 DRUM

Name	State	Symptoms
2nd Feed start timing Sensor	Open	E-22 is displayed when the drum rotates.
	Shorted	
Master Eject Position (HP) Sensor	Open	E-23 is displayed when the drum rotates.
	Shorted	
Feed Start Timing Sensor	Open	E-24 is displayed when the drum rotates.
	Shorted	
Drum set	Set	Setting Drum: Normal Operation No Drum: E-06 is displayed when the main motor is rotates.
	OFF	Displays “no drum”
Drum ink sensor	ON	Image will be patchy because ink will not be supplied.
	OFF	Display “Ink end”

4.2.2 PAPER EJECT

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

4.2.3 PAPER FEED

Name	State	Symptoms
Paper Registration Sensor	Open	The “AB” jam indicator is lit.
	Shorted	The “A” jam indicator is lit when a copy is made.
Paper Table Lower limit Sensor	Open	The paper table doesn’t go down.
	Shorted	The paper table goes down below the sensor, and E-02 is displayed.
Paper End Sensor	Open	Printing can begin even if there is no paper, and the “A” jam indicator will be lit.
	Shorted	The “load more paper” indicator is lit.
Paper height sensor 1	Open	E-02 is displayed after 1 second from moving up the paper feed table during printing.
	Shorted	The paper table goes up over the sensor, and E-02 is displayed
Paper height sensor 2	Open	E-02 is displayed after 1 second from moving up the paper feed table during printing.
	Shorted	The paper table goes up over the sensor, and E-02 is displayed

4.2.4 MAIN DRIVE

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

4.2.5 SCANNER

Name	State	Symptoms
Platen Cover Sensor	Open	The master is made normally, even if the platen cover is open. (Have to push the start button twice)
	Shorted	The image is treated using center/edge erase mode.
Scanner HP Sensor	Open	E-13 is displayed.
	Shorted	

4.2.6 MASTER EJECT

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

4.2.7 MASTER MAKING UNIT

Name	State	Symptoms
Master Set Cover Sensor	Open	The “D” jam indicator is lit.
	Shorted	The “open cover” indicators are lit.
Cutter HP Sensor	Open	E-01 is displayed.
	Shorted	E-01 is displayed.
Master making unit set switches	On	Either of sensors is work correctly, the machine move correctly.
	Off	“Not set making unit” is displayed
Master End Sensor	White	Master making can start even if there is no master roll, but the “D” jam indicator will be lit.
	Black	The “load new master roll” indicator is lit.
Thermal Head Temperature	Open	E-09 is displayed.
	Short	E-04 is displayed.

4.2.8 OTHER

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

4.3 DIP SW, LED, VR, TP, AND FUSE TABLES

4.3.1 TEST POINTS

MPU

No	Usage
TP5	GND-a
TP10	+5V
TP11	+5VE
TP23	Ink Detection Pulse
TP25	Standard Pulse
TP28	GND-a

4.3.2 POTENTIOMETERS

MPU

No	Usage
VR1	Ink detection adjustment
VR2	Master End Sensor Adjustment

Power Supply Unit

No	Usage
RV1	Thermal Head Voltage Adjustment

4.3.3 LED'S

MPU

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

FUSES

MPU

FUSE #	Rated Current	Voltage	Related Devices
FU 1	1 A	24 V DC	Ink Pump Motor
FU 2	2 A	5 V DC	UC2 PC Controller

PSU

FUSE #	Rated Current	Voltage	Related Devices
FU 700	6.3 A	120/230V AC	AC Line
FU 701	6.3 A	24VDC	Paper Transport Motor, Paper Feed Clutch, Paper Up-Down Motor, Air Knife Fan Motor, Front/Rear Pressure Release Solenoid, Vacuum Fan Motor, Ink Pump Motor, Master Eject Motor, Optional Key Counter, Master Counter, Paper Counter, Cutter Motor, Clamper Motor, Scanner Motor
FU 702	6.3 A	24V DC	Not used
FU 703	8 A	24V DC	Main Motor
FU 704	6.3 A	24V DC	Optional Tape Dispenser

5. SERVICE PROGRAM MODE

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

5.1 USING SERVICE PROGRAM MODES

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

5.1.1 ACCESSING SP MODES

Entering SP Mode

1. Key in the following sequence.

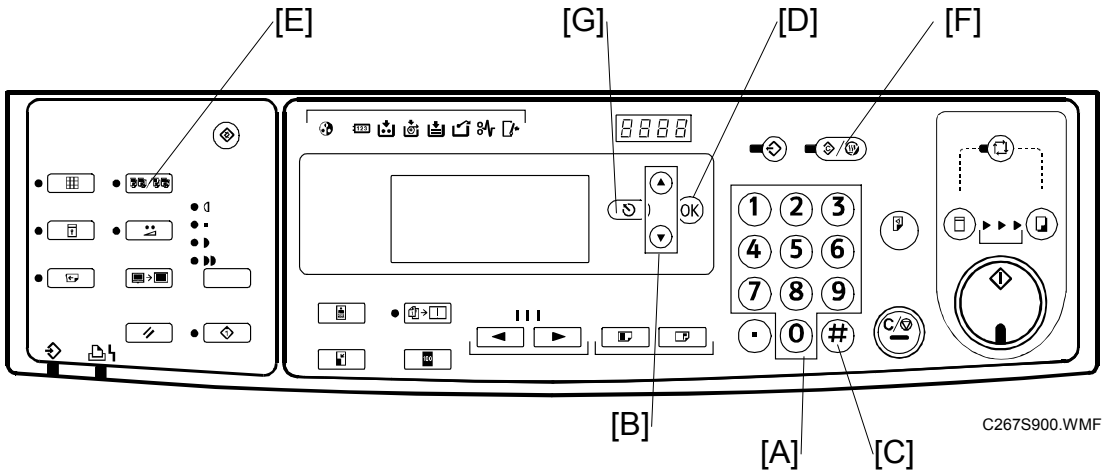
   [User Tools] → [1] → [0] → [7] → [#]

   - Hold the [#] key down for longer than 3 seconds.

Leaving SP Mode

Press the [User Tools] key one or more times.

5.1.2 HOW TO SELECT A PROGRAM NUMBER



1. Using the number keys [A] or the △▽ keys [B], enter the desired main menu number, then press the Enter key [C] or the OK key [D].
2. Using the number keys or the △▽ keys, enter the desired sub-menu number, then press the Enter key or the OK key.
3. Enter the desired value or mode using the number keys (SP modes are listed in the service program tables).
   NOTE: 1) Use the Memory/Class [E] key to toggle between "+" and "-".
   2) To enter a decimal place, you do not have to enter a decimal point. For example, to enter "1.5" just press "1" and "5" keys.
4. Press the Enter key or the OK key to store the displayed setting.
   NOTE: To cancel the SP mode, press the Clear Modes/Energy Saver key [F] or the Cancel key [G].

5.1.3 MAIN MENU NUMBER LIST

Number	Main Menu
1	Copy Data
2	Basic Settings
3	System Settings
4	Input Mode
5	Output Mode
6	Adjustment
7	Memory Clear
8	System Test

5.2 1. COPY DATA

5.2.1 SP TABLE (SP 1-XXX)

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

5.2.2 SP1-70: MAIN FIRMWARE PARTS NUMBER

Displays the main firmware parts number and the suffix.

5.2.3 SP1-80: ERROR CODE HISTORY

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

5.2.4 SP1-83: PSU UNUSUAL VOLTAGE HISTORY

Display the unusual power supply into the machine history.

5.3 2. BASIC SETTINGS

5.3.1 SP TABLE (SP 2-XXX)

No.	Menu Items	Default	Settings
1	Default print speed	2	1 to 3
2	Default image position	0	-10.0mm to +10.0mm (0.5mm interval)
4	Destination code		
5	Not used (Ink)	0	0 / 2-
6	Image position display	1	0:Slow 1:Normal 2:Fast
10	Ink detection board	On	Off/On (Off is used for tests, and for removing ink from the drum)
11	Paper end sensor	On	Off/On (Off is used for tests)
12	Drum master sensor	On	Off/On (Off is used for tests)
13	Platen cover sensor	On	Off/On (Off is used for tests)
14	ADF cover sensor	On	Off/On (Off is used for tests)
20	Destination setting	Other	Other/Japan
21	Ink setting (not used)	0	0 to 1
33	Re - Feeding setting	On	Off/On
40	T/H energy control – B4/Black	7	0 to 50%
41	T/H energy control – B4/Color	7	0 to 50%
42	T/H energy control – A4/Black	7	0 to 50%
43	T/H energy control – A4/Color	7	0 to 50%
44	T/H energy control – LG/Black	7	0 to 50%
45	T/H energy control – LG Color	7	0 to 50%
50	T/H energy control - B4/Black eco	15	0 to 50%
51	T/H energy control - B4/Color eco	15	0 to 50%
52	T/H energy control - A4/Black eco	15	0 to 50%
53	T/H energy control - A4/Color eco	15	0 to 50%
54	T/H energy control – LG/Black eco	15	0 to 50%
55	T/H energy control – LG/Color eco	15	0 to 50%
60	Bold letter mode	Off	Off/On
61	T/H Swing Mode	Off	Off/On
62	T/H Swing Quantity	2	+-1mm to +-5mm
80	Auto off at unusual voltage	On	Off/On
95	Paper table standby position	Low	High / Low
100	Make master without print	Off	Off/On

SP 2-34, 2-35 added RTB 8

5.3.2 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.

5.3.3 SP2-33: RE-FEEDING SETTING

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

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

OFF: Re- feeding is off.

5.3.4 SP2-40, 2-55: THERMAL HEAD ENERGY CONTROL

2-40~45: The default is 7%. This means that during normal printing mode, the thermal head energy is 93% of the maximum possible (100 – 7).

2-50~55: The default is 15%. This means that in economy printing mode, the thermal head energy is reduced by another 15%. With the default settings, this means that the thermal head energy is 85% of maximum power (100-15).

5.3.5 SP2-60: BOLD MODE: LETTER MODE ONLY

Makes a bold outline of a letter-mode image.

5.3.6 SP2-61: T/H SWING MODE

If this is set to 'ON', the thermal head writing position is moved a small amount between masters. The amount is set with SP2-61 (T/H Swing Amount) automatically. This changes the side-to-side margin on the master.

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

Default: OFF

5.3.7 SP2-62: T/H SWING AMOUNT

Settings: +-1 to +-5 mm

Default: 2 mm

5.3.8 SP2-80: AUTO OFF AT UNUSUAL VOLTAGE

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

5.3.9 SP2-95: PAPER TABLE STANDBY POSITION.

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

Low: The standard position

NOTE: If SP2-95 is “high”, the machine goes to the standard position in the following situations.

- When the master end indicator lights and a message is displayed
- When a master eject jam (B jam location indicator) is displayed
- When a master feed jam (D jam location indicator) is displayed
- When the paper height sensor is actuated immediately after the main switch is turned on.

5.3.10 SP2-100: MAKE MASTER WITHOUT PRINT

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

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

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

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

Procedure:

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

5.4 3. SYSTEM SETTINGS

5.4.1 SP TABLE (SP 3-XXX)

No.	Menu Items	Default	Settings
1	Input the present time	(00/01/01 0:00)	99/12/31 23:59
2	Input TEL number	-	
3	Input serial number	-	
4	Input installation data	(00/01/01)	99/12/31
9	Key counter setting	No	No/Yes
10	Key card setting (Japan only)	No	No/Yes

5.4.2 SP3-1: INPUT THE PRESENT TIME

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

Input the last two digits of the present year (two-digit number).
↓#
Input the present month (two-digit number).
↓#
Input the present date (two-digit number).
↓#
Input the present hour (two-digit number).
↓#
Input the present minute (two-digit number).
↓#
Input the present second (two-digit number).
↓#

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

03
↓#
01
↓#
27
↓#
13
↓#
00
↓#
00
↓OK

5.4.3 SP3-4: INPUT INSTALLATION DATE

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

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

↓#

Input the present month (two-digit number).

↓#

Input the present date (two-digit number).

↓#

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

03

↓#

01

↓#

27

↓OK

5.5 4. INPUT MODE

5.5.1 SP TABLE (SP 4-XXX)

No.	Menu Items
1	Scanner HP sensor
2	Platen cover sensor
7	Master eject unit open SN
9	Master making unit set SW 1
10	Master making unit set SW 2
11	Master set cover sensor
12	Cutter HP switch
13	Master end sensor
14	Eject box set switch
15	Master eject sensor
16	Pressure plate HP sensor
17	Pressure plate limit Sensor
18	Ink detection signal
19	Color drum signal
21	Drum set signal
22	Clamper open sensor
23	Clamper close sensor
24	Drum master sensor
25	Master eject position SN
27	Drum size1 signal
28	Drum size2 signal
30	Table lowering switch
31	Table lower sensor
33	Paper end sensor
35	Paper pick-up roller sensor
36	Paper height filler sensor
41	Registration sensor
42	Feed start timing sensor
43	2nd feed timing sensor
44	Paper exit sensor
50	Door safety switch

No.	Menu Items
60	ADF connecting signal
61	ADF cover sensor
62	ADF registration sensor
64	ADF original set sensor
69	ADF open sensor
70	Key counter signal
71	Key card signal (Japan only)

5.6 5. OUTPUT MODE

5.6.1 SP TABLE (SP 5-XXX)

No.	Menu Items
1	Exposure lamp (xenon lamp)
2	Scanner motor - scan
3	Scanner motor - return
4	Scanner to HP
8	Master feed motor – Forward
9	Cutter motor – to HP
10	Cutter motor – reverse
11	Cutter motor – forward
12	VHD signal
13	Master eject motor
14	Pressure plate motor - limit
15	Pressure plate motor -to HP
17	Main motor - 30 rpm
18	Main motor - 60 rpm
19	Main motor - 80 rpm
20	Main motor - 100 rpm
21	Main motor - 130 rpm
23	Clamper motor: to open
24	Clamper motor: to close
25	Ink pump motor
26	Pressure release solenoids
30	Table motor – down
31	Table motor – up
35	Paper feed clutch
40	Registration motor - 30 rpm
41	Registration motor - 60 rpm
42	Registration motor - 80 rpm
43	Registration motor - 100 rpm
44	Registration motor - 130 rpm
46	Air knife fan motors
47	Vacuum fan motor
48	PSU fan motor
50	Paper counter
51	Master counter

No.	Menu Items
60	ADF motor
61	ADF feed clutch
62	ADF pick-up solenoid
63	Key counter signal
64	Not used
65	Key card (Japan only)
90	Main motor – to HP
91	Main motor – to Master clamp
100	All indicators on the panel
111	Auto Off solenoid

5.7 6. ADJUSTMENT

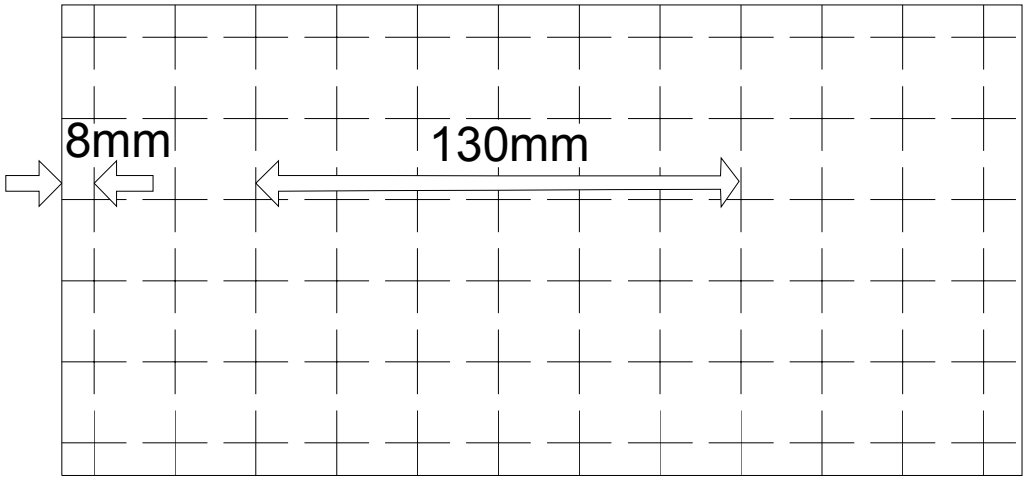
5.7.1 SP TABLE (SP 6-XXX)

No.	Menu Items	Default	Settings
1	Main-scan position – platen	0	-5.0 to 5.0 mm
2	Main-scan position – ADF	0	-5.0 to 5.0 mm
3	Scan start position – platen	0	-2.0 to 5.0 mm
4	Scan start position - ADF	0	-5.0 to 5.0 mm
5	Scanning speed - platen	0	-5.0 to 5.0 %
6	Scanning speed - ADF mode	0	-5.0 to 5.0 %
10	Master writing speed	0	-5.0 to 5.0 %
11	Master writing length	0	-5.0 to 5.0 %
20	Registration buckle	0	0 to100 PLS
21	Paper regist position	0	-5.0 to 5.0 mm
27	Master making density - Tint	1	0: Pale, 1: Normal, 2: Dark
28	Master making density - Photo	1	0: Pale, 1: Normal, 2: Dark
29	Master making density - Letter/Photo	1	0: Pale, 1: Normal, 2: Dark
30	Master making density - Letter	1	0: Pale, 1: Normal, 2: Dark
32	MTF filter – Letter: Main	2	0 to 7
33	MTF filter – Letter: Sub	2	0 to 7
34	MTF filter – Letter/Photo: Main	2	0 to 7
35	MTF filter – Letter/Photo: Sub	2	0 to 7
36	MTF filter - Photo: Main	2	0 to 7
37	MTF filter – Photo: Sub	2	0 to 7
40	Ink detection adjustment	–	
50	Master end sensor voltage	2	0.5 to 3.5V
61	Master length – LG drum	4780	4200 to 6000 (0.1mm)
62	Master length – B4 drum	4780	4200 to 6000 (0.1mm)
63	Master length – A4 drum	4140	3000 to 6000 (0.1mm)
70	SBU VRT value	–	
71	SBU FBO value	–	
72	SBU FBE value	–	
100	Paper registration 30rpm	0	-40 to 40
101	Paper registration 60rpm	0	-40 to 40
102	Paper registration 80rpm	0	-40 to 40
103	Paper registration 100rpm	0	-40 to 40
104	Paper registration 130rpm	0	-40 to 40
108	Paper regist: skip: 30rpm	0	-40 to 40
109	Paper regist: skip: 60pm	0	-40 to 40

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

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

5.7.2 SP6-10: MASTER WRITING SPEED



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1. Input SP8-10 (Test patterns) and enter “6”, then press the Start key.
2. Exit the SP mode, print 10 copies at 100 rpm (speed 2). Use the 10th print for the adjustment.
3. The length of the 6 squares in the feed direction should be 130 mm, as shown above.
4. If it is not, calculate the reproduction ratio using the following formula.
   {(130 - Value) / 130} x 100 = ± X.X % (Round off to one decimal place)
   Example: If the value is 133, {(130 - 133) / 130} x 100 = - 2.3 %
5. Access SP6-10, input the calculated ratio, and press the Enter key.
6. Repeat the procedure to make sure that the ratio is correct.

5.7.3 SP6-21: PAPER REGIST POSITION

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

5.7.4 SP6-5: SCANNING SPEED – PLATEN AND SP6-6: SCANNING SPEED – ADF MODE

1. Make copies of the test pattern printed during the previous adjustments (☛ previous page), in platen mode at speed 2. Use the 10th print for the adjustment.
2. The length of the 6 squares in the feed direction should be 130 mm.
7. 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 %
3. Access SP6-05, input the calculated ratio, and press the Enter key.
4. Check again to make sure that the ratio is correct.
5. Make copies of the test pattern in ADF mode and repeat the process using SP6-06.

5.7.5 SP6-3: SCANNING START POSITION – PLATEN AND SP6-4: SCANNING START POSITION - ADF

1. Make copies of the test pattern printed during the previous adjustments (☛ previous page), in platen mode at speed 2. Use the 10th print for the adjustment.
2. The space between the leading edge and the next line should be 8 mm.
3. If it is not, access SP6-03, input the gap value and press the Enter key.
   Example: If the value is 7 mm, 7 - 8 = -1.0
4. Repeat the procedure to make sure that the gap is correct.
5. Make copies of the test pattern in ADF mode and repeat the process using SP6-04.

5.7.6 SP6-1: MAIN SCAN POSITION – PLATEN AND SP6-2: MAIN SCAN POSITION - ADF

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

5.7.7 IMAGE ADJUSTMENT (SP6-10, -21, -5, -3, AND -1)

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

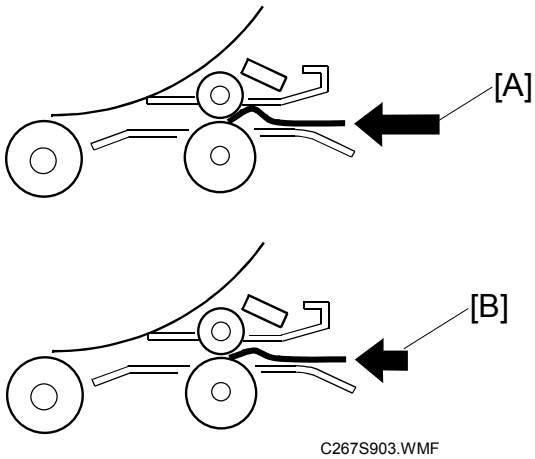
Adjust the settings in the order: SP6-10, -21, -5, -6, -3, -4, -1, -2.

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

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

5.7.8 SP6-20: REGISTRATION BUCKLE

Adjusts the paper skew and the paper registration slippage.



C267S903.WMF

[A]: **Increase the value**
The occurrence of paper skew will be reduced, but the paper is more likely to slip and the registration position may be incorrect.

[B]: **Decrease the value**
The paper registration position will be correct.

5.7.9 SP6-32 TO 37: MTF FILTER

Sharpens the image, but moiré can become more apparent.

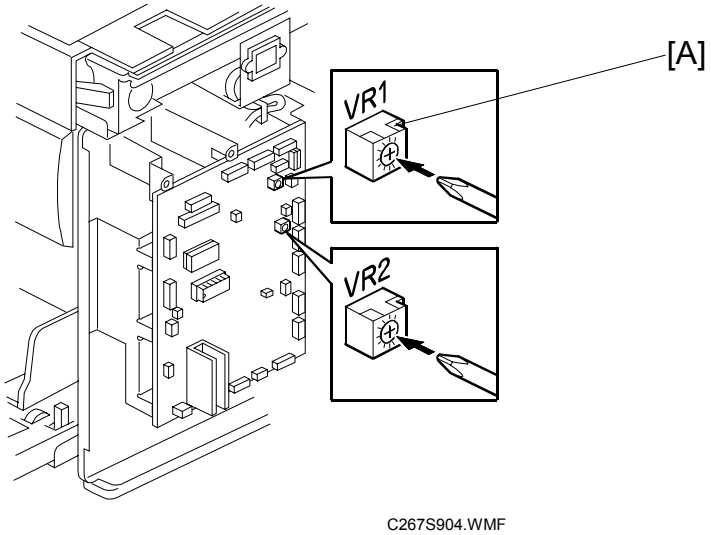
Refer to the following table for the relationship between this SP mode value and filter strength (the relationship is not linear).

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

5.7.10 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).



C267S904.WMF

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

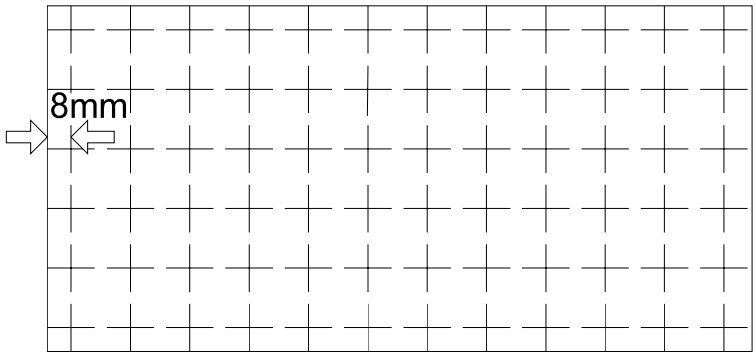
NOTE: When the drum has ink inside, the machine displays “----“.

5.7.11 SP6-100 TO 104: PAPER REGISTRATION - EACH SPEED

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

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

1. Set SP8-10 (Test patterns) to a value of "6", then press the Start key.
2. Make 3 copies at speed 3 (finishing with 130 rpm). Perform the adjustment below for all 3 copies.
   Trial print: 30 rpm
   1st print: 60 rpm
   2nd print: 80 rpm
   3rd print: 100 rpm
   4th print: 130 rpm
3. The distance between the leading edge and first line should be 8mm, as shown below.



C267S905.WMF

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

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

5.8 7. MEMORY CLEAR

5.8.1 SP TABLE (SP 7-XXX)

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

5.8.2 SP7-1: FACTORY SETTINGS CLEAR

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

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

5.8.3 SP7-3: TOTAL COUNTER CLEAR

This resets the following SP numbers

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

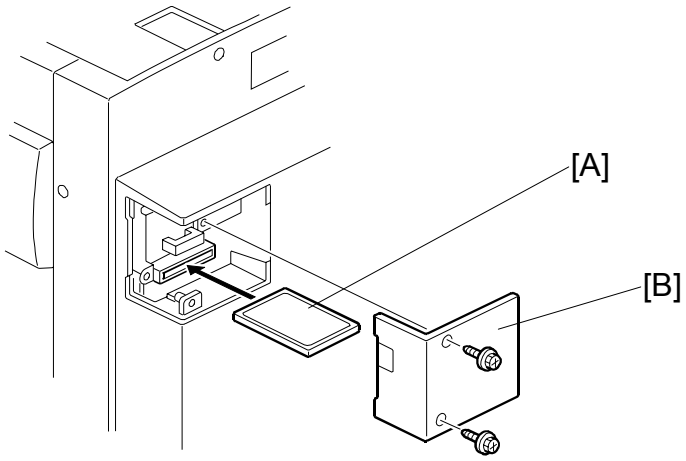
NOTE: The counters for “User tool 1: Counter Display” are unresetable counter

5.9 8. SYSTEM TEST

5.9.1 SP TABLE (SP 8-XXX)

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

5.9.2 SP8-1. DOWNLOAD MAIN FIRMWARE



C267S906.WMF

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

NOTE: To update the I/O control firmware in the EPROM on the MPU, replace the EPROM (see section 3.12).

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

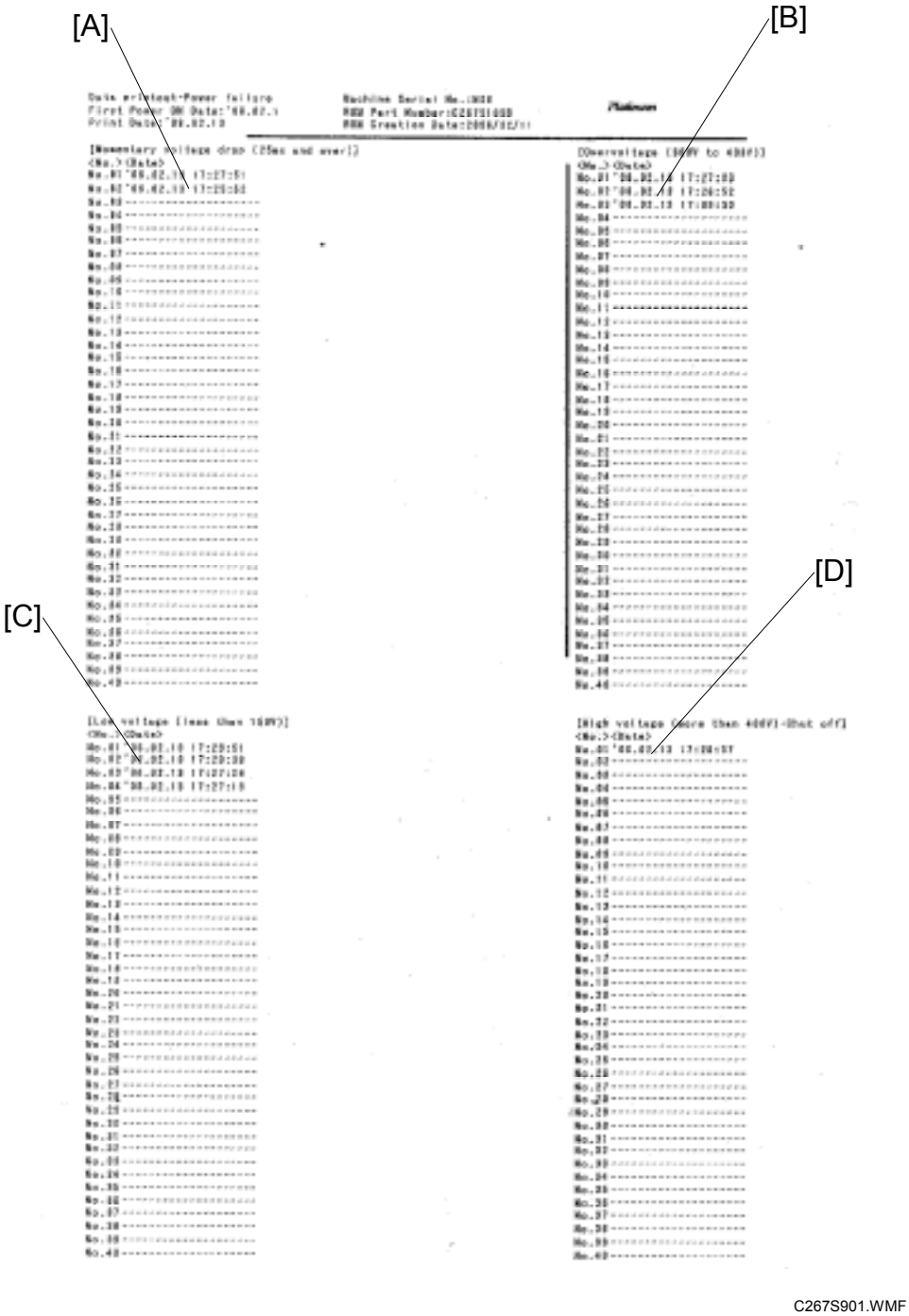
5.9.3 SP8-2: UPLOAD MAIN FIRMWARE

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

1. Refer to steps 3 to 5 of section 5.9.2 (download main firmware).
2. Connect the power cord, then turn on the main switch while holding the Clear Modes key.
3. Access SP8-2 and press the OK key. Press the “Enter(#)” key.

Refer to steps 8 and 10 in section 5.9.2 (download main firmware).

5.9.4 SP8-9 DATA PRINTOUT – POWER FAILURE



C267S901.WMF

[A]: Momentary Voltage Drop

[B]: Over voltage

[C]: Low voltage

[D]: High voltage

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

See section 6.11 for more information about the four types of data ([A] to [D]).

5.9.5 SP8-10: TEST PATTERNS

Makes prints without using the scanner.

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

Other numbers are as shown below

1: Grid, 2: Vertical, 3: Horizontal gray, 4: Vertical gray, 5: 16 grays,
6: Cross, 7: Diagonal grid, 8: 256 grays, 9: 64 grays

5.9.6 SP8-21: PAPER FEED TEST (30 RPM)

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

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

5.9.7 SP8-22: FREE RUN PAPER FEED (30 RPM)

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

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

5.10 USER TOOLS

5.10.1 MAIN MENU NUMBER LIST

Number	Main Menu
1	Counter
2	System Settings
3	Set Operation Mode
4	Initial Settings
5	Mode Settings
6	Administration Tools
7	Online Settings

5.10.2 USER TOOL LISTS

1. Counter

No.	Mode	Description
1	Counter Display	Shows the total number of masters and prints.

2. System

No.	Mode	Description
1	Auto Reset Timer	The machine automatically returns to its initial condition if it has not been operated for a certain period of time.
2	Disp. Resettable Counter	Shows the total number of masters and prints after resetting.
3	Reset Resettable Counter	You can select whether or not to clear the number of resettable counter
4	mm/inch	You can select the units of measurement used on the panel display.
5	Language on LCD	You can select the language for the panel display.
6	Date/Time	You can set the date and time for the machine's internal clock using the number keys.
7	Energy Saver Option	You can select the energy saver mode from Energy Saving or Auto Off.
8	Energy Saver Timer	You can specify the time taken for the machine to enter Energy Saver mode.
9	Auto Off Timer	You can select to use the auto off timer.
10	Data Print	You can print the log data and the counter list.

3. Set Operation Mode

No.	Mode	Description
1	Minimum Print Quantity	You can set a minimum print quantity between 0 and 9999. Any number below the minimum will not be printed.
2	Maximum Print Quantity	You can set a maximum print quantity between 0 and 9999.
3	Panel Beeper	You can turn the beeper on or off.
4	LCD Contrast	You can adjust the brightness of the panel display.
5	Class Display	Under the Memory/Class function, you can select to have “Select Class/Year” displayed as “Select Department” instead, when the machine is not limited to school or college use.

4. Initial Settings

No.	Mode	Description
1	Master Making Density	You can specify the image density that is selected by default when the power is turned on.
2	Original Type	You can specify the original type that is selected by default when the power is turned on.
3	Ratio	You can specify the reproduction ratio that is selected by default when the power is turned on.
4	Economy Mode	You can select to have Economy mode as either “On” or “Off” when the power is turned on, or after mode settings have been cleared.
5	Erase Border Width	You can specify the edge erase margin.
6	Program/ Change Class	You can store settings of the Class mode
7	Program/ Change Memory	You can store settings of the Memory mode”
8	Prog.Change: Class/Year	You can store settings of the Select Class/Year.

5. Mode Settings

No.	Mode	Description
1	Auto Cycle	You can select to have Auto Cycle mode as either “On” or “Off” when the power is turned on.
2	Background Correction	When you make prints in Photo, or Text/Photo mode, the background of the prints might appear dirty. In this case, you can select background correction to improve the clarity of your prints.
3	Longer Paper	If you are making prints on paper of custom sizes, you can set “Use”.
4	Combine/Repeat Priority	You can choose to have either Combine or Repeat selected by default when the power is turned on.
5	Cmb / Img Repeat Sep. Line	You can specify the type of separate line of combine and repeat.
6	Cancel Combine setting	You can specify whether Combine/Repeat mode will be automatically cleared after you have finished your print job.
7	Skip Feed	You can specify the number of times that the drum rotates when in Skip Feed mode.
8	Memory Mode Setting	You can choose to have either Memory mode or Stack Memory mode as the default.
9	Auto Class	Under the Class mode, the machine stops after it is finished a Class print job. When you select Auto Class, the machine stops for 2 seconds and then goes on to the next Class print job.

6. Administrator Tools

User Codes

If user codes are turned on, operators must enter their user codes before they can operate the machine. The machine keeps count of the number of masters and prints made under each user code.

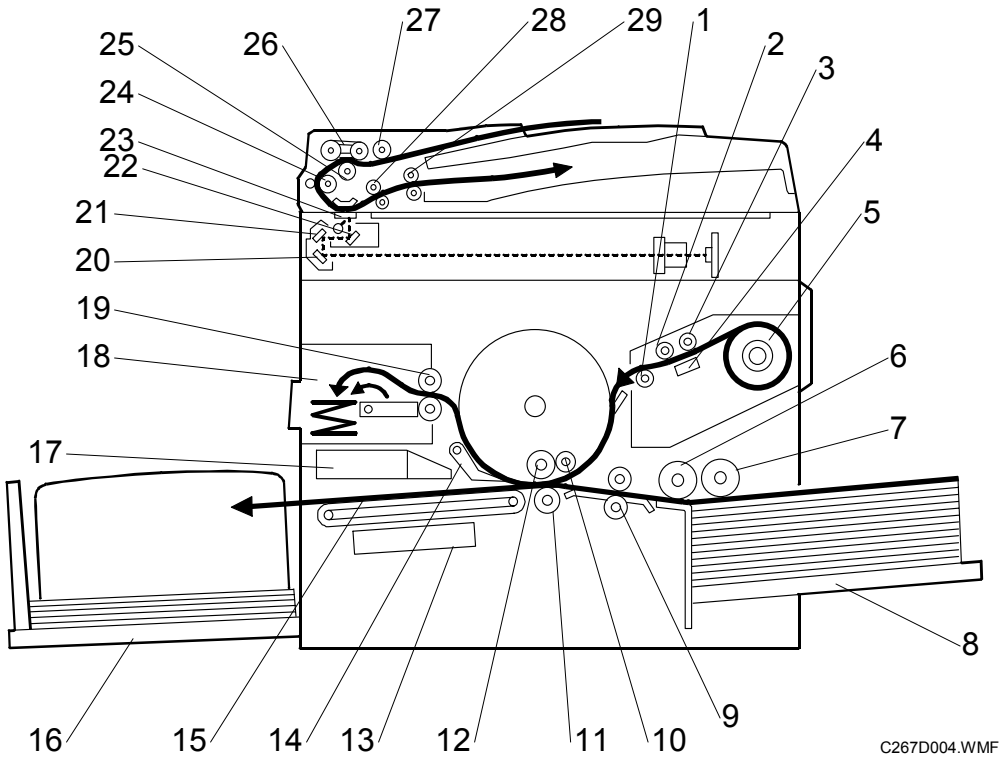
No.	Mode	Description
1	Display Counter(s)	You can check the number of masters and copies made under each user code.
2	Clear Counter(s)	You can clear each or all user code counters.
3	User Code Management	You can select whether or not to use User Code mode.
4	Key Counter Adjust	Normally, the optional key counter counts the number of prints regardless of the number of masters used. You can, however, add to the key counter a value between 0 and 50 to the key counter each time a new master is used.

7. Online Settings

No.	Mode	Description
1	Hold Data-in	You can select to have Hold Data-in mode either “On” or “Off” when the power is turned on, or after mode settings have been cleared.

6. DETAILED SECTION DESCRIPTIONS

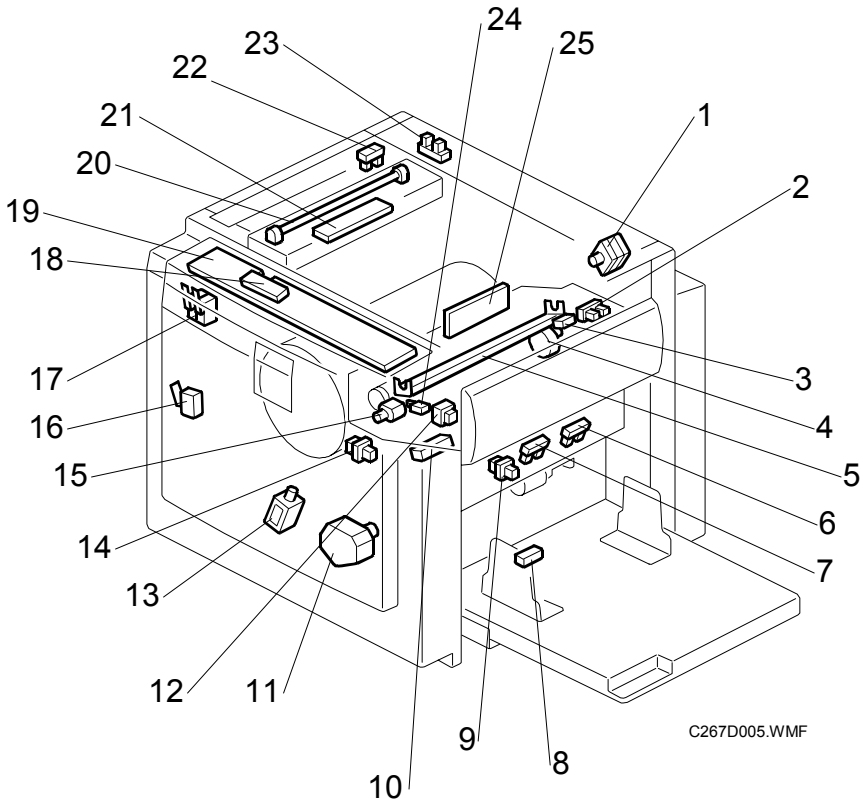
6.1 MECHANICAL COMPONENT LAYOUT

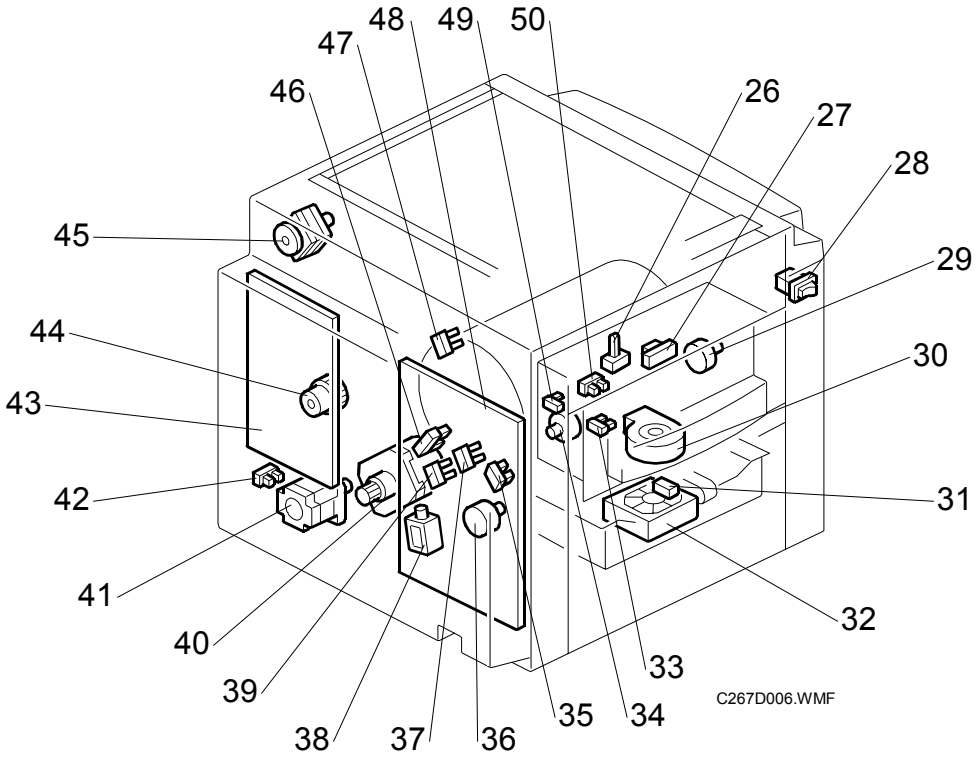


1. Tension Roller
2. Master Feed Roller
3. Platen Roller
4. Thermal Head
5. Master Roll
6. Paper Feed Roller
7. Paper Pick-up Roller
8. Paper Table
9. Registration Rollers
10. Doctor Roller
11. Press Roller
12. Ink Roller
13. Vacuum Fan Motor
14. Exit Pawl
15. Transport Belts
16. Paper Delivery Table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

6.2 ELECTRICAL COMPONENT LAYOUT

6.2.1 MAIN BODY





Boards

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

Motors

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

Solenoids

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

Switches

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

Index No.	Name	Function
28	Main Switch	Turns the power on or off.

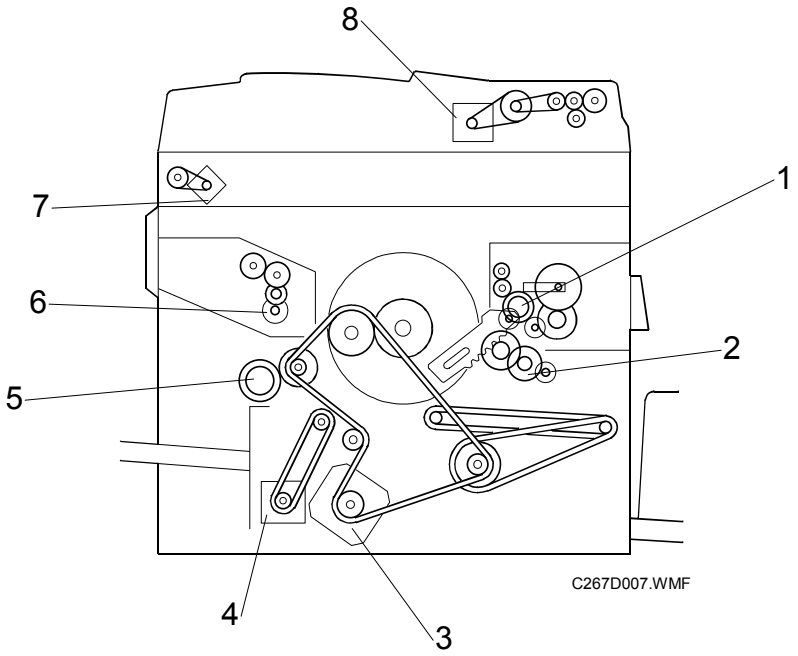
Sensors

Index No.	Name	Function
2	Master Set Cover Sensor	Checks if the master set cover is set.
3	Master End Sensor	Informs the CPU when the master making unit runs out of master roll.
6	Paper Height Sensor 1	Detects when the paper table reaches the paper feed position.
7	Paper Height Sensor 2	Detects when the paper table reaches the paper feed position.
8	Paper End Sensor	Informs the CPU when the paper table runs out of paper.
10	Paper Registration Sensor	Detects paper approaching the registration roller.
24	Scanner Home Position Sensor	Detects when the image sensor is at home position.
25	Platen Cover Sensor	Detects whether the platen cover is open or closed.
26	Master Eject Sensor	Detects used master misfeeds.
27	Drum Master Sensor	Detects if there is a master on the drum
31	Paper Exit Sensor	Detects paper misfeeds at the exit.
33	Pressure Plate Limit Sensor	Detects if the pressure plate is in the lowest position.
35	2nd Feed start Timing Sensor	Determines the paper misfeed check timing at the paper registration area.
37	Clamper Open Sensor	Detects if the clamper is in the open position.
39	Clamper Close Sensor	Detects if the clamper is in the closed position.
42	Paper Table Lower Limit Sensor	Detects when the paper table is at its lower limit position.
46	Feed Start Timing Sensor	Determines the paper feed start timing.
47	Master Eject Position Sensor	Detects when the drum is at the master eject position (this is the home position)
49	Pressure Plate Home Position Sensor	Detects if the pressure plate is at the home position.
50	Eject Box Set Sensor	Checks if the master eject box is set.

Others

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

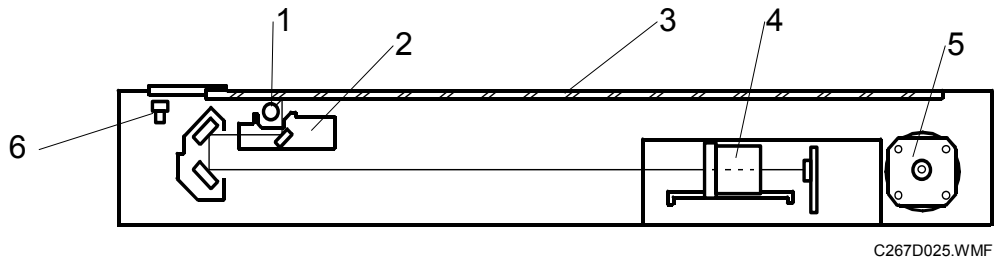
6.3 DRIVE LAYOUT



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

6.4 SCANNER AND OPTICS

6.4.1 SCANNER OVERVIEW



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1. Exposure Lamp
2. 1st Scanner
3. Exposure Glass
4. Lens Block
5. Scanner Motor
6. Scanner H.P. Sensor

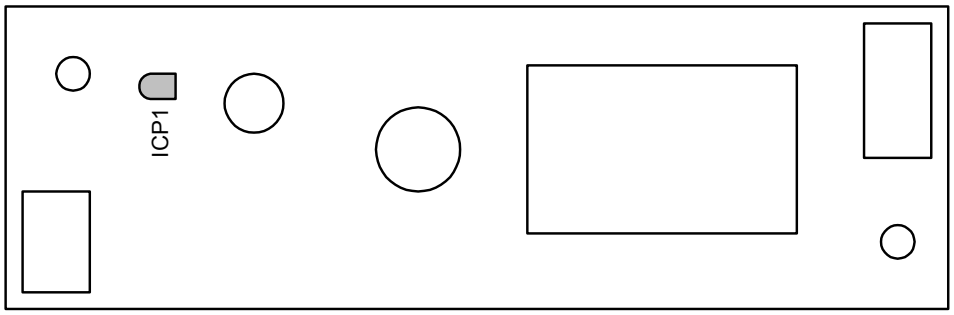
The original is illuminated by the exposure lamp (a xenon lamp). The image is reflected onto a CCD (charge coupled device) on the lens block via the 1st, 2nd, and 3rd mirrors, and through the lens on the lens block.

The 1st scanner consists of the exposure lamp, a reflector, and the 1st mirror.

A lamp stabilizer energizes the exposure lamp. The light reflected by the reflector is of almost equal intensity, to reduce shadows on pasted originals.

There is no original size detection. All masters are printed at full size.

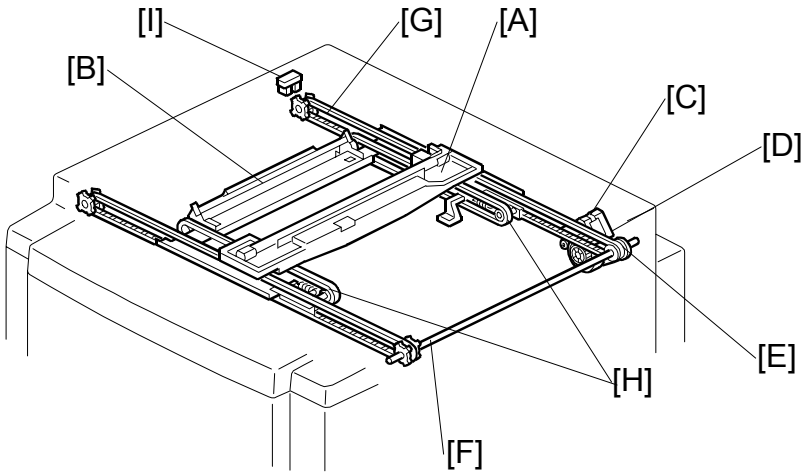
Lamp Stabilizer Fuse



C267D935.WMF

	Rating	Manufacturer	Type No.
ICP1	DC50 V/1.5 A	ROHM CO.,LTD	ICP–N38

6.4.2 SCANNER DRIVE



C267D026.WMF

A stepper motor drives the 1st and 2nd scanners [A, B]. The 1st scanner is driven by the scanner drive motor [C], timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two timing belts [G]. The 2nd scanner is driven through the 1st scanner and two timing belts [H].

- Book mode -

The MPU controls and operates the scanner drive motor. In full size mode, the 1st scanner speed is 200 mm/s during scanning. The 2nd scanner speed is half that of the 1st scanner.

In reduction or enlargement mode, the scanning speed depends on the magnification ratio. The returning speed is always the same, whether in full size or magnification mode. The image length change in the sub scan direction is done by changing the scanner drive motor speed, and in the main scan direction it is done by image processing on the MPU board.

Magnification in the sub-scan direction can be adjusted by changing the scanner drive motor speed using SP6-5. Magnification in the main scan direction can be adjusted using SP6-1.

- ADF mode -

The scanners are always kept at their home position (the scanner H.P. sensor [I] detects the 1st scanner) to scan the original. The ADF motor feeds the original through the ADF. In reduction/enlargement mode, the image length change in the sub-scan direction is done by changing the ADF motor speed. Magnification in the main scan direction is done in the MPU board, like for book mode.

Magnification in the sub-scan direction can be adjusted by changing the ADF motor speed using SP6-6. In the main scan direction, it can be adjusted with SP6-2, like for book mode.

6.5 IMAGE PROCESSING

6.5.1 IMAGE PROCESSING FLOW

Image processing is done by the IPU (Image Processing Unit) on the MPU board, following the steps shown below.

Shading Correction

↓

Reduce/Enlarge

↓

Filtering

↓

Gamma Correction

↓

Grayscale Processing

Shading Correction:

Corrects errors in the signal level for each pixel using the white plate.

Reduce / Enlarge:

Reduces or enlarges the image in the main-scan direction by data processing. (Image magnification in the sub-scan direction is controlled by changing the scanning speed.)

Filtering:

Improves the scanned image data, to make the image as close to the original as possible.

Gamma Correction:

Background erase

Grayscale Processing:

Compares each pixel with surrounding pixels to enhance the image.

- Text mode: Binary processing
- Photo mode: Error diffusion

6.5.2 THERMAL HEAD

Specifications

- Length 256 +- 0.2 mm
- Number of thermal head elements 3024 dots
- Density of thermal head elements 300 dpi
- Applied voltage Approximately 15 volts

Thermal Head Control

The thermal head has heating elements at a density of 300 dpi. The thermal heating elements melt the over-coating and polyester film layers of the master, according to the image signal for each pixel.

The power supply unit applies power to the thermal heating elements. The power source varies from one head to another since the average resistance of each element varies. Therefore, when the thermal head or power supply unit is replaced, it is necessary to readjust the applied voltage with particular values for each thermal head.

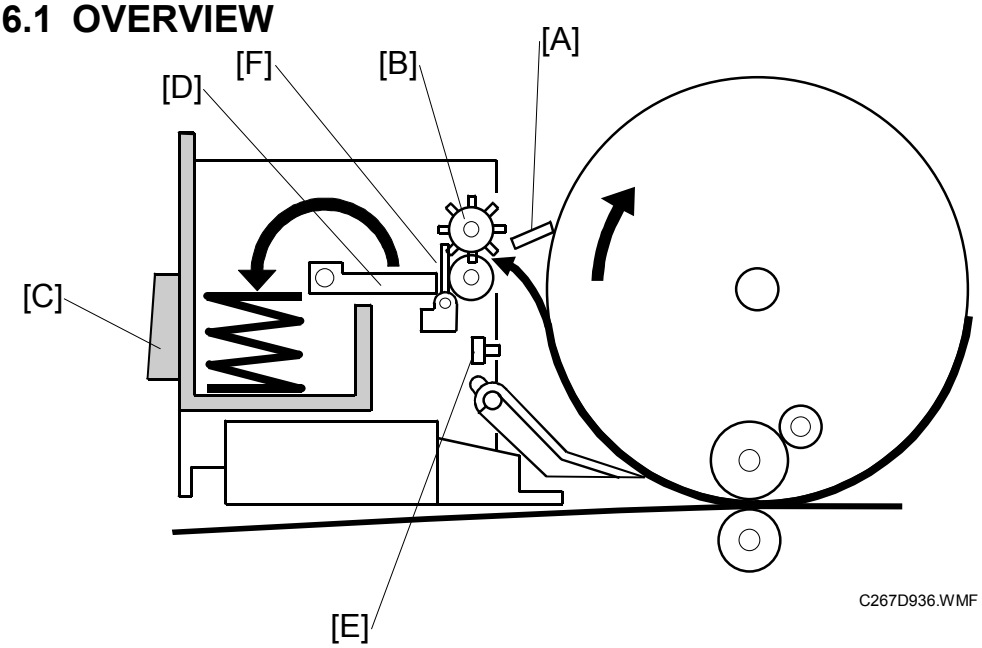
Thermal Head Protection

The thermistor on the thermal head provides thermal head protection, preventing the thermal head from overheating when processing a solid image. The CPU detects any abnormal condition when the Start key is pressed, and displays an SC code on the operation panel as follows:

SC Code	Conditions	Detecting Component
E - 04	Over 65°C	Thermistor
E - 09	More than 4.432V - (Normally, this indicates that the thermistor has become open, or a related connector is disconnected.)	Thermistor
E - 10	When the pulse width that controls the thermal head energy becomes abnormal, master making stops and this SC lights.	MPU
E-40	The CPU detects an abnormal ID signal from the thermal head.	MPU

6.6 MASTER EJECT UNIT

6.6.1 OVERVIEW



The master eject unit removes the used master from the drum. (☛CT: Digital Duplicators – Duplicating Process – Master Ejecting)

Procedure

The drum turns to the master eject position (same as drum home position). Then the clamper [A] opens.

↓

Master eject rollers [B] pick-up the master's leading edge and feed the master for 1 second into the master eject box [C].

↓

The clamper then closes.

↓

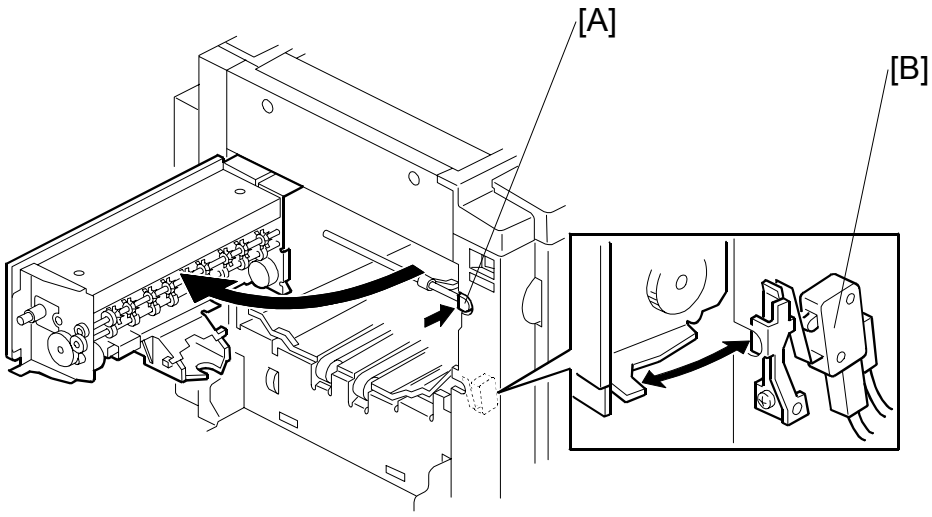
The drum then turns at 30 rpm while the master eject rollers continue to feed the used master into the eject box.

↓

After the drum makes 1.5 turns, it gets to the master feed position. Then, the master eject motor stops, and the pressure plate [D] then compresses the used masters in the eject box.

- The capacity is 30 used masters (under normal conditions)
- The master eject process is skipped when the drum master sensor [E] detects no master on the drum.
- During the master eject process, the master eject sensor [F] detects master eject jams.

6.6.2 MASTER EJECT UNIT OPEN MECHANISM

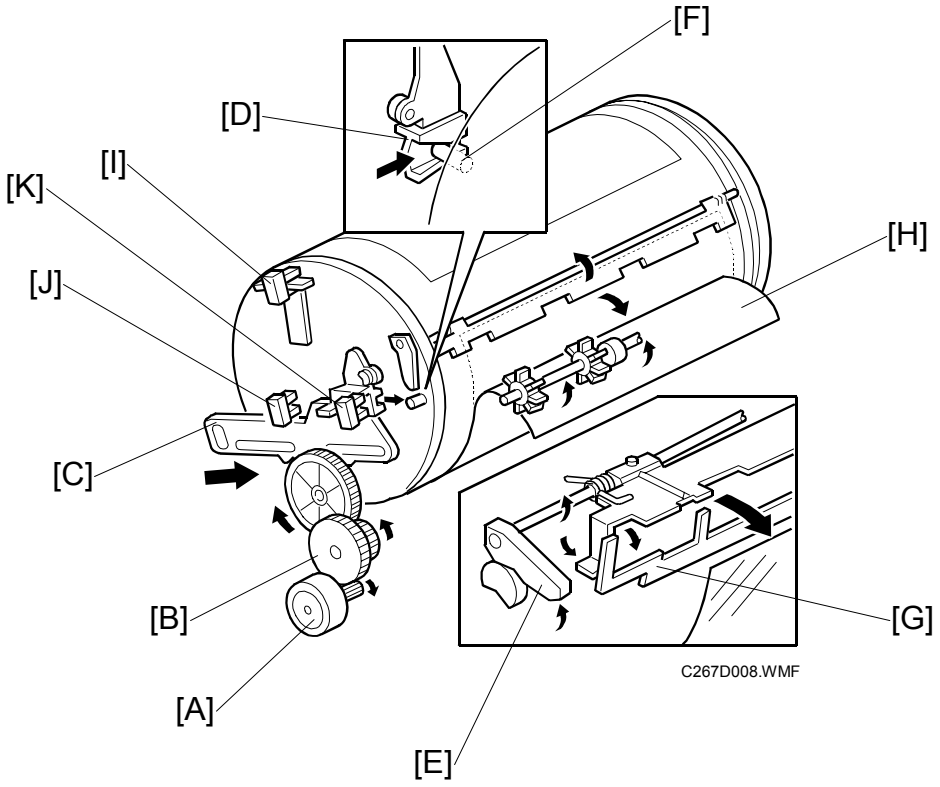


C267D030.WMF

To open the master eject unit, just push the button [A]. This makes it easy for maintenance and for removing master and paper jams.

If the button is pushed by accident while the machine is operating, the master eject unit safety switch [B] will stop the machine automatically for safety.

6.6.3 MASTER CLAMPER OPENING MECHANISM

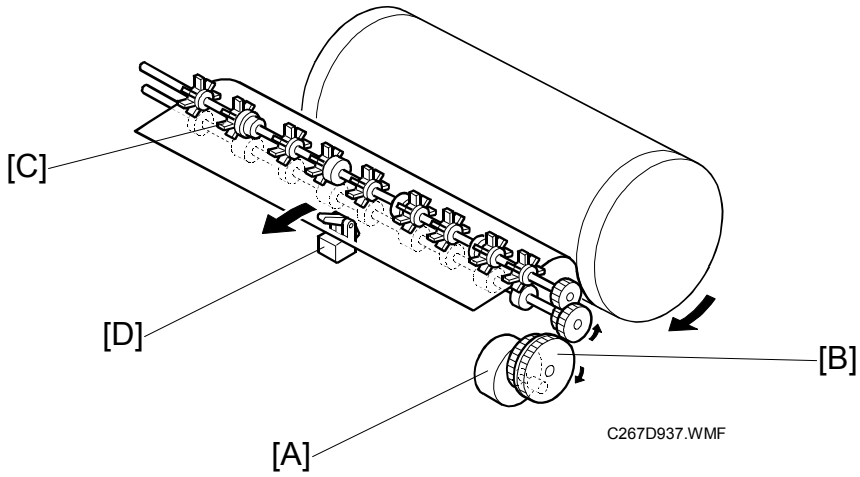


Clamper Mechanism

Clamper motor [A] - opens the clamper at the master eject position
↓
Gears [B]
↓
Link [C]
↓
Drum guide [D] - moves and engages the pin on the rear flange of the drum
↓
Lifts the clamper lever [E], and engages the drum pin [F]
↓
The lever [E] lifts the master eject arm [G] to release the master's leading edge [H] from the clamper.

NOTE: 1) After the master making key is pressed and before the clamper motor starts, the master eject position sensor [I] is checked (the drum must be at the master eject position).
2) The sensor actuators on the link [C], the clamper open sensor [J], and the clamper close sensor [K] determine the clamper open and close positions.
3) The master clamper uses a magnetic plate to clamp the master's leading edge.
4) The drum guide catches the drum at the master eject position while the master clamper is being opened. When the clamper motor turns on in reverse to close the clamper, the drum guide also disengages the pin and the drum can turn.

6.6.4 MASTER EJECT ROLLER MECHANISM

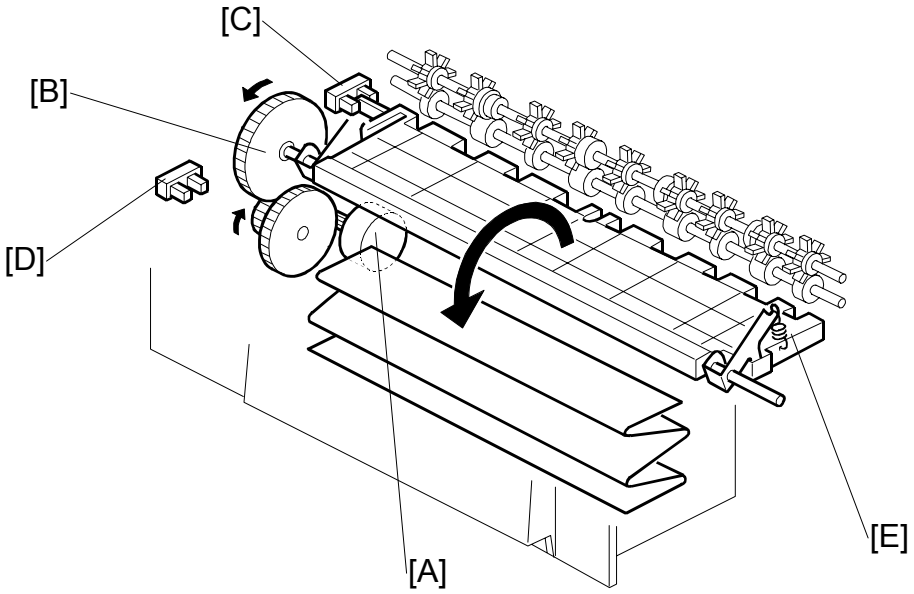


Mechanism

Master eject motor [A]
↓
Gears [B]
↓
Master eject rollers [C] – the upper roller has paddles
↓
Pick up the master and feed it into the master eject box

NOTE: During this process, the master eject sensor [D] detects master eject jams.

6.6.5 PRESSURE PLATE MECHANISM



Mechanism

Pressure plate motor [A]

↓

Gears [B]

↓

Pressure plate rotates

↓

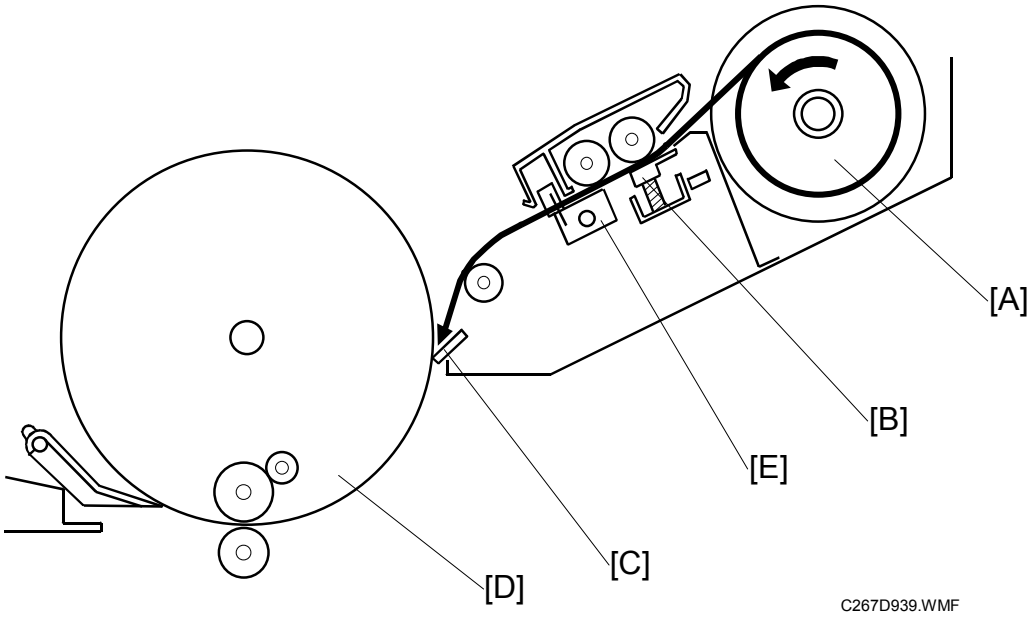
Compresses the masters

Procedure

1. After the master has been ejected and the drum is stopped at the master feed position, the pressure plate motor turns until the actuator on the pressure plate actuates the limit sensor [D].
2. After master making and cutting, the motor reverses until the pressure plate home position sensor [C] is actuated, then it stops.
3. If the pressure plate limit sensor is not actuated within 2.2 seconds after the pressure plate motor rotates, the Full Master Eject Box indicator lights.
4. The spring [E] prevents motor overload.

6.7 MASTER FEED

6.7.1 OVERVIEW



The master making unit makes an image on the master and feeds the master to the drum. (☛CT: Digital Duplicators – Duplicating Process – Master Feeding)

Procedure

The machine feeds the master from the master roll [A].

↓

The thermal head [B] makes an image on the master.

↓

Clamper [C] opens. (The drum is at the master feed position.)

↓

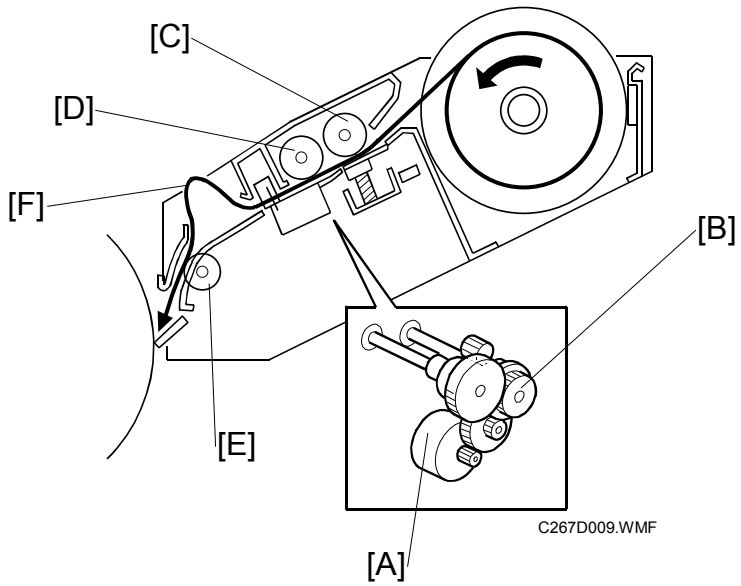
The clamper clamps the master.

↓

The master is wrapped around the drum [D]. Then, the cutter [E] cuts the master.

Then, after cutting, the drum turns a bit more to complete the wrapping.

6.7.2 MASTER FEED MECHANISM



Mechanism

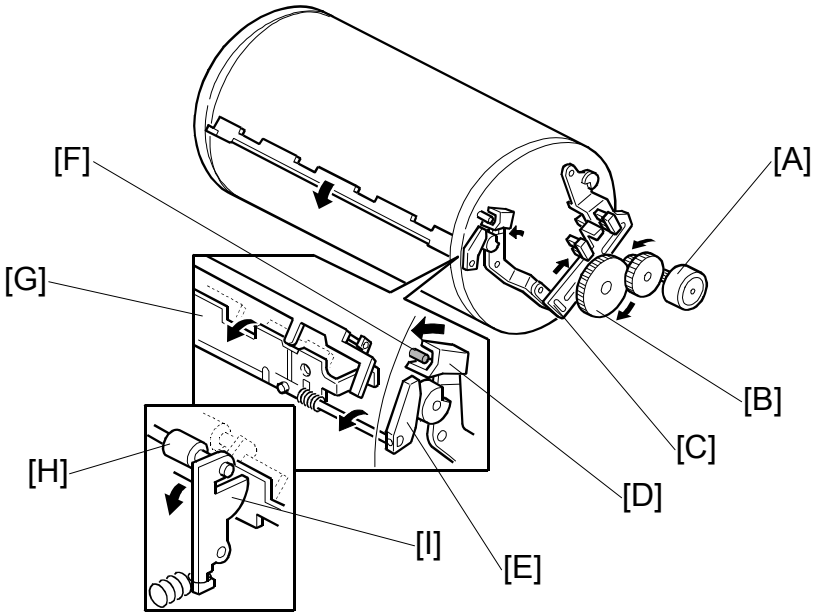
Master feed motor [A] (stepper motor)
↓
Gears [B]
↓
Platen roller [C], master feed roller [D]
↓
Feeds the master (The thermal head makes an image on the master.)

Procedure

1. After the old master has been ejected, the drum stops at the master feed position and the master clamper opens, ready to clamp the new master.
2. When the clamper is open, the tension roller releases and the master is fed to the clamper on the drum. For details of the tension roller, see section 6.7.3.
3. After the clamper closes, the master feed motor feeds the master while the drum rotates intermittently at 30 rpm. The intermittent rotation keeps a buckle [F] in the master above the master feed guide to absorb shocks from the wrapping operation.
4. The tension roller [E] keeps the master under tension. This roller reduces the master making time, because it allows the drum to turn continuously during wrapping. Without this roller, if the drum kept turning, the master would crease.
5. The main motor turns off when the drum is at the master eject position. The master feed motor continues to feed the master until master making completed. Then the master feed motor turns off, and cutting is done. Then the main motor turns on again to complete the wrapping.

NOTE: Springs press the thermal head against the platen roller. The pressure is applied when the master set cover, which includes the platen roller, is closed.

6.7.3 CLAMPER AND TENSION ROLLER MECHANISM



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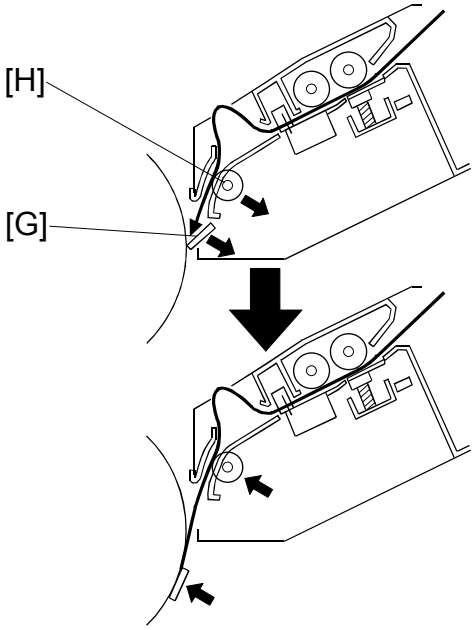


C267D940.WMF

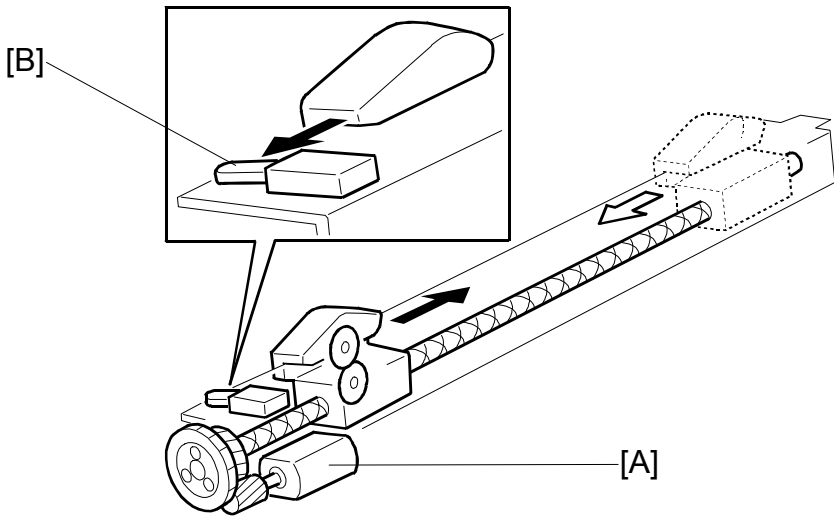
Mechanism

Clamper motor [A]
↓
Gears [B]
↓
Link [C]
↓
Drum guide [D]
↓
Lifts the lever [E], engages and locks the drum pin [F], opens the clamper plate [G].
↓
Releases the tension roller [H].
↓
Feeds the master into the clamper.

Procedure

- When the old master has been ejected, the drum is stopped at the master feed position. The master clamper clamps the leading edge of the new master before the drum starts to turn again.
- The tension roller [H] normally presses against the master feed guide plate to apply tension to the master during master wrapping. When the clamper opens, it pushes the tension roller arms [I] and moves the tension roller away from the guide plate to allow the master to be fed into the master clamper.
- Clamper mechanism: See the section 6.6.3 Master Clamper Opening Mechanism.

6.7.4 CUTTER MECHANISM

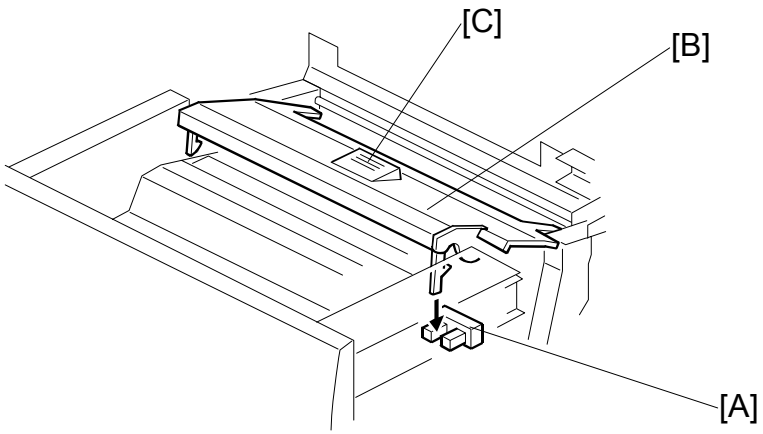


[A]: Cutter motor
[B]: Cutter HP sensor

- When the cutter starts, the drum is stopped at the master eject position (drum HP).
- The cutter moves backwards and forwards. While the cutter travels towards the rear (non-operation side), it cuts the master. The motor turns in one direction. The cutter returns to the home position when it reaches the rear because of the two different spiral threads on the screw shaft.
- The cutter usually cuts a master of about 474 mm in length.

After cutting, the drum starts turning again to wrap the remaining part of the master around the drum. The leading edge of the master that was cut remains at the cutting position, ready to make the next master.

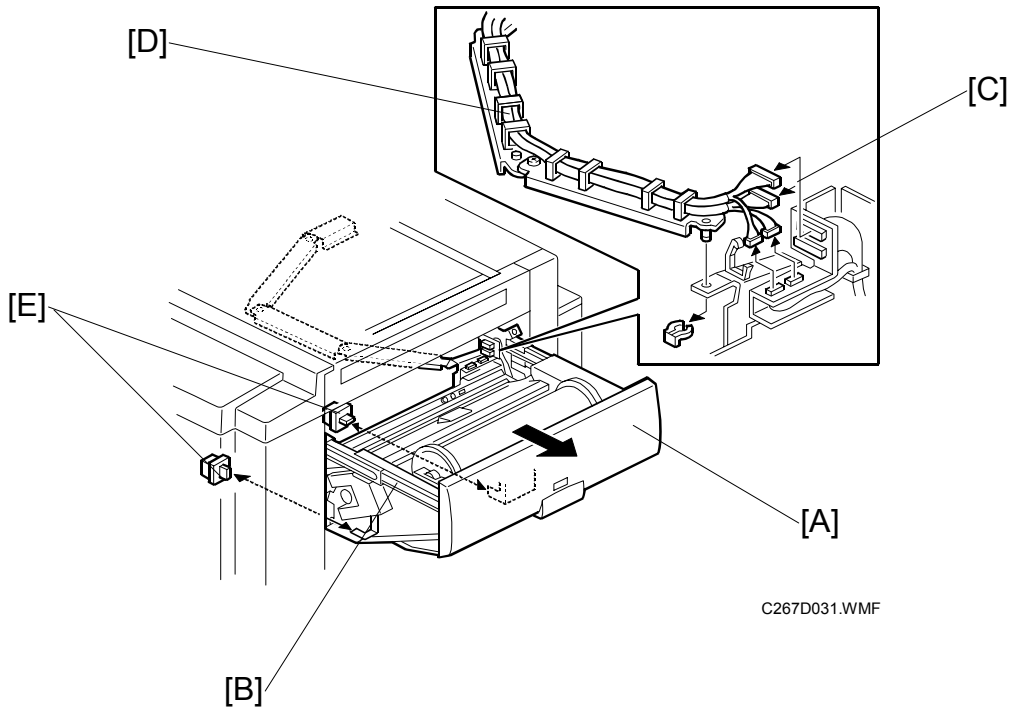
6.7.5 MASTER SET COVER SENSOR



[A]: Master set cover sensor
[B]: Master set cover

NOTE: If the cover is closed properly, the release button [C] rises.

6.7.6 MASTER MAKING UNIT SLIDE-OUT MECHANISM

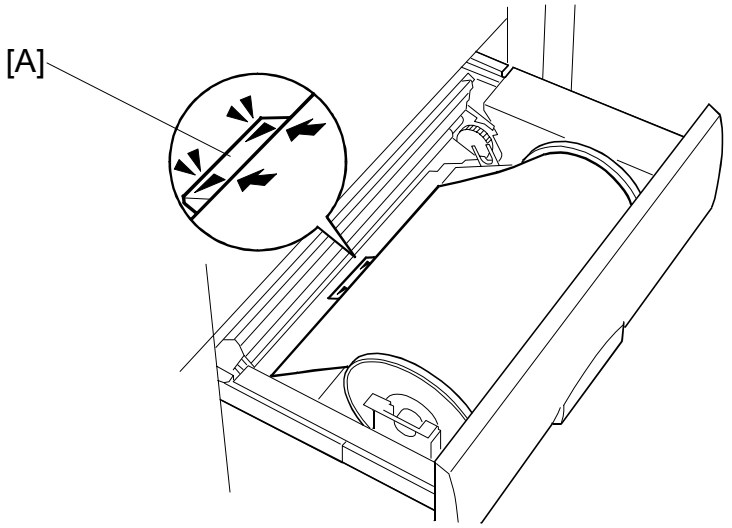


The master making unit [A] can be pulled out along the guide rails [B].

There are four cable connectors [C] behind the master making unit. The bundle of harnesses [D] is placed in the space between the scanner and the drum, and connected to the MPU.

There are two master making unit set switches [E] for safety, because this model does not have a unit locking mechanism. Both sensors must be on, or the machine will not start. When one of the sensors detects the unit is open, the operation panel displays a message.

6.7.7 MASTER SET MECHANISM

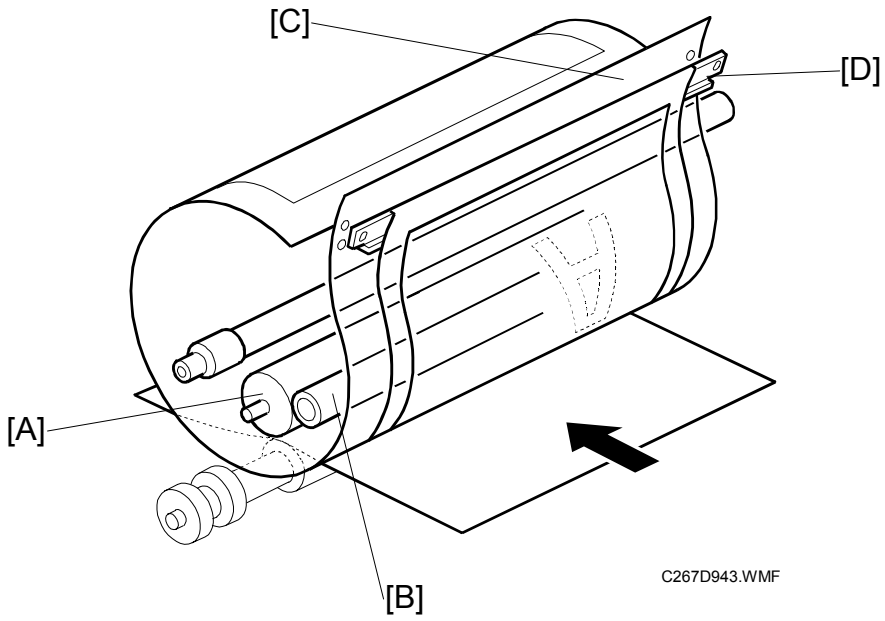


C267D942.WMF

The convex part [A] at the arrows helps the user when installing a new roll, so that the user does not push the leading edge too far into the interior of the master making unit.

6.8 DRUM

6.8.1 OVERVIEW



Procedure

Ink is supplied inside the drum, through the drum shaft.

↓

The ink roller [A] and the doctor roller [B] spread the ink evenly on the screens.

↓

Ink passes through the metal screen [C].

↓

Ink passes through the cloth screen [D].

↓

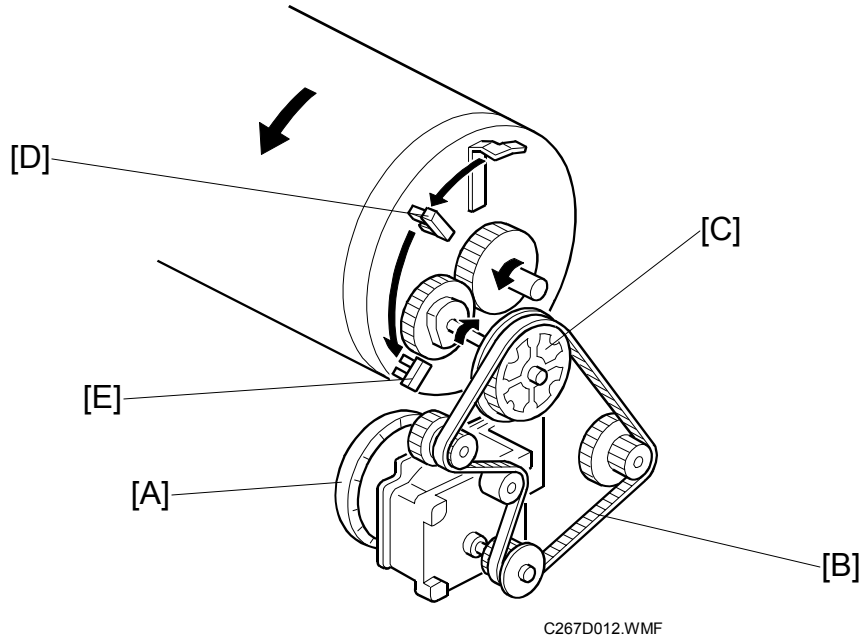
Ink passes through the holes in the master that were made by the thermal head.

↓

Ink reaches the paper.

NOTE: 1) The drum is driven by the main motor and turns only clockwise.
2) The main motor speed and the drum stop positions are controlled by monitoring the motor encoder.
3) The ink pump supplies ink from the ink cartridge into the drum through the drum shaft.

6.8.2 DRUM DRIVE MECHANISM



Mechanism

Main motor [A] (dc motor)

↓

Belt [B]

↓

Gears [C]

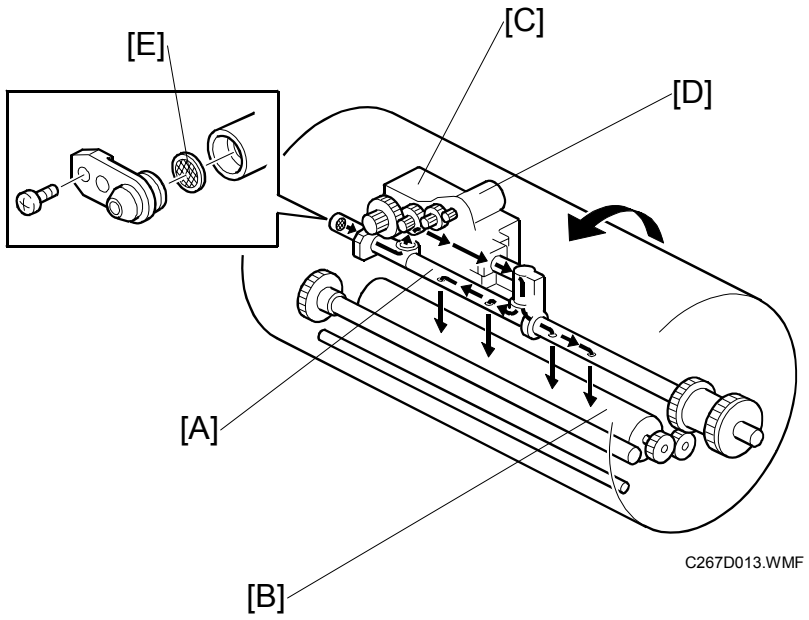
↓

The drum rotates.

NOTE: 1) The main motor encoder sends pulses to the main motor control board (1020 pulses = 360 degrees).
2) The CPU monitors the pulses and controls the drum speed and stop positions.
3) The drum has two sensors;
- Master eject sensor [D] (master eject position and drum home position)
- Feed start timing sensor [E]

4) The drum has two stop positions;
- Master eject (drum home) position
- Master feed position (feed start timing sensor + 102 pulses)

6.8.3 INK SUPPLY MECHANISM



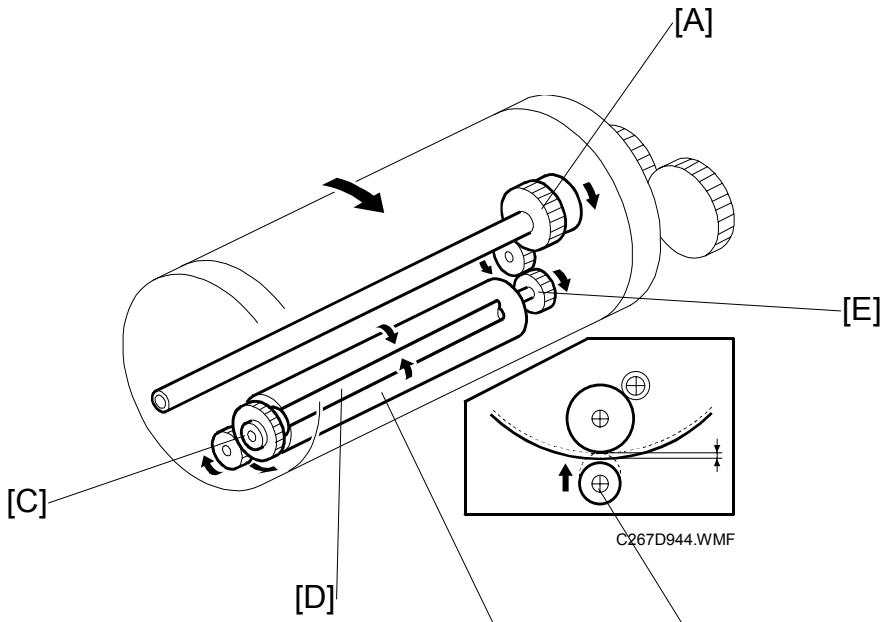
Ink is supplied from the ink cartridge to the ink roller [B] by a trochoid type pump [C]. The ink pump is driven by the ink supply motor (a dc motor) [D].

Ink drops through the holes in the drum shaft [A] onto the ink roller [B].

There is an ink filter [E] at the entrance of the ink nozzle. The ink filter prevents small objects from getting into the ink pump and causing damage.

NOTE: 1) There are 4 holes in the shaft for the B4 size drum models, and two holes for the Legal and A4 drum versions.
2) Optional drum units do not use the trochoid type pump, but use a piston pump.

6.8.4 INK ROLLER MECHANISM



Main motor

↓

Gears [A]

↓

Ink roller [B] rotates

↓

Gears [C]

↓

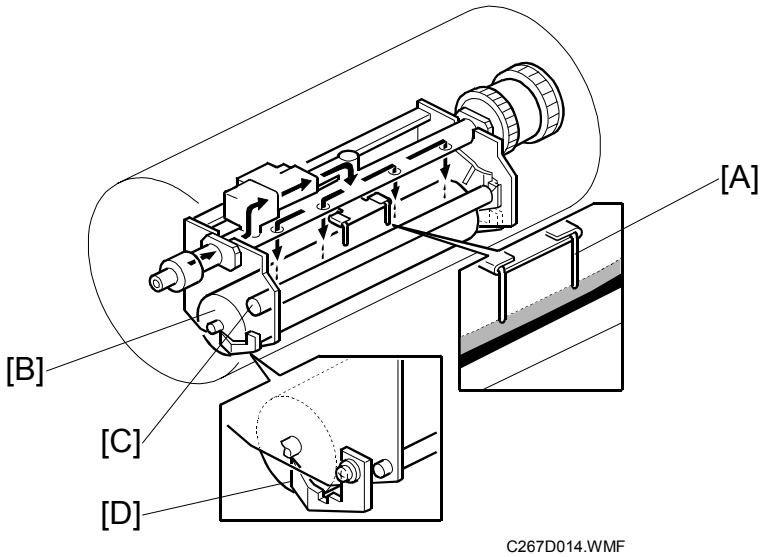
Doctor roller [D] rotates

↓

The doctor roller squeezes the ink on the ink roller to produce an even thickness of ink on the ink roller.

NOTE: 1) The ink roller drive gear [E] has a one-way clutch to prevent the ink roller from being turned in reverse if the drum is manually turned in reverse.
2) The ink roller does not touch the metal screen when the machine is not printing.
3) During printing, the ink on the ink roller is applied to the paper through the holes in the screens and the master. This happens when the press roller [F] under the drum moves up to press the drum screen and the master against the ink roller. (☛CT: Digital Duplicators – Ink Supply Control)

6.8.5 INK SUPPLY CONTROL



Mechanism

When the ink level is low, the pins [A] do not touch the ink.

↓

The ink pump motor keeps the ink level normal by supplying ink when the level is low.

NOTE: 1) The ink detection pins [A] detect the capacitance of the ink between the ink roller [B] and doctor roller [C].
2) If the pins detect an insufficient amount of ink after activating the ink pump motor for 27 seconds, a "no ink condition" is detected. The add ink indicator on the operation panel will light.
3) The ink roller blades [D] on both ends of the ink roller scrape off the built-up ink on the ends of the ink roller.

Automatic Ink Supply for a New Drum

If the machine detects a new drum, ink is supplied automatically at the trial print for the first job with this drum.

The machine detects a new drum if:

- There is no master wrapped on the drum, and
- The ink detection pins detect no ink

Mechanism:

1. The machine detects a new drum

↓

2. Ink is supplied automatically.

↓

3. If the machine detects the ink before 26 seconds, go to step 5.

   If the machine does not detect the ink before 26 seconds, go to step 4.

↓

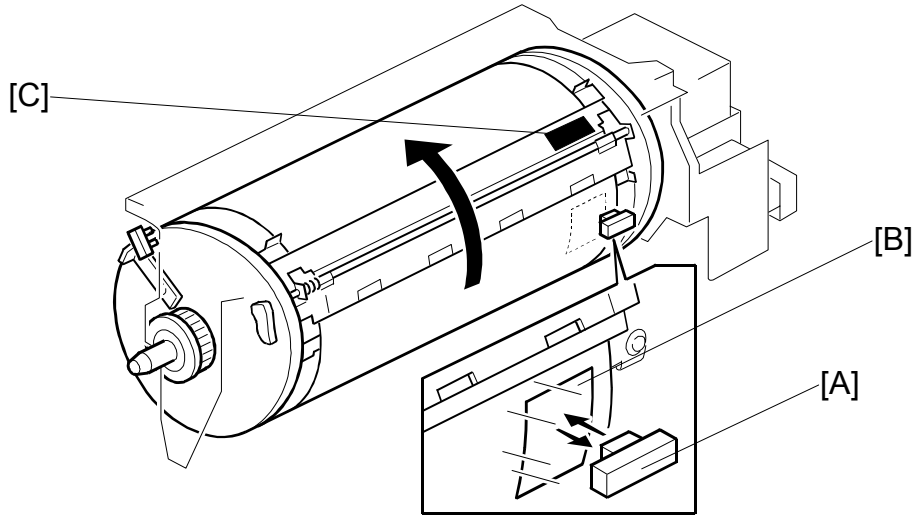
4. A blank master is wrapped around the drum, and the drum rotates, with pressure applied to the drum. Then the blank master is removed. Go to step 5.

↓

5. Master making is started for the original that you set.

NOTE: There is also a manual ink supply procedure, like for previous machines.
"0" + "Economy Mode"

6.8.6 DETECTION OF MASTERS ON THE DRUM

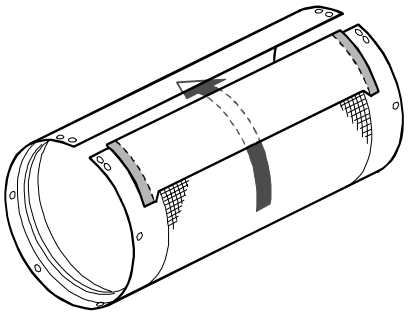


C267D945.WMF

[A]: Drum master sensor
[B]: Black patch on the screen
[C]: Black patch on the clamper

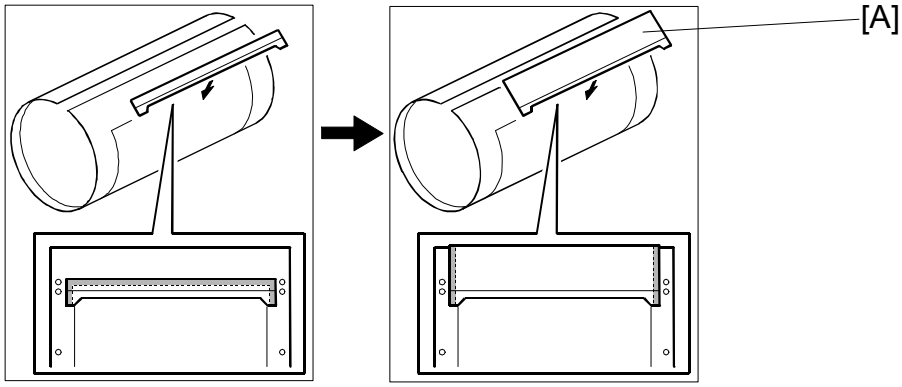
- The drum master sensor [A] detects whether there is a master on the drum.
- When there is a master on the drum, the black patch [B] is covered and the sensor detects the light reflected from the master. When there is no master on the drum, the black patch [B] is exposed. The black patch does not reflect light back to the sensor. Because of this, the master eject process can be skipped when a new master is being made, if no master is detected on the drum.
- There is a black patch [C] on the clamper. If a master covers this black patch, there was an error during cutting, and because of this error the master is double-wrapped around the drum.

6.8.7 METAL SCREEN



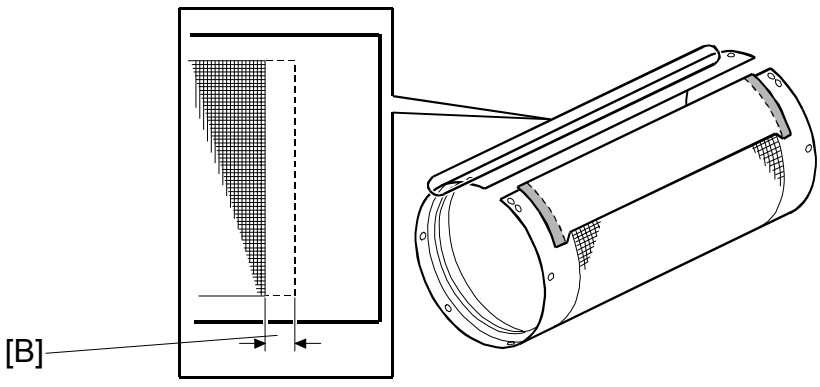
C267D946.WMF

The flow of ink is shown above. The excess ink goes back to the inside of the drum from the trailing edge of the metal screen.



C267D947.WMF

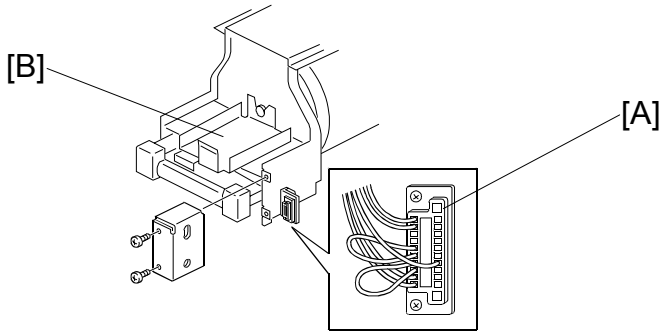
The adhesive parts [A] are only at the sides of the mylar seal for the metal screen. They are not attached to the trailing edge. This prevents ink leakage from the trailing edge.



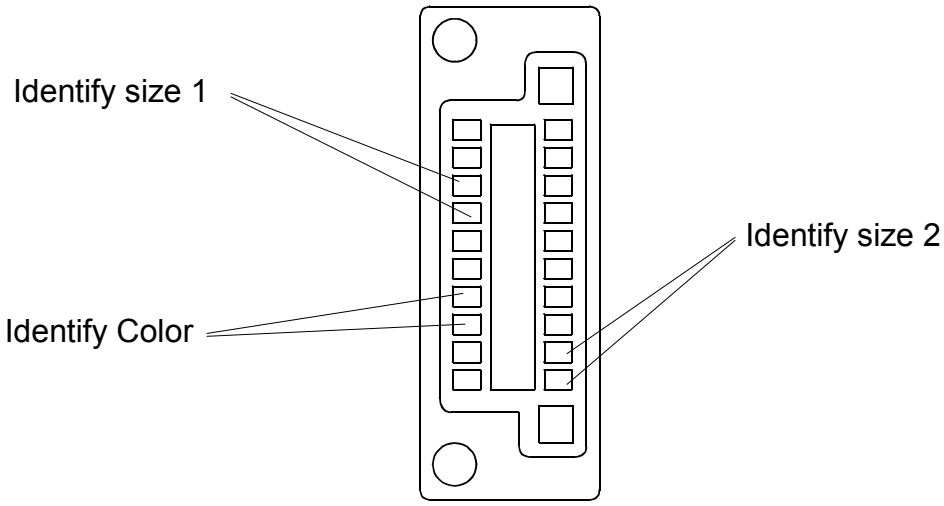
C267D948.WMF

The leading edge of the mesh on the metal screen is reduced by 2.5 mm [B] from previous models. This prevents small dots at the leading edge of the paper.

6.8.8 DRUM TYPE DETECTION



C267D957.WMF



C267D958.WMF

The type of drum is distinguished by inserting jumper wires in the drum connector [A] at three locations, as shown in the lower diagram.

Black drum

	Identify Color	Identify size 1	Identify size 2
B4 drum	No jumper	Jumper inserted	Jumper inserted
A4 drum	No jumper	Jumper inserted	No jumper
LG drum	No jumper	No jumper	Jumper inserted

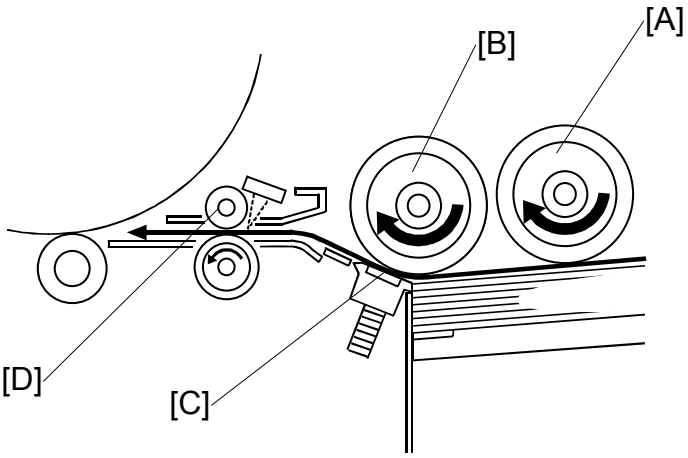
Color drum

	Identify Color	Identify size 1	Identify size 2
B4 drum	Jumper inserted	Jumper inserted	Jumper inserted
A4 drum	Jumper inserted	Jumper inserted	No jumper
LG drum	Jumper inserted	No jumper	Jumper inserted

NOTE: When you modify the color drum into a black drum, replace the ink holder [B] to the correct type for a black drum. Then take off the jumper at the 'identify color' location. Never remove or insert jumpers at 'identify size 1' or 'identify size 2', or the machine will detect the incorrect drum size.

6.9 PAPER FEED

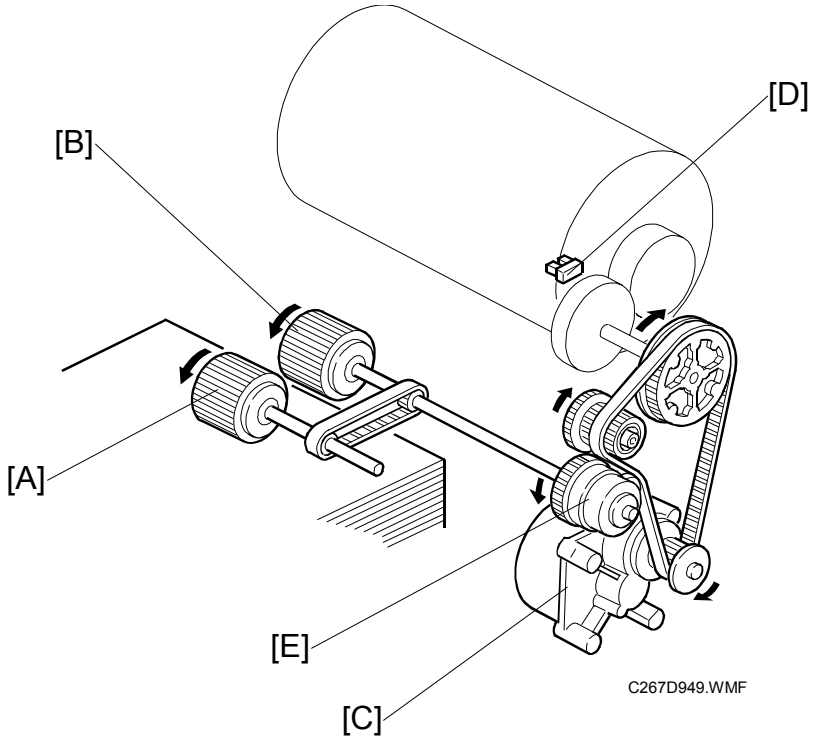
6.9.1 OVERALL



The top sheet of the paper on the paper table is first fed by the pick-up roller [A]. Then, it is separated by the paper feed roller [B] and the friction pad [C], and transported to the registration rollers [D]. The upper and lower registration rollers transport the sheet to the drum.

The paper feed roller is driven by the main motor, and an independent stepper motor is used to control the registration roller. The registration roller synchronizes the paper feed timing with the master on the drum. The registration roller starts rotating after the paper has come into contact with the rollers and has been aligned.

6.9.2 PAPER FEED MECHANISM

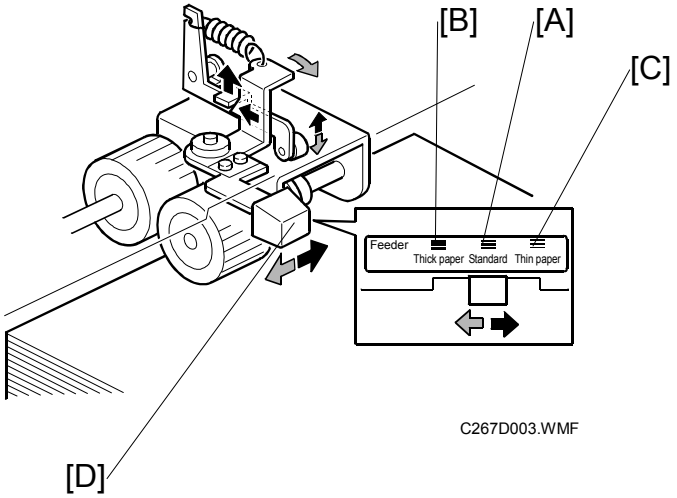


The pick-up roller [A] and paper feed roller [B] are driven by the main motor [C] through gears and a timing belt.

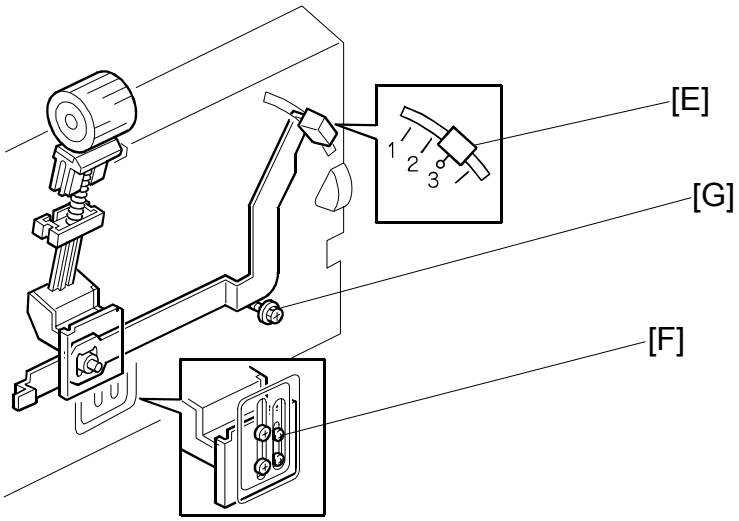
During the printing cycle, when the feed start timing sensor [D] is actuated by the actuator on the drum, the paper feed clutch [E] is energized to transmit the main motor rotation to the paper feed roller shaft. The top sheet of the paper is separated from the paper stack by the friction between the roller and the friction pad, and transported to the registration roller.

A one-way clutch is installed in the paper feed roller so that after the electromagnetic clutch is de-energized, it does not disturb the paper transportation.

6.9.3 PAPER FEED/SEPARATION PRESSURE ADJUSTMENT MECHANISM



C267D003.WMF

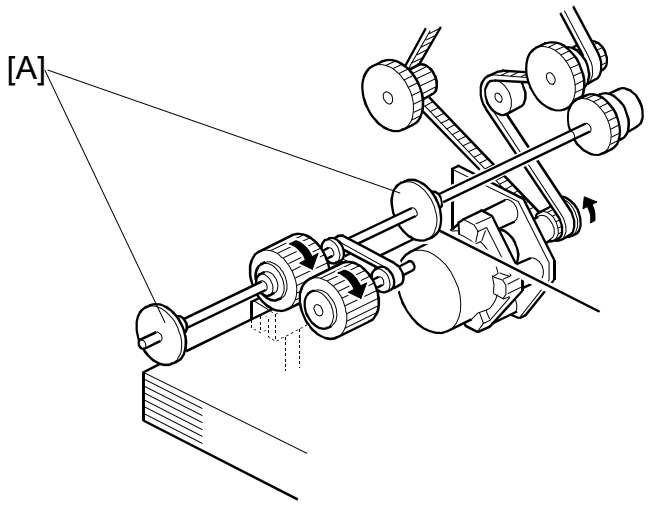


C267D001.WMF

[A]: Normal position
[B]: Thick paper position
[C]: Thin paper position

- The user can change the pick-up roller pressure by changing the position of the pressure adjustment lever [D].
- If paper feed jams frequently occur, the lever [D] should be moved to the left or the right to adjust the pressure.
- If non-feed or multi-sheet feed problems still occur, the paper separation pressure can also be adjusted by the lever [E].
- If there is still a paper feed problem, the technician can adjust the paper separation pressure by loosening then moving the screw [F] up or down.
- For the Chinese model, the separation pressure adjustment lever [E] has 4 levels. For the other models, a screw [G] is attached so that the lever [E] cannot move down more than level 3.

6.9.4 SIDE EDGE PAPER PRESS PLATE MECHANISM



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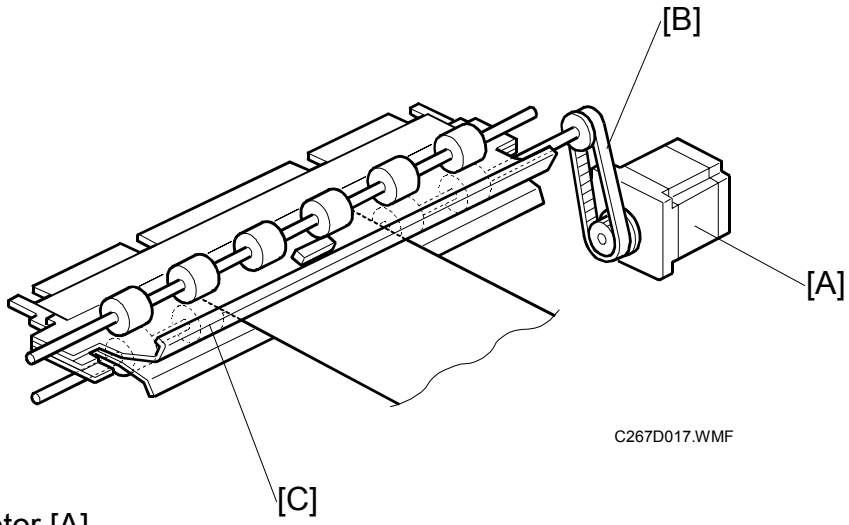
For some paper types, the side edges of the paper might curl up because the centre of the paper is pressed down by the paper feed roller. This will cause paper jams to occur.

To prevent the curling up of the paper side edges, the paper guide plates [A] press the edges down.

6.9.5 REGISTRATION ROLLER MECHANISM



Registration motor [A]

↓

Belt [B]

↓

Turns the lower registration roller [C]

NOTE: 1) The MPU controls the registration roller start timing to synchronize the print paper with the image on the master on the drum.
2) The motor speed depends on the selected printing speed.
3) By pressing the image position keys on the operation panel, the registration motor start timing is changed.

6.9.6 PAPER FEED RETRY MECHANISM

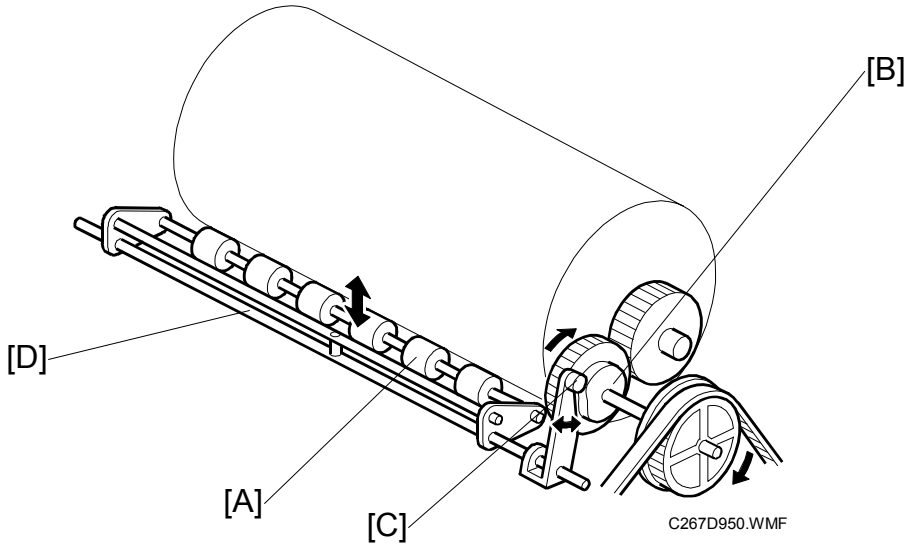
When paper is misfed at the paper feed tray, a paper feed jam is not displayed, and the machine tries to feed the paper again.

The paper registration sensor does not turn on after the paper feed motor turns, and the drum turns without paper. Then, when the feed start sensor is on again, the paper feed motor starts to feed again.

The paper feed retry mechanism only operates during printing, and not for the trial print.

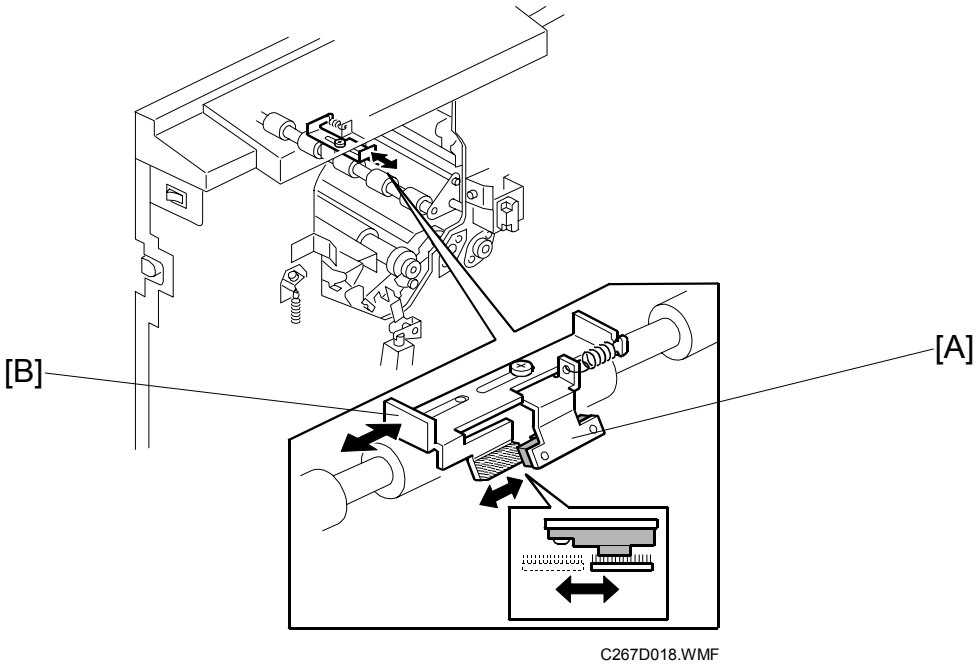
The retry is done only one time. If paper is not fed, then a misfeed occurs.

6.9.7 REGISTRATION ROLLER UP/DOWN MECHANISM



- After the printing paper is caught between the drum and the press roller, the registration motor stops and the upper registration roller [A] is released from the lower registration roller. This is to prevent interference from the registration rollers while the drum and press roller transport the paper.
- When the high point of the cam [B] on the drum drive gear reaches the cam follower [C], the shaft [D] rotates clockwise (as seen from the operation side) to release the upper registration roller [A] from the lower registration roller.

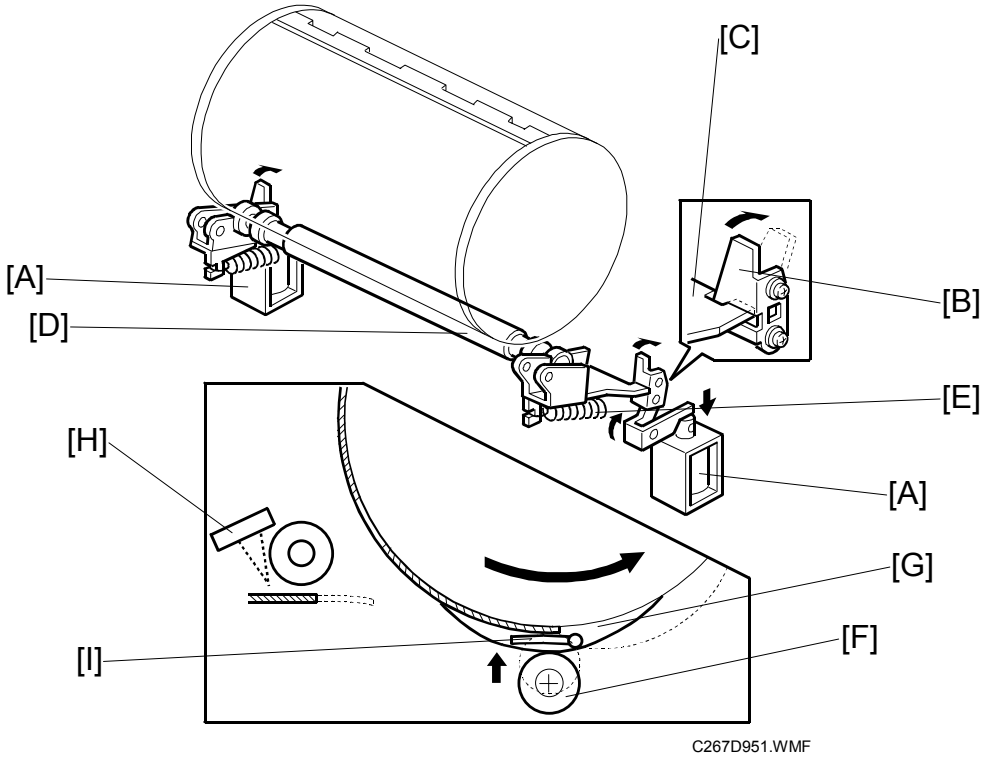
6.9.8 REGISTRATION SENSOR CLEANING



NOTE: This mechanism is attached only for the Chinese model.

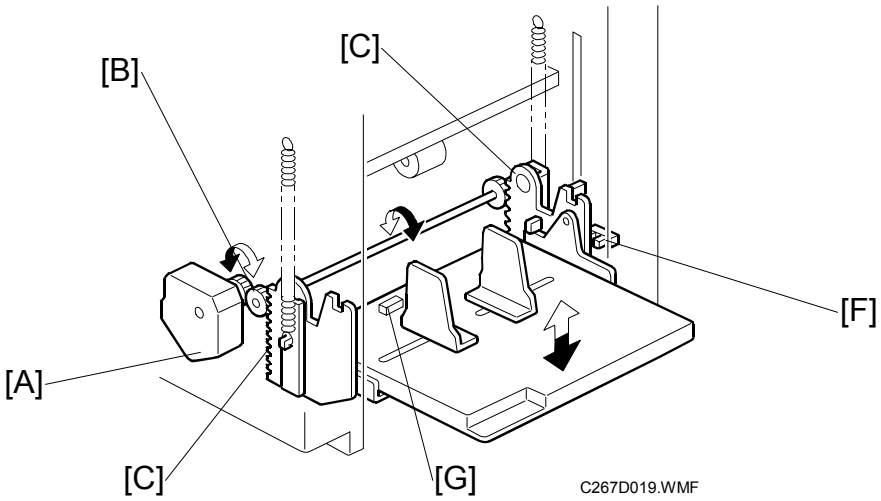
Dust on the registration sensor [A] can be removed by operating a lever [B]. The technician should do this every visit.

6.9.9 PRINTING PRESSURE MECHANISM



- When not in the printing cycle, the two solenoids [A] stay off and the stoppers [B] lock the brackets [C] to keep the press roller [D] away from the drum.
- When the 1st sheet of paper is fed, the solenoid is energized but the brackets are still locked by the stoppers due to strong tension from the springs [E].
- When the high points of the cams [G] on the front and rear drum flanges reach the cam followers [F] on both sides of the press roller shaft, a small clearance is made between the stoppers and the brackets. The two solenoids plungers are pulled down at the same time, releasing the stoppers from the brackets.
- Printing pressure is applied by tension from the springs [E] when the cam followers [F] come off the high points of the cams [G].
- During the printing cycle, the solenoids stay on. However, if paper does not reach the registration sensor [H] at the proper time (when the cam follower is on the high point of the cam), the solenoids are de-energized to lock the brackets.
- The printing pressure is released when the cams push down the cam followers so that the press roller does not contact the master clamper [I].
- After printing is finished, the solenoids de-energize and the springs push the stoppers back. Before the drum returns to the home position, the stoppers lock the brackets again when the cams push down the cam followers.

6.9.10 PAPER TABLE MECHANISM



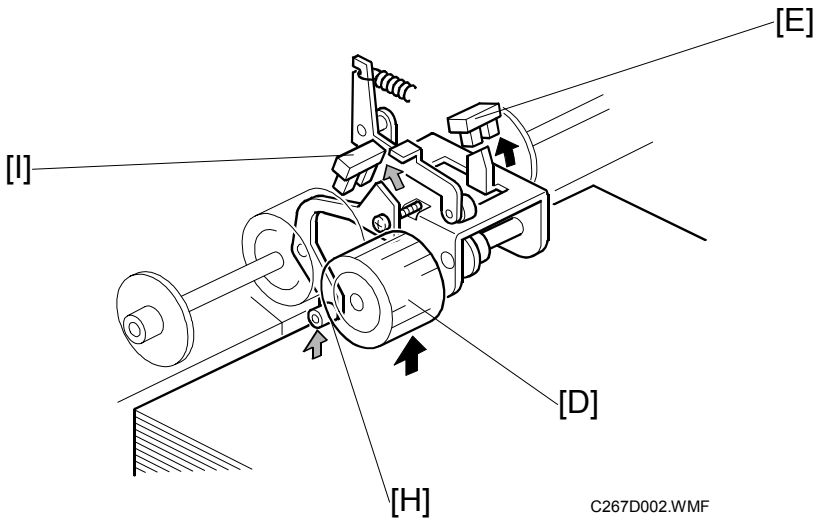


Table Up and Down Mechanism

An independent dc motor, the paper table motor [A], drives the paper table. When the motor turns, the pinions [B] turn on the racks [C], lifting up or lowering the paper table.

There are two paper height sensors.

- Sensor 1 [E] is actuated when the top of the stack pushes the pick-up roller [D] to a certain height.
- Sensor 2 [I] is actuated when the top of the stack pushes a feeler [H].

When the paper table moves up, the top of the paper stack contacts the pick-up roller [D] or feeler [H], lifting it up. Then, when paper height sensor 1 [E] or 2 [I] is actuated, the paper table stops.

During a printing run, sheets are fed from the stack, and the paper pick-up roller and feeler both drop. When the paper height sensor 1 or 2 is de-actuated, the paper table motor starts turning and lifts the paper table until the sensor is actuated

again. In this way, the top of the paper stack remains at the same position during printing.

When the tray lowers, the lower limit position is detected by the lower limit sensor [F], which is beside the paper table motor.

When paper runs out, the paper feed table lowers, until the paper table lower limit sensor (not shown) detects the lower limit position.

Why do we have two height sensors?

Note that the feeler [H] is at a different part of the stack from the pick-up roller [D].

Some types of paper have a different stack thickness at different parts of the stack. This is notably true for envelopes, which have a greater stack thickness at the leading edge. The pick-up roller contacts the stack a small distance away from the leading edge, so the stack is a bit thicker than detected by an actuator attached to the pick-up roller.

Then, if there is only one height sensor, it might detect that the table is at the correct height at the wrong time, or that the stack height is too low at the wrong time.

Then a misfeed will occur.

So, having two sensors prevents misfeeds.

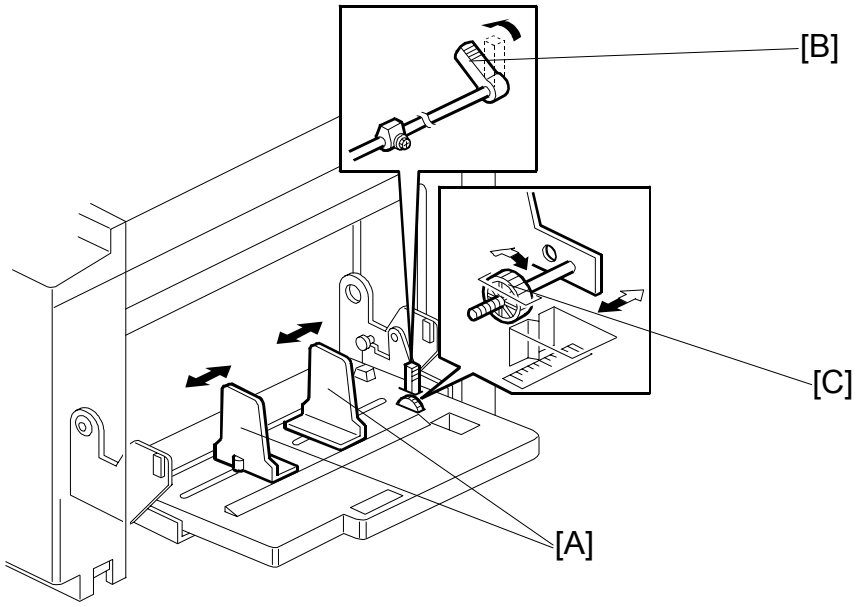
Paper End Detection Mechanism

The paper end sensor [G] is under the paper table to detect when the paper on the table runs out.

Paper Size Detection

NOTE: The paper size is not detected in this model, because there are no paper size sensors. As a result, the master is always made at full size. (Also, there is no size sensor for originals.)

6.9.11 PAPER TABLE SIDE FENCE MECHANISM



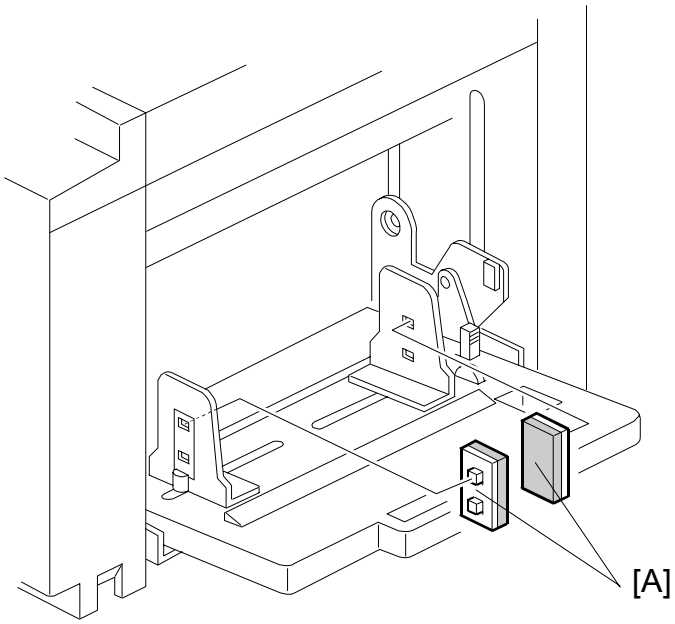
The left and right side fences [A] move together due to a rack and pinion mechanism. There is a lock lever [B] to hold the side fences in position.

NOTE: The lock lever may be useful if there is no dedicated operator and some of the operators cannot set the side fences properly, causing paper feed problems. Advise the operator to use the lock lever once the paper fences are properly adjusted.

Paper Table Side-to-Side Shift Mechanism

The paper table shifting dial [C] shifts the image across the page. If the dial is turned, the whole paper table moves towards one side or the other.

Side Fence Friction Pads

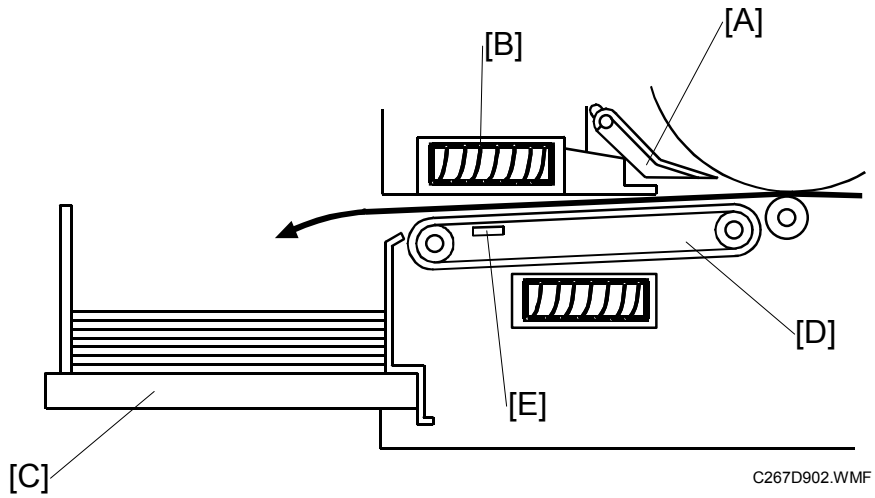


The two side fence friction pads are included as accessories. These are not used normally, but if paper multi-feed frequently occurs, the friction pads [A] can be installed to apply stopping pressure to the paper. These are especially useful when thin paper is used.

The user can install the friction pads if they are using thin paper.

6.10 PAPER DELIVERY

6.10.1 OVERALL



Procedure

The exit pawl [A] and the air knife [B] separate the paper from the drum.

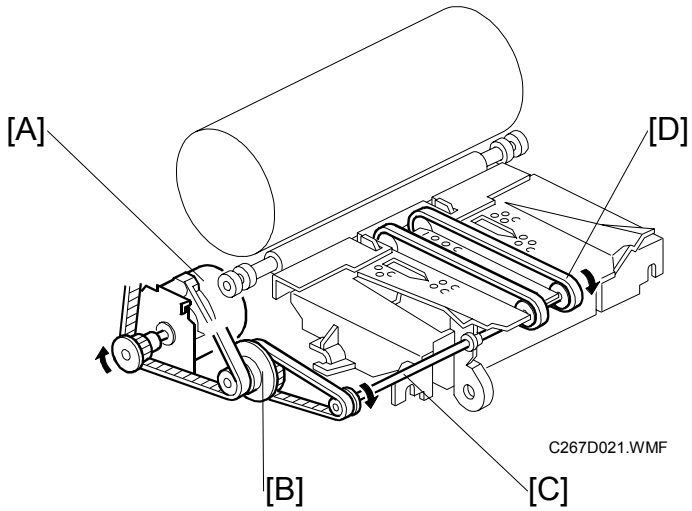
↓

The paper is fed to the paper delivery table [C] by the paper delivery unit [D].

↓

The paper exit sensor [E] is used for jam detection.

6.10.2 PAPER DELIVERY UNIT DRIVE MECHANISM

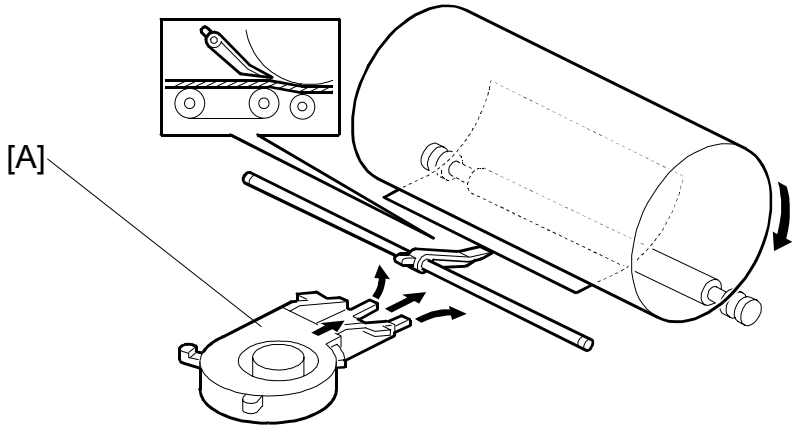


Mechanism

Main motor [A]
↓
Belt and gear [B]
↓
Shaft [C]
↓
Rotates the transport belts [D].

NOTE: 1) The vacuum fan motor inside the unit holds the paper against the belts [D] to deliver the paper to the delivery table.
2) Transport belt [D] become wider compare to previous Silver serious machine.
3) The transport belt rotation speed depends on the selected print speed.

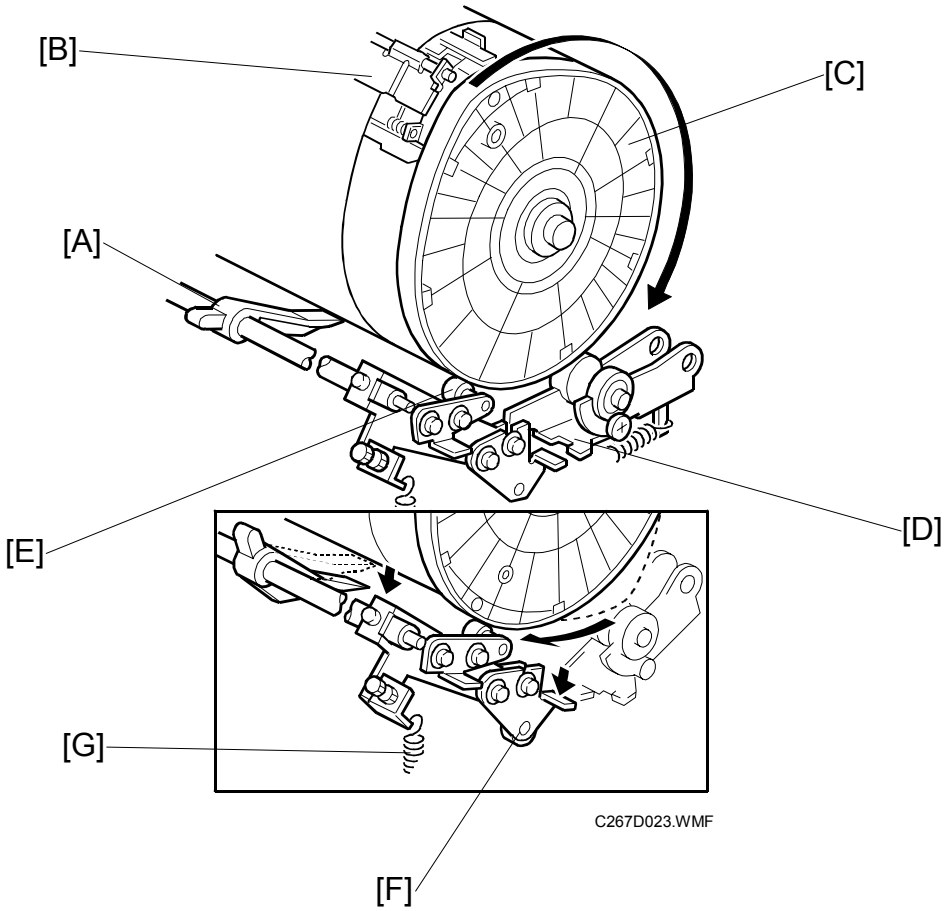
6.10.3 PAPER SEPARATION FROM DRUM



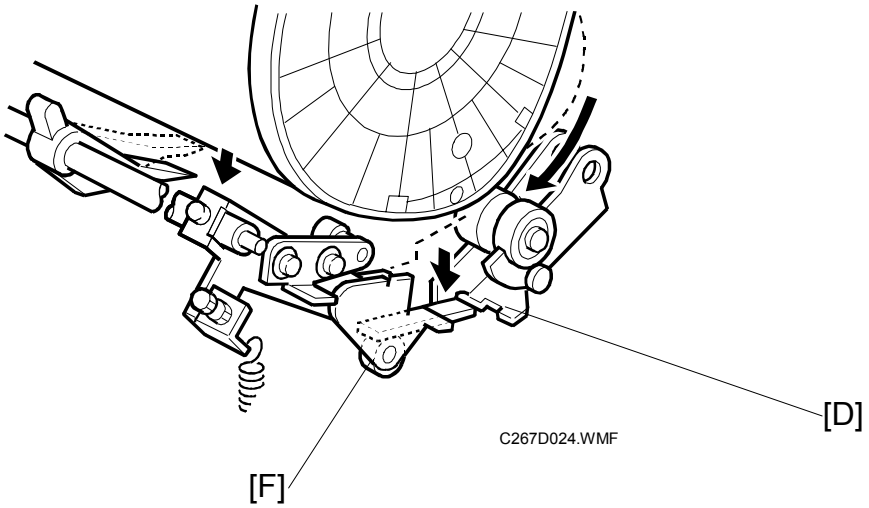
Air knife

- The air from the air knife fan motor [A] separates the paper from the drum.
- The air knife fan motor starts blowing air when the print start key is pressed or when master cutting is finished. The paper passes under the exit pawl and is delivered to the delivery table.

6.10.4 EXIT PAWL DRIVE MECHANISM

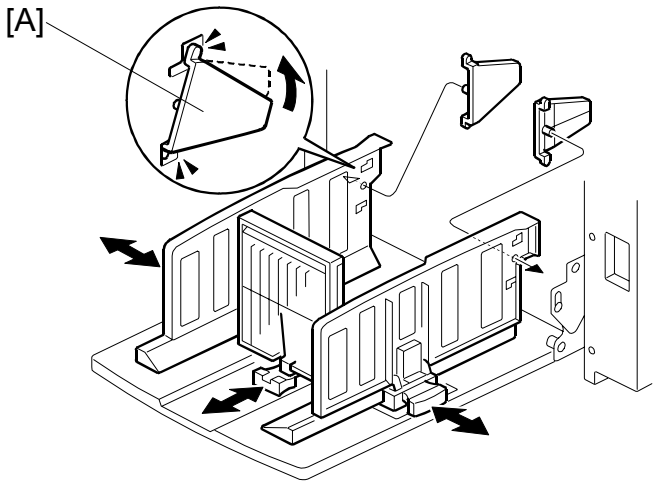


- During printing, the distance between the exit pawl [A] and the drum is very small, to prevent paper wrap jams. However, when the master clamper [B] approaches the exit pawl (as the drum turns), the pawl has to be moved away from the drum to prevent it from being damaged by the master clamper. This is controlled by the front drum flange [C], which is cam-shaped, and the cam follower [E] on the exit pawl shaft.
- When the cam follower is not pushed out by the drum flange, the exit pawl closely approaches the drum surface, due to the tension from a spring [G].
- As the master clamper approaches the exit pawl, the high point of the drum flange cam [C] moves into contact with the cam follower [E] pushing it down. This moves the cam follower arm [F] downwards. The pawl shaft turns clockwise to move the pawl away from the drum.



- When printing finishes and the printing pressure is released, the cam follower arm [F] is engaged by the printing pressure release arm [D] and held in the lower position. Therefore, after printing finishes, the cam follower is out of contact with the cam, and the exit pawl moves away from the drum to its normal position.

6.10.5 SIDE PLATE GUIDE



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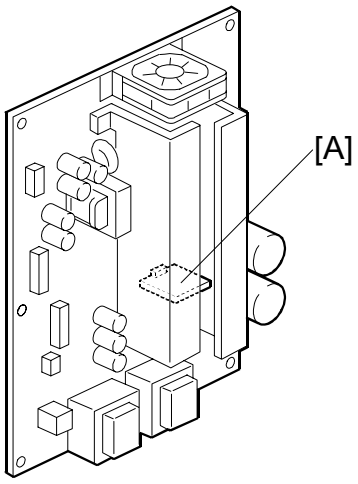
When printing on A4SEF, B5, and thin paper, side plate guides [A] should be attached to the side plate of the paper delivery table. Users can attach these guides.

Then, the side plate guides can correctly stack the printouts on the paper delivery table.

6.11 ABNORMAL VOLTAGE PROTECTION

This is for the AC220V ~240V machine only.



C267D955.WMF

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

Momentary voltage drop

SP 1-83 records the number of momentary interruptions.

NOTE: The machine can record only interruptions of very short duration. If the machine does not get voltage continuously, the PSU will shut off.

Low voltage (less than 150V)

Records (SP1-83) the number of low voltage peaks.

High voltage

Records (SP1-83) the number of high voltage peaks.

AC300V to 400V

The machine records the occurrence, and if the PSU keeps getting the high voltage continuously, the main switch will shut off automatically to protect the machine.

Over voltage (More than AC400V)

The machine will shut off immediately after recording the high voltage occurrence.

NOTE: 1) The main switch contains a solenoid to shut off the main switch automatically.
2) The auto shut off mode can be set ON or OFF by SP2-80.
3) A message will be displayed when the machine is turned on the first time after an auto shut off.

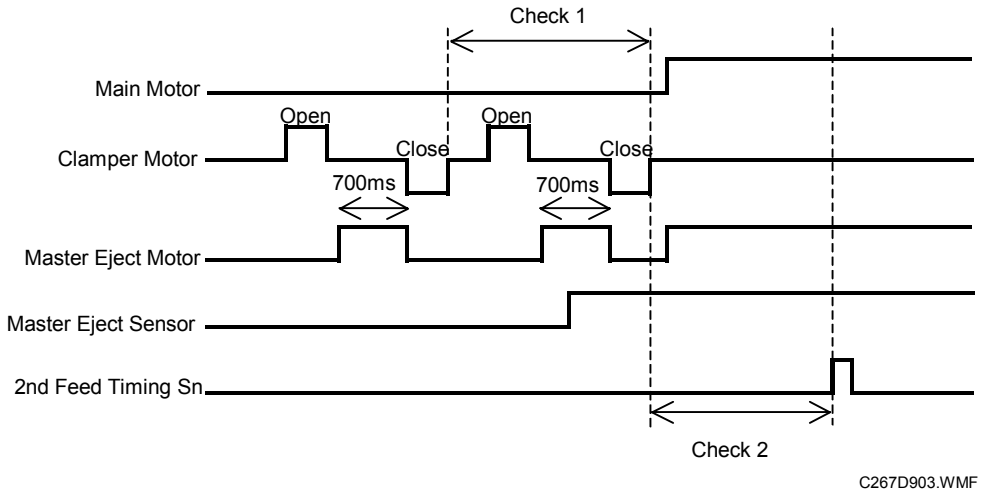
General Notes on this Feature

NOTE: 1) The durability of the PSU is improved compared to previous models.
2) The 100V machine does not have this mechanism, because voltages more than 220 V will not occur.
3) The machine keeps a record, and you can check the data with SP 8-9 Data printout – Power failure. Refer to section 5-9-3.
4) Collect the logging data with the PSU board when it is needed for investigation.
5) When the user turns the main power switch off, the machine detects this as a ‘momentary voltage drop’ and a ‘low voltage’, and adds this to the log for these two error types.

6.12 ERROR DETECTION

6.12.1 MASTER EJECT JAM (E JAM LOCATION INDICATOR)

Picking up the used master from the drum



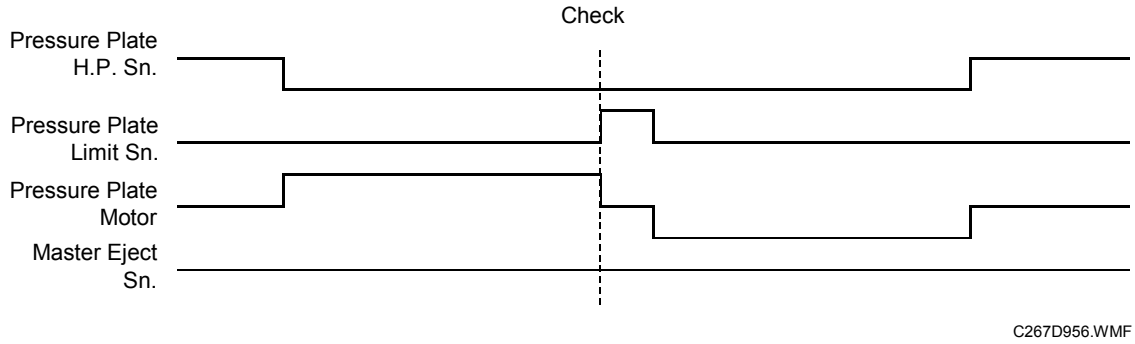
Check 1:

The retry mechanism will turn on when the master eject sensor does not turn on when the master eject motor is rotating.

Check 2:

The E jam indicator lights (master eject jam), when the master eject sensor does not turn on between closing the clamper and turning on the 2nd feed timing sensor.

Compressing the used master



Check:

If the master eject sensor detects a master when the pressure plate limit sensor turns on, the E jam indicator lights.

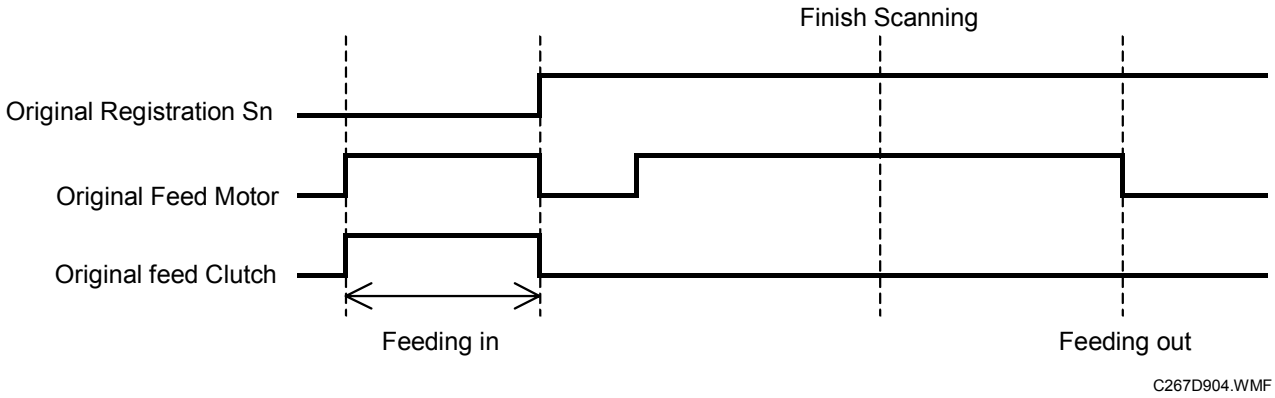
Just after turning on the main switch

Check:

If the master eject sensor is on (master detected), the E jam indicator lights.

6.12.2 ADF JAM (P JAM LOCATION INDICATOR)

Feeding in the original (ADF)



Feeding in

The P jam indicator lights if the original registration sensor does not turn on within 5 seconds after the original feed motor turns on

Feeding out

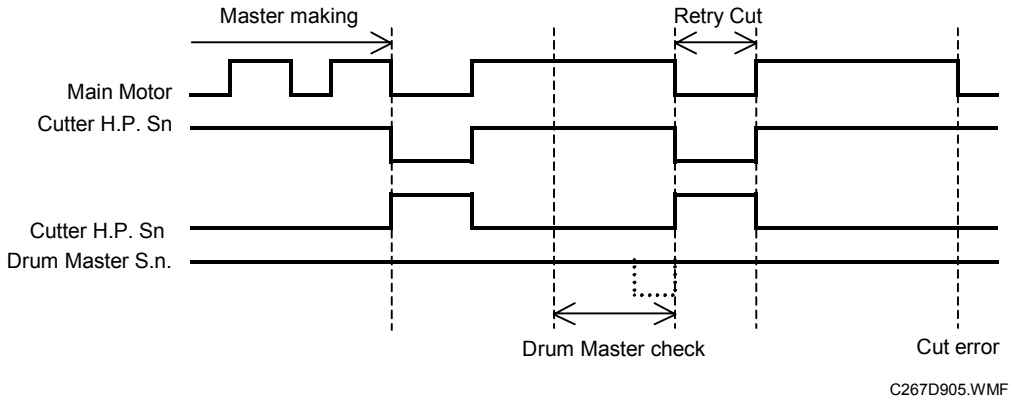
When the scanner has fed out the correct length and feeds 150mm more, but the original registration sensor still detects the original, the P jam indicator lights.

Just after turning on the main switch

If the original registration sensor detects an original, the P jam indicator lights.

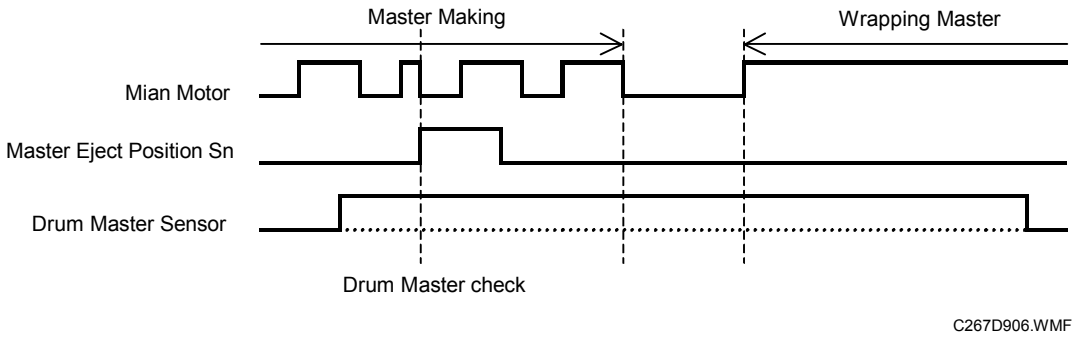
6.12.3 MASTER FEED JAM (D JAM LOCATION INDICATOR)

Cutting the master



The drum master sensor does not turn on between feed start timing sensor and drum black patch after the master cutting operation. In this case, the machine tries to cut the master again and if the machine does not cut the master correctly, the D jam indicator lights.

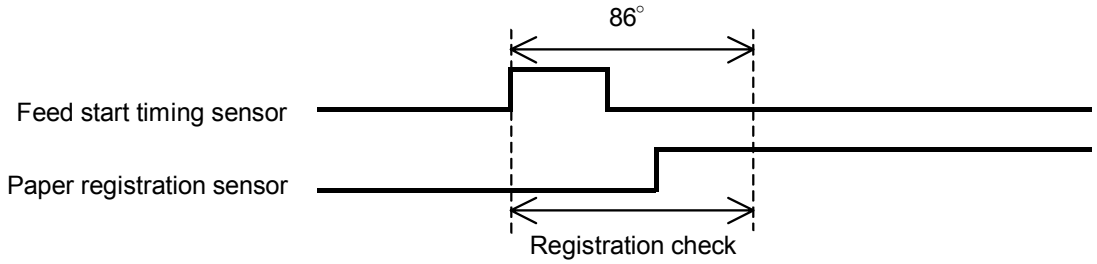
Clamping the master



A master clamp error occurs when the drum master sensor does not turn on at the home position (the drum stops at the home position for a short time; home position is when the master eject position sensor turns on).

6.12.4 PAPER FEED JAM (A JAM LOCATION INDICATOR + +)

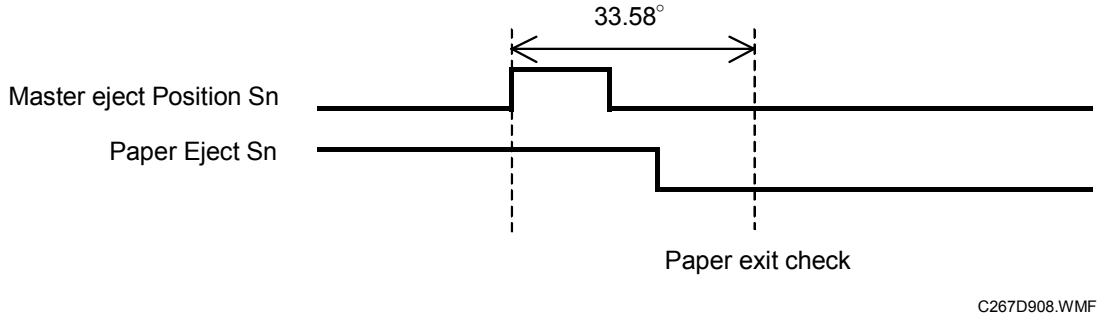
Paper feed



Paper feed will try again when the paper registration sensor does not turn on after 86 degrees from the paper start timing sensor. Then the drum will rotate one more time and if the paper registration sensor still does not turn on, the A jam indicator lights.

6.12.5 PAPER DELIVERY JAM (C JAM LOCATION INDICATOR)

Paper delivery

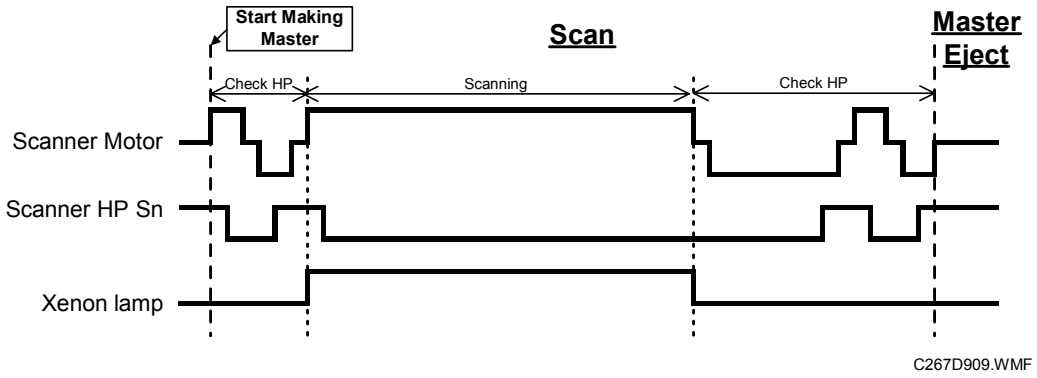


A paper exit error occurs when the paper exit sensor turns on immediately after turning on the power or after finishing printing.

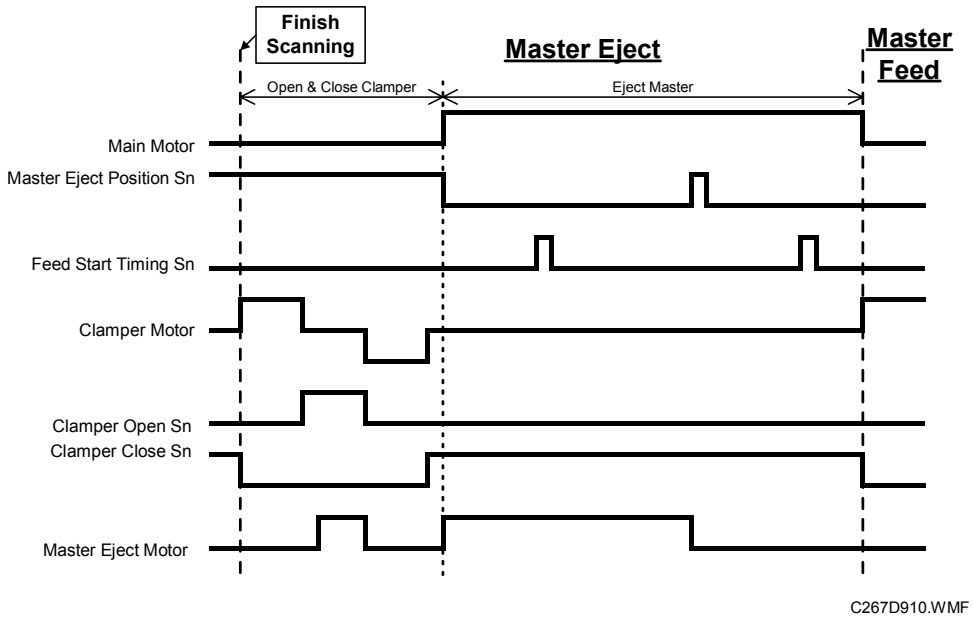
Also, a paper exit error occurs when the paper exit sensor turns on at 33.58 degrees from the paper ejection position during printing.

6.13 TIMING CHART

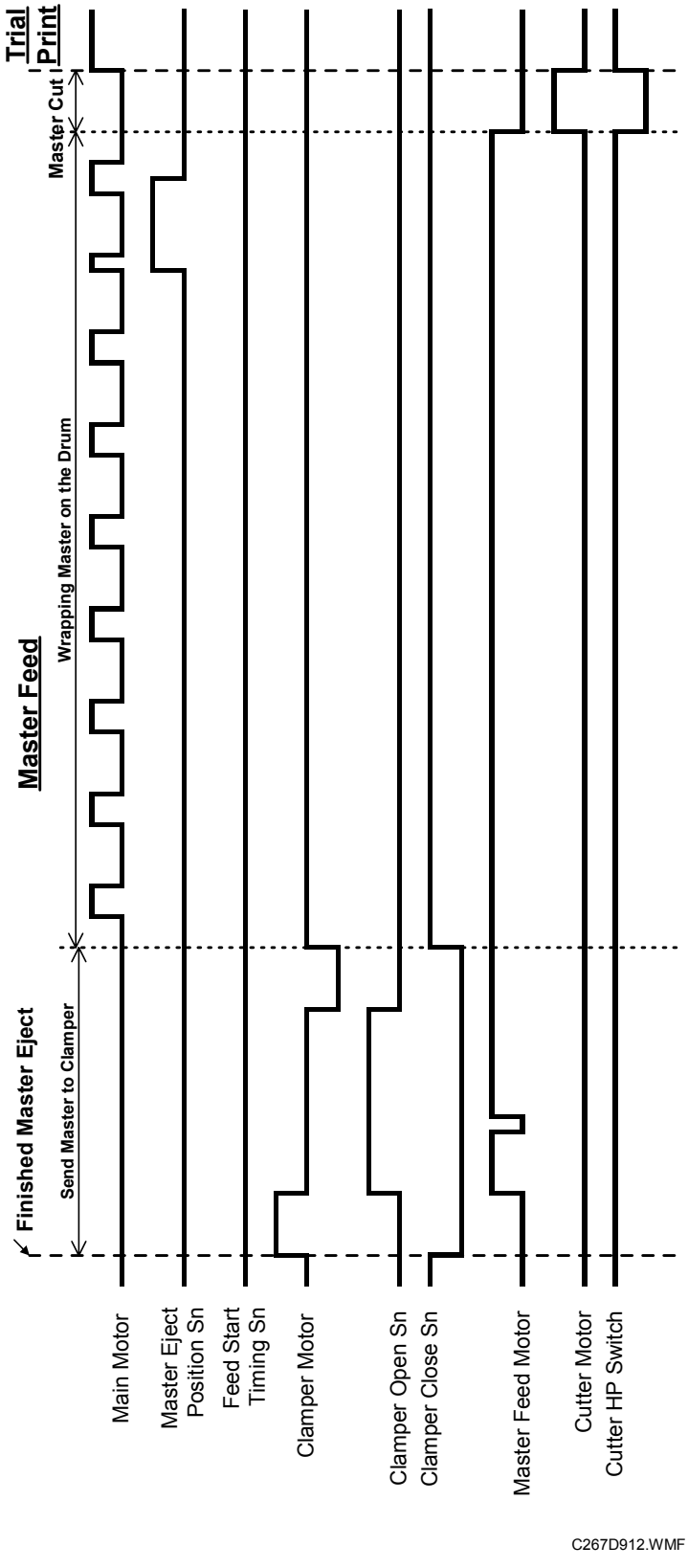
6.13.1 SCANNING



6.13.2 MASTER EJECT



6.13.3 MASTER FEED



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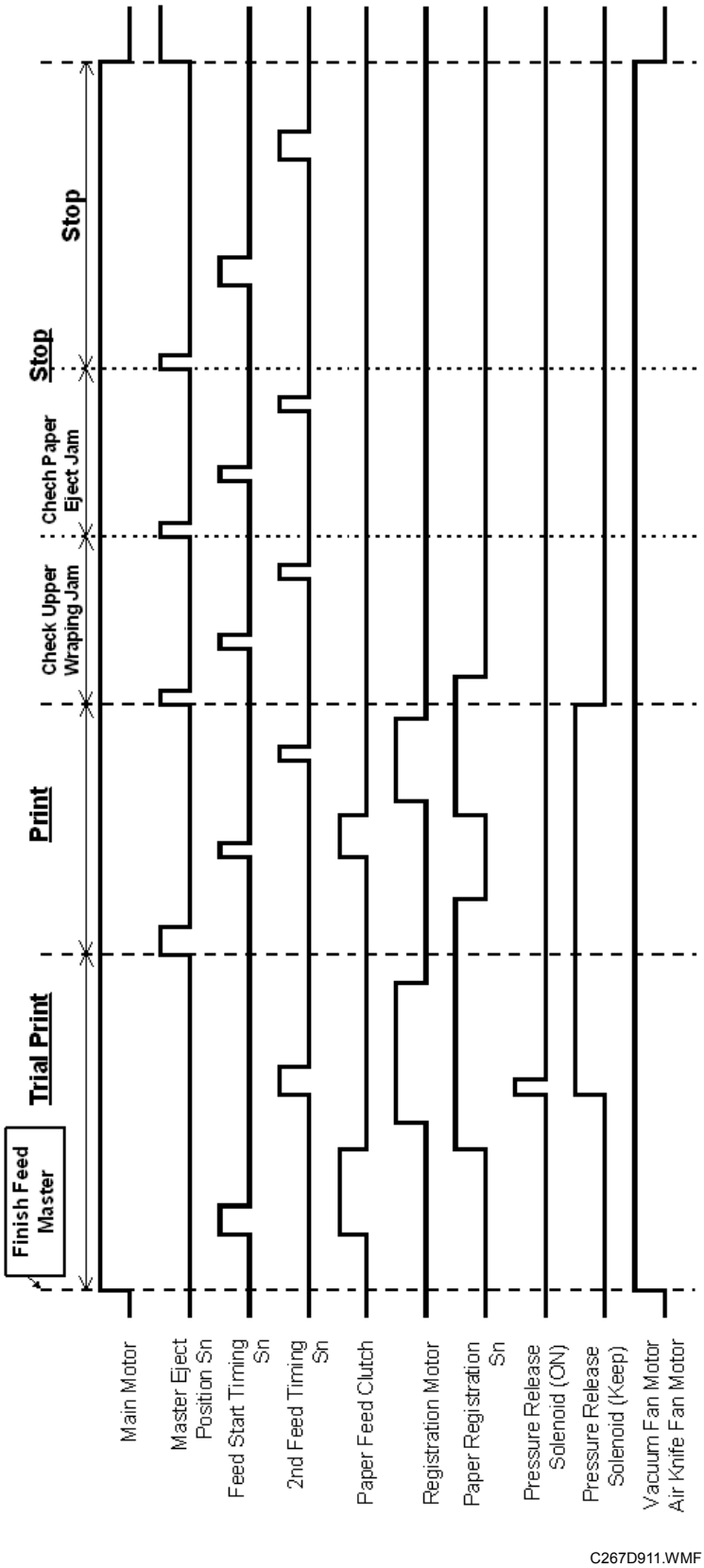
6.13.4 PRINT



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7. SPECIFICATIONS

7.1 ESSENTIAL DIFFERENCES BETWEEN C248 AND C267 MODELS

No.	Item	Remarks
1	Scanner unit	A newly designed scanner unit is used. 600 dpi x 300 dpi CCD A3 / 11” x 17” size book scanner
2	Operation panel	A newly designed operation panel is used. Bigger size bright LCD Two start buttons (master making and print) combined into one.
3	Master eject unit	Based on the TT model and added a master eject unit open mechanism like in the VT series.
4	Master making unit	Based on the TT model and added a master making unit slide-out mechanism like in the Sapphire series
5	Drum unit	Based on the TT model New ink pump unit Trochoid type pump Metal screen / Cloth screen Change the mylars to prevent ink leakage
6	Separation Pressure	The separation pressure can be changed with a lever. 3 levels (Other destinations) 4 levels (Chinese models)
7	Paper height sensor	Two paper height sensors
8	Paper delivery unit	Based on the TT model The main motor drives the paper delivery unit. Vacuum fan changed from sirocco fan motor to axial fan motor.
9	PSU	A newly designed PSU is used. Abnormal voltage protection mechanism. (220V machine only) • Durability is improved • Auto detection system for unexpected voltage surges, with automatic shut-off and data logging features.
10	MPU	A newly designed MPU is used. MPU controls: Machine, paper feed, image processing, main motor Upgrade the firmware using a flash memory card
11	Image processing	An LSI (same as the HP4) improves image processing
12	SP mode / User tools	Based on the HP4
13	Auto off mode	Added the auto-off mode
14	ADF	A newly designed ADF is used.

7.2 ESSENTIAL DIFFERENCES BETWEEN C252 AND C267 MODELS

No.	Item	Remarks
1	Scanner unit	A newly designed scanner unit is used. 600 dpi x 300 dpi CCD A3 / 11" x 17" size book scanner
2	Operation panel	A newly designed operation panel is used. Bigger size bright LCD Two start buttons (master making and print) combined into one.
3	Master eject unit	Master eject unit open mechanism like in the VT series
4	Master making unit	Master making unit slide-out mechanism like in the Sapphire series
5	Drum unit	Ink pump unit New ink pump unit Changed the motor to Trochoid type from piston pump type
6	Paper table	Based on the Silver series paper feed table
7	Paper height sensor	Two paper height sensors
8	Paper feed	Two types of roller (Paper pick-up roller and paper feed roller) The number of levels for paper feed pressure are changed from 2 levels to 3 levels.
9	Separation pressure	The separation pressure can be changed by the user with a lever. 3 levels (Other destinations) 4 levels (Chinese models)
10	PSU	A newly designed PSU is used. Abnormal voltage protection mechanism. (220V machine only) • Durability is improved • Auto detection system for unexpected voltage surges, with automatic shut-off and data logging features
11	MPU	A newly designed MPU is used. MPU controls: Machine, paper feed, image processing, main motor Upgrade the firmware using a flash memory card
12	Image processing	An LSI (same as the HP4) improves image processing
13	Printing speed	There are three printing speeds (not two).
13	SP mode / User tools	Based on the HP4
14	Auto off mode	Added the auto-off mode
15	ADF	A newly designed ADF is used.

7.3 GENERAL SPECIFICATIONS

Configuration	Desktop
Pixel Density	300 dpi × 300 dpi In Fine mode, 400 dpi in sub-scanning resolution
Scanning	600 dpi × 300 dpi CCD This model always reduces the amount of scanned data in the main-scan direction by half before printing.
Master Process	Digital with 300 dpi thermal head
Original Type	Sheet / Book
Printing Process	Fully automatic one-drum system
Original Size	Platen Mode Maximum A3 / DL size ADF Mode Maximum 297 mm × 432 mm, 11.7" × 17.0" Minimum 105 mm × 128 mm, 4.1" × 5.0"
Original Thickness / Weight	Platen Mode Maximum 30 mm ADF Mode 52 to 105 g/m^2, 14 to 28 lb.
Original Stack Capacity (ADF)	40 sheets (A4/ 8 1/2" and below size, 80 g/m^2 [20 lb.]) 30 sheets (Over A4/ 8 1/2" x 11" size, 80 g/m^2 [20 lb.])
Copy Paper Size	Maximum 275 mm × 395 mm, 10.8" × 15.6" Minimum 90 mm × 140 mm, 3.5" × 4.7"
Copy Paper Weight	China model 35 to 127.9 g/m^2 Other models 47.1 to 209.3 g/m^2
Printing Speed	80, 100, 130 cpm (3 steps)
Original Type	Text, Text/Photo, Photo, Pale mode
Master Making Density	Lighter, Normal, Darker 1, Darker 2
Reproduction Ratios	Metric (%): 141, 122, 115, 93, 87, 82, 71 Inch (%): 155, 129, 121, 93, 77, 74, 65
Master Eject Box Capacity	30 masters
Copy Paper Capacity	1,000 sheets (64 g/m2, 171 lb.)
Paper Delivery Tray Capacity	1,000 sheets (64 g/m2, 171 lb.)
Power Source	120 V, 60 Hz, 2.0 A 220 V – 240 V, 50 – 60 Hz, 1.1 A
Power Consumption	Less than 180 W
Noise Emission	Sound Power Level Standby: 36 dB Copying 80 cpm: 78 dB Copying 100 cpm: 80 dB Copying 130 cpm: 84 dB Operating Position Sound Power Level Standby: 20 dB Copying 80 cpm: 63 dB Copying 100 cpm: 70 dB Copying 130 cpm: 72 dB

RTB 3
Print speed for thick and thin paper (China model)

Spec.

Dimensions (W × D × H)	Stored 750 × 676 × 633 mm, 29.5” × 26.6” × 24.9” Stored with ADF 750 × 676 × 686 mm, 29.5” × 26.6” × 27.0” Set up 1224 × 676 × 633 mm, 48.2” × 26.6” × 24.9” Set up with ADF 1224 × 676 × 686 mm, 48.2” × 26.6” × 27.0”
Weight	68.5 kg

Master Processing Time	32 seconds (A4 ▱) When setting an original on the exposure glass
First Print Time	33 seconds (A4 ▱) When setting an original on the exposure glass
Printing Area	B4 Drum 250 mm × 355 mm LG Drum 210 mm × 355 mm A4 Drum 210 mm × 288 mm
Leading Edge Margin	5 mm ± 3 mm
Side / Vertical Registration Adjustable Range	± 10 mm

Master	Master Type	280 mm width (B4) 240 mm width (LG / A4) 100 mm / roll (China) 125 mm / roll (other destinations)
	Yield	260 masters / roll (B4 / LG) 300 masters / roll (A4) 205 masters / roll (B4 China)
	Maximum run length per master	2000 prints / master
	Storage Condition	0 to 40 C, 10 to 95 %RH
	Storage Period	12 months after production date
Ink	Ink Type	500 ml / pack (Black, China) 600 ml / pack (Black, Other destinations) 600 ml / pack (Other colors)
	Available Colors	Black, Red, Blue, Green, Brown, Violet Yellow, Maroon, Navy, Orange, Hunter green
	Storage Condition	-5 to 40 C, 10 to 95 %RH
	Storage Period	-5 to 40 C (12 months after production date) 15 to 25 C (18 months after production date)

Avoid locations exposed to direct sunlight.