Model Cat's-eye
Machine Code: C269

SERVICE MANUAL

April 2007

Subject to change

IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the printer and peripherals, make sure that the power cord is unplugged.
2. The wall outlet should be near the printer and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.

HEALTH SAFETY CONDITIONS

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

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

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

⚠CAUTION

- The RAM has a lithium battery which can explode if handled incorrectly. Replace only with the same type of RAM. Do not recharge or burn this battery. Used RAM's must be handled in accordance with local regulations.
- The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard batteries in accordance with the manufacturer’s instructions and local regulation.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

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

Symbols

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

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

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4. Troubleshooting

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1. Installation

Installation Requirements

Carefully select the installation location because environmental conditions have a great effect on machine performance.

Optimum Environmental Condition

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

Environments to Avoid

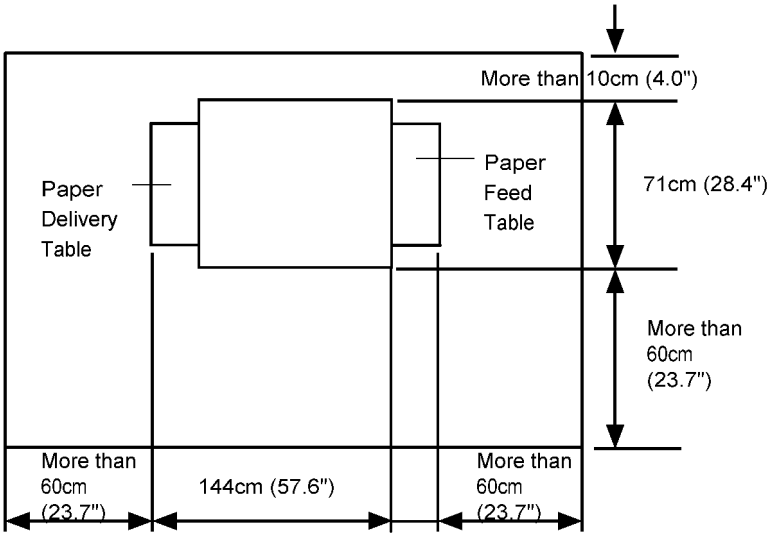
1. Locations exposed to direct sunlight or strong light (more than 1,500 lux).
2. Dusty areas.
3. Areas containing corrosive gases.
4. Locations directly exposed to cool air from an air conditioner or reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause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

Power Connection

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

Access to the Machine

Put the machine near a power source, and give clearance as shown below.



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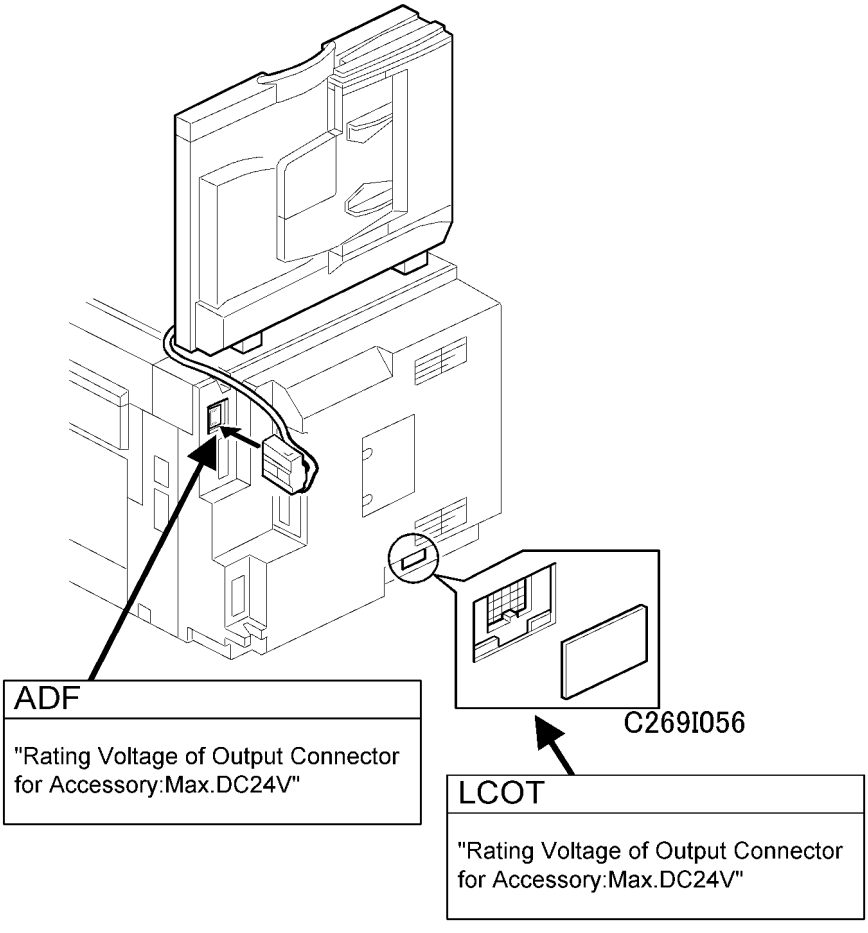
Power Sockets for Peripherals

⚠CAUTION

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


ADF
"Rating Voltage of Output Connector for Accessory:Max.DC24V"
C269I056
LCOT
"Rating Voltage of Output Connector for Accessory:Max.DC24V"

Installation Procedure

1

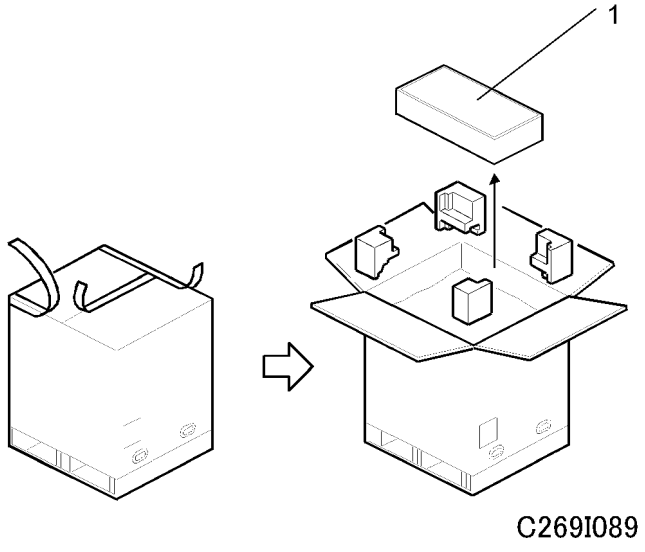
Main Body

Accessory Check

Make sure that you have all the accessories listed below:

No.	Description	Quantity
1.	Model name plates (C269-52, C269-53 only)	1
2.	Model name plate cover (C269-52, C269-53 only)	1
3.	Carrying handle stopper	4
4.	Ferrite Core	1
5.	NECR (C269-11 only)	1
6.	Manuals for this machine (Printed Manuals)	1
7.	Easy Operation Guide (Printed Manuals)	1
8.	Safety Information (Printed Manuals)	1
9.	Preparations for use as a Printer (Printed Manuals)	1
10.	CD-ROM Manuals (Including Operating Instructions, Printer Reference, PostScript3 Supplement and Network Guide)	1
11.	CD-ROM (Document Management Utility)	1
12.	CD-ROM (Printer Driver)	1
13.	Stabilizer Bracket	2
14.	Caution Label	1
15.	Thumbscrew	4

Installation Procedure



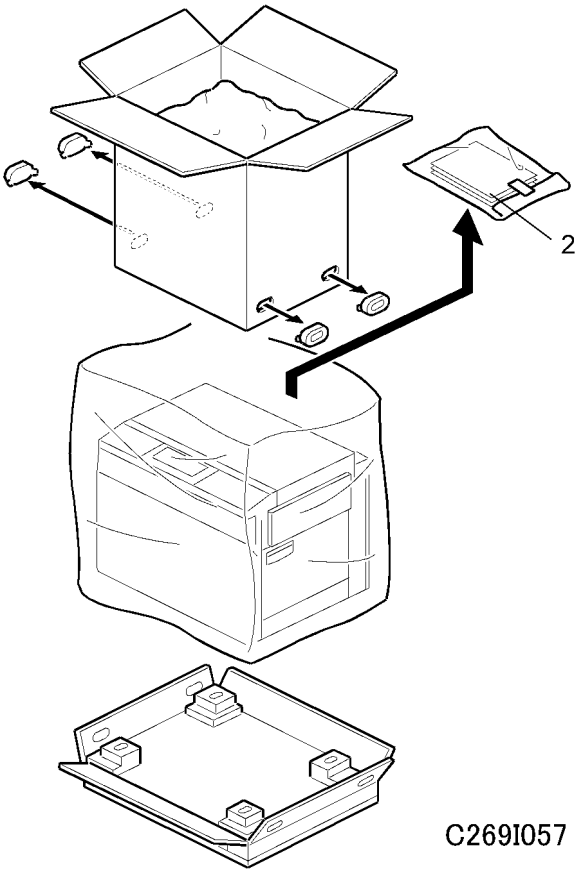
⚠CAUTION

- Open the box from the top. If the box is lifted off the machine from the bottom, the paper delivery table may be damaged.

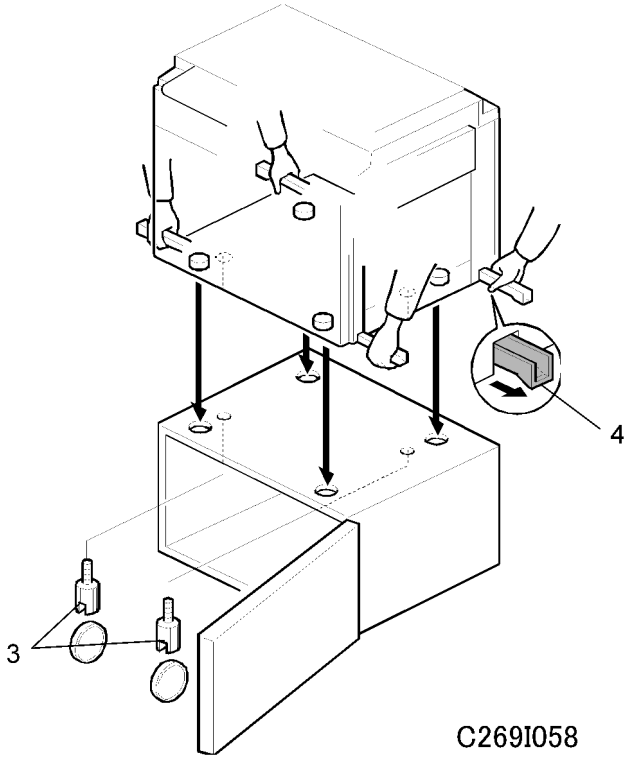
1. Unpack the box. Take out the small box [1], which contains the paper delivery table.

Note

- First, open the top of the box, and remove the small box inside [1]. This prevents the paper delivery table (inside the box [1]) from being damaged.



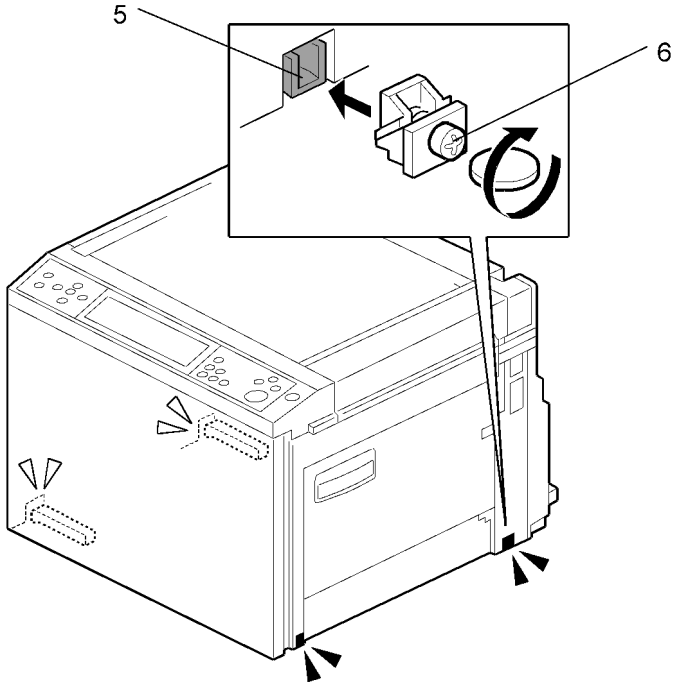
2. Continue to unpack the box. Make sure that the accessory bag [2] is included.



3. When you install the optional table, mount the machine on the table, as shown (2 screws [3] packed with the table).

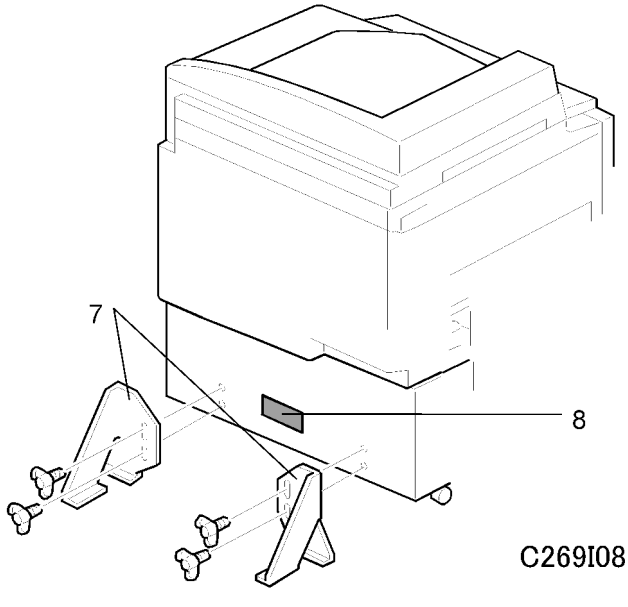
⚠CAUTION

- Only handle with the carrying handles [4] on the bottom of the machine. Otherwise, your fingers may be pinched between the main body and the table during installation. (The gap between the bottom of the main body and the table is very small.)
- Be sure to attach screws [3], or static electricity will build up inside the machine.



C269I065

4. Insert the carrying handle [5] in the machine, and attach the carrying handle stopper [6].



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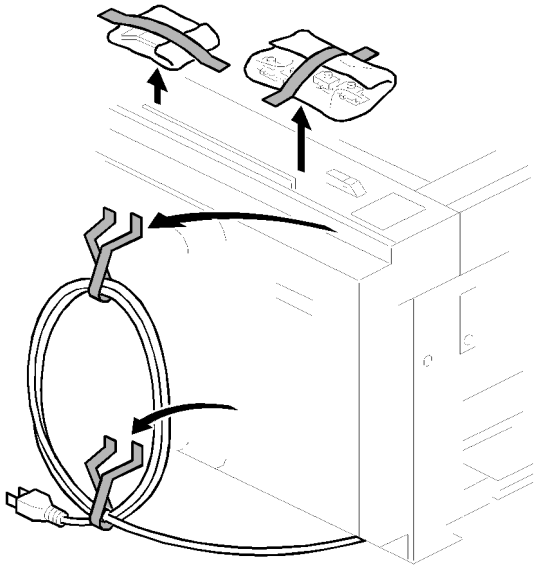
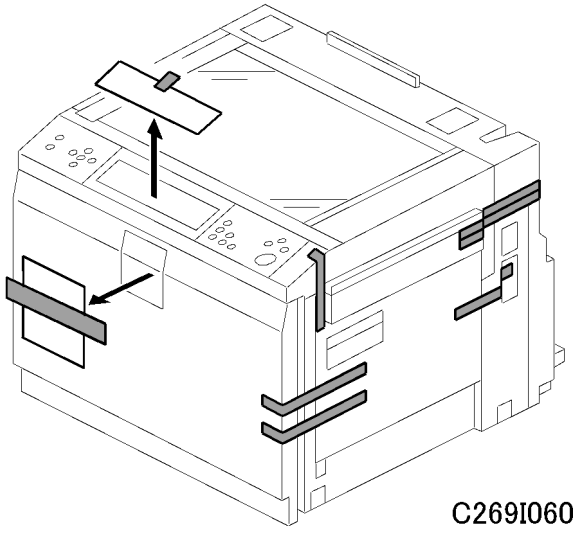
5. Install the stabilizer brackets [7] (4 thumbscrews) and caution label [8].

⚠CAUTION

- This must be done to prevent the machine from falling backwards.



C269I059



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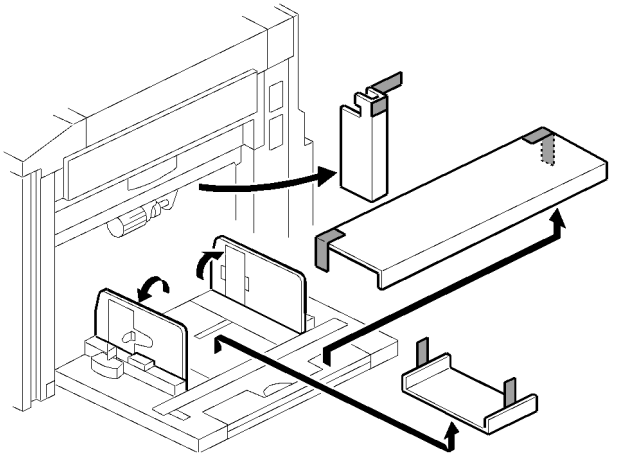

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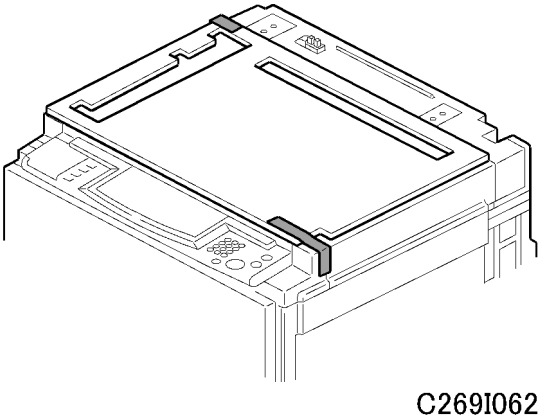

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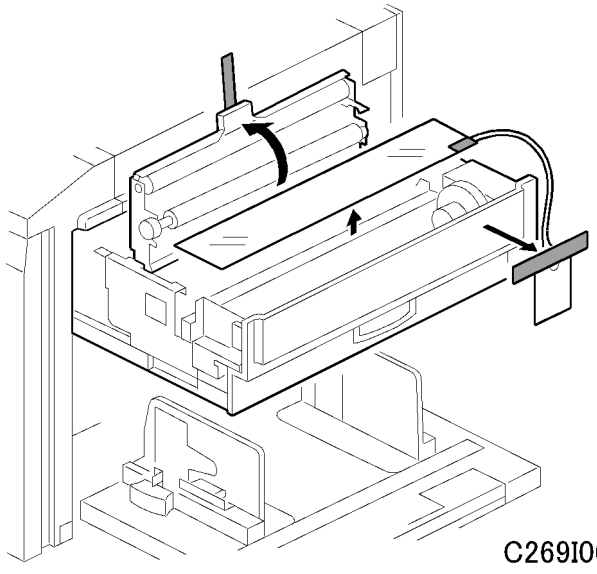

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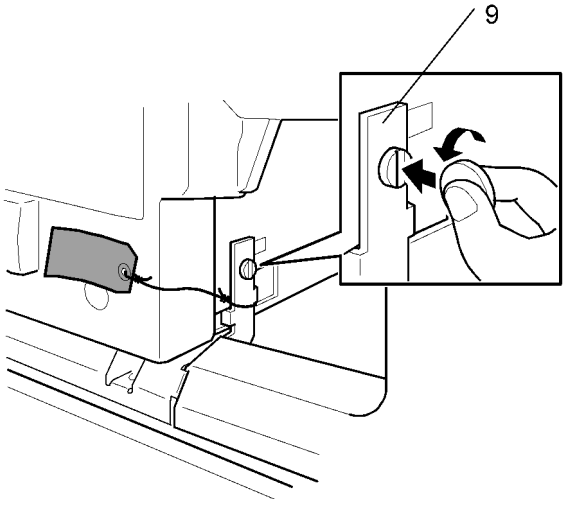
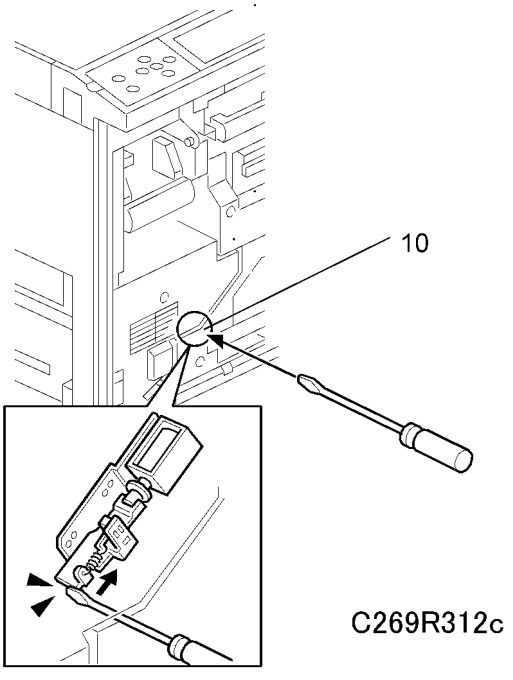
6. Remove the tape that secures the covers and units, as shown in the previous few diagrams.

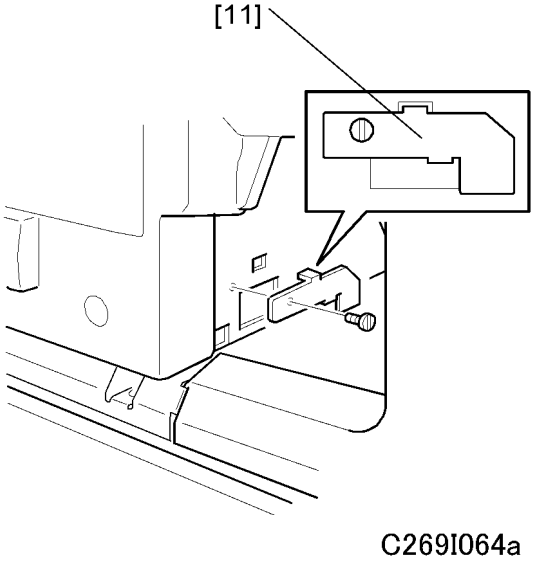


C269I063a

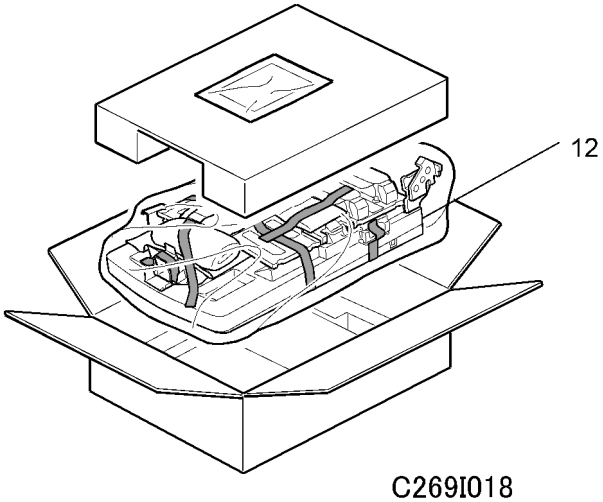
7. Open the front cover, and remove the duplex unit stopper [9].



8. Insert a screwdriver into [10] to move up the solenoid.

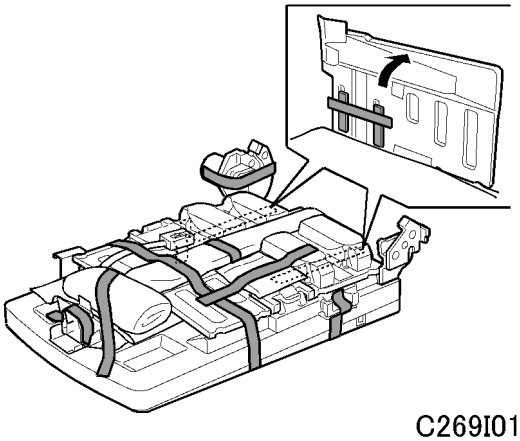


9. Install the duplex unit stopper [11], rotated by 90 degrees.



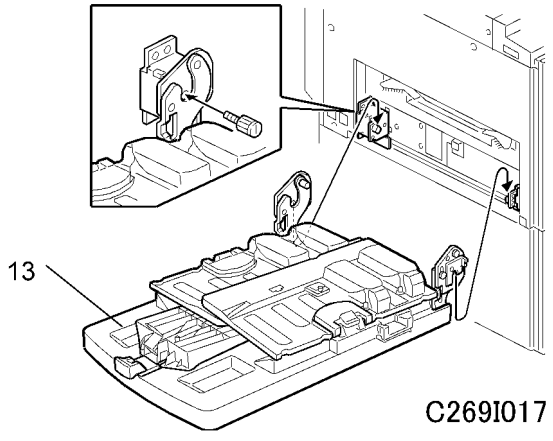
C269I018

10. Take out the paper delivery table [12] from the box.

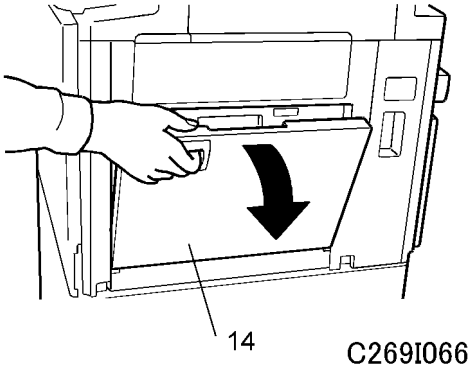


C269I019

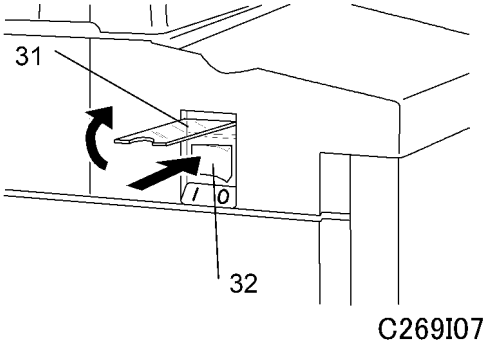
11. Remove the tape that secures the paper delivery table.



12. Attach the paper delivery table [13] (x 2).



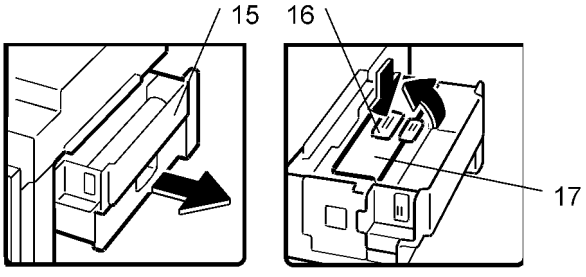
13. Open the paper table [14].



14. Open the main switch cover [31], and turn on the main switch [32].

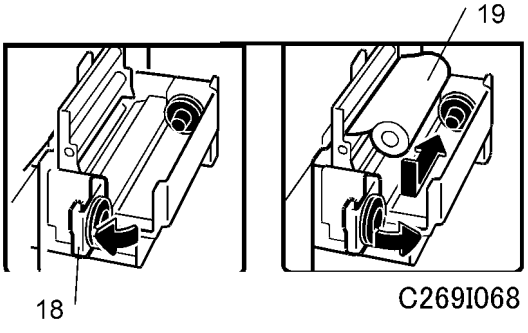
Note

- Turn on the main switch before setting the master roll.



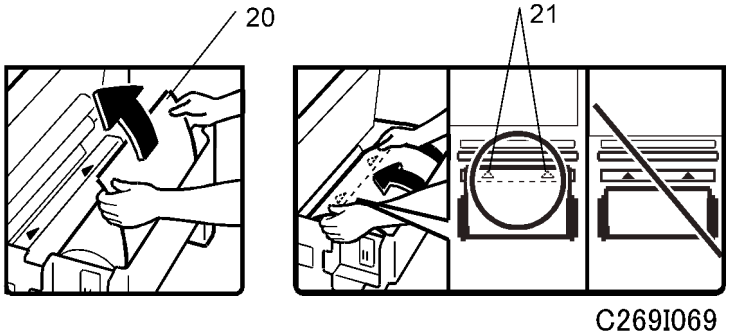
C269I067

15. Pull out the master making unit [15] until it stops.
16. Push the button [16], and open the master guide [17].



C269I068

17. Open the master tray cover [18].
18. The master roll [19] must be positioned as shown in the illustration.
19. Close the master tray cover [18].

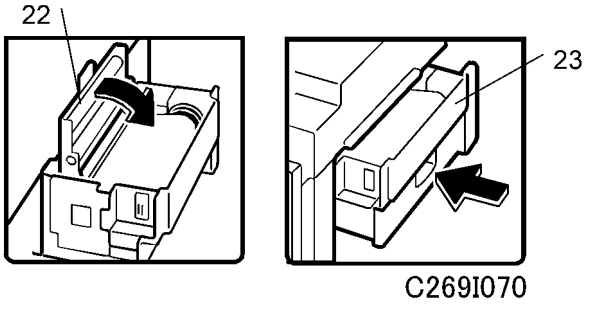


C269I069

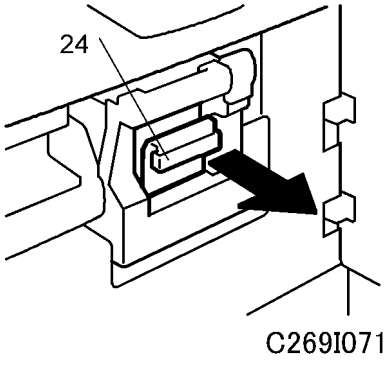
20. Insert the master roll [20].

Note

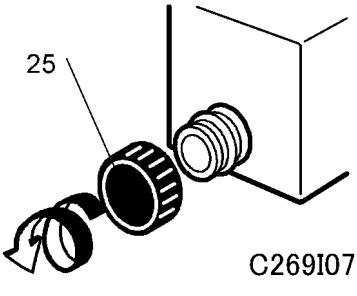
- Make sure the leading edge reaches the interior [21] of the master holder.



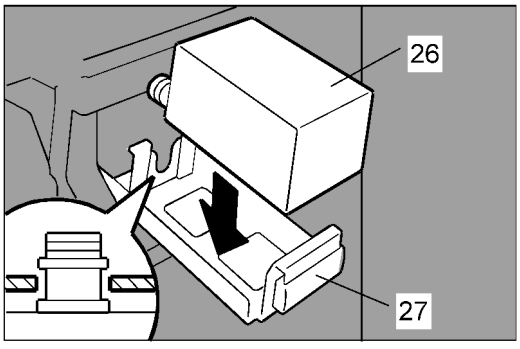
21. Close the master guide [22].
22. Push in thes master making unit [23] until it stops.



23. Open the front cover, and pull out the ink holder [24].

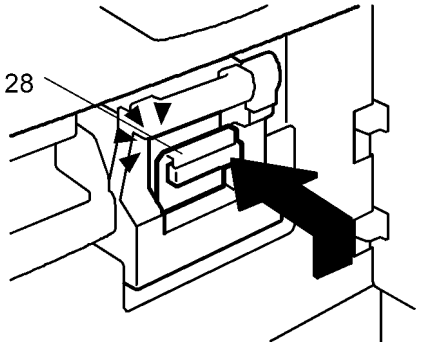


24. Remove the cap of the new ink cartridge [25].



C269I023

25. Insert the new ink cartridge [26] into the ink holder [27].



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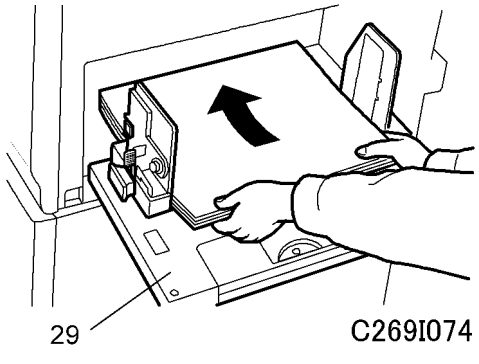
26. Return the ink holder [28] to its original position until it clicks, and close the front cover.



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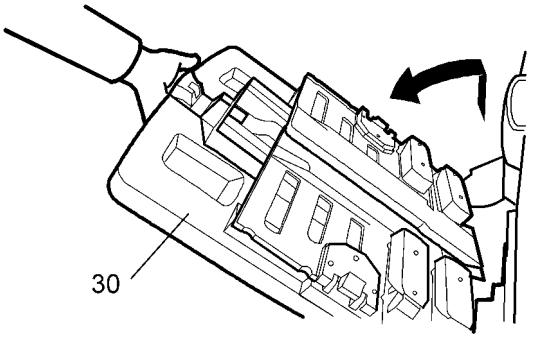
27. Put a stack of paper on the paper table [29].



28. On the paper delivery table [30], adjust the side plates and the end plate to the paper size.
29. Install the platen cover or ADF. (☛See 'Platen Cover (Option)' or 'ADF (Option)'.).
30. Insert the plug in the wall outlet.

Note

- Make sure that the wall outlet is near the machine and easily accessible.

31. Place an original on the exposure glass.
32. Make a master and make 30 one-sided 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.

33. Place a two-sided original in the ARDF.
34. Make a master and make 30 duplex prints with this master to test the copy quality.

Date/Time Setting

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

1. On the operation panel, press the User Tools key.
2. On the touch-panel, press "System Settings".
3. Push the "Timer Setting" tab.
4. Push "Set Date" then enter the date.
5. Push "Set Time" then enter the time.

SP Code Settings

SP No.	Name	Function
SP3-001-6	Phone Number – Service	Do this SP and input the contact numbers of the customer engineer. These numbers are shown when a service call is issued.
SP3-001-7	Phone Number – Supply Order	Do this SP and input the contact numbers of the customer engineer. These numbers are shown when the supply is ended.
SP3-001-8	Phone Number – Sales	Do this SP and input the contact numbers of the customer engineer.
SP3-001-9	Product Name - Master	These names appear when the user pushes the Inquiry button on the User Tools screen.
SP3-001-10	Product Name - Ink	

Register the relevant information.

Changing the Operation Panel Language

There are only two languages in the machine. If you need to change the language, please see the firmware update procedure in the 'Service Tables – Firmware Update' section.

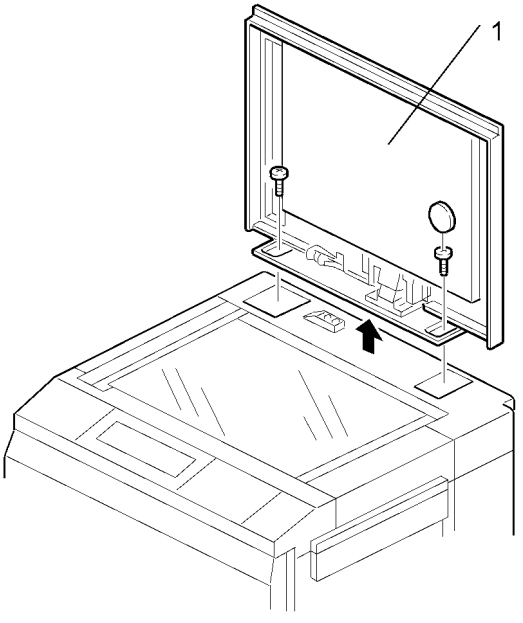
Platen Cover (Option)

Accessory Check

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

No.	Description	Quantity
1.	Stepped Screw	2

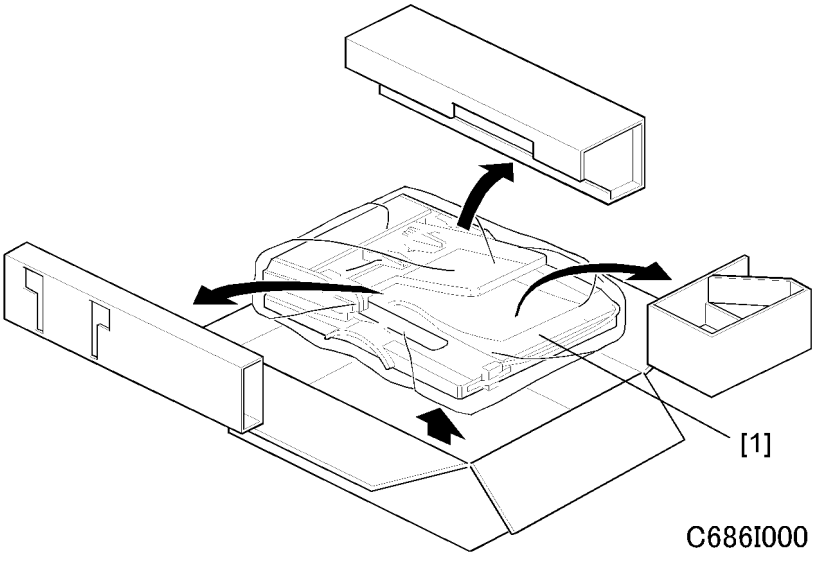
Installation Procedure



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

ADF (Option)

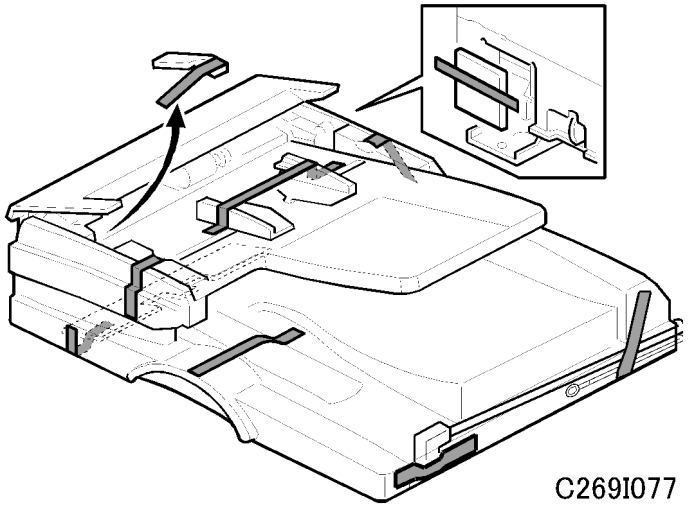
Accessory Check



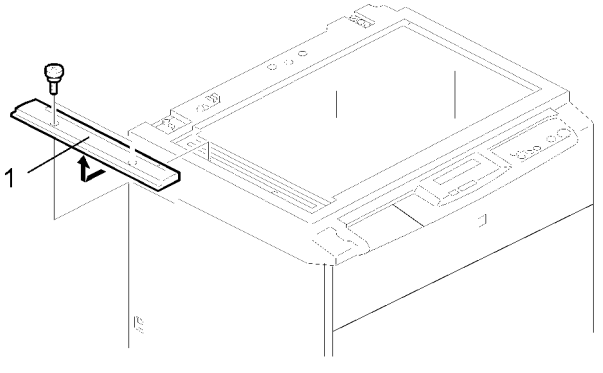
After bring out ADF [1], Check the quantity and condition of the accessories in the box against this list:

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

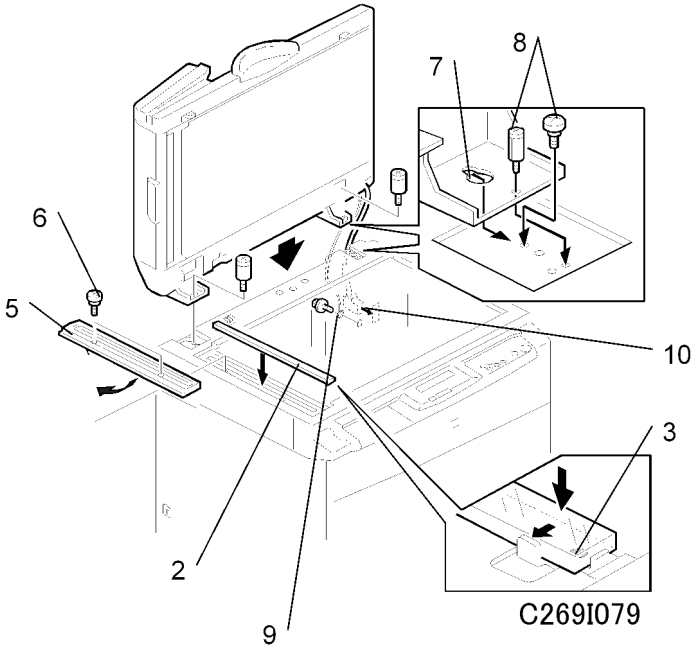
Installation Procedure



1. Remove the strips of tape.



2. Remove the left scale [1] (x 2).

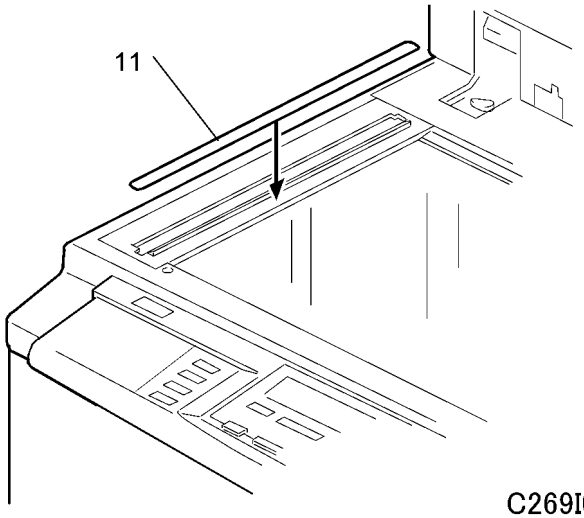


3. Place the DF exposure glass [2] on the glass holder.

Note

- When installing the DF exposure glass, make sure that the white dot [3] is positioned at the front side, as shown.

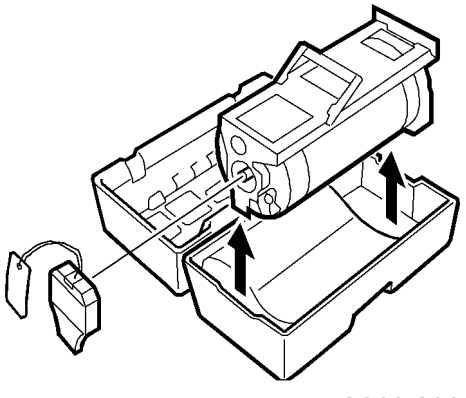
4. Install the scale guide [5] (2 screws removed in step 2).
5. Install the two stud screws [6].
6. Mount the DF by aligning the holes [7] in the DF with the stud screws, then slide the DF to the front as shown.
7. Secure the DF unit with two screws [8].
8. Connect the cables [9] and cable [10] to the main body.



C269I080

9. Attach the scale decal [11] as shown.
10. Connect the power cord, then turn the main switch on.
11. Make a full size copy with the ADF. Then check to make sure the side-to-side and leading edge registrations are correct. If they are not, adjust their values (do the adjustment procedures in the 'Replacement and Adjustment – Copy Image Adjustment' section').

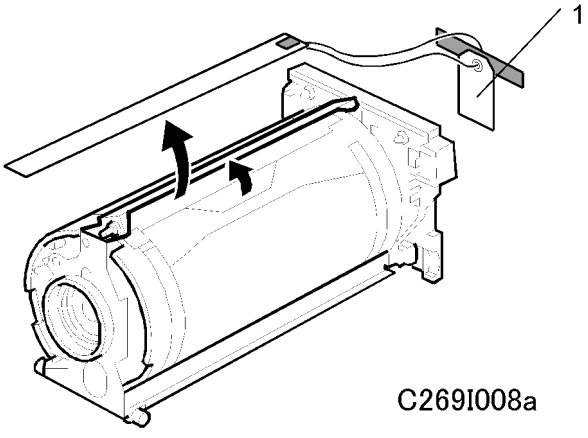
Additional Drums (Option)



C269I082

There is one type of drum unit:

- A3/DLT Size: Color or black



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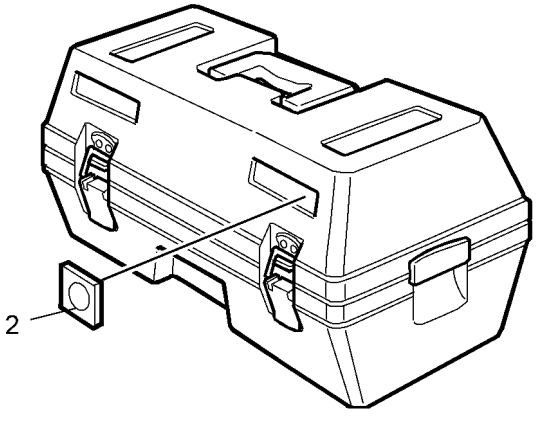
1. Remove the master clamper protective sheet [1] from the drum unit.
2. Remove the tape that secures the ink holder.



C269I083

3. Attach a color indicator decal [2] to the drum case. The decal must be the same color as the ink in use.
4. Remove the drum unit.
5. Leave the master wrapped around the removed drum, to protect the drum from dust and from drying.

Note

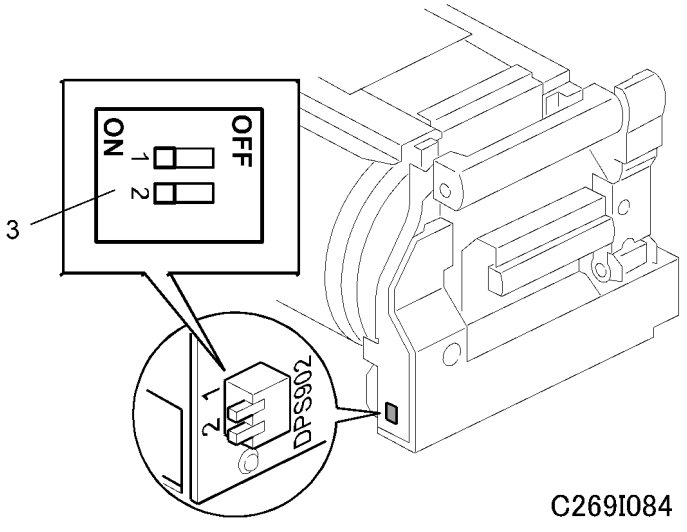
- If the user is concerned about security, make a new blank master to wrap around the drum. At this time, the user's master (now on the drum) will go into the eject box, which is locked.

6. Keep the removed drum unit in the drum case.
7. Install the drum unit.

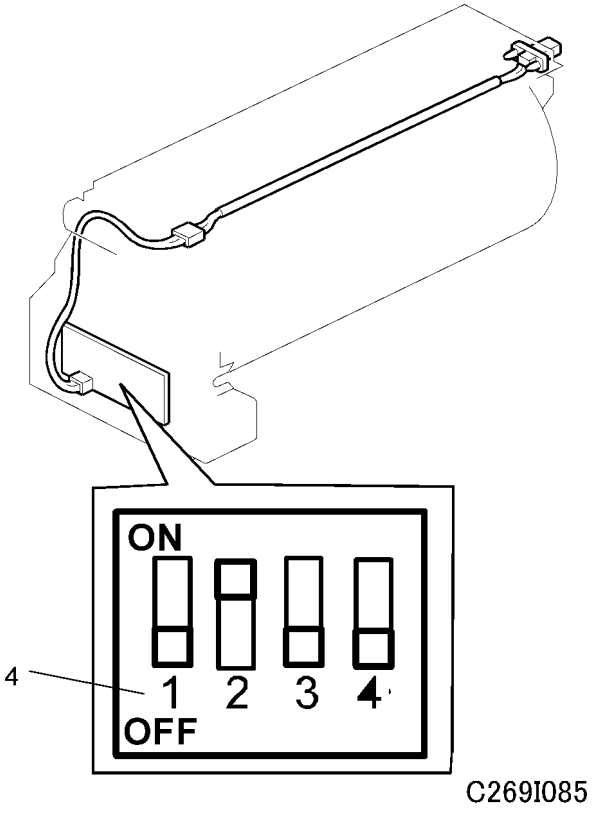
Note

- The color drum indicator on the operation panel stays lit when a drum is installed in the machine.

8. Remove the ink cartridge cap.
9. Insert the ink cartridge in the ink holder.



10. Make sure that SP 2-010-1~4 and DPS902 [3] have the correct settings for the color of ink that is used.



- First, set the dip switch 901 (for drum-type detection) on the ink detection board [4] to 'color drum'. To do this, DIPSW 901-1 must be off and 901-2 must be on.
- Then, set the DPS902 dip switches [3] on the drum to specify the ID of the color. Four color IDs can be recognized.

DPS902	-1	-2
ID0	OFF	OFF
ID1	ON	OFF
ID2	OFF	ON
ID3	ON	ON

- Then, with SP 2-010-1 to -4, you can specify the meaning of each of these 4 ID codes.
  - 2-010-1 specifies the meaning of ID0
  - 2-010-2 specifies the meaning of ID1
  - 2-010-3 specifies the meaning of ID2
  - 2-010-4 specifies the meaning of ID3

- There are 15 possible colors that can be specified with SP 2-010-1 to -4.

  Allocation of color codes

0	1	2	3	4	5	6	7
Other	Red	Blue	Green	Brown	Gray	Yellow	Purple
8	9	10	11	12	13	14	
Maroon	Navy	Orange	Teal	Red Base	Blue Base	Yellow Base	

  Default: 0 (other)

  For example, you install a drum with DPS 902-1 and -2 both set to OFF (this means 'ID0'). If this drum contains blue ink, then set SP 2-010-1 to 2 (blue). Then 'blue' will be shown on the display panel when this drum is installed.

  The names in the above table are fixed in the software. So, for example, if the drum contains gold-coloured ink, the selected color should be 14 (yellow base).

11. Place the original on the exposure glass or ADF.
12. 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.

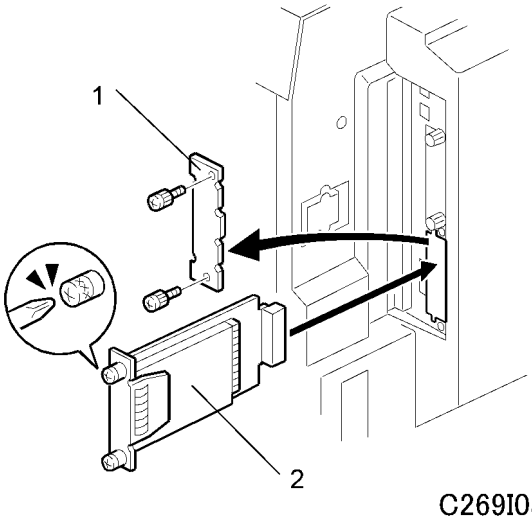
Extension HDD Type 1 (Option)

Accessory Check

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

No.	Description	Quantity
1.	HDD	1

Installation Procedure



C2691034

1. Turn the machine off.
2. Remove the slot cover [1] (x 2).
3. Install the HDD [2] in Slot B and secure it with the screws (x 2).
4. Turn the machine on and print a configuration page to make sure that the machine can see the Printer Hard Disk Drive (☛see 'Configuration Page'):
   - User Tools> Online Printer Features> List/Test Print> Configuration Page

   After you turn the power on, the machine displays 'Please wait'. Stamp data is being transferred to the hard disk. This takes about 1 minute.

   If the disk is not formatted, the machine will automatically format the disk and transfer the stamp data.

Note

- If necessary, you can format the hard disk with SP 7-007-1. But the stamp data will not transfer automatically. So, after you format the hard disk, you must copy the stamp data to the hard disk with SP 8-002-7.

⚠CAUTION

- When you replace the hard disk, be careful about handling the old hard disk, because it contains the user's private information.

Postscript3 Board Type 2 (Option)

1

Accessory Check

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

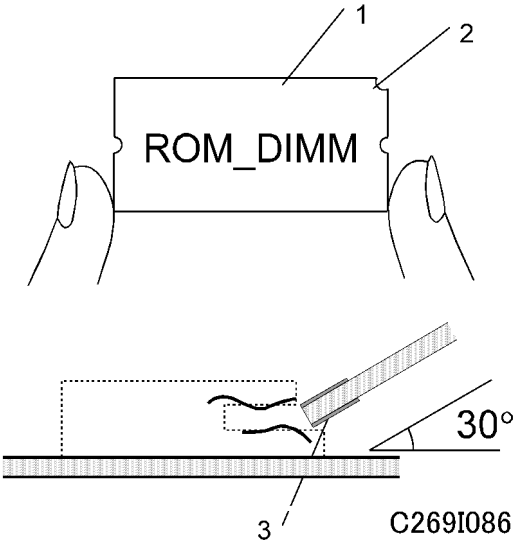
No.	Description	Quantity
1.	DIMM	1
2.	Decal - PostScript	1

Inserting DIMMs

Read this section carefully before installation, so that you know how to insert the DIMMs correctly.

⚠CAUTION

- Follow the procedure below to connect the DIMMs to the controller board. Incorrect insertion can damage the controller board or cause a bad connection between the DIMM and controller contacts. If the upper contact is pushed in and bent, the resulting poor connection could cause the entire system to not operate.



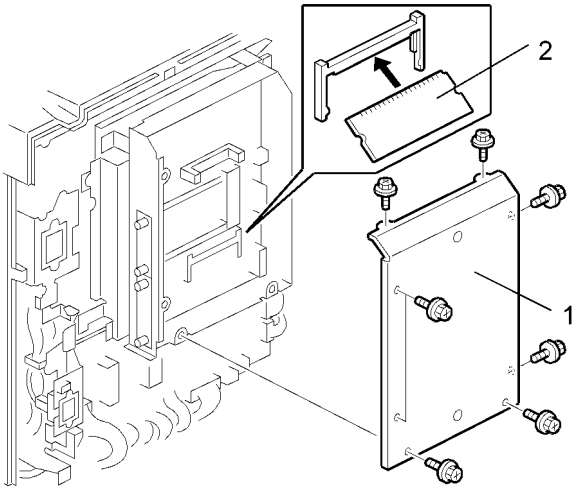
1. Hold the ROM DIMM with the edge connector [1] pointing toward the slot and the notch [2] on the DIMM in the upper right corner.
2. Insert the edge connector [3] into the slot at a 30-degree angle from the surface of the board.

Note

- If the angle is too low, the upper contact could bend.

3. Move the outside edge of the ROM DIMM up and down slightly until it works into the connector, then gently press it down level with the controller board.

Installation Procedure



C269I026

1. Turn the machine off.
2. Remove the rear cover (x 6).
3. Remove the controller cover [1] (x 8).
4. Insert the PS3 module [2] into Slot 2.
5. Turn the machine on and print a configuration page to make sure that the machine can see "Adobe PostScript 3" and "Adobe PDF" (see 'Configuration Page'):
   - User Tools> Online Printer Features> List/Test Print> Configuration Page

CAUTION

- Make sure that the DIMM is inserted correctly.

IEEE 802.11B I/F Unit Type 1 (Option)

Accessory Check

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

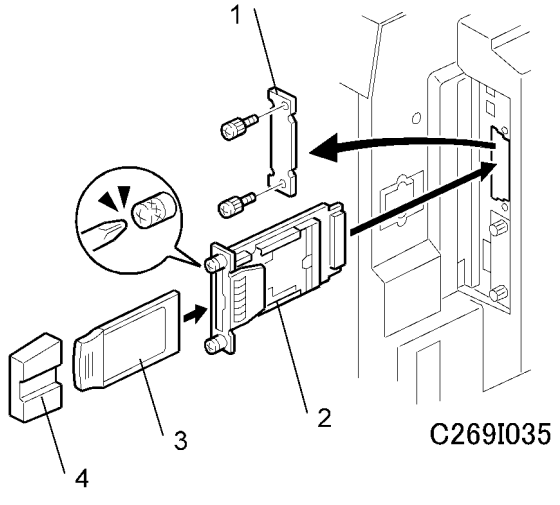
No.	Description	Quantity
1.	LAN board	1
2.	LAN card	1
3.	LAN card cap	1

Installation Procedure

You can only install one of these two cards, because only one slot (slot A) is available for these options:

- IEEE 802.11b I/F Unit Type 1
- IEEE 1284 Parallel Board Type 1

If a different card is installed in slot A, you must remove it before you install the IEEE 802.11b I/F Unit Type 1.



1. Turn the machine off.
2. Remove the slot cover [1] (x 2).
3. Install the Wireless LAN board [2] into slot A and secure it with the screws (x 2).
4. Insert the Wireless LAN card [3] in the slot.

5. Attach the Wireless LAN card cap [4].
6. Turn the machine on and print a configuration page to make sure that the machine can see "IEEE 802.11b" (☛see 'Configuration Page'):
    - User Tools> Online Printer Features> List/Test Print> Configuration Page

IEEE 1284 Parallel Board Type 1 (Option)

Accessory Check

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

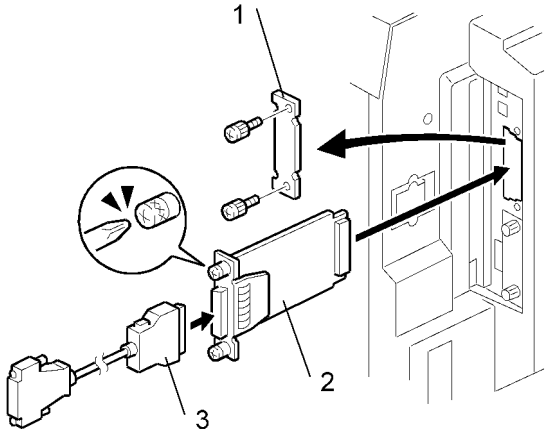
No.	Description	Quantity
1.	Parallel board	1
2.	Parallel cable	1

Installation Procedure

You can only install one of these two cards, because only one slot (slot A) is available for these options:

- IEEE 802.11b I/F Unit Type 1
- IEEE 1284 Parallel Board Type 1

If a different card is installed in slot A, you must remove it before you install the IEEE 1284 Parallel Board Type 1.



C269I036

1. Turn the machine off.

2. Remove the slot cover [1] (x 2).
3. Install the IEEE1284 board [2] into slot A and secure it with the screws (x 2).
4. Attach the parallel cable [3].
5. Turn the machine on and print a configuration page to make sure that the machine can see "IEEE 1284":
    - User Tools > Online Printer Features > List/Test Print > Configuration Page

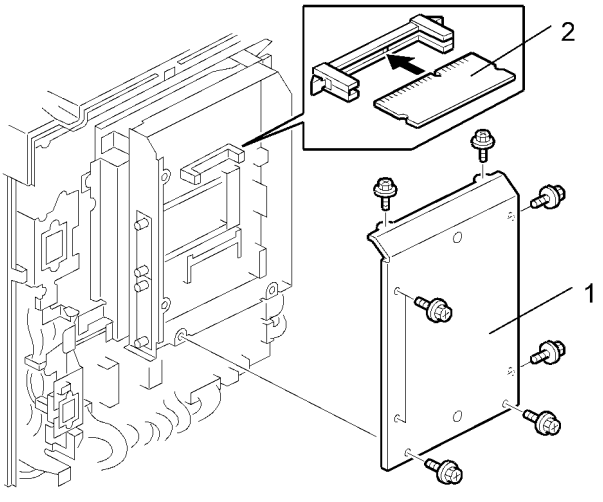
Memory Unit Type C (128MB/256MB) (Option)

Accessory Check

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

No.	Description	Quantity
1.	Memory (128MB or 256MB)	1

Installation Procedure



C269I037

1. Turn the machine off.
2. Remove the rear cover (x 6).
3. Remove the controller cover [1] (x 8).

⚠CAUTION

- Make sure that the DIMM is inserted correctly. (☛ 'PostScript 3 Board Type 2 – Inserting DIMMs'.)

4. Remove the SDRAM DIMM (standard onboard memory 64MB) [2] from Slot 1.
5. Insert the SDRAM DIMM (expansion memory 128MB or 256MB) [2] into Slot 1.
6. Turn the machine on and print a configuration page to make sure that the machine can see "192MB/320MB" (☛ 'Configuration Page'):
   - User Tools> Online Printer Features> List/Test Print> Configuration Page

Tape Dispenser (Option)

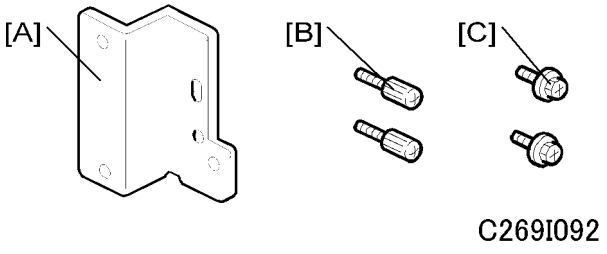
Accessory check

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

Description	Matching Models	Quantity
Knob Screw	C210, C217, C218, C219, C222, C223, C225, C228, C238, C237, C238, C248, C249, C264	2
Screw M4 x 25	C211, C212, C213, C214, C216, C224, C226, C269	2
Auxiliary Bracket	C226, C267	1
	C238, C247, C249	1
	C264	1
	C269	1
Screw M4 x 8	C226, C238, C247, C249, C267, C269	4
Lock Washer	C226	1
Lock Washer	Without C267	1
Tape	Use on Tape dispenser	1

Installation Procedure

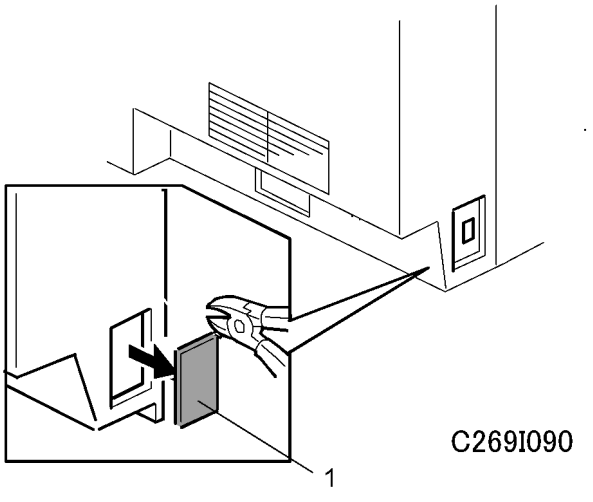
Use following three kind of parts for installing C269.



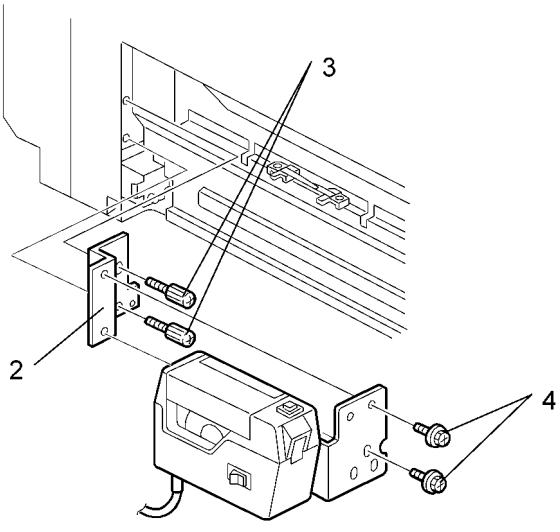
[A]: Auxiliary Bracket for C269

[B]: Screw M4 x 25

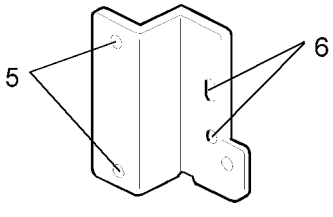
[C]: Screw M4 x 8



1. Turn off the main switch and unplug the power cord.
2. Remove the cutout [1] from the rear cover, as shown.

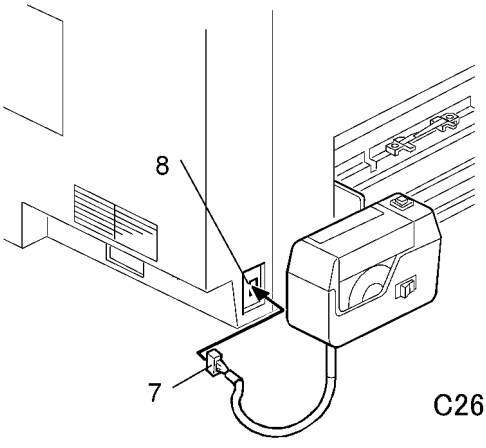


C269I091

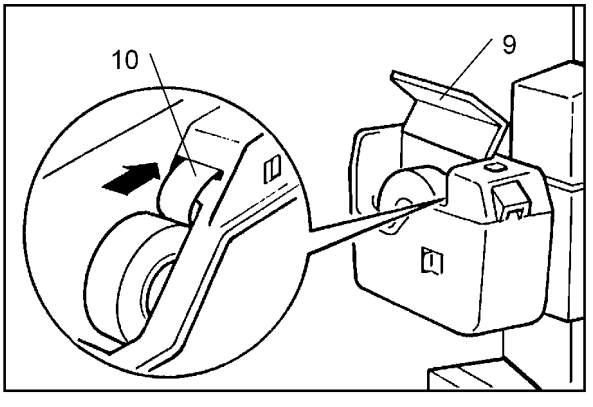


C269I093

1. Install the auxiliary bracket [2] on the main body (x 2, M4 x 25 [3], from the accessories). Use the threaded holes [6] on the bracket.
2. Install the tape dispenser on the attached auxiliary bracket [2] (x 2, M4 x 8 [4], from the accessories). Use the threaded holes [5] on the bracket.



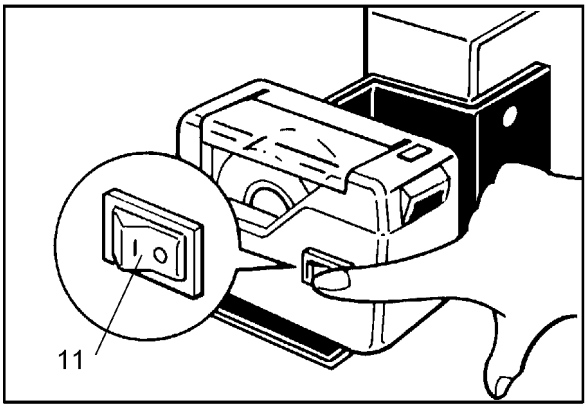
3. Connect the harness from the tape dispenser [7] to the connector [8].



4. Open the tape dispenser cover [9]. Then, insert the leading edge of the tape into the tape entrance until it stops as shown in the illustration [10].

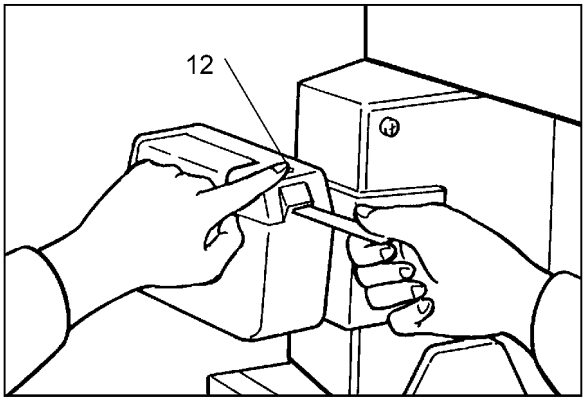
Note

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



C269I096

5. Firmly insert the power plug in the outlet.
6. Turn on the main switch of the main body.
7. Enter SP mode and change SP3-2-1 Job Separation to ON.
8. Turn the main switch of the main body OFF and ON again.
9. Turn on the tape dispenser switch [11].



C269I097

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

2. Preventive Maintenance

Maintenance Table

The following items must be maintained periodically.

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

⚠WARNING

- Turn off the main power switch and disconnect the machine before you do any procedure in this section.

	Every 600k	Every 1200k	Every 2400k	Every 3000k	Life	When Visit	Note
Scanner/Optics							
Exposure Glass		C				C	Damp Cloth
Master Making Unit							
Thermal Head		C			R	C	Damp Cloth (Alcohol) Expected Life: 30K masters
Platen Roller		C			R	C	Damp Cloth (Alcohol) Expected Life: 30K masters
Duplex Unit							
Press Roller		R					Damp Cloth (Alcohol) Expected Life: 1200K
Duplex Transport Belts		R					Expected Life: 1200K
Duplex Feed Roller		C					Damp Cloth (Alcohol)
Duplex Unit Jam 1 Sensor						C	Damp Cloth
Duplex Unit Jam 2 Sensor						C	Damp Cloth
Pressure Cam HP Sensor						C	Damp Cloth

	Every 600k	Every 1200k	Every 2400k	Every 3000k	Life	When Visit	Note
Printing Pressure Adjustment HP Sensor						C	Damp Cloth
Printing Pressure Encoder Sensor						C	Damp Cloth
Duplex Clamper HP Sensor						C	Damp Cloth
Print pressure motor worm gear				L			Lubricate the shaft with Silicone Grease G501: 52039502)
Paper Feed							
Paper Pick-up Roller		R				C	Damp Cloth (Alcohol)
Paper Feed Roller		R				C	Damp Cloth (Alcohol)
Friction Pads		R				C	Damp Cloth (Alcohol)
Registration Roller		C				C	Damp Cloth (Alcohol)
Paper End Sensor						C	Dry Cloth
Paper Length Sensor						C	Dry Cloth
Paper Pick-up Roller Bushing [B]				L			Motor Oil (SAE #20)
Paper Feed Roller Bushing [B]				L			Motor Oil (SAE #20)
Paper Delivery							
Transport Belt-Long		R					
Transport Belt-Short		R					

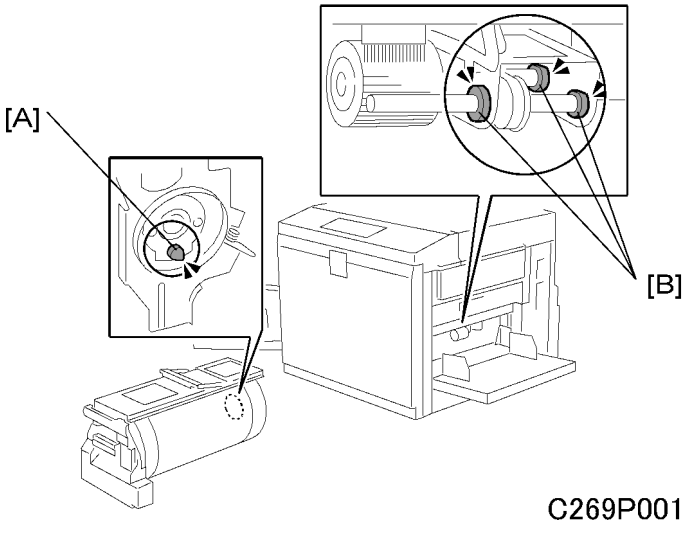
	Every 600k	Every 1200k	Every 2400k	Every 3000k	Life	When Visit	Note
Upper Wrapping Jam Sensor		C				C	Dry Cloth
Paper Exit Sensor		C				C	Dry Cloth
Drum and Ink Supply							
Drum Master Sensor		C				C	Dry Cloth
Black Sensor Patch		C				C	Dry Cloth
Cloth Screen				R			
In/Outside of Drum		C				C	Dry Cloth (Cleaner)
Clamper magnet		C				C	Dry Cloth (Cleaner)
Ink Nozzle		C				C	Dry Cloth
Drum Drive Pin [A]				L			Remove the drum from the machine. Lubricate the pin with Alvania #2. (A0699502)
Others							
Feed Start Sensor						C	Damp Cloth (Alcohol)
ADF (Option)							
Separation and pick-up roller						C	Dry Cloth
Original feed roller						C	Dry Cloth

After you replace the following parts, reset the PM counters with SP 3-004:

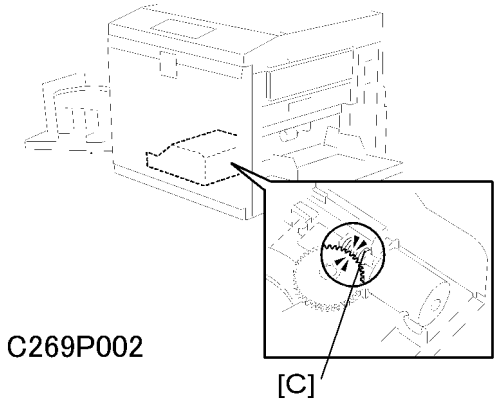
Cloth screen, Pick-up roller, Paper feed roller, Friction pad A/B, Press Roller, Transport Belt - Long, Transport Belt - Short, Duplex Transport Belt.

To reset a counter, access the SP, then push 'Replace' on the screen, then 'Yes'. The replacement history for that part will appear on the screen.

Lubrication Points



C269P001



C269P002

[A]: Drum Drive Pin

[B]: Paper Pick-up Roller, Paper Feed Roller Bushing

[C]: Print pressure motor gear and worm gear

3. Replacement and Adjustment

General Caution

⚠CAUTION

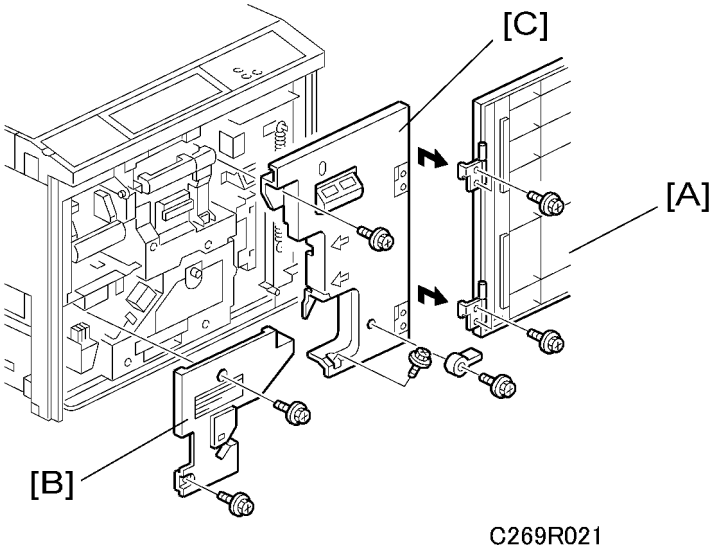
- Turn off the main power switch and unplug the machine before you attempt any of the procedures in this section.

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

☛: See or refer to, : screw, : connector, : E-ring, : clip, : clamp

Covers

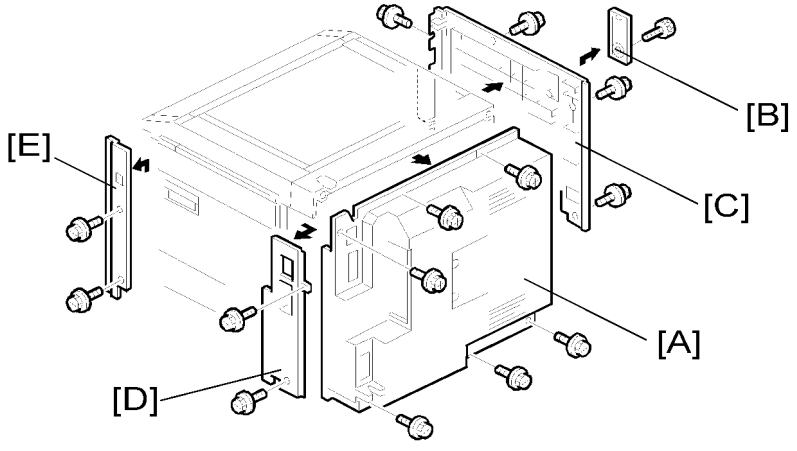
Front Cover, Inner Cover, Knob Cover



Remove these parts:

- [A]: Front cover (x 4)
- [B]: Left inner cover (x 1)
- [C]: Right inner cover (x 4)

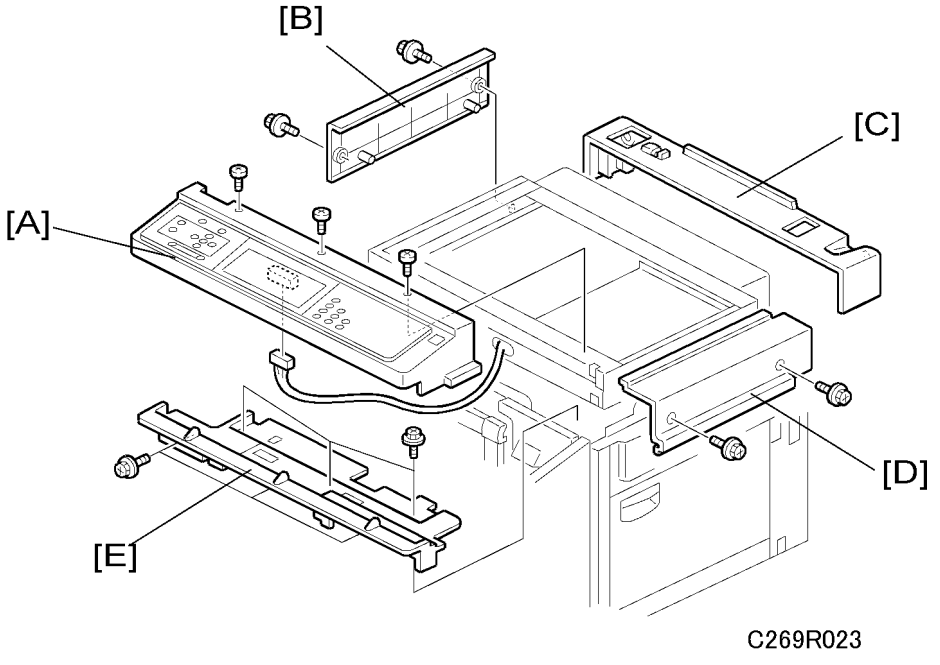
Left Cover, Right Front and Right Rear Covers, Rear Cover



Remove these parts:

- [A]: Left cover (x 5)
- [B]: Cover Cap (x 1)
- [C]: Rear cover (x 6)
- [D]: Right rear cover (x 2)
- [E]: Right front cover (x 2)

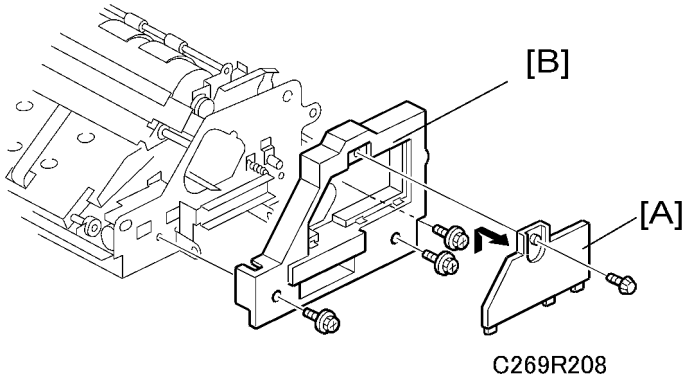
Operation Panel, Left Scanner Cover, Rear Upper Cover, Right Scanner Cover, Lower Panel Cover



Remove these parts:

- [A]: Operation panel (x 6, x 1)
- [B]: Right scanner cover (x 2)
- [C]: Left scanner cover (x 2)
- [D]: Rear upper cover (x 3)
- [E]: Lower operation panel cover (x 3)

Duplex Unit Front Cover, Duplex Unit Cover.

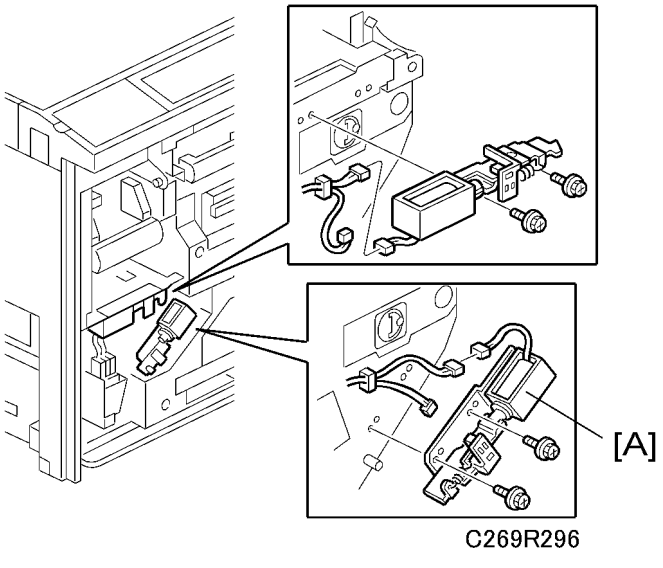


[A]: Duplex unit front cover (x 1)

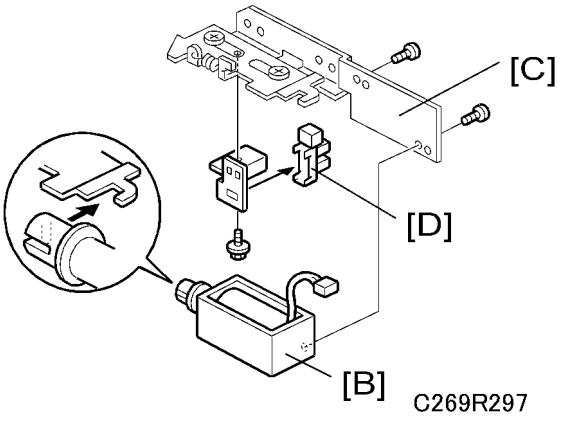
[B]: Duplex unit cover (x 3)

Duplex Unit Lock Release Solenoid and Sensor

1. Remove the left inner cover (x 2).



2. Remove the duplex unit lock unit [A] (x 2, x 2).

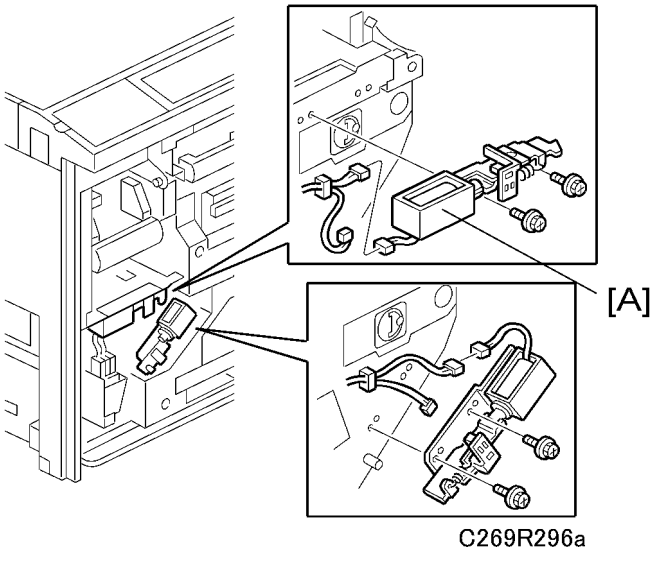


3. Remove these parts:

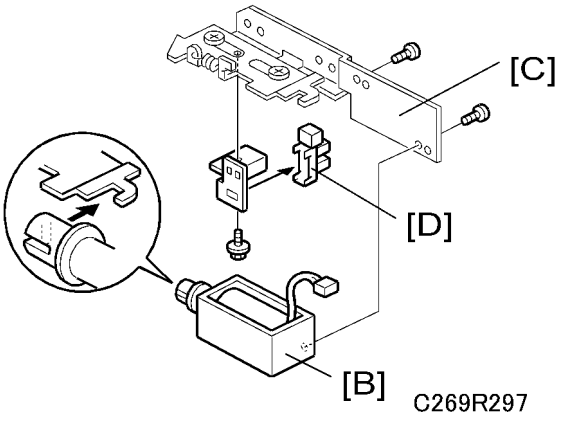
- [B]:Duplex unit lock release solenoid (x 2)
- [C]:Duplex unit lock release sensor bracket (x 1)
- [D]:Duplex unit lock release sensor

Drum Lock Release Solenoid and Sensor

1. Remove the left inner cover (x 2):



2. Remove the drum lock unit: (x 2, x 2) [A].

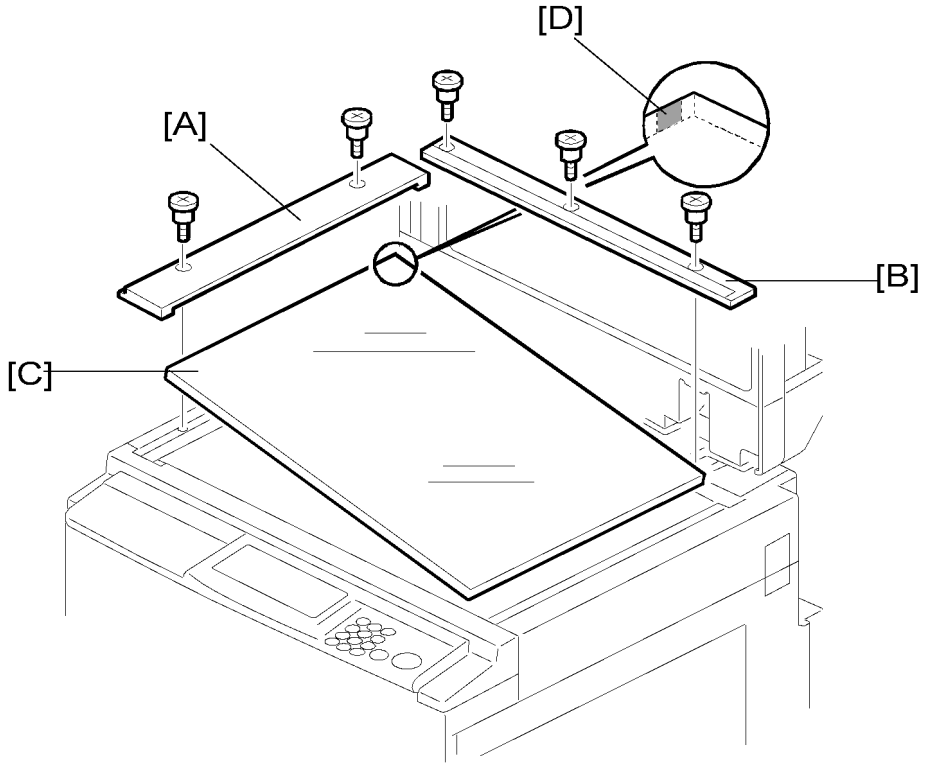


3. Remove these parts:

- [B]:Drum lock release solenoid (x 2)
- [C]:Drum lock release sensor bracket (x 1)
- [D]:Drum lock release sensor

Scanner Unit

Exposure Glass, Scales



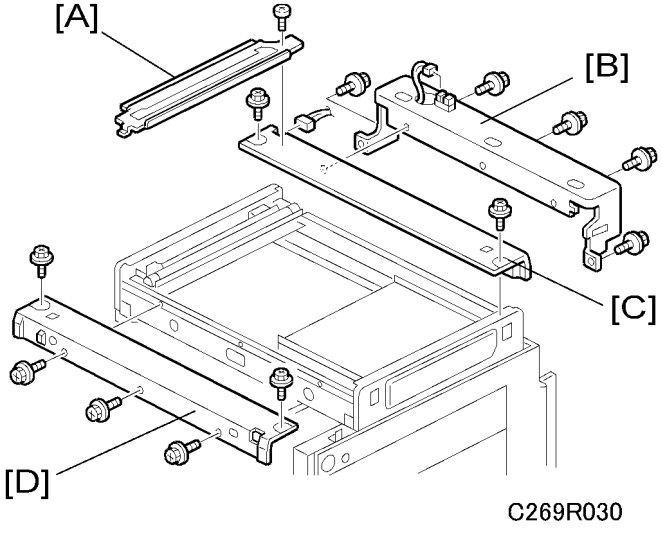
Remove these parts:

- [A]: Left scale (x 2)
- [B]: Upper scale (x 3)
- [C]: Exposure glass

Note

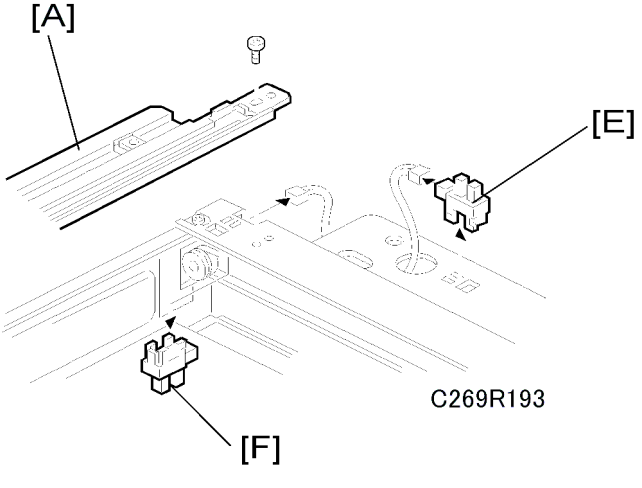
- When you install the glass, make sure that the dot [D] is at the rear left corner as shown in the diagram.

Scanner Frame, Scanner HP Sensor, Platen Cover Sensor, Exposure Lamp

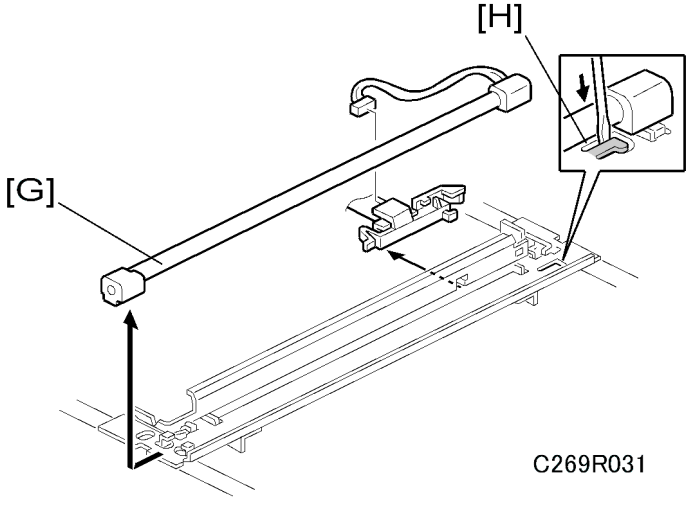


Remove the following parts:

- Platen cover or ADF
- Operation panel, Left scanner cover, Rear upper cover, Right scanner cover, Lower operation panel cover (☛ 'Covers – Operation Panel')
- Left scale, Upper scale, Exposure glass (☛ 'Covers – Exposure Glass')
- [A]: Exposure glass bracket (x 1)
- [B]: Lower rear scanner frame (x 1, x 5)
- [C]: Upper rear scanner frame (x 1, x 2)
- [D]: Front scanner frame (x 5)



- [E]: Platen cover sensor (☞ x 1)
- [F]: Scanner HP sensor (☞ x 1)

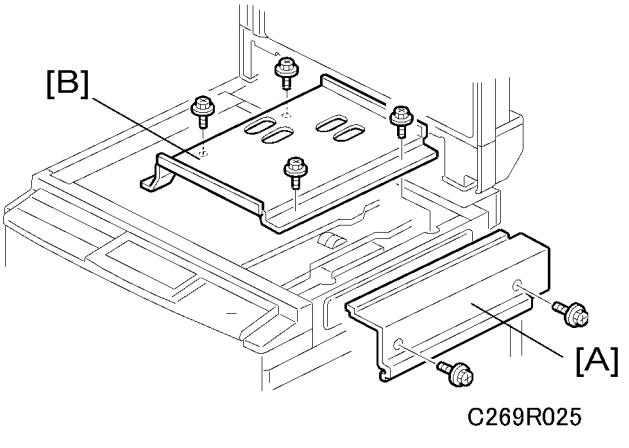


- [G]: Exposure lamp (☞ x 1)

Note

- After you install the lamp, push the lamp holder [H] up to the original position so that it can hold the lamp properly.

Lens Cover

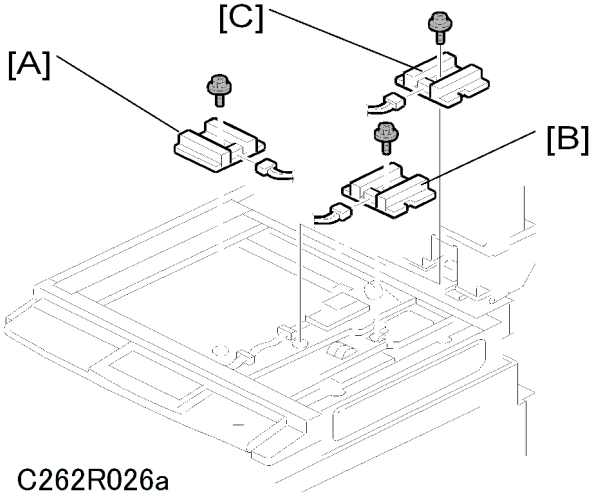


Remove these parts:

- Left scale, Upper scale, Exposure glass (☛ 'Covers – Exposure Glass')
- [A]: Right scanner cover (☞ x 2)

- [B]: Lens cover (x 4)

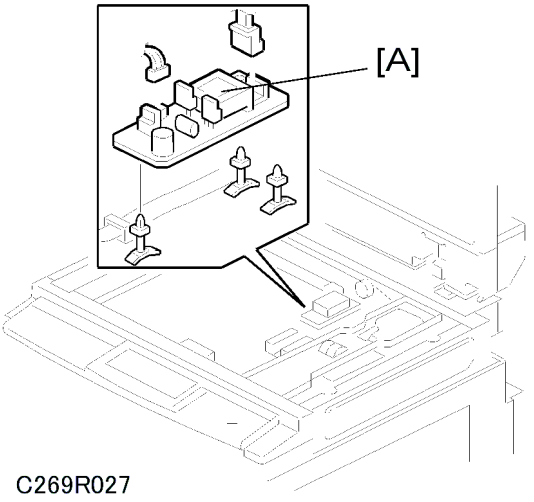
Original Size Sensors



Remove these parts:

- Right scanner cover (☛ 'Covers – Operation Panel')
- Left scale, Upper scale, Exposure glass (☛ 'Covers – Exposure Glass')
- Lens cover (☛ 'Lens Cover')
- [A]: Original width sensor (x 1, x 1)
- [B]: Original length sensor (x 1, x 1)
- [C]: Original special size sensor (x 1, x 1)

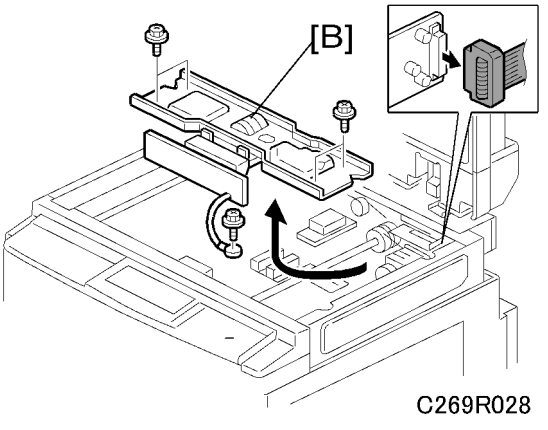
Lamp Stabilizer, SBU, Scanner Drive Motor



C269R027

Remove these parts:

- Right scanner cover (☛ 'Covers – Operation Panel')
- Left scale, Upper scale, Exposure glass (☛ 'Covers – Exposure Glass')
- Lens cover (☛ 'Lens Cover')
- [A]: Lamp stabilizer (x 2)

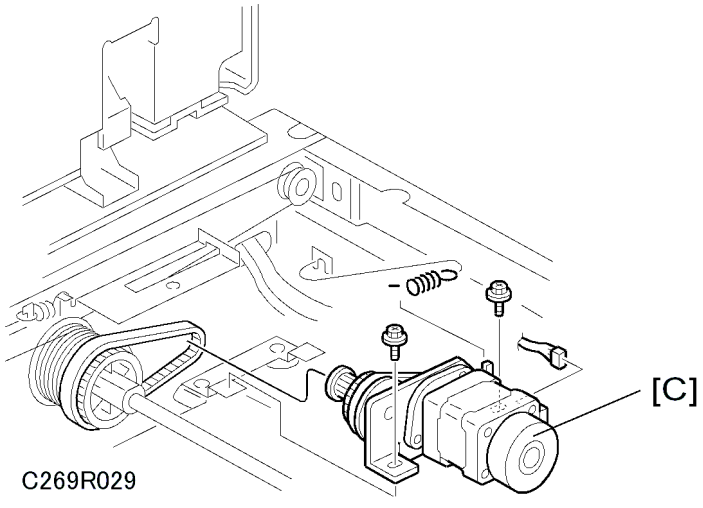


C269R028

- [B]: SBU/Lens block assembly (x 1, x 5)

Note

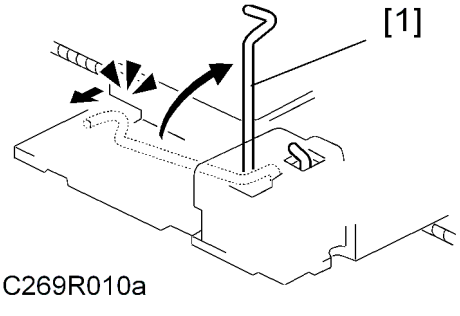
- Do the SBU calibration if you install a new SBU (☛ 'SBU Calibration').

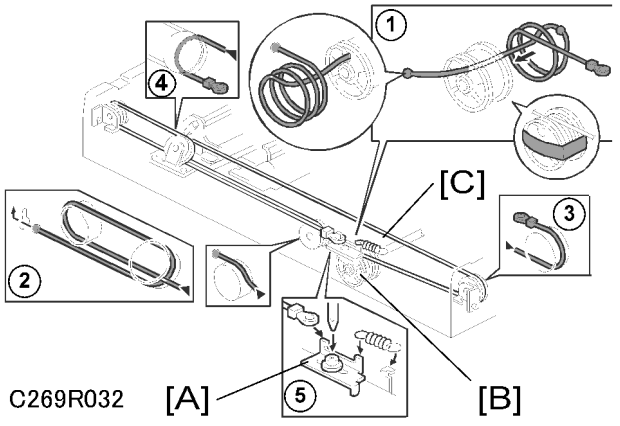


- [C]: Scanner drive motor (x 1, x 2, 1 spring)

Scanner Wires

1. Move the first scanner next to the opening in the frame.
2. Remove these parts:
   - Exposure glass (☛ 'Covers – Exposure Glass')
   - Lens cover (☛ 'Lens Cover')
   - Exposure glass bracket (☛ 'Scanner Frame')
   - Lower rear scanner frame, Upper rear scanner frame, Front scanner frame (☛ 'Scanner Frame')





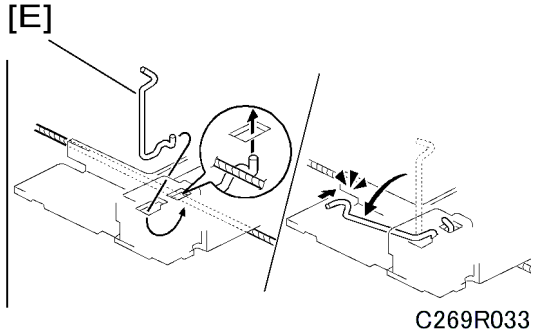
- First scanner ([1]: 2 pins)

Note

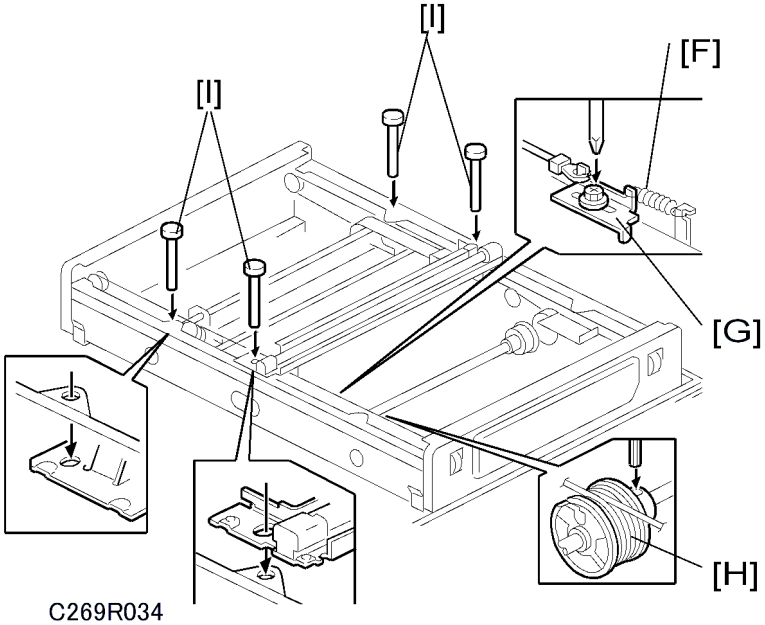
- The drawings show only the front side. Repeat the procedure to remove components on the other side.
- [A]: Wire tension brackets (2 springs, x 2)
- [B]: Scanner drive pulleys (2 Allen screws)
- [C]: Scanner wires

Installation

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



C269R033



C269R034

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

SBU (Sensor Board Unit) Calibration

Purpose: To do the SBU auto calibration at these times:

- After the ECU is replaced (this is not necessary if you put the old RAM on the new MBU)
- After the SBU is replaced
- After the standard white plate located behind the original scale is replaced.

1. Put about 10 sheets of paper on the exposure glass.
2. Turn on the main switch and access the SP mode (Clear Modes1➜ 0 ➜ 7 ➜ Clear/Stop).
3. Select SP6-005-1.
4. Push the "Run" key to start.

Note

- When the sequence is successful, "Completed" is shown on the display.

Copy Image Adjustment

Leading Edge Registration Adjustment

Purpose: To adjust the leading edge registration on prints by changing the image scanning start positions in platen and ARDF modes.

Adjustment standard:

Within -2.0 to 5.0 mm (in platen mode)

Within 0 ±5.0 mm (in ADF mode)

⚠CAUTION

- This adjustment is required every time the ECU is replaced.

1. Turn on the main switch, and make a copy in platen mode.

   Note

   - The image position on the trial print that is automatically made after making a master tends to be not constant. Do not use the trial print to check the copy image.
2. Measure the difference between the leading edge registration of the original and the print. If the registration does not meet specifications, go to the next step.
3. Access SP6-001-3 (Scan Start Position Adjustment - Platen Mode).
4. Adjust the gap.
5. Exit the SP mode and make a copy.
6. Re-measure the leading edge registration to ensure it is within specifications. If the registration meets specifications, go to the next step.
7. Make a copy in ADF mode and repeat the same steps using SP6-001-4 (Scan Start Position - DF Mode). The specification in ADF mode is 0 ±5.0 mm.

Note

- The master clamping position is adjustable using SP6-003-1 (Master Clamp Registration). Changing the clamping position with this SP also adjusts the leading edge registration. Normally, do not use this SP mode for adjusting the leading edge registration.

Side-to-Side Registration Adjustment

Purpose: To adjust the side-to-side image position on prints by changing the main-scan positions in platen and ADF modes.

Adjustment standard:

Within -5.0 to 2.0 mm (in platen mode)

Within 0 ±5.0 mm (in ADF mode)

⚠CAUTION

- This adjustment is required every time the ECU is replaced.

1. Turn on the main switch, and make a copy in platen mode.

Note

- The image position on the trial print that is automatically made after making a master tends to be inconstant. Do not use the trial print to check the copy image.

2. Measure the difference between the side-to-side edge registration of the original and the print. If the registration does not meet specifications, go to the next step.
3. Access SP6-001-1 (Main-scan Position - Platen Mode).
4. Adjust the gap.
5. Exit the SP mode and make a copy.
6. Re-measure the side-to-side registration to ensure it is within specifications. If the registration meets specifications, go to the next step.
7. Make a copy in ADF mode and repeat the same steps using SP6-001-2 (Main-scan Position - DF Mode). The specification in ADF mode is 0 ±5.0 mm.

Vertical Magnification Adjustment

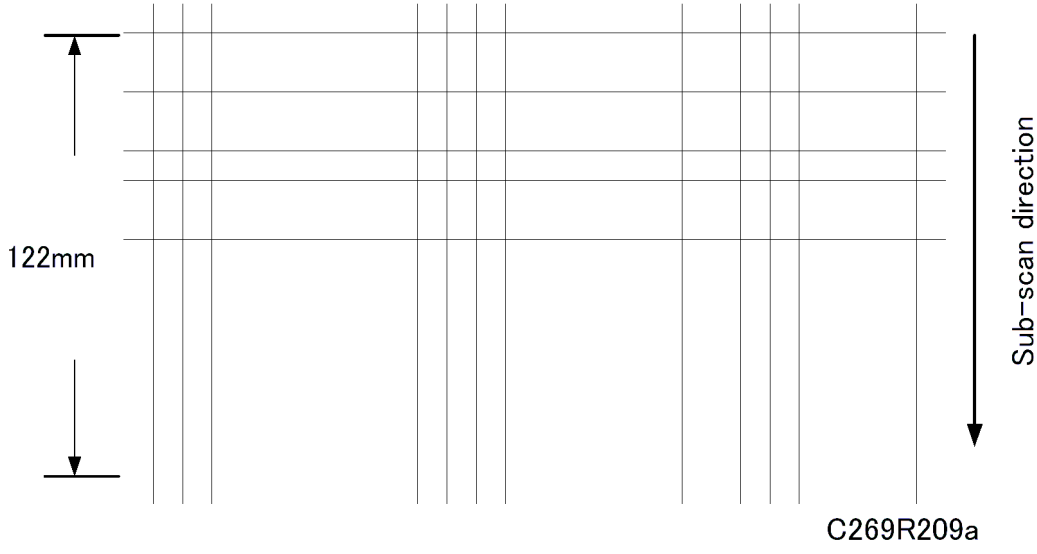
Purpose: To adjust the vertical magnification to within the adjustment standard by changing the master writing speed.

Adjustment standard: Within 100 ±1.0%

⚠CAUTION

- This adjustment is required every time the ECU is replaced.

1. Turn on the main switch, access SP8-005-1 (TH Test Patterns), and print pattern number 6.
2. On the printout, measure the distance of 15 intervals in the sub-scan direction, as shown in the diagram.



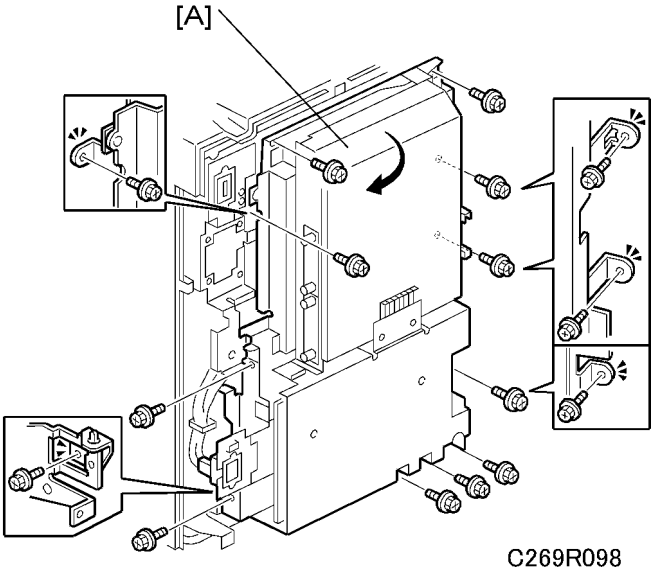
3. The distance should be 122 mm. If it is not 122 mm, calculate the necessary adjustment with the following formula.
    - [(122 - measured value) / 122] x 100 = x.x %
4. Access SP6-001-7 (Master writing speed) and adjust the value (x.x %).
5. Access SP8-005-1 (TH Test Patterns) and print pattern number 6.
6. Check the distance of 15 intervals in the sub-scan direction again, to ensure it is within specifications

Note

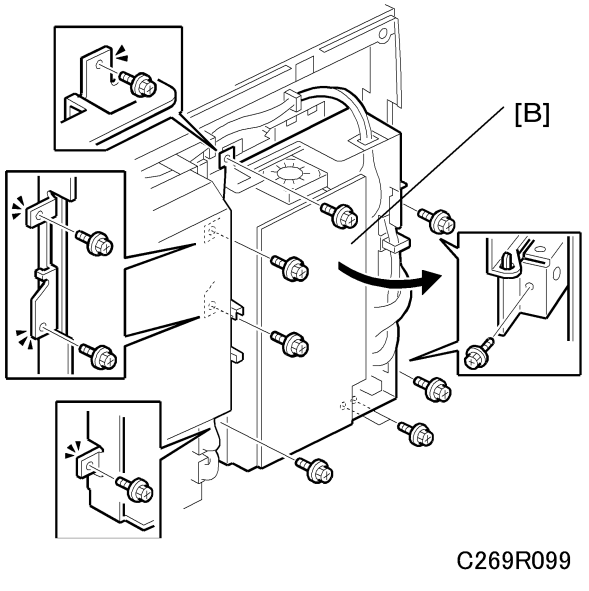
- The image scanning speed can be adjusted with SP6-001-5, -6 (Scanning speed). If you change the speed with this SP, the vertical magnification also changes. Normally, do not use this SP mode to adjust the vertical magnification.

Boards

ACU and ECU, PSU Opening Procedure

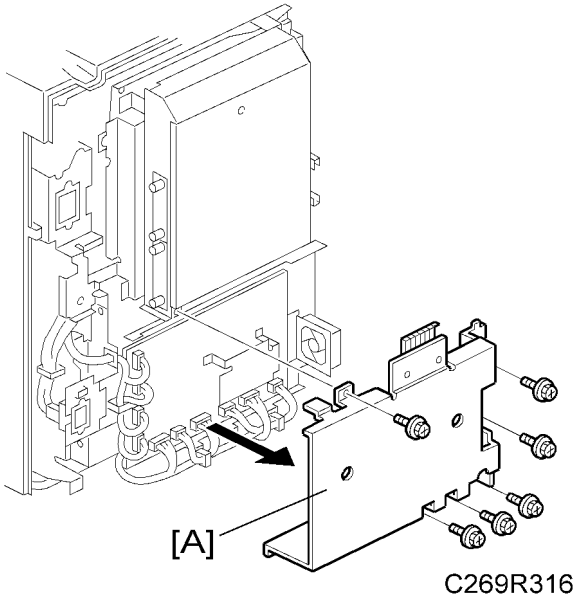


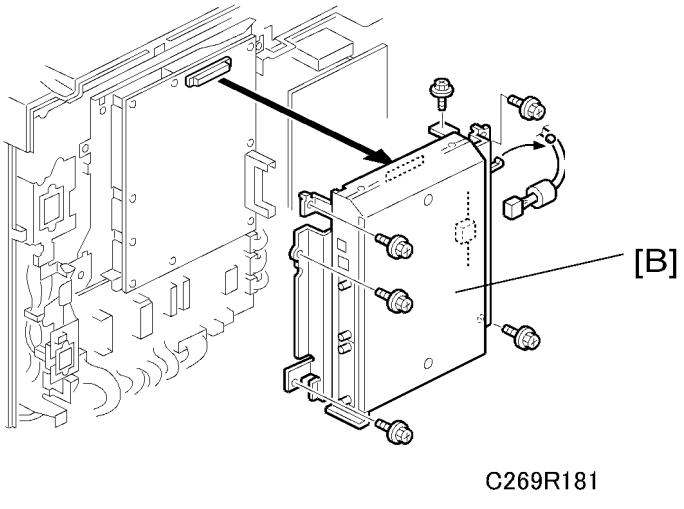
1. Rear Cover (☛ 'Covers – Left Cover')
2. Open out the ACU - ECU assembly [A] (🔧 x 11)



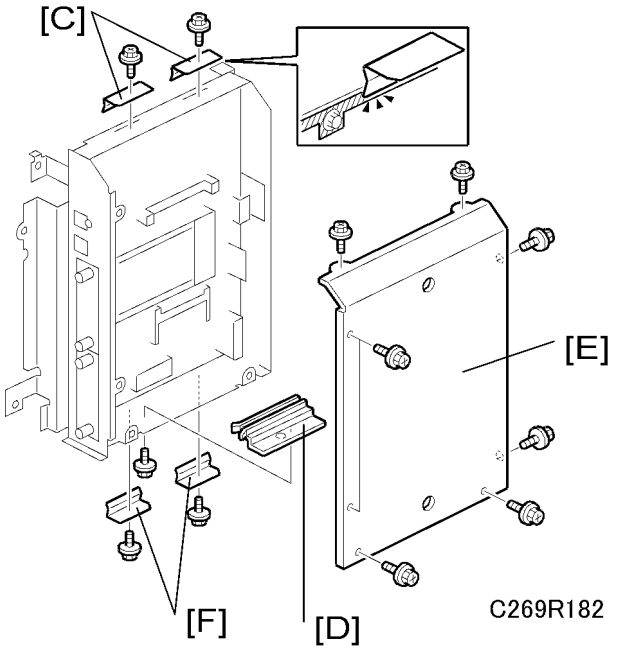
3. Open out the PSU [B] (x 8)

ACU Board





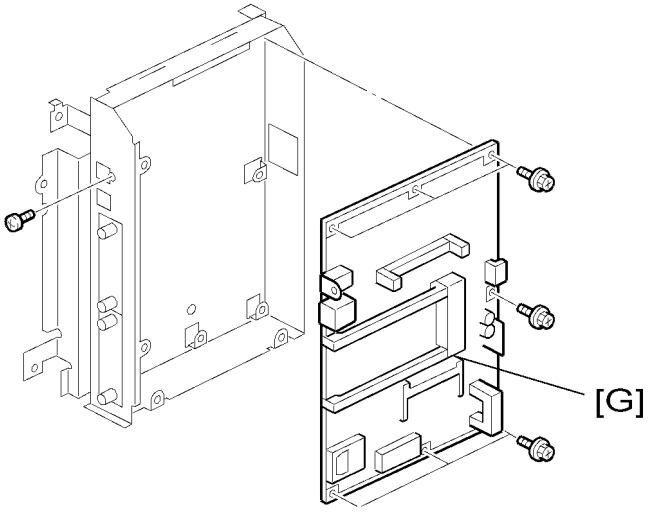
1. Rear cover (☛ 'Covers – Left Cover')
2. Take off the duplex board cover [A] (x 6)
3. Take off the controller unit [B] (x 6)



4. Take off the ACU board cover [E] (x 8)
5. Take off the ground board [C] (x 4)
6. Remove the guide rails [F] (x 1 each)
7. Remove the guide rail [D] (x 1)

Note

- Check that the ground board is in the correct position when you install it.

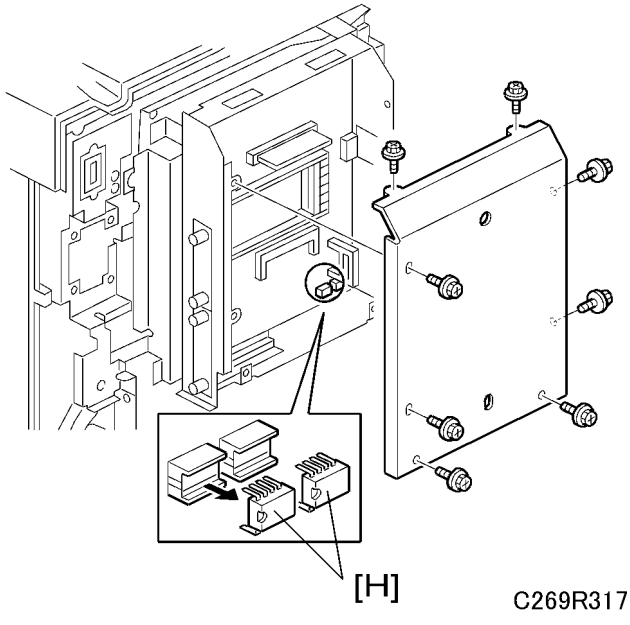


C269R183

1. Take off the ACU board (F) (x 8)

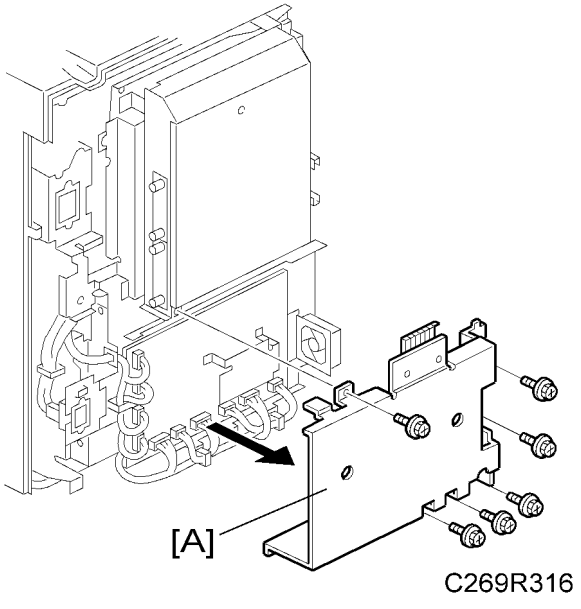
⚠CAUTION

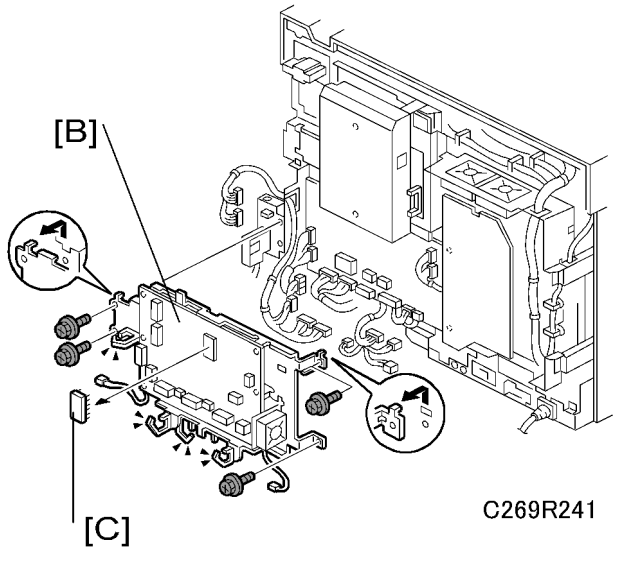
1. The connectors should be connected firmly.
2. When you replace the ACU board, remove the two NVRAMs [H] from the old ACU board and install them on the new ACU board. Otherwise, machine information will be lost.



C269R317

Duplex Board

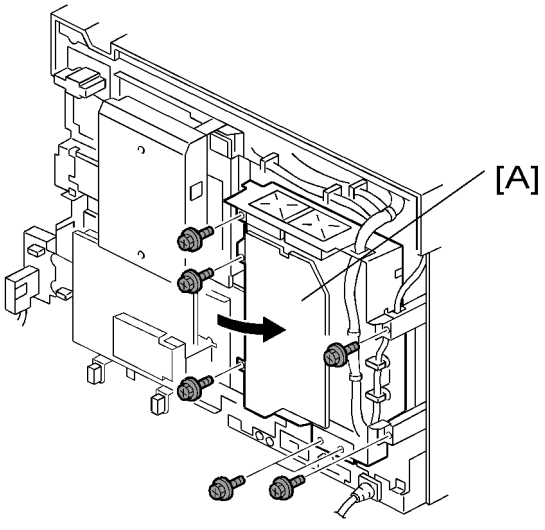




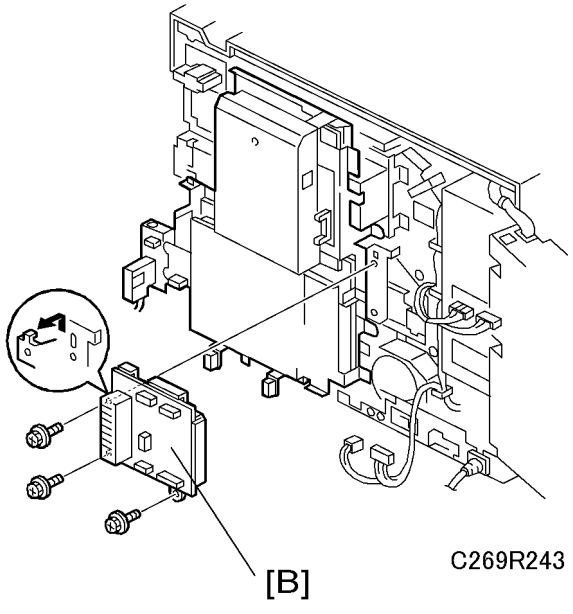
1. Rear cover
2. Take off the duplex board cover [A]. (x 6)
3. Take off the duplex board [B]. (x 4, x 11)
4. Remove the ROM [C] from the old duplex board and put it on the new one.

Main Motor Drive Board

1. Rear cover

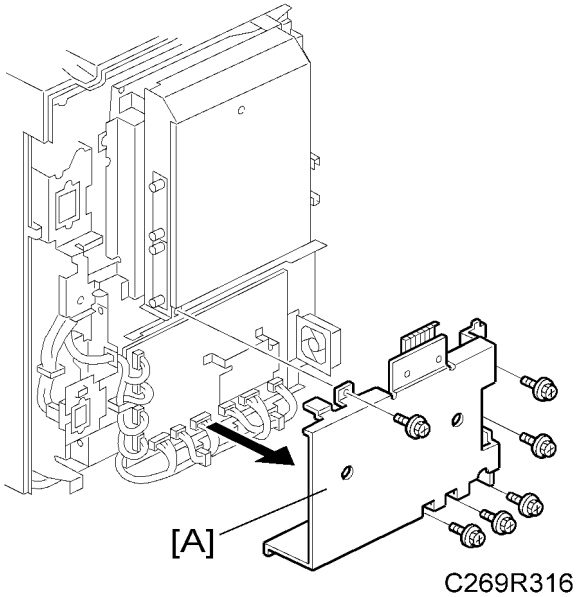


2. Open out the PSU board (x 6)
3. Open out the ACU-ECU board [A] (x 8)

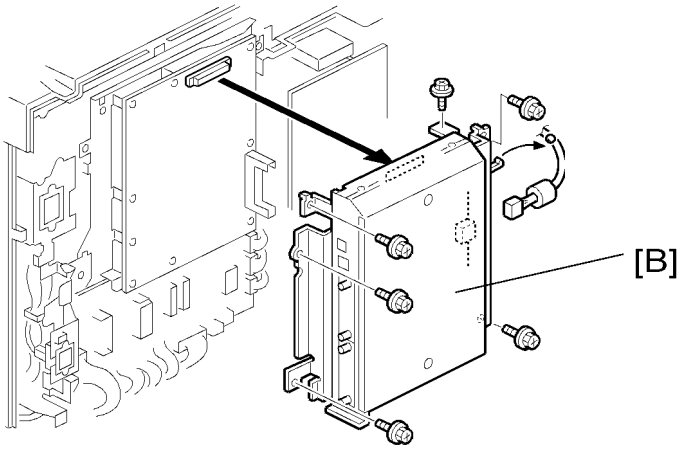


4. Main motor drive board [B] (x 3, x 4)

I/O Board, ECU Board

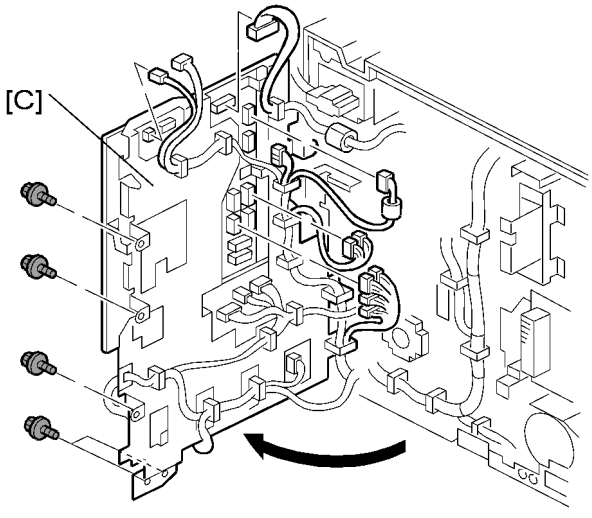


C269R316

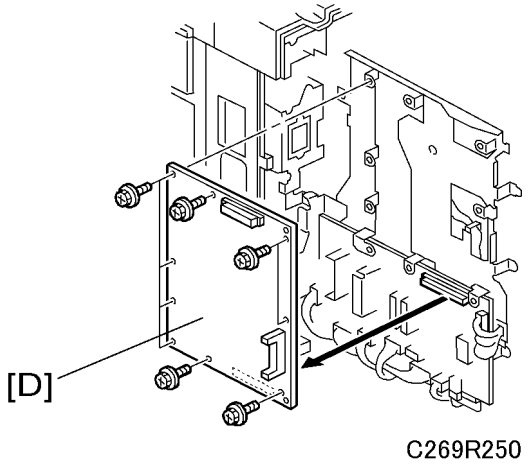


C269R181

1. Rear cover
2. Take off the duplex board cover [A] (x 6)
3. Take off the controller unit [B] (x 6, x 1)



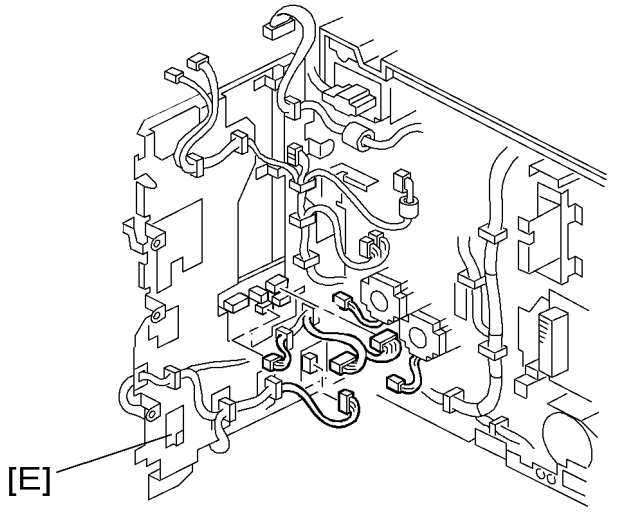
4. Open out the ACU-ECU board [C] and take off the connectors for the ECU (🔩 x 8, 🖐 x 12).



5. Take off the ECU board [D] (🔩 x 9)

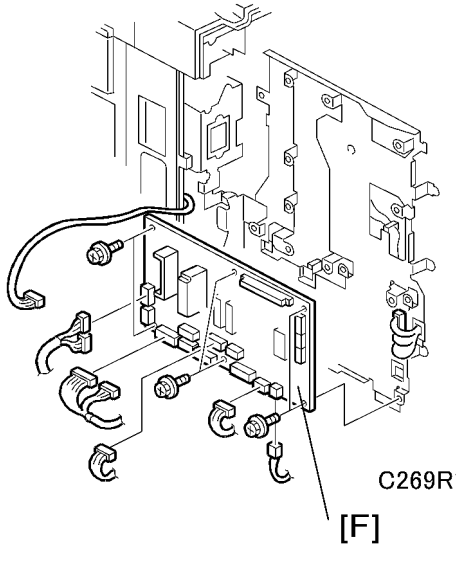
⚠CAUTION

- When the ECU board is replaced, remove the NVRAM from the old ECU board and install it on the new ECU board. Otherwise, machine information will be lost. (☛ 'NVRAM on ECU board')



C269R249

1. Open out the I/O board bracket [E]



C269R185

2. Take off the connector from the I/O board and take off the I/O board [F] (☞ x 6)

Note

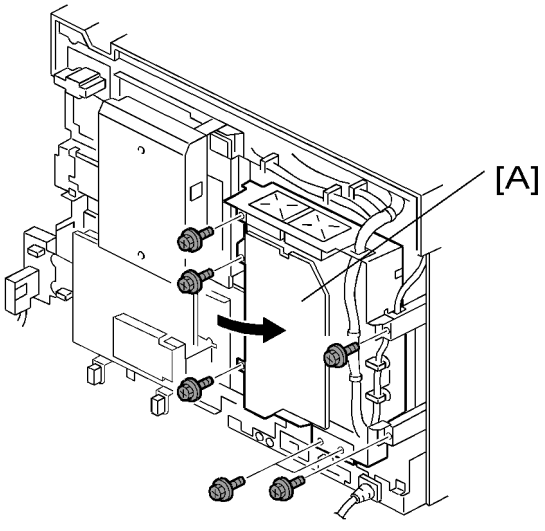
- Adjust all of the following sensors after you install the new I/O board:
  - Master eject (☛ 'Master Eject Section - Master Eject Sensor Adjustment')
  - Master end (☛ 'Master Feed Section – Master End Sensor' Adjustment)
  - Master edge sensor (☛ 'Master Feed Section – Master Edge Sensor Adjustment')

- Master set sensor (☛ 'Master Feed Section – Master Set Sensor Adjustment')
- 1st and 2nd drum master sensor. (☛ 'Drum Section – 1st Drum Master Sensor Adjustment', 2nd Drum Master Sensor Adjustment')

- Adjust the master end sensor after you install the new ECU board (not necessary if you remove the NVRAM from the old ECU and install it on the new ECU).

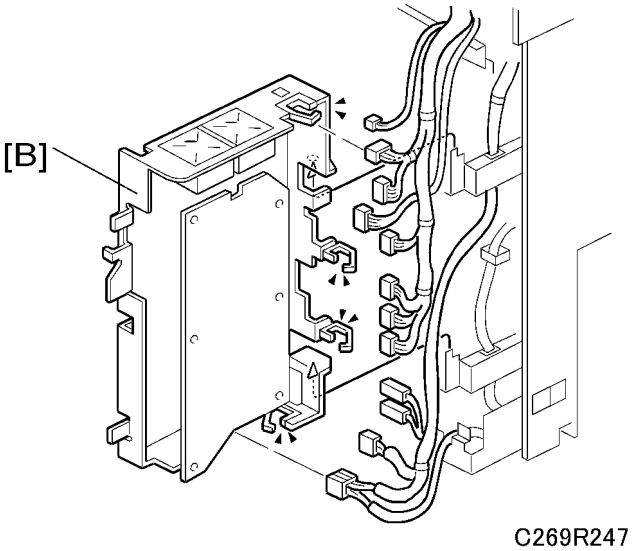
PSU

1. Rear Cover (☛ 'Covers – Left Cover')



C269R242

2. Open out the PSU [A] (x 6)
3. Open out the ACU-ECU board (x 8)
4. Take off the main motor drive board (x 3, x 4)



5. Remove the PSU [B] (x 13)

⚠CAUTION

- Do the thermal head voltage adjustment after you install the new PSU (☛'Master Feed Section – Thermal Head Voltage Adjustment')

ACU, ECU and I/O Board Replacement, NVRAMs

NVRAM on ACU board

There are two NVRAMs on the ACU board. One [A] is for the log data and the other [B] is for the printer information.

When the NVRAM [A] is replaced, the following data will disappear:

Machine code, Serial number, option setting, optional counter

After you replace the NVRAM [A], do the following SP modes:

- **SP7-001-1 Memory Clear - Factory setting:** Clears the setting so that the electrical counter will reset and start to count. The electrical counter will not count unless you do this procedure.
- **2-004-1 Machine Code Setting:** When the machine code is set, the destination, language, and so on will be set automatically, so that all the settings do not have to be set individually.
- **3-001-1 Serial Number:** Set the machine's serial number.

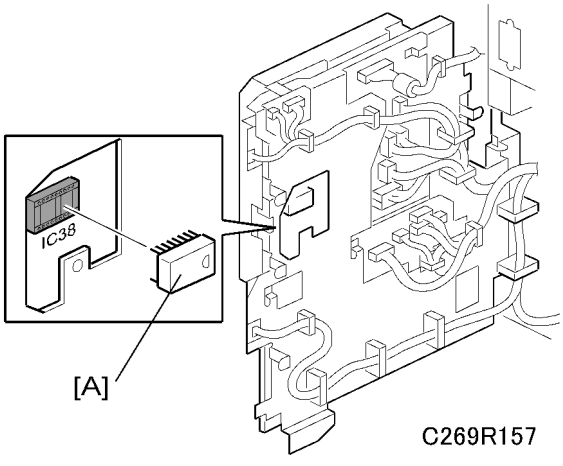
When the NVRAM [B] is replaced, all the controller settings (such as the IP address) will disappear:

- You need to reset the all the controller settings.

NVRAM on ECU board

SP mode data and other adjustment data are stored in the backup RAM on the ECU. When the NVRAM for the ECU is replaced, the settings that were made at the factory for this machine will disappear. (These settings are written on the sheet of paper under the front cover) Set all the SP modes according to the sheet of paper under the front cover.

- The SP mode data returns to the default. Save the data SP mode in order to restore it later. If possible, print out all system parameter lists with SP8-001-1 to SP8-001-15.
- Do all the copy image adjustments. (☛ 'Copy Image Adjustments')
- Sensor board unit calibration. (☛ 'Scanner Unit – SBU Calibration')
- Master end sensor adjustment. (☛ 'Master Feed Section – Master End Sensor Adjustment')

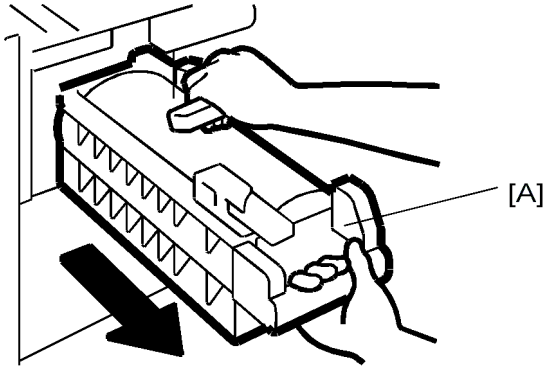


Note

- If you use the backup RAM [A] (IC38) from the old ECU on the new one, all data, including data in the SP modes, will be restored. You do not have to do the above procedures. (The battery inside the RAM preserves the data if the RAM is removed from the ECU.)

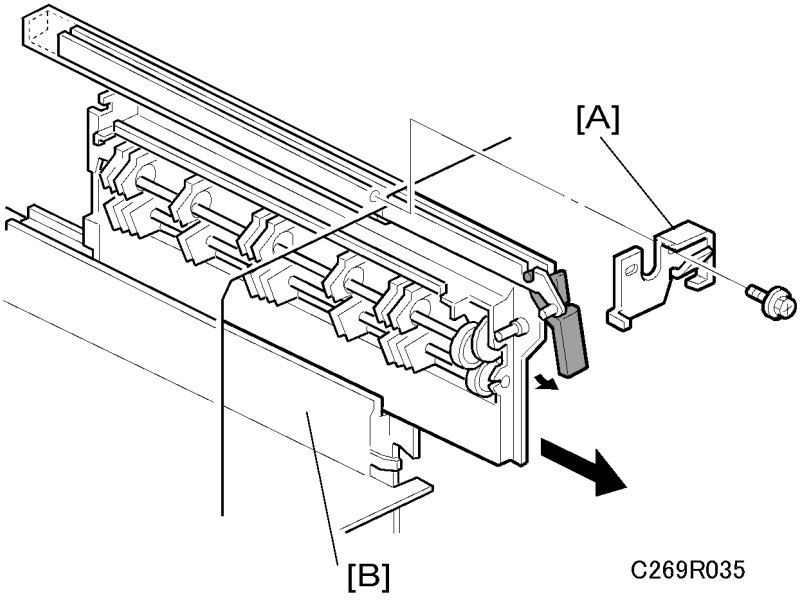
Master Eject Section

Master Eject Box



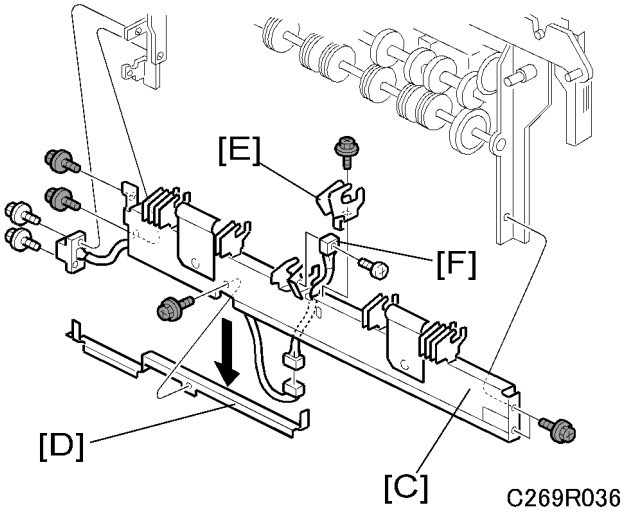
1. Open the front cover.
2. Master eject box [A]

Master Eject Roller Unit, Master Eject Sensor



1. Open the front cover.

2. Remove these parts:
    - [A]: Supporter (x 1)
    - [B]: Master eject roller unit

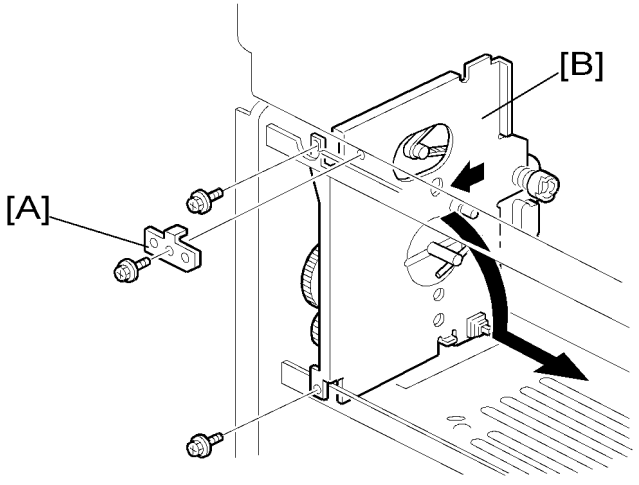


    - [C]: Lower master eject roller unit (x 6)
    - [D]: Master eject sensor cover (x 1)
    - [E]: Master eject sensor bracket (x 1)
    - [F]: Master eject sensor (x 1, x 1)

Note

- Do the master eject sensor adjustment (☛ 'Master Feed Section – Master End Sensor Adjustment') after you install the new master eject sensor.

Master Eject Drive Unit, Sensors and Motors



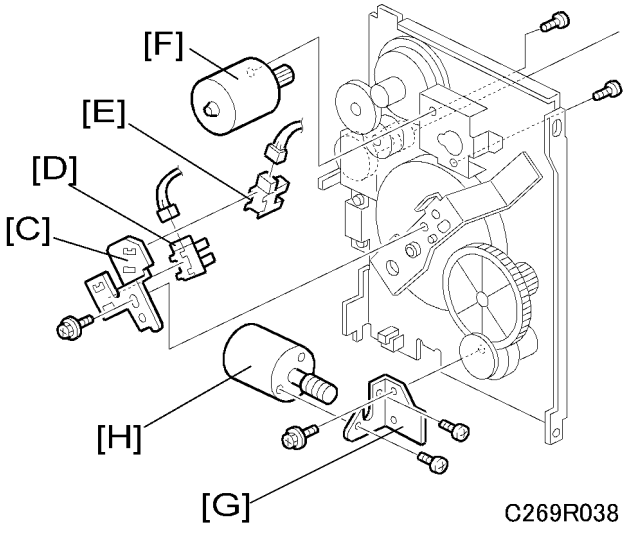
C269R037

Remove these parts:

- Rear Cover (☛ 'Covers – Left Cover')
- PSU (☛ 'Boards – PSU')
- Left scanner cover (☛ 'Covers – Operation Panel')
- Master eject box (☛ 'Master Eject Box')
- Master eject roller unit (☛ 'Master Eject Roller Unit')
- [A]: Bracket (x 1)
- [B]: Master eject drive unit (x 2, x 4)

Note

- To remove the master eject drive unit [B], slide it out towards the paper delivery direction, and pull down the top of the unit towards the operation panel. (See the arrows in the illustration.)
- The master eject drive unit is connected to the cables from the sensor and the motor. Remove the master eject drive unit carefully.



- [C]: Sensor bracket (x 1)
- [D]: Pressure plate HP sensor (x 1)
- [E]: Pressure plate limit position sensor (x 1)
- [F]: Master eject motor (x 2)
- [G]: Pressure plate motor bracket (x 2)
- [H]: Pressure plate motor (x 2)

Master Eject Box Lock Solenoid

Remove these parts:

- Left Cover (☛ 'Covers – Left Cover')
- Master eject box (☛ 'Master Eject Box')
- [A]: Master eject box lock solenoid bracket (x 4, x 2)
- [B]: Master eject box lock sensor (x 1)
- [C]: Master eject box lock solenoid (x 2)

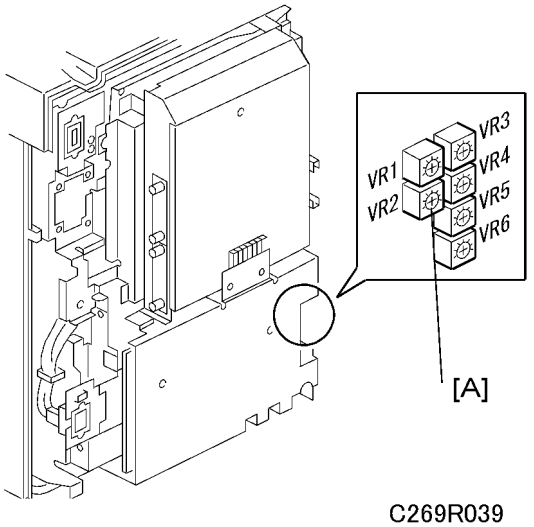
Master Eject Sensor Adjustment

Purpose: To ensure that the sensor detects the ejected master properly.

Standard: 1.5 volts (within "+0.1" and "-0.1" volts)

⚠CAUTION

- 1) The sensor adjustment is required in the following cases:
- - After the sensor is replaced.
- - After the I/O board is replaced.
- 2) While adjusting, make sure to attach all exterior covers to avoid external light.
- 3) Do not turn the VRs excessively.
- 4) If the sensor is dirty, clean or replace it.
- 5) For how to access SP mode, refer to the Service Program Mode section. (☛ 'Service Tables – Service Program Mode')



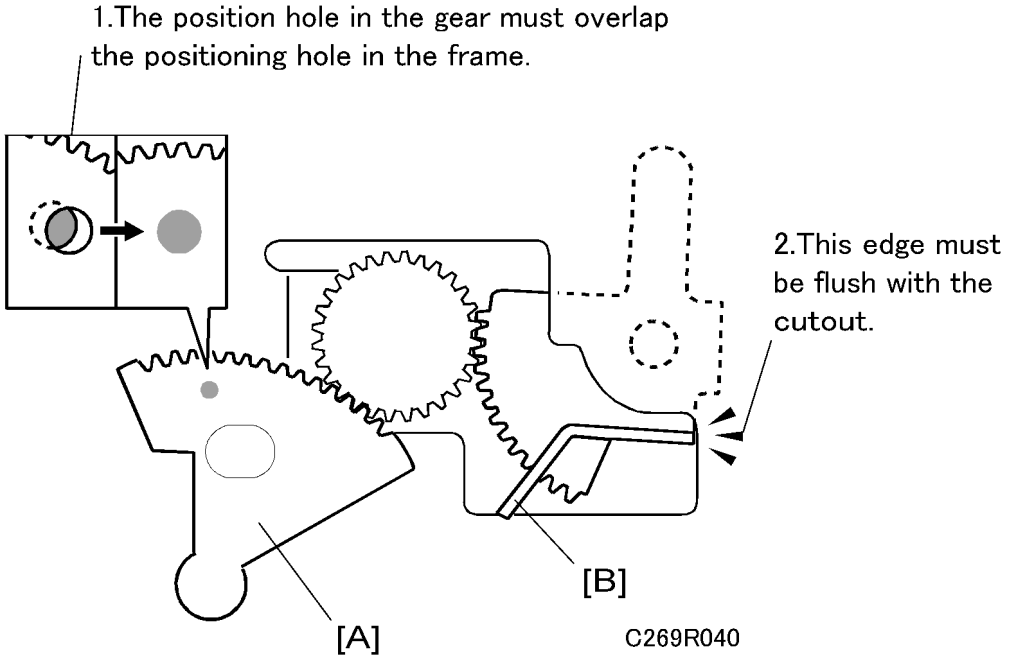
C269R039

1. Remove these parts:
   - Rear Cover (☛ 'Covers – Left Cover')
   - Master eject box (☛ 'Master Eject Box')

   Note
   - The drum must be installed.
2. Turn on the main switch, then access SP6-004-1 (Master Eject Sensor).
3. The sensor input voltage is displayed on the operation panel. Turn VR2 [A] on the I/O board until the value is between 1.4 and 1.6 volts.
4. Leave the SP mode.

Reassembling the Master Pick-Up Roller Drive Gears

Purpose: When the master pick-up roller drive sector gear [A] or master eject clamper drive arm [B] have been removed, they must be re-installed in the correct position.



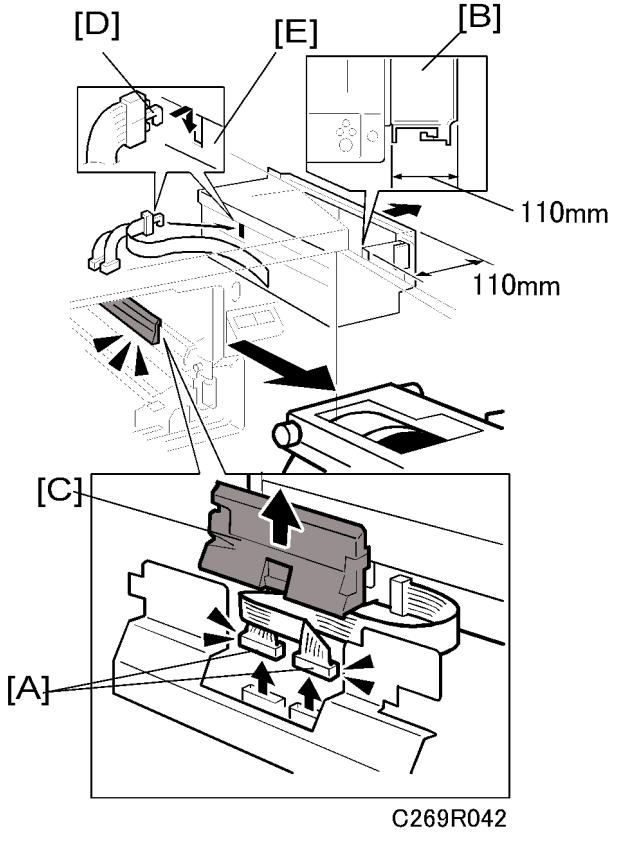
1. The master eject clamper drive arm [B] must be flush with the cutout in the frame, as shown.
2. While you hold the arm in the above position, install the sector gear [A]. The small positioning hole in the sector gear must exactly overlap the positioning hole in the frame, as shown.

Master Feed Section

Master Making Unit

⚠CAUTION

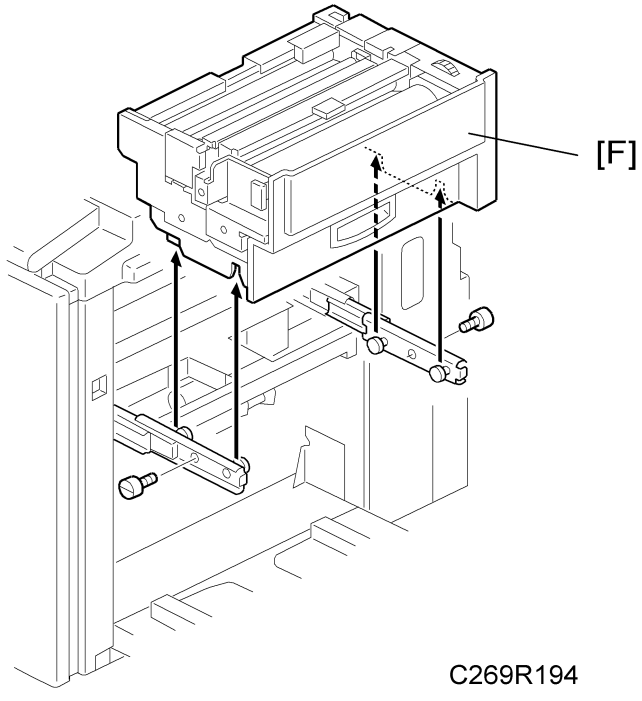
- When you remove the master making unit from the main frame, make sure to disconnect the two connectors [A].



1. Remove the drum unit (☛ 'Drum Section – Drum Unit')
2. Pull out the master making unit [B]. Make sure that the distance between the main frame and the edge of the master making unit is 110 mm or less. If you pull the unit out more than 110 mm, you cannot do step 5.
3. Remove the connector cover [C].
4. Remove the two connectors [A].
5. Check that the hook on the flat cable [D] is attached to notch [E] in the master feed control roller bracket.

Note

- This hook must always be attached when you install the master making unit, to prevent damage to the cable.

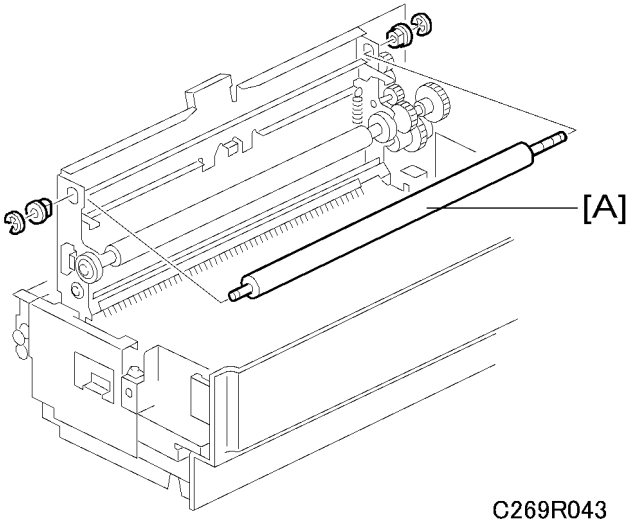


6. Remove the master making unit [F] (x 2).

CAUTION

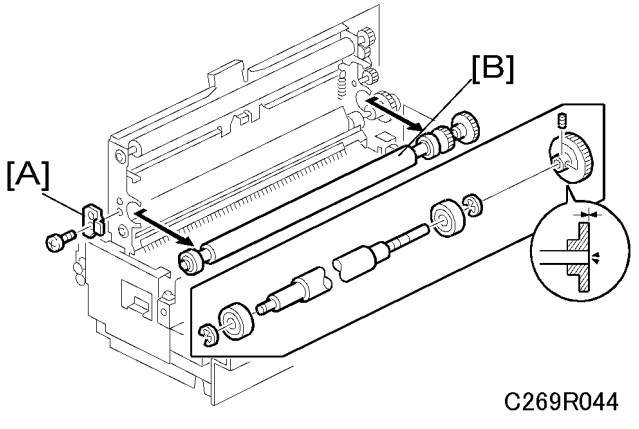
- When you install the master making unit, make sure to attach the two connectors [A].

Master Set Roller, Platen Roller, Upper Tension Roller

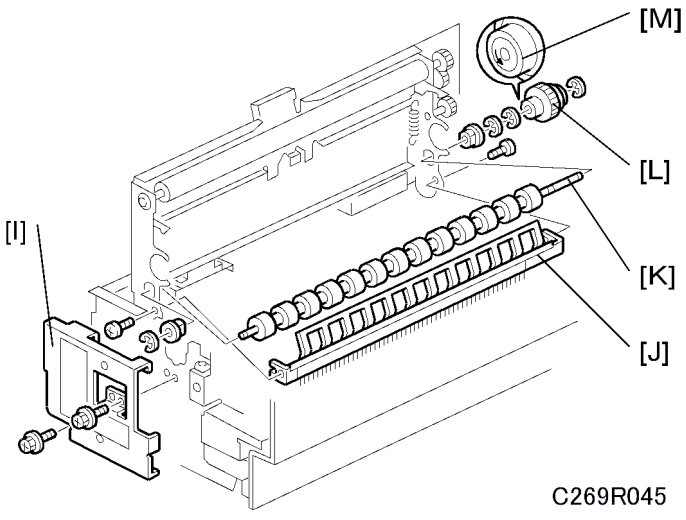


Remove these parts:

- Master making unit (☛ 'Master Making Unit')
- [A]: Master set roller (ℂ x 2)



- [A]: Platen roller bracket (🔩 x 1)
- [B]: Platen roller (Hexagon bolt x 2, ℂ x 2)

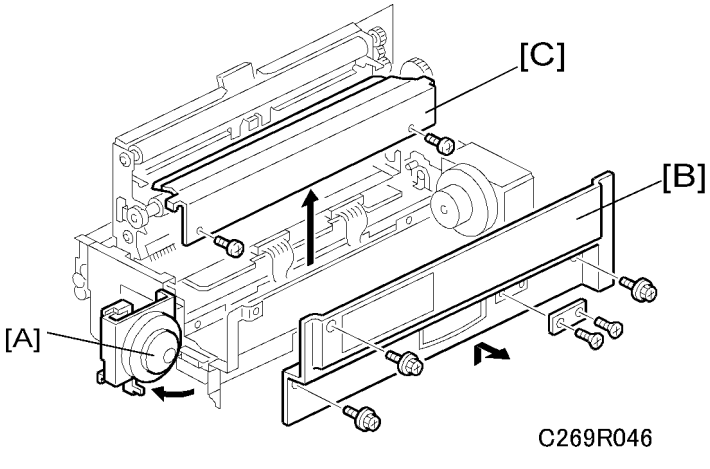


- [I]: Front bracket (☞ x 2)
- [J]: Tension roller guide (☞ x 3)
- [K]: Upper tension roller (ℂ x 4)

Note

- When you install the one-way clutch [L], position the one-way clutch and marking [M] as shown in the diagram.

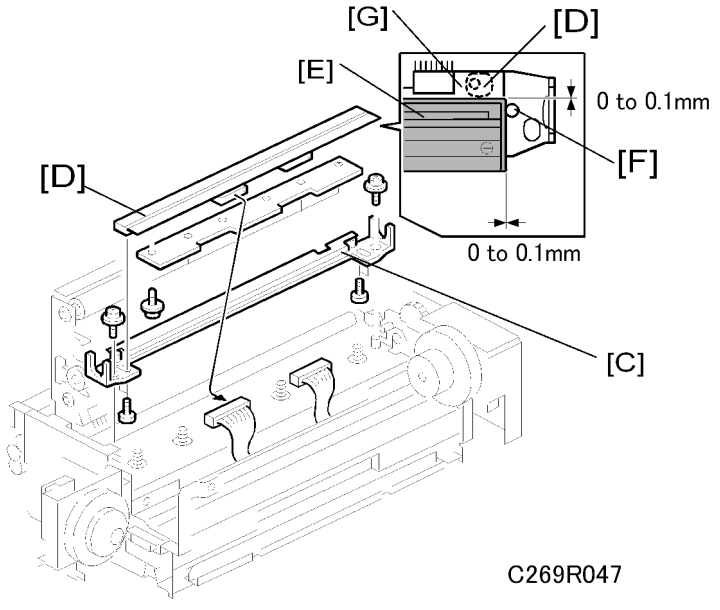
Thermal Head



Remove these parts:

- Master making unit (☛ 'Master Making Unit')

- [B]: Master making unit right cover (x 5)
- [C]: Thermal head cover (x 2)

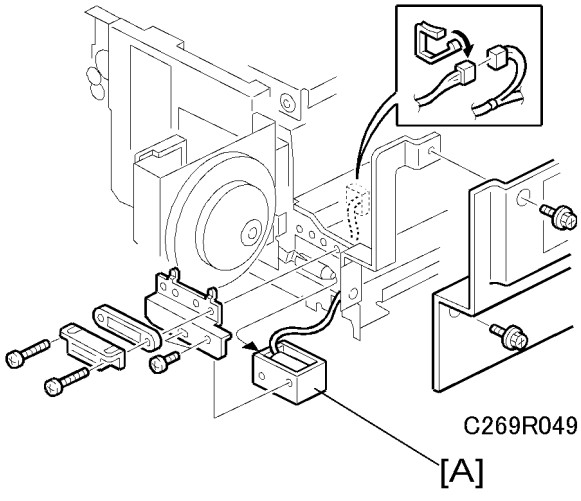


- [C]: Thermal head base (x 2, x 2)
- [D]: Thermal head (x 10)

CAUTION

- 1) When you re-install the thermal head, make sure that these distances are 0 to 0.1 mm
  - At the right edge of the thermal head: The distance between the thermal head [E] and the projection [F]
  - At the left and right edges of the thermal head: The distance between the thermal head [E] and the thermal head guide plate [G].
  - At the left and right edges of the thermal head: The distance between the thermal head [E] and the eccentric bushing [H].
- 2) After the replacement, adjust the thermal head voltage (☛ 'Thermal Head Voltage Adjustment').
- 3) Make sure that there is no foreign material on the thermal head surface (especially on the heating elements).
- 4) Don't touch the surface with bare hands. (If you touch it, clean the surface with alcohol.)
- 5) Also, do not touch the surface of the master film with bare hands.
- 6) Connect and disconnect the connectors carefully. Keep them horizontal. Also, make sure that they are reconnected firmly.
- 7) Don't touch the terminals of the connectors with bare hands.

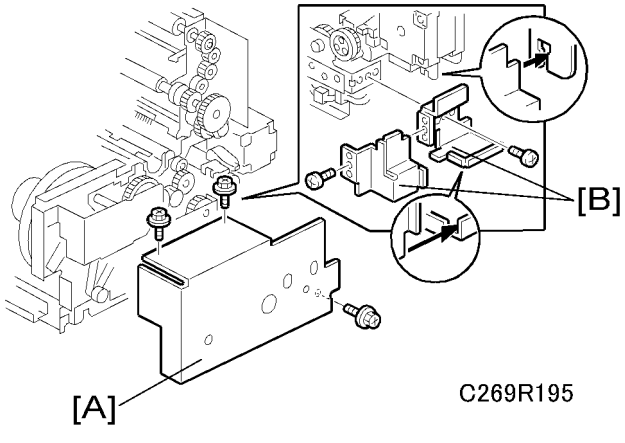
Duct Entrance Solenoid



Remove these parts:

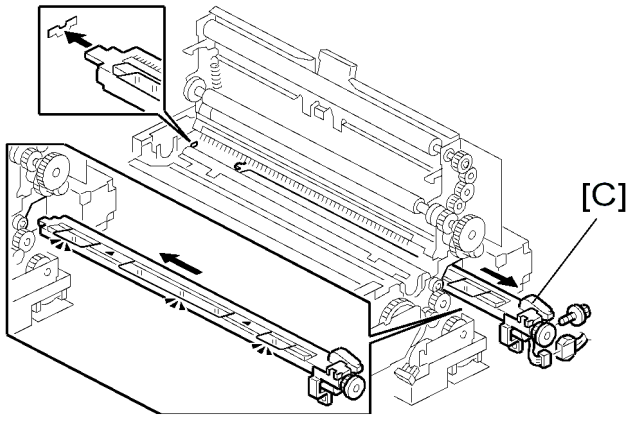
- Master making unit (☛ 'Master Making Unit')
- Master making unit right cover (☛ 'Thermal Head')
- [A]: Duct entrance solenoid (x 4, x 1)

Cutter Unit, Master Feed Control Motor, Clamp Tension Roller, Upper Master Feed Control Roller

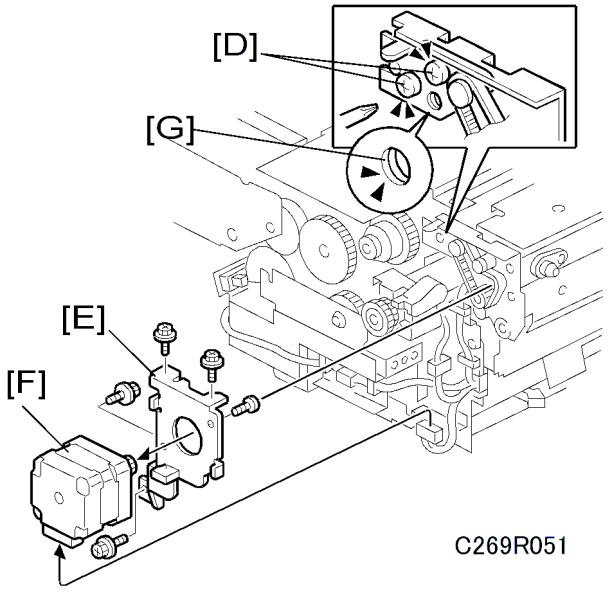


1. Remove these parts:
    - Master making unit (☛ 'Master Making Unit')
    - [A]: Master making unit rear cover (x 3)

- [B]: Harness covers (x 2)



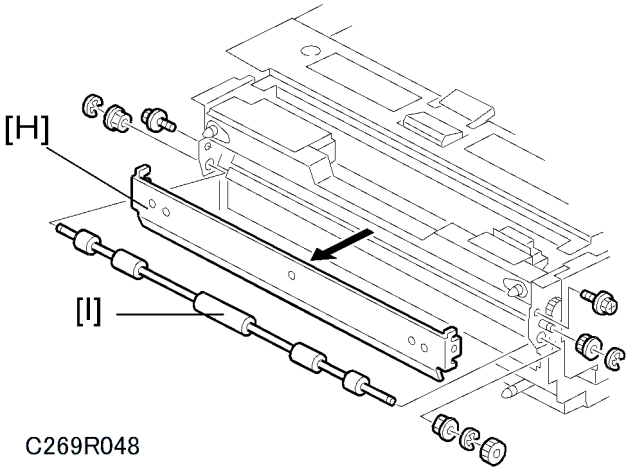
- [C]: Cutter unit (x 1, x 1)



2. Loosen the screws [D] that secure the tension bracket.
3. Remove these parts:
   - [E]: Master feed control motor bracket (x 3, x 1)
   - [F]: Master feed control motor (x 2)

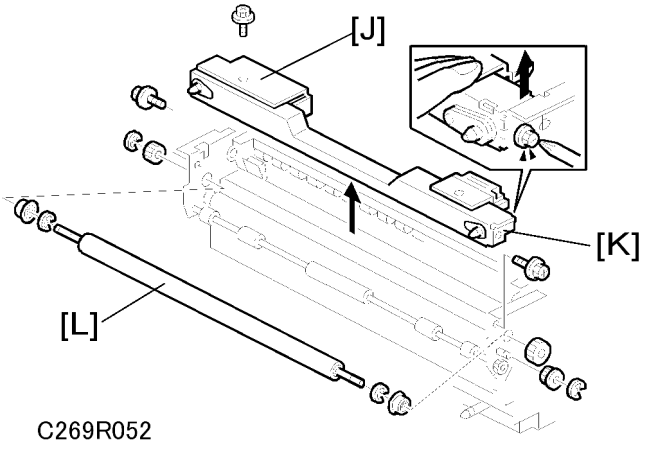
Note

- When you tighten the screws to secure the tension bracket [D], make sure that the small holes in the rear frame are in line with the small hole in the tension bracket [G], as shown.



C269R048

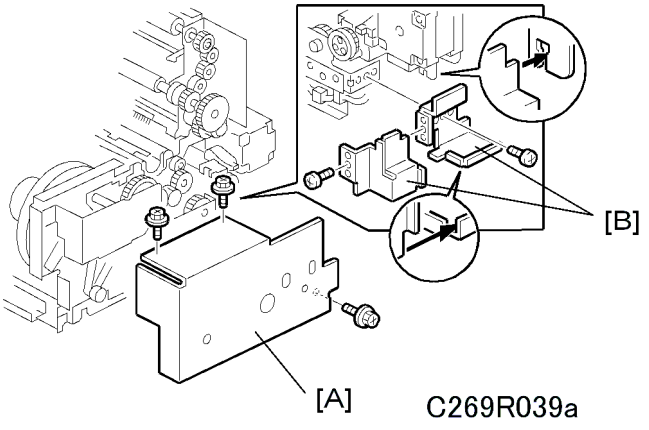
- [H]: Master feed control roller bracket (☞ x 2)
- [I]: Clamp tension roller (ℂ x 3)



C269R052

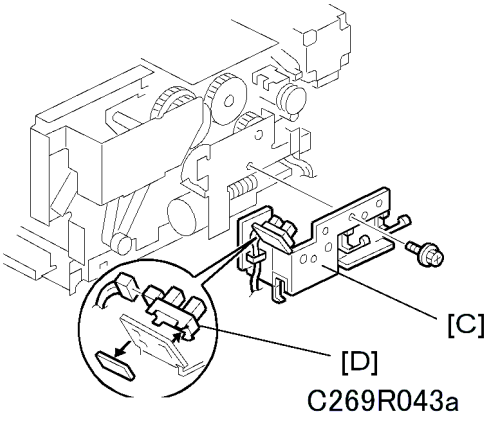
- [J]: Master edge sensor cover (☞ x 1)
- [K]: Master making unit frame (☞ x 2)
- [L]: Upper master feed control roller (ℂ x 4)

Platen Release Sensor, Platen Release Motor

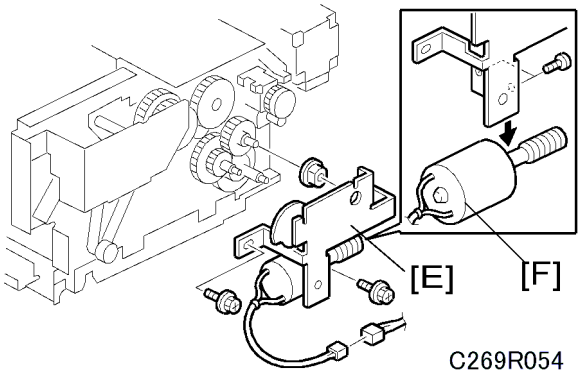


Remove these parts:

- Master making unit (☛ 'Master Making Unit')
- Master making unit right cover (☛ 'Thermal Head')
- [A]: Master making unit rear cover (🔩 x 3)
- [B]: Harness covers (🔩 x 2)



- [C]: Cover bracket (🔩 x 1)
- [D]: Platen release sensor (🔌 x 1)

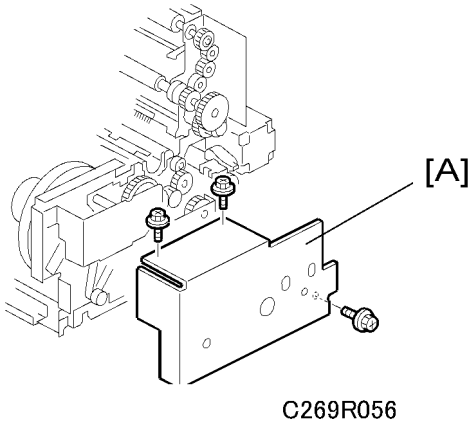


- [E]: Platen release motor bracket (x 2, x 1)
- [F]: Platen release motor (x 2)

Note

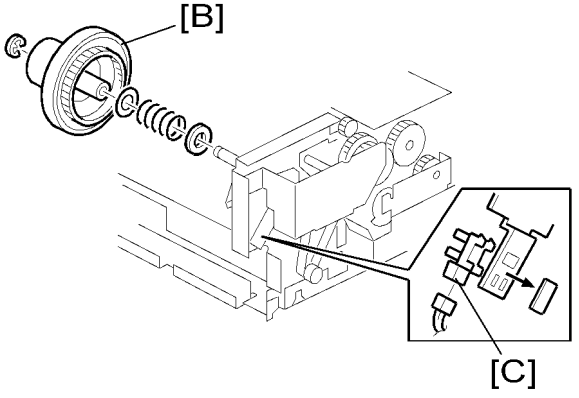
- When you install the platen release motor bracket, make sure that the gear is positioned correctly (☛ 'Platen Release Cam Adjustment').

Master Amount Sensor



Remove these parts:

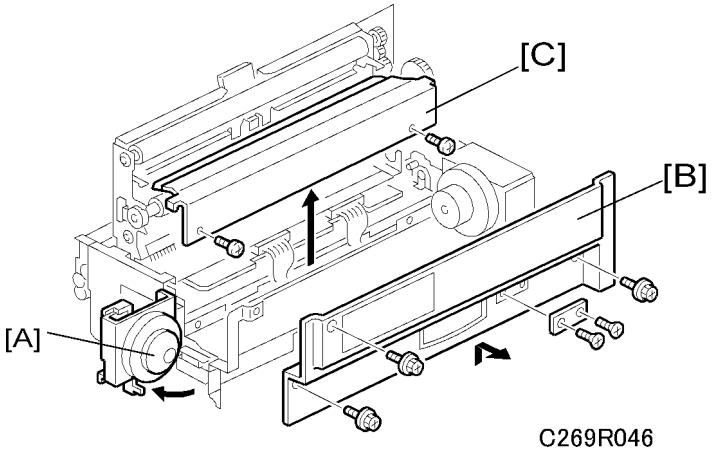
- Master making unit (☛ 'Master Making Unit')
- Master making unit right cover (☛ 'Thermal Head')
- [A]: Master making unit rear cover (x 3)



C269R197

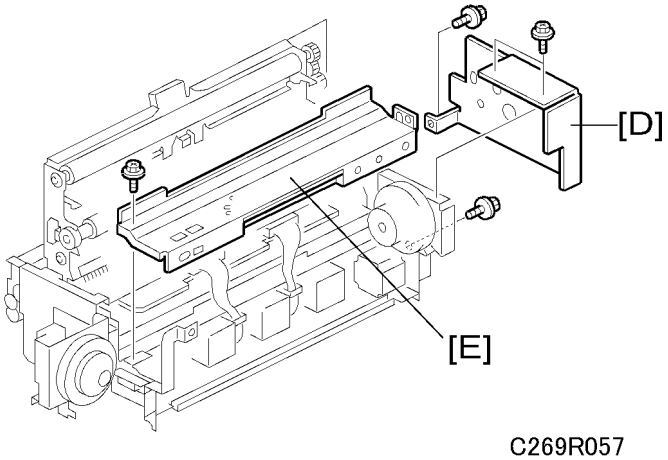
- [B]: Rear master flange (ℂ x 1)
- [C]: Master amount sensor (x 1)

Master Duct Sensor, Master Suction Fans, Master Feed Motor

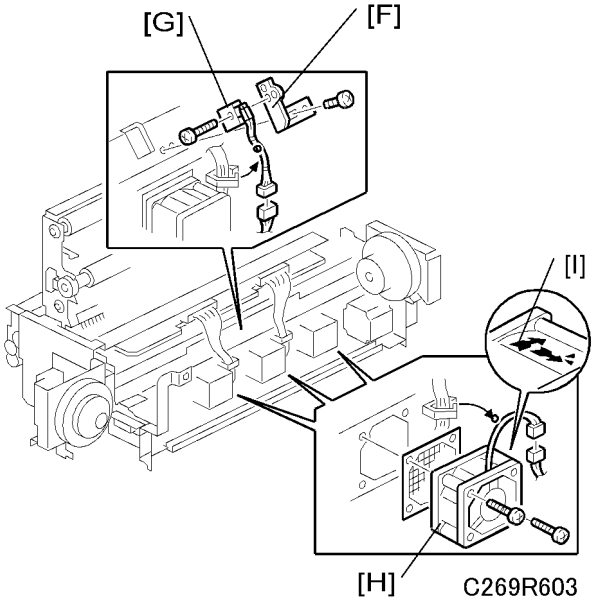


C269R046

1. Remove these parts:
    - Master making unit (☛ 'Master Making Unit')
2. Open the master tray cover [A].
3. Remove these parts:
    - [B]: Master making unit right cover (x 5)
    - [C]: Thermal head cover (x 2)



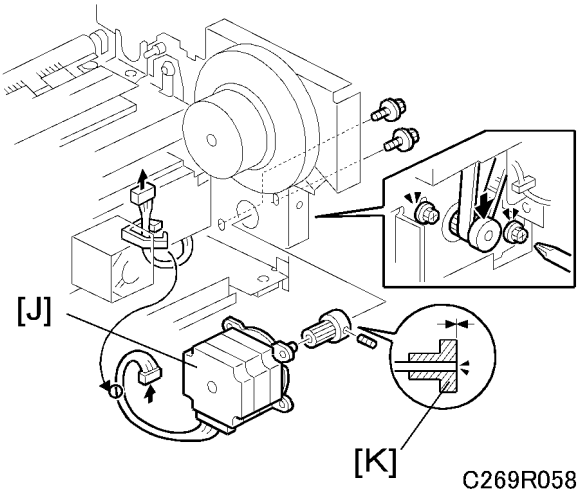
- [D]: Master making unit rear cover (x 3)
- [E]: Lower master cover (x 2)



- [F]: Master duct sensor bracket (x 1, x 1)
- [G]: Master duct sensor (x 1)
- [H]: Master suction fans (x 2, x 1 each)

Note

- When you install the master suction fans, position the cable and marking [I] as shown in the diagram.

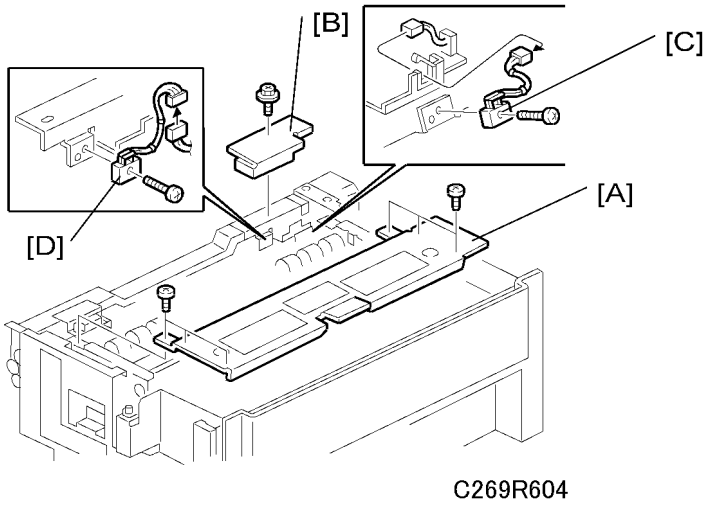


- [J]: Master feed motor (x 2, x 1)

Note

- Make sure that the end of the master feed motor shaft is flush with the edge of the pulley [K].

Master Set Sensor, Master Edge Sensor



Remove these parts:

- Master making unit (☛ 'Master Making Unit')
- [A]: Master set cover (x 6)

- [B]: Master edge sensor cover (x 1)
- [C]: Master set sensor (x 1, x 1)

Note

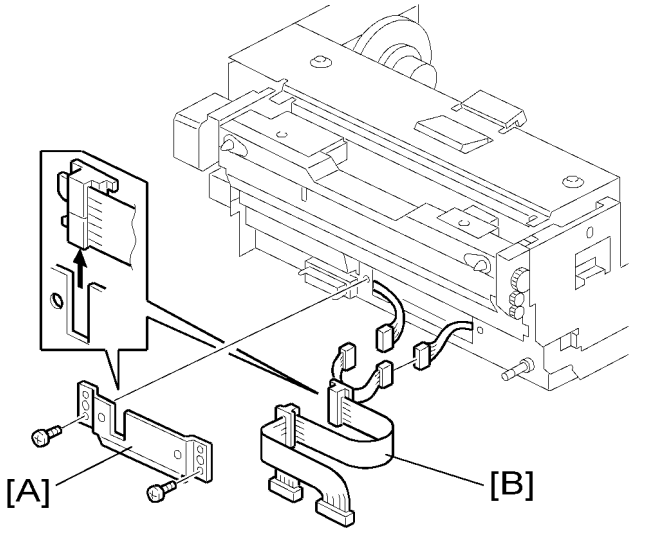
- Do the master set sensor adjustment (☛ 'Master Set Sensor Adjustment') after you install the new master set sensor.

- [D]: Master edge sensor (x 1, x 1)

Note

- Do the master edge sensor adjustment (☛ 'Master Edge Sensor Adjustment') after you install the new master edge sensor.

Flat Cable

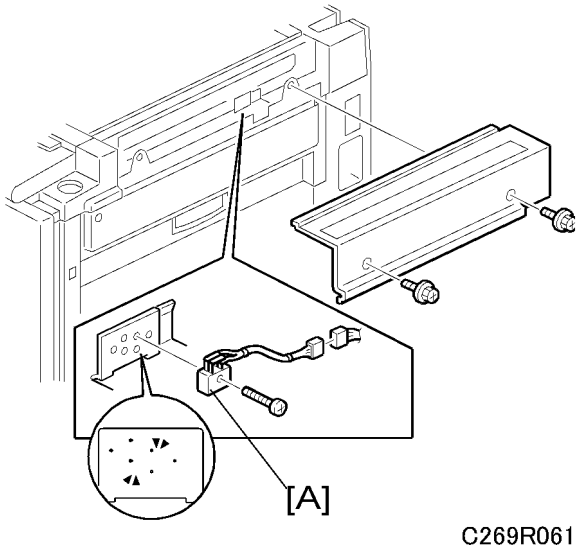


C269R187

Remove these parts:

- Master making unit (☛ 'Master Making Unit')
- [A]: Cable cover (x 2)
- [B]: Flat cable (x 2)

Master End Sensor

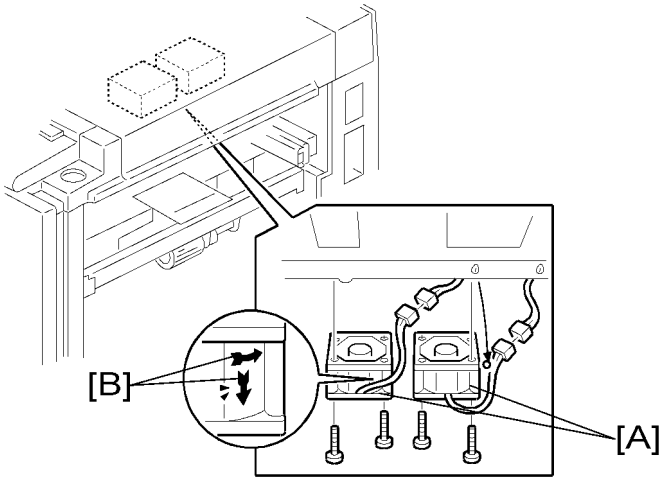


C269R061

Remove these parts:

- Right scanner cover (☛ 'Covers – Operation Panel')
- [A]: Master end sensor (x 1, x 1)
- Do the Master End Sensor Adjustment after you replace the sensor.

Master Buffer Fans



C269R063

Remove these parts:

- Master making unit (☛ 'Master Making Unit')
- [A]: Master buffer fans (x 2, x 1 each)

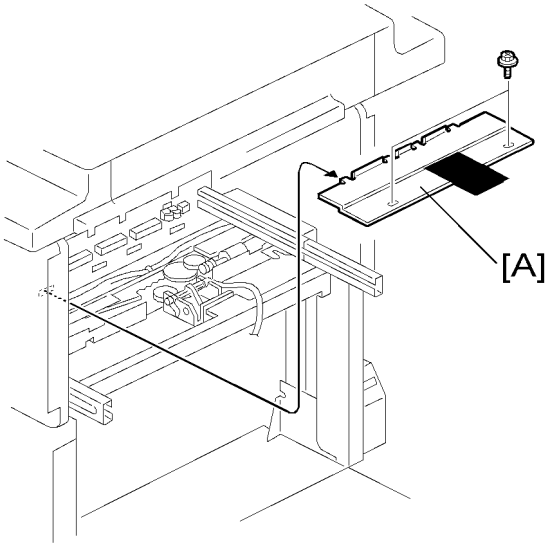
Note

- When you install the fans, position the cable and marking [B] as shown in the diagram.

Unit Lock Solenoid, 2nd Drum Master Sensor

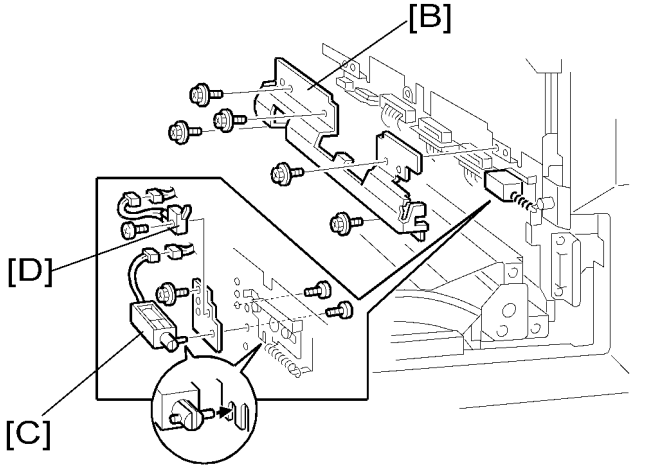
Remove these parts:

- Master making unit (☛ 'Master Making Unit')
- Drum unit (☛ 'Drum Section – Drum Unit')



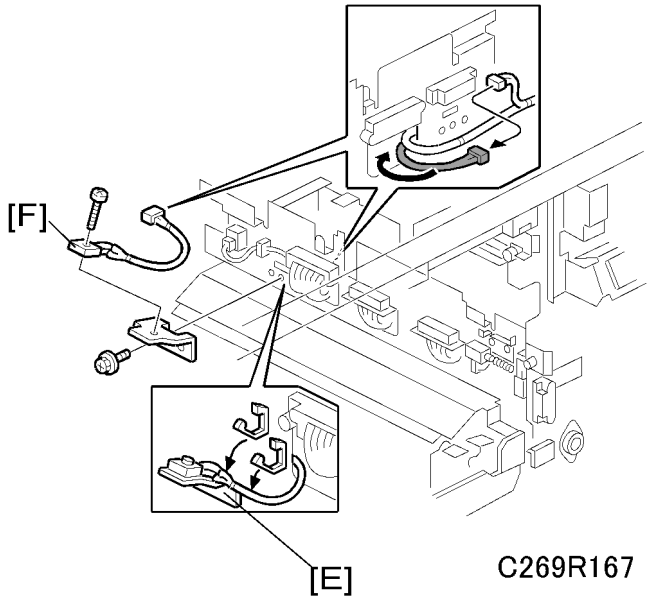
C269R064

- [A]: Feed cover (x 2)



C269R065

- [B]: Sensor bracket (x 5)
- [C]: Master making unit lock solenoid (x 2, x 1)
- [D]: Master making unit lock detector (x 1, x 1)



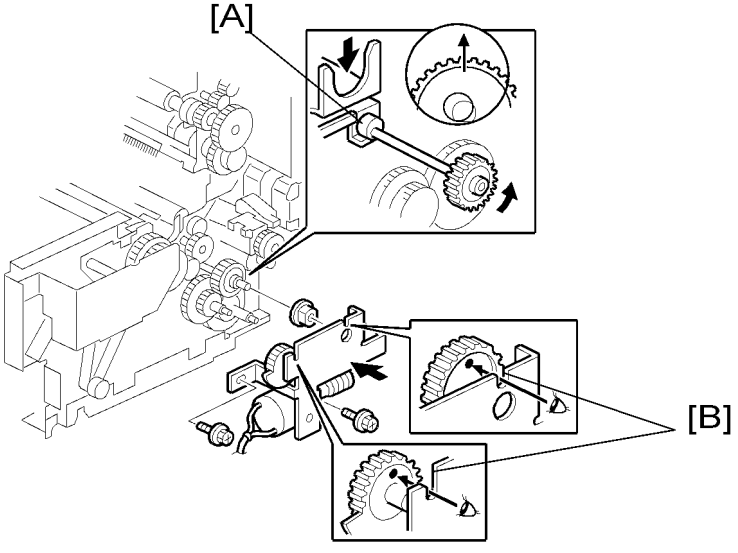
C269R167

- [E]: 2nd drum master sensor bracket (x 1, x 1)
- [F]: 2nd drum master sensor (x 1)

Note

- Do the 2nd drum master sensor adjustment (☛ 'Drum Unit – 2nd Drum Master Sensor Adjustment') after installing the new 2nd drum master sensor.

Platen Release Cam Adjustment



C269R055

Purpose: After the platen release mechanism is disassembled, the platen release cam [A] must be reinstalled in the correct position.

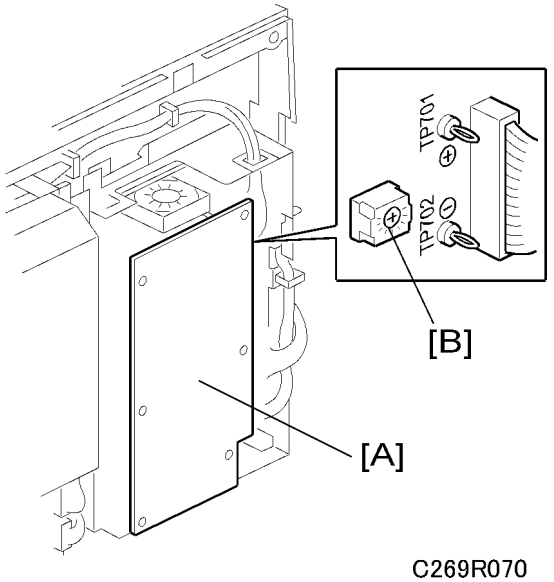
Procedure: When you tighten the screws to secure the mechanism, make sure that the small holes in the gears [B] are in line with the cutouts in the bracket, as shown.

Thermal Head Voltage Adjustment

⚠CAUTION

- The voltage value affects the durability of the thermal head, and is different for each thermal head. Refer to the exact voltage value that is labeled on each thermal head.
- The adjustment range is between + 0 and – 0.1 volts from the specified value. Never set it out of this range even if there is an image quality problem.
- This adjustment is always required after the thermal head or PSU is replaced.

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



C269R070

1. Turn off the main switch. Then, remove the rear cover to access the PSU [A].
2. Check the voltage on the thermal head decal.

   Note

   - The value is different for each thermal head.
3. Turn on the main switch and access the SP mode. Then, select SP 5-010-13 (the thermal head voltage output mode).
4. Press the Start key to apply the voltage to the thermal head. The voltage is continually supplied while the Start key is held down.

   Note

   - As another way to apply the voltage, press the # key instead of the Start key. However, after the # key is pressed, the machine will not stop supplying the voltage until you press the Clear/Stop key or cancel the SP mode. To protect the thermal head, never leave the voltage on for a long time.
5. Measure the voltage between pins TP701 (VHD) and TP702 (GND) on the PSU. Check that it is between + 0 and – 0.1 volts from the specified value that you read from the decal in step 2.
6. If needed, adjust the voltage by turning RV1 [B] on the PSU.

   Note

   - To increase the voltage: Turn RV1 clockwise
   - To reduce the voltage: Turn RV1 counterclockwise
7. Leave the SP mode.

Master End Sensor Adjustment

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

Standard: 0.8 volts

⚠CAUTION

- 1)The sensor adjustment is required in the following cases:
  - After the sensor is replaced.
  - After the ECU is replaced (not necessary if you remove the NVRAM from the old ECU and install it on the new ECU).
  - After the I/O board is replaced
- 2) If the sensor is dirty, clean or replace it.
- 3) For how to access the SP mode, refer to the Service Program Mode section. (☛ 'Service Tables – Service Program Mode')

1. Turn on the main switch, then access SP6-004-2 (Sensor Voltage and Threshold Adjustment for Master End Sensor).
2. The sensor threshold value is displayed on the operation panel. Enter 0.8 (volts) with the number keys.
3. Leave the SP mode.

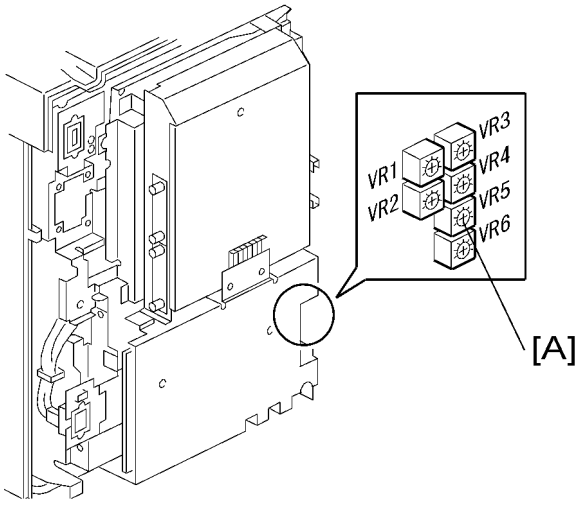
Master Edge Sensor Adjustment

Purpose: To ensure that the sensor detects the master properly.

Standard: 0.9 to 1.0 volt

⚠CAUTION

- 1) The sensor adjustment is required in the following cases:
  - After the sensor is replaced.
  - After the I/O board is replaced.
- 2) While adjusting, make sure to attach all exterior covers to avoid external light.
- 3) Do not turn the VRs excessively.
- 4) If the sensor is dirty, clean or replace it.
- 5) For how to access SP mode, refer to the Service Program Mode section. (☛ 'Service Tables – Service Program Mode')



C269R071

First, remove these parts:

- Rear cover (☛ 'Covers – Left Cover')
- Master roll

Note

- The master roll must not be installed for this adjustment.

1. Turn on the main switch, then access SP6-004-3 (Sensor Voltage and Threshold Adjustment for Master Edge Sensor).
2. Press the Start key.
   - The duct entrance plate opens automatically. The duct plate will stay open for 30 seconds, then it will close automatically.
   - Do the adjustment (step 3) before the duct entrance plate closes.
   - If you cannot complete the adjustment before the plate closes, then press Start again to open the plate.
3. The sensor input voltage is displayed on the operation panel. Turn VR5 [A] on the I/O board until the value is between 0.9 and 1.0 volt.
4. Leave the SP mode.

Master Set Sensor Adjustment

Purpose: To ensure that the sensor detects the master properly.

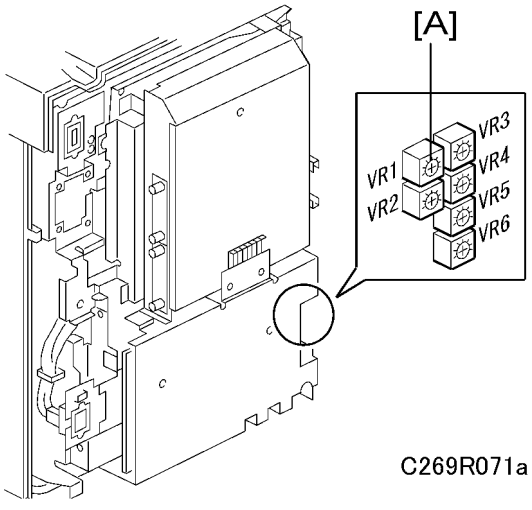
Standard: 1.0 to 1.1 volts

⚠CAUTION

1. The sensor adjustment is required in the following cases:

   After the sensor is replaced.

   After the I/O board is replaced.
2. While adjusting, make sure to attach all exterior covers to avoid external light.
3. Do not turn the VRs excessively.
4. If the sensor is dirty, clean or replace it.
5. For how to access SP mode, refer to the Service Program Mode section. (☛ 'Service Tables – Service Program Mode')



First, remove the following:

- Rear cover (☛ 'Covers – Left Cover')

1. Turn on the main switch, then access SP6-004-4 (Sensor Voltage and Threshold Adjustment for Master Set Sensor).
2. Pull out the master making unit from the machine and open the master set cover.
3. Insert the leading edge of the master under the master set sensor. Then close the master set cover and reinstall the master making unit in the machine.
4. The sensor input voltage is displayed on the operation panel. Turn VR1 [A] on the I/O board until the value is between 1.0 and 1.1 volts.
5. Pull out the master making unit from the machine and open the master set cover.
6. Remove the master from the master making unit. Then close the master set cover and reinstall the master making unit in the machine.
7. Check if the value of SP6-004-4 is 3.0 volts or more.
8. If the sensor input voltage is 3.0 volts or more, adjustment is completed.

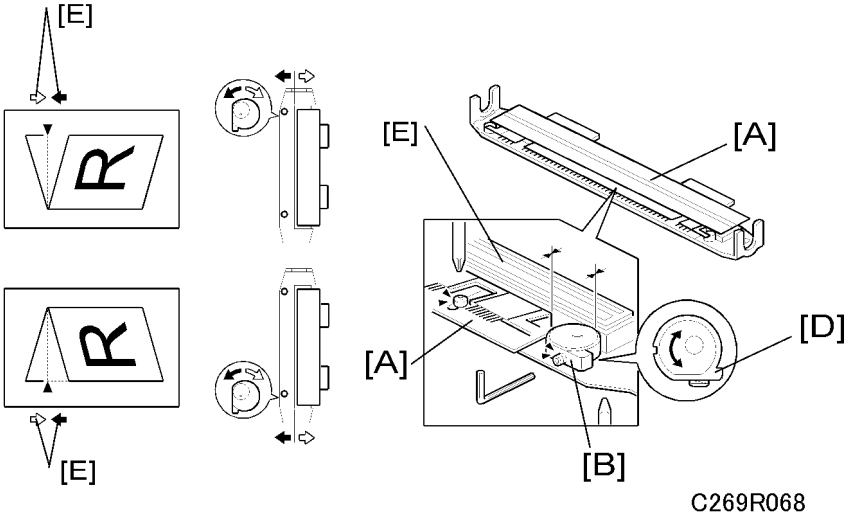
9. If the sensor input voltage is less than 3.0 volts, adjust VR1 until the sensor input voltage is 3.0 volts or more
10. Leave the SP mode.

Thermal Head Alignment Adjustment

Purpose: To make sure that the original image is correctly reproduced without skew.

First, remove these parts:

- Master making unit (☛ 'Master Making Unit')
- Master making unit right cover (☛ 'Thermal Head')
- Thermal head cover (☛ 'Thermal Head')
- Thermal head base (☛ 'Thermal Head')



1. Remove the thermal head guide plate [A].
2. Loosen the four screws [B] that secure the thermal head base.
3. Loosen the Allen screws [C].
4. Turn the eccentric bushing [D] at the operation side or the non-operation side. If the eccentric bushings [D] are turned one graduation, the image skew amount [E] is corrected by 0.2 mm.
5. Tighten the Allen screws [C].
6. Tighten the four screws [B] that secure the thermal head base.
7. Install the thermal head guide plate [A].

Note

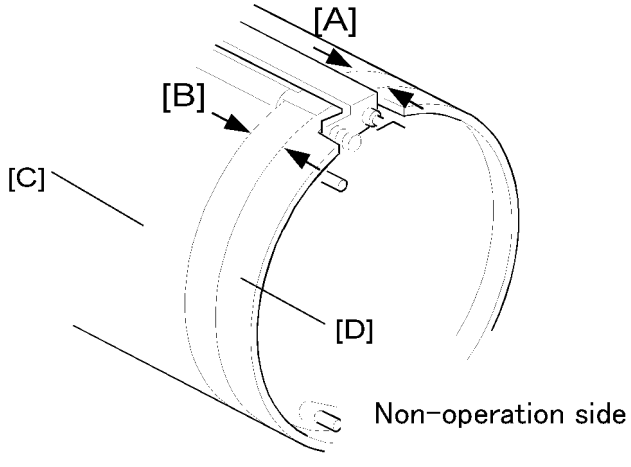
- When you install the thermal head base and the thermal head guide plate, make sure that these are positioned correctly (☛ 'Thermal Head').

8. Install the thermal head base, thermal head cover, and master making unit right cover. (☛ 'Thermal Head')
9. Install the master making unit. (☛ 'Master Making Unit')
10. Make a new master and check if the image skew is within acceptable limits.

Master Making Unit Parallel Adjustment

Purpose: To make sure that the master is correctly wrapped around the drum without skew.

1. Make a new master. The machine will wrap this master around the drum.



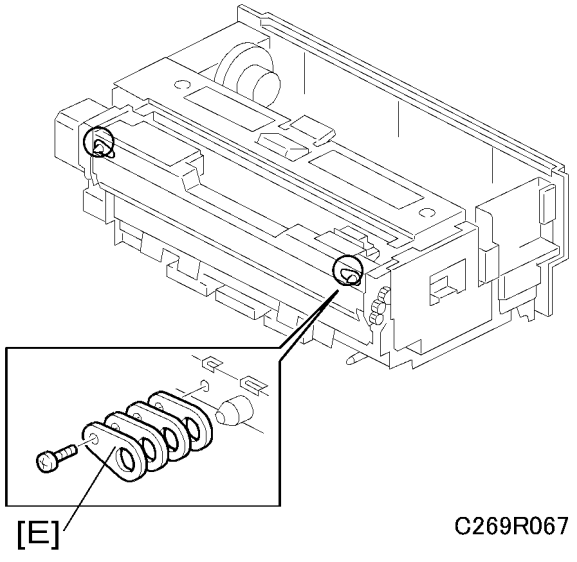
C269R066

2. Take out the drum unit from the machine.
3. Measure the clearance at the leading edge [A] and the trailing edge [B] between the edge of the master [C] and the edge of the metal screen [D].

Note

- Standard for A4 drums, A3 drums, and DLT drums: 32.0 mm

4. Remove the master making unit (☛ 'Master Making Unit').



5. Add or remove spacers to adjust the position of the master making unit, if necessary.

   Example: If the value at the leading edge [A] is 32.0 mm and the value at the trailing edge [B] is 31.8mm ([A] – [B] = 32.0 - 31.8= 0.2), remove the spacer [E] at the operation side on the master making unit.

   Note

   - [A] – [B] = Positive value: Decrease the thickness of spacers at the operation side.
   - [A] – [B] = Negative value: Decrease the thickness of spacers at the non-operation side.
   - If one spacer is removed, the master skew is corrected by 0.2 mm.

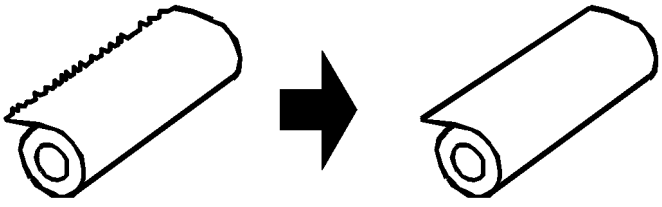
6. Install the master making unit in the duplicator.
7. Make a new master and check if the master skew is within acceptable limits.

Master Edge Trimming Procedure

Purpose: To even off the leading edge of the master roll, if the edge was not cut evenly. This happens, for example, after a master misfeed jam (D-Jam).

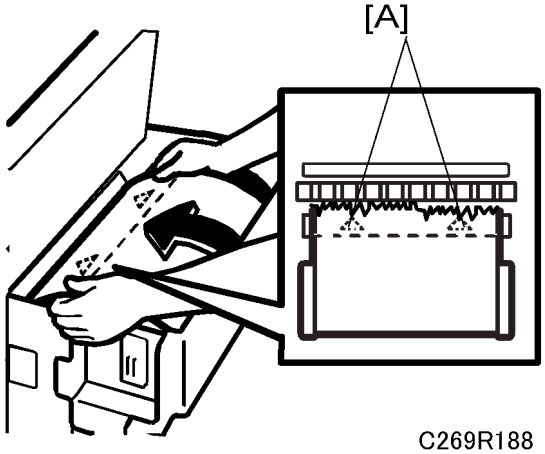
Note

- The following procedure cannot be done if a misfeed or SC error condition was not corrected.



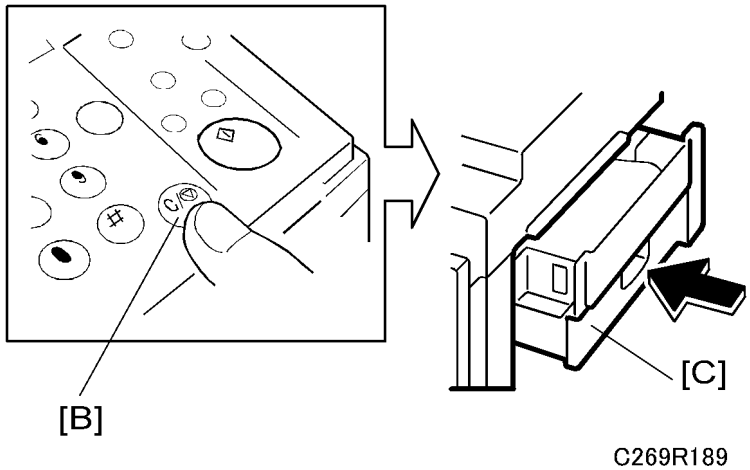
C269R605

1. Load the master roll in the master making unit.



C269R188

2. Feed the leading edge manually until it covers the two arrow marks [A].



C269R189

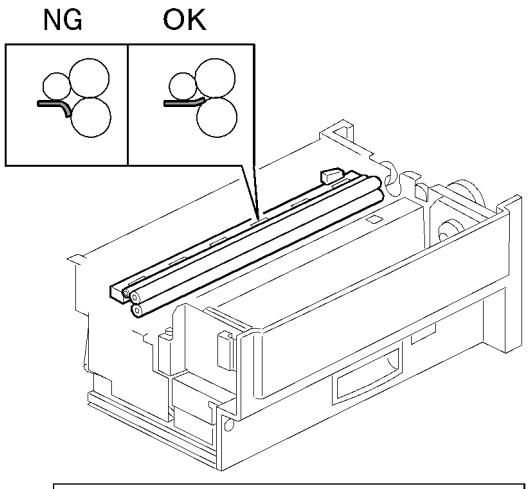
3. Press the Clear/Stop key [B]. Then, while holding this key down, push in the master making unit [C].

Note

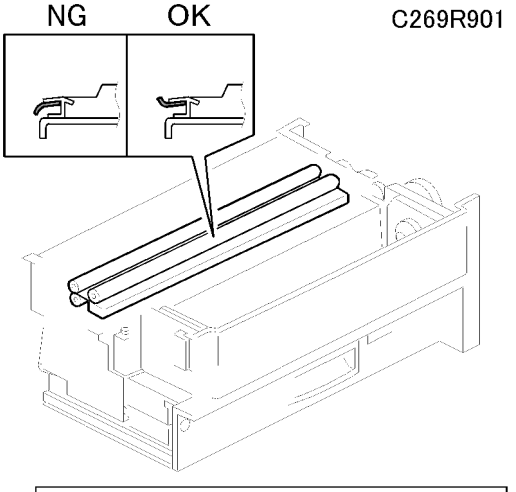
- The machine will then trim the leading edge. After this is completed, a beep will be heard and the operation panel will show "Master Misfeed" and "remove the cut master."

4. Open the master making unit and remove the trimmed portion.

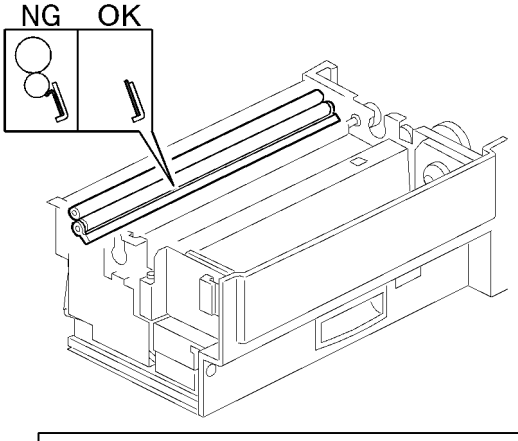
Master Feed Mylar Positioning



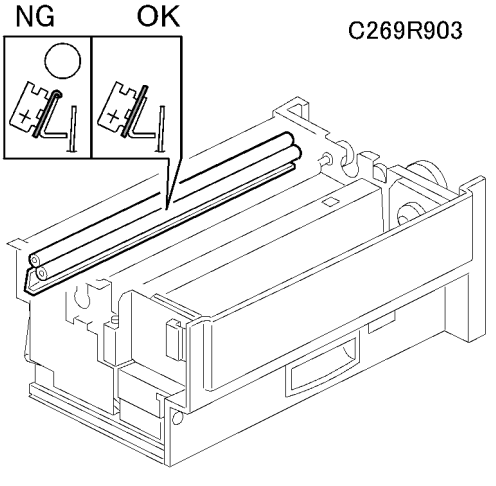
Cutter Unit
After the tension roller



Themal Head Base
Before the tension roller



Buffer Duct Entrance Plate
Before Master Feed Control Roller



Lower Master Feed Control
Roller Exit Guide Plate

Purpose:

These strips of mylar are easily put in the wrong position. Take care to set these properly to avoid master jams.

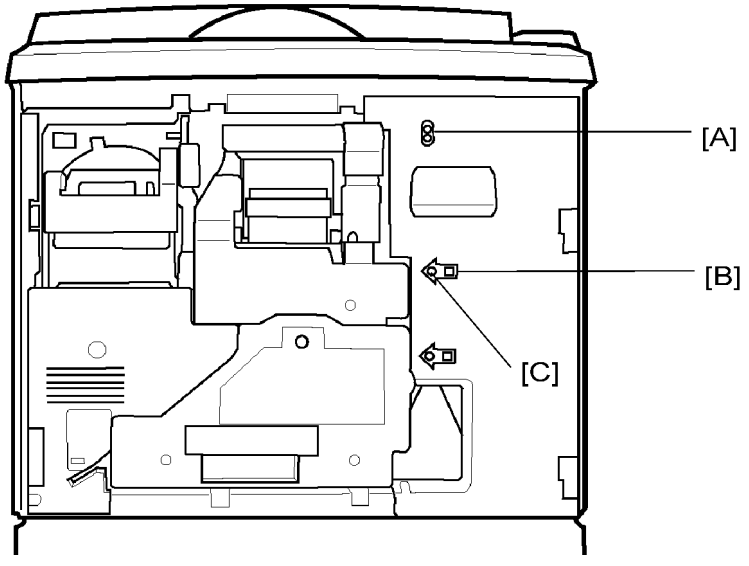
Procedure:

When replacing or removing the thermal head, the cutter unit, the master duct, or the guide plate of the lower master feed control roller, install the lower tension roller or lower master feed control roller as shown in the illustration.

Drum Section

Taking Out the Drum

When power is on



C269R313a

1. Push the switch [B]

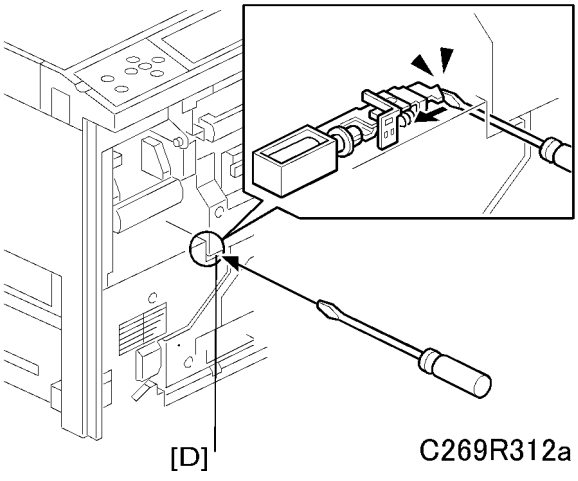
The drum lock LED [C] will turn on and the home position LED [A] will turn to green.

2. Take out the drum

⚠CAUTION

- When the home position LED [A] is red, close the front door and wait for the machine to initialize (after the motors inside the machine all stop).
- When the security mode is on, the drum will not go to home position, so the security mode should be turned off.

When power is off

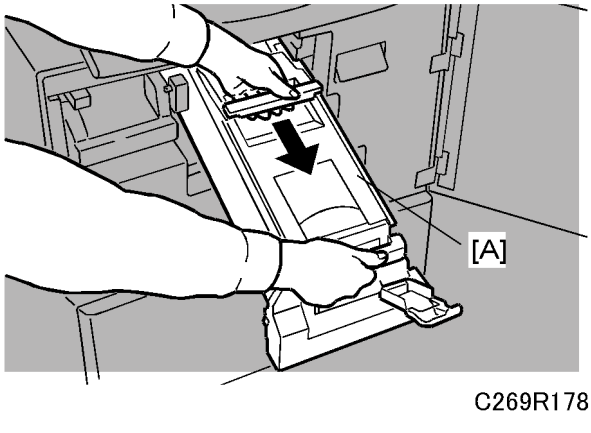


⚠CAUTION

- The drum usually cannot take out, when the power is off, because the drum lock release solenoid locks the unit while power is off.

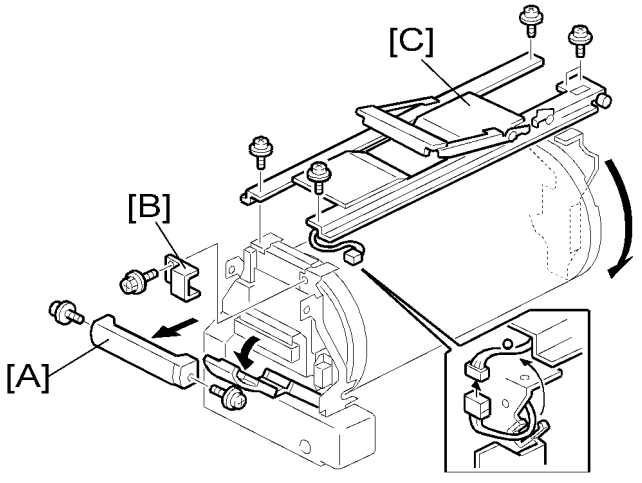
1. Inset a screwdriver into [D] to release the solenoid temporarily.
2. Take out the drum.

Drum Unit



1. First, open the front cover.
2. Drum unit [A]

Drum Cloth Screen

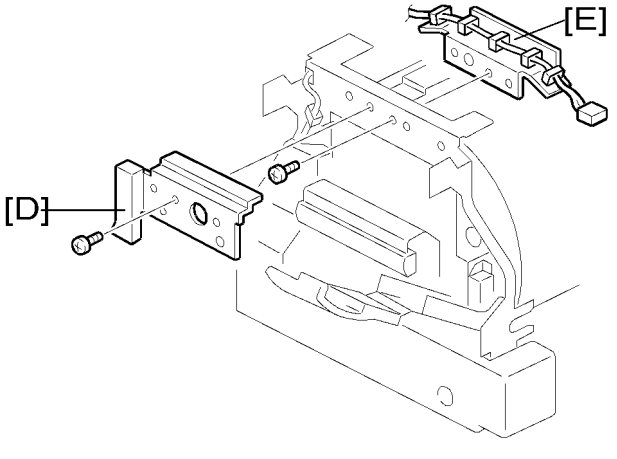


C269R073

1. Remove these parts:
   - [A]: Drum release grip (x 2)
   - [B]: Connector cover (x 1)
   - [C]: Drum handle (x 5, x 1)

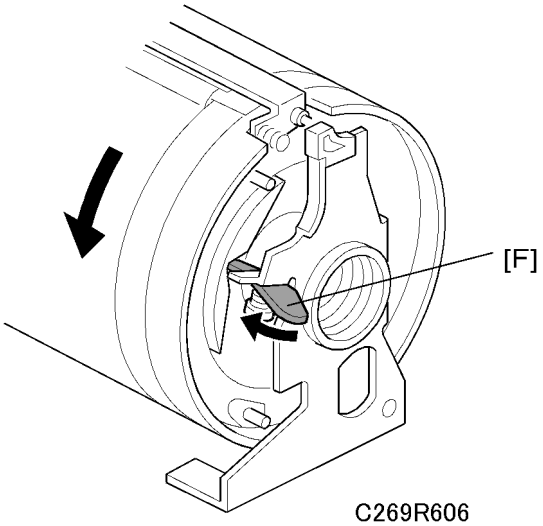
   Note

   - Do not put the drum unit upside down. However, if you must put it upside down, wipe off the ink around the ink roller first (use SP2-002-1, select OFF, and feed paper until ink ends). After you complete your work on the machine, make sure to return SP2-002-1 to its default (ink detection ON).

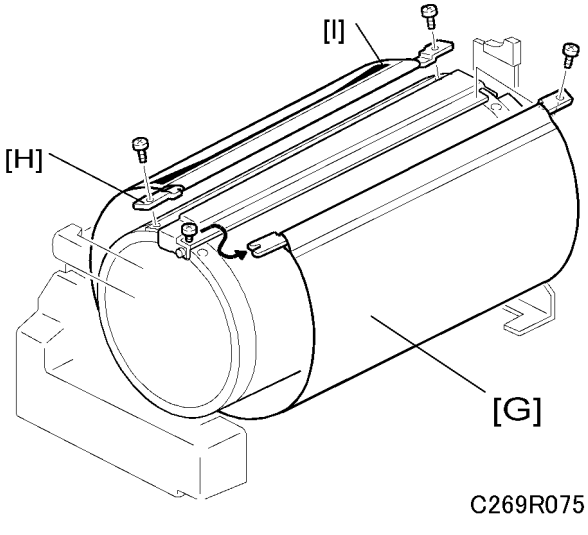


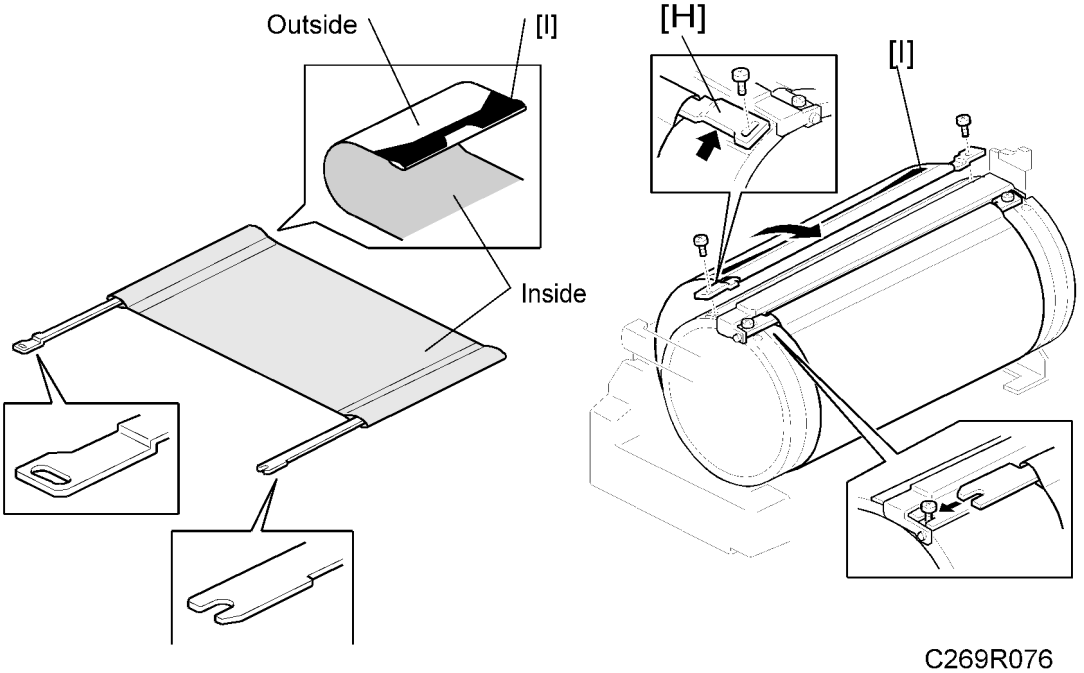
C269R074

- [D]: Front bracket (x 1)
- [E]: Front inner bracket (x 1)



2. Loosen the stopper [F]. Then turn the drum until the clamper unit is positioned on the top of the drum.





3. Remove the drum screen [G] (x 4)

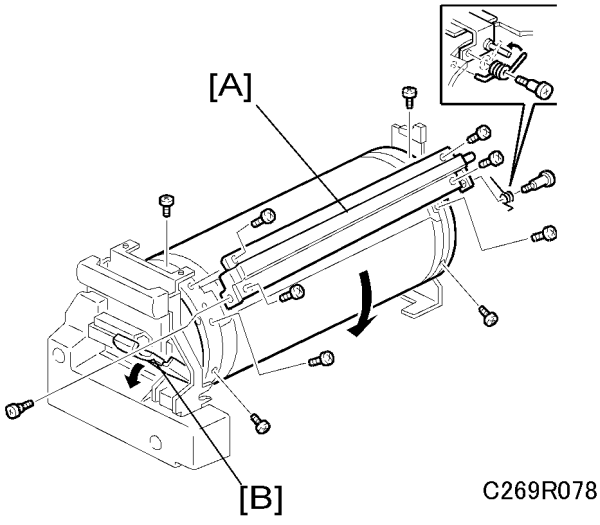
CAUTION

- Do not scratch the cloth screen or metal screen.
- When replacing the cloth screen, spread the screen around the metal screen while strongly pulling the stay [H]. Adjust the stay so that it is parallel to the master clamper, then tighten the screws.
- When installing the new screen, the black sensor patch [I] must be to the left of the master clamper. (Position the clamper on the top of the drum, and view from the operation side - refer to the illustration above right.)
- Make sure that the correct side of the screen is facing up. (Refer to the illustration above left.)
- Make sure that the stays for securing the cloth screen are positioned correctly. (Refer to the illustration above right)

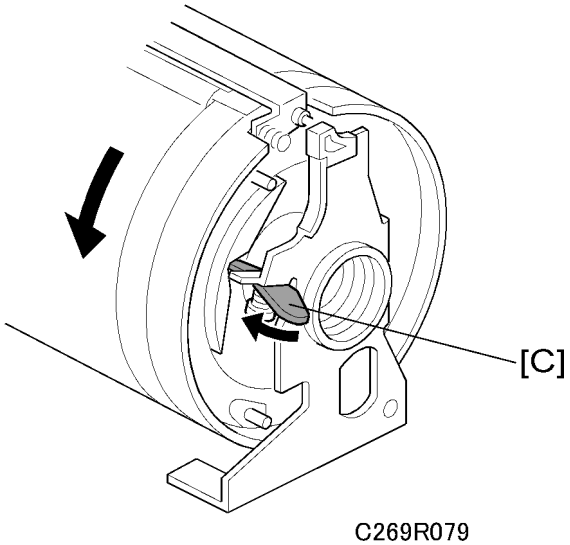
Note

- After you install a new cloth screen, reset the counter for this part with SP 3-004-1.

Drum Master Clamper, Metal Screen



C269R078



C269R079

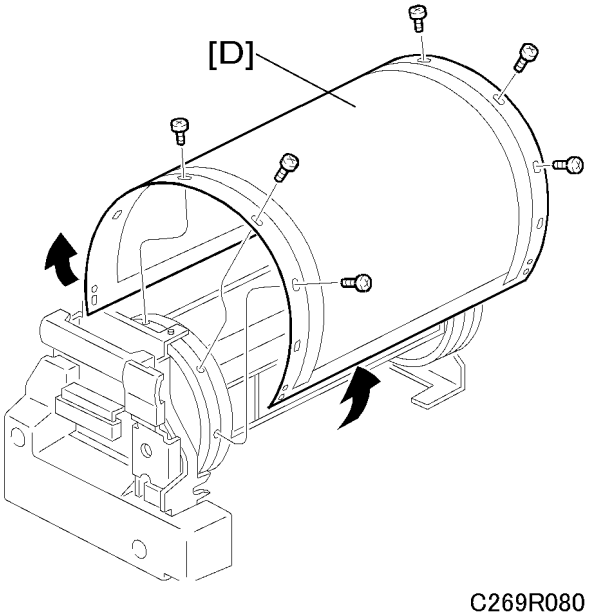
Remove these parts:

- Drum cloth screen (☛ 'Drum Cloth Screen')
- [A]: Drum clamper (x 2)

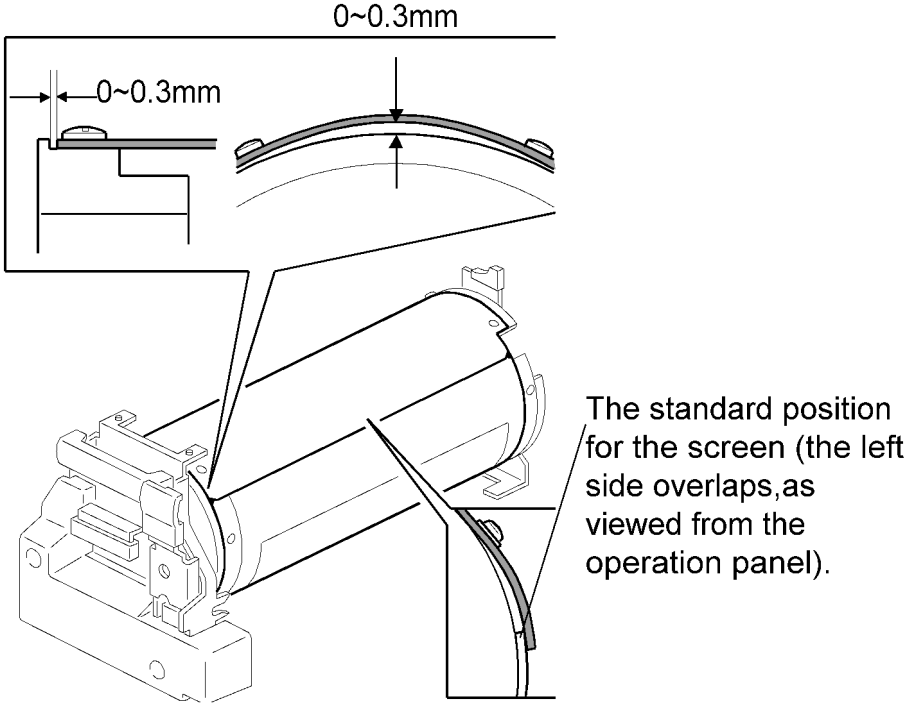
Note

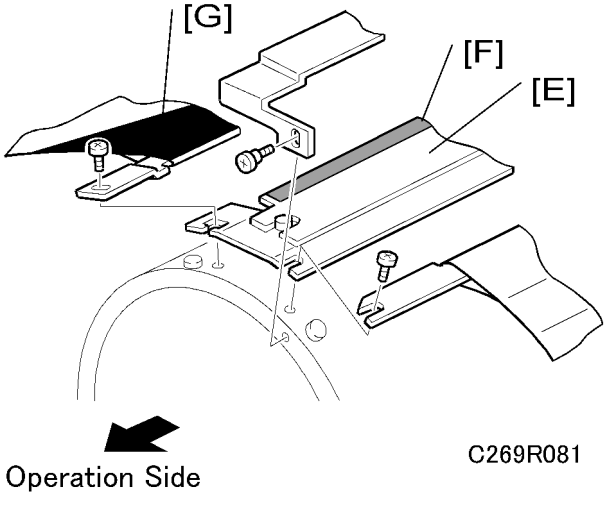
- To remove the drum clamper screw on the operation side, turn the drum into the position shown in the first diagram and pull out the lever [B]. To rotate the drum, release the stopper [C] on the rear of the drum.

- When replacing the drum clamper, install the spring on the opposite side as shown in the illustration.
- Do not put the drum unit upside down. However, if you must put it upside down, wipe off the ink around the ink roller first (use SP2-002-1, select OFF, and feed paper until ink ends). After you complete your work on the machine, make sure to return SP2-002-1 to its default (ink detection ON).



- [D]: Metal screen (x 12)





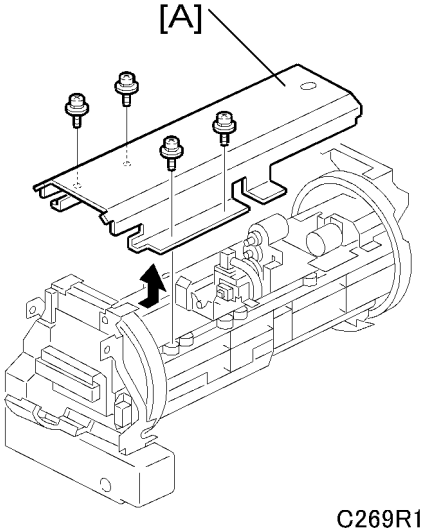
⚠CAUTION

- Do not scratch the cloth screen or metal screen.
- Make sure that the correct end of the metal screen is overlapping. (Refer to the upper part of the illustration.)

- When attaching the metal screen to the drum flanges, wrap it so that the gap is correct. (Refer to the upper part of the illustration.)
- When installing the master clamper [E], make sure that it is the correct way around. The side with the sandpaper [F] must be facing the black patch [G].
- Do not allow the inside of the master clamper to become dirty with ink. If it is dirty with ink, the master may slip off and the image position on the prints will move toward the trailing edge of the print during a printing run.
- Use a cloth dampened with water to clean the inside of the master clamper. Do not use alcohol or other solvents. The clamping force of the magnet will be weakened.

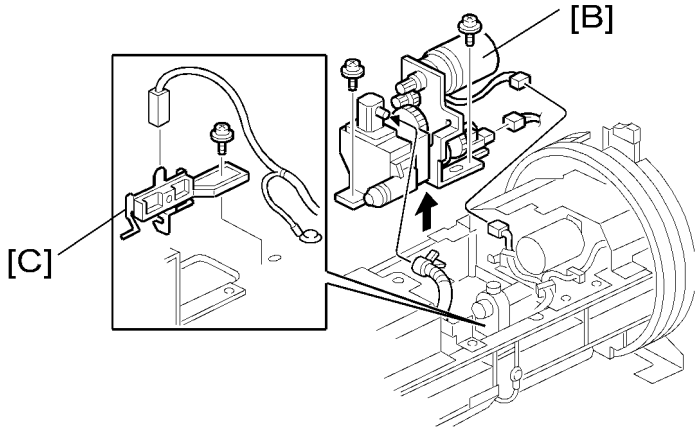
Motors and Sensors in the Drum

1. Remove these parts
   - Drum cloth screen (☛ 'Drum Cloth Screen')
   - Drum clamper (☛ 'Drum Master Clamper, Metal Screen')
   - Metal screen (☛ 'Drum Master Clamper, Metal Screen')
2. Pull out the ink cartridge holder.
3. Remove these parts:



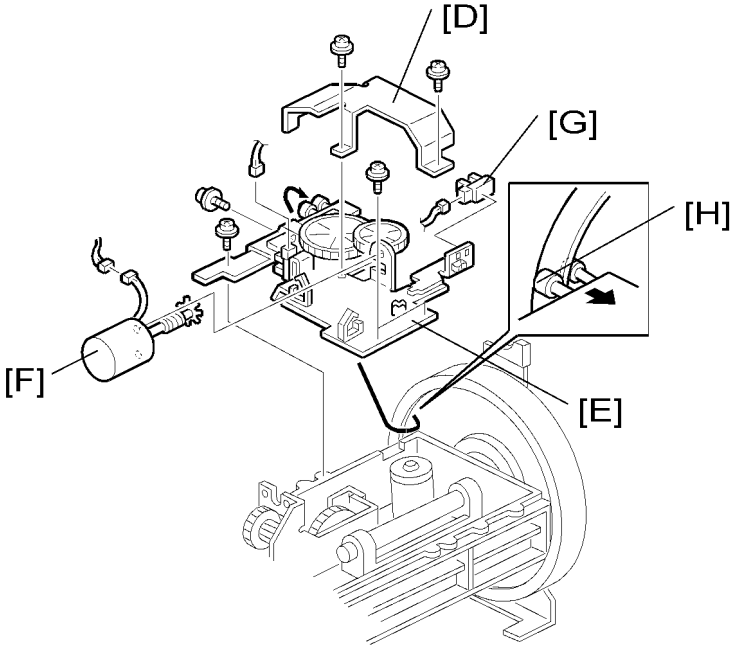
C269R190

- [A]: Ink cartridge cover (🖉 x 4)



C269R085

- [B]: Ink pump unit (x 3, x 1)
- [C]: Ink detection pin (x 1, x 1)

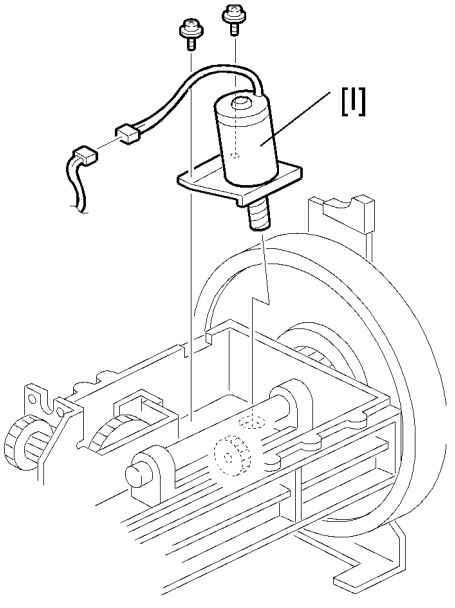


C269R084

- [D]: Drum shift motor cover (x 2)
- [E]: Drum shift motor unit (x 4, x 4)
- [F]: Drum shift motor
- [G]: Drum shift HP sensor

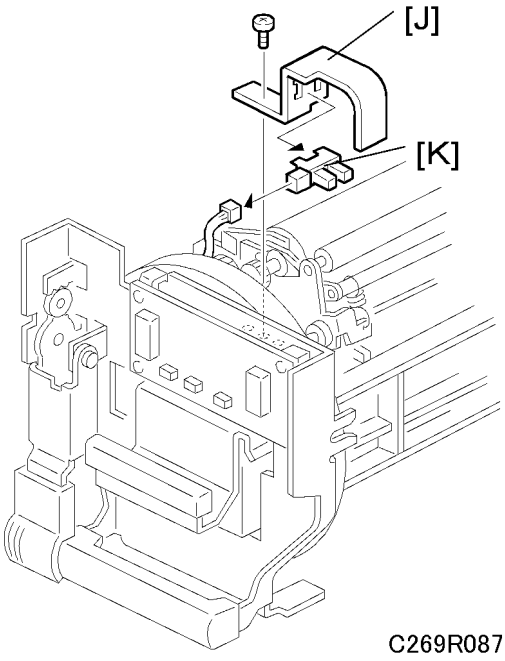
Note

- When reinstalling the drum shift motor unit, insert the bearings [H] into the drum flange edge, as shown.



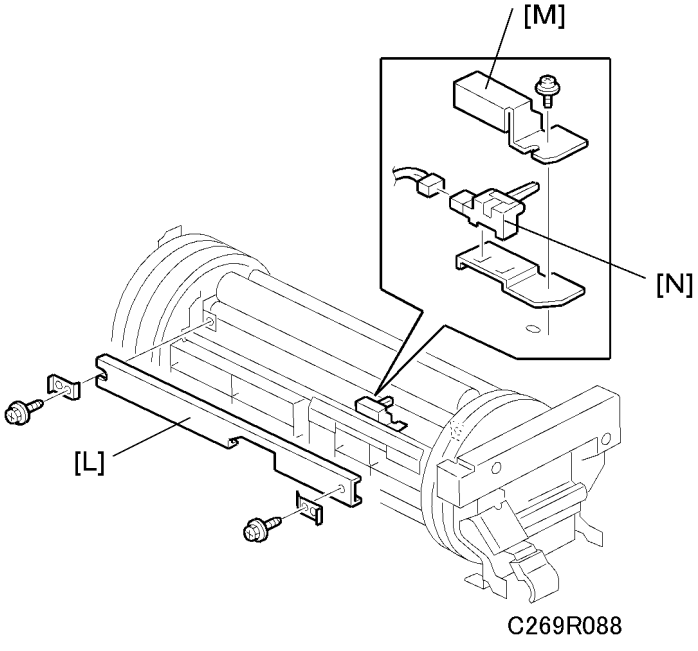
C269R086

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



C269R087

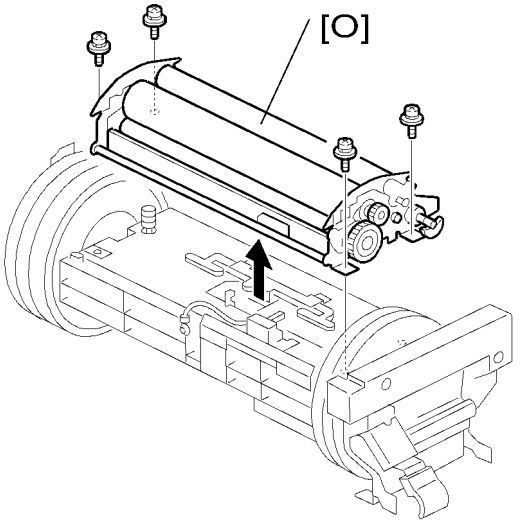
- [J]: Sensor bracket (x 1)
- [K]: Idling roller HP sensor (x 1)



C269R088

- [L]: Ink supply roller cover (x 2)

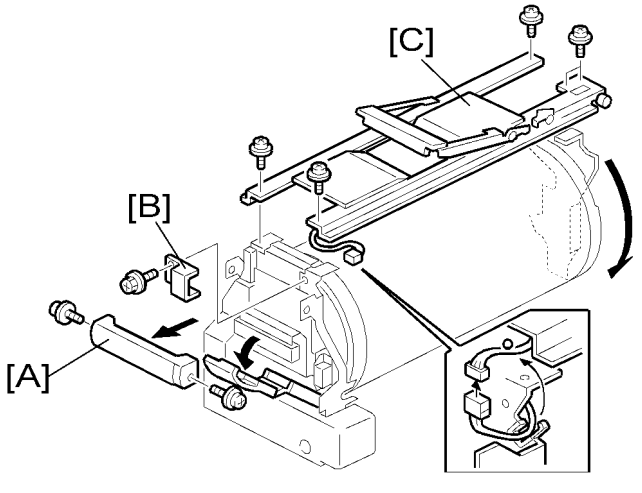
- [M]: Sensor bracket (x 1)
- [N]: Ink flow sensor (x 1)



C269R165

- [O]: Ink supply roller unit (x 4)

Ink ID Detection/Ink Flow Sensor Connector

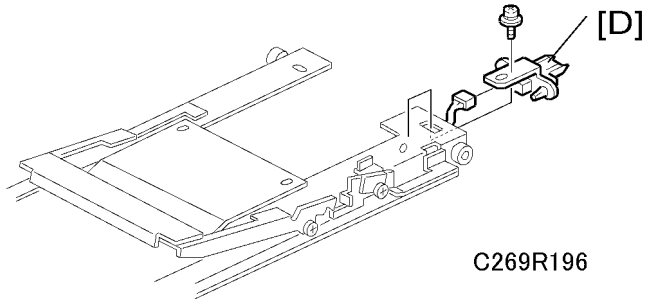


C269R073

Remove these parts:

- [A]: Drum release grip (x 2)

- [B]: Connector cover (x 1)
- [C]: Drum handle (x 5, x 1)



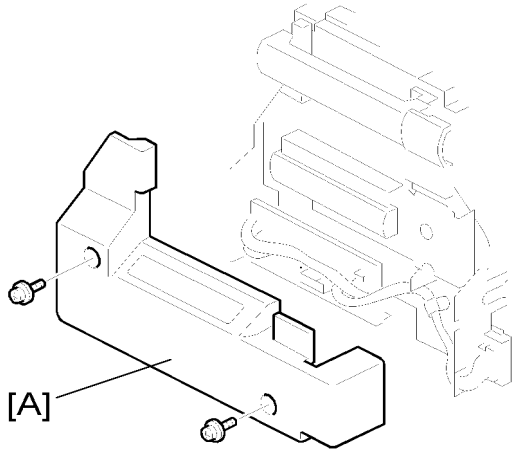
C269R196

- [D]: Ink ID detection/Ink flow sensor connector (x 1, x 1)

Ink Roller Gap Adjustment

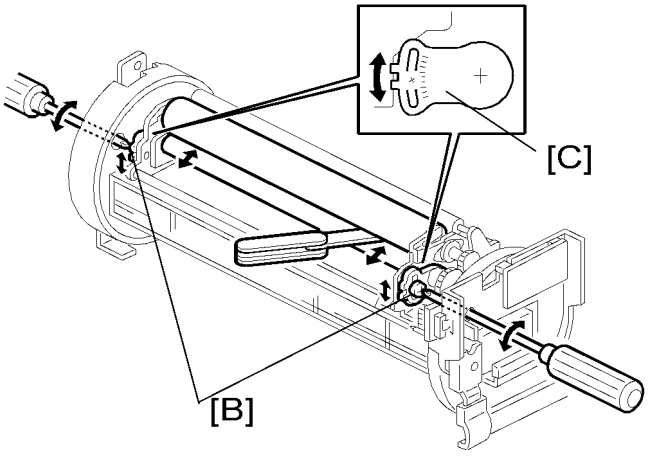
Purpose: To ensure that ink on the ink roller spreads evenly on the drum screen.

1. Take out the drum unit from the machine.



C269R607

2. Remove the drum front cover [A] (x 2).
3. Remove the drum cloth and metal screens from the drum unit. (☛ 'Drum Master Clamper, Metal Screen')
4. Wipe off the ink around the ink roller and the doctor roller.



C269R089

5. Insert a 0.08-mm gap gauge between the doctor roller and the ink roller. Then, make sure that a 0.1-mm gauge cannot pass through the gap.

Note

- Check the gap at the left, center, and right.

6. If the gap is not correct, loosen the screws [B] on both sides and adjust the gap by turning the eccentric bushings [C] at each side.

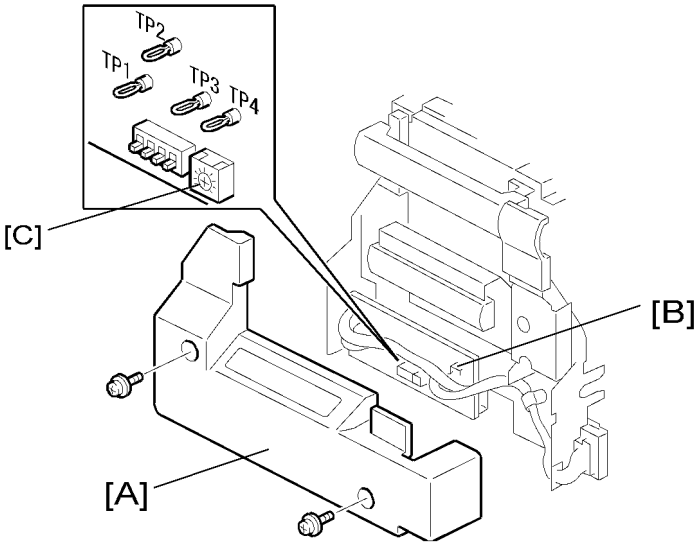
Ink Detection Adjustment

Using an Oscilloscope

Purpose: To ensure correct detection of a no-ink condition when all the ink has been consumed.

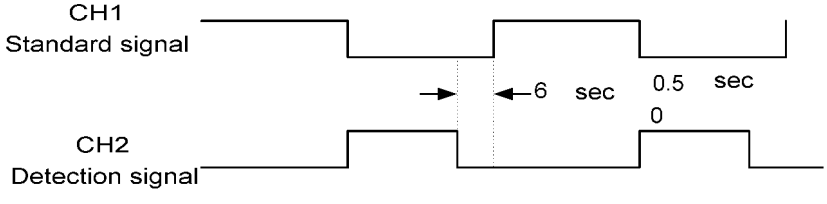
⚠CAUTION

- Before you do this procedure, be sure to remove the ink around the ink roller. To do this, set SP2-002-1 (ink detection) to OFF, and then feed paper until the ink reaches the end condition. After you complete the following procedure, make sure to return SP2-002-1 to its default (ink detection ON).



C269R090

1. Remove the drum front cover [A]. (x 2)
2. Connect the probes and grounding lead of an oscilloscope to the following points on the ink detection board [B]:
   - Probe CH1 to TP1
   - Probe CH2 to TP2
   - Grounding lead to TP3 and TP4
3. Select the 5 µs range.
4. Turn on the main switch.
5. Make sure that the waveform is as shown in the top half of the following diagram when the ink detection pin is not in contact with the ink.



C269R072

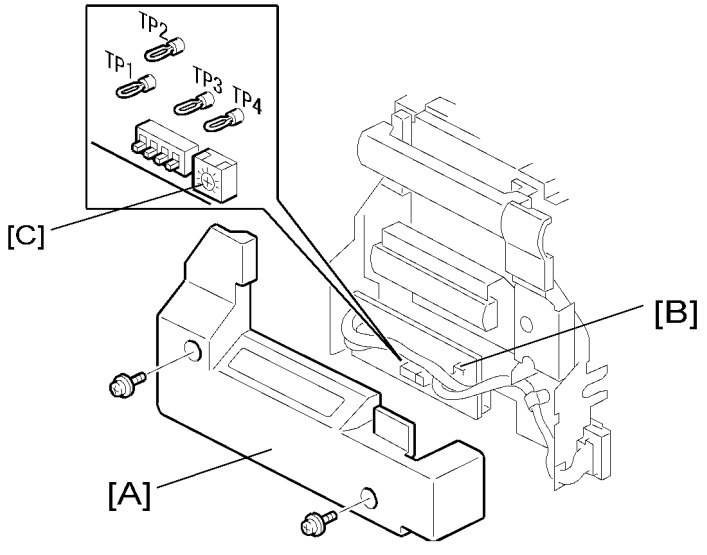
6. If incorrect, adjust the standard signal by turning VR901 [C] on the ink detection board.

Simple Method (SP6-008-1)

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

⚠CAUTION

- Before attempting this procedure, wipe off the ink around the ink roller. To do this, set SP2-002-1 (Ink Detection) to OFF, and feed paper until ink ends.
- This adjustment is required every time the MPU has been replaced.
- Normally, the simple method is sufficient. But, the oscilloscope method is more accurate. Use the oscilloscope method if you cannot adjust the sensor to the required value with the simple method, or if ink flooding problems occur after adjustment with the simple method.



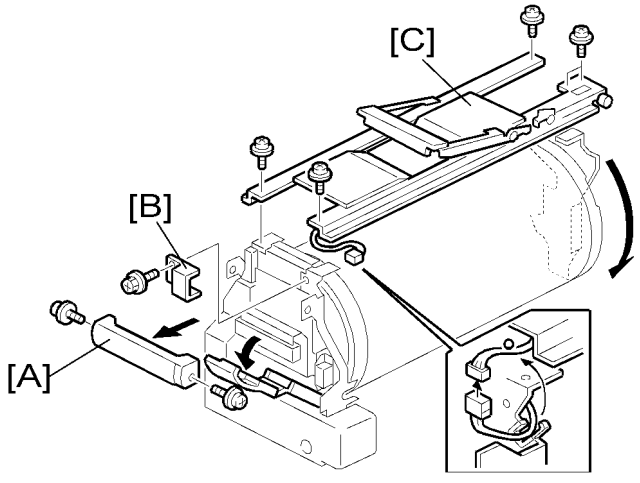
C269R090

1. Access SP6-008-1 and check if the value is "6.0µ" or not.
2. Remove the drum front cover [A], if the value is not "6.0µ". (🔩 x 2)
3. Turn VR901 [C] on board [B] until the display shows "6.0µ".
4. Set SP2-002-1 (ink detection) to ON.

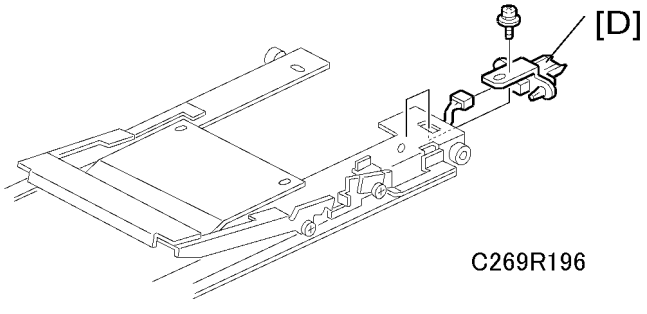
Note

- If the simple method gives an inaccurate result, 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.
- If you turn VR901 in the clockwise direction fully, the machine always detects 'ink present'. (The machine will not provide ink when it should do so.)
- If you turn VR901 in the anticlockwise direction fully, the machine always detects 'no ink'. (The machine will always supply ink, even when not necessary.)

Ink ID Detection Connector



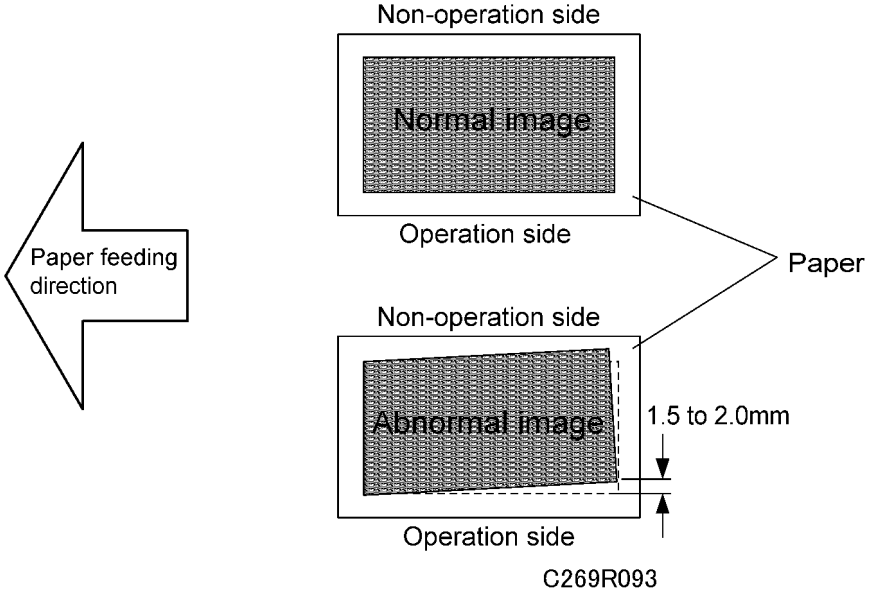
1. Remove the handle on the front of the drum [A]. (x 2)
2. Remove the connector cover [B]. (x 1)
3. Remove the drum guide cover [C]. (x 5, x 1)



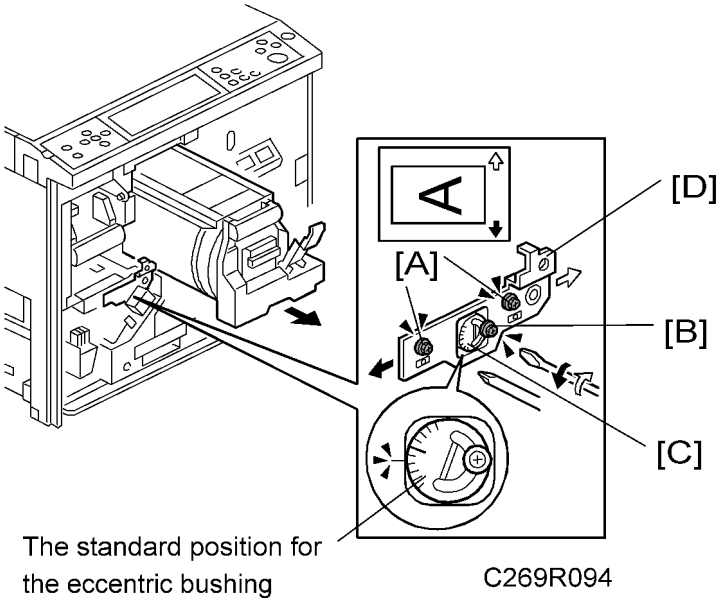
1. Remove the ink ID detection connector [D]. (x 1, x 1)

Drum Position Adjustment

Purpose: To prevent the back edge of the master from coming 1.5 to 2.0 mm closer on the non-operation side during printing, which causes the image to turn obliquely on the paper.



C269R093



C269R094

1. Loosen the three screws [A] [B].
2. Turn the eccentric bushing [C], if the back edge of the master comes close to the non-operation side.

Note

- The default is 1.5 graduations below the long line.
- As a rough guide, if the edges moved to the non-operation side by 1.0 mm, turn the eccentric bushing [C] counterclockwise one graduation.

- Please check the machine after adjusting, because the effect of moving the bushing by one graduation differs for each machine. To do this, print about 1000 sheets and compare the 10th sheet with the 1000th sheet.

3. Tighten the screw [B].
4. Shift the drum position plate [D] in the paper table direction (to the right) and tighten the two screws [A].

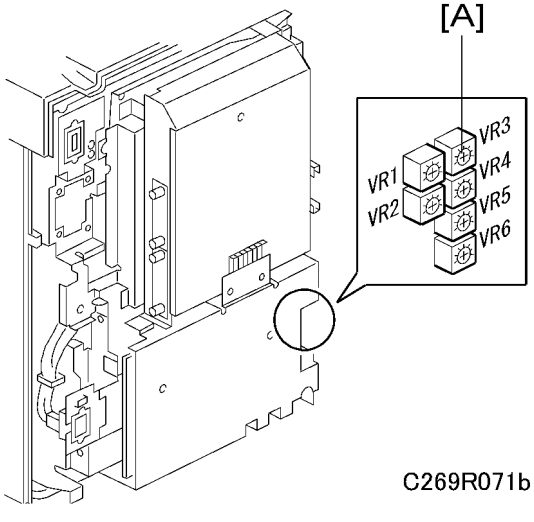
1st Drum Master Sensor Adjustment

Purpose: To ensure that the sensor detects the master properly.

Standard: 1.0 to 1.2 volts

⚠CAUTION

- The sensor adjustment is required in the following cases:
  - After the sensor is replaced.
  - After the I/O board is replaced.
- While adjusting, make sure to attach all exterior covers to avoid external light.
- Do not turn the VRs excessively.
- If the sensor is dirty, clean or replace it.
- For how to access SP mode, refer to the Service Program Mode section. (☛ 'Service Tables – Service Program Mode')



- Rear Cover (☛ 'Covers – Left Cover')

1. Remove the master that is wrapped around the drum, and install the drum in the main body.

2. Turn on the main switch, then access SP6-004-5 (Sensor Voltage and Threshold Adjustment for 1st drum master sensor).
3. The sensor input voltage is displayed on the operation panel. Turn VR3 [1] on the I/O board until the value is between 1.0 and 1.2 volts.
4. Set SP2-006-8 (Make master without printing) to 'On'. Then press the "Start" key while holding down the "•/×" key. This wraps a blank master around the drum.
5. Access SP6-004-5 (Sensor Voltage and Threshold Adjustment for 1st drum master sensor).
6. The sensor input voltage is displayed on the operation panel. Check if it is 3.0 volts or more.
7. If the sensor input voltage is 3.0 volts or more, adjustment is completed.
8. If the sensor input voltage is less than 3.0 volts, adjust VR3 until the sensor input voltage is 3.0 volts or more
9. Leave the SP mode.

2nd Drum Master Sensor Adjustment

Purpose: To ensure that the sensor detects the master properly.

Standard: 1.0 to 1.2 volts

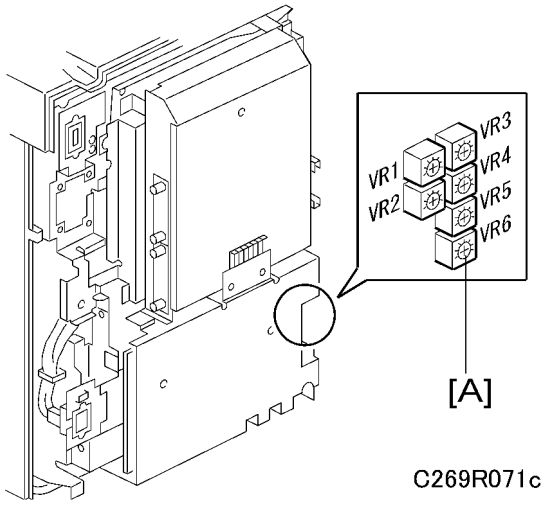
⚠CAUTION

- The sensor adjustment is required in the following cases:
  - After the sensor is replaced.
  - After the I/O board is replaced.
- While adjusting, make sure to attach all exterior covers to avoid external light.
- Do not turn the VRs excessively.
- If the sensor is dirty, clean or replace it.
- For how to access SP mode, refer to the Service Program Mode section. (☛ 'Service Tables – Service Program Mode')
- Rear Cover (☛ 'Covers – Left Cover')

1. Remove the master that is wrapped around the drum, and install the drum in the main body.
2. Turn on the main switch, then access SP6-004-6 (Sensor Voltage and Threshold Adjustment for 2nd drum master sensor).
3. Press the Start key to rotate the drum to the adjustment position.

⚠CAUTION

- The drum will rotate back to home position after you leave SP6-004-6.

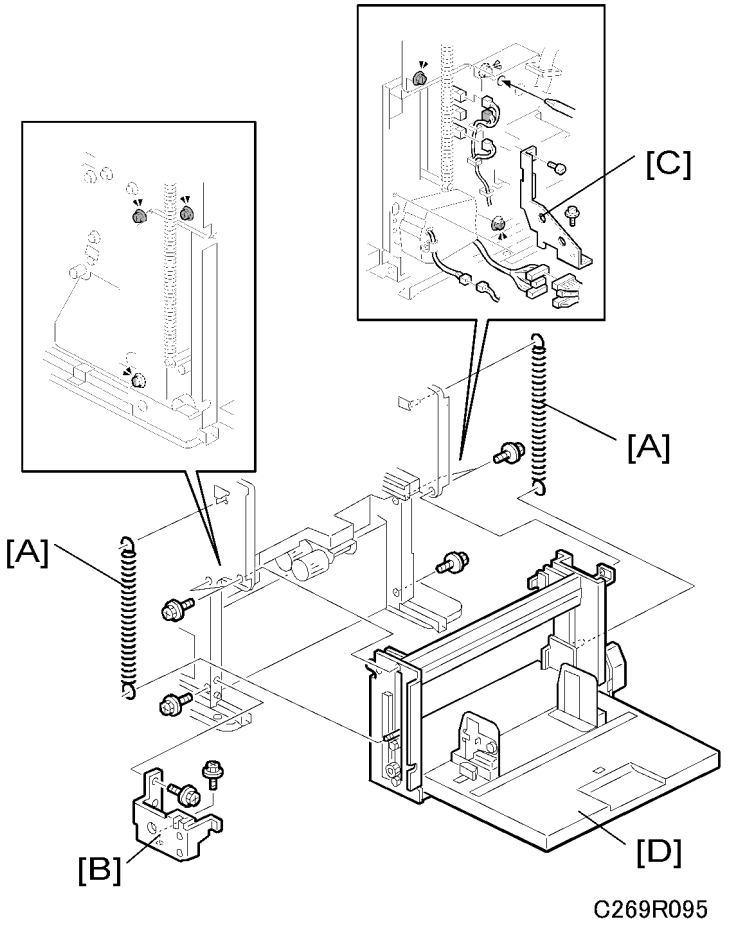


C269R071c

4. The sensor input voltage is displayed on the operation panel. Turn VR6 [A] on the I/O board counter clockwise as far as possible (minimum output)
5. Turn VR6 [A] on the I/O board clockwise until the value is between 1.0 and 1.2 volts.
6. Set SP2-006-8 (Make master without printing) to 'On'. Then press the "Start" key while holding down the "*/#" key. This wraps a blank master around the drum.
7. Access SP6-004-6 (Sensor Voltage and Threshold Adjustment for 2nd drum master sensor).
8. The sensor input voltage is displayed on the operation panel. Check if it is 3.0 volts or more.
9. If the sensor input voltage is 3.0 volts or more, adjustment is completed.
10. If the sensor input voltage is less than 3.0 volts, adjust VR6 until the sensor input voltage is 3.0 volts or more
11. Leave the SP mode.

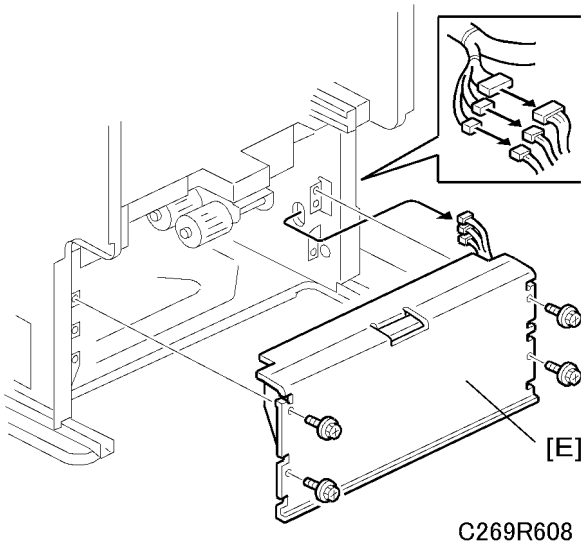
Paper Feed Section

Paper Table Unit, Paper Feed Assembly



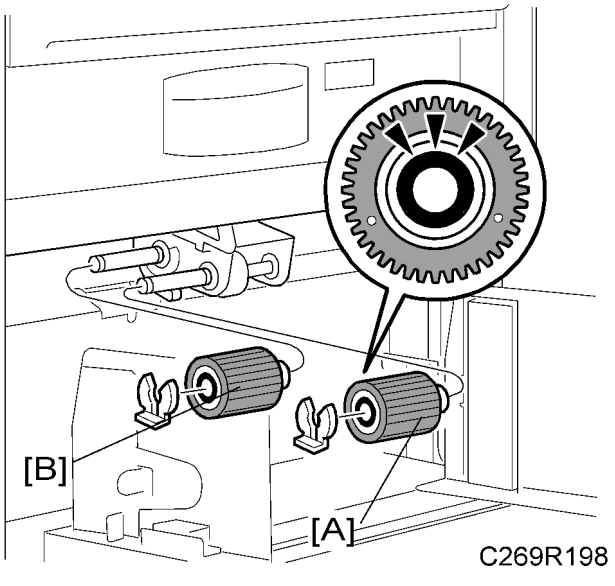
1. Remove these parts:
    - Front cover, Knob cover, Inner cover (☛ 'Covers – Front Cover')
    - Rear cover, Right rear cover, Right front cover (☛ 'Covers – Left Cover')
2. Open out the ACU - ECU assembly (☛ 'Boards – ACU, ECU, PSU Opening Procedure')
3. Remove these parts:
    - [A]: Springs
    - [B]: Front bracket (🔩 x 2)
    - [C]: Rear bracket (🔩 x 2)

- [D]: Paper table unit (x 6, x 7)



- [E]: Paper feed assembly (x 4, x 3)

Pick-Up Roller, Paper Feed Roller



Remove these parts:

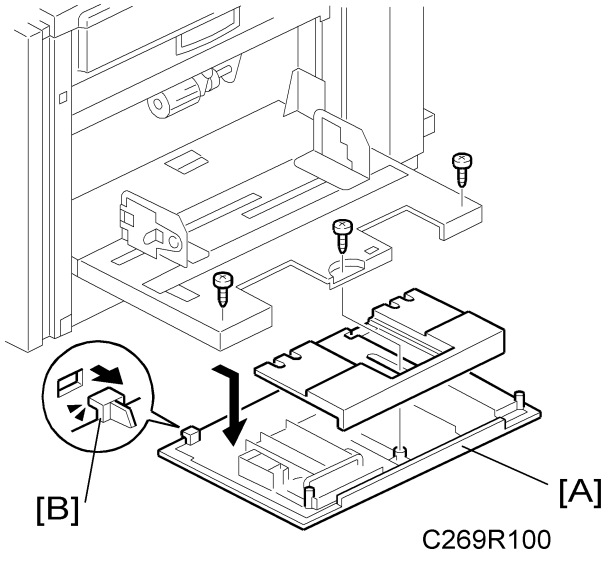
- [A]: Pick-up roller (x 1)
- [B]: Paper feed roller (x 1)

Note

- When you install the pick-up roller and the paper feed roller, position the one-way clutch correctly. (The clutch must point towards the front of the machine, as shown in the diagram.)
- After you install a new paper pick-up roller, reset the counter for this part with SP 3-004-3.
- After you install a new paper feed roller, reset the counter for this part with SP 3-004-4.

Paper Width Detection Board

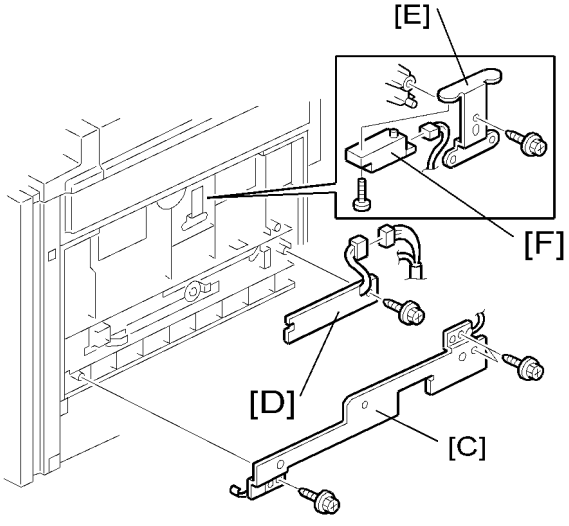
Remove these parts:



- [A] Paper table rear cover (x 3)

Note

- Carefully push out the two hooks [B] with a screwdriver.



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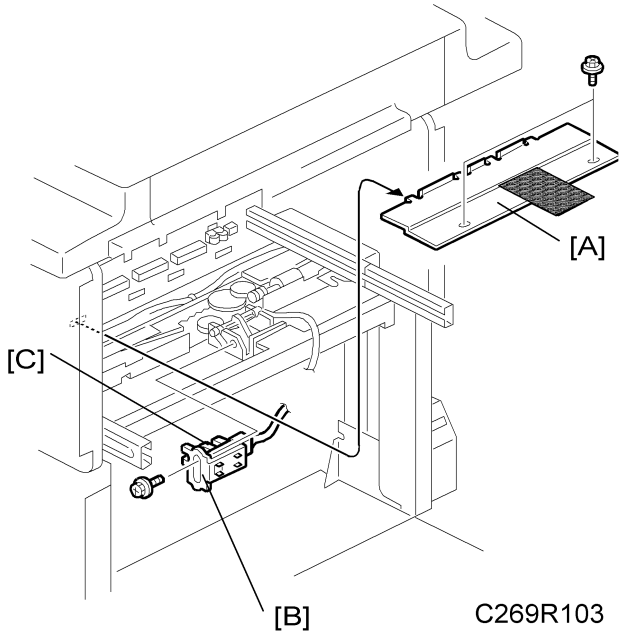
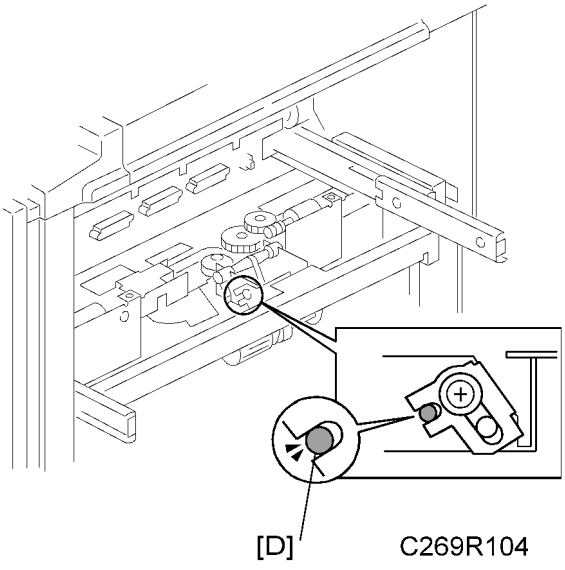
- [C] Paper width detection board bracket (x 3)
- [D]Paper width detection board (x 1, x 1)
- [E] Paper length sensor bracket (x 1)
- [F]: Paper length sensor (x 1, x 1)

Paper Height Sensor



Remove these parts:

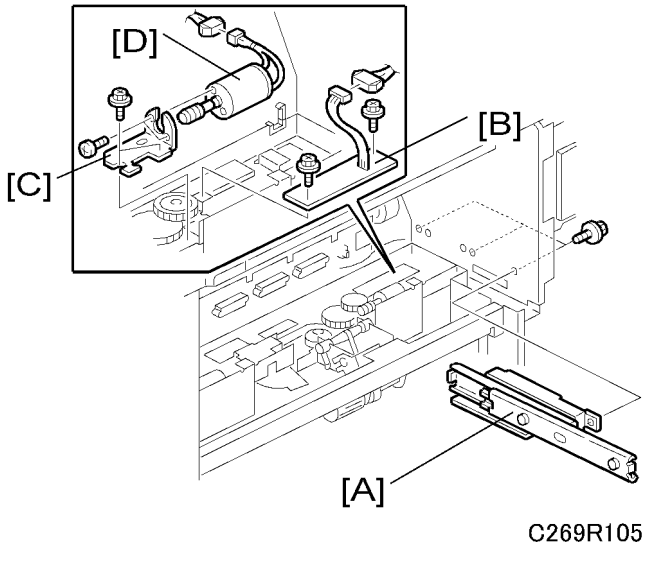
- Master making unit (☛'Master Feed - Master Making Unit')
- [A]: Feed cover (x 2)
- [B]: Paper height sensor bracket (x 1, x 1)
- [C]: Paper height sensor



Note

- When you install the paper height sensor bracket, make sure that the small hole in the stay [D] is in the line with the cutout in the bracket, as shown.

Feed Pressure Motor, Feed Pressure Detection Board

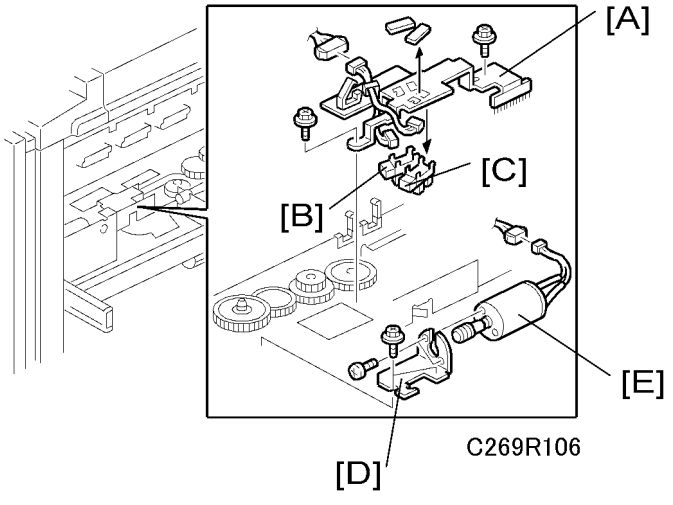


1. Remove these parts:
    - Master making unit (☛ 'Master Feed - Master Making Unit')

- Feed cover (☛ 'Paper Height Sensor')

2. Open out the ACU - ECU assembly (☛ 'Boards – ACU, ECU, PSU Opening Procedure')
3. Remove these parts:
   - Double feed detector board (☛ 'Boards – Double Feed Detector Board')
   - [A]: Rear rail bracket (x 3)
   - [B]: Feed pressure detection board (x 2, x 1)
   - [C]: Feed pressure motor bracket (x 2, x 1)
   - [D]: Feed pressure motor (x 2)

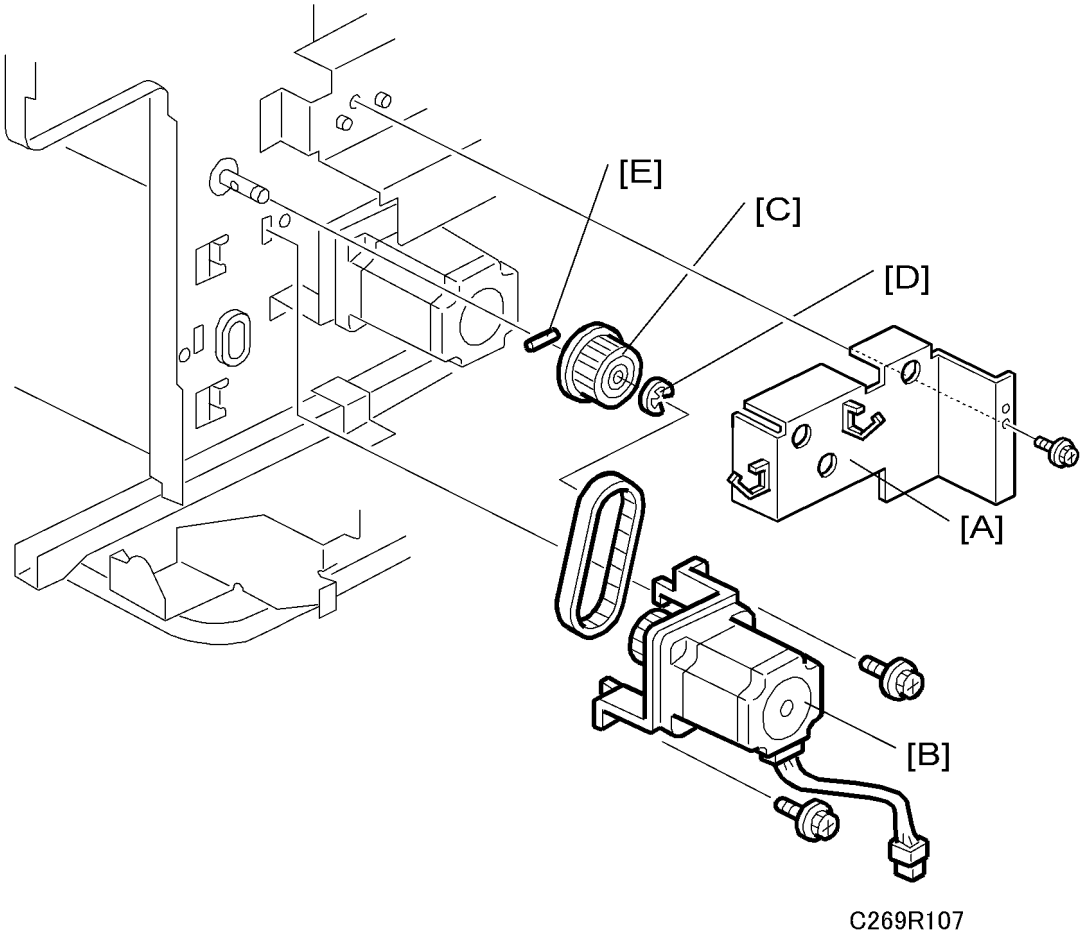
Registration Pressure Motor, Registration Roller Press Sensor, Registration Roller Release Sensor



Remove these parts:

- Master making unit (☛ 'Master Feed - Master Making Unit')
- Feed cover (☛ 'Paper Height Sensor')
- [A]: Registration roller sensor bracket (x 2, x 1)
- [B]: Registration roller press sensor (x 1)
- [C]: Registration roller release sensor (x 1)
- [D]: Registration pressure motor bracket (x 2, x 1)
- [E]: Registration pressure motor (x 2)

Paper Registration Sensor, Paper Feed Timing Sensor



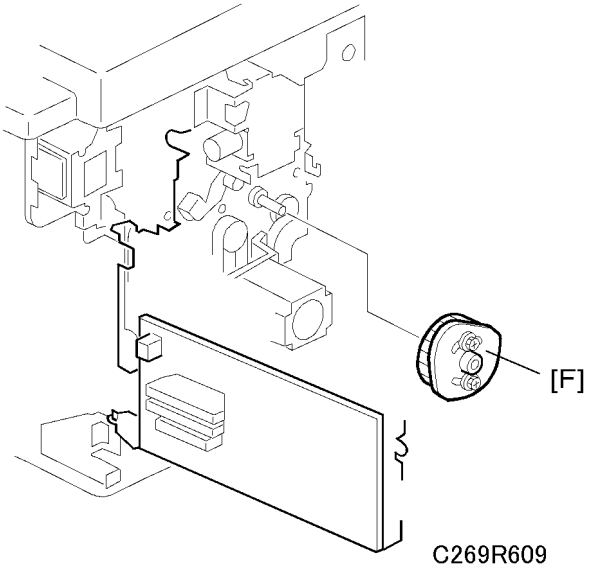
Remove these parts:

- Rear cover, Right rear cover (☛ 'Covers – Left Cover')
- Master making unit (☛ 'Master Feed - Master Making Unit')
- Feed cover (☛ 'Paper Height Sensor')
- Paper table unit (☛ 'Paper Table Unit')
- Paper feed assembly (☛ 'Paper Feed Assembly')

1. Open out the ACU - ECU assembly (☛ 'Boards – ACU, ECU, PSU Opening Procedure')
2. Remove these parts:
    - [A]: Motor cover (x 2)
    - [B]: Paper feed motor (x 2)
    - [C]: Pulley (x 1 [D])

Note

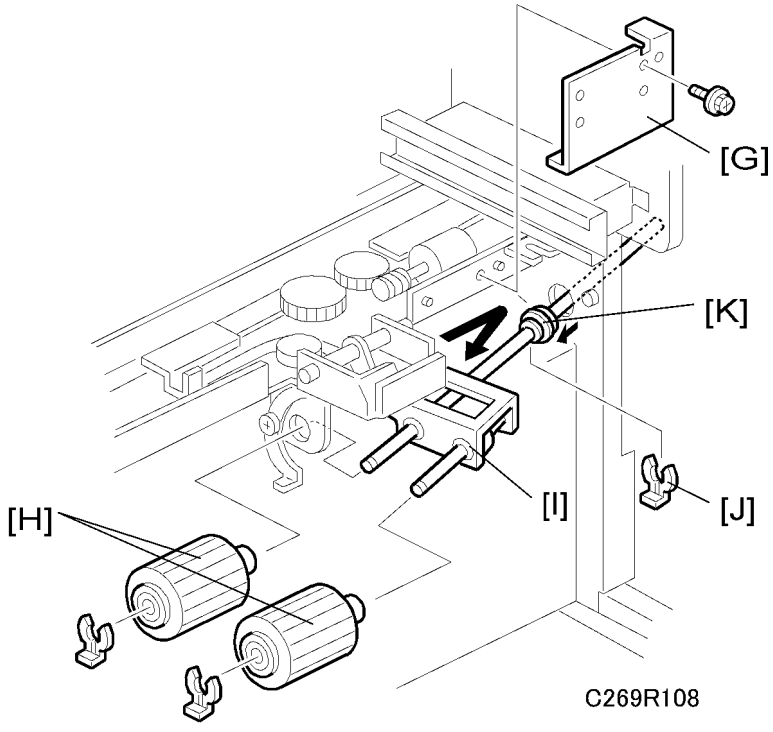
- Do not lose the key [E] from the pulley.



- [F]: Registration roller lifting cam

Note

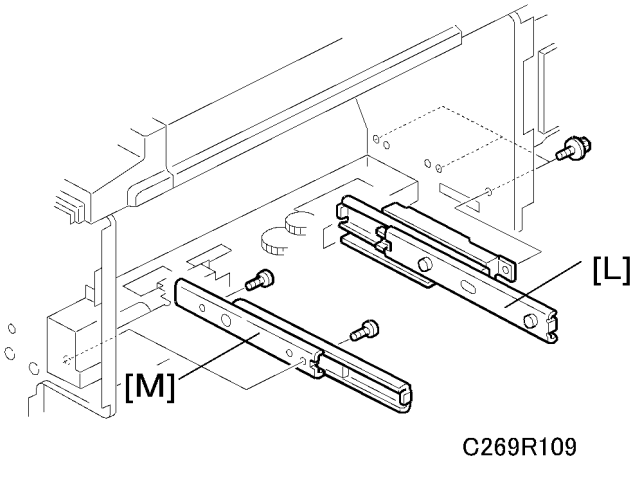
- There is a correct position for the cam. Because of this, when you reinstall the cam, do the registration roller lifting cam position adjustment. (☛ 'Registration Roller Lifting Cam Position Adjustment')



- [G]: Right paper guide plate (x 1)
- [H]: Rollers x 2 ((x 1 each)
- [I]: Paper feed roller unit (x 1 [J])

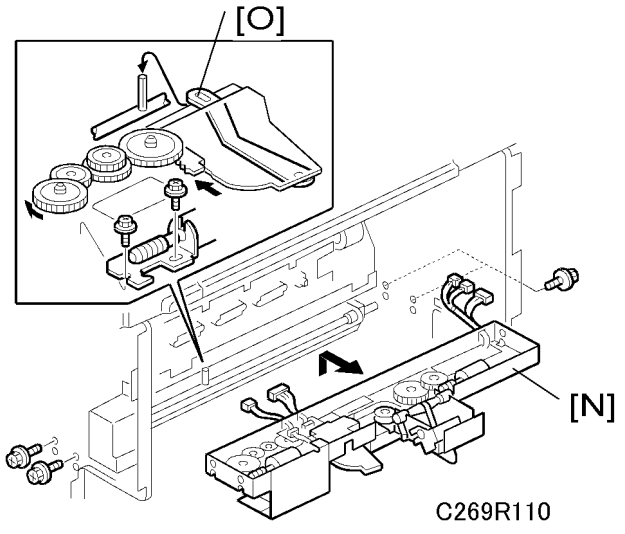
Note

- Slide the bushing [K] towards the operation side.



- Front cover, Inner cover, Knob cover (☛ 'Covers – Front Cover')

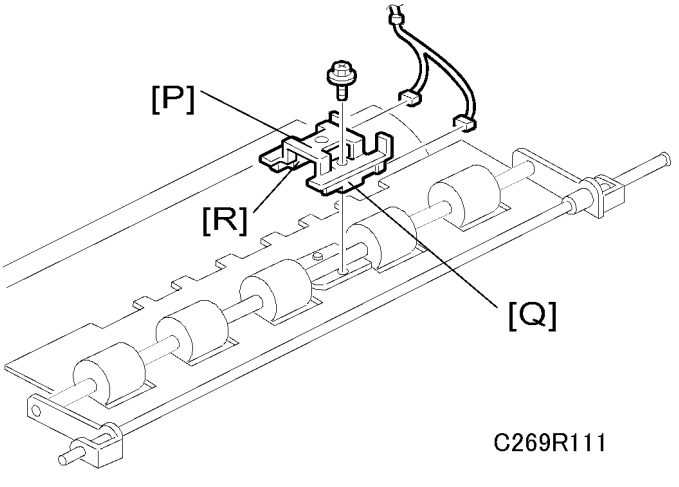
- [L]: Rear rail bracket (x 3)
- [M]: Front rail bracket (x 2)



[N]: Feed pressure unit (x 4, x 5)

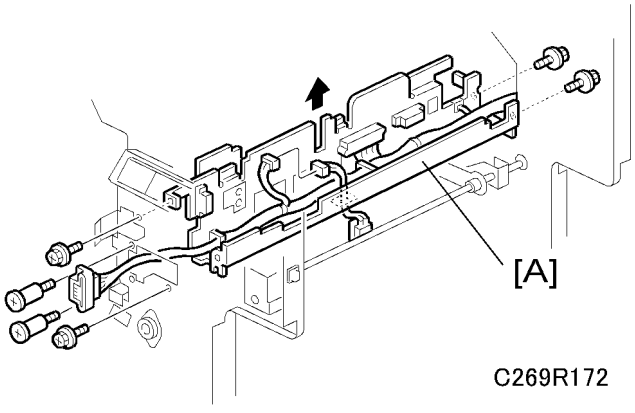
Note

- When tightening the feed pressure unit, pass the pin through the small hole in the lever [O], as shown.



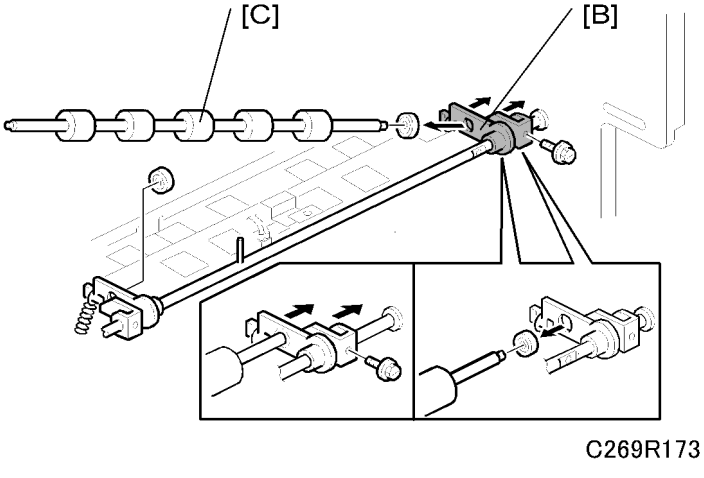
- [P]: Sensor bracket (x 1, x 2)
- [Q]: Paper registration sensor
- [R]: Paper feed timing sensor

Upper Registration Roller



Remove these parts:

- Paper registration sensor, Paper feed timing sensor (☛ 'Paper Registration Sensor, Paper Feed Timing Sensor')
- [A]: Upper stay (x 5, x 1)
  (Push up the upper stay.)

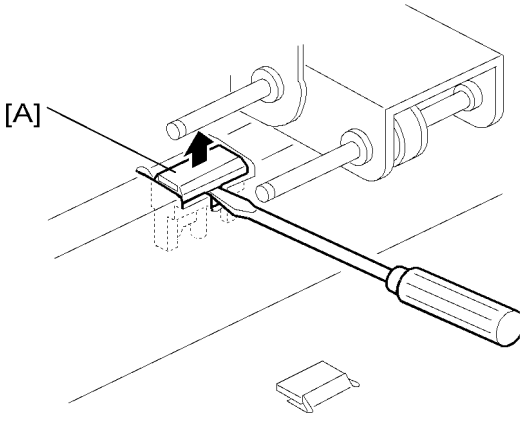


- [B]: Upper registration rear bracket

  Note

  - Slide the upper registration rear bracket [C] towards the non-operation side.
- [C]: Upper registration roller

Friction Pads



C269R117

Remove these parts:

- Pick-up roller, Paper feed roller (☛ 'Pick-up roller, Paper feed roller')
- [A]: Friction pad

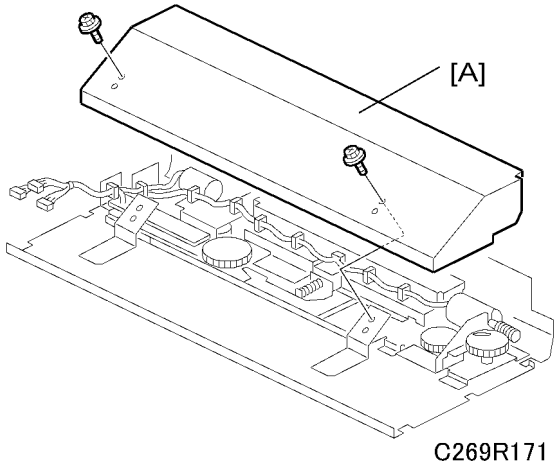
Note

- Friction pad A is the standard friction pad. It is black. Friction pad B is the 'special' friction pad. It is grey. If you cannot see the correct friction pad at [A] as shown above, use SP 5-042 to move the necessary pad to [A]. To move friction pad A to the replacement position, turn on the main switch, then access SP 5-042-1, and push the Start key. To move friction pad B to the replacement position, turn on the main switch, then access SP 5-042-2, and push the Start key.
- After you install a new friction pad, reset the PM counter:
- Friction pad A: SP3-004-5
- Friction pad B: SP3-004-6

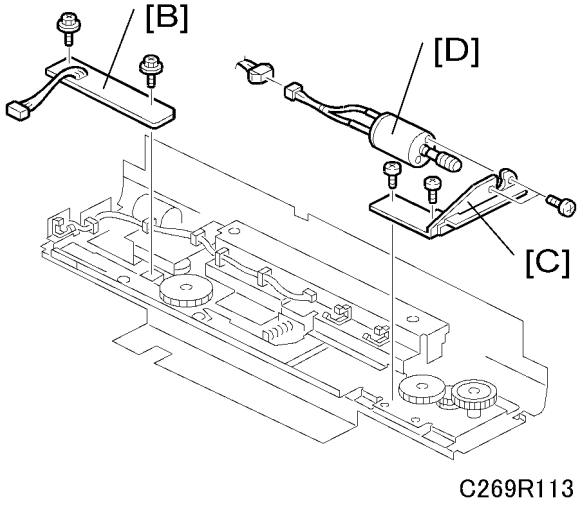
Separation Pressure Detection Board, Friction Pad Shift Motor

Remove these parts:

- Paper feed assembly (☛ 'Paper Table Unit')



- [A]: Friction pad unit cover (x 2)

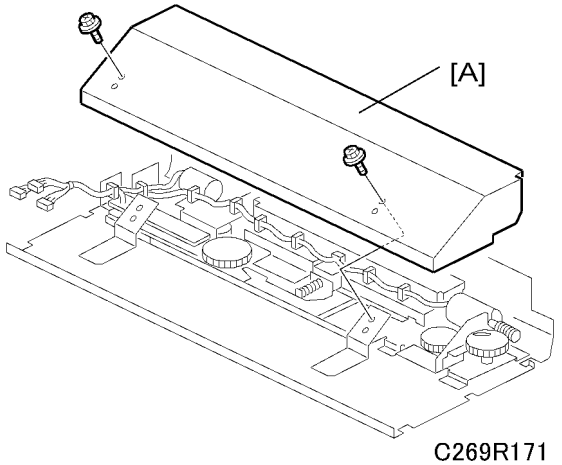


- [B]: Separation pressure detection board (x 2)
- [C]: Friction pad shift motor bracket (x 2, x 1)
- [D]: Friction pad shift motor (x 2)

Separation Pressure Motor, Friction Pad Position Sensors 1, 2

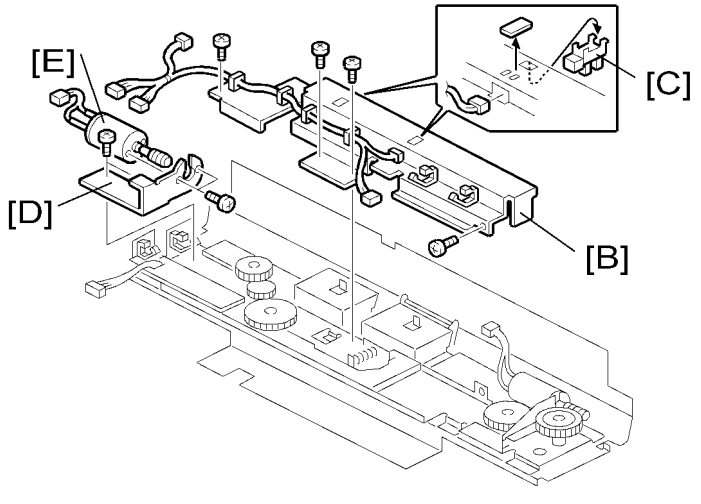
Remove these parts:

- Paper feed assembly (☛ 'Paper Table Unit')



C269R171

- [A]: Friction pad unit cover (x 2)



C269R114

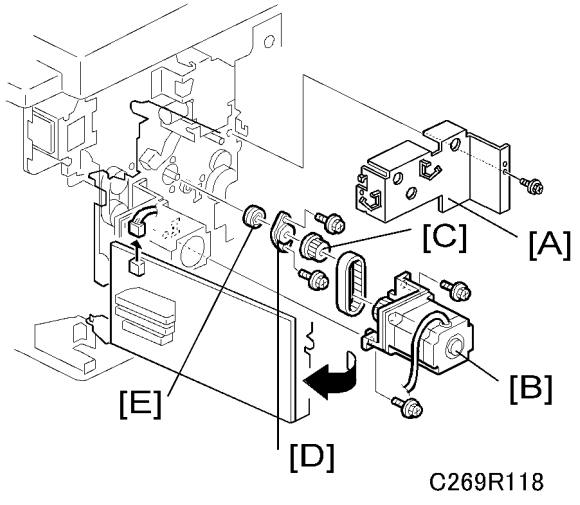
- [B]: Friction pad position sensor bracket (x 4, x 3)
- [C]: Friction pad position sensors 1, 2
- [D]: Separation pressure motor bracket (x 2, x 1)
- [E]: Separation pressure motor (x 2)

Lower Registration Roller

1. Remove these parts:
    - Front cover, Inner covers (☛ 'Covers – Front Cover')

- Rear cover (☛ 'Covers – Left Cover')

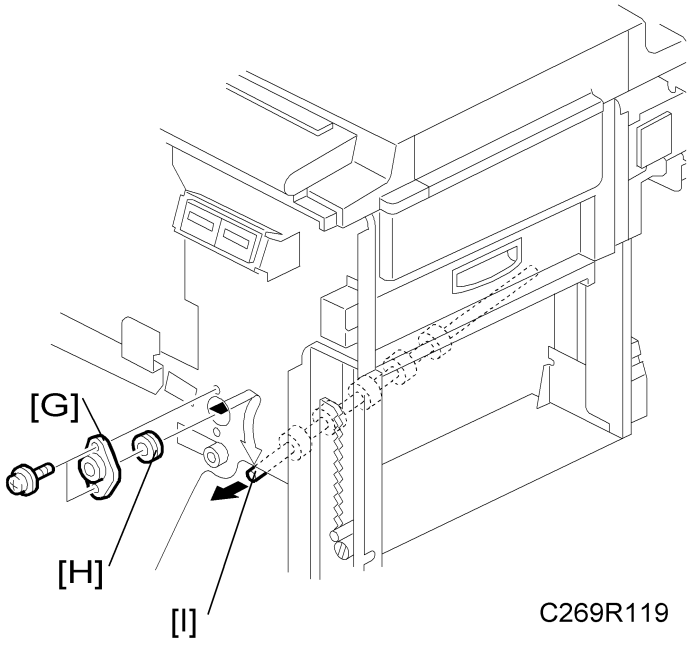
2. Open out the ACU - ECU assembly (☛ 'Boards – ACU, ECU, PSU Opening Procedure')



3. Remove these parts:
   - [A]: Pulley cover (x 1)

     Note

     - Take off the connector to remove the pulley cover.
   - [B]: Registration motor (x 2, x 1)
   - [C]: Pulley (Allen screw x 2)
   - [D]: Bearing holder (x 2)
   - [E]: Bearing



- [G]: Bearing holder (☞ x 2)
- [H]: Bearing
- [I]: Lower registration roller

Note

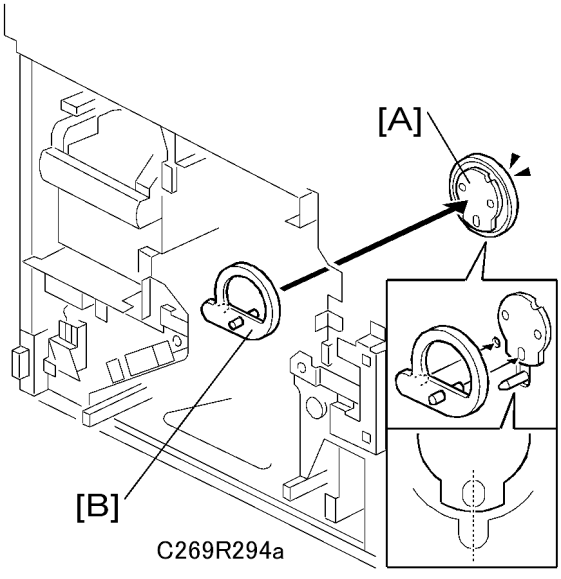
- Slide the lower registration roller [I] towards the operation side.

Registration Roller Lifting Cam Position Adjustment

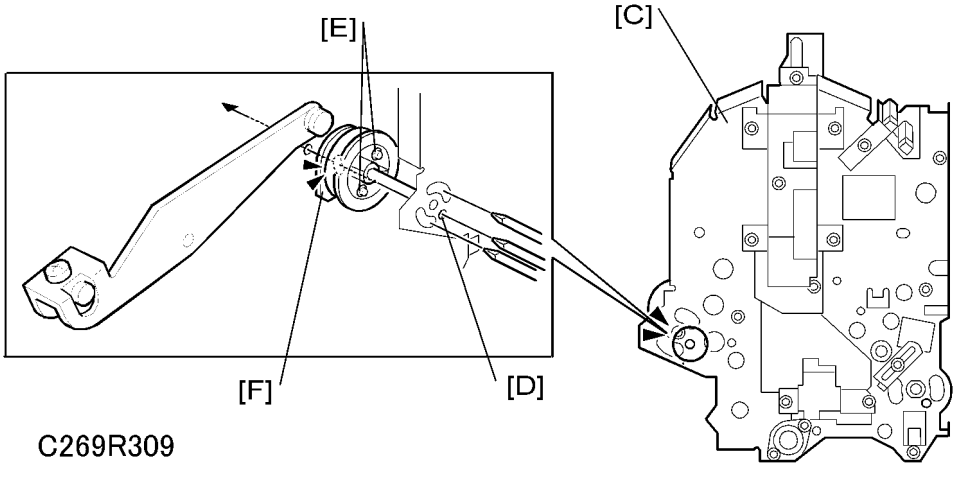
Purpose: To ensure smooth paper feed from the registration roller to the drum.

Note

- Make sure that the drum is at home position before the adjustment.



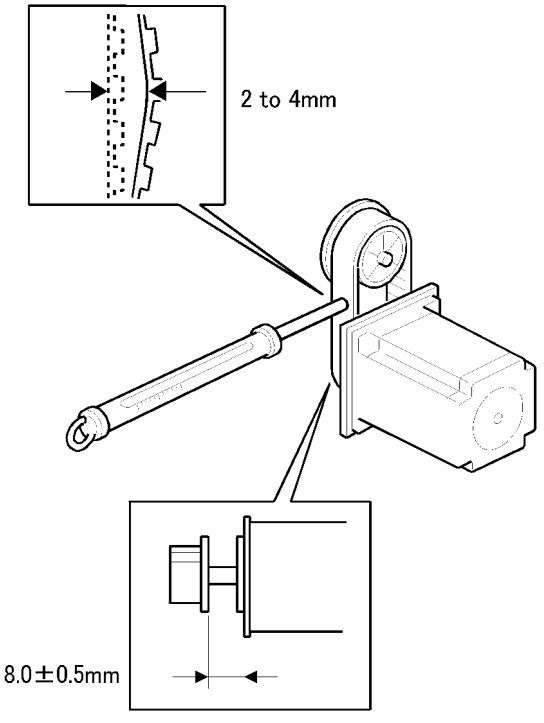
1. Take out the drum and set the drum home position bracket [B] on the drum drive disk [A].



2. Loosen the screws [E] on the registration roller lifting cam [F].
3. Align the hole [D] in the plate of the main drive unit [C] and the hole in the cam [F] and insert a screwdriver through these two holes.
4. Tighten the screws.

Timing Belt Tension Adjustment for the Paper Feed Motor

Purpose: To ensure smooth paper feed.

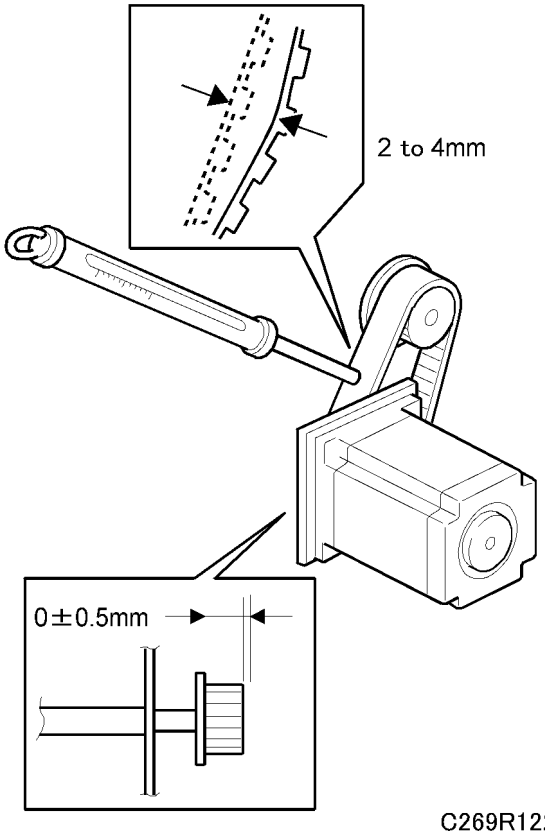


C269R121

1. Make sure that the distance between the motor and the flange is 8.0 ±0.5mm.
2. Apply a 500g load to the center of the belt using a tension gauge. Make sure that the belt deflects between 2 to 4 mm. If the tension is incorrect, move the motor up or down.

Timing Belt Tension Adjustment for the Registration Motor

Purpose: To ensure smooth paper feed.



C269R122

1. Make sure that the distance between the end of the lower registration roller shaft and the edge of the pulley is 0 ±0.5 mm.
2. Apply a 500g load to the center of the belt using a tension gauge. Make sure that the belt deflects between 2 to 4 mm. If the tension is correct, move the motor up or down.

Paper Feed and Separation Pressure Adjustment

Paper Feed Pressure Adjustment

Purpose: To ensure smooth paper feed from the paper table.

- The user has a choice of three different settings for the paper feed pressure (Standard, Frequent, Very Frequent). The user sets this between jobs depending on how often they think no-feed errors are occurring.
- The setting is returned to the default by pressing the Clear Modes key or turning the main switch off and back on. The default setting is "Standard".
- The pressure applied for each setting can be adjusted by SP mode.

1. Select SP mode "6-009-1", "6-009-2" and "6-009-3".

Note

- SP6-009-10, 11, 12 are for special paper types (basically for envelopes), SP6-009-1, 2, 3 are for standard paper types, and SP6-009-4, 5, 6 are for thick paper. If the user has programmed as User 1 or User 2, you can change the paper feed pressures with SP6-009-13, 14, 15 and SP6-009-16, 17, 18.

2. Change the settings as necessary.

- Defaults for SP6-009-1 (Standard): 3, SP6-009-2 (Frequent): 5, SP6-009-3 (Very Frequent): 6
- The available pressure levels are from 0 to 6. (0 is the weakest, 6 is the strongest.)

Paper Separation Pressure Adjustment

Purpose: To ensure paper separation.

- The user has a choice of three different settings for the separation pressure (Standard, Frequent, Very Frequent). The user sets this between jobs depending on how often they think multi-feed errors are occurring.
- The setting is returned to the default by pressing the Clear Modes key or turning the main switch off and back on. The default setting is "Standard".
- The pressure applied for each setting can be adjusted by SP mode.

1. Select SP mode "6-010-1", "6-010-2" and "6-010-3".

Note

- SP6-010-10, 11, 12 are for special paper types, SP6-010-1, 2, 3 are for standard paper types, and SP6-010-4, 5, 6 are for thick paper. If the user has programmed as User 1 or User 2, you can change the paper feed pressures with SP6-010-13, 14, 15 and SP6-10-16, 17, 18.

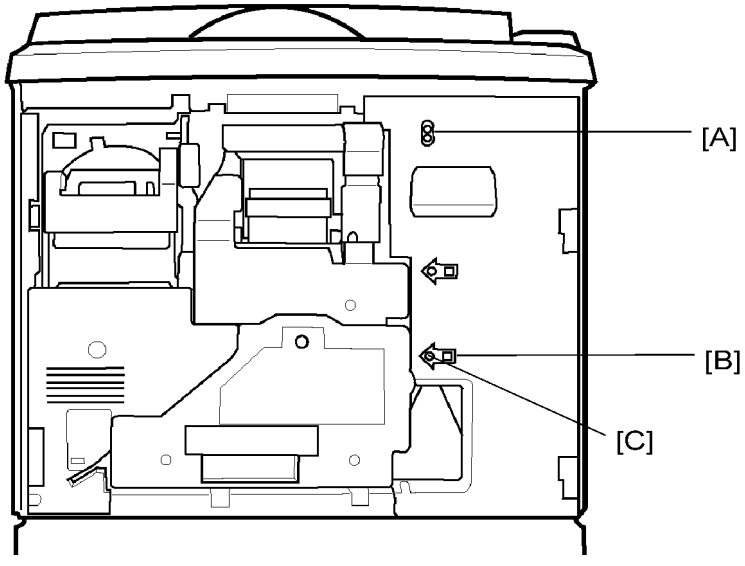
2. Change the settings as necessary.

- Defaults for SP6-010-1 (Standard): 4, SP6-010-2 (Frequent): 5, SP6-010-3 (Very Frequent): 6
- The available pressure levels are from 0 to 6. (0 is the weakest, 6 is the strongest.)

Duplex Section

Removing the Duplex Unit

When power is on



C269R313b

1. Push the switch [B]

The green LED [C] will turn on when the drum home position LED [A] is green.

2. Take out the duplex units

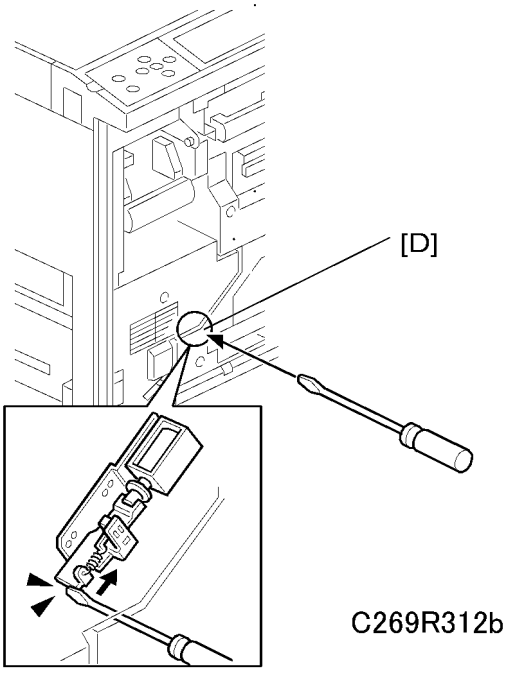
⚠CAUTION

- When the home position LED [A] is red, close the front door and wait for the machine to initialize (after the motors inside the machine all stop).
- When the security mode is on, the machine will not go to home position, so the security mode should be turned off.

When power is off:

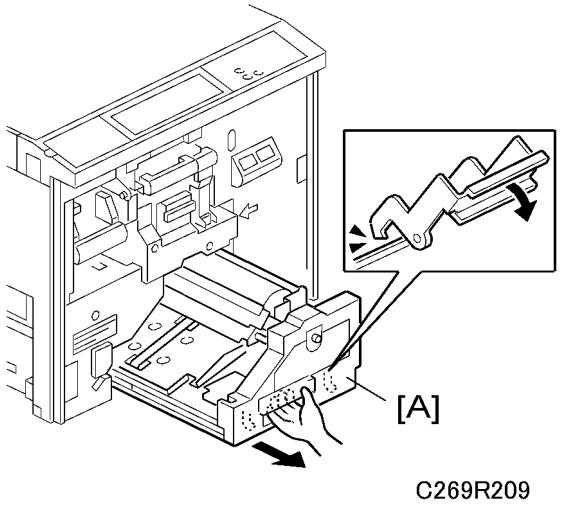
⚠CAUTION

- The duplex unit cannot be taken out when the power is off, because the duplex unit lock release solenoid locks the unit while power is off.



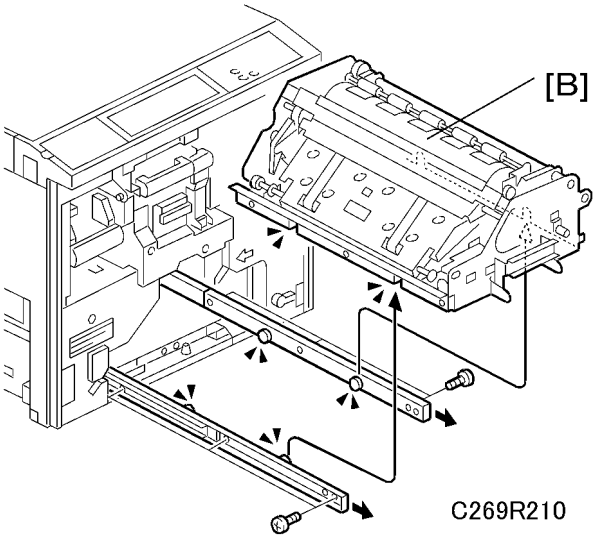
1. Inset a screw driver into [D] to move up the solenoid.
2. Take out the duplex unit.

Duplex Unit



1. Remove the duplex unit front cover and the duplex cover (☛ 'Cover – Duplex Unit Front Cover, Duplex Unit Cover')

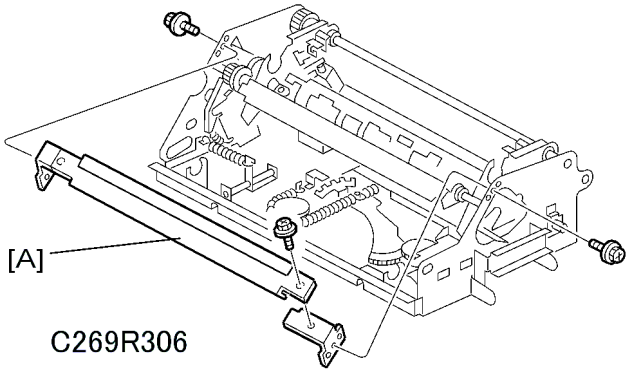
2. Open the front cover and pull out the duplex unit [A].



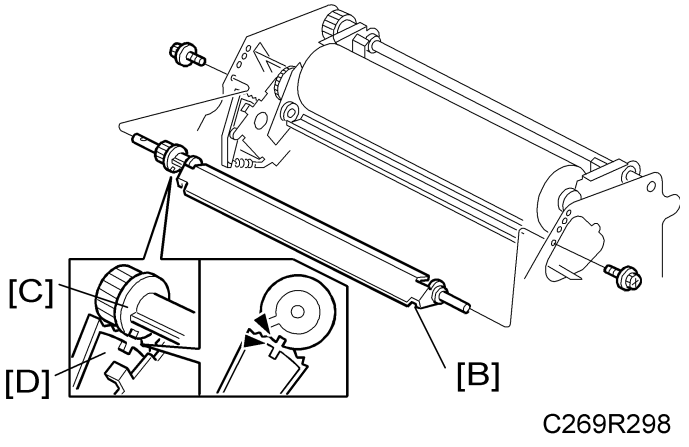
3. Remove the unit [B] (☞ x 6)

If you install a new duplex unit, do the Print Pressure Cam Home Position Adjustment after you install the new unit (☛ 'Drive Section - Print Pressure Cam Home Position Adjustment')

Paper Drop Guide



1. Remove the paper guide [A] (☞ x 3).

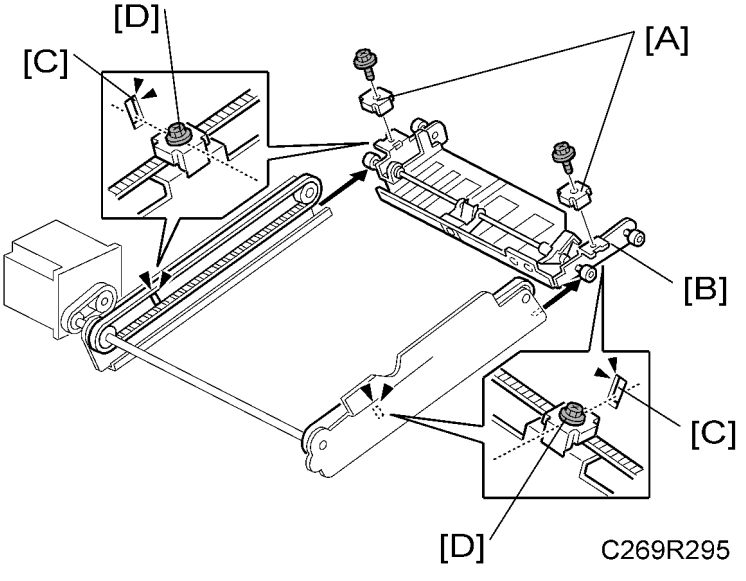


2. Remove the paper drop guide [B] (x 2)

⚠CAUTION

- When you install the paper drop guide, align the notches in parts [C] and [D] as shown above.

Duplex Clamper

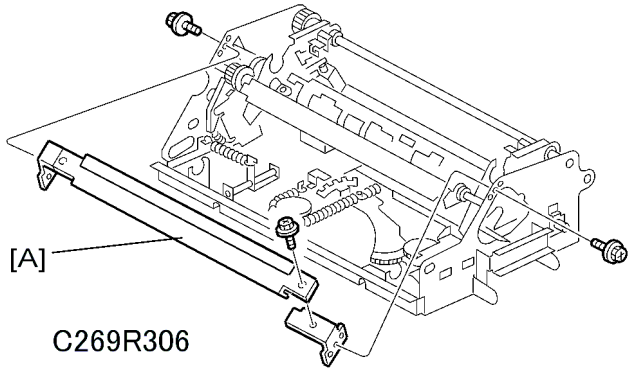


1. Remove the duplex unit from the machine (☛ 'Duplex Unit').
2. Remove the paper delivery unit (☛ 'Paper delivery section').
3. Remove the brackets [A] and the duplex clamper [B] (x 2).

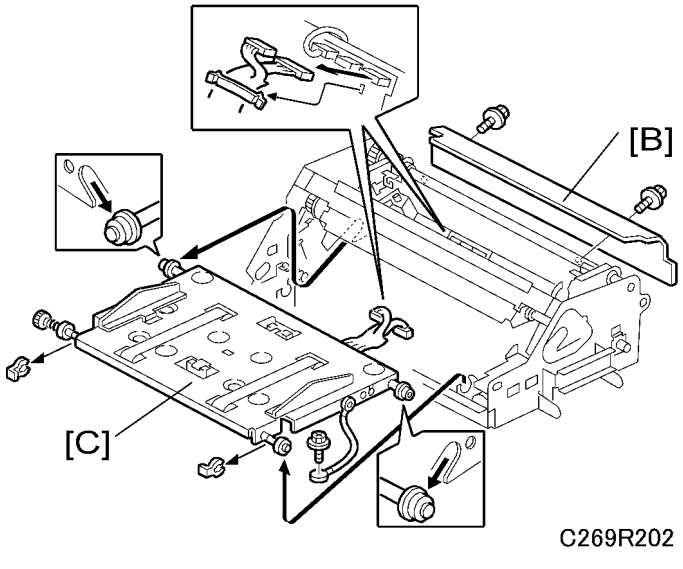
Note

- When you install the duplex clamper, align the holes [C] and screws [D] at both sides of the duplex clamper, to make it parallel.

Duplex Feed Unit



1. Remove the paper guide [A] (x 2).



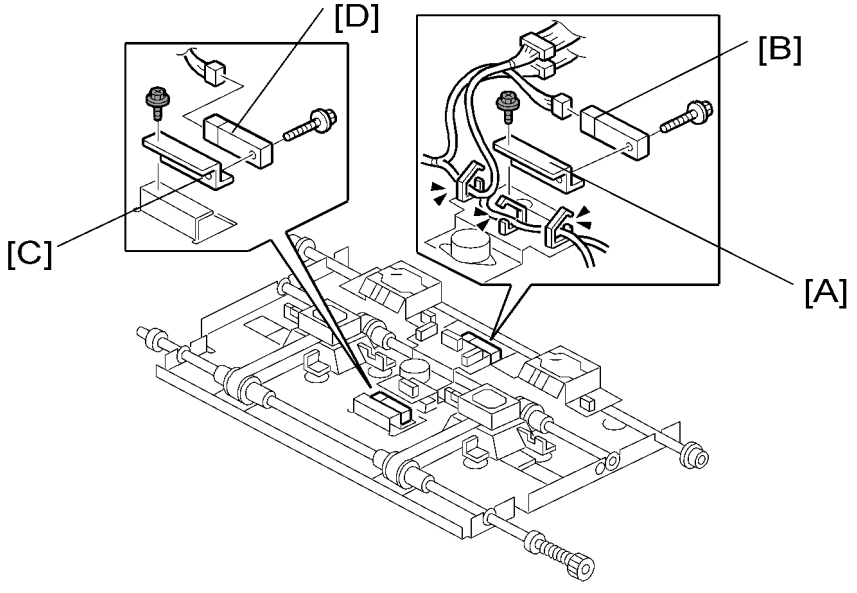
2. Remove the cover [B] (x 2).
3. Remove the duplex feed unit [C] (x 1 [Ground], x 2, x 2, x 3)

Note

- When you remove the duplex feed unit from the duplex unit, it is easier if you tilt up the front (operation) side of the duplex unit, to prevent damage to the duplex unit drawer connector under the unit.

Duplex Leading Edge and Trailing Edge Sensors

1. Remove the duplex feed unit. (☛ 'Duplex Feed Unit'.)



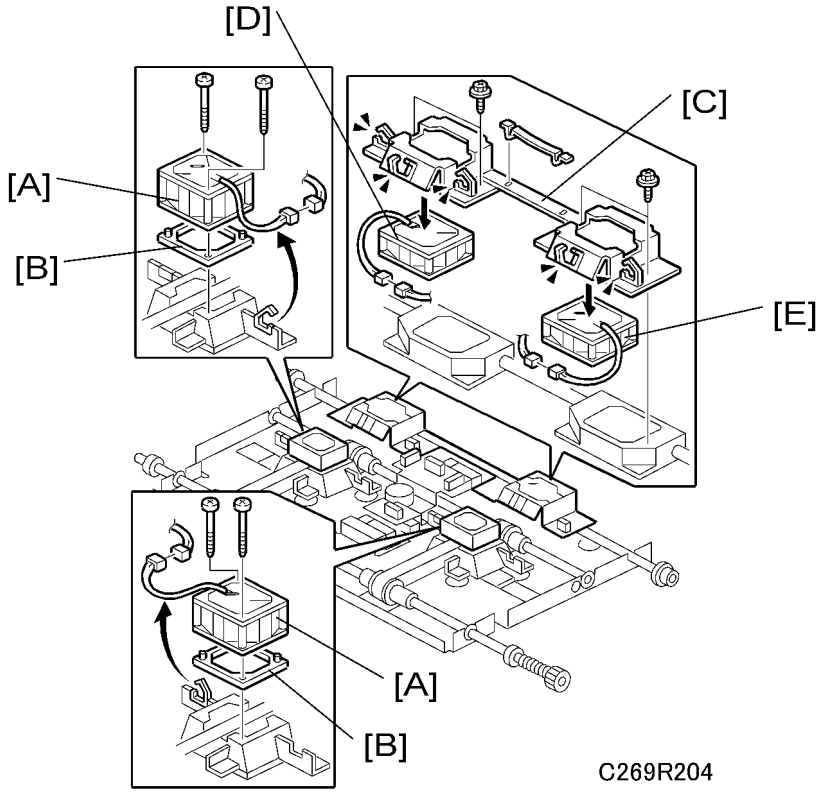
2. Remove these parts
   - [A]: Duplex leading edge sensor bracket (x 1, x 1)

Note

- When you remove the bracket, move aside the harness above the bracket.
- [B]: Duplex leading edge sensor (x 1, x 1)
- [C]: Duplex trailing edge sensor bracket (x 1, x 1)
- [D]: Duplex trailing edge sensor (x 1, x 1)

Duplex Unit Suction Fans

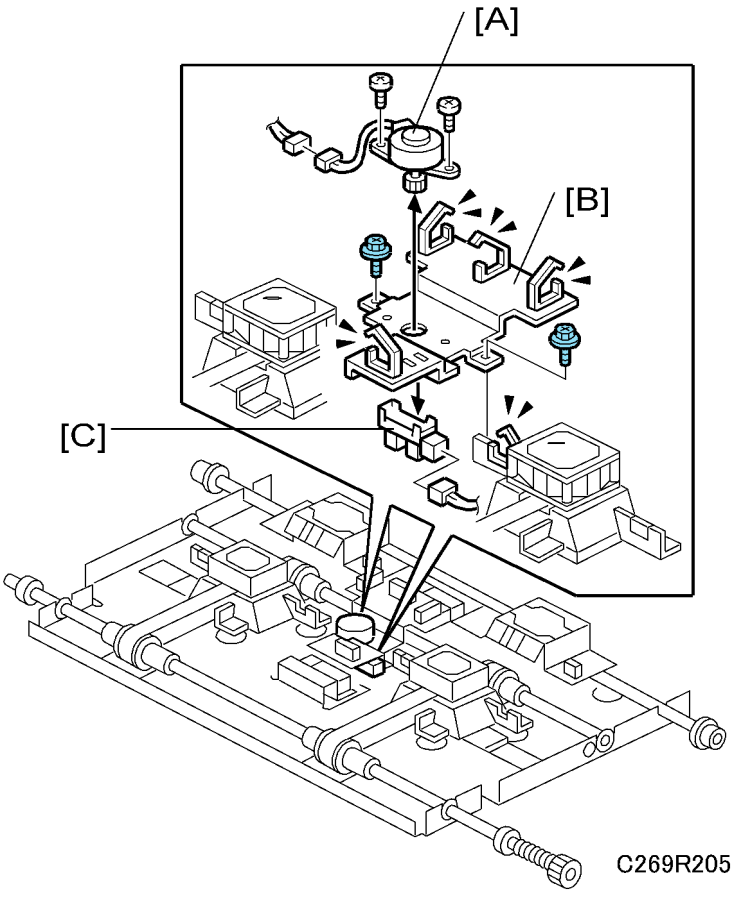
1. Remove the duplex feed unit. (☛'Duplex Feed Unit'.)



2. Remove the parts
   - [A]: Duplex unit suction fan front and back, [B]: Base (each x 2, x 1, x 1)
   - [C]: Duplex unit suction fan 2 bracket (x 4)
   - [D, E]: Duplex unit suction fan 2 front and back (each x 1, x 2)

Duplex Paper Guide Motor and Duplex Paper Guide HP Sensor

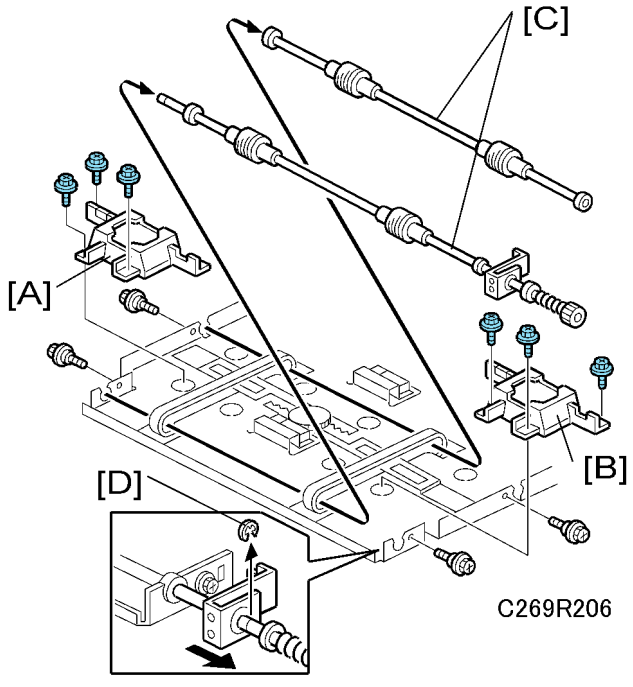
1. Remove the duplex feed unit. (☛ 'Duplex Feed Unit'.)



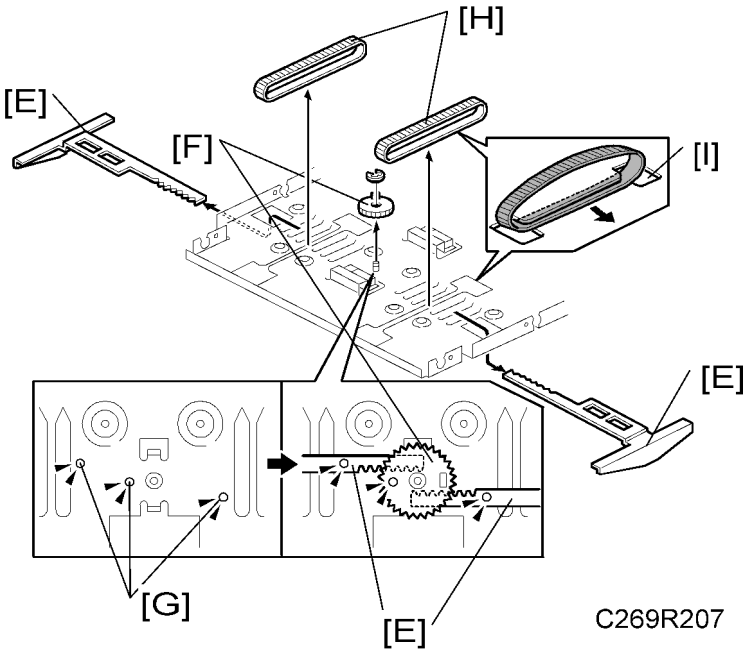
2. Remove these parts
   - [A]: Paper guide motor (x 2, x 1, x 2)
   - [B]: Paper guide plate HP sensor bracket (x 2, x 2, x 4)
   - [C]: Paper guide plate HP sensor

Duplex Transport Belts

1. Remove the duplex feed unit. (☛ 'Duplex Feed Unit'.)
2. Remove these parts:
   - Duplex unit suction fan 1 front and back (☛ 'Duplex suction fans'.)
   - Paper guide plate HP sensor bracket (☛ 'Paper guide motor and paper guide plate HP sensor'.)



3. Remove the parts
   - [A,B]:Duplex unit suction fan 1 base front and back (each x 3)
   - [C]:2 shafts (each x 1, x 1 [D])



4. Remove the paper guide plates [E] and gear [F] (℄ x 1).

⚠CAUTION

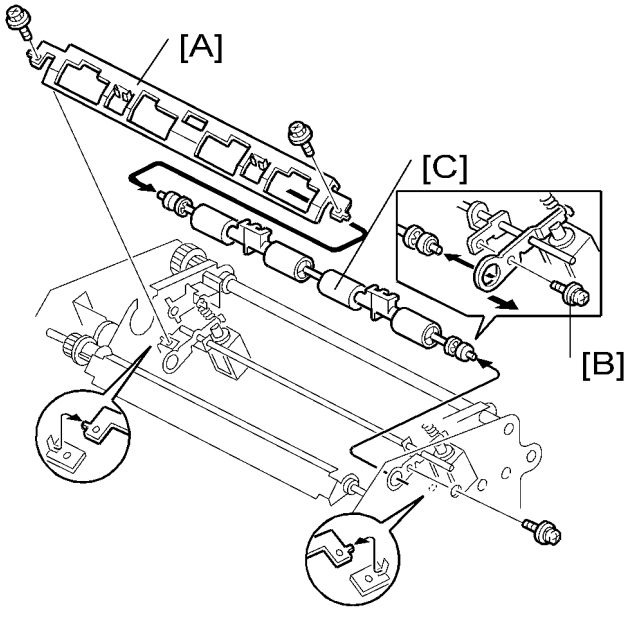
- When you replace the guides, make sure that the positions of racks [E] and gear [F] are correct in relation to the three holes [G], as shown above.
- Duplex feed belts [H]

⚠CAUTION

- Take off the belt through the opening in the duplex feed unit guide plate [I]

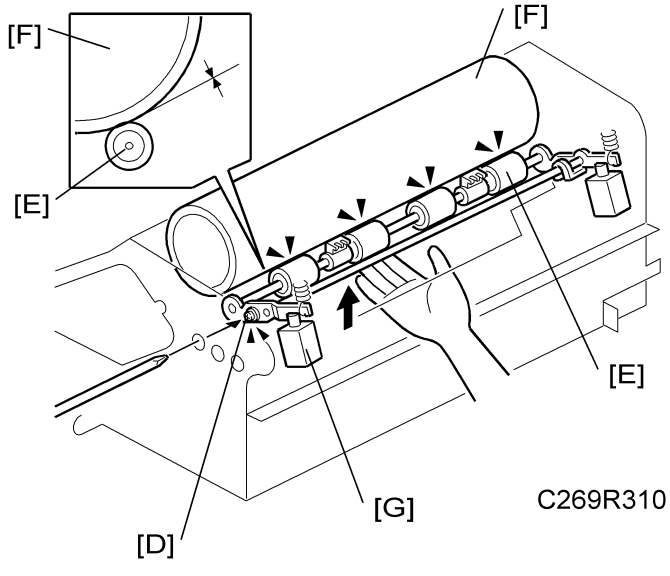
Duplex Feed Roller

1. Take out the duplex unit
2. Remove the duplex unit front cover. (☛ 'Cover– Duplex Unit Front Cover, Duplex Unit Cover''.)



C269R302

3. Remove these parts
    - Press roller
    - [A]: Duplex feed roller bracket (x 2)
4. Remove screw [B] and duplex feed roller [C]

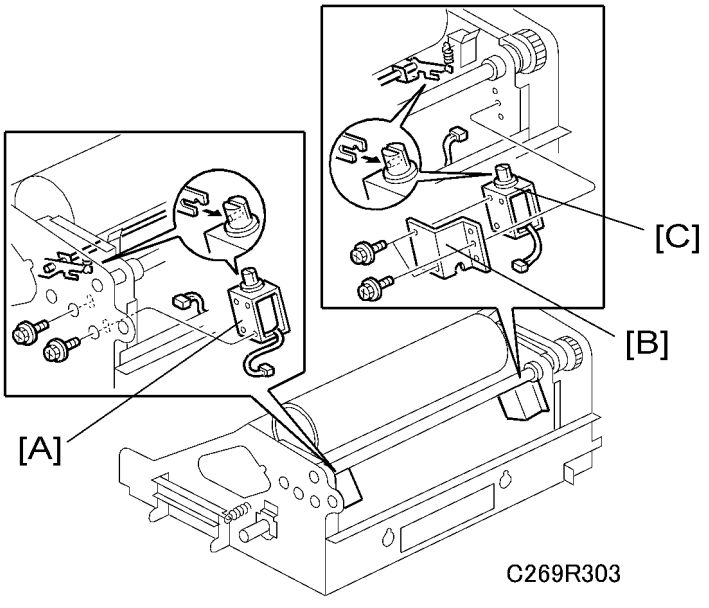


C269R310

5. After you install the roller:

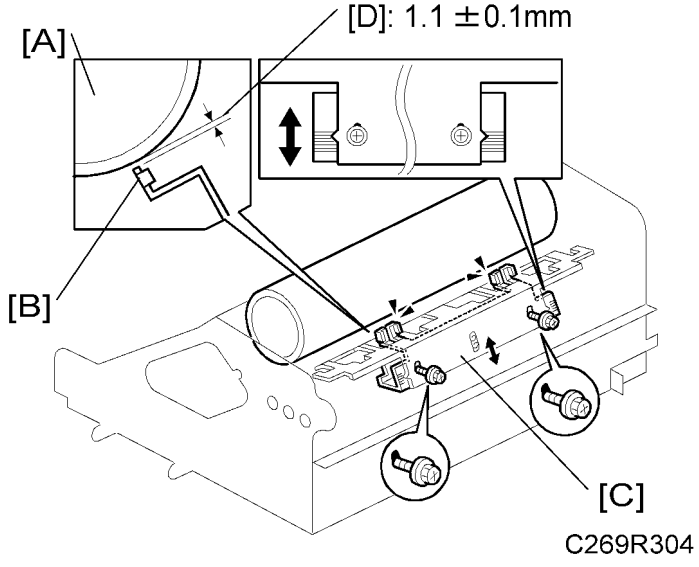
- Loosen screw [D].
- Move up the duplex feed roller [E] until it touches the press roller [F].
- Then tighten screw [D].
- Make sure that the plunger of solenoid [G] can move the duplex feed roller up and down.

Duplex Feed Roller Solenoid



1. Remove these parts:
   - Duplex feed roller solenoid front [A] (x 2, x 1, x 1)
   - Duplex feed roller solenoid back bracket [B] (x 1, x 1, x 1)
   - Duplex feed roller solenoid [C] (x 2)

Duplex Feed Stopper Height Adjustment



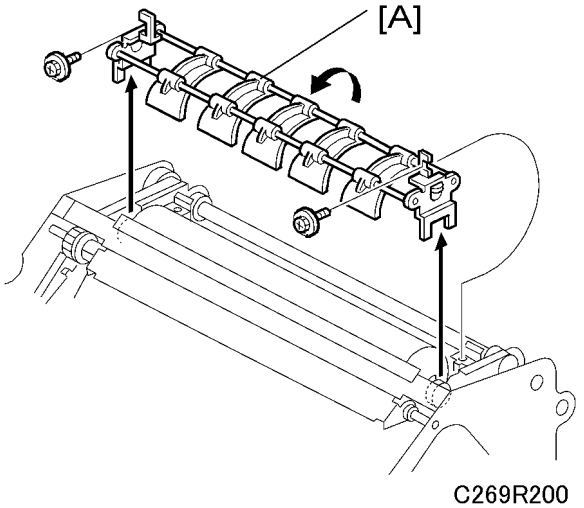
Loosen the screws on the duplex feed stopper bracket [C].

Adjust the gap [D] between press roller [A] and duplex feed stopper [B] to 1.1 ±0.1mm

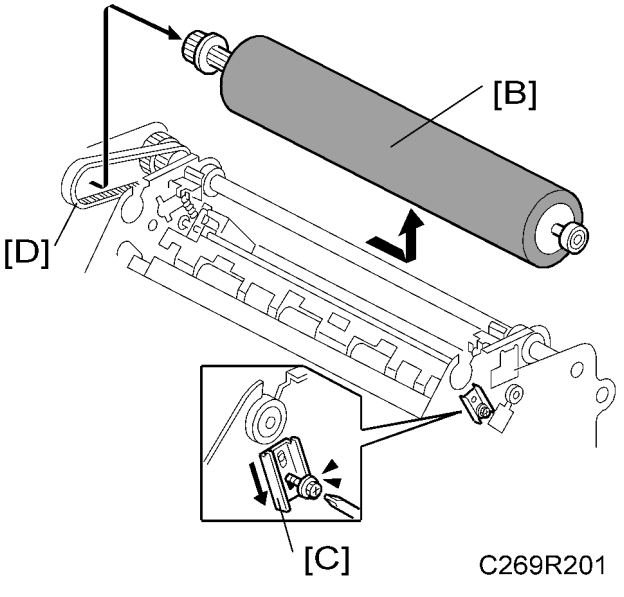
Do this adjustment if the paper is damaged at the leading edge, or if there is image shift in the sub scan direction.

Printing Section

Press Roller



1. Remove the duplex guide [A] (x 2).



2. Remove the press roller [B] (x 1)

Note

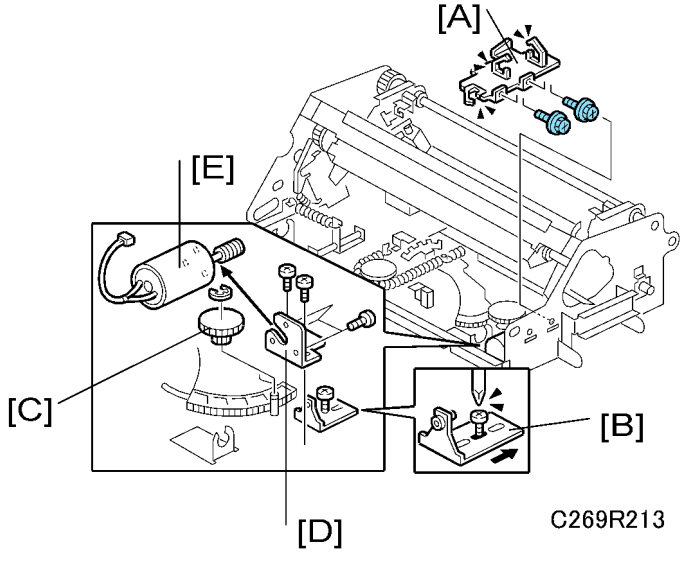
- Loosen the screw and slide the stopper [C], then slide the press roller towards the operation side.

⚠CAUTION

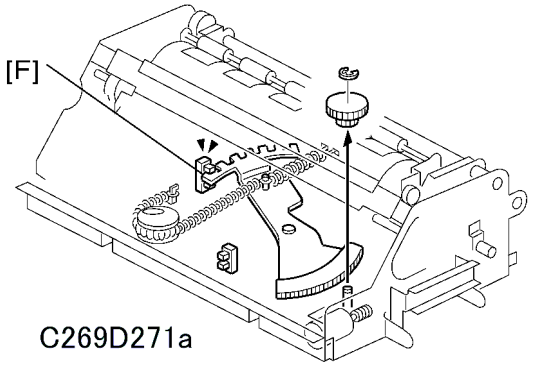
- When you install the press roller, do not forget to attach the belt [D]

Printing Pressure Adjustment Motor

1. Remove the duplex feed unit. (☛ 'Duplex Section - Duplex Feed Unit'.)



2. Remove these parts
   - [A]: Printing pressure motor cover (x 2, x 3)
   - [B]: Motor gear slip protection bracket [B] (x 1; loosen only)
   - [C]: Gear (x 1)

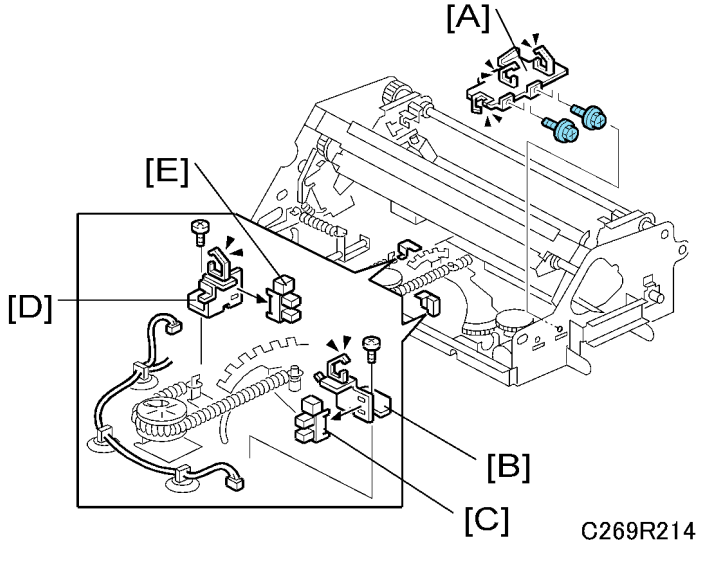


Note

- Before you take out the gear, check if the printing pressure is 0 or 1. The printing pressure is at the 0 position when the end of the actuator is inside the sensor as shown [F].
- [D]: Printing pressure adjustment motor bracket (x 2)
- [E]: Printing pressure adjustment motor (x 3)

Printing Pressure Adjustment HP Sensor, Printing Pressure Adjustment Sensor

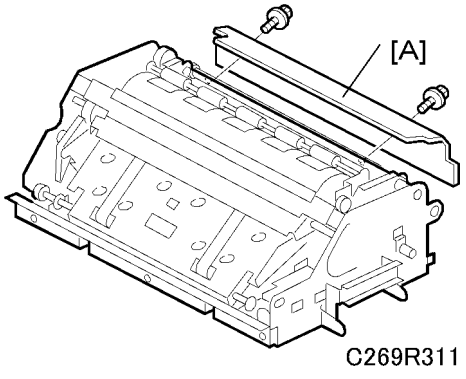
1. Remove the duplex feed unit. (☛ 'Duplex Section - Duplex Feed Unit'.)
2. Remove the cover [A] (x 2)



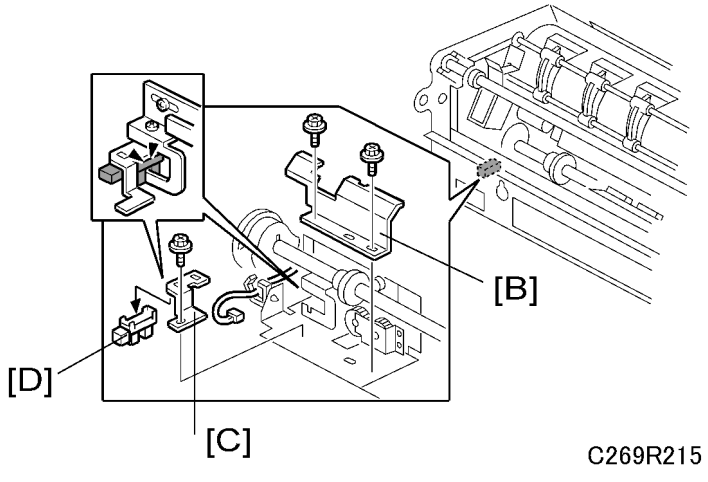
3. Remove these parts
   - [B]: Printing pressure adjustment HP sensor bracket (x 1, x 1, x 2)

- [C]: Printing pressure adjustment HP sensor
- [D]: Printing pressure adjustment sensor bracket (x 1, x 1, x 1)
- [E]: Printing pressure adjustment sensor

Printing Pressure Cam HP Sensor



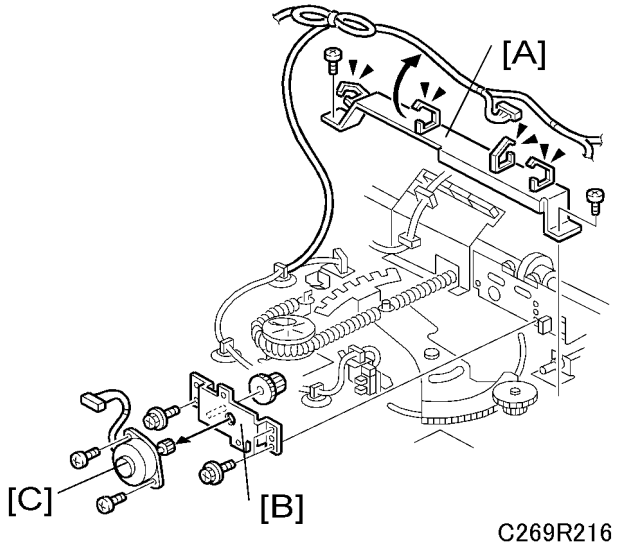
1. Remove the cover [A] (x 2).



2. Remove these parts
   - [B]: Printing pressure cam unit cover (x 2)
   - [C]: Printing pressure cam HP sensor bracket (x 1, x 1,)
   - [D]: Printing pressure cam HP sensor

Pressure Cam Shift Motor

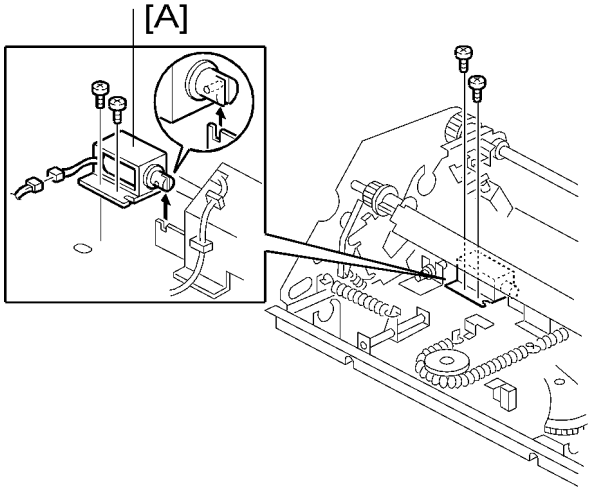
1. Remove the duplex feed unit. (☛ 'Duplex Section - Duplex Feed Unit'.)



2. Remove these parts:
   - [A]: Harness stay (x 2, x 5)
   - [C]: Printing pressure shift motor (x 2, x 1, x 1)

Printing Pressure Release Solenoid

1. Remove the duplex feed unit. (☛ 'Duplex Section - Duplex Feed Unit'.)



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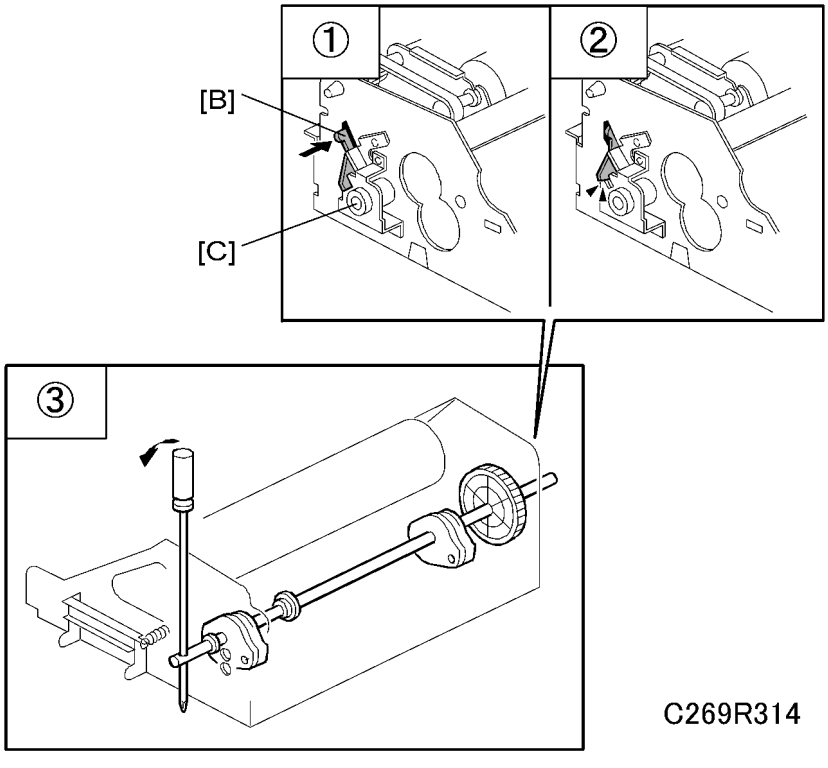
2. Remove the printing pressure release solenoid [A] .(x 2, x 1)



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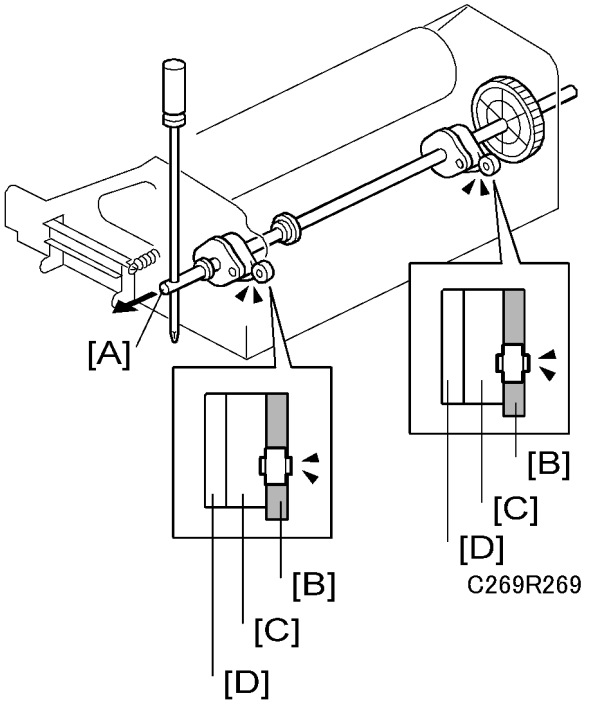
⚠CAUTION

- Release the print pressure cam stopper [B] before you rotate the print pressure cam, or the stopper bracket [C] will be damaged.

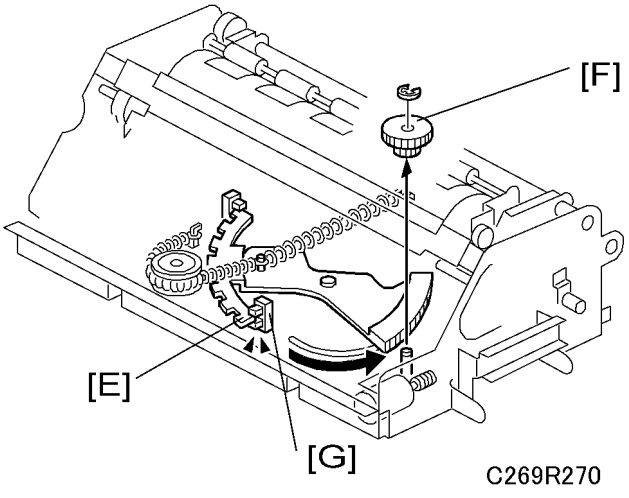
Printing Pressure Release Arm Adjustment

Note

- Pressure should not be on when the drum is idling, because the press roller will become dirty with ink. The printing pressure release arm locks the printing pressure when the drum is idling. When the press roller becomes dirty because of not locking the pressure while drum is idling, this adjustment will improve the situation. Also when you replace parts of the duplex unit or the unit itself, do this adjustment.



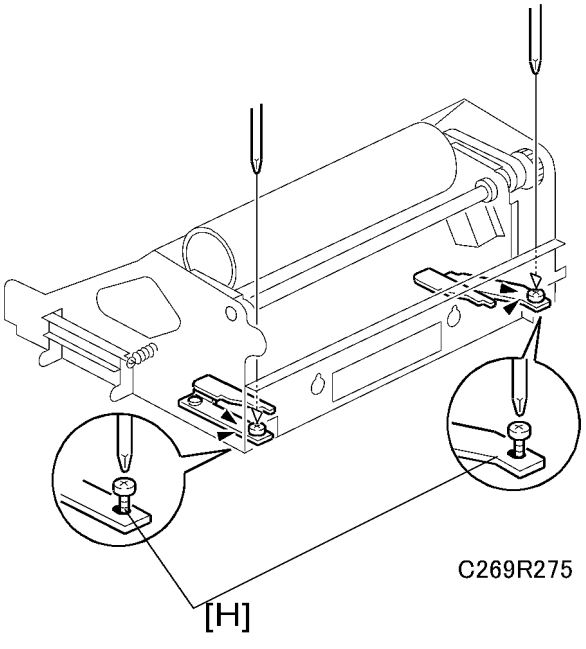
1. Pull out print pressure cam shaft [A] so that the front page cams [B] are at the cam followers.
    - [B]: Front page cam
    - [C]: Both sides cam
    - [D]: Back page cam



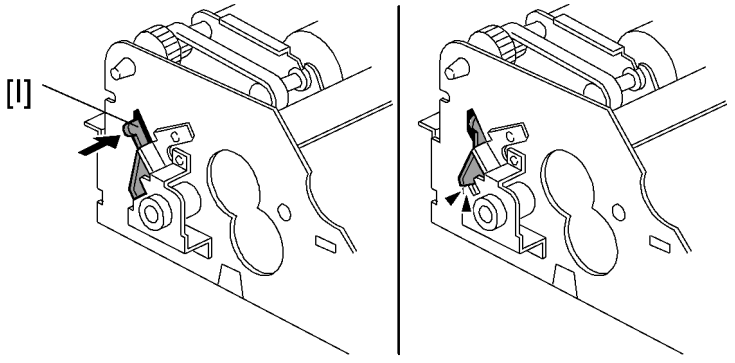
2. Remove the gear [F] (℃ x1) and move the sector gear until the leading edge of encoder [E] on the sector gear gets to the print pressure adjustment HP sensor [G]. Then attach the gear again

Note

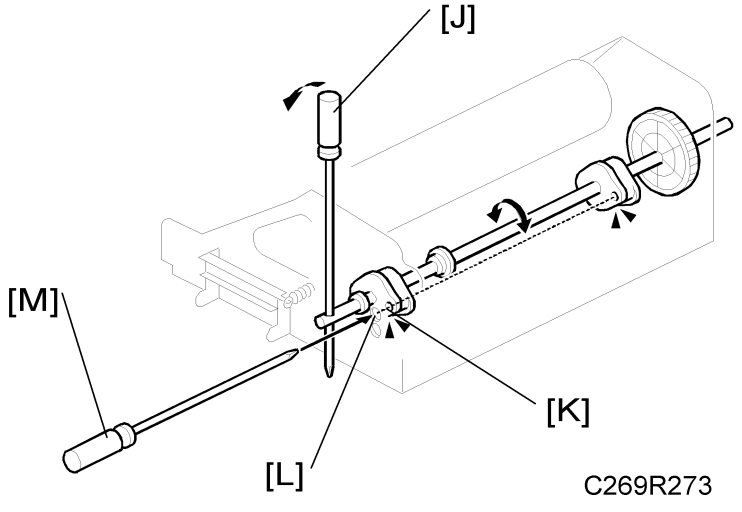
- This step takes the printing pressure to the highest setting. This is the correct setting for this adjustment.



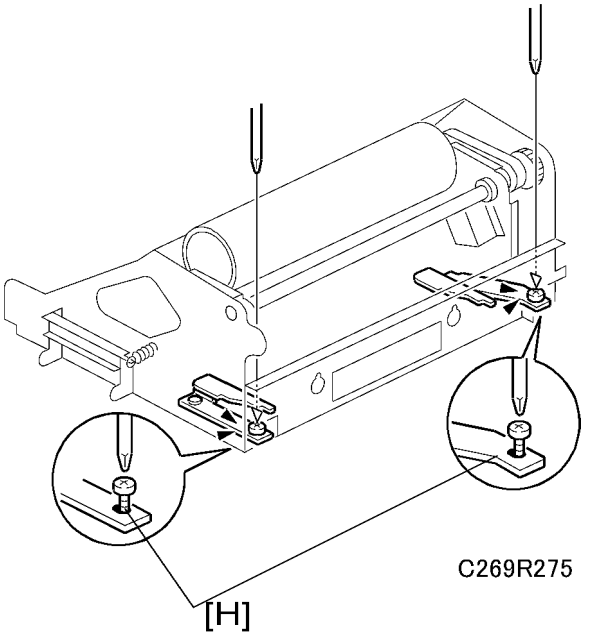
3. Loosen the screws [H].



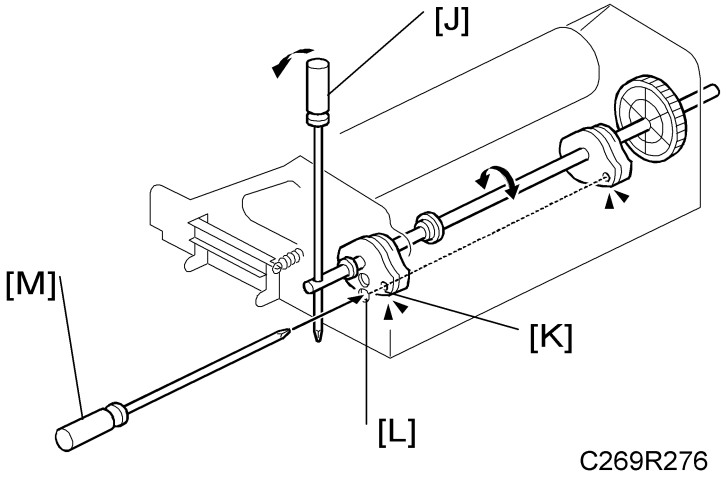
4. Release the print pressure cam stopper [I].



5. Turn the cam with a screwdriver [J] until the hole in the cam [K] is aligned with the hole in the frame [L] (the upper of the two holes; this is for adjustments). Then insert a screwdriver [M] through the two holes.



6. Tighten the screws [H].

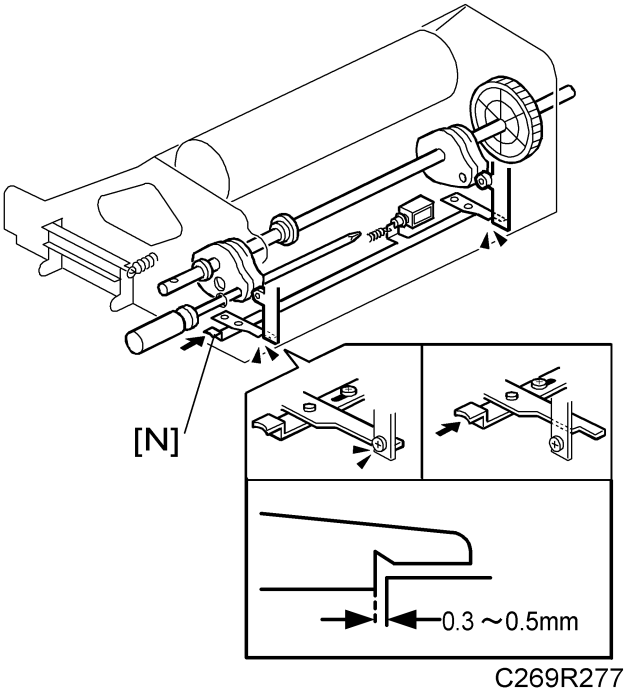


7. Remove the screwdriver [M].
8. Then, use a screwdriver [J] to turn the cam shaft one full rotation until the hole in the cam [K] is aligned with the other hole in the frame [L] (the lower of the two holes; this is for the home position).

Note

- This is to make some play in the gap (see the diagram below) after you tightened the screws. Before you do this step, the gap is 0.

9. Then, insert the screwdriver [M] again.



10. Push the print pressure release lever [N] several times to make sure that the arm can be released easily.
11. Remove the screwdriver and put back the print pressure cam stopper [I].

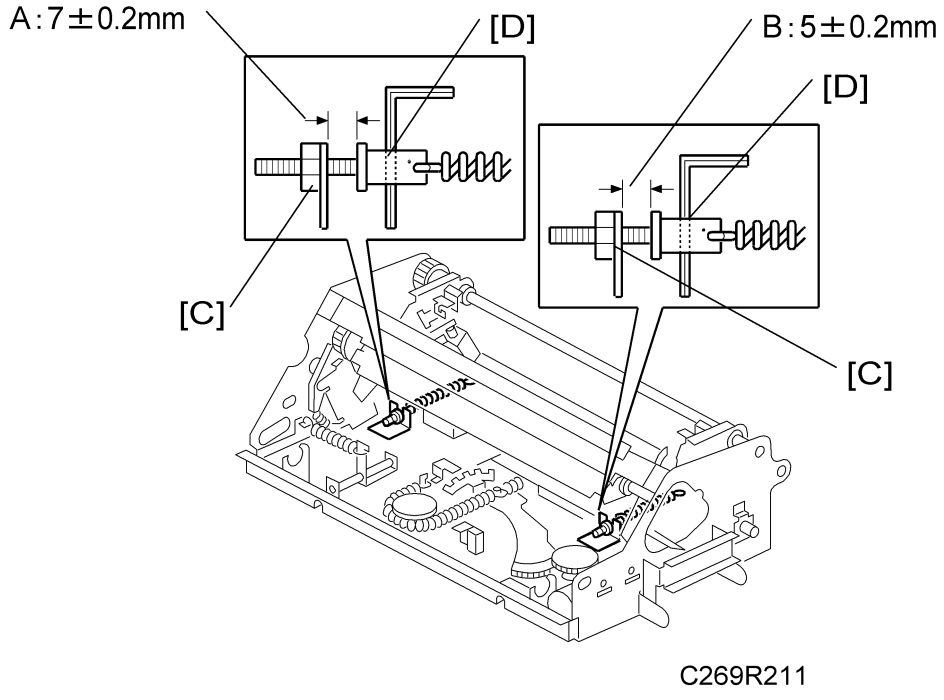
Note

- The gap must be 0.3mm to 0.5mm after this procedure. If it is not, then go back to step 3 and do the procedure again.

Print Pressure Adjustment

Note

- The print pressure adjustment is required in the following cases.
  - Density of the printed image is not even
  - When the spring in the printing pressure mechanism is taken out.
  - When a new duplex unit is installed



Turn the nuts [C] to adjust the pressure at the rear side [A] and at the operation side [B].

[A]: 7 ±0.2mm

[B]: 5 ±0.2mm

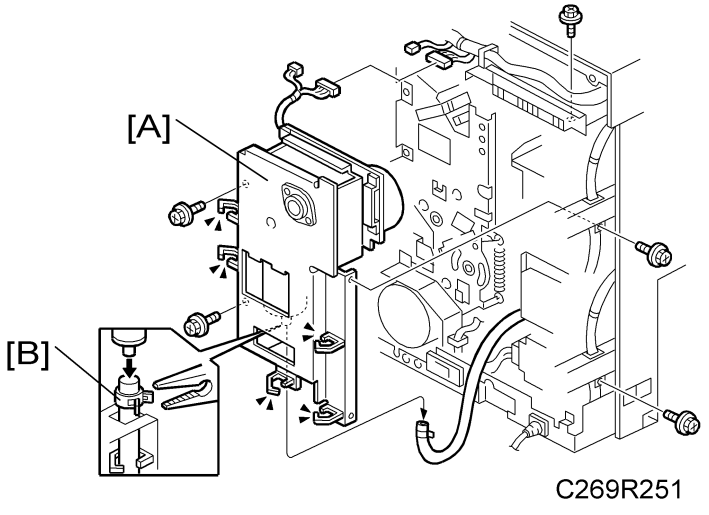
Note

- While adjusting the pressure, insert a hexagon wrench into the hole [D] and hold it, to prevent the spring from turning.

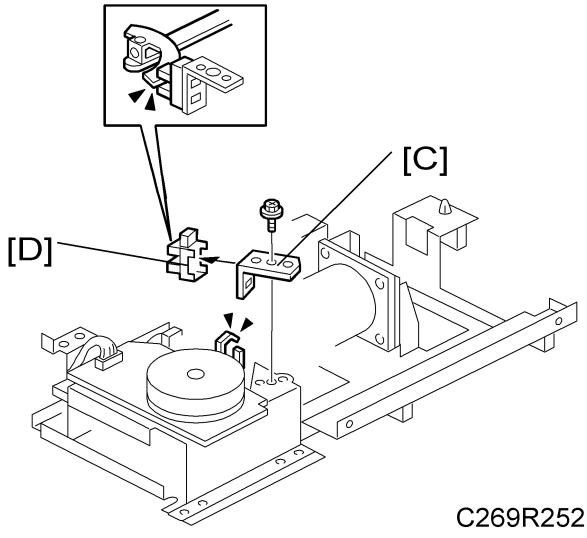
Drive Section

Junction Gate Pump motor

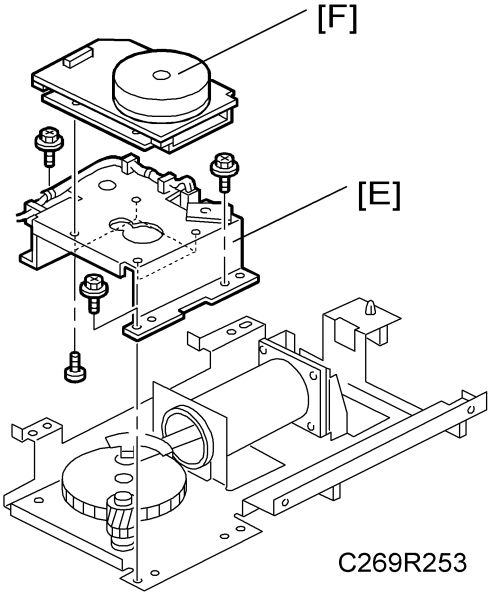
1. Remove these parts
   - Left cover (☛ 'Cover - Left Cover')
   - Back cover (☛ 'Cover - Back Cover')
2. Open out the PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
3. Open out the ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
4. Motor drive board (☛ 'Boards - Main Motor Drive Board')



5. Remove the junction gate pump unit [A] (x 5, x 2, x 9, hose clamp [B] x 1).



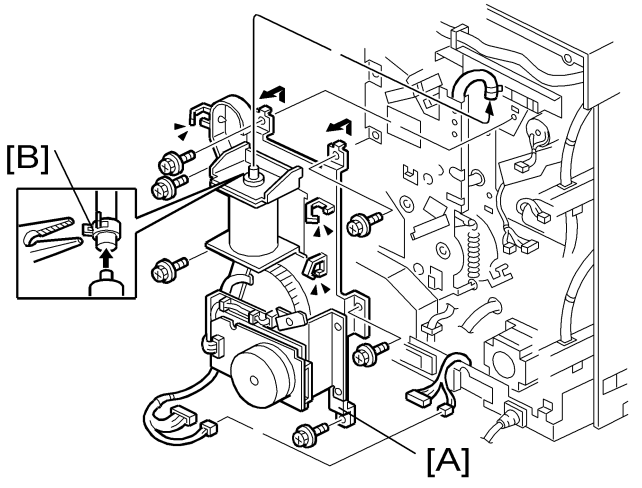
6. Remove these parts:
    - [C]: Junction gate pump HP sensor bracket (x 1, x 1)
    - [D]: Junction gate pump HP sensor



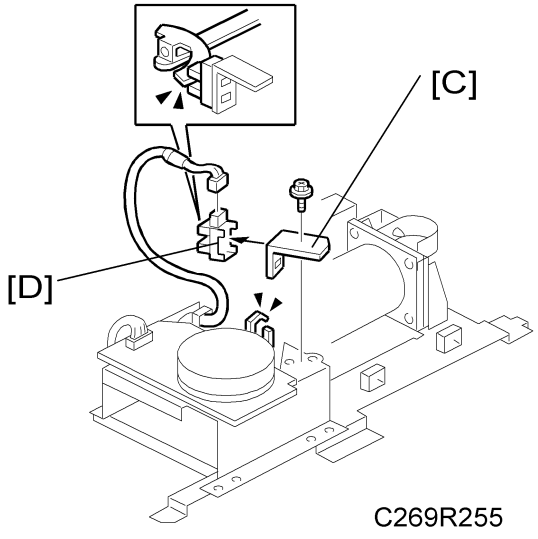
7. Remove these parts
    - [E]: Junction gate pump motor bracket (x 3)
    - [F]: Junction gate pump motor(x 4)

Exit Pawl Pump Motor

1. Remove these parts:
    - Left cover (☛ 'Cover - Left Cover')
    - Back cover (☛ 'Cover – Back Cover')
2. Open out the PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
3. Open out the ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
4. Motor drive board (☛ 'Boards - Main Motor Drive Board')
5. Junction gate pump motor (☛ 'Junction Gate Pump motor')



6. Remove the exit pawl pump unit [A] (x 6, x 6, x 3, hose clamp [B] x 1)



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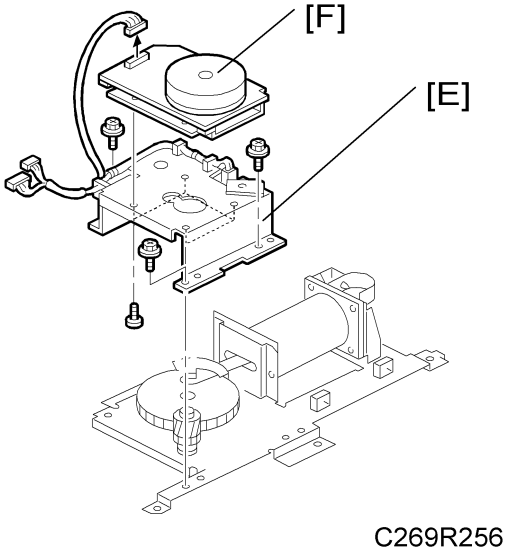
7. Remove these parts:
    - [C]: Exit pawl pump HP sensor bracket (x 1, x 1)
    - [D]: Exit pawl pump HP sensor



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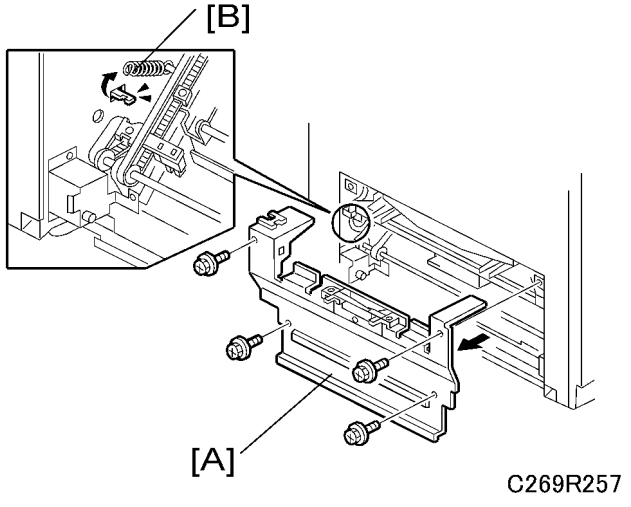
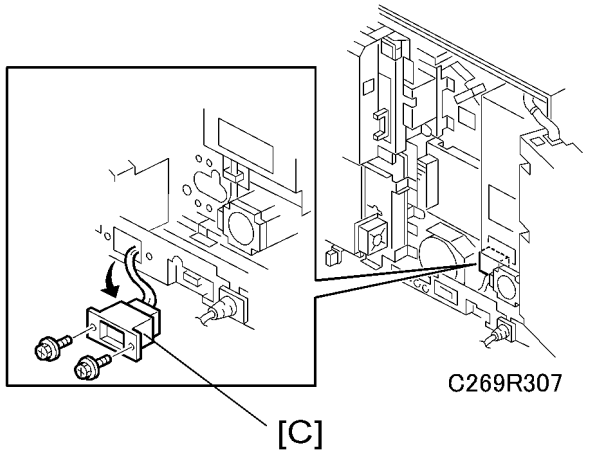
    - [E]: Exit pawl pump bracket (x 3)
    - [F]: Exit pawl pump (x 4)

Duplex Clamper Motor

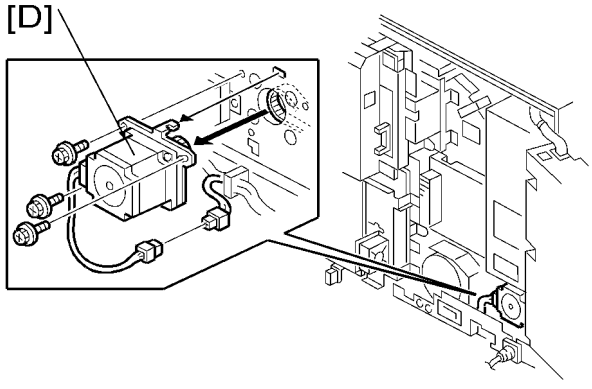
1. Remove the back cover (☛ 'Cover – Back Cover')
2. Open out the PSU board (☛ 'PSU')



3. Remove these parts
   - [A]: Paper delivery cover (☞ x 4)
   - [B]: Spring



4. If the LCS is installed, remove connector [C] (☞ x 2).

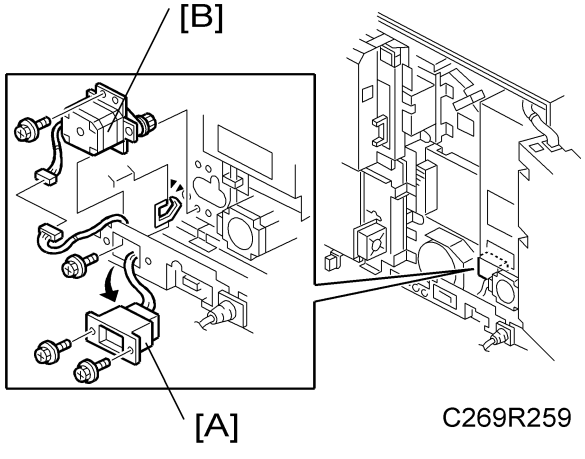


C269R258

5. Remove the duplex clamper motor [D] (x 3, x 1).

Duplex Transport Belt Motor

1. Remove the back cover (☛ 'Cover')
2. Open out the PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')



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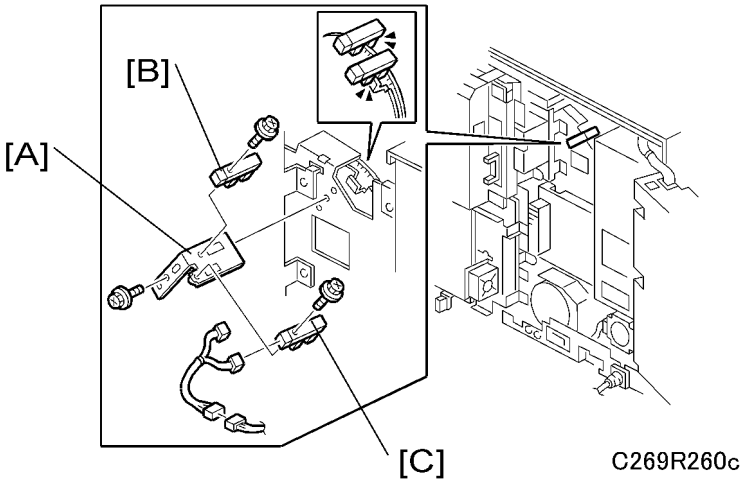
3. Remove these parts
   - [A]: Connector (x 2) (If the LCS is installed.)
   - [B]: Duplex transport belt motor

Drum Home Position Sensor 3 and Encoder Sensor

1. Remove the back cover (☛ 'Cover – Back Cover')

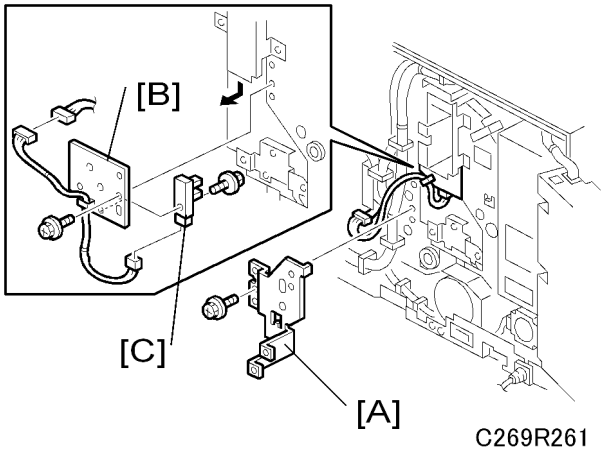
2. Open out the boards
    - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
    - ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')



3. Remove these parts:
    - [A]: Sensor bracket (x 1, x 1)
    - [B]: Encoder sensor (x 1, x 1)
    - [C]: Drum home position sensor 3 (x 1, x 1)

Feed Start Sensor

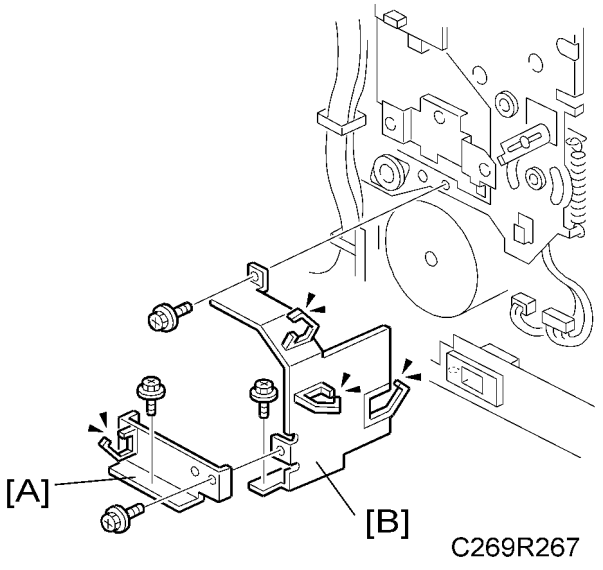
1. Remove the back cover (☛ 'Cover – Back Cover')
2. Open out the boards
    - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
    - ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
3. Remove the main motor control board (☛ 'Boards - Main Motor Drive Board')



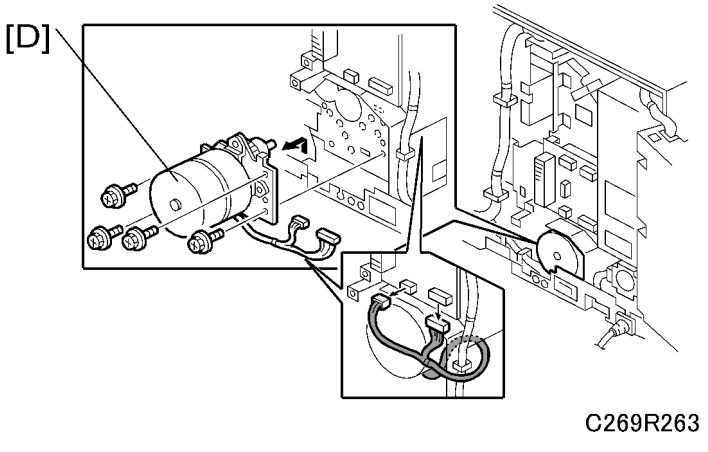
4. Remove these parts
    - [A]: Main motor control board bracket (x 1)
    - [B]: Feed start sensor bracket (x 1 x 1)
    - [C]: Feed start sensor (x 1 x 1)

Main Motor

1. Remove the back cover (☛ 'Cover – Back Cover')
2. Open out the boards
    - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
    - ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')

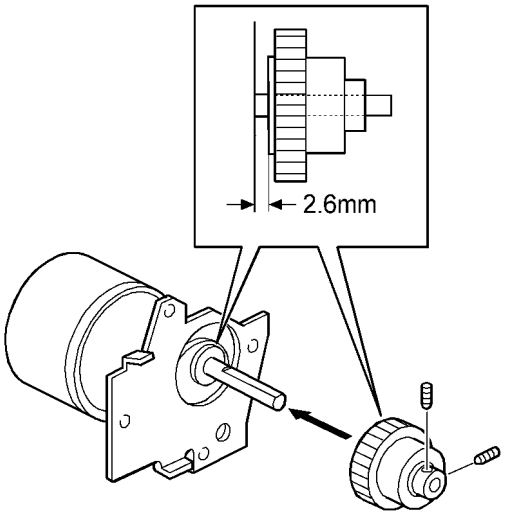


3. Remove the parts
    1. [A]:Main motor under cover (x 2, x 1)
    2. [B]:Main motor cover (x 2, x 3)



4. Remove the main motor [D] (x 4, x 2)

Main Motor Pulley Position



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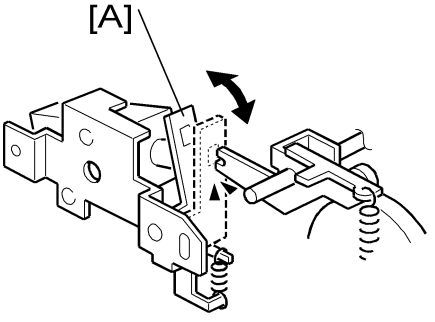
The correct gap between main motor and pulley is 2.6 mm.

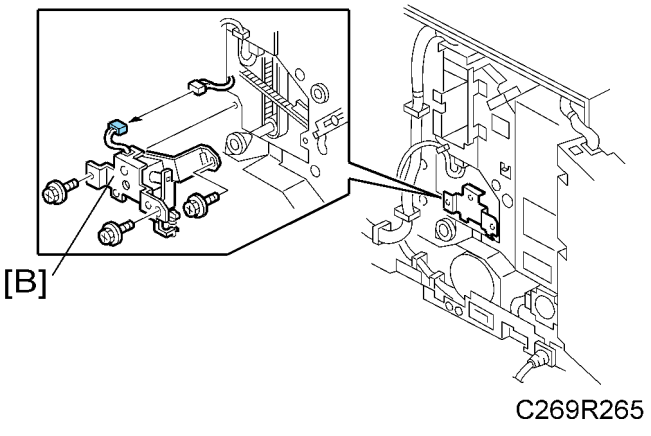
Junction Gate Solenoid Unit

1. Remove the back cover (☛ 'Cover – Back Cover')
2. Open out the boards
   - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
   - ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
3. Remove these parts
   - Main motor under cover (x 2, x 1) (☛ 'Main Motor'.)
   - Main motor control board (x 3, x 4) (☛ 'Boards - Main Motor Drive Board')
   - Main motor control board bracket (x 1) (☛ 'Feed Start Sensor'.)



C269R266a

4. Release the stopper [A].



C269R265

5. Remove the junction gate solenoid unit [B] (x 3)

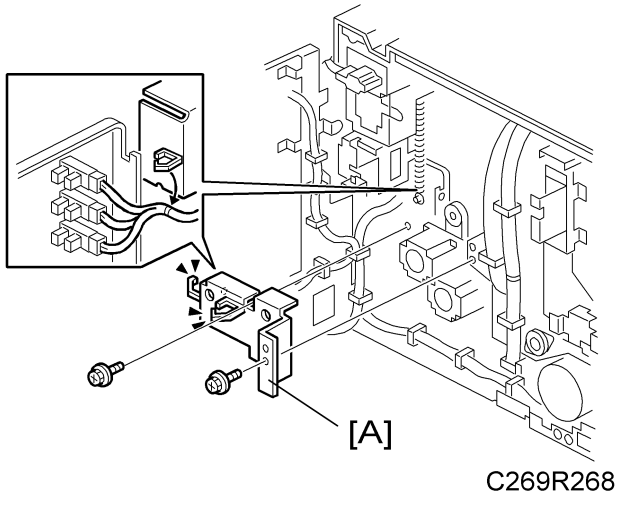
Note

- After the junction gate solenoid unit is put back in the machine, adjust the gap of the release lever. (☛ Paper Delivery - Gap Adjustment between Junction Gate and Press Roller)

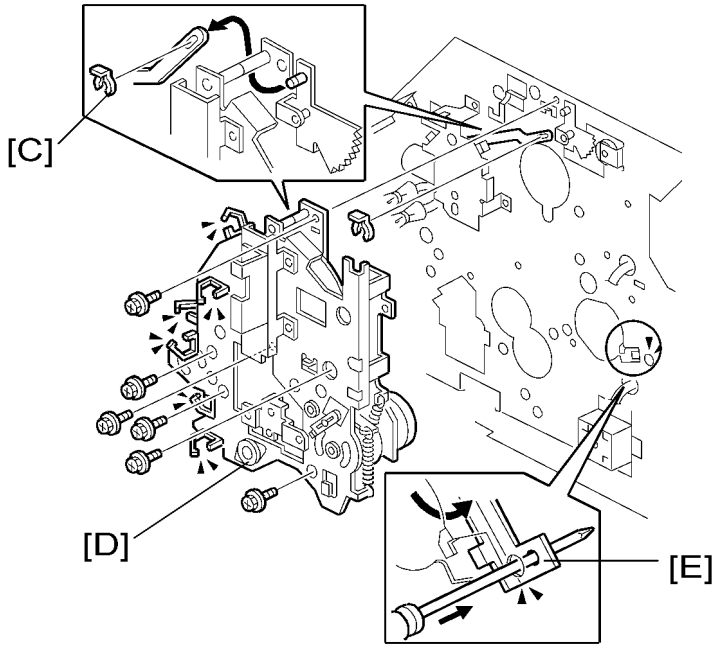
Main Drive Unit

1. Remove the back cover (☛ 'Cover - Back Cover')
2. Open out the boards
   - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
   - ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
3. Remove these parts
   - Main motor control board (☛ 'Boards - Main Motor Drive Board')
   - Junction gate pump unit (☛ 'Junction Gate Pump Motor')

- Exit pawl pump unit (☛ 'Exit Pawl Pump Motor')
- Drum HP 3 sensor and encoder sensor (☛ 'Drum Home Position Sensor 3 and Encoder Sensor')
- Main motor control board bracket (☛ 'Feed start sensor')
- Feed start sensor (☛ 'Feed start sensor')
- Main motor cover (☛ 'Main motor')
- Main motor under cover (☛ 'Main motor')
- Main motor (☛ 'Main motor')



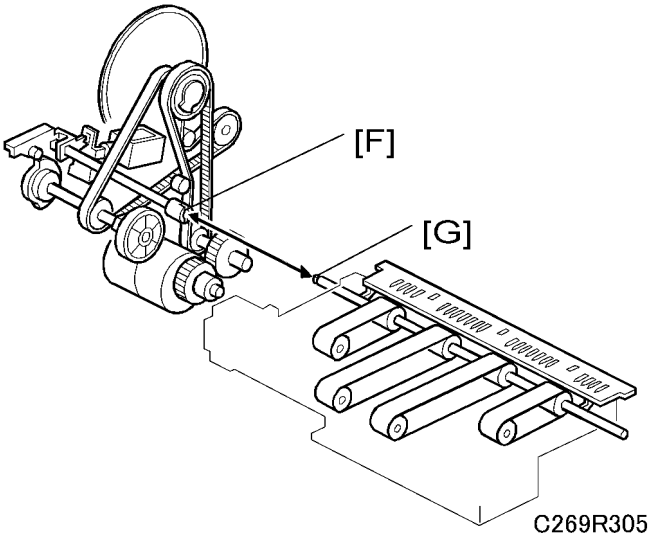
4. Remove the feed/registration motor cover [A] (x 2, x 2).



5. Take off the link [C] (x 1)
6. Remove the main drive unit [D] (x 7, x 1, x 8)

Note

- Before you uninstall and install the main drive unit, inset a screwdriver through the holes [E] in the paper exit pawl arm and the back of the machine's main frame.



Note

- When you install the main drive unit, do not bend the link [C], and make sure that it is correctly installed (between the two plates, as shown in the diagram).
- Before you uninstall and install the main drive unit, inset a screwdriver through the holes [E] in the paper exit pawl arm and the back of the machine's main frame.
- When you install the main drive unit, check that the shafts [F, G] are connected as shown in the diagram.

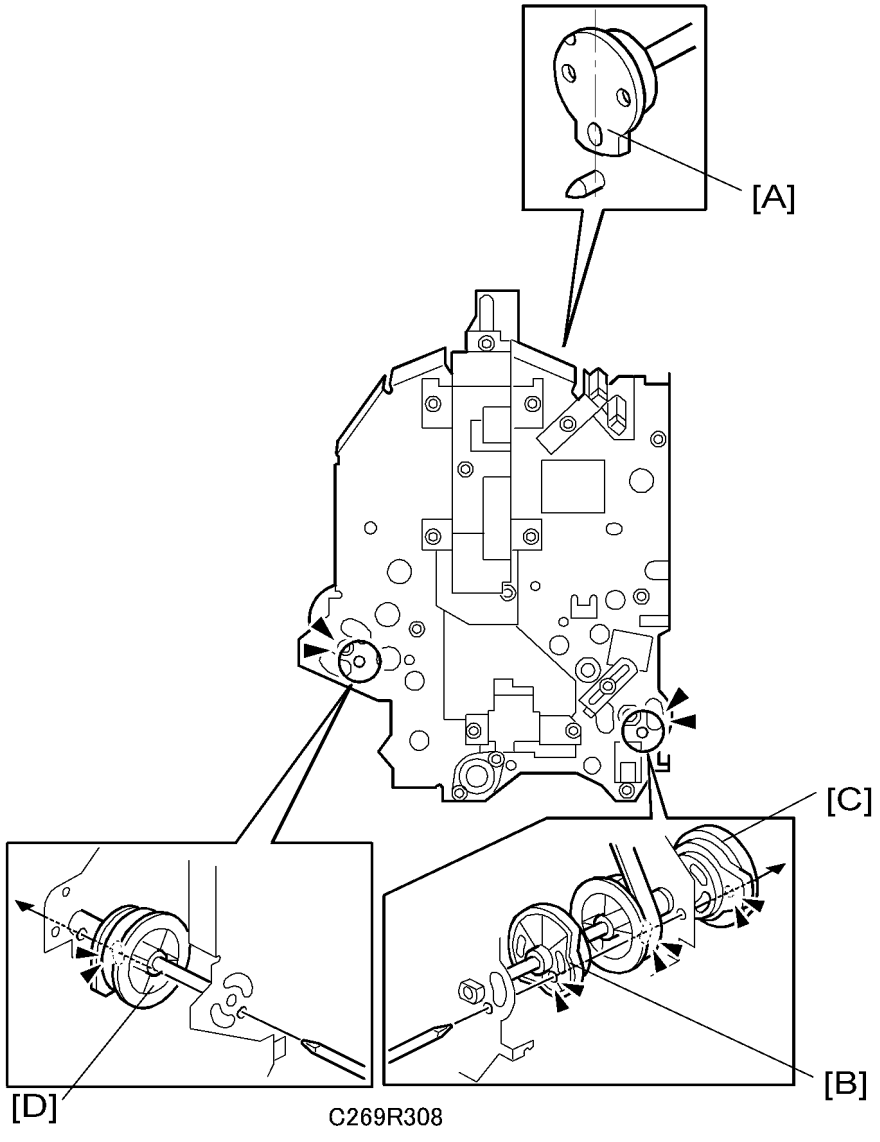
Check When Replacing the Main Drive Unit

Note

- Check the following 4 home positions before you install the main drive unit.
- Normally, if the drum drive disk is in home position, the other parts will also be in home position unless the main drive unit has been taken apart.
- Do the print pressure cam home position adjustment (to align the gears below the drive unit and duplex unit) after you replace the main drive unit. (☛ 'Print Pressure Cam Home Position Adjustment')

[A]: Drum drive disk HP	[C]: Exit pawl drive cam HP
[B]: Junction gate drive cam HP	[D]: Registration Roller Up/Down HP

Home Position Adjustments

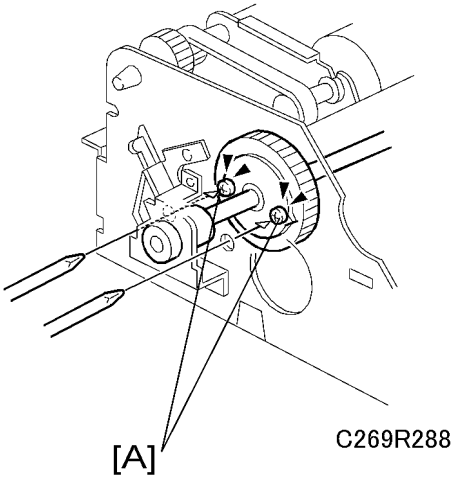


Print Pressure Cam Home Position Adjustment.

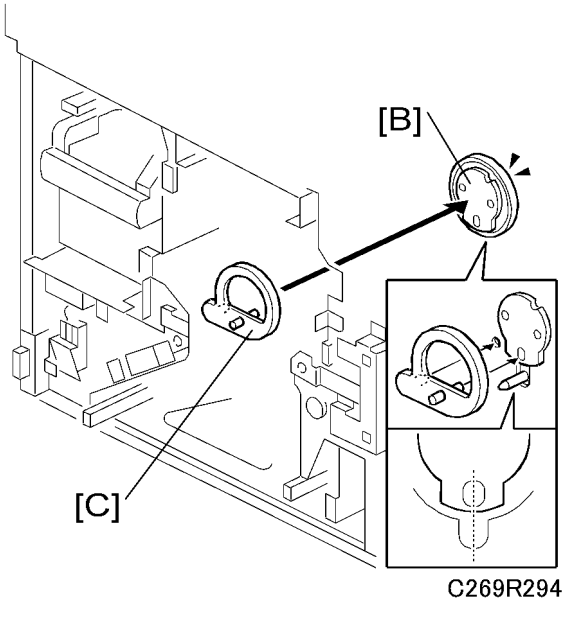
Note

- Adjust the position of the duplex unit gear [A] as shown below when one of the following parts is replaced or the duplex unit does not set correctly.
  - Main drive unit (☛ 'Main Drive Unit'): Do the adjustment whenever you take out the main drive unit.

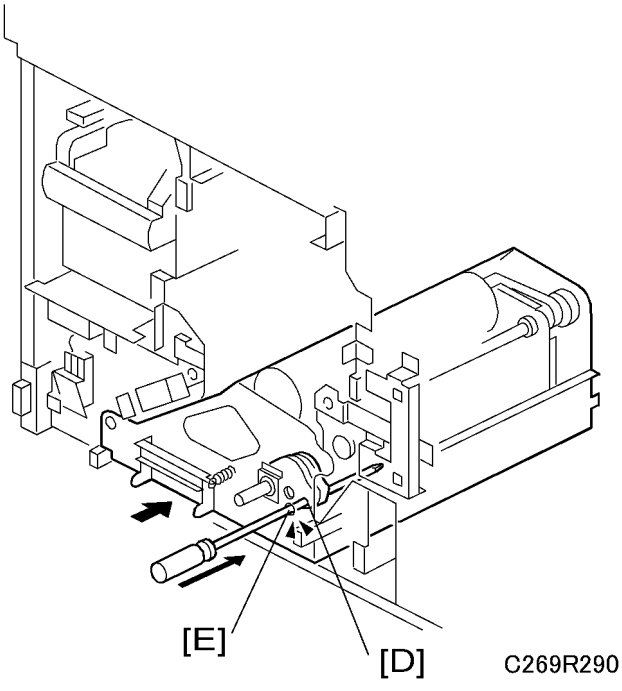
- Duplex unit (☛ 'Duplex Section – Duplex Unit'): Do the adjustment only after installing a new duplex unit.



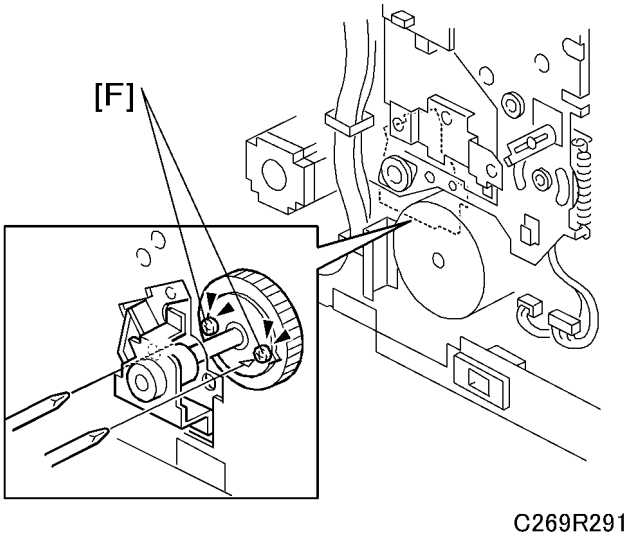
1. Take out the duplex unit from the machine (☛ 'Duplex Section - Duplex Unit').
2. Loosen the two screws [A] from the rear side of the duplex unit.
3. Remove the drum from the machine.



4. Set the drum drive securing tool [C] on the main drive unit [B].
5. Set the duplex unit in the machine.



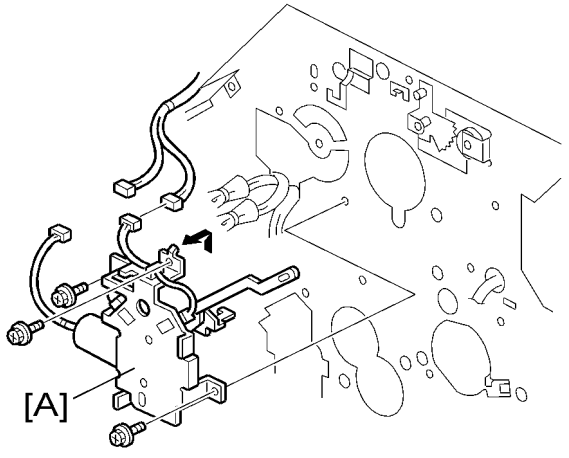
6. Insert a screwdriver through the holes in the print pressure cam [D] and in the front frame of the duplex unit [E].
7. Remove the back cover (☛ 'Cover - Back Cover')
8. Open out the boards
    - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
    - ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')



9. Tighten the screws [F] from the rear side.

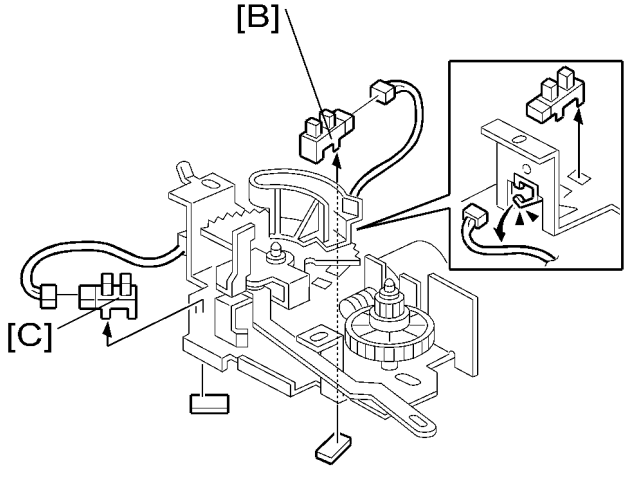
Master Clamper Unit

1. Remove the main drive unit (☛ "Main drive unit").



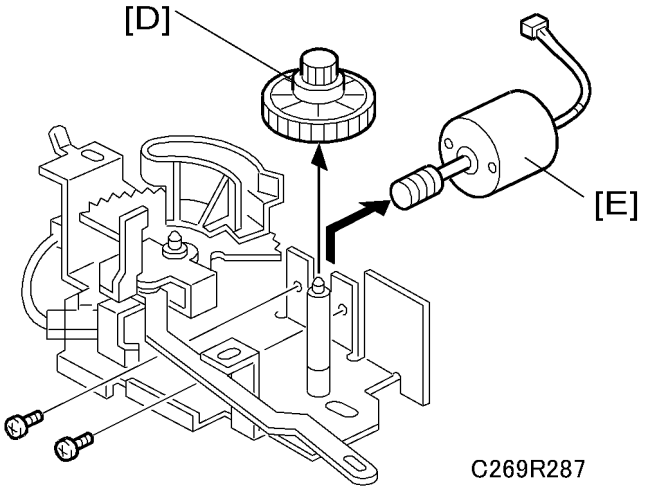
C269R285

2. Remove the master clamper unit [A] (x 3, x 2)



C269R286

3. Remove these parts:
   - Clamper close position sensor [B] (x 1, x 1)
   - Clamper open position sensor [C] (x 1, x 1)

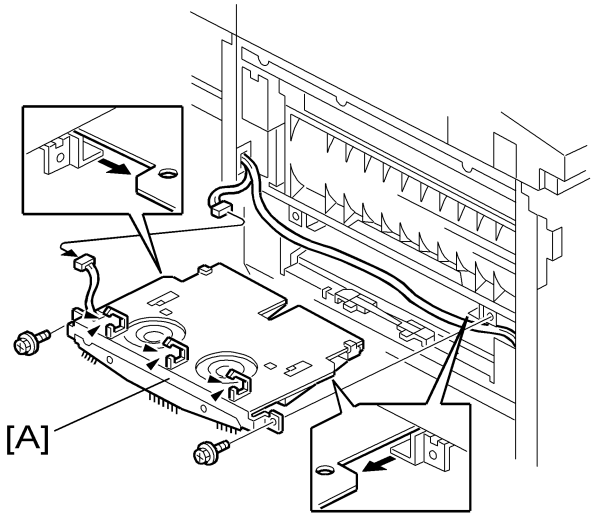


4. Remove these parts:
    - Clamper motor gear [D]
    - Clamper motor [E] (x 1, x 1)

Paper Delivery Section

Air Knife Unit

1. Remove the left cover (☛ 'Cover - left cover')



C269R221

2. Remove the air knife unit [A] (x 2 , x 1, x 3)

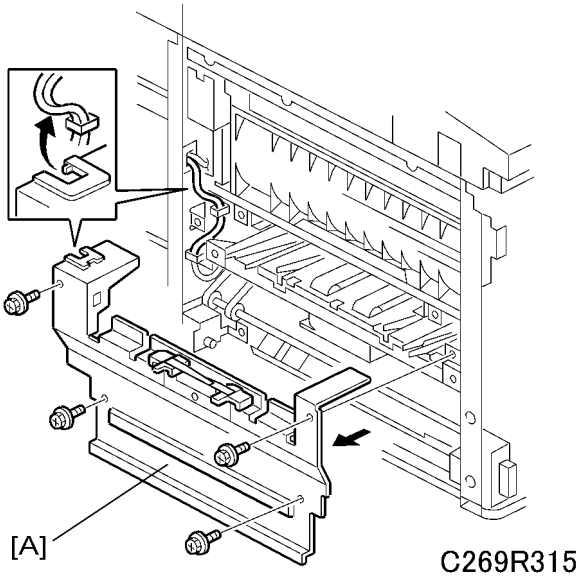
Transport Suction Fan, Wing Guide Motor, Wing Guide HP Sensor

1. Remove these parts:

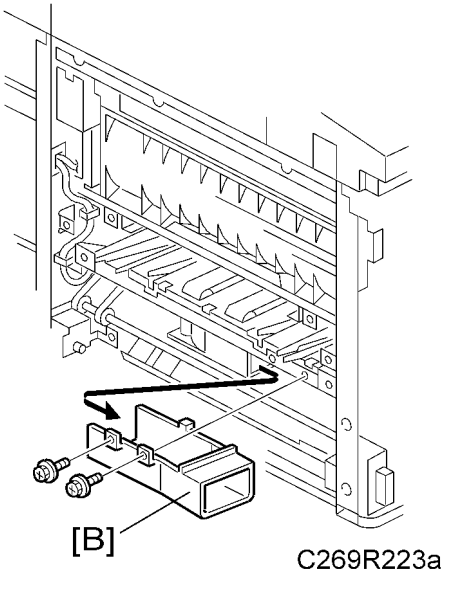
   Drum

   Left cover (☛ 'Cover - left cover')

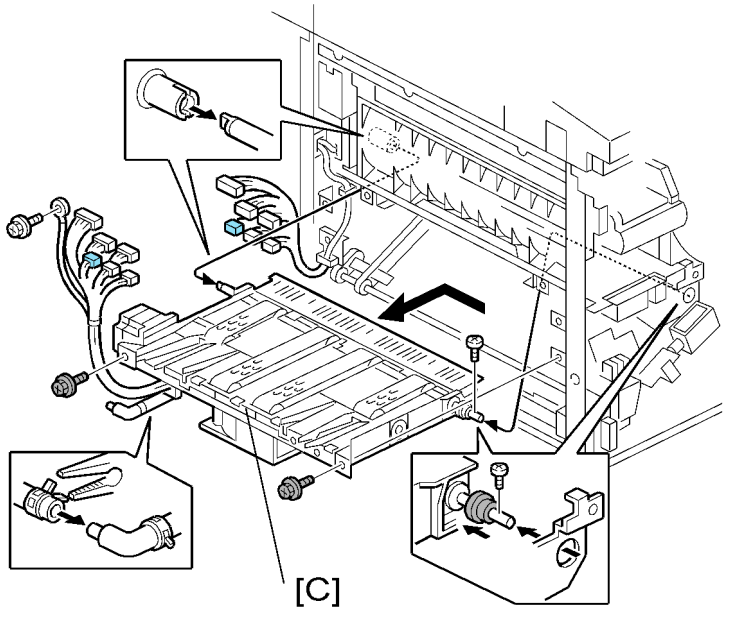
   Air knife unit (☛ 'Air Knife Unit')



2. Remove the paper delivery cover [A] (x 4)



3. Remove the transport suction fan duct [B] (x 2)

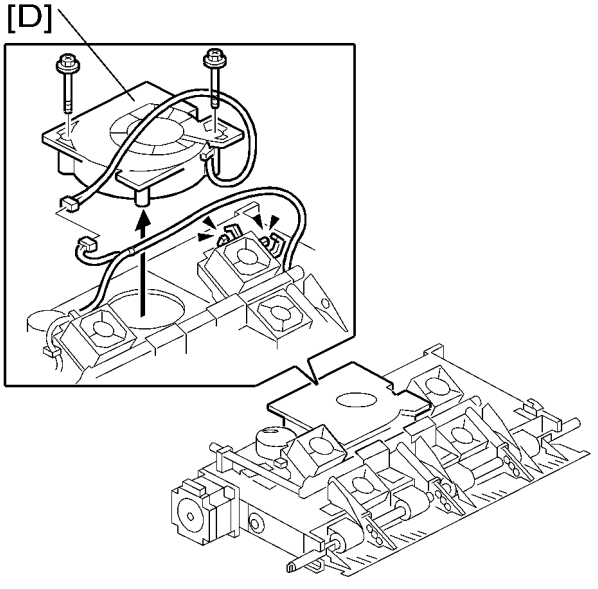


C269R224

4. Remove the paper delivery unit [C] (x 4, x 6, x 2, earth x 1, hose clamper x 1, bushing x 1).

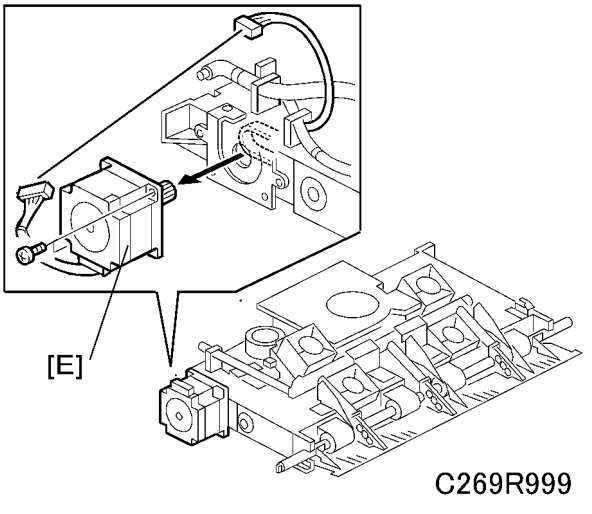
CAUTION

- When the paper delivery unit is removed or installed, make sure that the unit does not touch the duplex clamper belt.



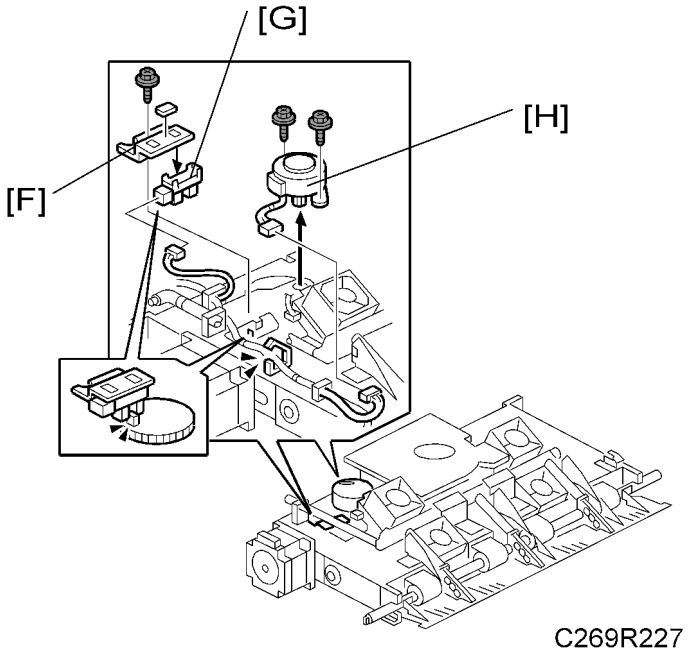
C269R225

5. Remove the transport suction fan [D] (x 2 , x 1, x 2)



C269R999

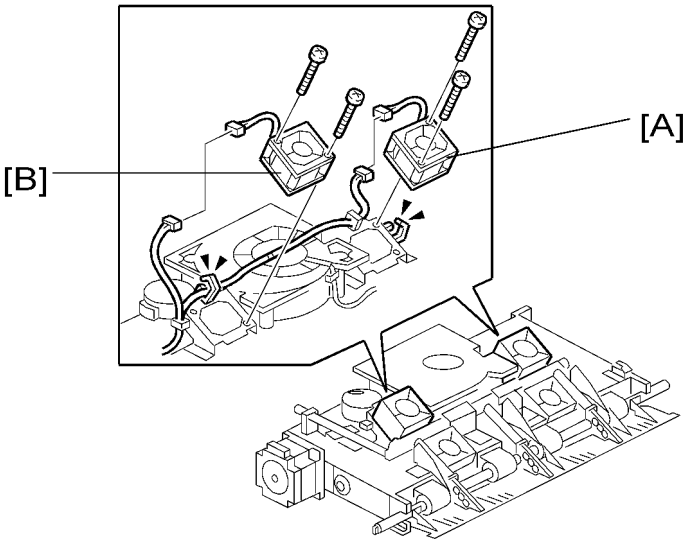
6. Remove the paper delivery motor [E] (x 2 , x 1)



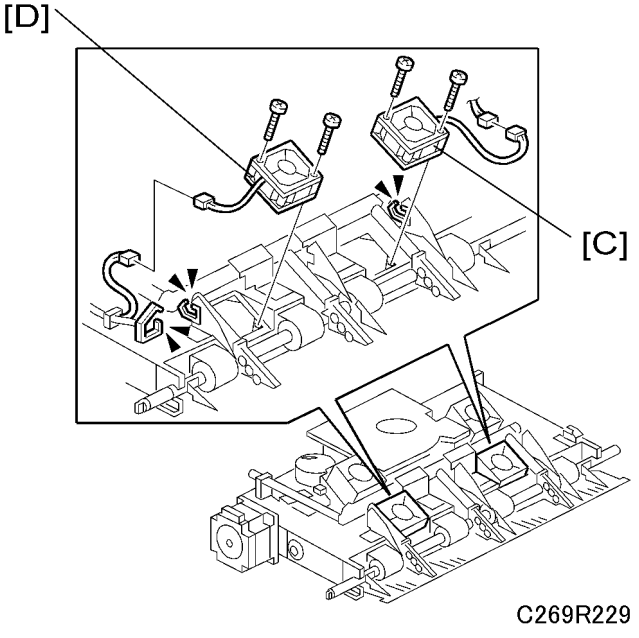
7. Remove these parts:
    - [F]: Wing guide HP sensor bracket (x 1 , x 1)
    - [G]: Wing guide HP sensor
    - [H]: Wing guide motor (x 2 , x 1)

Delivery Suction Fan and Duplex Blower Fan

Remove the paper delivery unit (☛ 'Transport Suction Fan, Wing Guide Motor, Wing Guide HP Sensor')



1. Remove these parts:
   - [A]: Duplex blower fan – operation side (x 2 , x 1, x 1)
   - [B]: Duplex blower fan – rear side (x 2 , x 1, x 1)

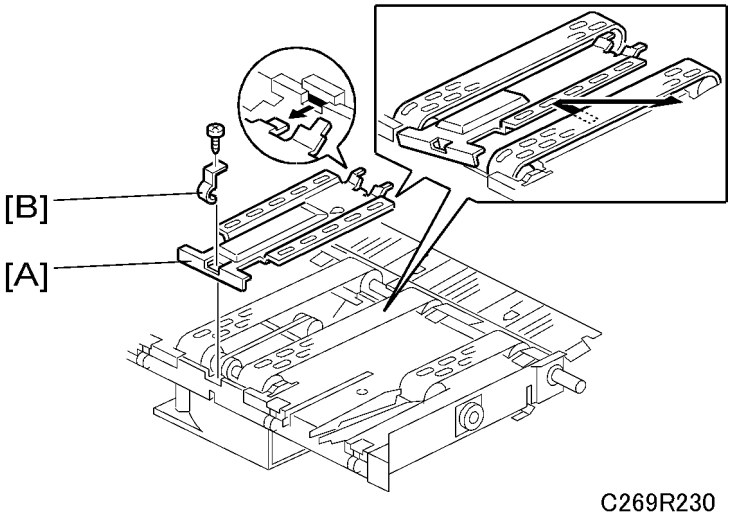


2. Remove these parts:
   - [C]: Delivery suction fan – operation side (x 2 , x 1, x 1)

- [D]: Delivery suction fan – rear side (x 2 , x 1, x 1)

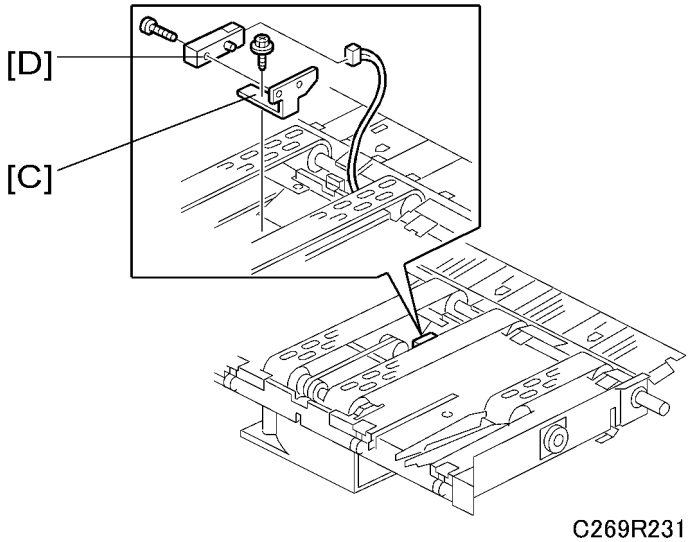
Paper Exit Sensor

Remove the paper delivery unit (☛ 'Transport Suction Fan, Wing Guide Motor, Wing Guide HP Sensor')



C269R230

1. Remove the delivery unit cover - middle [A] (x 1, ground plate [B] x 1).



C269R231

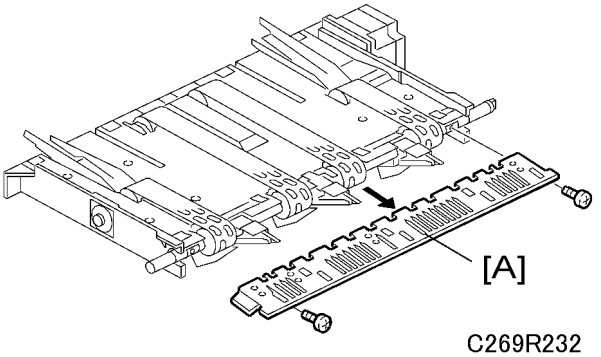
2. Remove these parts:
   - [C]: Paper exit sensor bracket (x 1 , x 1)
   - [D]: Paper exit sensor (x 1)

Transport Belts

Note

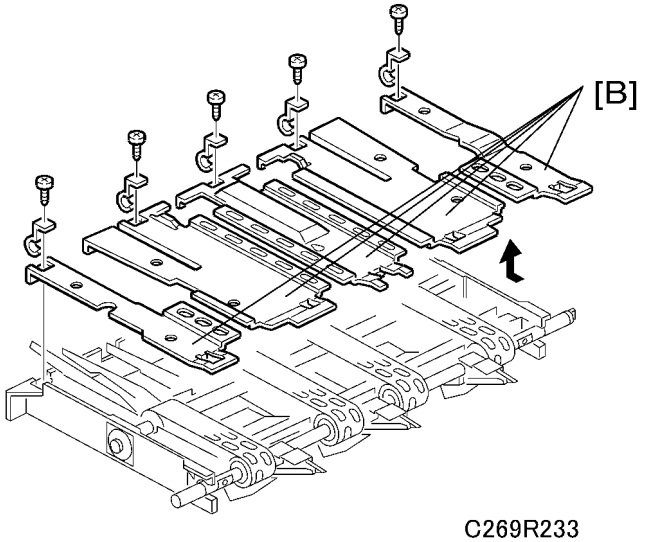
- When you clean the belts, do not use a cloth or paper towel. The surface of the belts is like sandpaper and the dust will stick to the belts if a paper towel is scraped on the surface.
- Use the adhesive side of packing tape to remove foreign material from the belts.

1. Remove the paper delivery unit (☛ 'Transport Suction Fan, Wing Guide Motor, Wing Guide HP Sensor')



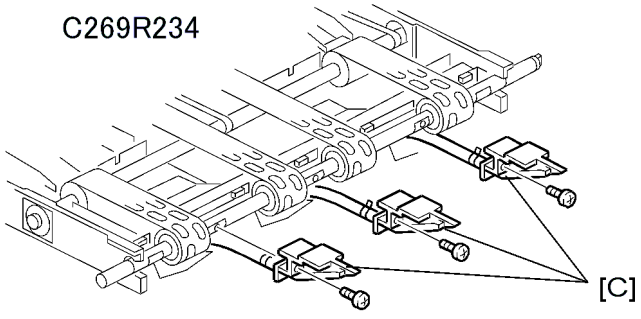
C269R232

2. Remove the junction gate plate [A] (🖉 x 2)

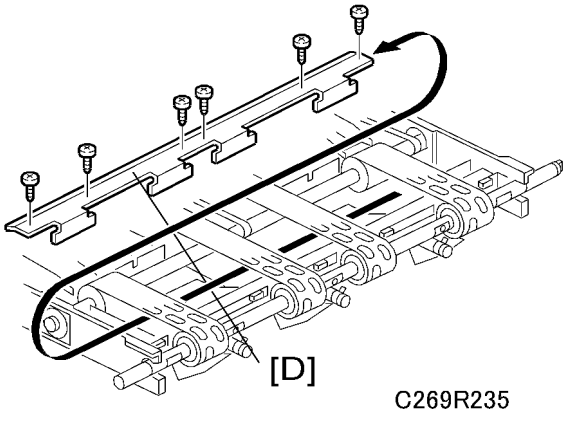


C269R233

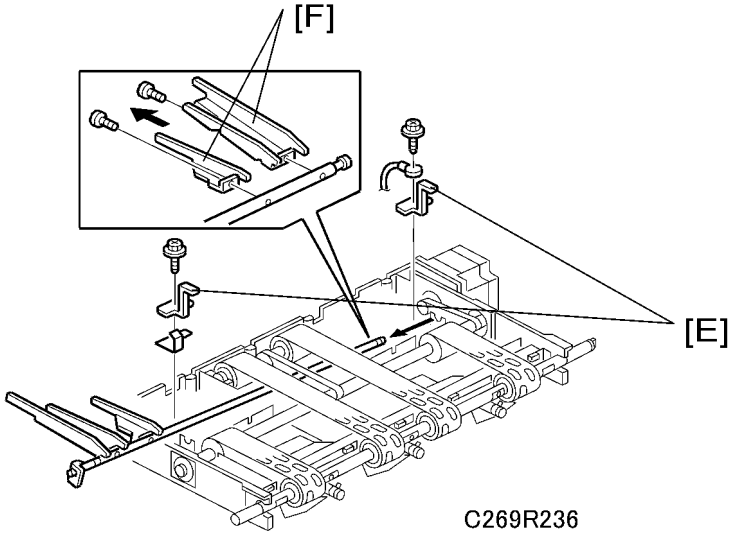
3. Remove the delivery unit covers [B] (each 🖉 x 1, each ground plate x 1)



4. Remove the junction gate pawls [C] (each ☞ x 1)



5. Remove the fixed bracket [D] (☞ x 6)

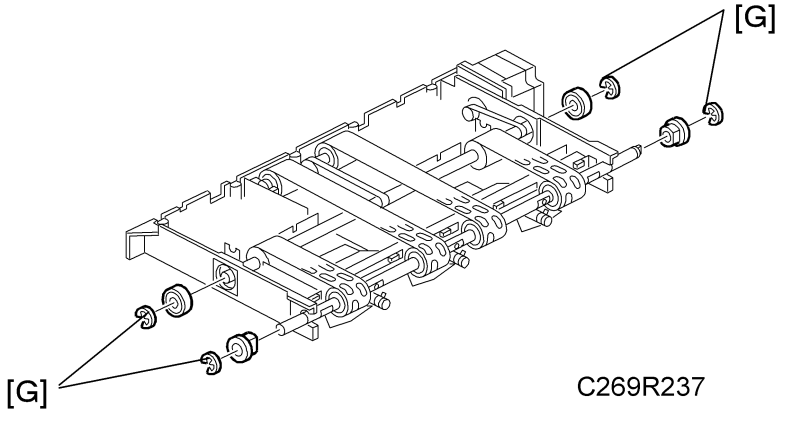


1. Remove these parts:

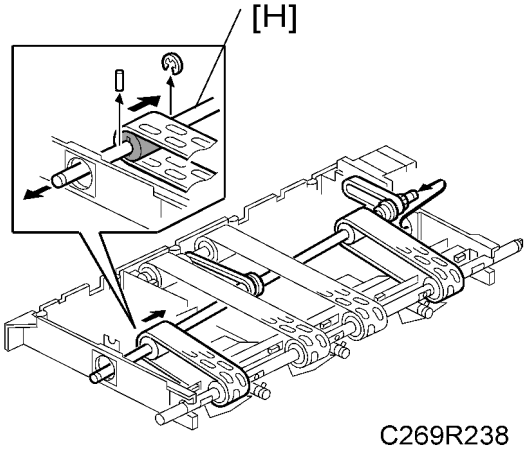
- [E]: Paper guide plate brackets (2) (x 1 each)
- [F]: Paper guide plates (2) (x 1 each)

Note

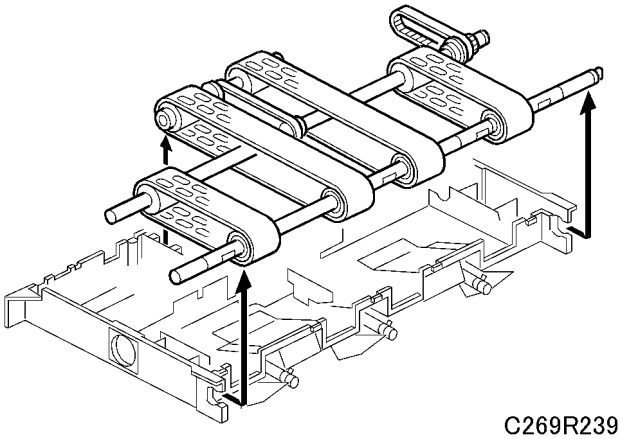
- Only remove the two paper guide plates at one end, and slide out the shaft from the operation side.



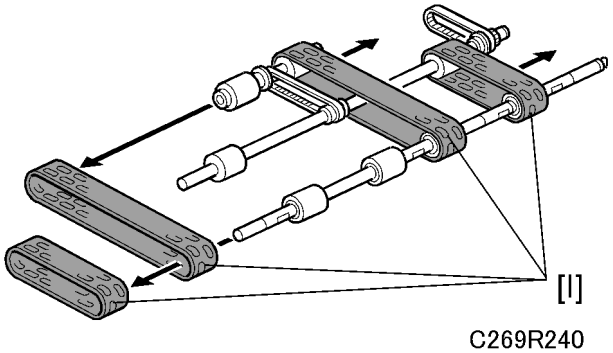
2. Remove 2 bearings and 2 bushings [G] (each x 1).



3. Remove the shaft [H] (x 1, pin x 1).



C269R239



C269R240

4. Remove the transport belts [I]

Gap Adjustment between Junction Gate and Press Roller

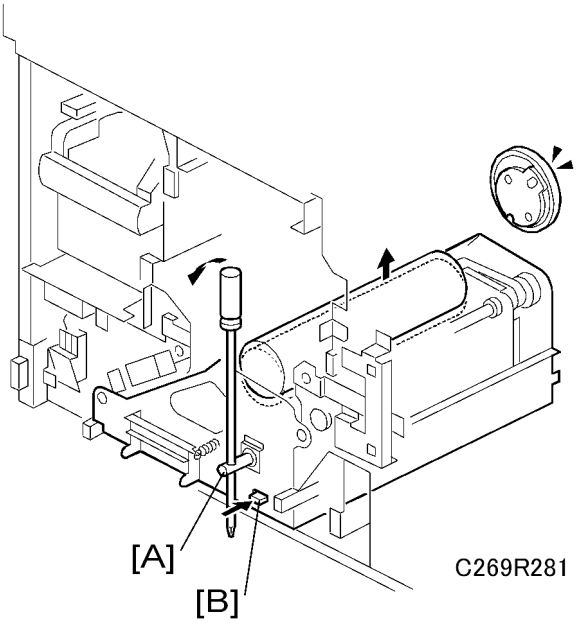
Note

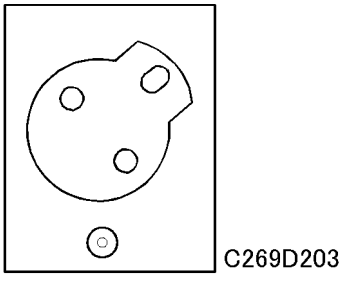
- This adjustment required in the following cases.
- After the cam follower for the junction gate is replaced.
- After the main drive unit is replaced.

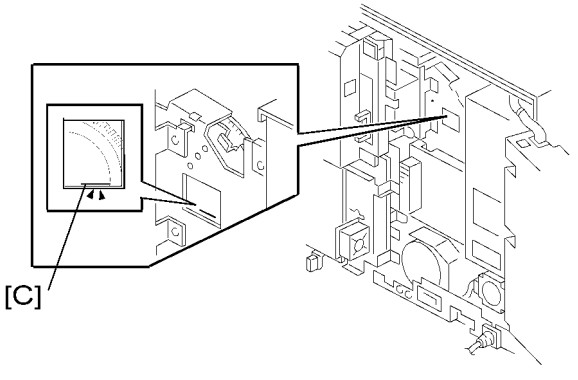
CAUTION

- This adjustment should be done before you do the gap adjustment between drum and junction gate.

1. Take out the drum from the machine
2. Remove the back cover (☛ 'Cover - Back Cover')
3. Open out the PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')



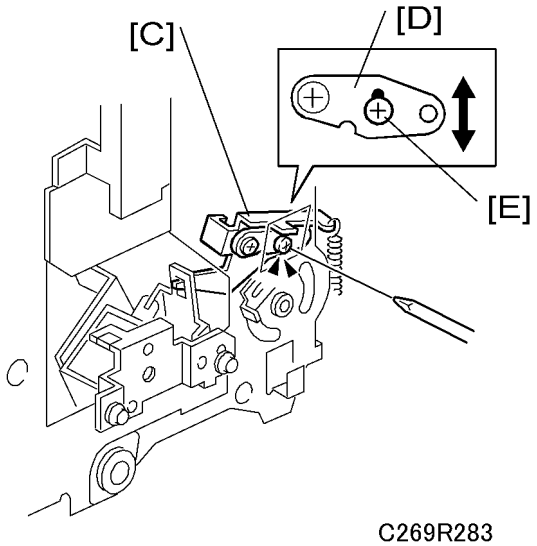




C269R904

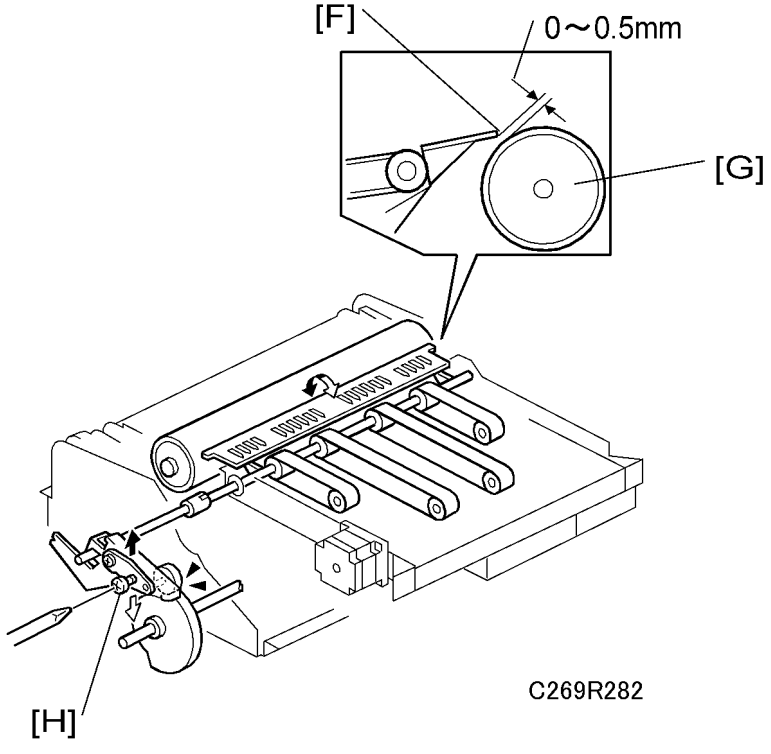
4. Insert a screwdriver into the hole in shaft [A] and press the pressure release lever [B]. Then turn the shaft until the drum drive disk is in the position as shown above (230 degrees from the drum home

position). There is a window in the frame of the main drive unit, through which you can see a scale on the encoder disk [C] to tell you the current angle of rotation.



C269R283

5. Loosen the screw [E] for the cam follower [D] of the junction gate release arm [C].



C269R282

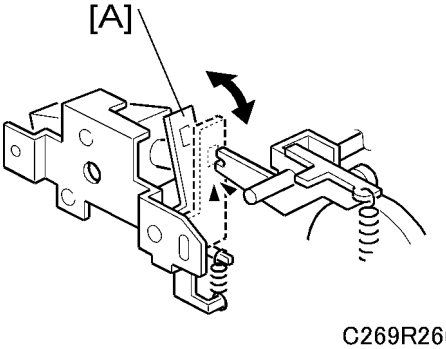
6. Adjust the gap between press roller [G] and junction gate plate [F] to 0 to 0.5mm. Then tighten the screw [H] (the same as screw [E] in a previous step).

Gap Adjustment between Junction Gate and Drum

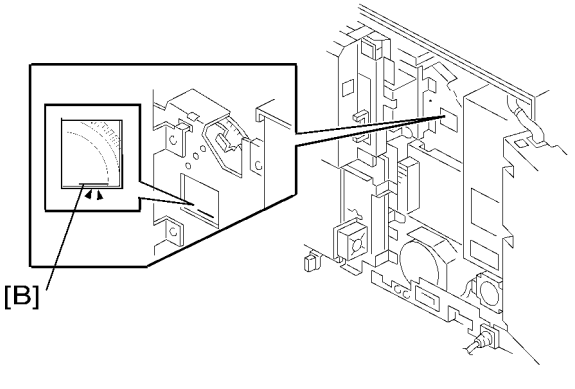
⚠CAUTION

- Adjust the gap between junction gate and press roller before you do this adjustment.

1. Set the drum.
2. Remove the duplex unit
3. Remove the back cover (☛ 'Cover - Back Cover')
4. Open out the boards
   - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
   - ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
5. Remove the main motor control board (☛ 'Boards - Main Motor Drive Board')

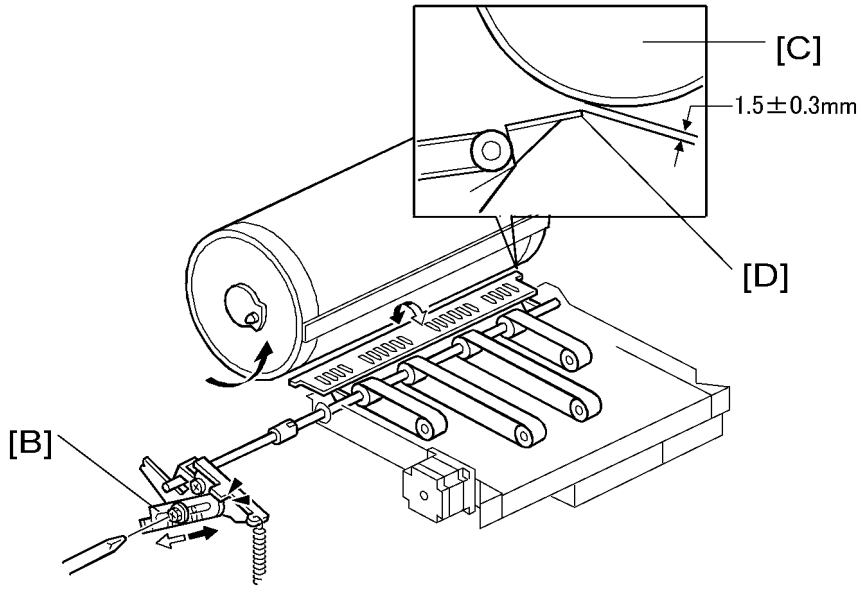


C269R266

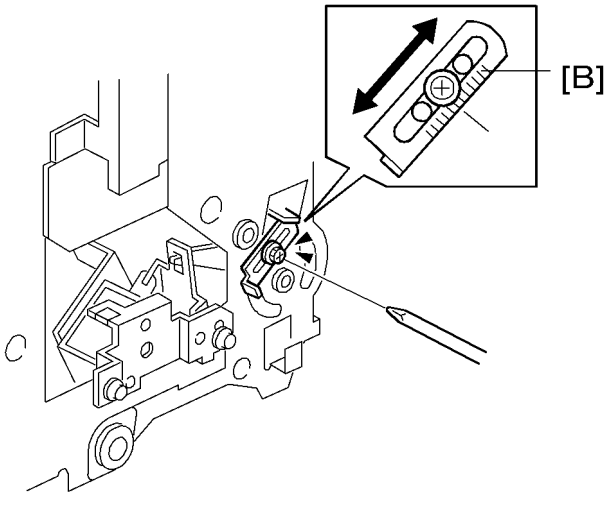


C269R904a

6. Release the junction gate release lever [A] and rotate the main motor by hand to 90 degrees from the drum home position. There is a window in the frame of the main drive unit, through which you can see a scale on the encoder disk [B] to tell you the current angle of rotation.



C269R279

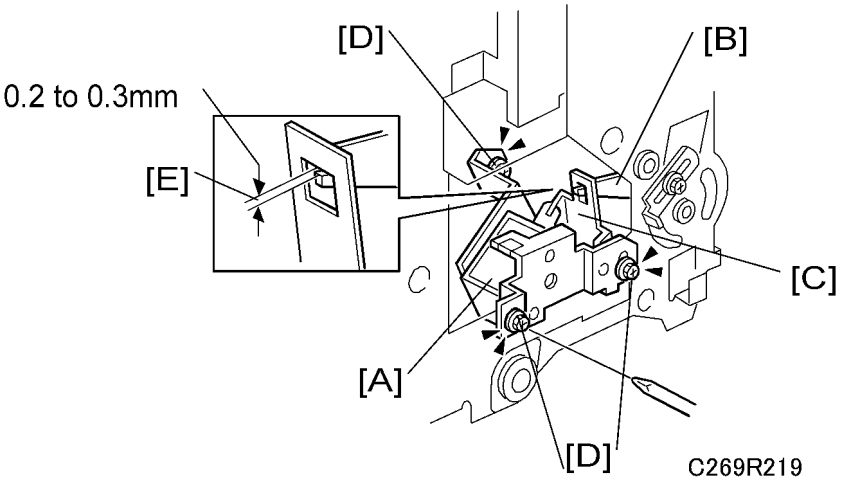


C269R280

1. Loosen the screw on the stopper [B]. Then, adjust the gap between junction gate [D] and drum [C] to 1.5 ±0.3mm. Then tighten the screw.

Junction Gate Release Lever Adjustment

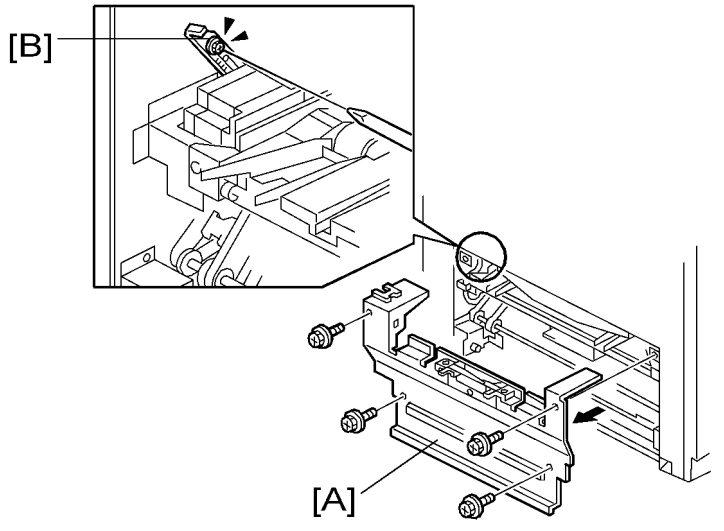
1. Set the drum.
2. Remove the back cover (☛ 'Cover – Back Cover')
3. Open out the boards
   - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
   - ACU-ECU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')
4. Remove the main motor control board (☛ 'Boards - Main Motor Drive Board')



5. Loosen the three screws [D] on the junction gate solenoid bracket [A].
6. Adjust the gap [E] between junction gate release lever [B] and junction gate release bracket to between 0.2mm and 0.3mm.
7. Tighten the screws.

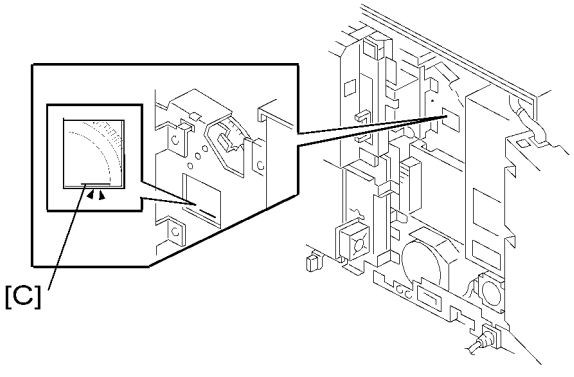
Gap Adjustment between Paper Exit Pawl and Drum

1. Set the drum.
2. Remove the duplex unit.



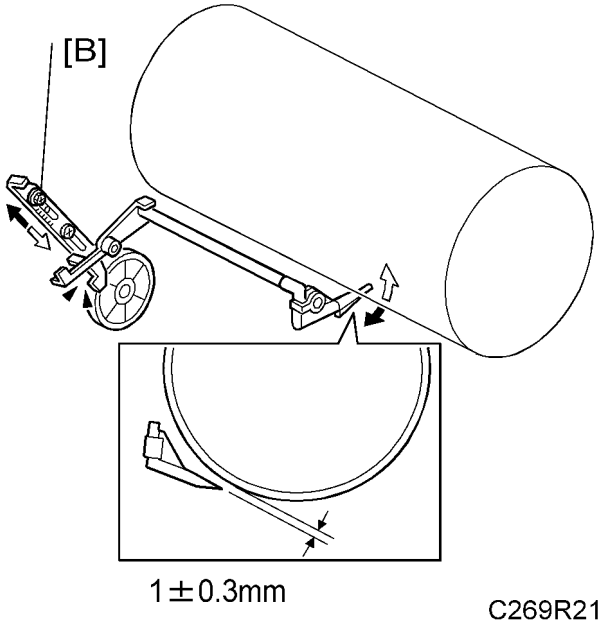
C269R218

3. Remove these parts:
    - Paper delivery cover [A] (x 4)
    - Back cover (☛ 'Cover – Back Cover')
4. Open the boards
    - PSU board (☛ 'Boards - ACU and ECU, PSU Opening Procedure')



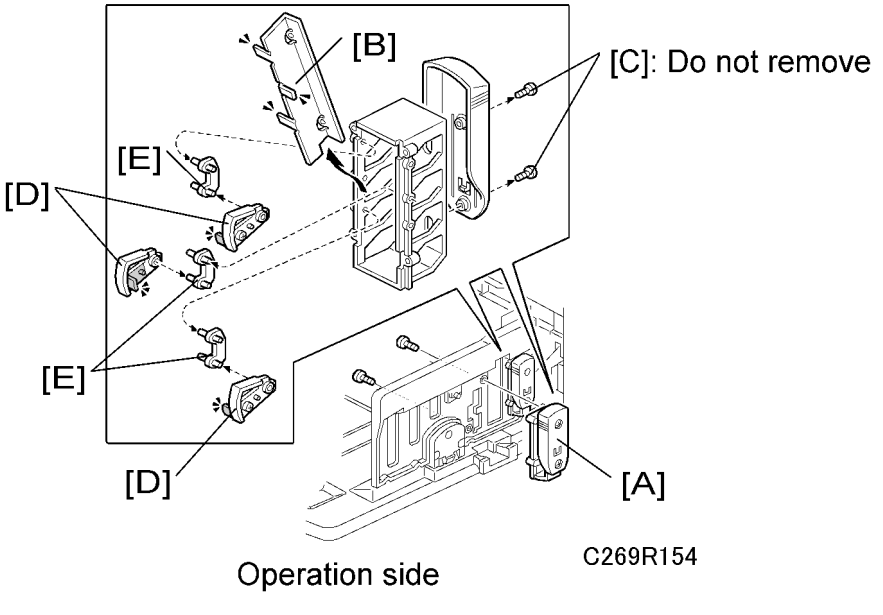
C269R904

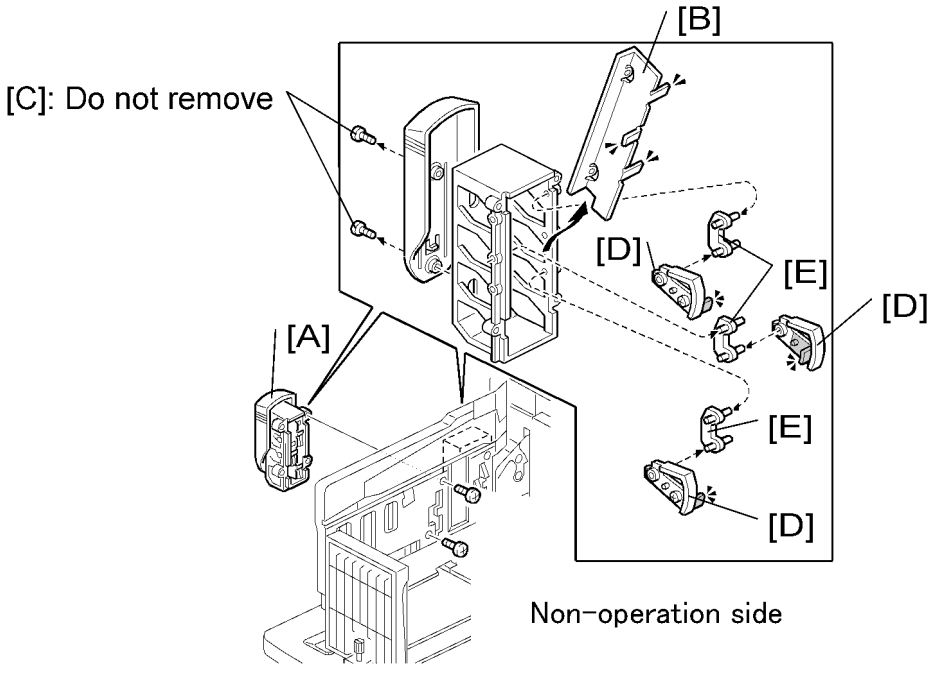
5. Rotate the main motor by hand to 90 degrees from the drum home position. There is a window in the frame of the main drive unit, through which you can see a scale on the encoder disk [C] to tell you the current angle of rotation.



6. Loosen the screw on the adjustment lever. Adjust the gap between paper exit pawl and drum to 1 ±0.3mm. Then tighten the screw.

Chocks





C269R155

1. Chocks (☞ x 2)
2. Buffer fin bracket (☞ x 2 [C]) – Normally, do not disassemble parts [B] to [E] in the field.
3. Buffer fin
4. Buffer fin link

4. Troubleshooting

General

⚠WARNING

- Never turn off the main power when the power LED is lit or flashing. To avoid damaging the hard disk or memory, press the operation power switch to switch the power off, wait for the power LED to go off, and then switch the main power switch off.

Note

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

Classification List

Number	Unit
100	Scanner
200	Mater Making Unit
300	Drum
400	Master Exit
500	Paper feed and delivery (including duplex)
600	Electrical component
700	Options
800	ACU
900	ACU

Service Call Code Table

Code	Title	Conditions	Possible Causes
Scanner			
SC100	Scanner motor lock	Scanner HP sensor does not turn on after the scanner turns in the opposite of the scanning direction for more than 10 seconds. Scanner HP sensor does not turn off after the scanner moves from the home position towards the scanning direction for more than 2 seconds.	• Defective scanner HP sensor • Scanner wire slip-off • Defective scanner motor

Code	Title	Conditions	Possible Causes
Master Making Unit			
SC200	Thermal head ID error	The CPU detects an abnormal ID signal from the thermal head.	• Defective thermal head • Defective ECU • Bad connection at thermal head, for example a fragment of the master roll is present.
SC201	Thermal head energy pulse error	The CPU detects an abnormal thermal head energy control pulse.	• Defective ECU
SC202	Thermal head thermistor short	The signal from the thermal head thermistor reaches more than 4.27 volts.	• Thermistor open circuit • Related connector disconnected
SC203	Thermal head temperature abnormal	When the Start key is pressed, a temperature of 54 °C or more is detected at the thermal head.	• Thermistor short • Defective thermal head
SC210	Cutter unit error	The cutter HP sensor does not turn off after turning on the cutter for more than 3 seconds. The cutter HP sensor does not turn on after turning on the cutter for more than 2.9	• Defective sensor • Defective motor • Jammed master

Code	Title	Conditions	Possible Causes
		seconds, and the cutter HP sensor does not turn on after turning on the cutter motor in the opposite direction for more than 3 seconds.	
SC211	Platen release motor lock	The sensor does not turn off for more than 5 seconds after the platen release motor on signal is generated. The sensor does not turn on for more than 5 seconds after the platen release motor on signal is generated.	• Defective sensor • Defective motor
SC212	Master cut error	The master edge sensor remains on after the first master cut recovery operation. (Normally, the master is cut if the master edge sensor detects a mis-cut master the first time.) The master edge sensor remains on after the machine detects SC300 (main motor lock) during master wrapping. Normally, the cutter operates if the machine detects SC300 (Main motor lock) during wrapping a master on drum, also after the master edge sensor is still ON when the drum turns to HP again. The cutter HP switch does not turn on within 3 seconds after starting the cutter motor, and the master edge sensor remains on when the drum turns to HP after the cutter motor turns in the opposite direction and returns to HP.	• Defective master edge sensor • Defective cutter unit • Defective master vacuum fans • Jammed master
SC213	Master Making Unit lock solenoid error	The master making unit lock sensor does not turn off after releasing the master making unit lock solenoid.	• Defective master making unit lock solenoid • Defective master making unit lock sensor.

Code	Title	Conditions	Possible Causes
Drum			

Code	Title	Conditions	Possible Causes
SC300	Main motor lock (1st drum position sensor does not turn on)	At power on or when the drum returns to home position, the 1st drum position sensor is not activated for more than 5 seconds after the main motor on signal is generated.	• Defective sensor • Defective main motor • Defective main motor drive board • Defective FU703+704 on the PSU • Damage gear of main motor
SC301	Main motor lock (motor control signal error)	The CPU on the motor control board detects an abnormal signal from the main motor encoder.	• Defective main motor • Defective main motor drive board
SC302	Main motor lock (3rdDrum Home position sensor error)	When the drum is at the home position, 3rddrum home position sensor does not turn on 3 continuous times.	• Defective sensor
SC304	Drum shift motor lock (HP sensor error)	At power on, the sensor signal does not change for more than 3 seconds after the drum shift motor on signal is generated.	• Defective sensor • Defective motor
SC305	Drum shift motor lock (no encoder pulse)	At power on or when the image side-to-side shift mode is selected, the CPU detects no encoder pulse from the sensor for more than 6 seconds after the drum shift motor on signal is generated.	• Defective sensor
SC306	Drum thermistor shut off	The signal from the thermistor cuts off. (below -25 degrees centigrade.)	• Thermistor circuit cut off
SC307	Hot Ink	The temperature of ink is more than 61 ° C	• Thermistor short
SC308	Ink pump motor lock	The sensor signal does not change status after the ink pump motor on signal is generated for 8 seconds.	• Defective sensor • Defective motor • Defective ink pump

Code	Title	Conditions	Possible Causes
SC311	Pressure cam shift motor lock (HP sensor error)	The pressure cam HP sensor does not turn off for more 3 seconds when the pressure cam is at HP. The pressure cam HP sensor does not turn on for more than 3 seconds when the pressure cam is not at HP.	• Defective sensor • Defective motor
SC312	Pressure cam shift motor lock (Encoder sensor error)	The printing pressure encoder SN does not detect within 3 seconds after the pressure cam turns to HP.	• Defective sensor • Defective motor
SC313	Clamper motor lock (Clamper close position sensor error)	When the master clamper is being opened, the sensor is not activated after the clamper motor on signal is generated. The motor is not de-activated for more than 4 seconds	• Defective clamper close position sensor • Defective motor • Defective drum guide drive • Defective 2nd drum position sensor • Defective movement of clamper
SC314	Clamper motor lock (Clamper open position sensor error)	When the master clamper is being opened, the sensor is not activated after the clamper motor on signal is generated. The motor is not de-activated for more than 4 seconds	• Defective clamper open position sensor • Defective motor • Defective drum guide drive • Defective 2nd drum position sensor • Defective movement of clamper
SC315	Idling roller motor lock	The motor does not activate for more than 4 seconds after the signal is generated.	• Defective idling roller • Defective motor • Defective sensor

Code	Title	Conditions	Possible Causes
Master Exit			
SC400	Pressure plate motor lock	The pressure plate HP sensor and limit position sensor do not turn ON for more than 8 seconds after the pressure plate motor on signal is generated. The pressure plate does not reach home while traveling from the master eject ready position to the compression position for more than 3 seconds after the pressure plate motor on signal is generated. The pressure plate does not reach the home position from the pressure position for more than 6 seconds after the pressure plate motor on signal is generated. The pressure plate does not reach pressure prelate limit position for 4.5 seconds (A3) and 3.5 seconds (A4).	• Defective sensor • Defective motor • Jammed master
SC401	Master Eject Box lock solenoid error	The eject box lock sensor does not turn off after lifting the lock twice.	• Defective box lock solenoid • Defective sensor

Code	Title	Conditions	Possible Causes
Paper Delivery and Duplex transport			
SC500	Feed pressure motor lock	The sensor does not change status for more than 6 seconds after the feed pressure motor on signal is generated.	• Defective feed pressure detection board • Defective feed pressure motor
SC501	Separation pressure motor lock	The sensor does not change status for more than 6 seconds after the separation pressure motor on signal is generated.	• Defective separation pressure detection board • Defective separation pressure motor
SC503	Feed start sensor error	The sensor is not activated for more than 5 seconds after the main motor on signal is generated.	• Defective sensor

Code	Title	Conditions	Possible Causes
SC505	Friction pad shift motor lock	The sensor's status remains the same after the motor turns for 5 seconds.	• Defective sensor • Defective motor
SC512	Registration Press Motor lock	The registration roller release sensor does not change the status for more than 3 seconds after the Registration press motor on signal is generated.	• Defective motor • Defective registration roller release sensor
SC513	Main drive encoder	There is no count pulse for 2 seconds when the drum is turning during duplex control initialization. The machine does not detect the Main drive encoder within 32ms after starting the paper feed motor.	• Main drive encoder detection error • Main drive encoder or sensor defective • Duplex board error • I/O board • Main motor lock from other cause
SC514	Junction gate motor	Junction gate HP sensor does not turn OFF after 3 seconds when duplex control goes to home position. Junction gate HP sensor does not turn ON after 3 seconds when duplex control goes to home position but is not at home position.	• Junction gate HP sensor error • Junction gate motor error • Duplex board error • Motor locked from other cause
SC520	Paper table lock (paper table lower limit sensor)	When the table moves upwards, the sensor does not change status for more than 7.5 seconds after the paper table motor on signal is generated.	• Defective sensor • Defective motor • Mechanism blocked by foreign material • Defective gear • A spring has come off
SC521	Paper table lock (paper table height sensor)	When the table moves upwards, the sensor does not change status for more than 7.5 seconds after the paper table motor on signal is generated.	• Defective sensor • Defective motor • Mechanism blocked by foreign material • Defective gear • A spring has come off

Code	Title	Conditions	Possible Causes
SC550	Duplex clamper motor	Duplex clamper HP sensor does not turn OFF after 2 seconds when duplex control.goes to home position. Duplex clamper HP sensor does not turn ON after 2 seconds when duplex control goes to home position but is not at home position.	• Duplex clamper HP sensor error • Duplex board error • Motor locked from other cause
SC551	Paper guide motor	Paper guide HP sensor does not turn OFF after 3 seconds when duplex control goes to home position. Paper guide HP sensor does not turn ON after 3 seconds when duplex control goes to home position but is not at home position.	• Paper guide HP sensor error • Duplex board error • Motor locked from other cause
SC552	Exit pawl pump motor	Exit pawl pump HP sensor does not turn OFF after 6 seconds when duplex control goes to home position. Exit pawl pump HP sensor does not turn ON after 6 seconds when duplex control goes to home position but is not at home position.	• Exit pawl pump HP sensor error • Motor locked from other cause
SC553	Junction gate motor	Junction gate HP sensor does not turn OFF after 6 seconds when duplex control goes to home position. Junction gate HP sensor does not turn ON after 6 seconds when duplex control goes to home position but is not at home position.	• Junction gate HP sensor error • Motor locked from other cause
SC554	Duplex unit lock release solenoid	Duplex unit lock release sensor does not turn OFF before 3 seconds when the duplex unit lock release solenoid is ON. Duplex unit lock release sensor does not turn ON before 3 seconds when the duplex unit lock release solenoid is OFF.	• Duplex unit lock release solenoid error • Duplex unit lock release sensor error • Mechanism blocked by foreign material

Code	Title	Conditions	Possible Causes
SC555	Drum lock release solenoid	When the drum lock release sensor does not turn OFF before 3 seconds when the drum lock release solenoid is ON. When the drum lock release sensor does not turn ON before 3 seconds when the drum lock release solenoid is OFF	• Drum lock release solenoid error • Drum lock release sensor error • Mechanism blocked by foreign material
SC556	Pressure cam shift motor	Pressure cam HP sensor does not turn ON after 100 pulses from the front or back cam position. If pressure cam HP sensor does not turn ON to OFF after 64 pulses when the cam moves to the front or back printing position. Pressure cam HP sensor does not turn ON after initialization check when turning ON main switch.	• Pressure cam HP sensor error • Duplex board error • Mechanism blocked by foreign material

Code	Title	Conditions	Possible Causes
Electrical Components			
SC600	NVRAM (ECU) version differ	There is no version history in the program of NVRAM	• Incorrect firmware installed.
SC601	Flash ROM (ECU) error	Upload error to Flash ROM	• Defective ECU
SC602	Ri10 error	Ri10 cannot be started, read, written.	• Defective ECU
SC603	MSU error	The machine detects a failure in the memory control ASIC. The memory control ASIC cannot access to RAM normally.	• Defective ECU board • Replace the RAM on the ECU board • Defective connection of cable on ECU board
SC604	Make-up RAM error	The RAM for the make-up pattern data cannot be reset.	• Defective ECU

Code	Title	Conditions	Possible Causes
SC605	Shut off solenoid lock	Does not shut off for more than 6 seconds after the shut off solenoid on signal is generated.	• Defective main switch
SC670	Engine response error	After powering on the machine, a response is not received from the engine within the specified time.	• Loose connection between ACU and ECU board • Defective ECU board • Defective ACU board
SC672	Operation Panel Error	Operation panel does not display correctly	• Defective software of ACU or panel • Defective ACU

Code	Title	Conditions	Possible Causes
SC720	Paper table motor lock – LCIT	The paper table upper limit sensor or lower limit sensor does not change the status for more than 15 seconds after the paper table motor on signal is generated.	• Defective sensor • Defective motor • Mechanism blocked by foreign material
SC725	Paper table motor lock – LCOT	The paper table upper limit sensor or lower limit sensor does not change the status for more than 15 seconds after the paper table motor on signal is generated.	• Defective sensor • Defective motor • Mechanism blocked by foreign material
Options ADF			
SC780	DF Gate signal error	DF gate signal level does not change to "H" 10 seconds after paper feed starts at the registration position.	• Harness error • ADF Board error
SC781	DF Connection error	When an ADF for another model is connected.	• The wrong ADF is connected • Harness error • ADF Board error

Code	Title	Conditions	Possible Causes
ACU			

Code	Title	Conditions	Possible Causes
SC818	Watch-dog error	While the system program is running, other processes do not operate at all.	• Defective ACU board • Software error (ACU)
SC819	Kernel panic error	Processing cannot be continued by kernel	• Software error (ACU)
SC820	Self-Diagnostic Error: CPU	The central processing unit returned an error during the self-diagnostic test.	• Defective ACU board • Software error (ACU)
SC821	Self-Diagnostic Error: ASIC	The ASIC returned an error during the self-diagnostic test because the ASIC and CPU timer interrupts were compared and determined to be out of range.	• ACU board defective
SC822	Self-Diagnostic Error: HDD	The hard disk drive returned an error during the self-diagnostic test.	• HDD defective • HDD connector defective • ACU board defective
SC823	Self-diagnostic Error: NIC	The network interface control returned an error during the self-diagnostic test.	• Defective ACU board
SC824	Self-diagnostic Error: NVRAM	The resident non-volatile RAM returned an error during the self-diagnostic test.	• NVRAM of ACU board damaged or abnormal • ACU board defective • NVRAM socket damaged
SC825	Self-diagnostic Error: NVRAM (Option)	The resident non-volatile RAM returned an error during the self-diagnostic test.	• NVRAM of ACU board damaged or abnormal • NVRAM socket damaged
SC826	Self-diagnostic Error: NVRAM (RTC Option)	If this NVRAM is installed, the difference between the 1 second measurement of RTC and 1 second CPU timer exceeds the allowable limit.	• RTC device error
SC827	Self-diagnostic Error: RAM	The resident RAM returned a verify error during the self-diagnostic test.	• Defective ACU board

Code	Title	Conditions	Possible Causes
SC828	Self-diagnostic Error: ROM	The resident read-only memory returned an error during the self-diagnostic test.	• ACU board defective • Firmware defective (ACU)
SC829	Self-diagnostic Error: DIMM-RAM	The DIMM-RAM returned an error during the self-diagnostic test.	• DIMM-RAM defective • ACU board defective
SC834	Self-diagnostic Error: Engine I/F Option memory	If there is an error when doing a write/verify check on the RAM on the engine I/F board.	• Memory device error
SC835	Self-Diagnostic Error: Centro device	Loopback test error.	• Loopback connector not detected • IEEE1284 connector defective • ACU board defective
SC836	Self-diagnostic Error: Resident Font ROM	The resident font ROM returned an error during the self-diagnostic test.	• Defective ACU board
SC837	Self-diagnostic Error: Optional Font ROM	The optional font ROM returned an error during the self-diagnostic test.	• Defective ACU board
SC838	Self-diagnostic Error: Clock generator	The setting value of the clock generator is wrong	• Defective ACU board
SC850	Network I/F Abnormal	The IP address is the same as another device on the network	• Change the IP address • ACU board defective
SC851	IEEE 1394 I/F Abnormal	IEEE1394 interface error	• IEEE1394 interface board defective • ACU board defective
SC853	Wireless LAN card not detected	The wireless LAN card is not detected before communication is established, though the wireless LAN board is detected.	• Loose connection

Code	Title	Conditions	Possible Causes
SC854	Wireless LAN card not detected	The wireless LAN card is not detected after communication is established, though the wireless LAN board is detected.	• Loose connection
SC855	Wireless LAN card error	An error is detected in the wireless LAN card.	• Loose connection • Defective wireless LAN card
SC856	Wireless LAN board error	An error is detected in the wireless LAN board.	• Defective wireless LAN board • Loose connection
SC857	USB interface error	The USB interface cannot be used due to a driver error.	• Defective USB driver • Loose connection
SC860	Startup without HDD connection at main power on	The hard disk connection is not detected.	• Initialize HDD • Defective HDD • Damaged data
SC861	Startup without HDD detection at power switch on	The hard disk connection is not detected.	• Defective HDD • HDD connector loose or defective • Defective ACU
SC862	Maximum number of bad sectors detected on HDD	Up to 101 bad sectors have appeared in the area on the hard disk where image data is archived, and the hard disk may require replacement.	• Defective HDD
SC863	Startup without HDD data lead	Data stored on the hard disk is not read correctly.	• A bad sector occurred during operation of the HDD
SC864	HDD data CRC error	During operation of the HD, the HDD responded with a CRC error.	• Data transfer was abnormal in the data read from the HDD. • Defective HDD
SC865	HDD access error	The hard disk detected an error.	• Error detected other than the bad sectors error

Code	Title	Conditions	Possible Causes
			(SC863) or the CRC error (SC864)
SC900	Electronic total counter error	The value of the total counter has already exceeded 9,999,999	• NVRAM of ACU board defective
SC920	Printer application error	An error is detected in the printer application program.	• Defective software • Unexpected hardware resource error (e.g., memory shortage)
SC990	Software performance error	The software attempted to perform an unexpected operation.	• Software of ACU defective • Internal parameter incorrect • Insufficient working memory
SC991	Software continuity error	The software attempted to perform and unexpected operation. However, unlike SC990, the object of the error is continuity of the software.	• Software bug • Internal parameter incorrect • Insufficient working memory
SC992	Undefined error	An undefined error has occurred.	-
SC998	Application start error	After power on the application does not start within 60 s. (All applications neither start nor end normally.)	• Software defective • An option required by the application (RAM, DIMM, board) is not installed
SC999	Program download error	Download from SD card finished with an error	• Board installation error • ECU board error • SD card error • Power shut down during download; replace the ACU board • Incorrect type of card

Electrical Component Defects

Jam Types

	Jam Type
Paper feed	A Jam
Drum	B Jam
Paper eject	C Jam
Master feed	D Jam
Master eject	E Jam
ADF	P Jam
Duplex feed section	Z Jam

Scanner

Name	State	Symptoms
Scanner HP sensor	The sensor stays on (detects that the scanner is in home position, but it is not)	If the sensor does not turn off two seconds after the main switch is turned on, SC100 occurs (defective scanner drive motor)
	The sensor stays off (detects that the scanner is not in home position, but it is)	If the sensor does not turn on 10 seconds after the main switch is turned on or the start button is pushed, SC100 occurs (defective scanner drive motor)
Original length / width sensors	Original not detected, but an original is present	The printed image shifts when Auto Reduce/Enlarge, image rotation, or image repeat is used
	Original detected, but no original is present	The printed image shifts when Auto Reduce/Enlarge, image rotation, or image repeat is used

Name	State	Symptoms
Platen cover sensor	Detects that the cover is open, but the cover is closed	The machine will start after you push the Start button two times.
	Detects that the cover is closed, but the cover is open	The image in the border will be erased.

ADF

Name	State	Symptoms
Feed cover open sensor	Detects that the ADF cover is open, but it is closed	The machine displays "Close ADF cover" after the main switch is turned on.
	Does not detect that the ADF cover is open, but it is open	A P jam occurs, because the original is fed when the cover is open.
Registration sensor	Detects paper, but there is no paper	A P jam occurs after the main switch is turned on.
	Does not detect paper, but there is paper	A P jam occurs after 5 seconds when the Start button is pushed
Original set sensor	Detects an original, but there is no original.	A P jam occurs when an original is put on the exposure glass. An original cannot be set again after last page of the job is fed, because the machine does not know that the last page of the original was fed, and the DF pick-up solenoid stays on. When A4 master saving mode is used, an A3 size master will not be wrapped on the drum at the end of the job, because the machine cannot detect the last page of the original.
	Does not detect an original, but there is an original	The machine displays " Set original" when the Start button is

Name	State	Symptoms
		pushed. If the Start button is pushed again, the machine will scan the exposure glass.
Original trailing edge	Detects an original, but there is no original	The final page of the original is not detected early.
	Does not detect an original, but there is an original	The final page of the original is not detected early.
Original width sensor	Detects an original, but there is no original	The machine detects that the width of the original is the widest possible size, and the image on the output shifts up or down.
	Does not detect an original, but there is an original.	The machine reads only one part of the image, and the image on the output shifts up or down.
Original length sensors 1 and 2	Detects an original, but there is no original	The machine makes a master of the maximum length. A4 master saving mode does not work because the sensor detects a long original. An original cannot be set again after last page of the job is fed, because the machine does not know that the last page of the original was fed, and the DF pick-up solenoid stays on.
	Does not detect an original, but there is an original.	The trailing edge of the printed image becomes blank and a feed out jam occurs
APS	Detects open, but close	The machine scans in platen mode instead of ADF mode.
	Detects close, but it is open	A P jam might occur. (It does not always occur.)
DF open sensor	Detects that the cover is open, but the cover is closed	The machine will start after you push the Start button two times.

Name	State	Symptoms
	Detects that the cover is closed, but the cover is open	The image in the border will be erased.
Reverse sensor	Detects an original, but there is no original	P Jam.
	Does not detect an original, but there is an original	P jam.
ADF paper eject sensor	Detects an original, but there is no original	P Jam.
	Does not detect an original, but there is an original	P jam.

Master Making Unit

Name	State	Symptoms
Master end sensor	Detects a master on the roll, but no master is present	The machine will display 'master end' after master making. (In normal operation, 'master end' will be shown before master making.)
	Detects no master on the roll, but a master is present	The machine detects the end of the master roll and will not start to make a master
Master set sensor	Detect a master, but no master is present	If there is no master at the master set roller, the machine will show a D jam.
	Detects no master, but a master is present	The machine displays "set the master", but the master is set correctly.
Master edge sensor	Detect a master, but no master is present	A B or D jam will be displayed when the Start button is pushed (master clamp error)

Name	State	Symptoms
	Detects no master, but a master is present	A D jam occurs because the machine tries to feed the master to the standby position; but a master is already there (master set error).
Platen release sensor	Stays on (detects that platen pressure is applied, but it is not)	If the sensor does not turn off 5 seconds after the start button is pushed, SC211 occurs (platen release motor lock).
	Stays off (detects that platen pressure is released, but it is applied)	If the sensor does not turn on 5 seconds after the start button is pushed or the platen release motor starts, SC211 occurs (platen release motor lock).
Cutter HP switch	Stays on (detects that the cutter is not at home position, but it is)	If the cutter HP switch does not turn off 3 seconds after the start button is pushed and the cutter motor starts, SC210 occurs (cutter unit error).
	Stays off (detects that the cutter is at home position, but it is not)	If the cutter HP switch does not turn off 3 seconds after the start button is pushed and the cutter motor starts, SC210 occurs (cutter unit error).
Master making unit lock sensor	Detects 'locked', but the unit is not locked	If the sensor does not turn off when the machine tries to release the lock, SC213 occurs.
	Detects 'unlocked', but the unit is locked	If the sensor does not turn on after the start button is pushed to try to lock the master making unit, the machine displays "master making unit is not set".

Drum

Name	State	Symptoms
1st drum master sensor	Detects a master, but there is no master at the sensor	The machine displays "E jam" when master making is started. A paper upper wrapping jam occurs when printing is started.
	Does not detect a master, but there is a master at the sensor	The machine displays "no master" after the main switch is turned on. After the Start button is pushed: When a master is on the drum, another master will be wrapped around the drum. This means that two layers of master will be on the drum. When there is no master on the drum, printing cannot be done.
2nd drum master sensor	Detects a master, but there is no master at the sensor	The trial print will cause an upper wrapping jam.
	Does not detect a master, but there is a master at the sensor	A master clamp error occurs.
1st drum position sensor (symptom after the main switch is turned on)	The sensor detects the drum is not at the 1st position, but it is	If the sensor does not turn off more than 3.74 seconds after the main switch is turned on, SC300 occurs (main motor lock)
	The sensor detects the drum is at the 1st position, but it is not	If the sensor does not turn on more than 3.74 seconds after the main switch is turned on, SC300 occurs (main motor lock)
1st drum position sensor (symptom during master making)	The sensor detects the drum is not at the 1st position, but it is	Drum rotation (low speed) will not stop when the Start button is pushed.
	The sensor detects the drum is at the 1st position, but it is not	SC313 (clamper lock) when the Start button is pushed

Name	State	Symptoms
1st drum position sensor (symptom during printing)	The sensor detects the drum is not at the 1st position, but it is	Drum rotation will not stop when the Start button is pushed.
	The sensor detects the drum is at the 1st position, but it is not	Drum rotation will not stop when the Start button is pushed.
2nd drum position sensor (symptom after the main switch is turned on)	The sensor detects the drum is not at the 2nd position, but it is	Nothing happens after the main switch is turned on.
	The sensor detects the drum is at the 2nd position, but it is not	Nothing happens after the main switch is turned on.
2nd drum position sensor (symptom during master making)	The sensor detects the drum is not at the 2nd position, but it is	SC313 (clamper lock) when the Start button is pushed
	The sensor detects the drum is at the 2nd position, but it is not	The master eject mechanism will not stop when the Start button is pushed.
2nd drum position sensor (symptom during printing)	The sensor detects the drum is not at the 2nd position, but it is	An upper wrapping jam occurs when the Start button is pushed.
	The sensor detects the drum is at the 2nd position, but it is not	The drum will not stop after one sheet of paper is fed when the Start button is pushed.
Drum home position sensor	The sensor detects the drum is not at the home position, but it is	The green LED stays lit and the red LED stays off.
	The sensor detects the drum is at the home position, but it is not	The green LED stays off and the red LED stays lit. SC302 (drum home position sensor error) occurs after the drum tries to move to home position 3 times when the front cover is opened and closed.
Thermistor	Short circuit	SC307 occurs immediately after the main switch is turned on.
	Broken wire	SC306 occurs immediately after the main switch is turned on.

Name	State	Symptoms
Ink detection pin	Detects ink, but there is no ink	The printed image is patchy because ink is not supplied when the Start button is pushed.
	Does not detect ink, but ink is present	Excess ink is supplied, but the overflow sensor will detect the overflow and prevent the ink leakage. Replace or clean the ink detection pin
Ink cartridge set switch	Detects a cartridge, but no cartridge is present	The printed image will be pale, because the drum tries to supply ink without an ink cartridge.
	Does not detect a cartridge, but a cartridge is present	The machine displays "Set ink cartridge" after the main switch is turned on.
Drum shift sensor	Does not detect a signal	If a signal does not come from the encoder for 6 seconds, SC305 occurs (drum shift motor lock).
Drum shift HP sensor	Does not detect a signal	SC304 (drum shift motor lock) occurs if one of these two conditions occurs: • The drum does not go back to home position within 3 seconds. • The drum does not go to the requested drum shift position within 6 seconds.
Idling roller HP sensor	Stays on (detects that the idling roller is at home position, but it is not)	If the sensor does not turn off more than 4 seconds after the main switch is turned on, SC315 (idling roller motor lock) occurs.
		If the sensor does not turn on more than 4 seconds after the main switch is turned on, SC315 (idling roller motor lock) occurs.

Master Eject

Name	State	Symptoms
Eject box set switch	Detects the box, but there is no box	There is no place to eject the master. Because of this, used masters will be ejected into the machine's cavity.
	Does not detect the box, but the box is installed	The machine displays "Set the master eject box", after the main switch is turned on.
Pressure plate limit position sensor	Does not detect the pressure plate	SC400 occurs if one of these things occurs: • The pressure plate limit position sensor or the pressure plate HP sensor do not turn on after more than 8 seconds. • The number of edges in the sensor signal is less than 4 when the masters are compressed for more than 6 seconds. • The movement between the position of print pressure and HP takes more than 6 seconds. • The movement between the master eject position and HP takes more than 3 seconds.
Pressure plate HP sensor	Does not detect the pressure plate at home position	SC400 occurs if one of these things occurs: • The pressure plate limit position sensor or the pressure plate HP sensor do not turn on after more than 8 seconds.

Name	State	Symptoms
		• The number of edges in the sensor signal is less than 4 when the masters are compressed for more than 6 seconds. • The movement between the position of print pressure and HP takes more than 6 seconds. • The movement between the master eject position and HP takes more than 3 seconds.
Master eject sensor	Detects a master, but there is no master	A master eject error occurs.
	Does not detect a master, but there is a master	A master eject error occurs, but the master was ejected correctly.
Eject box lock sensor	Detects that the box is locked, but it is released	The eject box lock solenoid does not release the lock after the main switch is turned on or the security mode is canceled. SC401 occurs.
	Detects that the box is not locked, but it is locked	The eject box lock solenoid does not lock the box after the main switch is turned on or the security mode is canceled. It is not possible to install the master eject box.

Paper Feed

Name	State	Symptoms
Paper registration sensor	Detects paper, but there is no paper	A jam occurs after the main switch is turned on.

Name	State	Symptoms
	Does not detect paper, but there is paper	A jam occurs when the Start button is pushed.
Paper feed timing sensor	Detects paper, but there is no paper	A jam occurs after the main switch is turned on.
	Dose not detect paper, but there is paper	A jam occurs when the Start button is pushed.
Feed start sensor	Detect the actuator, but it is not there	SC503:
	Does not detect the actuator, but it is there	SC503:
Paper width detection board	Detects paper, but there is no paper	The printed image shifts if the paper width detection board detects the wrong paper size.
	Does not detect paper, but there is paper	The paper width detection board cannot detect the paper size.
Paper length sensor	Detects a long paper size, but it is not long paper	Pressure is applied between the drum and pressure cylinder after the trailing edge of the paper on the drum, and ink will transfer to the pressure cylinder.
	Does not detect a long paper size, but it is long paper	The image will be patchy near the trailing edge, because pressure is not applied near the trailing edge.
Paper table lower limit sensor	Detects the paper table, but it is not at the lower limit position.	If the sensor does not turn off more than 7.5 seconds after the paper feed table starts to move up, SC520 (paper feed lock) occurs.
	Does not detect the paper table at the lower limit position, but it is there.	The paper table motor does not stop at the lower limit position. If the sensor does not turn off more than 7.5 seconds after the paper feed table starts to move

Name	State	Symptoms
		up, SC520 (paper feed lock) occurs.
Paper height sensor	Detects that the top of the stack is at the correct height for paper feed, but it is not.	A jam occurs because the paper feed table does not move up when the Start button is pushed.
	Detects that the top of the stack is not at the correct height for paper feed, but it is.	If the paper table does not stop within 7.5 seconds, SC521 (paper table motor lock) occurs.
Paper table set sensor	Detects that the table is closed, but it is open.	The machine displays "Open the paper table" after the main switch is turned on.
	Detects that the table is open, but it is closed.	The paper table does not move up after the Print button is pushed.
Paper end sensor	Detects paper, but there is no paper	A jam occurs when the Print button is pushed.
	Does not detect paper, but there is paper	The machine displays "Add paper" after the main switch is turned on.
Feed pressure detection board	Detects pressure, but there is not.	The feed pressure detection board detects the pressure continually when the print button is pushed SC500: Feed pressure motor lock
	Does not detects pressure, but there is pressure.	The feed pressure detection board does not detect the pressure continually when the print button is pushed SC500: Feed pressure motor lock
Separation pressure detection board	Detects pressure, but there is not.	The separation pressure detection board detects the pressure continually when the print button is pushed.

Name	State	Symptoms
		SC501: Separation pressure motor
	Does not detects pressure, but there is pressure.	The separation pressure detection board does not detect the pressure continually when the print button is pushed SC501: Separation pressure motor
Friction pad position sensor 1	Stays on (detects a friction pad, but one is not there)	If the sensor does not turn off for 5 seconds when the friction pad is changing to thick paper, SC505 occurs (friction pad shift motor).
	Stays off (does not detect a friction pad, but one is there)	If the sensor does not turn on for 5 seconds when the friction pad is changing to normal paper, SC505 occurs (friction pad shift motor).
Friction pad position sensor 2	Stays on (detects a friction pad, but one is not there)	A paper jam or double feed occurs, because the friction pad does not stop at the correct position.
	Stays off (does not detect a friction pad, but one is there)	If the sensor does not turn on for 5 seconds when the friction pad is changing, SC505 occurs (friction pad shift motor).

Printing

Name	State	Symptoms
Clamper open position sensor	Stays on (detects that clamper is open, but it is not)	If the sensor does not turn off when the clamper motor is opening and closing the clamper, SC314 (clamper motor lock) occurs.

Name	State	Symptoms
		If the clamper close position sensor does not turn ON immediately after the main switch is turned ON, SC314 (clamper motor lock) occurs.
	Stays off (detects that clamper is closed, but it is not)	If the sensor does not turn on when the clamper motor is opening and closing the clamper, SC314 (clamper motor lock) occurs. If the clamper close sensor does not turn ON immediately after the main switch is turned ON, SC314 (clamper motor lock) occurs. If the clamper close position sensor is ON when the clamper motor stops opening the clamper, SC314 (clamper motor lock) occurs.
Clamper close position sensor	Stays on (detects that clamper is closed, but it is not)	If the sensor does not turn off when the clamper motor is opening and closing the clamper, SC313 (clamper motor lock) occurs.
	Stays off (detects that clamper is not closed, but it is)	If the sensor does not turn on when the clamper motor is opening and closing the clamper, SC313 (clamper motor lock) occurs.
Main drive encoder	Stays on	If the drum rotates, SC513 occurs.
	Stays off	If the drum rotates, SC513 occurs.

Paper Eject

Name	State	Symptoms
Paper exit sensor	Detects paper, but there is no paper	C jam occurs after the main switch is turned on.
	Does not detect paper, but there is paper	A paper upper wrapping jam occurs when the Print button is pushed.
Paper eject wing HP sensor	Stays on	SC514 occurs when the motor turns on to initialize the mechanism after power is turned on.
	Stays off	SC514 occurs when the motor turns on to initialize the mechanism after power is turned on.

Duplex

Name	State	Symptoms
Drum lock switch	Stays on	It will not unlock if you push drum lock switch.
	Stays off	It will not unlock if you push drum lock switch.
Drum lock sensor	Locked	If drum lock sensor does not unlock within 3 seconds, drum unlock SC555 occurs.
	Unlocked	If drum lock sensor does not lock within 3 seconds, drum lock SC555 occurs.
Duplex unit lock switch	Stays on	Duplex unit does not unlock when you push the duplex unit lock switch.

Name	State	Symptoms
	Stays off	Duplex unit does not unlock when you push the duplex unit lock switch.
Duplex unit lock sensor	Locked	If duplex unit lock sensor does not unlock within 3 seconds, drum unlock SC554 occurs.
	Unlocked	If duplex unit lock sensor does not lock within 3 seconds, drum lock SC554 occurs.
Duplex unit set sensor	Detects the duplex unit	If the duplex unit is detected just after the main switch is turned on, and the front cover is closed: normal operation. If there is no duplex unit: Printing pressure cam shift motor error occurs, because the cam cannot be detected at HP when the mechanism tries to initialize.
	Does not detect the duplex unit	Display on LCD [duplex unit not set] just after the main switch is turned on.
Exit pawl pump HP sensor	Stays ON	SC552 occurs when the motor turns on to initialize the mechanism after power is turned on.
	Stays Off	Same as above
Shift pawl pump HP sensor	Stays ON	SC553 occurs when the motor turns on to initialize the mechanism after power is turned on.
	Stays Off	Same as above
Printing pressure cam HP sensor	Stays ON	SC556 occurs when printing pressure mechanism is initialized after power is turned on.

Name	State	Symptoms
	Stays Off	Same as above
Printing pressure variability HP sensor	Stays ON	SC311 occurs when the pressure variability motor turns on to initialize the mechanism after power is turned on.
	Stays Off	Same as above.
Printing pressure encoder sensor	Stays ON	SC312 occurs when the printing pressure variability motor is at each pressure point.
	Stays Off	Same as above.
Paper refeed leading edge jam sensor	Stays ON	Just after the main switch is turned on: Z Jam
	Stays Off	When duplex printing: Z Jam.
Paper refeed trailing edge jam sensor	Stays ON	Just after the main switch is turned on. Z Jam
	Stays Off	When duplex printing: Z Jam.
Duplex clamper HP sensor	Stays ON	SC550 occurs when the duplex clamper motor turns on to initialize the mechanism after power is turned on.
	Stays Off	Same as above.
Paper guide plate HP sensor	Stays ON	SC551 occurs when the paper guide plate motor turns on to initialize the mechanism after power is turned on.
	Stays Off	Same as above.

Paper Separation

Name	State	Symptoms
Slider position sensor	Stays on (detects the slider, but it not there)	If the sensor does not turn off, SC511 occurs.
	Stays off (does not detect the slider, but it is there).	If the sensor does not turn on when the Start button is pushed, SC511 occurs during printing.
Paper sensor	Stays on (detects that the slider touched the paper, but it did not touch the paper)	If the sensor does not turn off, SC508 occurs.
	Stays off (does not detect the surface of paper)	If the sensor does not turn on, SC508 occurs.
Slider HP sensor	Stays on (detects the slider, but it is not at home position)	If the sensor does not turn off, SC510 (slider lift motor lock) occurs.
	Stays off (does not detect the slider, but it is at home position)	If the sensor does not turn on, SC510 (slider lift motor lock) occurs.
Slider upper limit sensor	Stays on (detects the slider, but it is not at the upper limit position.)	If the sensor does not turn off, SC509 occurs.
	Stays off (does not detect the slider, but it is at the upper limit position)	If the sensor does not turn on, SC509 occurs.

Fuses on Boards

Name	State	Symptoms
FU700 12A (motor board)	Broken	SC300 (main motor lock)
FU701&FU702 6.3A (PSU)	Broken	LCD does not display and the 'cover open' LED is lit.
FU703&FU704	Broken	SC300 (main motor lock)

Name	State	Symptoms
6.3A (PSU)		
FU705 (PSU)	Broken	The machine power cannot be turned on.
FU706 6.3A (PSU)	Broken	Duplex unit connection error as like SC311
FU707 6.3A (PSU)	Broken	Duplex unit connection error as like SC550

DIP Switch, LED, VR, TP, and Fuse Tables

Test Points

Ink Detection Board

Number	Usage
TP1	Ink Level
TP2	Ink Level
TP3, TP4	-12V

Dip Switches

Ink Detection Board

Drum detection

DPS901	-1	-2	-3	-4
Standard Drum A3/DLT	ON	ON	OFF	OFF
Color Drum A3/DLT	OFF	ON	OFF	OFF
Not used	OFF	OFF	OFF	OFF

Note

- 1) Do not turn the all the dip switches off, or the machine will detect that there is no drum.
- 2) Do not change DIPSW-3 because it is used for TC-IIR. If the setting is changed, an error could be displayed on the operation panel or there could be an effect on image quality.
- 3) DIPSW-4 is not used.

Color detection

DPS902	-1	-2
Color ID0 (Default)	OFF	OFF
Color ID1	ON	OFF

DPS902	-1	-2
Color ID2	OFF	ON
Color ID3	ON	ON

ACU

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

Note

- For normal operation, keep the all switches OFF

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

Potentiometers

I/O Board

Number	Usage
VR1	Master Set Sensor Adjustment
VR2	Master Eject Sensor Adjustment
VR3	1st Drum Master Sensor Adjustment
VR4	Master End Sensor Adjustment (Do not adjust)
VR5	Master Edge Sensor Adjustment

Number	Usage
VR6	2nd Drum Master Sensor Adjustment

Power Supply Board

Number	Usage
RV1	Thermal Head Voltage Adjustment
RV2	+5VE Voltage Adjustment (Do not adjust)

Ink Detection Board

Number	Usage
VR901	Ink Detection Board Adjustment (☛ 'Ink Detection Adjustment')

LED's

MPU

Number	Function
LED1	Monitors the RAM and SARM operation on the CPU. This LED is lit if there is a problem.
LED2	Monitors the CPU operation. Usually, this LED is blinking.

I/O Board

Number	Function
LED1	Monitors the CPU operation and works as follows. • In Normal Usually: blinks at 2 second intervals.

Number	Function
	When the jam occur about paper feed: blinks at 0.2 second interval. • In abnormal Main drive encoder error: blink 1 second. Connection error to ECU board: blink 0.2 second interval. Connection error to Duplex board: blink 0.04 second interval.

ACU

Number	Function
LED1	Monitors the CPU operation. Usually, this LED is blinking.

Operation Panel

Number	Function
LED101	This LED is blinking in normal operation During firmware download: lighting After firmware download: slow blink
LED102	During firmware download: quick blink Other than during firmware download: extinction After firmware download: slow blink

Note

- The Green LED of the start button on the operation panel displays the status of firmware downloading in normal; therefore, it is not necessary to open the operation panel.

Duplex Board

Number	Function
LED1	Monitors the CPU operation and works as follow. • In Normal Turn on main switch to finish initialize of duplex unit: blink 1 second interval. The other case in normal: blink 2 second interval.

Number	Function
	• In abnormal Connection error: blink 0.2 second interval.
LED2	Monitors the encoder sensor. Sensor ON: blink Sensor OFF: extinction

Drum Lock LED

Number	Function
LED1	The unit can pool off if lock release: lighting The other case: extinction

Duplex Unit Lock LED

Number	Function
LED1	The unit can pool off if lock release: lighting The other case: extinction

Fuses

Power Supply Unit

Fuse	Rated Current	Protect
FU700	10A	Power Supply Unit
FU701/ FU702	6.3A x 2	I/O Board
FU703/ FU704	6.3A x 2	Main Motor Drive Board
FU705	2A	Not used
FU706/ FU707	6.3A x 2	Duplex Board

Note

- F701 and F702, F703 and F704 are connected in parallel to protect the board. If one fuse is broken, the machine works if the other fuse does not break. But replace the broken fuse as soon as possible.

Main Motor Drive Board

Fuse	Rated Current	Protects
F1	12A	Main Motor

Duplex Board

Fuse	Rated Current
FU1	3.15A

5. Service Tables

Service Tables

Service Remarks

Scanner Section

1. Xenon Lamp

Do not touch the xenon lamp while it is on, or you might receive a weak electrical shock.

2. Scanner Wire Installation

A special tool is needed. (☛ 'Special Tools')

3. Sensor Board Unit (SBU) Calibration

When the ECU is replaced or the standard white plate located behind the original scale is replaced, the SBU must be calibrated with SP6-005-1.

Master Eject Section

1. Master Pick-up Roller Drive Gear and Master Clamper Drive Arm Positions

These parts must be positioned correctly. (☛ 'Master Feed Section - Reassembling the Master Pick-up Roller Drive Gears')

Master Feed Section

1. Thermal Head 1

When installing the thermal head, there are important points to note. (☛ 'Thermal Head - Remarks for Handling the Thermal Head')

2. Thermal Head 2

When replacing the thermal head, be sure to adjust the voltage supplied to the thermal head (☛ 'Master Feed Section - Thermal Head Voltage Adjustment')

3. Master Vacuum Fan Position

The fan must be positioned correctly. (☛ 'Master Feed Section –Master Duct Sensor, Master Suction Fans, Master Feed Motor')

4. Master Feed Mylar Positions

When replacing or removing the thermal head, the cutter unit, the master duct, or the guide plate of the lower master feed control roller, the strips of mylar are easily put in the wrong position while installing the

lower tension roller or lower master feed control roller. (☛ 'Master Feed Section –Master Feed Mylar Positioning')

Paper Feed Section

1. Paper Pick-up Roller and Paper Feed Roller 1

Be careful to install the rollers the correct way around. They have a one-way clutch inside.

2. Paper Pick-up Roller and Paper Feed Roller 2

Do not touch the surfaces of the rollers with bare hands.

Drum and Drum Drive Section

1. Doctor Roller

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

2. Drum Master Clamper

1. Do not allow the inside of the clamping plate to become dirty with ink.
2. Do not use alcohol or other solvents to clean the inside of the clamping plate. Use a cloth dampened with water.

3. Ink Roller Unit

Do not disassemble the ink roller unit. Each part between the front and rear side plates of this unit has been precisely adjusted on the production line to keep the doctor and ink rollers parallel against the drum shaft.

Main Drive Section

1. Main Drive Adjustment

Special tools are needed for the adjustment. For details, (☛ 'Special Tools')

Electrical Components

1. ECU and I/O Boards

After replacing the ECU or I/O board, some adjustments are needed. (☛ 'Boards – I/O Board, ECU Board')

2. ACU, ECU, and Power Supply Unit

To access the rear of the machine, the ACU, ECU, and I/O board have to be moved out of the way. (☛ 'Boards – ACU and ECU, PSU Opening Procedure')

3. Power Supply Unit

When replacing the power supply unit, be sure to adjust the voltage supplied to the thermal head. (☛ 'Master Feed Section - Thermal Head Voltage Adjustment')

4. Program Update

To update the machine's software, an SD card is needed. Follow all cautions in the procedures in the manual.

5. Sensor Adjustments

Adjustment is needed for the following sensors (SP6-004)

- Master eject sensor (☛ 'Master Eject Section - Master Eject Sensor Adjustment')
- Master end sensor (☛ 'Master Feed Section – Master End Sensor' Adjustment)
- Master edge sensor (☛ 'Master Feed Section – Master Edge Sensor Adjustment')
- Master set sensor (☛ 'Master Feed Section – Master Set Sensor Adjustment')
- 1st drum master sensor (☛ 'Drum Section – 1st Drum Master Sensor Adjustment')
- 2nd drum master sensor (☛ 'Drum Section – 2nd Drum Master Sensor Adjustment')

Drum and duplex unit

1. Pulling out the drum unit or duplex unit while power is on

Only one unit can be pulled out from the machine each time. Press the required switch while the drive is home position.

Note

- To prevent damage caused when these two units contact eachother, the machine uses solenoids to lock the units so that only one unit can be pulled out at a time.

2. Pulling out the drum unit or duplex unit while power is off

The unit release solenoid can be released only while power is on. So, when power is off, solenoids have to be released by hand. (☛ Drum - Taking out the drum unit, ☛ Duplex removing the duplex unit)

Special Tools

The following are the special tools used for service.

Description	Part Number	Application
Main Drive Securing Tool Kit (This kid contains drum securing tool and two positioning shafts; however, only main drive securing tool is used for this model.)	C229 9000	For main drive positioning
Scanner Positioning Pin Kit (4 pins as a set)	A006 9104	For scanner wire installation
SD Card	B6455010	For updating firmware
PCMCIA Card Adapter	B6456705	For uploading data to an SD card
USB Reader/Writer	B6456810	For uploading data to an SD card

Touch Panel Position Adjustment

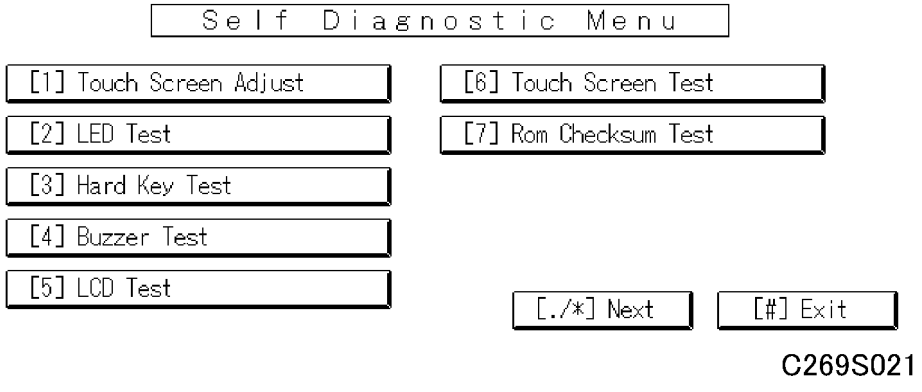
Note

- It is necessary to calibrate the touch panel at the following times:
  - When you replace the operation panel.
  - When you replace the controller board.

When the touch panel detection function does not operate correctly

Do not use items [2] to [9] of the Self-Diagnostic Menu. These items are for design use only.

1. Press ⊡, press ①⑨⑨③, then press C/⊘ 5 times to open the Self-Diagnostics menu.



1. On the touch screen press "Touch Screen Adjust" (or press ①).
2. Use a pointed (not sharp) tool to press the upper left mark ◦↖.
3. Press the lower right mark when "↘◦" shows.
4. Touch a few spots on the touch panel to make sure that the marker "+" shows exactly where the screen is touched.

   Press Cancel. Then start from Step 2 again if the "+" mark does not show where the screen is touched.
5. Press [#] OK on the screen (or press #) when you are finished.
6. Touch [#] Exit on the screen to close the Self-Diagnostic menu. Save the calibration settings.

Service Program Mode

The service program (SP) mode is used to check electrical data, change modes, or change adjustment values.

⚠CAUTION

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

Enabling and Disabling Service Program Mode

Note

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

Entering SP Mode

⟲	1.	Press the Reset key.
1 0 7	2.	Use the keypad to enter "107".
C/⊘	3.	Hold down Clear/Stop for at least 3 seconds.
	4.	Enter the Service Mode.

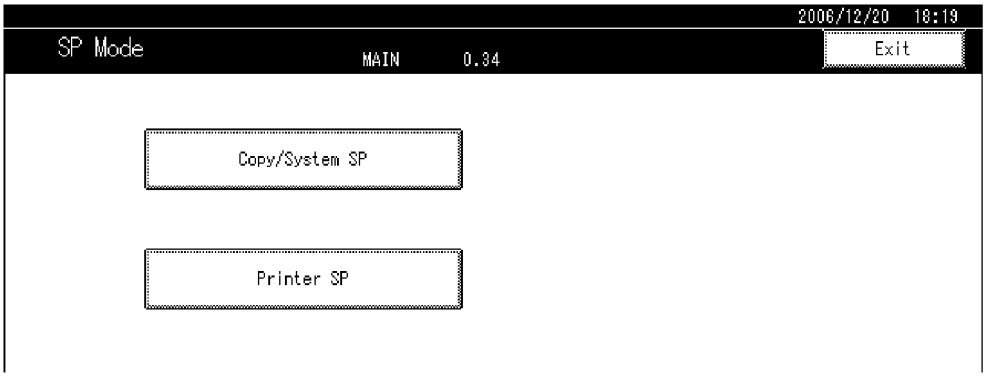
Exiting SP Mode

Exit	5.	Press Exit twice to return to the copy window.

Types of SP Modes

- Copy/System SP: SP modes related to the engine functions
- Printer SP: SP modes related to the printer functions

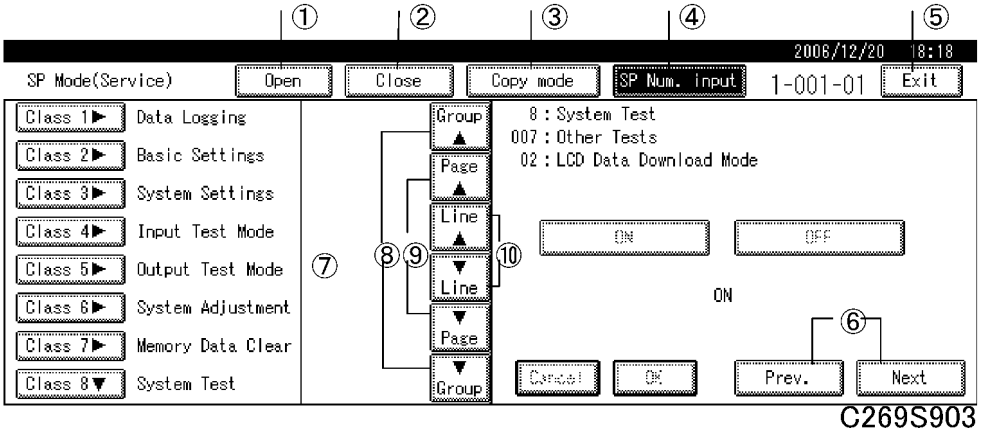
Select one of the Service Program modes (Copy/System or Printer) from the touch panel as shown in the diagram below, after you access the SP mode.



C269S002

SP Mode Button Summary

Here is a short summary of the touch-panel buttons.

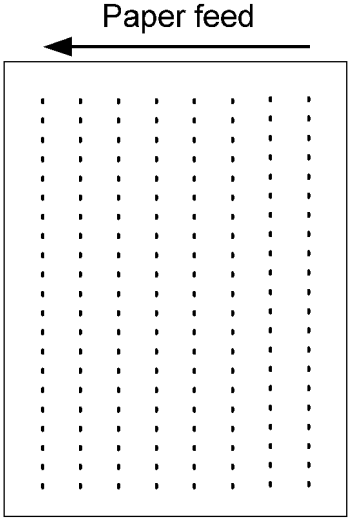


C269S903

①	Opens all SP groups and sublevels.
②	Closes all open groups and sublevels and restores the initial SP mode display.
③	Switch SP mode and Copy mode for checking the setting after changing a setting in SP mode.
④	Enter the SP code directly with the number keys if you know the SP number. Then press #. (The required SP Mode number will be highlighted when pressing #. If not, just press the required SP Mode number.)
⑤	Press two times to leave the SP mode and return to the copy window to resume normal operation.

⑥	Press to move the highlight on the left to the previous or next selection in the list.
⑦	Press any Class 1 number to open a list of Class 2 SP modes.
⑧	Press to scroll the show to the previous or next group.
⑨	Press to scroll to the previous or next display in segments the size of the screen display (page).
⑩	Press to scroll the show the previous or next line (line by line).

Print image when switching to copy mode from inside SP mode



C269S906

When a master is made when switching to Copy Mode from within SP mode (by pressing the Copy Mode button and then Start to make the print), dotted lines will be added to the original image to remind you to get out of SP mode.

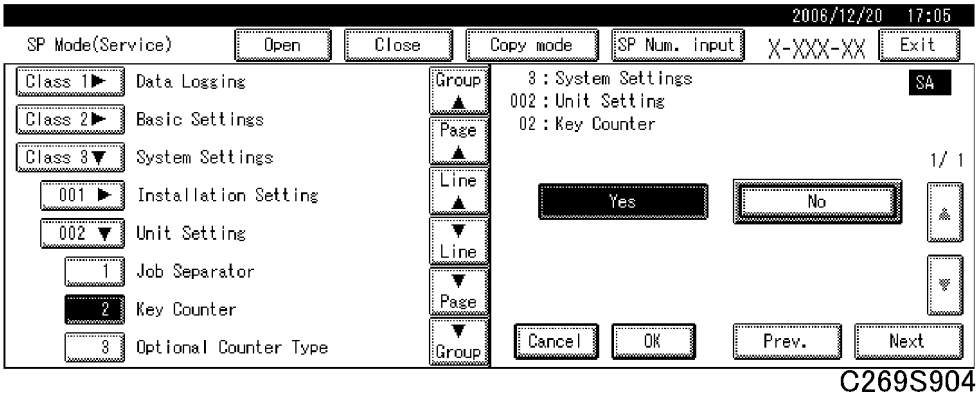
Make a blank image master after getting out of SP mode, so that the master with the test image does not remain on the drum.

Selecting the Program Number

Program numbers have two or three levels.

1. Refer to the Service Tables to find the SP that you want to adjust before you begin.
2. Press the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to show the SP number that you want to open. Then press that number to expand the list.

4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set and press it. The small entry box on the right activates and shows the below default or the current settings.



Note

- Refer to the Service Tables for the range of allowed settings.

5. Do this procedure to enter a setting:
   - Press ⊙/* to toggle between plus and minus and use the keypad to enter the appropriate number. The number you enter writes over the previous setting.
   - Press # to enter the setting. (The value is not registered if you enter a number that is out of range.)
   - Press "Yes" when you are prompted to complete the selection.
6. Press Exit two times to return to the copy window when you are finished.

Exiting Service Mode

Press the Exit key on the touch-panel.

Service Program Table

Main Menu Number List

C269S002

No.	Menu	Description
Copy / System SP		
1	Data Logging	Various counters and logged data
2	Basic Settings	Various settings
3	System Settings	Settings used at installation
4	Input Test Mode	Sensor on/off status check
5	Output Test Mode	Motors and other components on/off check
6	System Adjustment	Various adjustments
7	Memory Data Clear	Resets or clears the SP mode data
8	System Test	Various data printouts and system tests
Printer SP		
9	Printer Controller	Controller data print out and System tests

Note

- In this model, the User Tool settings cannot be accessed with SP mode.

- The SP mode items for the optional units (such as the LCS) do not appear when the unit is not installed (e.g. SP 1-019).

1. Data Logging

No.	Display	No.	Menu	Function
1-001	Master Counter	1	Total Master Counter	Total master counter.
		2	One-Sided	Counts the number of masters made for one-sided printing
		3	Duplex	Counts the number of masters made for duplex printing
		4	Total Master Counter - ADF	Master counter made in ADF mode.
1-002	Master Counter - Original size	1	A3/DLT	Master counters for each original size used. '-L': Lengthwise feed (LEF)
		2	B4/LG	
		3	A4-L/LT-L	
		4	A4/LT	
		5	B5-L	
		6	B5	
		7	Other Size	
1-003	Master Counter – Original Type	1	Letter Mode	Master counters for each paper type used.
		2	Letter/Photo Mode	
		3	Photo Mode	
		4	Pencil Mode	
		5	Pale Mode	
1-004	Master Counter - Paper Type	1	Standard Paper	Master counters for each paper type used
		2	Thick Paper	

No.	Display	No.	Menu	Function
		3	Thin Paper	
		4	Special Paper	
		5	User Setting 1	
		6	User Setting 2	
1-005	Master Counter - Copy Mode	1	Economy Mode 1	Master counters for various copy modes.
		2	Economy Mode 2	
		3	Combine 2 Originals	
		4	Combine 4 Originals	
		5	2 Repeats	
		6	4 Repeats	
		7	8 Repeats	
		8	16 Repeats	
		9	Custom Repeats	
		10	Enlargement Mode	
		11	Reduction Mode	
		12	Zoom Mode	
		13	Directional Magnification	
		14	Auto Magnification	
		15	Slight Reduction	
		16	Make-up Mode	
		17	Margin Erase - Original	
		18	Margin Erase – Copy	
		19	Centering	
		20	Online Mode	

No.	Display	No.	Menu	Function
		21	Scanner Overlay - Scanner	
		22	Scanner Overlay - Online	
		23	Scanner Overlay - Org. Storage	
		24	Format Overlay - Scanner	
		25	Format Overlay - Org. Storage	
		26	Default Stamp	
		27	Up/Down shift	
		28	Side Shift	
		29	Short Master	
		30	Image Rotation	
		31	Class - By Class	
		32	Class - By Original	
		33	Class - By Manual No.	
		34	Class - By Year and Class	
		35	Job Separator	
		36	Auto Cycle	
		41	Original Storage	
		42	Original Storage - Web	
		43	Duplex	
		44	Combine Duplex	
		45	Book Duplex	
		46	Booklet 1	
		47	Booklet 2	

No.	Display	No.	Menu	Function
		48	Booklet 1 (Hand)	Hand-feed mode
		49	Booklet 2 (Hand)	Hand-feed mode
1-008	Print Counter	1	Total Print Counter	Total print counter (number of sheets of paper)
		2	One - Sided	Number of sheets of paper used for one-sided prints
		3	Duplex	Number of sheets of paper used for duplex prints
		4	Page	Total number of pages printed (one-sided plus duplex). For each sheet of paper in duplex mode, the counter increases by 2.
		5	Duplex Page	Total number of pages printed (duplex mode). For each sheet of paper in duplex mode, the counter increases by 2.
		6	Color Drum – Other	Print counter made with the optional color drums (number of sheets of paper).
		7	Color Drum – Red	
		8	Color Drum – Blue	
		9	Color Drum – Green	
		10	Color Drum – Brown	
		11	Color Drum – Gray	
		12	Color Drum – Yellow	

No.	Display	No.	Menu	Function
		13	Color Drum – Purple	
		14	Color Drum – Maroon	
		15	Color Drum – Navy	
		16	Color Drum - Orange	
		17	Color Drum - Teal	
		18	Color Drum – Red Base	
		19	Color Drum – Blue Base	
		20	Color Drum – Yellow Base	
1-009	Print Counter - Size	1	Over A3/DLT	Print counters for each paper size used (number of sheets of paper). '-L': Lengthwise feed
		2	A3/DLT	
		3	B4/LG	
		4	A4-L/LT-L	
		5	A4/LT	
		6	B5-L	
		7	B5	
		8	A6-L	
		9	Under A6-L	
		10	Other Size	
1-010	Print Counter - Paper Type	1	Standard Paper	Print counters for each paper type used (number of sheets of paper).
		2	Thick Paper	
		3	Thin Paper	
		4	Special Paper	
		5	User Setting 1	
		6	User Setting 2	

No.	Display	No.	Menu	Function
1-013	Print counter - LCS	1	Total	Number of sheets of paper.
		2	Over A3/DLT	
		3	A3/DLT	
		4	B4/LG	
		5	A4-L/LT-L	
		6	A4/LT	
		7	B5-L	
		8	B5	
		9	Other	
1-014	Print Counter - C/O	1	1 - 3 Prints	Print counter per original (number of sheets of paper)
		2	4 - 5 Prints	
		3	6 - 10 Prints	
		4	11 - 20 Prints	
		5	21 - 30 Prints	
		6	31 - 50 Prints	
		7	51 - 70 Prints	
		8	71 - 100 Prints	
		9	101 - 200 Prints	
		10	201 - 500 Prints	
		11	501 - 1000 Prints	
		12	1001 - 2000 Prints	
		13	2001 - 3000 Prints	
		14	3001 - 4000 Prints	
		15	4001 - 6000 Prints	
		16	6001 - 8000 Prints	

No.	Display	No.	Menu	Function
		17	8001 - 10000 Prints	
		18	More than 10000 Prints	
1-015	Master/Paper Feed Error Ratio	1	Master Set Error	Counters for various types of jams. Jam ratios are also displayed.
		2	Master Clamp Error	
		3	Master Cut Error	
		4	Master Eject ON Check	
		5	Master Pressure Plate Error	
		6	Master Eject OFF Check	
		7	Paper Registration ON Check	
		8	Paper Feed Timing ON Check	
		9	Paper Feed Timing OFF Check	
		10	Paper Upper Wrapping	
		12	Paper Exit OFF Check	
		13	DF Feed-in Error	
		14	DF Feed-out Error	
		16	Duplex Delivery Misfeed	
		17	Duplex Feed Misfeed	
		18	Duplex Feed Remain Misfeed	
1-016	Paper Jam Count - Paper Type	1	Jam P0 Standard 60rpm	Feed-in jams and registration roller jams for various paper sizes and paper types.
		2	Jam P0 Standard 75rpm	
		3	Jam P0 Standard 90rpm	
		4	Jam P0 Standard 105rpm	

No.	Display	No.	Menu	Function
		5	Jam P0 Standard 120rpm	
		6	Jam P0 Standard 135rpm	
		7	Jam P0 Thick 60rpm	
		8	Jam P0 Thick 75rpm	
		9	Jam P0 Thick 90rpm	
		10	Jam P0 Thick 105rpm	
		11	Jam P0 Thick 120rpm	
		12	Jam P0 Thick 135rpm	
		13	Jam P0 Thin 60rpm	
		14	Jam P0 Thin 75rpm	
		15	Jam P0 Thin 90rpm	
		16	Jam P0 Thin 105rpm	
		17	Jam P0 Thin 120rpm	
		18	Jam P0 Thin 135rpm	
		19	Jam P0 Others 60rpm	
		20	Jam P0 Others 75rpm	
		21	Jam P0 Others 90rpm	
		22	Jam P0 Others 105rpm	
		23	Jam P0 Others 120rpm	
		24	Jam P0 Others 135rpm	
		25	Jam P1 Standard 60rpm	Registration roller jams (when the paper feed timing sensor stays on) for various paper sizes and paper types.
		26	Jam P1 Standard 75rpm	
		27	Jam P1 Standard 90rpm	
		28	Jam P1 Standard 105rpm	
		29	Jam P1 Standard 120rpm	

No.	Display	No.	Menu	Function
		30	Jam P1 Standard 135rpm	
		31	Jam P1 Thick 60rpm	
		32	Jam P1 Thick 75rpm	
		33	Jam P1 Thick 90rpm	
		34	Jam P1 Thick 105rpm	
		35	Jam P1 Thick 120rpm	
		36	Jam P1 Thick 135rpm	
		37	Jam P1 Thin 60rpm	
		38	Jam P1 Thin 75rpm	
		39	Jam P1 Thin 90rpm	
		40	Jam P1 Thin 105rpm	
		41	Jam P1 Thin 120rpm	
		42	Jam P1 Thin 135rpm	
		43	Jam P1 Others 60rpm	
		44	Jam P1 Others 75rpm	
		45	Jam P1 Others 90rpm	
		46	Jam P1 Others 105rpm	
		47	Jam P1 Others 120rpm	
		48	Jam P1 Others 135rpm	
		49	Jam P2 Standard 60rpm	Upper wrap, lower wrap, and feed-out jams for various paper sizes and paper types.
		50	Jam P2 Standard 75rpm	
		51	Jam P2 Standard 90rpm	
		52	Jam P2 Standard 105rpm	
		53	Jam P2 Standard 120rpm	
		54	Jam P2 Standard 135rpm	

No.	Display	No.	Menu	Function
		55	Jam P2 Thick 60rpm	
		56	Jam P2 Thick 75rpm	
		57	Jam P2 Thick 90rpm	
		58	Jam P2 Thick 105rpm	
		59	Jam P2 Thick 120rpm	
		60	Jam P2 Thick 135rpm	
		61	Jam P2 Thin 60rpm	
		62	Jam P2 Thin 75rpm	
		63	Jam P2 Thin 90rpm	
		64	Jam P2 Thin 105rpm	
		65	Jam P2 Thin 120rpm	
		66	Jam P2 Thin 135rpm	
		67	Jam P2 Others 60rpm	
		68	Jam P2 Others 75rpm	
		69	Jam P2 Others 90rpm	
		70	Jam P2 Others 105rpm	
		71	Jam P2 Others 120rpm	
		72	Jam P2 Others 135rpm	
1-019	Paper Jam - LCS	1	Paper Feed - LCIT	
1-020	Other Counters	1	Set Master	
		2	Ejected Master	
		3	Ink Pump Rotation	
		4	Master End	
		5	Ink End	

No.	Display	No.	Menu	Function
		6	Master Eject Box Full	Number of times the eject master box is full.
		7	Original A Side - ADF	The total number of times the ADF was used.
		8	Original B Side - ADF	
		9	Original Counter Platen	The total number of times the platen was used.
		10	Misfeed Setting Counter	Number of times the user changed the 'Misfeed' setting for paper feed or separation pressures.
		11	Double feed Setting Change	Number of times the user changed the 'Double Feed' setting for paper feed or separation pressures.
		12	Start Error Message	Number of times an error message appeared when the Start key was pressed.
		13	Original Storage - Scanner	Number of times the user stored an original with the scanner, without printing immediately.
		14	Original Storage - Online	Number of times the user stored an original by sending it from a PC.

No.	Display	No.	Menu	Function
1-021	Machine Information	1	Serial Number	Displays serial numbers of the machine and options.
		2	ROM Versions and Serial Number	Displays the ROM number and serial number of the machine and options.
		3	Power On Time	Displays the time that power was turned on.
		4	Counter - Read Only	Displays the Electrical Counter (sheets, prints, masters, duplex, one-sided). It cannot be reset.
		5	Counter - Read Only @Remote	All counters of the machine for making masters, printing, for use on @Remote.
1-022	Service Information	1	Telephone Number for Service	Enter data with SP3-001-6 at installation if required.
		2	Service Call Counter	Displays the latest 40 Service Call codes.
1-024	Sales Mode Change Record	1	Economy Mode - Sorter Mode	Do not use (Japanese version use only).
		4	Ink Supply Pre-Printing	
		5	Color Drum ID0	
		6	Color Drum ID1	
		7	Color Drum ID2	
		8	Color Drum ID3	
		9	Optional Charge Counter	

No.	Display	No.	Menu	Function
		11	Print Per Count	
		12	Count Timing	
		13	Max Print Per Master	
		14	Job Separation Setting	
		15	Key Counter Setting	
		16	Paper Delivery Table	
		17	Main Scan Position - DF	
		18	Scan Start Position - DF	
		19	Scanning Speed – DF	
		20	Clear Printer Settings	
		21	NIB NVRAM Clear	
		22	HDD Format - All	
		23	HDD Format – Image Files	
		24	HDD Format - Fonts	
		25	HDD Format – Job Log	
		27	Vender	
		28	Master On Drum	
		29	No Image Master On Drum	
		30	Double Feed - Paper Feed Station	
		31	Prepaid Card Or Coin Lock	
		32	Main Scan Position - DF Back	
1-025	PM Parts Replacement Record	1	Cloth Screen	The record of the PM parts replaced. When

No.	Display	No.	Menu	Function
		3	Paper Pick-up Roller	you do SP3-004 after you replace the PM parts, the data is stored here. (The sheets counter and master counter are displayed).
		4	Paper Feed Roller	
		5	Friction Pad A	
		6	Friction Pad B	
		12	Press Roller	
		13	Paper delivery Belts – Long	
		14	Paper delivery Belts - Short	
		15	Duplex Transport Belt	
1-026	Misfeed Duplex Unit	1	Standard 60 rpm	
		2	Standard 75 rpm	
		3	Standard 90 rpm	
		4	Standard 105 rpm	
		5	Standard 120 rpm	
		6	Thick 60 rpm	
		7	Thick 75 rpm	
		8	Thick 90 rpm	
		9	Thick 105 rpm	
		10	Thick 120 rpm	
		11	Thin 60 rpm	
		12	Thin 75 rpm	
		13	Thin 90 rpm	
		14	Thin 105 rpm	
		15	Thin 120 rpm	

No.	Display	No.	Menu	Function
		16	Other 60 rpm	
		17	Other 75 rpm	
		18	Other 90 rpm	
		19	Other 105 rpm	
		20	Other 120 rpm	

2. Basic Settings

No.	Display	No.	Menu	Function	Default	Setting
2-001	Defaults Panel Setting	1	Print Speed	See Note 1.	3	1 to 6
		2	Image Position Top/ Btm -Front		0	-15.0 to 15.0 mm
		3	Image Position Top/ Btm -Back		0	-7.5 to 7.5 mm
		4	Image Position Left/Right		0	-10.0 to 10.0 mm
		5	Make-up Pattern		1	1 to 40
2-002	Disable Detection	1	Ink Detection	Enables/disables various sensors for test purposes.	ON	ON/OFF
		2	Paper Length Detection		ON	ON/OFF
		3	Paper Size Detection		ON	ON/OFF
		4	Drum Master Detection		ON	ON/OFF
		5	Platen Cover Set Detection		ON	ON/OFF

No.	Display	No.	Menu	Function	Default	Setting
		7	Trailing Edge Stuck On Drum		OFF	ON/OFF
2-004	Destination Setting	1	Machine Code Setting	See Note 2.	-	-
		4	Machine Destination		-	0:Japan, 1:North America, 2:Europe, 3:China
		5	Vendor Selection		-	Different depends on the destination
2-006	Other Setting	1	APS/A5 Size Detection	See Note 3.	No	0:No 1:Yes
		4	Master Eject Attempt Number	This specifies the number of master eject attempts before an error is indicated. See Note 4.	1	1 to 3
		5	Auto Master Save Select	See Note 5.	Auto	1: Off 0: Auto
		6	Ink Supply After Trial Print	ON: Ink is supplied while a trial print is made after making a new master.	OFF	ON/OFF
		7	Ink Supply Timing	See Note 6.	After	0:After 1: Before 2: No
		8	Master on Drum	See Note 7.	OFF	ON/OFF
		14	TH Writing Position	See Note 8.	OFF	ON/OFF

No.	Display	No.	Menu	Function	Default	Setting
		15	TH Writing Pos Shift Amount	See Note 9.	2	1 to 5 mm
		16	Print Pressure Fixing Mode	See Note 10.	OFF	On/OFF
		17	Print Pressure in Fixing Mode	See Note 11.	3	0 to 6
		18	Print Pressure Shift Amount	See Note 12.	0	-2 to 2
		19	Print Pressure Shift Amount - Duplex		0	-2 to 2
		20	6th Speed Paper Limit	ON (default): 135 rpm is disabled for B4 SEF or longer.¶See Note 13.	ON	On/OFF
		21	No Image Master On Drum	See Note 14.	OFF	On/OFF
		22	No Image Master On Drum Number		1	1 to 10
		24	Master Compression time - A3/DLT	See Note 15.	0	0 to 3
		25	Master Compression time – A4	See Note 16.	0	0 to 1
		26	Air Knife Wind Amout	See Note 17.	Weak	Weak Medium Strong
		50	Master Slippage Adjustment	If this is 'ON', the settings of SP	OFF	ON/OFF

No.	Display	No.	Menu	Function	Default	Setting
				2-006-51 to 94 are used. See Note 18.		
		51	1 Start Print Number		90 print	10 to 4000 prints
		52	1 Interval		180 print	10 to 4000 prints
		53	1 Amount Of Adjustment		0.25 mm	0.25 to 10.0 mm
		54	1 Max Amount Of Adjustment		0.50 mm	0.25 to 10.0 mm
		55	2 Start Print Number		90 prints	10 to 4000 prints
		56	2 Interval		180 prints	10 to 4000 prints
		57	2 Amount Of Adjustment		0.25 mm	0.25 to 10.0 mm
		58	2 Max Amount Of Adjustment		1.00 mm	0.25 to 10.0 mm
		59	3 Start Print Number		90 prints	10 to 4000 prints
		60	3 Interval		180 prints	10 to 4000 prints
		61	3 Amount Of Adjustment		0.25 mm	0.25 to 10.0 mm
		62	3 Max Amount Of Adjustment		1.25 mm	0.25 to 10.0 mm
		63	4 Start Print Number		90 prints	10 to 4000 prints
		64	4 Interval		180 prints	10 to 4000 prints

No.	Display	No.	Menu	Function	Default	Setting
		65	4 Amount Of Adjustment		0.25 mm	0.25 to 10.0 mm
		66	4 Max Amount Of Adjustment		1.50 mm	0.25 to 10.0 mm
		67	5 Start Print Number		90 prints	10 to 4000 prints
		68	5 Interval		100 prints	10 to 4000 prints
		69	5 Amount Of Adjustment		0.25 mm	0.25 to 10.0 mm
		70	5 Max Amount Of Adjustment		1.75 mm	0.25 to 10.0 mm
		71	Black 60 rpm - Feed Table		5	1 to 5
		72	Black 75 rpm - Feed Table		4	1 to 5
		73	Black 90 rpm - Feed Table		2	1 to 5
		74	Black 105 rpm - Feed Table		2	1 to 5
		75	Black 120 rpm - Feed Table		3	1 to 5
		76	Black 135 rpm - Feed Table		3	1 to 5
		77	Color 60 rpm - Feed Table		5	1 to 5
		78	Color 75 rpm - Feed Table		4	1 to 5
		79	Color 90 rpm - Feed Table		2	1 to 5

No.	Display	No.	Menu	Function	Default	Setting
		80	Color 105 rpm - Feed Table		2	1 to 5
		81	Color 120 rpm - Feed Table		3	1 to 5
		82	Color 135 rpm - Feed Table		3	1 to 5
		83	Black 60 rpm – Duplex unit		4	1 to 5
		84	Black 75 rpm - Duplex unit		3	1 to 5
		85	Black 90 rpm - Duplex unit		1	1 to 5
		86	Black 105 rpm - Duplex unit		1	1 to 5
		87	Black 120 rpm - Duplex unit		2	1 to 5
		88	Black 135 rpm - Duplex unit		1	1 to 5
		89	Color 60 rpm – Duplex unit		4	1 to 5
		90	Color 75 rpm - Duplex unit		3	1 to 5
		91	Color 90 rpm - Duplex unit		1	1 to 5
		92	Color 105 rpm - Duplex unit		1	1 to 5
		93	Color 120 rpm - Duplex unit		2	1 to 5
		94	Color 135 rpm - Duplex unit		1	1 to 5

No.	Display	No.	Menu	Function	Default	Setting
2-010	Color Drum ID Setting	1	ID 0	Use this SP to assign colors to the drum ID numbers. ¶For details, see 'Drum – Ink Supply and Kneading – Color Drum ID Detection' in Detailed Section Descriptions. Also see Note 19.	Other	15 colors
		2	ID 1		Other	15 colors
		3	ID 2		Other	15 colors
		4	ID 3		Other	15 colors
2-012	IEEE 802.11b Setting	1	Channel Range Upper Limit		11	-
		2	Channel Range Lower Limit		1	-
2-013	Paper Feed Setting	1	Paper Feed Retry Setting	This SP enables the paper feed retry mechanism. See Note 20.	ON	ON/OFF
2-014	Thermal Head Energy Setting	1	Ink Temp Control - Black	See Note 21.	ON	ON/OFF
		3	Standard - Black	Reductions in thermal head energy in standard and economy modes, as percentage of full power.	7	0 to 50%
		4	Economy Mode 1 - Black		10	0 to 50%
		5	Economy Mode 2 - Black		20	0 to 50%
		11	Ink Temp Control - Color	See Note 21.	ON	ON/OFF

No.	Display	No.	Menu	Function	Default	Setting
		13	Standard - Color	Reductions in thermal head energy in standard and economy modes, as percentage of full power.	7	0 to 50%
		14	Economy Mode 1 - Color		10	0 to 50%
		15	Economy Mode 2 - Color		20	0 to 50%
		18	Economy Mode1 Down Limit-Color	Maximum setting for economy mode 1	40	0 to 50%
		19	Economy Mode2 - Down Limit-Color	Maximum setting for economy mode 2	50	0 to 50%
		22	Ink Temp Control - Duplex		ON	ON/OFF
		24	Standard - Duplex		17	0 to 50%
		25	Economy Mode 1 - Duplex		10	0 to 50%
		26	Economy Mode 2 - Duplex		17	0 to 50%

Notes

1: 2-001-1 (Default print speed, rpm)

Default: 3

Setting: 1: 60, 2: 75, 3: 90, 4: 105, 5: 120, 6: 135

2: 2-004-1 (Machine Code Setting)

By entering the machine code (e.g. for C269-52, input 269-53), the following values go to the factory settings for that model:

- Machine destination (SP2-004-4)

- Display language
- Vendor selection (SP2-004-5)

Note

- 269-52: Ricoh North America
- 269-53: Ricoh Europe
- Use the point (.) key to enter '-.'

3: 2-006-1 (APS/A5 Size Detection)

This determines how the machine behaves if the APS sensors cannot detect the original because it is too small.

0: No - No original detected

1: Yes - A5 assumed

Default: 0: No

4: 2-006-4 (Master Eject Attempt Number)

When the master eject mechanism cannot take the master off the drum, the mechanism will try for the number of times set with this SP.

When the master is removed, the mechanism will stop.

Settings: 1 to 3

Default: 1

5: 2-006-5 (Auto Master Save Select)

Auto: If the original is A4 LEF or shorter, the master will be half-sized (A4 for an A3 drum). This decreases master consumption.

Fix A3 size: The master will always be A3 size.

6: 2-006-7 (Ink Supply Timing)

This mode determines when ink is detected and supplied. There are three possible settings.

- '0: After': Ink detection and supply are done when a print job finishes.
- '1: Before': They are done when the Print Start key is pressed (and before starting printing).
- '2: No': Ink is not added except during normal printing.

Note

- If the machine detects a low ink condition during printing, ink is supplied regardless of this setting.
- To minimize the wait time for drum idling, ink supply prior to starting printing has been eliminated by setting this mode to '0: After' as the default.

7: 2-006-8 (Master on Drum)

This SP lets the user wrap a blank master around the drum. This should be done if a drum will not be used for a long time. If a normal used master is used, the holes in the master will let the ink become dry. Also, if the drum is removed, people can see the content of the master.

To wrap a blank master around the drum, the user must press the "." button and the Start button together.

8: 2-006-14 (Thermal Head Writing Position)

If this is set to 'ON', the thermal head writing position is moved a small amount between masters. The amount is set with SP2-006-15 (Thermal Head Writing Position Shift 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

9: 2-006-15 (Thermal Head Writing Position Shift Amount)

Settings: 1 to 5 mm

Default: 2 mm

10: 2-006-16 (Print Pressure In Fixing Mode)

The print pressure is fixed to the value of SP2-006-17 (Print Pressure In Fixing Mode). Otherwise, the print pressure will be changed by the print speed and the temperature.

Default: OFF (pressure is changed by print speed and temperature)

11: 2-006-17 (Print Pressure In Fixing Mode)

Settings: 0 to 6

Default: 3

12: 2-006-18 (Print Pressure Shift Amount)

2-006-19 (Print Pressure Shift Amount-Duplex)

The same amount of print pressure is added to all the print pressure settings (SP 6-054 to 6-058).

Note

- The maximum pressure is 6, and the minimum pressure is 0. If you input a value that takes the pressure outside this range, it is ignored, and either 6 or 0 will be used.

Settings: -2 to +2

Default: 0

13: 2-006-20 (6^{th} Speed Paper Limit)

Paper longer than B4 SEF can cause a paper exit jam. Because of this, the machine cannot use the 6^{th} speed print for paper that is longer than B4SEF.

If this SP is set to 'off', this limitation will be ignored.

⚠CAUTION

- When this setting is 'off', a paper exit jam could occur for paper larger than B4SEF after printing out about 600 sheets. Stop the print job when there are about 600 sheets of paper on the paper delivery table.

14: SP 2-006-21, 2-006-22

When there is too much ink in the drum, you must remove the ink. To do this, you must make a blank master, then remove the ink.

1. First, set SP 2-006-21 to ON. This enables the rest of this procedure.
2. Press the "Auto Cycle" button and the Start button together. The machine automatically wraps a master around the drum, applies pressure to transfer the ink into the master (at this time, the drum rotates a set number of times), and removes the master. Then another blank master is wrapped, to prevent the ink in the drum from becoming dry.

During this procedure, the excess ink in the drum transfers to the master. If there is a lot of excess ink, you must make more than one master. SP 2-006-22 sets the number of masters that are made.

After you finish, you can keep SP 2-006-21 on. Then if the problem occurs again, you can instruct the user by phone or mail about how to do the above procedure, and you do not have to go there yourself.

15: 2-006-24 (Master Compression time A3/DLT)

If you adjust this, the capacity of the master eject box will change. Adjust this if customers complain that the eject box is too heavy.

Settings: 0 to 3

Default: 0

Setting	Capacity	Compression Time
0	Over 100	4.5 sec
1	100	4.0 sec
2	90	3.5 sec
3	70	3.0 sec

16: 2-006-25 (Master Compression time A4)

If you adjust this, the capacity of the master eject box will change. Adjust this if customers complain that the eject box is too heavy.

Settings: 0 to 1

Default: 0

Setting	Capacity	Compression Time
0	140	3.5 sec
1	100	3.0 sec

17: 2-006-26 (Air Knife Wind Amount)

This function adjusts the strength of the air knife in the paper delivery unit.

Note

- You can use this function with one-sided printing. It is impossible to change the setting when printing on both sides. If you use a strong air flow for duplex printing, there will be paper feed problems.

Setting: Low / Mid / Hi

Default: Low

18: 2-006-50 (Master Slippage Adjustment)

This function switches master slippage correction ON/OFF when starting printing.

19: 2-010 (Color Ink Detection)

There are 15 possible colors that can be specified with SP 2-010-1 to -4.

Allocation of color codes							
0	1	2	3	4	5	6	7
Other	Red	Blue	Green	Brown	Gray	Yellow	Purple
8	9	10	11	12	13	14	
Maroon	Navy	Orange	Teal	Red Base	Blue Base	Yellow Base	

Default: 0 (other)

20: 2-013 (Paper Feed Setting)

This SP enables the paper feed retry mechanism. If retry is enabled, leading edge registration errors can occur. Disable the feature if customers complain about this.

21: 2-014 (Thermal Head Energy Saving)

If Ink Temp Control – Black (SP2-005-1), Color (2-005-11), or Duplex (2-005-22) are switched on, the energy supplied to the thermal head will depend on the temperature of ink measured by the thermistor in the drum, as shown by the formulas in the table below. This setting can be adjusted for Black, Color, and Duplex separately.

Thermal head energy settings used in the formulas:

[Y]: Standard

- Black (SP2-005-3): 7%
- Color (SP2-005-13): 7%
- Duplex (SP 2-005-24): 17%

[Z]: Economy Mode 1

- Black (SP2-005-4): 10%
- Color (SP2-005-14): 10%
- Duplex (SP 2-005-25): 5%

[Z]: Economy Mode 2

- Black (SP2-005-5): 20%
- Color (SP2-005-15): 20%
- Duplex (SP 2-005-26): 10%

[T]: The temperature of the ink

Drum	Ink Temp Control (SP2-005-1, 11)	Mode	Less than 20 °C	20 °C or more
Black/Color	ON (Default)	Standard	-Y%	-(Y+(T-20) x2)% The limit is 23%
		Economy 1	-(Y+Z)%	-(Y+(T-20) x2+Z)% The limit is 40%
		Economy 2	-(Y+Z)%	-(Y+(T-20) x2+Z)% The limit is 50%
	OFF	Standard	-Y%	
		Economy 1, 2	-(Y+Z)%	

3. System Settings

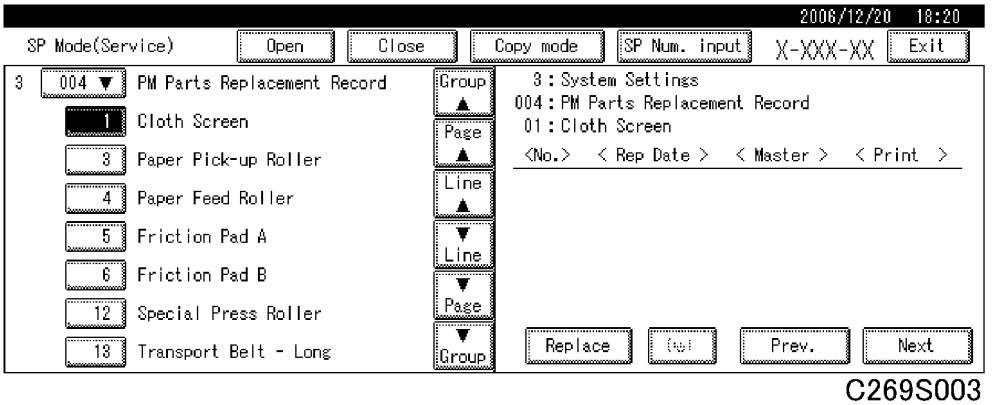
No.	Display	No.	Menu	Function	Default	Setting
3-001	Installation Setting	1	Serial Number	Use these to input the serial numbers, etc.Do these at installation if required. The data is used in the data printout mode in the system test.	-	-
		6	Phone Number - Service		-	-
		7	Phone Number - Supply Order		-	-

No.	Display	No.	Menu	Function	Default	Setting
		8	Phone Number – Sales	(SP3-1-1 can be seen in SP1-21-1. SP3-1-6 can be seen in SP1-22-1.)	-	-
		9	Product Name - Master		-	-
		10	Product Name – Ink		-	-
		11	Time		-	-
		12	Installation Date		-	-
		13	First Power On Date		-	-
3-002	Unit Setting	1	Job Separation	not used	No	No/ Tape Dispenser/Job Separator
		2	Key Counter		No	No/Yes
		3	Optional Counter Type	Set to Yes if installed.	0	0: None 1:Add.card 2:SubCard 3: Prepaid 4: Coin Rack
		4	Paper Delivery Table	Japan only	No	No/Yes
		6	Sorter	Japan only	No	No/Yes
		7	Two-table Delivery Unit	Japan only	No	No/Yes
		10	Double Feed Sensor	Japan only	No	No/Yes

No.	Display	No.	Menu	Function	Default	Setting
		11	LCIT	Set to Yes if installed.	No	No/Yes
		12	LCOT	Set to Yes if installed.	No	No/Yes
		13	Scanner Back Light	Japan only	No	No/Yes
		14	Anti-Condensation Heater	Japan only	No	No/Yes
		15	Cleaning Roller	Not used	No	No/Yes
3-004	PM Parts Replacement Record	1	Cloth Screen	See Note 1.	-	-
		3	Paper Pick up Roller		-	-
		4	Paper Feed Roller		-	-
		5	Friction Pad A		-	-
		6	Friction Pad B		-	-
		12	Press Roller		-	-
		13	Paper Delivery Belt - Long		-	-
		14	Paper Delivery - Short		-	-
		15	Duplex Transport Belt		-	-

Notes

1: 3-004 (PM Parts Replacement Record)



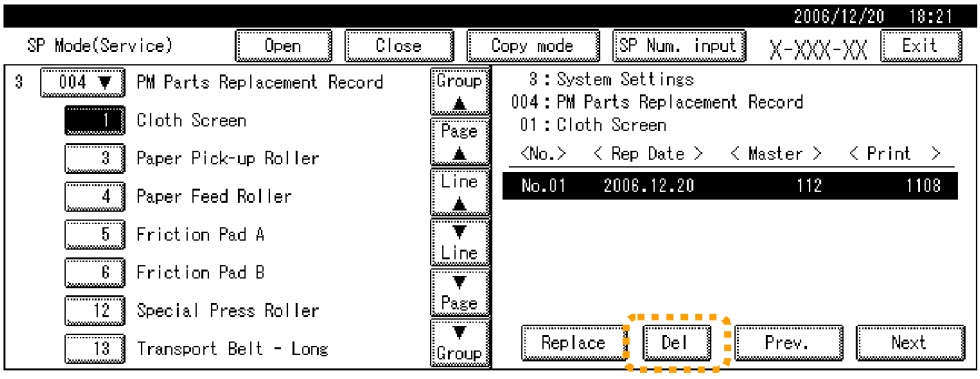
C269S003

C269S004

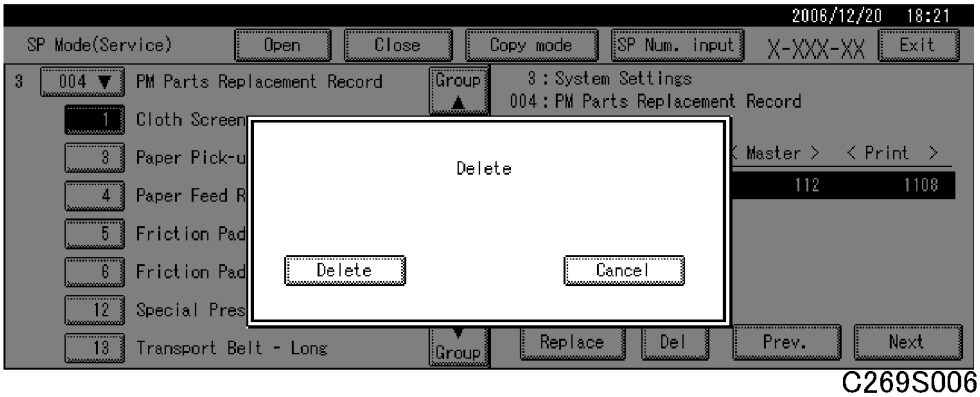
After all PM parts are replaced, use the SP for each replaced part and push the 'Replace' button, then push 'Yes'. The date, and the print and master counters at the time of replacement will be stored in the machine.

The parts for which this information can be recorded are:

Cloth screen, Pick-up roller, Paper feed roller, Friction pad A/B, Special Press Roller, Transport Belt - Long , Transport Belt - Short , Duplex Transport Belt



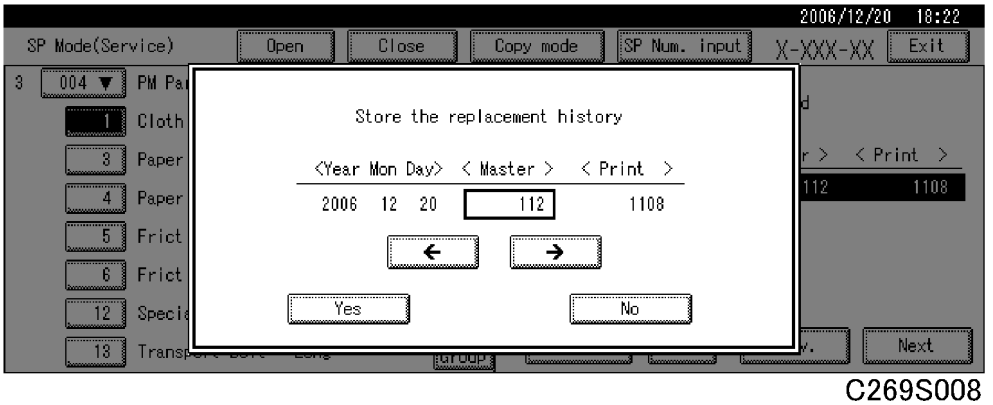
C269S005



C269S006

1. Make sure to push the 'Replace' button then 'Yes' each time you replace a part. If you do not do this, the information is not recorded correctly.
2. Select objects and push the "Delete" button if amiss part book in.
3. Use this information for checking the endurance of PM parts

C269S007



C269S008

Push the "Edit" button after select objects If correct <Year Mom Day><Master><Print> after book in.

4. Input Test Mode

SP No.	Display	No.	Menu
4-001	Scanner Unit	1	Scanner HP Sensor
		2	Original Length Sensor 1
		3	Original Length Sensor 2
		4	Original Width Sensor 1
		5	Original Width Sensor 2
		6	Original Special Size Sensor 1

SP No.	Display	No.	Menu
		7	Original Special Size Sensor 2
		8	Platen Cover Sensor
4-010	Master Making Unit	1	Master Making Unit Set Switch
		2	Master Making Unit Lock Sensor
		3	Cutter HP SW
		4	Master Set Sensor
		5	Master End Sensor
		6	Master Edge Sensor
		8	Platen Release Sensor
		9	Thermal Head Temperature
		11	Master Amount Sensor
4-020	Master Eject Unit	1	Eject Box Set Switch
		2	Master Eject Sensor
		3	Pressure Plate HP Sensor
		4	Pressure Plate Limit Pos. SN
		5	Eject Box Lock Sensor
4-030	Paper Feed Table	1	Paper Table Lowering Switch
		2	Paper Table Lower Limit Sensor
		3	Paper Table Height Sensor
		4	Paper Table Set Sensor
		5	Remaining Paper Sensor 1
		6	Remaining Paper Sensor 2
		7	Remaining Paper Sensor 3
4-031	Paper Feed Table - Paper	1	Paper End Sensor
		2	Paper Length Sensor

SP No.	Display	No.	Menu
		3	Paper Width Detection 0
		4	Paper Width Detection 1
		5	Paper Width Detection 2
		6	Paper Width Detection 3
		7	Paper Width Detection 4
		8	Paper Width Detection 5
4-040	Paper Feed Pressure Detection	1	Feed Pressure 0
		2	Feed Pressure 1
		3	Feed Pressure 2
		4	Feed Pressure 3
4-041	Separation Pressure Detection	1	Separation Pressure 0
		2	Separation Pressure 1
		3	Separation Pressure 2
		4	Separation Pressure 3
4-042	Friction Pad	1	Friction Pad Position Sensor 1
		2	Friction Pad Position Sensor 2
		3	Friction Pad Position - Standard
		4	Friction Pad Position - Special
4-050	Paper Transport	1	Paper Registration Sensor
		2	Paper Feed Timing Sensor
		3	Paper Feed Start Sensor
		6	Paper Exit Sensor
		7	Main Drive Encoder
		8	Wing Guide HP Sensor
		10	Registration Roller Press SN

SP No.	Display	No.	Menu
		11	Registrat. Roller Release SN
4-060	Around the Drum	1	Position Sensor (Not used)
		2	Position Sensor (not used)
		3	3rd Drum Position Sensor
		4	Drum Type Check 0
		5	Drum Type Check 1
		6	Color Drum ID 1
		7	Color Drum ID 2
		8	1st Drum Master Sensor
		9	2nd Drum Master Sensor
		10	Clamper Close Position Sensor
		11	Clamper Open Position Sensor
		12	Drum Lock Release SW
		13	Drum Lock Release SN
		14	Duplex Unit Lock Release SW
		15	Duplex Unit Lock Release SN
		16	Duplex Unit SN
		17	Exit Pawl Pump HP SN
		18	Junction Gate Pump HP SN
4-061	Image/Drum Shift HP SN	1	Drum Shift Sensor
		2	Drum Shift HP Sensor
4-062	Ink	1	Ink Pump Sensor
		2	Ink Cartridge Set Switch
		3	Ink Detection
		4	Ink Flow Sensor

SP No.	Display	No.	Menu
		5	Idling Roller HP Sensor
		6	Thermostat - Ink Temperature
4-070	Duplex Unit	1	Print Pressure Cam HP SN
		2	Print Pressure Switch HP SN
		3	Print Pressure Encoder SN
		4	Duplex Unit Jam SN 1
		5	Duplex Unit Jam SN 2
		6	Duplex Clamper SN
		7	Paper Guide
4-080	Other Section	1	Cover Safety Switches
		2	Main Motor Lock Detect
		3	Relay Guide Set Sensor
4-090	Job Separator Unit Not used	1	Slider Upper Limit Sensor
		2	Paper Sensor
		3	Slider Position Sensor
		4	Slide HP sensor
4-100	Document Feeder Unit	1	Feed Cover Open Sensor
		2	Registration Sensor
		3	Original Trailing Sensor
		4	Original Set Sensor
		5	Original Length Sensor 1
		6	Original Length Sensor 2
		7	Original width Sensor 1
		8	Original width Sensor 2
		9	DF Open Sensor

SP No.	Display	No.	Menu
		10	Inverter Sensor
		11	Eject Sensor
4-150	LCIT	1	Paper Table Lifting Switch
		2	Paper Table Lowering Switch
		3	Paper Table Height Sensor
		4	Paper Table Lower Limit Sensor
		5	Upper Cover Release Sensor
		6	Paper Table Upper Limit Sensor
		7	Paper Width Detection 1
		8	Paper Width Detection 2
		9	Paper Width Detection 3
		10	Paper Width Detection 4
		11	Paper Width Detection 5
		12	Paper Width Detection 6
		13	Paper Length Sensor
		14	Paper End Sensor
		15	1st Paper Sensor
		16	2nd Paper Sensor
		17	3rd Paper Sensor
		18	4th Paper Sensor
		19	5th Paper Sensor
		20	6th Paper Sensor
		21	7th Paper Sensor
		22	8th Paper Sensor
4-160	LCOT	1	Paper Table Lifting Switch

SP No.	Display	No.	Menu
		2	Paper Table Lowering Switch
		3	Paper Table Upper Limit Sensor
		4	Paper Table Lower Limit Sensor
		5	Paper Amount Sensor
		6	End Plate Release Sensor
4-170	Options	1	Key Counter Detection
		2	Key Card Detection
		3	Not used

5. Output Test Mode

SP No.	Display	No.	Menu
5-001	Scanner Unit	1	Xenon Lamp
		2	Drives Scanner - Scan
		3	Drives Scanner - Return
		4	Drives Scanner - HP
5-010	Master Making Unit	1	Master Feed Control Motor
		2	Platen Release Motor - Forward
		3	Platen Release Motor - Reverse
		4	Master Feed Control Motor - Forward
		5	Master Feed Control Motor - Reverse
		6	Cutter Motor - Forward
		7	Cutter Motor - Reverse
		8	Cutter Motor - HP
		9	Master Suction Fan 1

SP No.	Display	No.	Menu
		10	Master Suction Fan 2
		11	Master Buffer Fan
		12	Duct Entrance Solenoid
		13	Thermal Head ON
		14	Platen Roller Pressure ON
		15	Platen Roller Pressure OFF
		18	Unit Lock Solenoid - Lock
		19	Unit Lock Solenoid - Unlock
5-020	Master Eject Unit	1	Master Eject Motor - Forward
		2	Master Eject Motor - Reverse
		3	Pressure Plate Motor - Limit
		4	Pressure Plate Motor - Release
		5	Pressure Plate Motor - HP
		8	Eject Box Lock Solenoid ON
		9	Eject Box Lock Solenoid OFF
5-030	Paper Feed Table	1	Paper Table Motor - Up
		2	Paper Table Motor - Down
5-040	Paper Feed Pressure Motor	1	Feed Pressure Motor - Up
		2	Feed Pressure Motor - Down
		3	Feed Pressure Min
		4	Feed Pressure 1
		5	Feed Pressure 2
		6	Feed Pressure 3
		7	Feed Pressure 4
		8	Feed Pressure 5

SP No.	Display	No.	Menu
		9	Feed Pressure Max
5-041	Separation Pressure Motor	1	Motor Up
		2	Motor Down
		3	Eject Position
		4	Separation Pressure Min
		5	Separation Pressure 1
		6	Separation Pressure 2
		7	Separation Pressure 3
		8	Separation Pressure 4
		9	Separation Pressure 5
		10	Separation Pressure Max
5-042	Friction Pad Shift Motor	1	Standard
		2	Special
5-043	Paper Registration Pressure	1	Registration Pressure ON
		2	Registration Pressure OFF
		3	Regist Pressure Motor Forward
		4	Regist Pressure Motor Reverse
5-050	Paper Feed Motor	1	Slowest
		2	30 rpm
		3	1st Speed
		4	2nd Speed
		5	3rd Speed
		6	4th Speed
		7	5th Speed
		8	6th Speed

SP No.	Display	No.	Menu
5-051	Registration Motor	1	Slowest
		2	30 rpm
		3	1st Speed
		4	2nd Speed
		5	3rd Speed
		6	4th Speed
		7	5th Speed
		8	6th Speed
5-052	Paper Delivery	1	Transport Suction Fan
		2	Air Knife Fan Weak Front
		3	Air Knife Fan Mid Front
		4	Air Knife Fan Strong Front
		5	Air Knife Fan Weak Back
		6	Air Knife Fan Mid Back
		7	Air Knife Fan Strong Back
		8	Duplex Unit Blower Fan 1 Front
		9	Duplex Unit Blower Fan 1 Black
		10	Duplex Unit Blower Fan 2 Front
		11	Duplex Unit Blower Fan 2 Black
5-053	Paper Delivery Motor	1	16prm
		2	30rpm
		3	Speed 1
		4	Speed 2
		5	Speed 3
		6	Speed 4

SP No.	Display	No.	Menu
		7	Speed 5
		8	Speed 6
5-054	Wing Guide Motor	1	HP
		2	H1
		3	H2
		4	H3
		5	H4
		6	H5
		7	H6
		8	H7
		9	H8
		10	H9
		11	H10
		12	H11
5-055	Duplex Clamp Mtr: Constant	1	16rpm
		2	30rpm
		3	Speed 1
		4	Speed 2
		5	Speed 3
		6	Speed 4
		7	Speed 5
5-056	Duplex Clamp Mtr: 1 Stroke	1	16rpm
		2	30rpm
		3	Speed 1
		4	Speed 2

SP No.	Display	No.	Menu
		5	Speed 3
		6	Speed 4
		7	Speed 5
5-057	Duplex Delivery Motor	1	16rpm
		2	30rpm
		3	Speed 1
		4	Speed 2
		5	Speed 3
		6	Speed 4
		7	Speed 5
5-058	Print Press Switch Cam Motor	1	Back/A4 Master Cut
		2	Front
		3	Duplex
5-060	Drum Rotation	1	Slowest
		2	1st Speed
		3	2nd Speed
		4	3rd Speed
		5	4th Speed
		6	5th Speed
		7	6th Speed
		15	Stop by Master Making
		16	2nd Drum Position Sensor Adj.
5-061	Clamper Motor	1	Clamper Motor - Open
		2	Clamper Motor - Close
5-62	Image Shift Motor	3	Drum Shift Motor – Up

SP No.	Display	No.	Menu
		4	Drum Shift Motor - Down
5-063	Drum Idling Roller	1	Drum Idling Roller - ON
		2	Drum Idling Roller - Return
5-064	Around The Drum	1	Ink Pump Motor
		2	Print Press Release Solenoid
		5	Drum Position LED - GREEN
		6	Drum Position LED - RED
5-065	Exit Pawl Pump Motor	1	16 rpm
		2	30 rpm
		3	Speed 1
		4	Speed 2
		5	Speed 3
		6	Speed 4
		7	Speed 5
		8	Speed 6
5-066	Switch Pawl Motor	1	16 rpm
		2	30 rpm
		3	Speed 1
		4	Speed 2
		5	Speed 3
		6	Speed 4
		7	Speed 5
		8	Speed 6
5-067	Print Pressure Switch Motor	1	Pressure 0
		2	Pressure 1

SP No.	Display	No.	Menu
		3	Pressure 2
		4	Pressure 3
		5	Pressure 4
		6	Pressure 5
		7	Pressure 6
5-068	Duplex Unit	1	Suction Fan 1 Front
		2	Suction Fan 1 Back
		3	Suction Fan 2 Front
		4	Suction Fan 2 Back
		5	Paper Guide Motor HP
		6	Paper Guide Motor A4
		7	Paper Guide Motor B5
		8	Paper Guide Motor LT
		9	Delivery Roller Solenoid Front
		10	Delivery Roller Solenoid Back
		11	Delivery Roller Solenoid Duplex
5-070	Counter	1	Print Counter Up
		2	Master Counter Up
5-080	Other Sections - Main Body	1	All Indicators On
		2	PSU Fan Motor
		3	Auto Shut Off
		4	Drum Lock Release Solenoid
		5	Drum Lock LED
		6	Duplex Unit Lock Release SOL
		7	Duplex Unit Lock LED

SP No.	Display	No.	Menu
		8	Internal Light
		9	Switch Pawl Solenoid
		10	Duplex Board Fan Motor
5-090	Job Separator Unit Not used	1	Slider Lift Motor - Up
		2	Slider Lift Motor - Down
		3	Job Separator Motor - Forward
		4	Job Separator Motor - Reverse
5-100	Document Feeder Unit	1	DF Transport Motor
		2	DF Feed Clutch
		3	DF Pick-up Solenoid
		4	DF Reverse Motor
		5	DF Reverse Solenoid
		6	DF Gate Signal
5-150	LCIT	1	Paper End Solenoid
		2	Paper Length Solenoid
		3	Paper Table Motor Up
		4	Paper Table Motor Down
		5	Paper Feed motor
		6	1st Paper Delivery motor
		7	2nd Paper Delivery motor
		8	3rd Paper Delivery motor
5-160	LCOT	1	Paper Table Motor Up
		2	Paper Table Motor Down
5-170	Options	1	Count-up Key Counter
		2	Count-up Key Card

SP No.	Display	No.	Menu
		4	Not used

6. System Adjustment

No.	Display	No.	Menu	Function	Default	Setting
6-001	Scan & Writing Adjustment	1	Main Scan Position - Platen	Side-to-side registration adjustment; see Note 1.	0	-5.0 to 2.0 mm
		2	Main Scan Position - DF		0	-5.0 to 5.0 mm
		3	Scan Start Position - Platen	Scanning start line adjustment; see Note 2.	0	-2.0 to 5.0 mm
		4	Scan Start Position - DF		0	-5.0 to 5.0 mm
		5	Scanning Speed - Platen	See Note 3.	0	-5.0 to 5.0%
		6	Scanning Speed - DF		0	-5.0 to 5.0%
		7	Master Writing Speed	See Note 4.	0	-5.0 to 5.0%
		8	Master Writing Length	Do not use in the field.	0	-5.0 to 5.0%
		9	Main Master Writing Position		0	-3.0 to 3.0 mm
		10	Trail Edge Margin		2	0 to 3 mm
		11	Main Scan Position –DF Back	Duplex back side	0	-5.0 to 5.0 mm
		12	Skew Correction Back - ADF	Enables the setting of SP 6-001-13.	-	ON/OFF

No.	Display	No.	Menu	Function	Default	Setting
		13	Skew Correction Back - ADF – Adj.		0	-20 to 20 mm
6-002	Master Making Density	1	Letter	See Note 5.	1	0 to 2
		2	Letter/Photo		1	0 to 2
		3	Photo		1	0 to 2
		4	Pencil		1	0 to 2
		5	Pale		1	0 to 2
6-003	Master Clamp Adjustment	1	Master Clamp Registration	See Note 6.	0	-10 to 10 mm
6-004	Sensor Voltages/ Thresholds	1	Master Eject Sensor	The use of these SP modes is explained in various parts of the Replacement and Adjustment section.	2.5	1.5 to 3.0 V
		2	Master End Sensor		0.8	0.1 to 3.0 V
		3	Master Edge Sensor		2.0	1.5 to 3.0 V
		4	Master Set Sensor		2.8	1.5 to 3.0 V
		5	1st drum master sensor		2.5	1.5 to 3.0 V
		6	2nd drum master sensor		2.5	1.5 to 3.0 V
		7	List of Sensor Adjustments	See Note 7		
6-005	Sensor Board Unit Adjustment	1	Auto Adjustment	Refer to the Replacements and Adjustments section.	-	
		2	Gain - EVEN	Do not adjust.	59	

No.	Display	No.	Menu	Function	Default	Setting
		3	Gain - ODD	Do not adjust.	59	
		4	DC Count - EVEN	Do not adjust.	25	
		5	DC Count - ODD	Do not adjust.	25	
		6	Reference Count - Value	Do not adjust.	157	
		7	Offset - EVEN	Do not adjust.	173	
		8	Offset - ODD	Do not adjust.	174	
6-006	MTF Filter Setting	1	Letter Mode - Main Scan	See Note 8.	2	0 to 8
		2	Letter Mode - Sub Scan		1	0 to 8
		3	Letter Photo Mode – Main Scan		2	0 to 8
		4	Letter Photo Mode - Sub Scan		1	0 to 8
		7	Photo Mode - Main Scan		2	0 to 8
		8	Photo Mode - Sub Scan		1	0 to 8
		9	Pencil Mode - Main Scan		2	0 to 8
		10	Pencil Mode - Sub Scan		1	0 to 8
		11	Tint Mode - Main Scan		2	0 to 8
		12	Tint Mode - Sub Scan		1	0 to 8

No.	Display	No.	Menu	Function	Default	Setting
6-007	Drum Master Length Adjust	1	A3/DLT Drum	Adjust if the cut length of the master is not correct. See Note 9.	0	-5.0 to 5.0mm
		5	A4 Cut			
6-008	Ink detection pulse Adjustment	1	Ink detection pulse Adj.	This can be used instead of the adjustment with the oscilloscope, but the oscilloscope method is more accurate.	-	micro seconds (µs)
6-009	MisFeed - Paper Feed Pressure	1	Normal Paper	See Note 10.	3	0 to 6
		2	Normal Paper - Sometimes		5	0 to 6
		3	Normal Paper – Frequently		6	0 to 6
		4	Thick Paper		4	0 to 6
		5	Thick Paper – Sometimes		5	0 to 6
		6	Thick Paper – Frequently		6	0 to 6
		7	Thin Paper		1	0 to 6
		8	Thin Paper – Sometimes		3	0 to 6
		9	Thin Paper – Frequently		5	0 to 6
		10	Special Paper		3	0 to 6
		11	Special Paper-Sometimes		4	0 to 6

No.	Display	No.	Menu	Function	Default	Setting
		12	Special Paper – Frequently		5	0 to 6
		13	User 1		5	0 to 6
		14	User 1 - Sometimes		6	0 to 6
		15	User 1 – Frequently		6	0 to 6
		16	User 2		5	0 to 6
		17	User 2 – Sometimes		6	0 to 6
		18	User 2 – Frequently		6	0 to 6
6-010	Double Feed - Separation Press	1	Normal Paper	See Note 11.	3	0 to 6
		2	Normal Paper – Sometimes		5	0 to 6
		3	Normal Paper - Frequently		6	0 to 6
		4	Thick Paper		1	0 to 6
		5	Thick Paper - Sometimes		2	0 to 6
		6	Thick Paper – Frequently		4	0 to 6
		7	Thin Paper		2	0 to 6
		8	Thin Paper - Sometimes		4	0 to 6
		9	Thin Paper – Frequently		6	0 to 6
		10	Special Paper		1	0 to 6

No.	Display	No.	Menu	Function	Default	Setting
		11	Special Paper - Sometimes		2	0 to 6
		12	Special Paper - Frequently		4	0 to 6
		13	User 1		2	0 to 6
		14	User 1 – Sometime		4	0 to 6
		15	User 1 - Frequently		6	0 to 6
		16	User 2		2	0 to 6
		17	User 2 - Sometimes		4	0 to 6
		18	User 2 - Frequently		6	0 to 6
		19	Normal Paper - Low Temp Mode	See Note 12.	ON	On/OFF
		20	Thick Paper – Low Temp Mode		ON	On/OFF
6-011	Friction Pad	1	Normal Paper	See Note 13.	Standard	Standard/ Special
		2	Thick Paper		Special	Standard/ Special
		3	Thin Paper		Special	Standard/ Special
		4	Special Paper		Special	Standard/ Special
		5	User1 Paper		Standard	Standard/ Special

No.	Display	No.	Menu	Function	Default	Setting
		6	User2 Paper		Standard	Standard/ Special
6-013	Paper Delivery Wing Angle	1	Normal Paper	See Note 14.	Upper	Lower/Upper
		2	Thick Paper		Lower	Lower/Upper
		3	Thin Paper		Upper	Lower/Upper
		4	Special Paper		Lower	Lower/Upper
		5	User 1 Paper		Upper	Lower/Upper
		6	User 2 Paper		Upper	Lower/Upper
6-014	1st Paper Feed Delay	1	16 rpm	Do not adjust. (Changes the feed motor on timing after the feed start timing sensor is activated.) See Note 15.	290	0 to 32767
		2	30 rpm		550	0 to 32767
		3	60 rpm		242	0 to 32767
		4	75 rpm		147	0 to 255
		5	90 rpm		83	0 to 255
		6	105 rpm		84	0 to 255
		7	120 rpm		47	0 to 255
		8	135 rpm		20	0 to 255
6-015	1st Paper Feed Delay - Thick	1	16 rpm	Do not adjust. (Changes the feed motor on timing in thick and special paper modes after the feed start timing sensor is activated.) See Note 15.	370	0 to 32767
		2	30 rpm		630	0 to 32767
		3	60 rpm		322	0 to 32767
		4	75 rpm		227	0 to 255
		5	90 rpm		163	0 to 255
		6	105 rpm		104	0 to 255
		7	120 rpm		67	0 to 255
		8	135 rpm		40	0 to 255
6-016	1st Paper Feed Pulse	1	16 rpm	Do not adjust. (Changes the	50	0 to 255

No.	Display	No.	Menu	Function	Default	Setting
		2	30 rpm	registration motor on timing after the feed start timing sensor is activated.) See Note 16.	50	0 to 255
		3	60 rpm		50	0 to 255
		4	75 rpm		50	0 to 255
		5	90 rpm		50	0 to 255
		6	105 rpm		18	0 to 255
		7	120 rpm		18	0 to 255
		8	135 rpm		18	0 to 255
6-017	1st Paper Feed Pulse - Thick	1	16 rpm	Do not adjust. (Changes the registration motor on timing in thick paper mode after the feed start timing sensor is activated.) See Note 16.	0	0 to 255
		2	30 rpm		0	0 to 255
		3	60 rpm		0	0 to 255
		4	75 rpm		0	0 to 255
		5	90 rpm		0	0 to 255
		6	105 rpm		0	0 to 255
		7	120 rpm		0	0 to 255
		8	135 rpm		0	0 to 255
6-018	2nd Paper Feed Delay	1	30 rpm	Do not adjust. (Changes the registration motor on timing in special paper mode after the feed start timing sensor is activated.)	875	0 to 32767
		2	60 rpm		400	0 to 32767
		3	75 rpm		303	0 to 32767
		4	90 rpm		238	0 to 32767
		5	105 rpm		186	0 to 255
		6	120 rpm		149	0 to 255
		7	135 rpm		117	0 to 255
6-019	2nd Paper Feed Delay - Thick	1	30 rpm	Do not adjust. (Changes the registration motor on timing in	630	0 to 32767
		2	60 rpm		333	0 to 32767
		3	75 rpm		267	0 to 32767

No.	Display	No.	Menu	Function	Default	Setting
		4	90 rpm	special paper mode after the feed start timing sensor is activated.)	208	0 to 32767
		5	105 rpm		160	0 to 255
		6	120 rpm		126	0 to 255
		7	135 rpm		97	0 to 255
6-020	Registration Roller Delay	1	16 rpm	Do not adjust. (Changes the registration motor on timing in thick paper mode after the feed start timing sensor is activated, when the A4 drum is used.) See Note 17.	49	0 to 255
		2	30 rpm		61	0 to 255
		3	60 rpm		56	0 to 255
		4	75 rpm		49	0 to 255
		5	90 rpm		43	0 to 255
		6	105 rpm		36	0 to 255
		7	120 rpm		27	0 to 255
		8	135 rpm		18	0 to 255
6-021	Regist Roller Delay - Thick	1	16 rpm	Do not adjust. (Changes the registration motor on timing (when using the skip feed mode) after the feed start sensor is activated.) See Note 17.	49	0 to 255
		2	30 rpm		61	0 to 255
		3	60 rpm		56	0 to 255
		4	75 rpm		49	0 to 255
		5	90 rpm		43	0 to 255
		6	105 rpm		36	0 to 255
		7	120 rpm		27	0 to 255
		8	135 rpm		18	0 to 255
6-022	Regist Roller Delay - Special	1	16 rpm	Do not adjust. (Changes the registration motor on timing after the feed start timing sensor is activated, when	49	0 to 255
		2	30 rpm		61	0 to 255
		3	60 rpm		56	0 to 255
		4	75 rpm		49	0 to 255
		5	90 rpm		43	0 to 255

No.	Display	No.	Menu	Function	Default	Setting
		6	105 rpm	the A4 drum is used.) See Note 17.	36	0 to 255
		7	120 rpm		27	0 to 255
		8	135 rpm		18	0 to 255
6-023	A4 Regist Roller Delay	1	16 rpm	Do not adjust. See Note 17.	49	0 to 255
		2	30 rpm		61	0 to 255
		3	60 rpm		57	0 to 255
		4	75 rpm		50	0 to 255
		5	90 rpm		44	0 to 255
		6	105 rpm		35	0 to 255
		7	120 rpm		26	0 to 255
		8	135 rpm		17	0 to 255
6-024	A4 Regist Roller Delay - Thick	1	16 rpm	Do not adjust. See Note 17.	49	0 to 255
		2	30 rpm		61	0 to 255
		3	60 rpm		57	0 to 255
		4	75 rpm		50	0 to 255
		5	90 rpm		44	0 to 255
		6	105 rpm		35	0 to 255
		7	120 rpm		26	0 to 255
		8	135 rpm		17	0 to 255
6-025	Skip Regist Roller Delay	1	16 rpm	Do not adjust. See Note 17.	49	0 to 255
		2	30 rpm		61	0 to 255
		3	60 rpm		57	0 to 255
		4	75 rpm		50	0 to 255
		5	90 rpm		44	0 to 255
		6	105 rpm		35	0 to 255

No.	Display	No.	Menu	Function	Default	Setting
		7	120 rpm		26	0 to 255
		8	135 rpm		17	0 to 255
6-026	A4 Skip Regist Roller Delay	1	16 rpm	Do not adjust. See Note 17.	49	0 to 255
		2	30 rpm		61	0 to 255
		3	60 rpm		57	0 to 255
		4	75 rpm		50	0 to 255
		5	90 rpm		44	0 to 255
		6	105 rpm		35	0 to 255
		7	120 rpm		26	0 to 255
		8	135 rpm		17	0 to 255
6-027	Drum Pulse (A3 Cam)	1	16 rpm	See Note 18.	203	0 to 255
		2	30 rpm		200	0 to 255
		3	60 rpm		203	0 to 255
		4	75 rpm		203	0 to 255
		5	90 rpm		203	0 to 255
		6	105 rpm		203	0 to 255
		7	120 rpm		203	0 to 255
		8	135 rpm		203	0 to 255
6-028	Drum Pulse (A4 Cam)	1	16 rpm	See Note 18.	205	0 to 255
		2	30 rpm		200	0 to 255
		3	60 rpm		204	0 to 255
		4	75 rpm		204	0 to 255
		5	90 rpm		204	0 to 255
		6	105 rpm		204	0 to 255
		7	120 rpm		204	0 to 255

No.	Display	No.	Menu	Function	Default	Setting
		8	135 rpm		204	0 to 255
6-029	Drum Pulse (Special)	1	16 rpm	See Note 18.	203	0 to 255
		2	30 rpm		200	0 to 255
		3	60 rpm		203	0 to 255
		4	75 rpm		203	0 to 255
		5	90 rpm		203	0 to 255
		6	105 rpm		203	0 to 255
		7	120 rpm		203	0 to 255
		8	135 rpm		203	0 to 255
6-030	Paper Feed Jam Check Pulse	1	Normal Paper	See Note 19.	153	0 to 255
		2	Thick Paper		169	0 to 255
6-031	Paper Feed Setting	1	Feed Timing Pulse	Do not adjust.	171	0 to 255
		2	Feed Stop Timing Pulse	See Replacements and Adjustments – Paper Feed Length Adjustment for how to use. See Note 20.	21	0 to 255
		3	Feed Stop Timing Pulse - LCIT		-	0 to 255
		4	Print Position 3 Setting	Do not adjust.	101	0 to 255
		5	Print Position 2 Setting	Do not adjust.	100	0 to 255
		7	Print Position 3 Setting - Thick	Do not adjust.	98	0 to 255
		8	Print Position 2 Setting - Thick	Do not adjust.	100	0 to 255

No.	Display	No.	Menu	Function	Default	Setting
		10	Feed Slow Down Timing	See Note 21.	32	0 to 255
6-032	Paper Feed Setting - User1	1	Feed Stop Timing Pulse	See Replacements and Adjustments – Paper Feed Length Adjustment for how to use.	25	0 to 255
6-033	Paper Feed Setting - User2	1	Feed Stop Timing Pulse	See Replacements and Adjustments – Paper Feed Length Adjustment for how to use.	25	0 to 255
6-054	Print Pressure - Very Low Temp	1	Trial Print		2	0 to 6
		2	16 rpm		0	0 to 6
		3	30 rpm		0	0 to 6
		4	1st Speed		2	0 to 6
		5	2nd Speed		3	0 to 6
		6	3rd Speed		4	0 to 6
		7	4th Speed		5	0 to 6
		8	5th Speed		6	0 to 6
		9	6th Speed		6	0 to 6
6-055	Print Pressure - Low Temp	1	Trial Print		2	0 to 6
		2	16 rpm		0	0 to 6
		3	30 rpm		2	0 to 6
		4	1st Speed		2	0 to 6
		5	2nd Speed		3	0 to 6

No.	Display	No.	Menu	Function	Default	Setting
		6	3rd Speed		3	0 to 6
		7	4th Speed		4	0 to 6
		8	5th Speed		5	0 to 6
		9	6th Speed		6	0 to 6
6-056	Print Pressure - Normal Temp	1	Trial Print		1	0 to 6
		2	16rpm		0	0 to 6
		3	30rpm		0	0 to 6
		4	1st Speed		2	0 to 6
		5	2nd Speed		2	0 to 6
		6	3rd Speed		3	0 to 6
		7	4th Speed		3	0 to 6
		8	5th Speed		4	0 to 6
		9	6th Speed		5	0 to 6
6-057	Print Pressure - High Temp	1	Trial Print	(Japan Only)	0	0 to 6
		2	16rpm	(Japan Only)	0	0 to 6
		3	30rpm	(Japan Only)	0	0 to 6
		4	1st Speed	(Japan Only)	1	0 to 6
		5	2nd Speed	(Japan Only)	1	0 to 6
		6	3rd Speed	(Japan Only)	2	0 to 6
		7	4th Speed	(Japan Only)	3	0 to 6
		8	5th Speed	(Japan Only)	3	0 to 6
		9	6th Speed	(Japan Only)	4	0 to 6
6-058	Print Pressure - Very High Temp	1	Trial Print	(Japan Only)	0	0 to 6
		2	16rpm	(Japan Only)	0	0 to 6
		3	30rpm	(Japan Only)	0	0 to 6

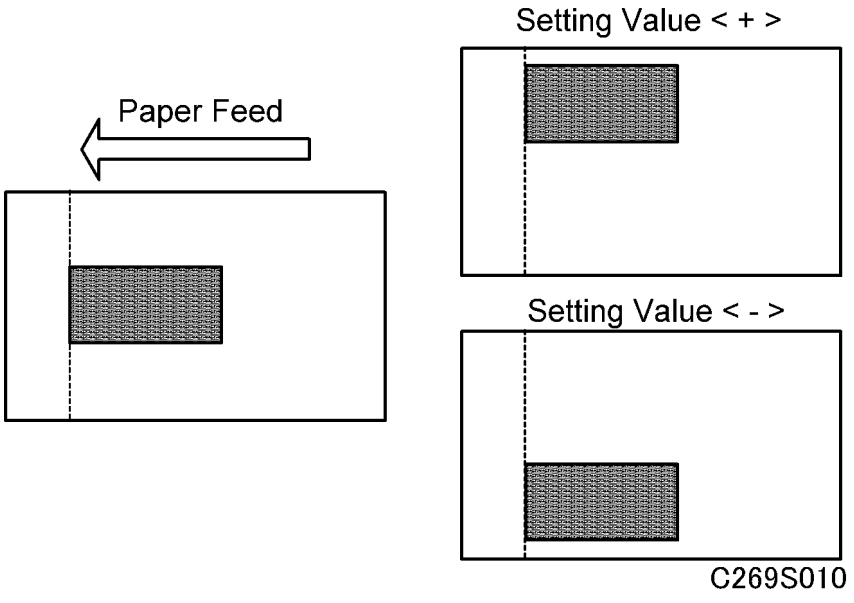
No.	Display	No.	Menu	Function	Default	Setting
		4	1st Speed	(Japan Only)	1	0 to 6
		5	2nd Speed	(Japan Only)	1	0 to 6
		6	3rd Speed	(Japan Only)	2	0 to 6
		7	4th Speed	(Japan Only)	3	0 to 6
		8	5th Speed	(Japan Only)	3	0 to 6
		9	6th Speed	(Japan Only)	4	0 to 6
6-059	Filter Selection	1	Letter	See Note 22.	1	0 to 3
		2	Letter/Photo		2	0 to 3
		3	Photo		3	0 to 3
		4	Pencil		1	0 to 3
		5	Tint		2	0 to 3
6-080	Duplex Clamper Motor Delay	1	16rpm	See Note 23.	20	0 to 239
		2	30rpm		20	0 to 239
		3	60rpm		16	0 to 239
		4	75rpm		15	0 to 239
		5	90rpm		15	0 to 239
		6	105rpm		14	0 to 239
		7	120rpm		14	0 to 239
6-081	Duplex Ppr Delivery SOL Delay	1	16rpm	See Note 24.	46.00	0 to 59.75
		2	30rpm		42.00	0 to 59.75
		3	60rpm		39.00	0 to 59.75
		4	75rpm		36.50	0 to 59.75
		5	90rpm		34.00	0 to 59.75
		6	105rpm		31.00	0 to 59.75
		7	120rpm		26.50	0 to 59.75

No.	Display	No.	Menu	Function	Default	Setting
		8	16rpm (Trial & Last Page)		46.00	0 to 59.75
		9	60rpm (Last Page)		37.50	0 to 59.75
		10	75rpm (Last Page)		39.50	0 to 59.75
		11	More than 90rpm (Last Page)		39.50	0 to 59.75
		12	Test Print		38.00	0 to 59.75
6-084	Duplex Slow Down Timing A4	1	16rpm	See Note 25.	125	0 to 239
		2	20rpm		125	0 to 239
		3	30rpm		125	0 to 239
		4	60rpm		99	0 to 239
		5	75rpm		99	0 to 239
		6	90rpm		99	0 to 239
		7	105rpm		92	0 to 239
		8	120rpm		96	0 to 239
6-085	Duplex Slow Down Timing B5	1	16rpm	See Note 25.	125	0 to 239
		2	20rpm		125	0 to 239
		3	30rpm		125	0 to 239
		4	60rpm		105	0 to 239
		5	75rpm		105	0 to 239
		6	90rpm		105	0 to 239
		7	105rpm		87	0 to 239
		8	120pm		70	0 to 239

No.	Display	No.	Menu	Function	Default	Setting
6-086	Duplex Slow Down Timing LT	1	16rpm	See Note 25.	125	0 to 239
		2	20rpm		125	0 to 239
		3	30rpm		125	0 to 239
		4	60rpm		99	0 to 239
		5	75rpm		99	0 to 239
		6	90rpm		99	0 to 239
		7	105rpm		92	0 to 239
		8	120pm		96	0 to 239
6-087	Jogger Fixed	1	A4	Do not adjust	5	0 to 255
		2	B5	Do not adjust	5	0 to 255
		3	LT	Do not adjust	5	0 to 255
6-088	Jogger Movement	1	A4	Do not adjust	15	0 to 255
		2	B5	Do not adjust	107	0 to 255
		3	LT	Do not adjust	55	0 to 255

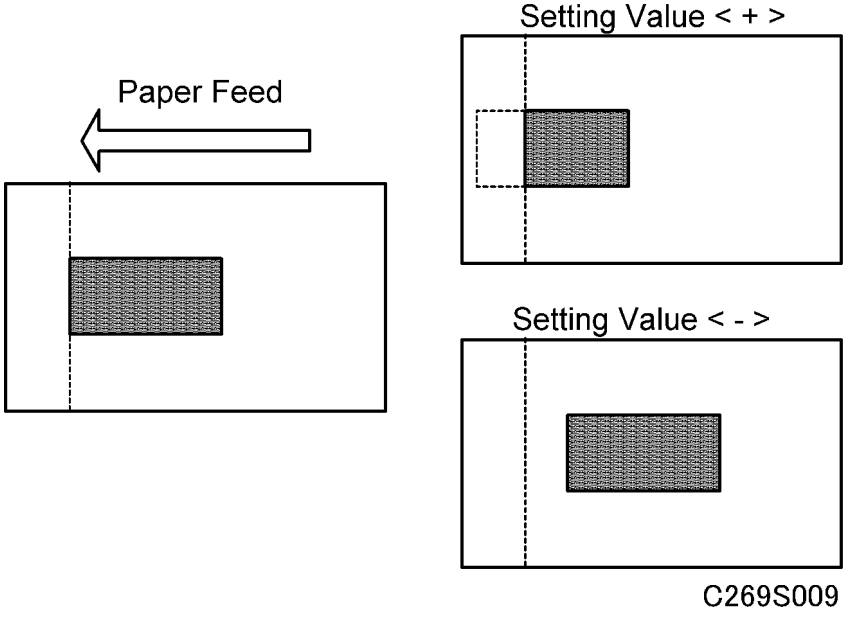
Notes

1: 6-001-1 and -2 (Main scan position)



Inputting a positive number moves the image away from the operation panel side of the machine. Use the point (.) key to switch between + and –.

2: 6-001-3 and -4 (Scan start position)



Inputting a positive number moves the image away from the leading edge of the printer paper. Use the point (.) key to switch between + and –.

3: 6-001-5 and -6 (Scanning speed)

Inputting a positive value stretches the image on the master. Inputting a negative value shrinks it. Use the point (.) key to switch between + and –.

Procedure:

Put a scale on the exposure glass and make a copy of it. Measure the image of the scale on the output.

Use the following formula to calculate the necessary adjustment to this SP.

[(Length of the scale – Length of the image of the scale) / Length of the scale] x 100 = x.x%

⚠CAUTION

- Normally, do not use this SP mode to adjust the vertical magnification. Use it only if the vertical magnification is not satisfactory by adjusting Master Writing Speed (SP6-001-7).

Acceptable settings: -5.0% to 5.0%

Default: 0

4: 6-001-7 (Master writing speed)

This changes the master feed motor speed.

Inputting a positive value stretches the image on the master. Inputting a negative value shrinks it. Use the point (.) key to switch between + and –.

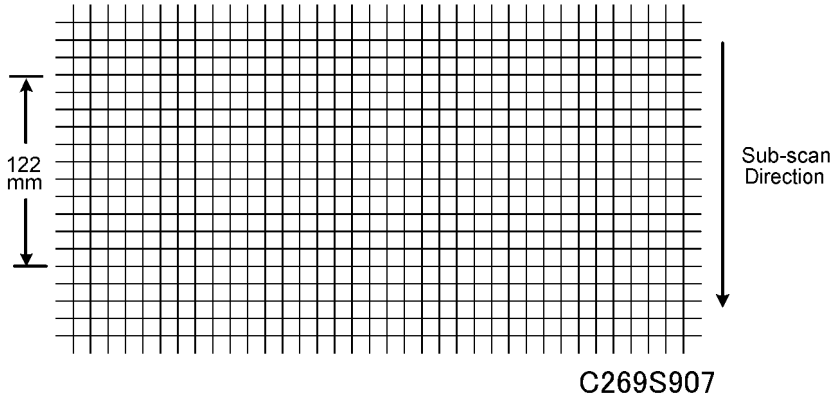
⚠CAUTION

- Adjust this SP mode before adjusting the Scanning Speed (SP6-001-5/6).

Procedure:

Enter SP8-005-1 (TH Test Patterns) and print pattern number 6.

On the printout, measure the distance of 10 intervals in the sub-scan direction, as shown in the diagram.



The distance should be 122 mm. If it is not 122 mm, calculate the necessary adjustment with the following formula.

[(122 – measured value) / 122] x 100 = x.x%

Acceptable settings: -5.0% to 5.0%

Default: 0

5: 6-002 (Master making density)

0: Pale, 1: Normal, 2: Dark

The default is 1: Normal. Changing this moves the user's image density settings up or down one notch.

Density	-2	-1	0	1	2	3
0	Pale	Normal	Little Dark	Dark		
1		Pale	Normal	Little Dark	Dark	
2			Pale	Normal	Little Dark	Dark

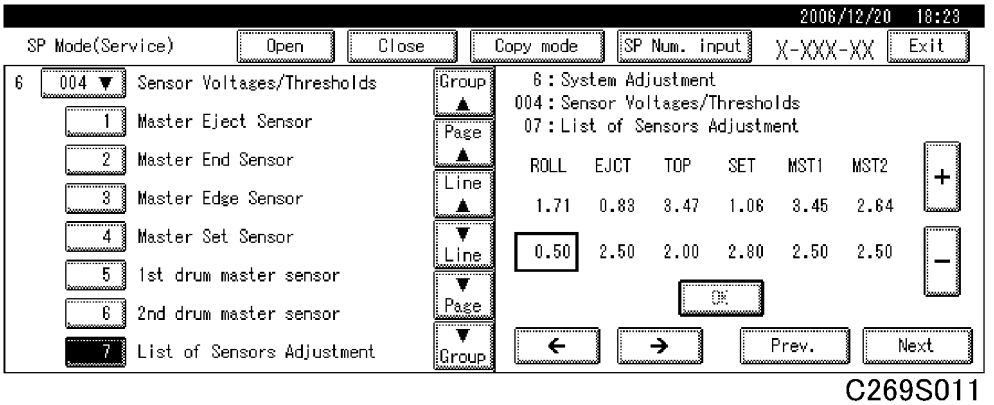
6: 6-003-1 (Drum master clamper registration)

This determines how far after the leading edge the master is clamped.

A larger value clamps the master further away from the leading edge, and moves the image closer to the leading edge of the paper.

Do not use this SP to adjust leading edge registration. Use SP6-001-3 and -4 for that.

7: 6-004-7 (List of Sensor Adjustments)



C269S011

A list of the following sensor adjustments is displayed.

- Master End Sensor (ROLL)
- Master Eject Sensor (EJCT)
- Master Edge Sensor (TOP)
- Master Set Sensor (SET)
- 1st Drum Master Sensor (MST1)
- 2nd Drum Master Sensor (MST2)

The voltage output from the sensors is shown in the top line of the display. You can use the + and – buttons on the right side of the display to adjust the boundary conditions for On or Off on the bottom line of the display.

When you are checking the master edge sensor, you must push the Start key to open the master buffer duct entrance plate. The duct plate will stay open for 30 seconds, then it will close automatically. If you want to close the plate before 30 seconds, press the Start key again. When the plate is open, 'TOP' will be shown on the display as white-on-black.

8: 6-006 (MTF filters)

A stronger filter leads to a sharper 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
8	X 4
7	X 2
6	X 1
5	X 1/2
4	X 1/4
3	X 1/8
2	X 1/16
1	X 1/32
0	0

Note

- This setting is effective only if SP6-059 (filter corrections) is set to "MTF filters".

9: 6-007-1, 6-007-5 (Drum Master Length Adjust)

This function adjusts the master length that is wrapped on the drum. If there is a solid image exactly at the trailing edge of the original, this can cause the master to wrinkle at the trailing edge. To stop this, increase the master cut length. But if you make the master too long, it is more likely that ink will transfer from the master eject roller to the unused portion of master at the trailing edge, and onto the press roller. So this should only be a temporary measure.

6-007-1 adjusts the A3 cut length, and 6-007-5 adjusts the A4 cut length.

Acceptable settings: 0~5mm

Default: 0mm

10: 6-009 (Misfeed – Paper Feed Pressure)

These SP modes determine the paper feed pressures that are automatically applied during paper feed. The feed pressure used by the machine is controlled by the following items:

- The paper type selected by the user (normal, thick, thin, special, user 1, user 2),
- The frequency at which non-feeds are occurring (this estimate can be input by the user).

0: Lowest feed pressure

6: Strongest feed pressure

11: 6-010 (Double Feed – Separation Press)

These SP modes determine the paper separation pressures that are automatically applied during paper feed.

The separation pressure used by the machine is controlled by the following items:

- The paper type selected by the user (normal, thick, thin, special, user 1, user 2),
- The frequency at which double-feeds are occurring (this estimate can be input by the user).

0: Lowest separation pressure

6: Strongest separation pressure

12: 6-010-19, -20 (Low Temperature Mode – Normal/Thick Paper)

If temperature is 19 °C or lower (measured by the drum thermistor), the separation pressure is increased by 1 automatically for all settings. The maximum pressure is 6.

13: 6-011 (Friction pad)

The machine switches the friction pads depending on the paper type selected by the user (standard, special, thick, user 1, user 2).

14: 6-013 (Paper delivery table wing angle)

The machine lifts or lowers the wings depending on the paper type selected by the user (standard, thick, thin, special, user 1, user 2).

The settings for user 1 and user 2 depend on the type of paper that the user has set these up for.

15: 6-014 ~ 6-015 (1st Paper Feed Delay – Normal/Thick)

The timing for starting the paper feed motor can be adjusted. There is a separate adjustment for each print speed.

It is controlled based on the start timing, after the first actuator on the rear of the pressure cylinder turns on the feed start sensor.

⚠CAUTION

- Do not use this adjustment, unless you are instructed by your service manager.

16: 6-016 ~ 6-017 (1st Paper Feed Pulse - Normal/Thick)

To improve the separation of paper, the paper feed roller is made to turn more slowly. There is a separate adjustment for each print speed.

⚠CAUTION

- Do not use this adjustment, unless you are instructed by your service manager.

17: 6-020 to 6-026 (Registration Roller Delay)

The timing for starting the registration motor can be adjusted. There is a separate adjustment for each print speed.

It is controlled based on the registration roller start timing, after the second actuator on the pressure cylinder turns on the feed start sensor.

⚠CAUTION

- Do not use this adjustment, unless you are instructed by your service manager.

18: 6-027 ~ 6-029 (Drum Pulse)

The amount of paper feed can be adjusted with this SP mode. Adjust this when there is damage to the leading edge, and upper and lower paper wrapping. There are separate adjustments for different paper types and print speed.:

- To decrease the amount of paper bending, increase the value of the SP.
- To increase the amount of paper bending, decrease the value of the SP.

19: 6-030 (Paper Feed Jam Check Pulse)

This SP mode adjusts the amount of time from starting the paper feed roller until jam detection. If the time is long, paper misfeed is improved; but paper cannot be fed if it is too long.

⚠CAUTION

- Do not use this adjustment, unless you are instructed by your service manager.

20: 6-031-2 (Feed Stop Timing Pulse)

The amount of paper buckle at the registration roller can be adjusted.

The amount of paper buckle increases by 0.3 mm if you increase the setting by 1.

⚠CAUTION

- Adjust this SP mode before adjusting the Feed Slow Down Timing (SP6-031-10).

21: 6-031-10 (Feed Slow Down Timing)

This adjusts the time that the machine starts to decrease the paper speed to adjust the paper buckle at the registration roller.

⚠CAUTION

- Normally, do not use this SP mode to adjust the amount of paper buckle at the registration roller. Use it only if the amount of paper buckle is not satisfactory after adjustment to Feed Stop Timing Pulse (SP6-031-2).

22: 6-059 (Filter Corrections)

The filter that is chosen depends on the original type that was selected at the operation panel.

The standard settings are as follows:

- MTF: Letter mode and Pencil mode
- Adaptation: Letter/Photo mode and Pale mode
- Smoothing: Photo mode

Number	Filter
0	-
1	MTF
2	Adaptation
3	Smoothing

23:6-80 (Duplex Clamper Motor Delay)

This function adjusts Duplex Clamper start timing from the clamp position when printing the back side.

Purpose: You can use this SP when Duplex Paper Delivery Jam (B, Z Jam) occurs often

Setting: 0 to 239

+1 change: Speed reduction starts earlier

- 1 change: Speed reduction starts later

24:6-81 (Duplex Ppr Delivery SOL Delay)

This function adjusts turn ON timing of the duplex paper delivery solenoid.

Purpose: You can use this SP if there is image shift on the front page.

Setting: 0.00 to 59.75

+0.25 change: Solenoid turns on earlier

- 0.25 change: Solenoid turns on later

25: 6-084, 6-085, 6-086 (Duplex Slow Down Timing A4, B5, LT)

When paper is fed from the duplex unit to the duplex stopper, the speed of paper feed reduces before the paper gets to the stopper. If paper is damaged when it is fed against the duplex stopper, adjust this SP to make the speed reduction start earlier.

Settings: 0 to 239

+1 change: Speed reduction starts earlier

- 1 change: Speed reduction starts later

7. Memory Data Clear

SP No.	Display	No.	Menu
7-001	Memory Clear	1	Factory Setting
		2	User Setting
		3	User Program Setting
		4	Sales Change Record
7-002	Counter Clear	1	Total Print
		2	Paper Jam/Error Logging
		3	Master Jam/Error Logging
7-003	Code Clear	1	User Code
		2	Key Operator Code
		3	Security Code Clear
7-004	Paper Feed System Clear	1	Feed Pressure
		2	Separation Pressure
		3	Friction Pad
		4	Wing Guide Angle
		5	Feed Control Data
		6	Feed Control Pulse
		7	Adjustment value for Duplex
7-005	Image Adjustment Clear	1	MTF Filter
7-007	HDD Formatting	1	All Areas
		2	Image Files
		3	Fonts
		4	Job Log

1: SP 7-001-1 (Factory Setting)

This function resets the following settings.

SP 2-004: Destination Setting

SP 3-001-1: Serial Number

SP 3-001-11: Time

All Settings of SP6

2: SP 7-001-2 (User Setting)

This function resets the following settings.

SP mode

SP 2-1: Defaults Panel Setting

SP 2-6-8: Master on Drum

SP 2-6-21: No Image Master On Drum

SP 2-6-22: No Image Master On Drum Number

User Tools (System Settings)

Auto Cycle

Paper Size

User Tools (Master Making / Print Settings)

Master Making Density

Original Type

Text / Photo Contrast

Photo Contrast

Photo (Screen)

Reproduction Ratio

Stamp Type Defaults

Stamp Position

Economy Mode

Prog .key Settings

3: SP 7-003-3

This is the password that the user must input to disable high security mode temporarily. You can also disable high security mode temporarily with SP 8-007-3.

4: SP 7-004-5 (Clear Paper Feed Delay adjustment)

This function resets all the paper feed delay settings mentioned below.

SP 6-014: 1st Paper Feed Delay

SP 6-015: 1st Paper Feed Delay – Thick

SP 6-016: 1st Paper Feed Pulse

SP 6-017: 1st Paper Feed Pulse – Thick

SP 6-018: 2nd Paper Feed Delay

SP 6-019: 2nd Paper Feed Delay – Thick

SP 6-020: Registration Roller Delay

SP 6-021: Regist Roller Delay – Thick

SP 6-022: Regist Roller Delay – Special

SP 6-023: A4 Regist Roller Delay

SP 6-024: A4 Regist Roller Delay – Thick

SP 6-025: Skip Regist Roller Delay

SP 6-026: A4 Skip Regist Roller Delay

SP 6-027: Drum Pulse (A3 Cam)

SP 6-028: Drum Pulse (A4 Cam)

SP 6-029: Drum Pulse (Special)

5: SP 7-004-7 (Adjustment value for Duplex)

This function resets the following settings.

SP 6-080: Duplex Clamper Motor Delay

SP 6-081: Duplex Ppr Delivery SOL Delay

SP 6-084: Duplex Slow Down Timing A4

SP 6-085: Duplex Slow Down Timing B5

SP 6-086: Duplex Slow Down Timing LT

SP 6-087: Jogger Fixed

SP 6-087: Jogger Movement

8. System Test

SP No.	Display	No.	Menu	Setting
8-001	Data Printout	1	Job Log	See note 1
		2	User Code	-
		3	SC & Jam	-
		4	Jam/Error Detail	-
		5	User Item	-

SP No.	Display	No.	Menu	Setting
		6	PM Part Replacement Record	-
		7	Defaults - System	-
		8	Defaults - Master/Print/Online	-
		9	Class	-
		10	Basic Setting	-
		11	Input Test	-
		12	Output Test	-
		13	All System Adjustment	-
		14	Paper Feed Adjustment	-
		15	Option Adjustment	-
		50	Output Data SD Card	See note 2
8-002	Download Program	1	ACU	-
		2	ECU	-
		3	Panel	-
		4	Language	-
		5	PostScript	-
		6	Stamp download	-
		7	IC Card (Japan only)	-
8-005	TH Test Patterns	1	TH Test Patterns	See Note 3
8-006	Free Run - Scanner/ ADF	1	Scanner Free Run/Magnify	50 to 200%
		2	ADF Free Run/Magnify	50 to 200%
8-007	Other Tests	1	APS Sensor Check Mode	-
		2	LCD Data Download Mode	On/OFF
		3	Temporary Security OFF	On/OFF See note 4

1. SP8-001-1 to 15 (system setting print out)

Use this to print out the log data.

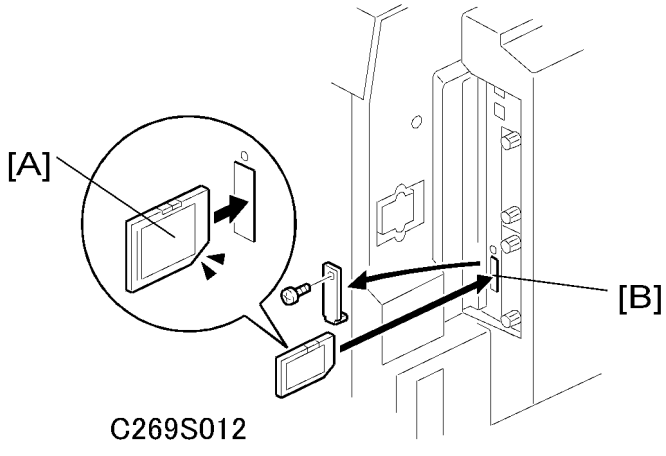
2. SP8-001-50 (Export Log Data to SD Card)

Use this to download contents of log data (SP8-001-1 to 15) to an SD card connected to the ACU board as a text file.

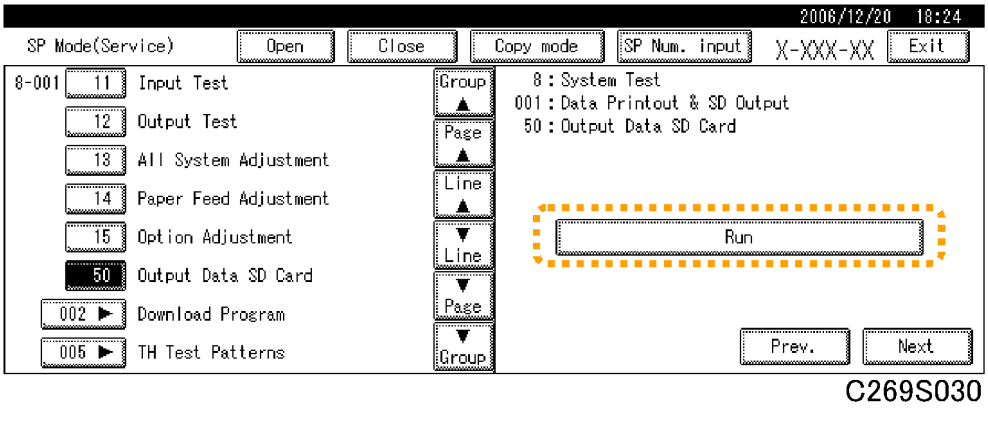
Note

- Export data downloaded on the SD card contains 15 text files (SP8-001-1 to 15)

1. Turn off the main switch



2. Connect the SD card.
3. Turn on the main switch.
4. Access SP8-001-50 and push the displayed "Run" button on the screen.



5. After about 30 seconds, "Finished" is shown on the display. Download has finished.

6. Turn off the main switch and remove the SD Card.
7. Connect the SD card to a PC (please use an SD card reader) and check the data with a text editor such as Notepad.

Note

- If there are text files of log data on the SP card already, the data will be appended to these files, even if the files are not for the same machine.

3. SP8-005-1 (TH Test Patterns)

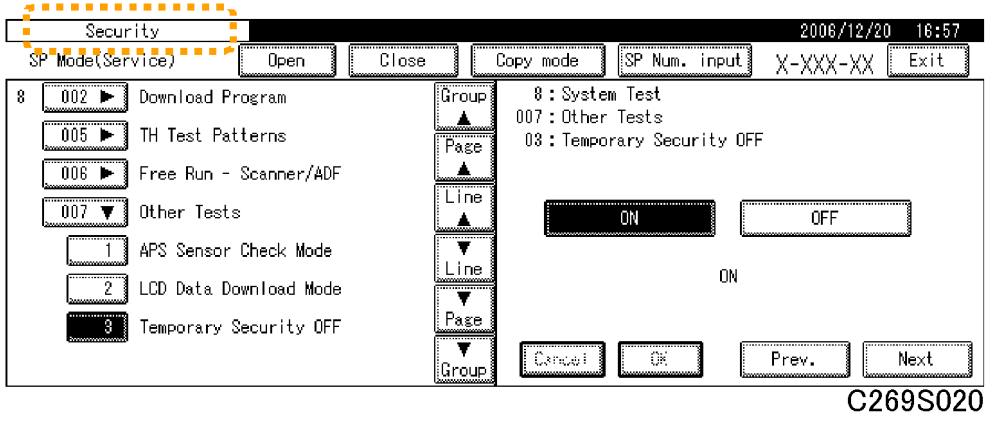
Select a test pattern. A master is made, without using the scanner.

Settings : 1 to 9	
1: Grid	6: Cross
2: Vertical	7: Diag grid
3: Horiz grey	8: 256 greys
4: Vert grey	9: 64 greys
5: 16 greys	

4. SP8-007-3 (Temporary Security OFF)

Use this function to turn off the Security mode. If you turn it off, you can remove the drum and master eject box from the machine.

Normally, Security Mode is unlocked only by the administrator, after the administrator presses a certain combination of buttons and enters a security code. But, if the administrator is not available and you need to work on the machine, you can use this SP mode. Security Mode will unlock temporarily, and "security" will be shown on the screen.



C269S020

Note

- You must get permission from the administrator before you use this function on a secured machine. If there is no administrator available, you must get permission from the customer before you use this SP mode.
- Put the machine back into Security Mode when you finish your work. To do this, either: a) turn the machine power off/on, b) set SP 8-007-3 to 'off'.

Settings: ON (security mode is switched OFF), / OFF (security mode is switched ON)

Default: OFF

9. Printer Controller

SP No.	Display	No.	Menu	Setting
9-001	Test Mode	1	Output Data Print	Normal/ HexDump/ SD card
		2	Service Summary Print	-
		3	NIB Summary Print	-
9-002	Clear Mode	1	Clear Printer Settings	-
		2	NIB NVRAM	-

Notes

1: 9-001-1 (Output Data Print)

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

There are three settings:

0: Normal (Default setting)

1: HexDump

2: SD card

HexDump

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

⚠CAUTION

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

SD card

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

Procedure:

1. Turn off the main switch.
2. Set the SD card.
3. Turn on the main switch.
4. Set SP9-001-1 to “SD card” and get out from the SP mode.
5. Send the data from a computer.
6. The ‘data in’ LED on the machine blinks during the data transfer, and the LED turns off when the data transfer is finished (the transfer takes a few seconds).
7. Set SP9-001-1 to “Normal”.
8. Turn on the main switch
9. Remove the SD card from the machine.

⚠CAUTION

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

Firmware Update

Overview

This machine uses SD cards as the media for new firmware.

There are five kinds of firmware for this machine

ACU - Controls the machine, through other boards

ECU - Controls the engine functions, both directly and through other boards.

PS3 - For PostScript 3

Note

- There are 2 files in this firmware module

Operation Panel - Controls the operation panel.

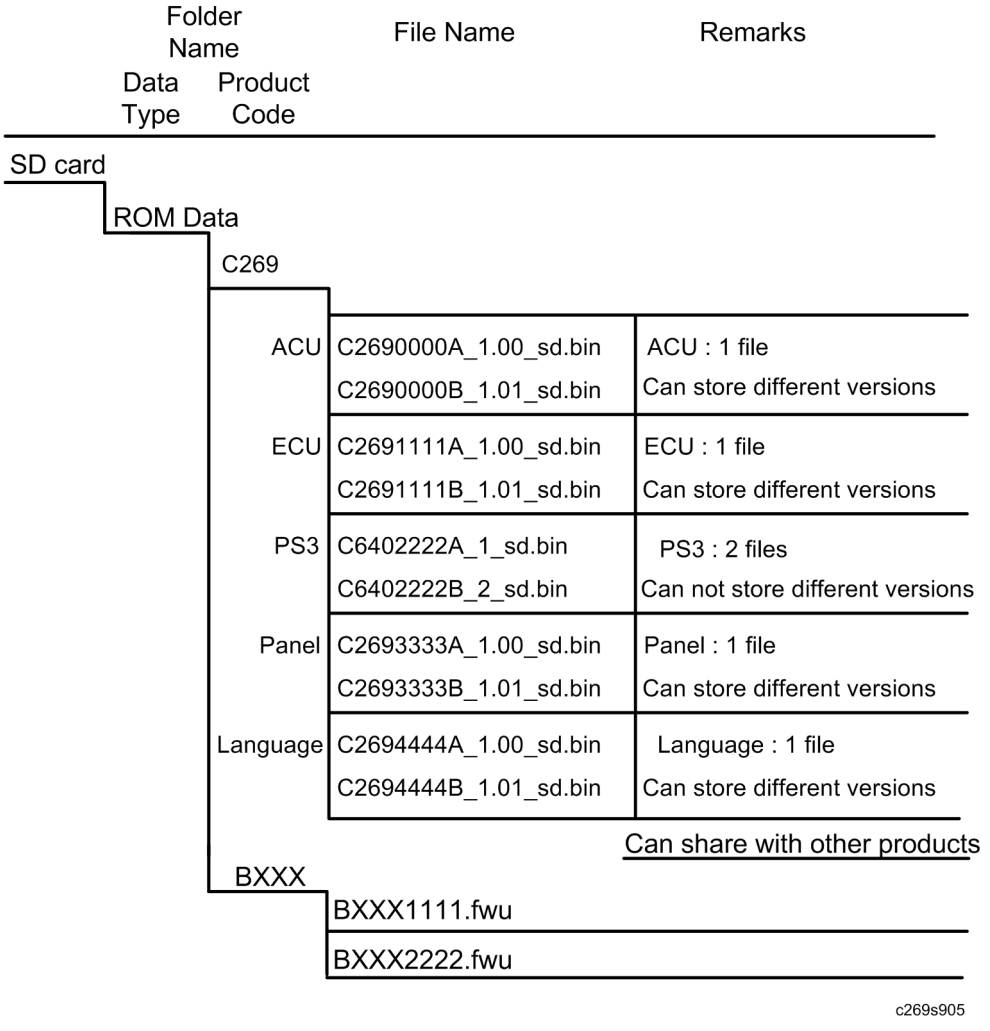
Language – Firmware for the wording on the operation panel.

Note

- PS3 has separate files in one firmware module. ACU, ECU, Panel and Language have one file for each firmware module.

Preparing to Download Firmware

1. Make a folder called “romdata” on the SD card (this step is only necessary when the SD card is used for the first time).
2. Make a folder called “C269” inside the “romdata” folder (this step is not necessary if this C269 folder already exists).



Note

- The SD card can be shared with other files (firmware for other duplicators, MFPs, etc.).
- Format of the file name
  - ACU, ECU, Panel, Language:
    C269****X_#_sd.bin
    PostScript
    C640****_#-1_sd.bin
    C640****_#-2_sd.bin
    ****: Part number, X: suffix, #: Version No.
- Transfer the firmware files into the "C269" folder

Note

- For ACU, ECU, Panel and Language

- If different versions of the firmware are stored on the SD card, the machine displays all versions of the firmware on the operation panel. Then, you can upgrade or downgrade by selecting the necessary firmware.
- The firmware should always be in the "C269" folder (Second level) - "romdata" folder (First Level). If not, the machine cannot find the firmware.
- Put C269 firmware in the "C269" folder.

3. Wait until the data is transferred completely.

⚠CAUTION

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

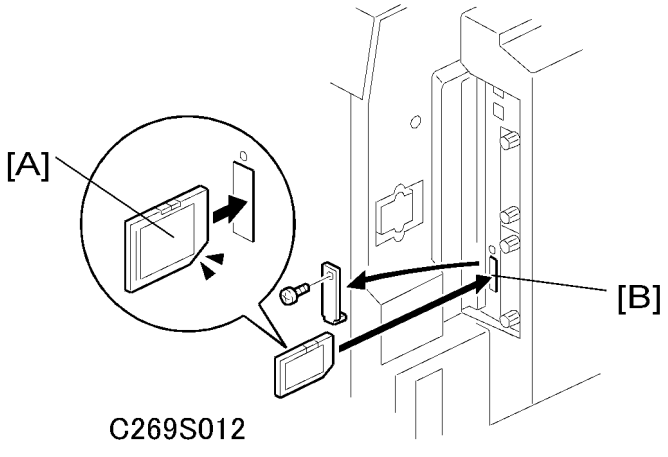
4. Compare the size of the file on the PC and the file on the SD card. If the sizes are different, the data was not transferred completely.

⚠CAUTION

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

Downloading the Firmware to the Machine

1. Turn off the power



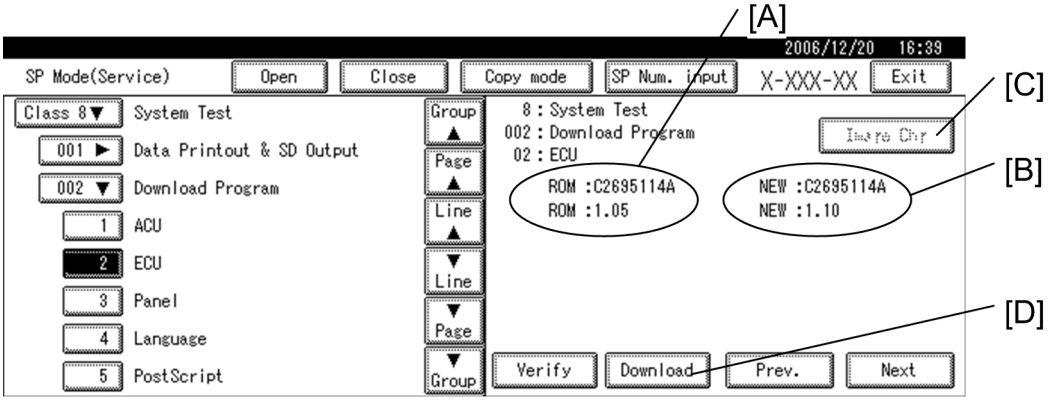
1. Put the SD card [A] in slot [B] of the ACU board.
2. Turn on the power again
    1. Enter the SP mode (SP8-002 Download Program).

ACU: SP8-002-1 Controller

On the left (indicated by ROM) [A], you can see the firmware version that is now in the machine. On the right (indicated by NEW) [B], you can see the firmware version on the SD card.

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

After selecting, push the 'Download' [D] button to start downloading.



c269s014

ECU: SP8-002-2 Engine

On the left (indicated by ROM) [A], you can see the firmware version that is now in the machine. On the right (indicated by NEW) [B], you can see the firmware version on the SD card.

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

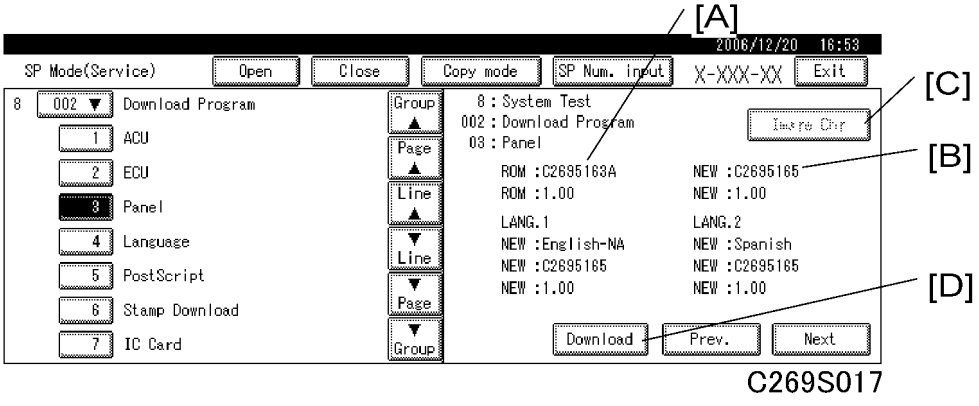
After selecting, push the 'Download' [D] button to start downloading.

PS3: SP8-002-5

On the left (indicated by ROM) [A], you can see the firmware version that is now in the machine. On the right (indicated by NEW) [B], you can see the firmware version on the SD card.

Only one version can be displayed on the operation panel.

Push the 'Download' button [C] to start downloading.



Panel: SP8-002-3

On the left (indicated by ROM) [A], you can see the firmware version that is now in the machine. On the right (indicated by NEW) [B], you can see the firmware version on the SD card.

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

After selecting, push the 'Download' [D] button to start downloading.

Language: SP8-002-4

The machine can have two languages (LANG1, LANG2).

On the left (indicated by ROM) [A], you can see the firmware versions that are now in the machine. On the right (indicated by NEW) [B], you can see the firmware versions on the SD card.

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

Then, use the arrow buttons [D] to scroll through the possible languages. If you do not wish to change one of the two language firmware modules in the machine, select 'NON' with the arrow keys.

After selecting, push the 'Download' [E] button to start downloading.

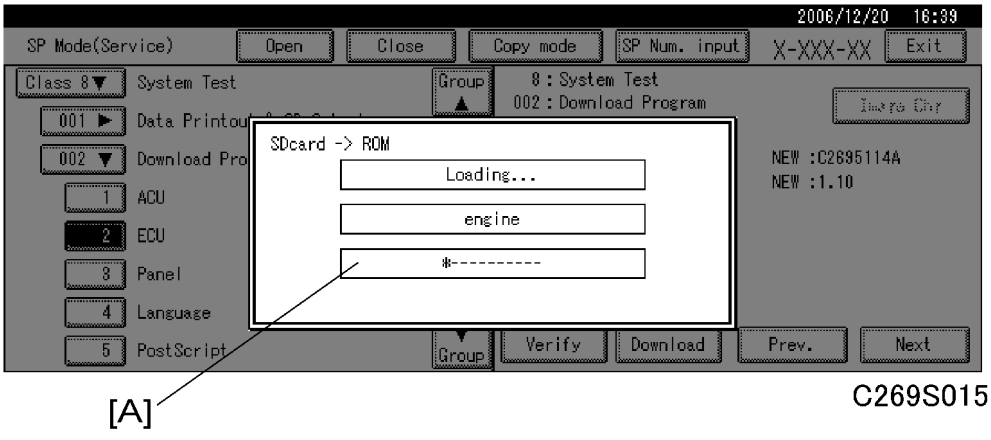
The approximate downloading times are:

- ACU: 8 minutes
- ECU: 4 minutes
- PS3: 15 minutes (Maximum 30 minutes)
- Panel: 3 minutes 30 seconds
- Language: 1 minute

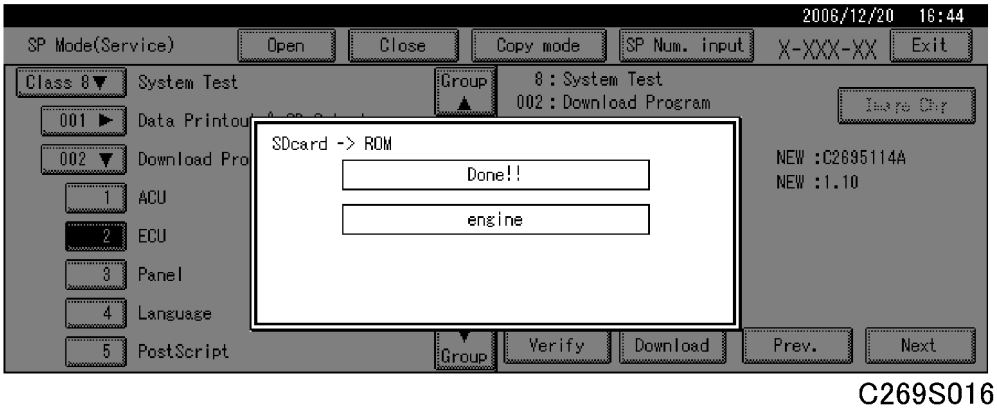
3. Shut down the main switch after one of these things occurs.
    - ACU, ECU, PS3: The operation panel changes from "Loading" to "done"

Note

- The number of * signs [A] increases during the downloading.



C269S015



C269S016

- Panel, language: The green LED on the Start button changes from blinking to lit.

Note

- For Panel and Language firmware, the operation panel will not display the status during the download; therefore, check the start button to check the status of the download.

If the downloading did not finish correctly:

- ACU, ECU, PS3: An error message will be shown on the operation panel.
- Panel, Language: Does not change from blinking to lit.

If an error occurred during the download

Do the download again when the display panel shows the SP mode screen. If this is not possible, the related board, and possibly the ACU must be replaced.

- ACU: Replace the ACU board.

- ECU: Replace the ECU board.
- PS3: Replace the PS3 unit.
- Panel: Replace the operation panel.
- Language: Replace the operation panel.

4. Take out the SD card if you finished downloading all modules. Or, if you need to download another firmware module, start from step 1 again.

Note

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

Errors during Firmware Update

If an error occurs during a download, an error message will be shown in the first line. The error code consists of the letter "E" and a number ("E20", for example).

Error Message Table

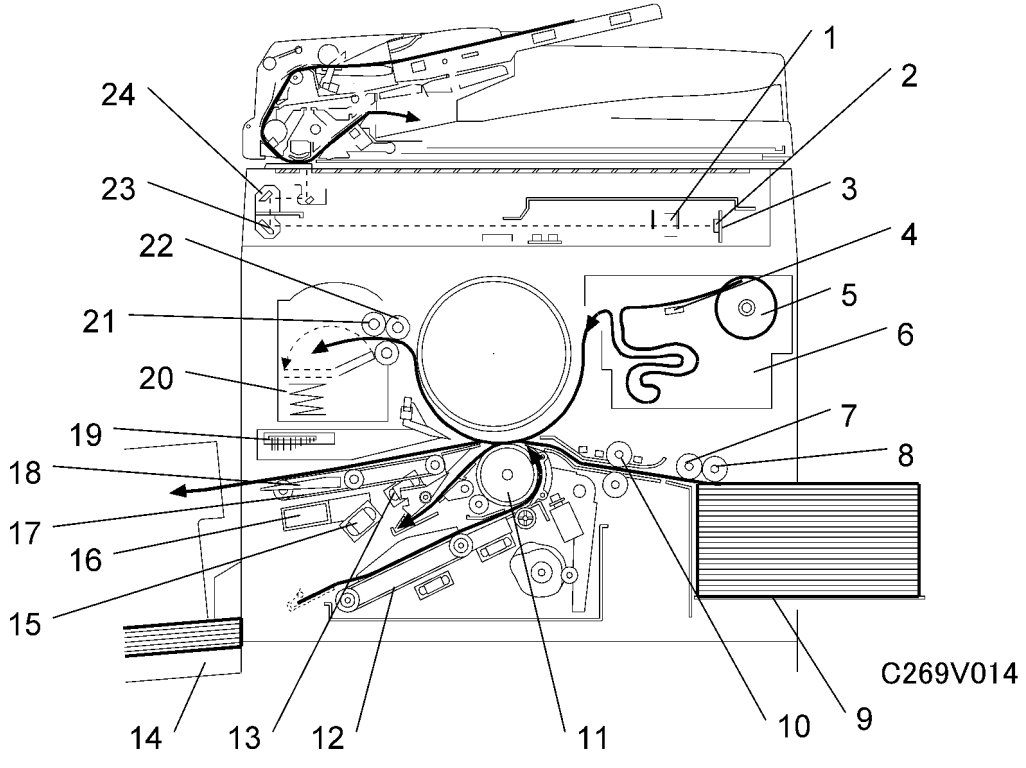
No.	Meaning	Solution
20	Cannot map logical address	Make sure the SD card is installed correctly, or use a different SD card.
21	Cannot access memory	HDD connection not correct, or replace the hard disk.
22	Cannot decompress compressed data	The ROM data on the SD card is not correct, or data is damaged.
23	Error occurred when ROM update program started	Controller program defective. If the second attempt fails, replace the ACU board.
24	SD card access error	Make sure the SD card is installed correctly, or use a different SD card.
31	Data incorrect for continuous download	Install the SD card with the remaining data necessary for the download, then re-start the procedure.
32	Data incorrect after download interrupted	Do the recovery procedure for the module, then repeat the installation procedure.
33	Incorrect SD card version	The firmware on the SD card is not correct, or data is damaged.

No.	Meaning	Solution
34	Module mismatch - Correct module is not on the SD card	The data on the SD card is not correct. Get the correct data (Japan, Overseas, OEM, etc.) then install again.
35	Module mismatch – Module on SD card is not for this machine	SD update data is not correct. The data on the SD card is for a different machine. Get the correct data then install again.
36	Cannot write module – Cause other than E34, E35	SD update data is not correct. The data on the SD card is for a different machine. Get the correct data then install again.
40	Engine module download failed	Replace the data for the module on the SD card and try again, or replace the ECU board.
42	Operation panel module download failed	Replace the data for the module on the SD card and try again, or replace the operation panel.
44	Controller module download failed	Replace the data for the module on the SD card and tray again, or replace the ACU board. The write-protect switch on the SD card is ON. Turn it off.
45	PS module download failed	Replace the data for the module on the SD card. Replace the ACU. Replace the PS module

6. Detailed Section Descriptions

Mechanism Overview

Major Parts

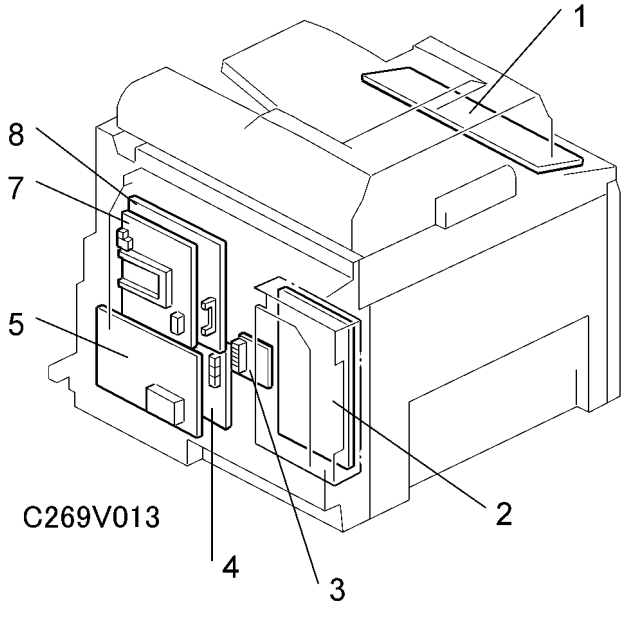


1. Lens	1. Delivery Suction Fan
2. CCD	2. Paper Delivery Table
3. SBU	3. Duplex Blower Fan
4. Thermal Head	4. Transport Suction Fan
5. Master Roll	5. Transport Belts
6. Master Buffer Duct	6. Paper Delivery Wing Guides
7. Paper Feed Roller	7. Air Knife Fan
8. Paper Pick-up Roller	8. Master Eject Box
9. Paper Feed Table	9. Master Eject Roller

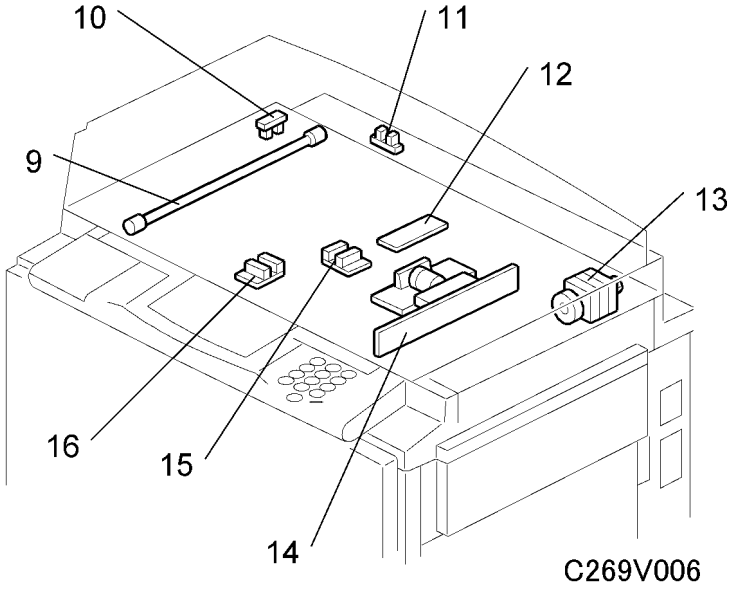
10. Registration Rollers	10. Master Pick-up Roller
11. Press Roller	11. 2nd Scanner
12. Duplex Transport Belt	12. 1st Scanner

Electrical Component Layout

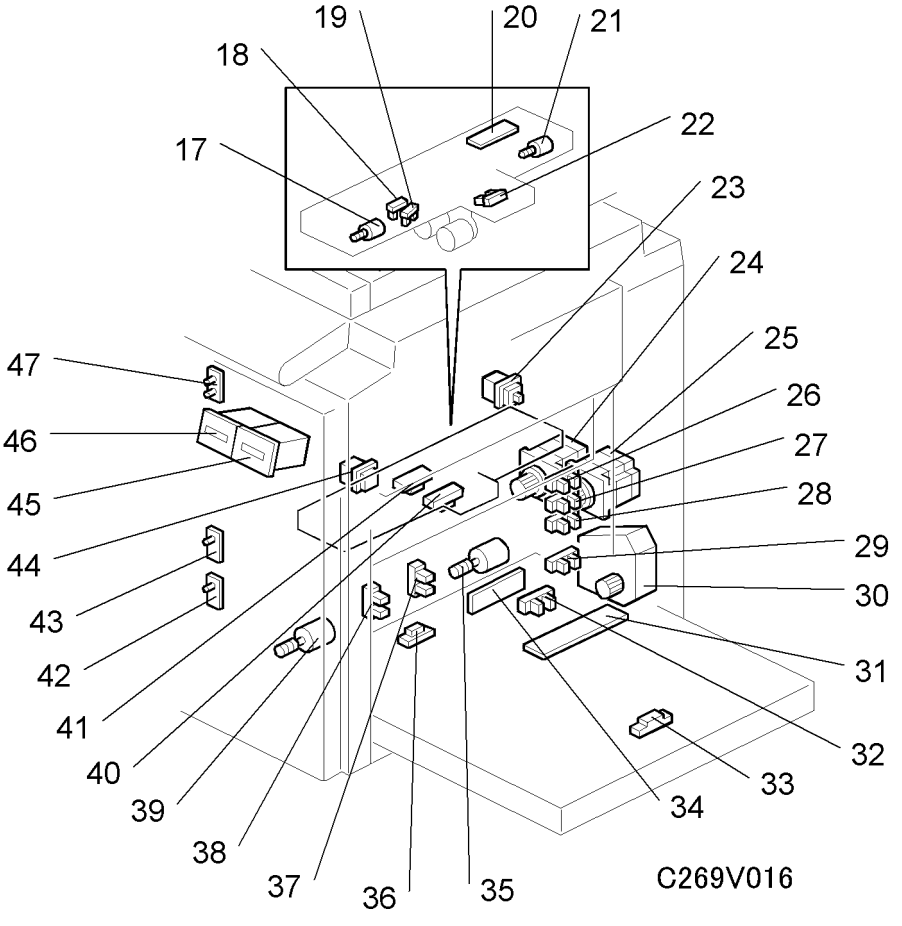
Printed Circuit Board Layout



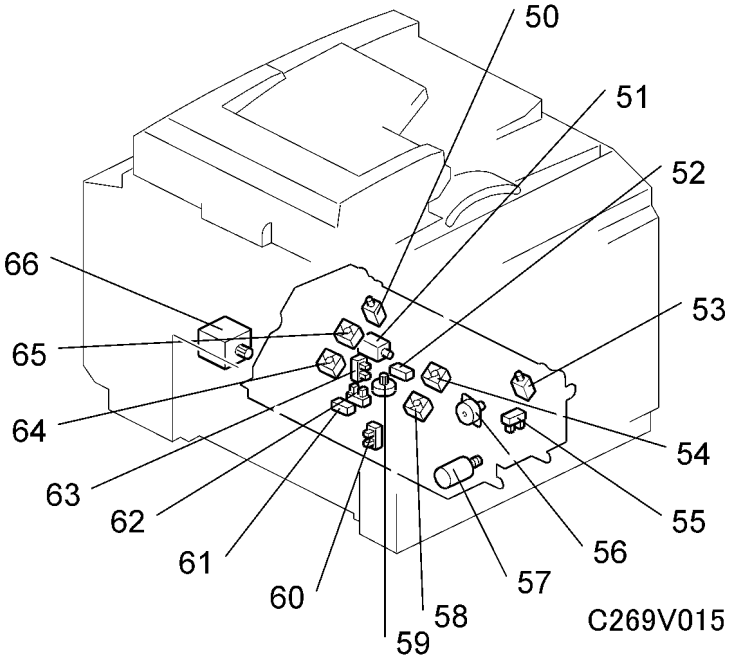
Scanner Section



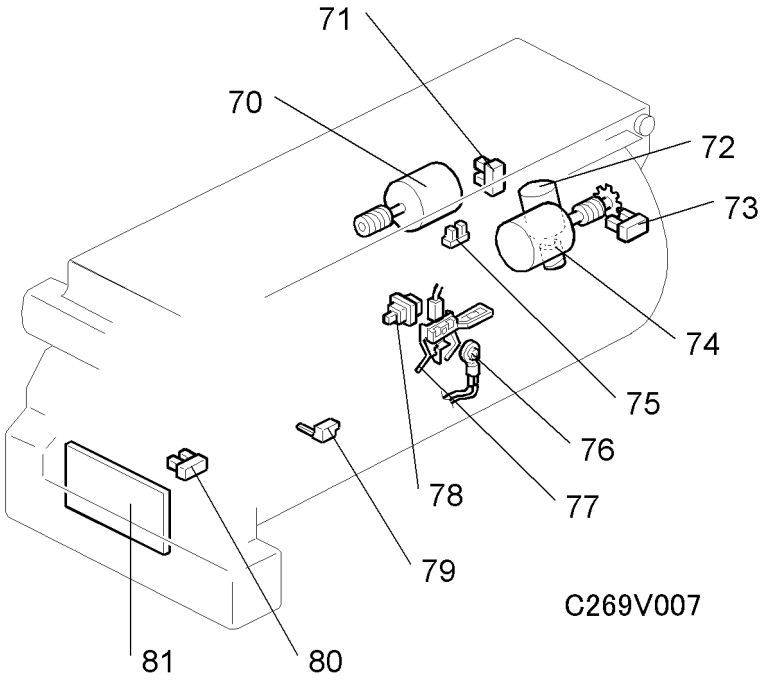
Paper Feed Section



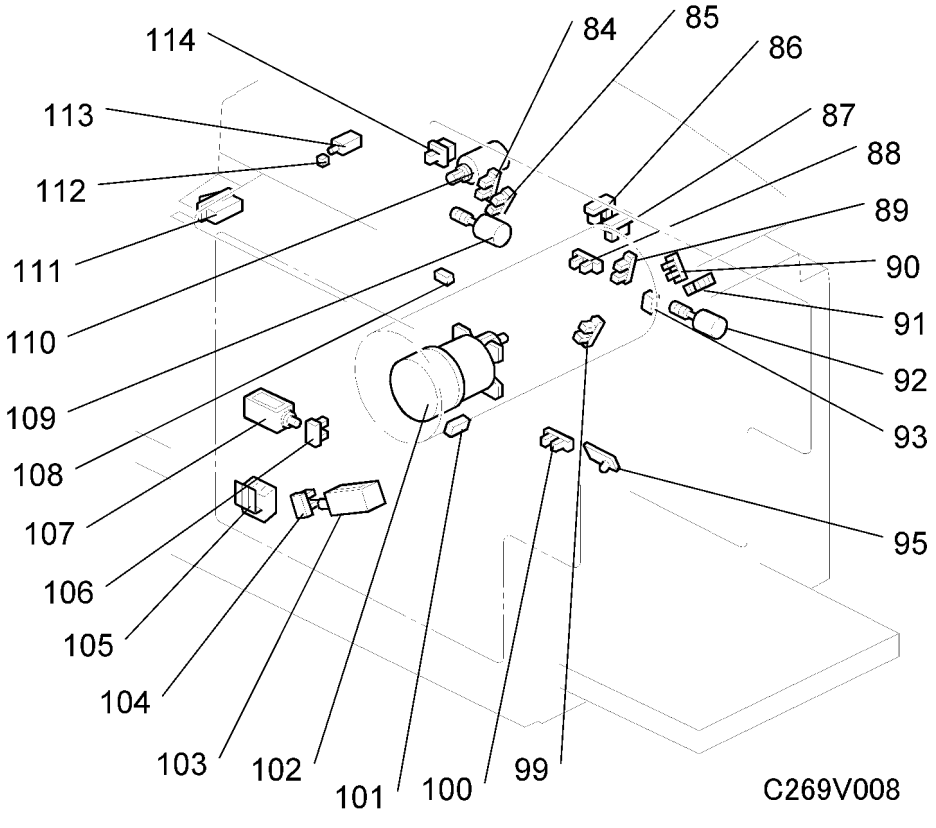
Duplex Unit



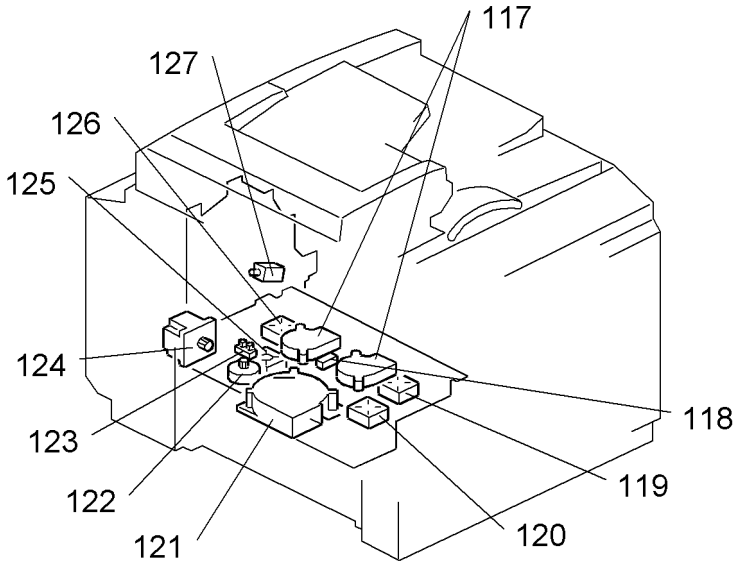
Drum Unit



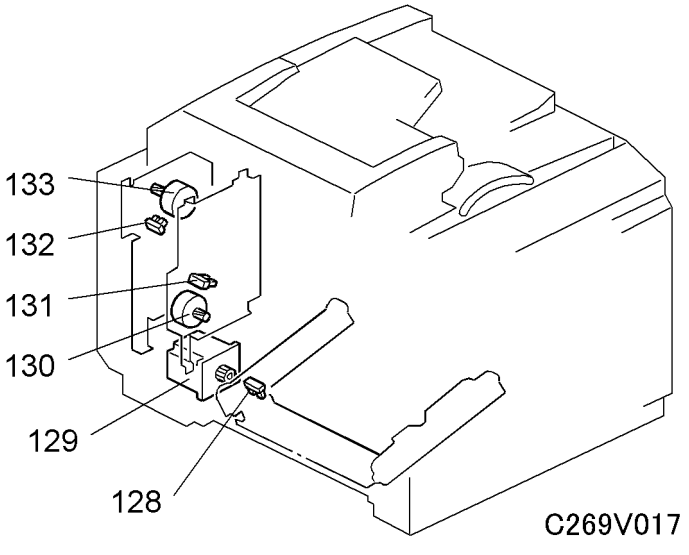
Master Eject and Other Sections



Paper Delivery Section



Duplex Clamper and Pump Unit



Master Making Unit

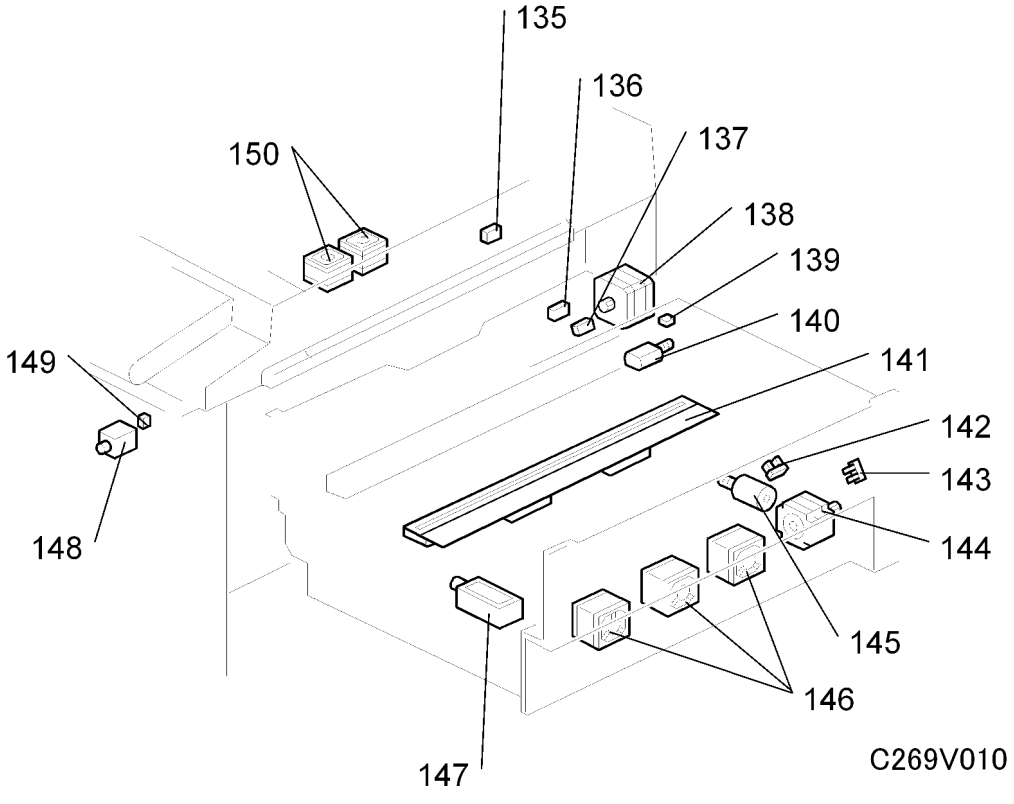


Table of Electrical Components

Boards

Index No.	Name	Function
1	Operation Panel	Controls the operation panel.
2	Power Supply Unit (PSU)	Provides DC power to the machine.
3	Main Motor Control Board	Controls the main motor speed.
4	I/O Board	Controls the mechanical components.
5	Duplex Board	This board controls the duplex unit.

Index No.	Name	Function
7	Application Control Unit (ACU)	This is the main control board for the machine.
8	Engine Control Unit (ECU)	Controls the engine functions, both directly and through other boards.
12	Lamp Stabilizer	This supplies power to the exposure lamp.
14	SBU	Makes a video signal from the scanned original.
20	Feed Pressure Detection Board	Sends data about the paper feed pressure to the CPU.
31	Paper Width Detection Board	Sends data about the paper width on the paper table to the CPU.
34	Separation Pressure Detection Board	Sends data about the paper separation pressure to the CPU.
81	Ink Detection Board	Checks if there is ink in the drum.

Motors

Index No.	Name	Function
13	Scanner Motor	Drives the scanner.
17	Registration Pressure Motor	Releases the pressure between the registration rollers, to allow jammed paper to be removed easily.
21	Feed Pressure Motor	Drives the paper feed pressure adjustment mechanism.
24	Registration Motor	Feeds the paper to align it with the image on the master on the drum.
25	Paper Feed Motor	Feeds the paper from the paper table.
30	Paper Table Motor	Raises and lowers the paper table.
35	Separation Pressure Motor	Drives the paper separation pressure adjustment mechanism.
39	Friction Pad Shift Motor	Switches between the normal pad and custom pad (these pads are used for paper separation).

Index No.	Name	Function
54	Duplex unit Suction Fan 2 Front	Prevents paper curling inside the duplex unit.
56	Print Pressure Cam Shift Motor	This controls the print pressure cam so that the correct part of the cam is used to move the press roller into contact with the drum at the correct time..
57	Print Pressure Adjustment Motor	Automatically adjusts the printing pressure for temperature and print speed.
58	Duplex unit Suction Fan 1 Front	Prevents paper curling inside the duplex unit..
59	Paper Guide Motor	Moves the paper guides in the duplex unit to the correct width.
64	Duplex unit Suction Fan 1 Back	Prevents paper curling inside the duplex unit..
65	Duplex unit Suction Fan 2 Back	Prevents paper curling inside the duplex unit..
66	Duplex transport belt Motor	Drives the duplex transport belt.
70	Ink Pump Motor	Drives the ink pump to supply ink.
72	Idling Roller Motor	Presses or releases the idling roller against the drum metal screen.
74	Drum Shift Motor	Slides the drum metal screen position to the front or rear for the side-to-side image shifting mode.
92	Clamper Motor	Opens or closes the drum master clamper.
102	Main Motor	Drives the drum, press roller, and paper delivery unit components.
109	Pressure Plate Motor	Raises and lowers the pressure plate in the master eject box.
110	Master Eject Motor	Sends used masters into the master eject box.
117	Air Knife Fans	Three fans provide air to separate the paper leading edge from the drum.
119	Delivery Suction Fan Front	Provides suction so that paper is held firmly on the transport belts.
120	Duplex Blower Fan Front	Prevents paper curling inside the duplex unit.

Index No.	Name	Function
121	Transport Suction Fan	Prevents paper curling inside the duplex unit.
122	Wing Guide Motor	Controls the wing guides in the paper delivery unit.
124	Paper Delivery Motor	Controls the transport belts in the paper delivery unit.
125	Duplex Blower Fan Back	Prevents paper curling inside the duplex unit.
126	Delivery Suction Fan Back	Prevents paper curling inside the duplex unit.
129	Duplex Clamper Motor	Controls the duplex clamper.
130	Exit Pawl Pump Motor	Blows air through the exit pawl
133	Junction Gate Pump Motor	Blows air through the junction gate
138	Master Feed Control Motor	Controls the master feed control roller operation to feed the master.
140	Cutter Motor	Cuts the master after completing the master making.
144	Master Feed Motor	Feeds the master to the drum.
145	Platen Release Motor	Applies or releases the pressure between the platen roller and the thermal head.
146	Master Suction Fans	Three fans provide suction to guide the master into the buffer duct.
150	Master Buffer Fans	Two fans make sure that the folds of the master do not stick together in the master buffer duct.

Switches

Index No.	Name	Function
23	Master Making Unit Set Switch	Checks if the master making unit is set correctly.
44	Paper Table Lowering Switch	Lowers the paper table.
78	Ink Cartridge Set Switch	Detects if the ink cartridge is in place.
105	Cover Safety Switch	Checks if the front door is set correctly.

Index No.	Name	Function
111	Main Switch	Turns the power on or off.
114	Eject Box Set Switch	Checks if the master eject box is installed.
139	Cutter HP Switch	Detects when the cutter is at the home position.

Sensors

Index No.	Name	Function
10	Scanner HP Sensor	Detects when the scanner is at home position.
11	Platen Cover Sensor	Detects if the platen cover is open or closed.
15	Original Length Sensor 1, 2	Detect the length of the original on the exposure glass.
16	Original Width Sensor 1, 2	Detects the width of the original on the exposure glass.
18	Registration Roller Press Sensor	Detects when the registration roller is in the correct position for paper feed.
19	Registration Roller Release Sensor	Detects when the registration roller is in the correct position for jam removal.
22	Paper Height Sensor	Detects if the top of the paper stack on the paper table is at the paper feed height.
26	Remaining Paper Sensor 1	Detects the amount of paper remaining on the paper table.
27	Remaining Paper Sensor 2	Detects the amount of paper remaining on the paper table.
28	Remaining Paper Sensor 3	Detects the amount of paper remaining on the paper table.
29	Paper Table Lower Limit Sensor	Detects when the paper table is at its lower limit position.
32	Paper Table Set Sensor	Detects if the paper table is closed.
33	Paper Length Sensor	Detects when long paper is on the paper table.
36	Paper End Sensor	Detects when the paper table runs out of paper.

Index No.	Name	Function
37	Friction Pad Position Sensor 1	Checks the position of the friction pad (used for paper separation).
38	Friction Pad Position Sensor 2	Checks the position of the friction pad (used for paper separation).
40	Paper Registration Sensor	Detects paper approaching the registration roller.
41	Paper Feed Timing Sensor	Detects paper approaching the press roller.
52	Duplex Unit Leading Edge Sensor	Detects leading edge paper jams in the duplex unit.
55	Pressure Cam HP Sensor	Detects printing pressure cam home position.
60	Printing Pressure Adjustment HP Sensor	Detects when the automatic printing pressure adjustment mechanism is at home position.
61	Duplex Unit Trailing Edge Sensor	Detects trailing edge paper jams in the duplex unit.
62	Duplex Paper Guide HP Sensor	Detects when the paper guides in the duplex unit are at home position.
63	Printing Pressure Encoder Sensor	Monitors the movement of the automatic printing pressure adjustment mechanism.
71	Drum Shift HP Sensor	Detects when the drum screen is at the home position (the side-to-side image shift is 0).
73	Drum Shift Sensor	Sends the image positions data to the CPU for display on the operation panel.
75	Ink Pump Sensor	Monitors the operation of the ink pump to count how many cycles it has moved.
79	Ink Overflow Sensor	Detects when the ink level is too high. This is a backup for the ink detection pins, to prevent ink flooding inside the drum.
80	Idling Roller HP Sensor	Detects when the idling roller is at the home position.
84	Pressure Plate HP Sensor	Detects when the pressure plate is at the home position.
85	Pressure Plate Limit Position Sensor	Detects when the pressure plate is at the lowest position.

Index No.	Name	Function
86	3rd Drum Position Sensor	Detects when the print engine is at home position.
87	Main Drive Encoder Sensor	Monitors the rotation of the encoder wheel.
88	2nd Drum Position Sensor	Checks the drum position.
89	1st Drum Position Sensor	Checks the drum position.
90	Clamper Close Position Sensor	Detects when the clamper is in the closed position.
91	Clamper Open Position Sensor	Detects when the clamper is in the open position.
93	2nd Drum Master Sensor	Detects if there is a master on the drum, to detect master clamping errors.
99	Position Sensor	Not used
100	Duplex Unit Set Sensor	Detect when the Duplex Unit is set in the machine.
101	1st Drum Master Sensor	Detects when a master is wrapped around the drum.
104	Duplex Unit Lock Release Sensor	Detects when the Duplex Unit Lock Release solenoid turns on
106	Drum Lock Release Sensor	Detects when the Drum Lock Release solenoid turns on
108	Master Eject Sensor	Detects master eject misfeeds.
112	Eject Box Lock Sensor	Detects the status of the master eject box lock mechanism.
118	Paper Exit Sensor	Detects paper misfeeds at the exit.
123	Paper Wing Guide HP Sensor	Detects when the wing guides in the delivery unit are at home position.
128	Duplex Clamper HP Sensor	Detects when the Duplex Clamper is at home position.
131	Exit Pawl Pump HP Sensor	Detects when the Exit Pawl Pump is at home position.
132	Junction Gate Pump HP Sensor	Detects when the Junction Gate Pump is at home position.
135	Master End Sensor	Detects when the master runs out.
136	Master Edge Sensor	Detects the leading edge of the master when a new master roll in installed.
137	Master Set Sensor	Detects whether a master roll is present.

Index No.	Name	Function
142	Platen Release Sensor	Detects when the platen pressure is applied against the thermal head.
143	Master Amount Sensor	Detects the speed of rotation of the master roll, to determine the length of master that remains on the roll.
149	Master Making Unit Lock Sensor	Detects the status of the master making unit lock mechanism

Solenoids

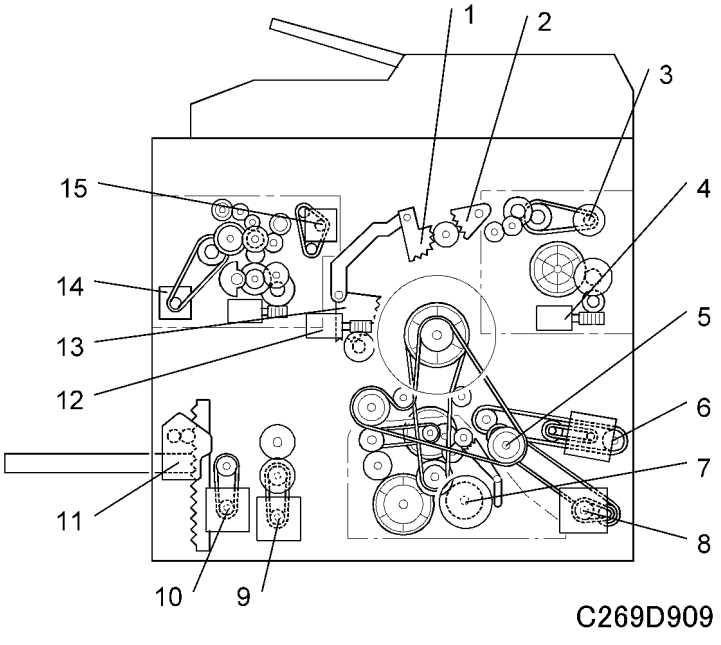
Index No.	Name	Function
50	Duplex feed roller Solenoid, back	Moves the duplex feed roller up.
51	Printing Pressure Release Solenoid	Releases the printing pressure while the printing pressure cam rotates.
53	Duplex feed roller Solenoid, front	Moves the duplex feed roller up.
103	Duplex Unit Lock Release Solenoid	Releases the duplex unit lock when you push the Duplex Unit Lock switch and the LED goes green.
107	Drum Lock Release Solenoid	Releases the drum lock when you push the drum Lock SW and the LED goes green.
113	Master Eject Box Lock Solenoid	Locks the master eject box, so that used masters cannot be removed. This security feature can be cancelled only by the machine's administrator.
127	Junction Gate Solenoid	When this solenoid is on, paper goes to the duplex unit. When it is off, paper goes to the paper delivery table.
147	Duct Entrance Solenoid	Opens or close the plate at the entrance of the master buffer duct.
148	Master Making Unit Lock Solenoid	Locks the master making unit in position during printing, so that the user cannot accidentally remove it at the incorrect time.

Others

Index No.	Name	Function
9	Exposure Lamp (Xenon Lamp)	Applies lights to the original for exposure.
42	Duplex Unit Lock LED	Lights after you push the duplex unit lock release switch, when it is possible to remove the duplex unit.
43	Drum Lock LED	Lights after you push the drum lock release switch, when it is possible to remove the drum.
45	Print Counters	Keeps track of the total number of copies.
46	Master Counters	Keeps track of the total number of masters made.
47	Drum Home Position Indicator (LEDs)	LEDs that indicates the drum position.
76	Thermistor	Detects the temperature inside the drum to adjust various processes.
77	Ink Detection Pin	Detects if ink is present in the drum.
95	Internal Light	Illuminates the interior of the machine when the machine is not in sleep mode.
141	Thermal Head	Burns the image of the original onto the master.

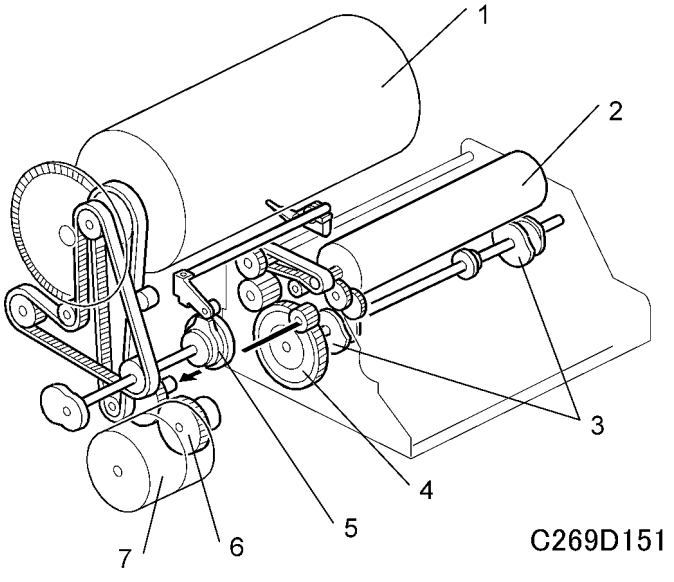
Drive Layout

Overview



1. Clamper Opening Arm Sector Gear (For the master eject position)	9. Registration Motor
2. Master Pick-up Roller Sector Gear	10. Paper Feed Motor
3. Master Eject Motor	11. Paper Table Motor
4. Pressure Plate Motor	12. Clamper Motor
5. Exit Pawl Drive Cam Gear	13. Drum Guide
6. Paper Delivery Unit Drive Gear/Pulley	14. Master Feed Motor
7. Main Motor	15. Master Feed Control Motor
8. Duplex Clamper Motor	

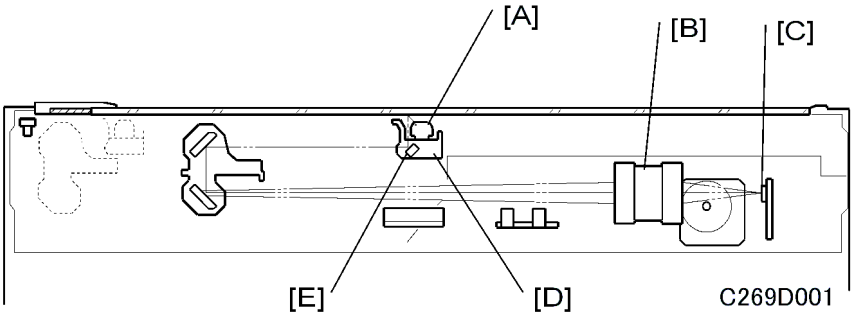
Main Drive



1. Drum	5. Exit Pawl Drive Cam Gear
2. Press Roller	6. Main Motor Gear
3. Printing Pressure Cam	7. Main Motor
4. Duplex Unit Main Gear	

Scanner and Optics

Overview

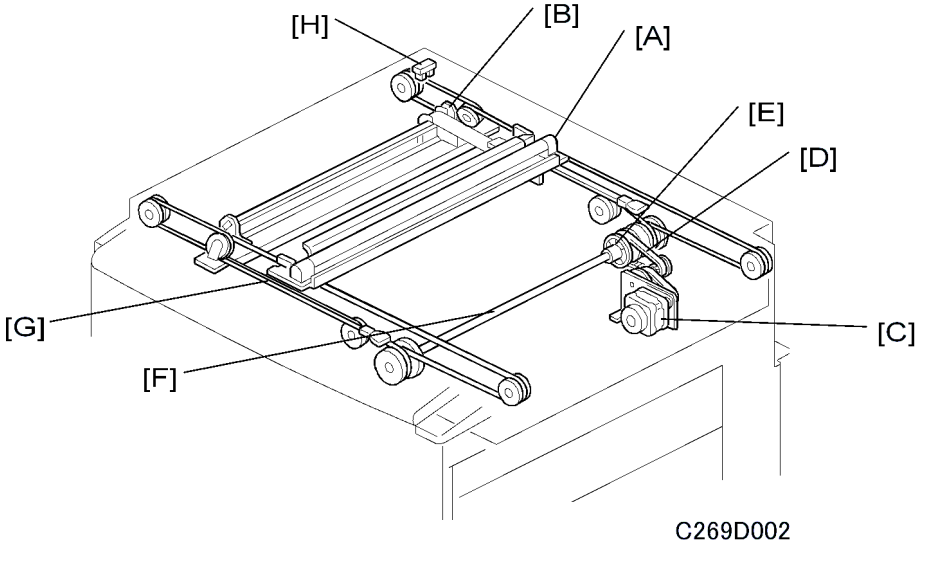


The original is illuminated by the exposure lamp (a xenon lamp in this model) [A]. The image is reflected onto a CCD (charge coupled device) [C] via the 1st, 2nd, 3rd mirrors, and lens [B].

The 1st scanner [D] consists of the exposure lamp, and the 1st mirror [E].

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

Scanner Drive



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

Book mode

In full size mode, the 1st scanner speed is 42.33 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, in both full size and magnification modes. Changing the scanner drive motor speed changes the image length in the sub-scan direction. Image processing on the MPU board accomplishes reduction and enlargement in the main scan direction.

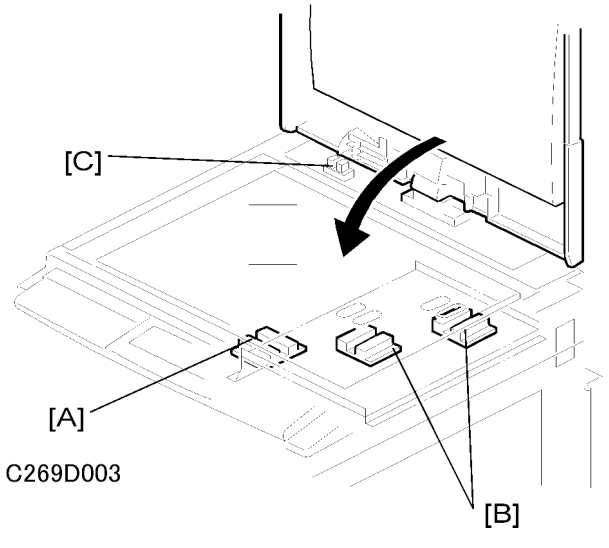
SP6-001-5 changes the motor speed and therefore adjusts the magnification ratio in the sub-scan direction.

ADF mode

During scanning, the scanners are always in their home positions (when the scanner H.P sensor [H] detects the 1st scanner). The ADF motor feeds the original through the ADF. In reduction/enlargement mode, changing the ADF motor speed changes the image length in the sub-scan direction. Magnification in the main scan direction is done on the ECU board, in the same manner as book mode.

SP6-001-6 changes the ADF motor speed and therefore adjusts the magnification ratio in the sub-scan direction.

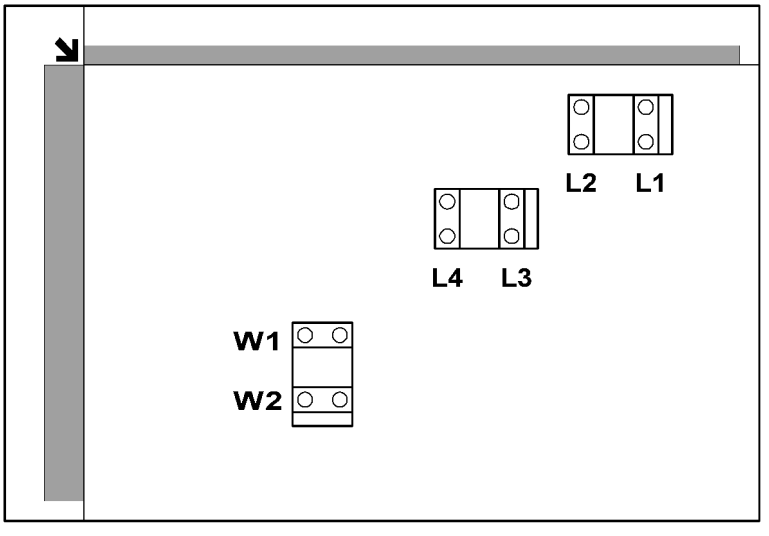
Original Size Detection in Platen Mode



The two width sensors [A] and four length sensors [B] are reflective photosensors. These sensors detect the size of the original.

The size is detected at these times:

- Immediately after the platen cover sensor [C] detects that the cover was just closed
- When the start key is pushed while the platen cover sensor is open.



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The platen cover sensor or the DF position sensor in the optional ADF informs the main CPU of the original size when the platen is about 15 cm above the exposure glass. At this time, only the sensors located underneath the original receive the reflected light and switch on. The other sensors remain off. The main CPU can recognize the original size from the number of activated sensors.

Original Size		Length Sensors				Width Sensors	
A4/A3 version	LT/DLT version	L1	L2	L3	L4	W1	W2
A3	11" x 17"	O	O	O	O	O	O
B4	10" x 14"	O	O	O	O	O	X
F4	8.5" x 14" (8" x 13")	O	O	O	X	X	X
A4-L	8.5" x 11"	O	O	X	X	X	X
B5-L	-	O	X	X	X	X	X
A4-S	11" x 8.5"	X	X	X	X	O	O
B5-S	-	X	X	X	X	O	X

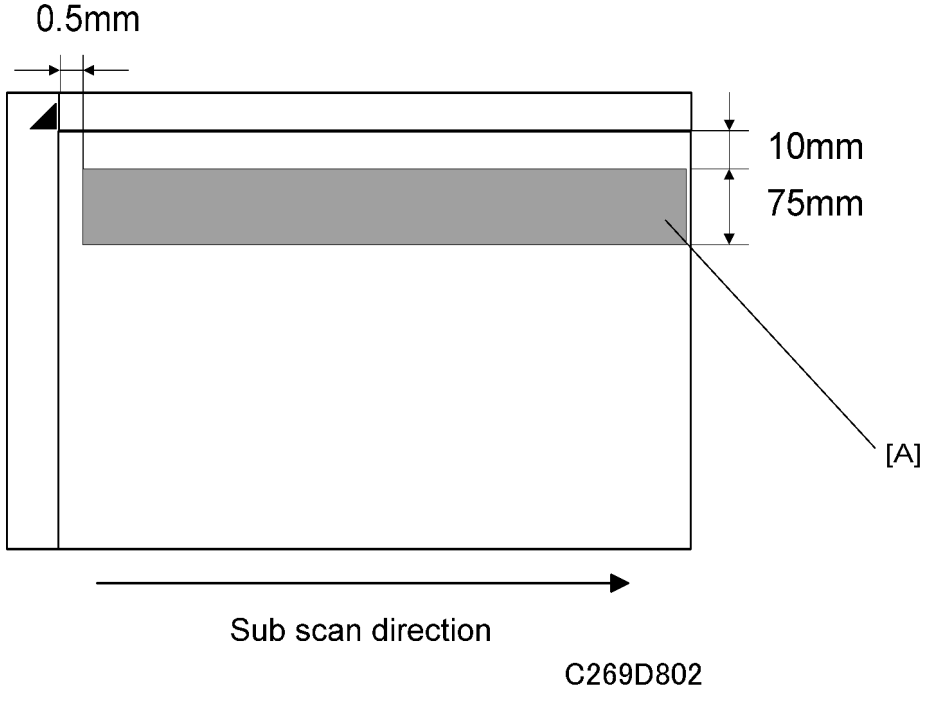
Note

- O: On (Paper Present)
- X: Off

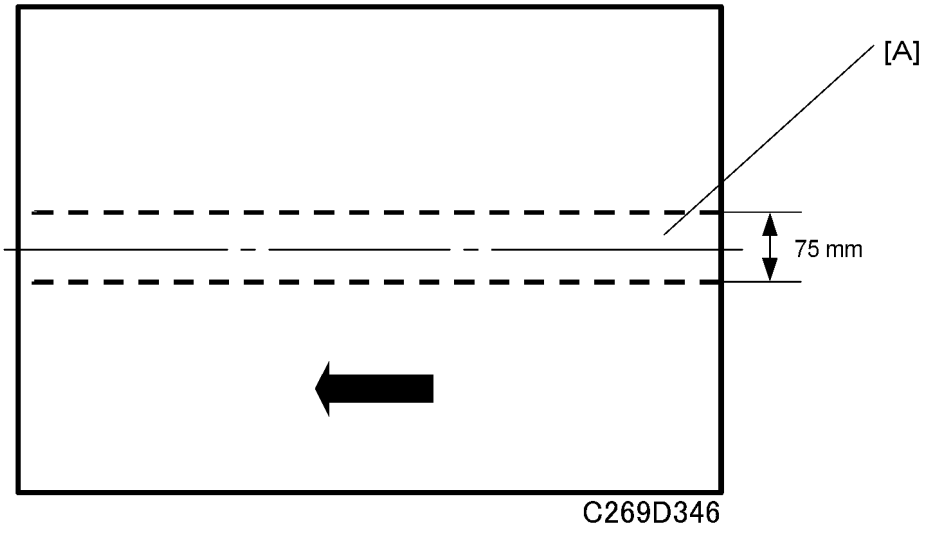
The above table shows the sensor output for each original size. A message will appear in the operation panel display for other combinations.

Auto Background Correction

For the platen cover



For the ADF



Auto background correction mode can be used in Photo/Letter, Photo, and Pale modes. The default setting does not allow the user to select auto background correction mode. Use a user tool to enable this mode (Master Making/Print Settings – Original Setting – Background Correction).

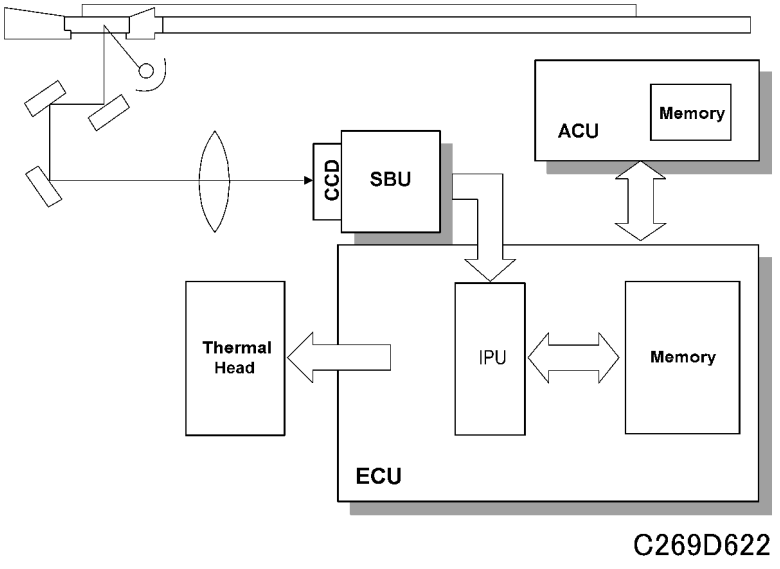
Auto background correction prevents the background of an original from appearing on copies.

While scanning the original, the background density detection area [A] is also scanned. This area [A] is a narrow strip at the start of the main scan line, as shown. As the scanner scans down the page, the ECU board detects the peak white level for each scan line, within this narrow strip only. From this peak white level, the ECU board determines the reference value for the A/D conversion for the scan line. The ECU board then sends the reference value to the reference controller on the SBU.

When an original with a gray background is scanned, the density of the gray area is the peak white level density. Therefore, the original background will not appear on copies. This feature corrects any changes in background density down the page, because peak level data is taken for each line scanned.

Image Processing

Overview



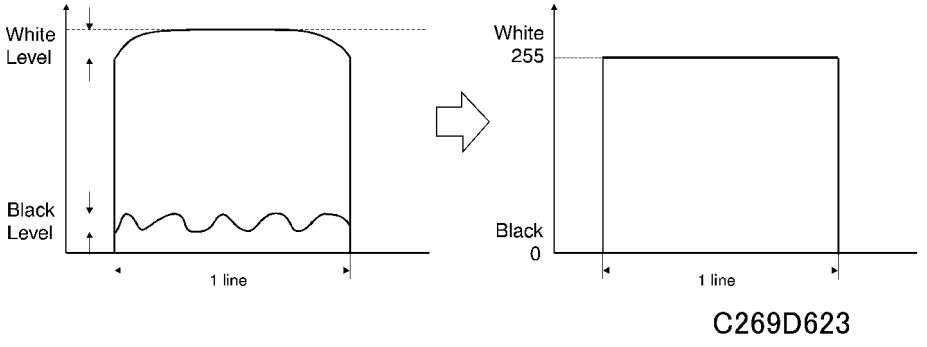
The CCD converts the light reflected from the original into an analog signal. The CCD line has 7,450 pixels and the resolution is 600 dpi (23.6 lines/mm).

After the above process, the A/D converter built into the SBU transforms the analog signals into 8-bit signals. This assigns a value to each pixel from a scale of 256 grades. Then, the digitized image data goes to the ECU board.

The image data then goes to the ECU board, which carries out the following processes on the image data:

1. Auto shading
2. Filtering (MTF, Adaptation Filter and smoothing)
3. Main scan Magnification/Reduction
4. Centering
5. Binary processing
6. Erase Shadow
7. Memory functions

Auto Shading



There are two auto shading methods: black level and white level correction. Auto shading corrects errors in the signal level for each pixel.

Black Level Correction

The CPU reads the black dummy data from one end of the CCD signal (64 pixels are blackened at the end) and takes an average of the black dummy data. Then, the CPU deletes the black level value of each image pixel.

White Level Correction

Before scanning the original, the machine reads a reference waveform from the white plate. The average of the white video level for each pixel is stored as the white shading data in the FIFO memory in the ECU board.

The video signal information for each pixel obtained during image scanning is corrected by the ECU board.

Auto shading for the first original is done before the scanning.

After scanning every page, auto shading is done to prepare for the next page.

If the copy image density or the original mode is changed during the copy run, the auto shading for the next scan is done before the scanning to respond to the mode change.

Filtering

Types of Filters

- MTF Filter
- Adaptation Filter

- Smoothing Filter

Filters for Each Original Type

The type of filter that is used depends on the original type.

- Letter mode: MTF Filter
- Letter/Photo mode: Adaptation Filter
- Photo mode: Smoothing Filter
- Pencil mode: MTF Filter
- Pale mode: Adaptation Filter

Note

- The filters that are used for each mode can be changed. Please refer to SP6-059-1~5 for details.

Features of the Filters

MTF Filter:

- When the filter is stronger in the main scan direction, lines parallel to the feed direction are emphasized.
- When the filter is stronger in the sub-scan direction, lines at right angles to the feed direction are emphasized.
- When the MTF filter is selected with SP6-059-1~5, the settings of SP6-006-1~12 (MTF Filter Setting) are used.

Adaptation Filter:

- Lines are less clear, but small characters are clear.

Smoothing Filter:

- Images are smooth, but text and lineart can become blurred.

Main Scan Magnification/Reduction

Changing the scanner speed enables reduction and enlargement in the sub-scan direction. However, the ECU board handles reduction and enlargement in the main scan direction. The processing for main scan magnification/reduction is the same as in the previous digital machines.

Centering

The timing for uploading data from the SBU is delayed, and the writing start position is changed to the center. (The standard writing position is in the corner.)

Binary processing

In the ECU board, the 8-bit data is converted into 1-bit data for black or white pixels. The binary processing for the letter mode is different from that for the photo mode and the letter/photo mode as follows:

1. Letter mode: Binary processing
2. Letter/Photo mode: Binary processing
3. Photo mode: Binary processing + error diffusion + dithering

These processes are used as follows.

- Binary Processing with Gamma Curve Compensation -

This process converts each video signal level from 8-bit to 1-bit (black and white image data) in accordance with a threshold value.

The threshold value changes based on a compensation curve (Gamma curve) which corresponds to selected image settings. For example, if a darker image is selected, a compensation curve, which converts each pixel value to a higher number, is selected. This ensures accurate generation of the gray scale from black to white.

- Error Diffusion - (Photo mode only)

The error diffusion process reduces the difference in contrast between light and dark areas of a halftone image. This process corrects each pixel using the difference between it and surrounding pixels. It then compares the corrected pixels with the error diffusion matrix.

- Dithering - (Photo mode only)

Dithering compares each pixel with a pixel in the dither matrix. Several matrixes are available, to increase or decrease the detail on the copy.

Erase Shadow

The shadow at the centre of a book, borders of originals and so on are erased automatically. This mode is activated when master making is started while the platen cover or ADF is open.

Memory Function

ECU has 16 Mbytes of RAM and ACU has 128 Mbytes of RAM, which corresponds to the amount of memory required for an A3 original. This enables the following image editing functions.

Memory Combine Mode (ACU)

- **Combine:** Combined images of 2 or 4 originals are printed on the same sheet of paper.
- **Repeat:** Prints 2, 4, 8, or 16 repeated images on the same sheet of paper.

- **Custom Repeat:** Images are repeated as often as the paper size allows.

Overlay (ACU and ECU)

Overlay merges two different originals onto the same sheet of paper.

Stamp Printing Mode (ACU)

This mode enables stamping modes such as, the date, page number, preset message, and user custom stamps.

Make-up Printing Mode (ECU)

The user makes command sheets to specify how various areas of the original will be processed. The user must be sure to scan the command sheets before the original. The ECU board modulates the image data for the command sheet and then stores the modulated command data on the memory board.

The image data for the original is also converted and modulated. The ECU board edits the modulated image data, the stored command area data, and the background pattern.

Positive/Negative can be used with this mode.

Report Print Mode (ACU)

This mode prints the following data:

- User reports
- Jam and error counter data
- The number of people in each class set by the user
- Number of prints and masters for each user code account
- SP mode data for service

Image Rotation Mode (ACU)

When the orientation for the original differs from the paper selected, the machine automatically rotates the original image 90 degrees to match the paper orientation.

User Tools – Master Making/Print Setting – Others – Auto Rotation can disable this mode.

Thermal Head

Specifications

- Length: 292.6 ±0.1 (mm)
- Number of thermal head elements: 4068
- Density of thermal head elements: 400 dpi

Thermal Head Control

The thermal head contains heating elements at a density of 400 dpi. The thermal heating elements melt the over-coating and polyester film layers of the master, in accordance with the image signal for each pixel.

The PSU board applies power (VHD) to the thermal heating elements. The power source varies from one head to another since the average resistance of each element varies. Therefore, when replacing the thermal head or power supply unit, it is necessary to readjust the applied voltage to the specific value for the thermal head.

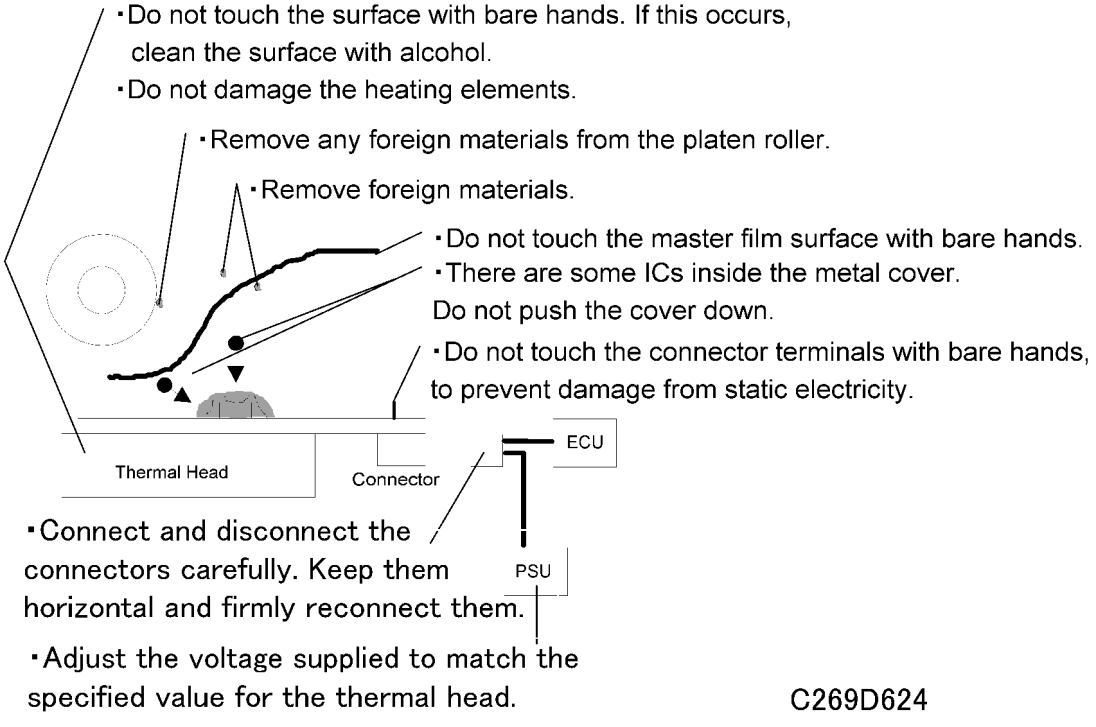
Thermal Head Protection

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

SC Code	Conditions	Detecting Component
SC203	Over 54 °C	Thermistor
SC202	Under - 20 °C (Normally in this case, the thermistor is open, or a related connector is disconnected.)	Thermistor
SC201	When the pulse width that controls the thermal head energy becomes abnormal, master making stops and generates this SC code.	ECU board
SC200	The CPU monitors the ID signal from the thermal head, which identifies the thermal head type. If an abnormal ID signal is detected just after installing the master making unit in the machine, it generates this SC code.	ECU board

Remarks for Handling the Thermal Head

Pay careful attention to the following remarks when servicing:

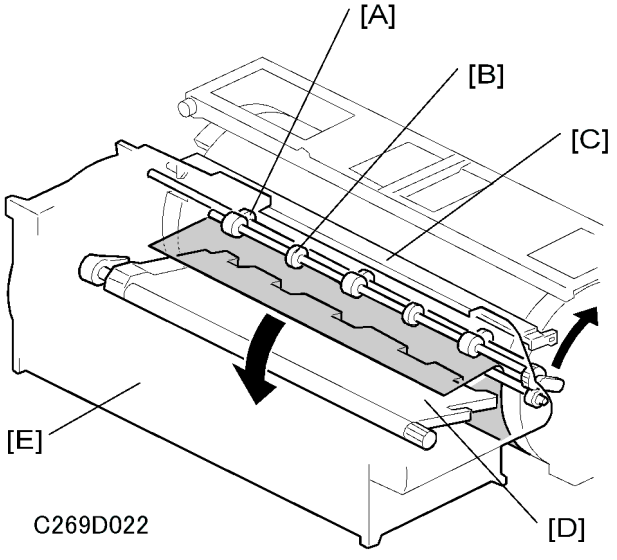


Other Remarks

Avoid using the machine under humid conditions. Moisture tends to condense on the thermal head, damaging the elements.

Master Eject

Overview



The master remains wrapped around the drum to prevent the ink from drying. Therefore, making a new master begins from the master ejecting process.

When the Start key is pressed to scan the original, the drum rotates from the home position to the master eject position. As soon as the drum reaches the master eject position, the drum master clamper [C] opens. The drum position lock mechanism locks the drum at this position to prevent the drum from moving during master ejection.

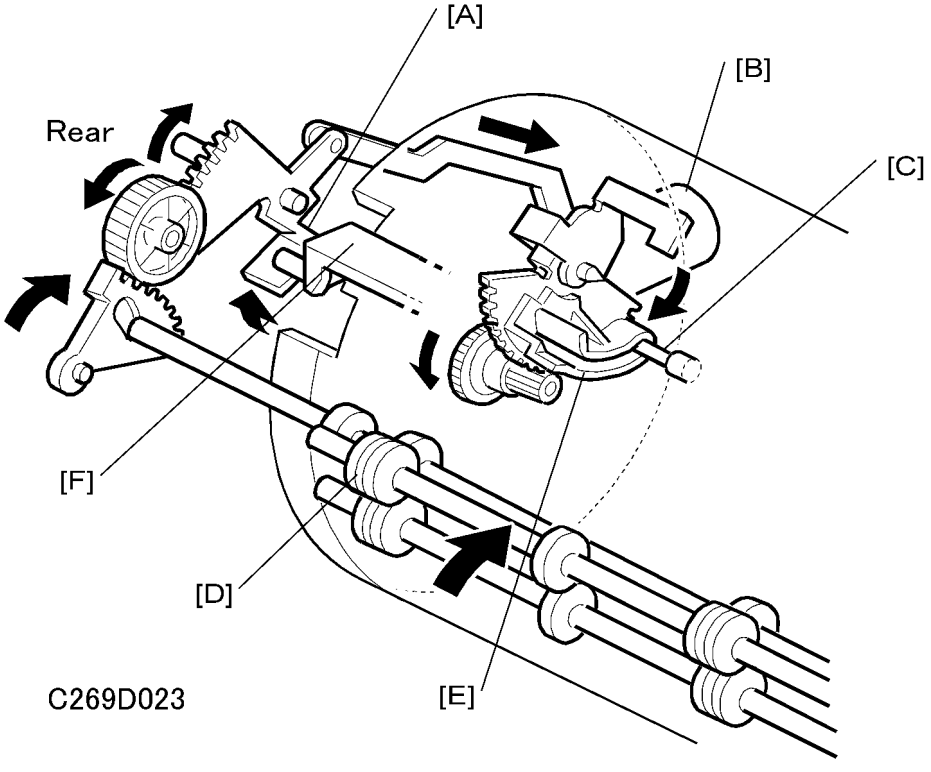
At the same time, the master pick-up roller [A] touches the drum, picking up the leading edge of the master on the drum. Then, the master is caught by the upper and lower master eject rollers [B] and is transported into the master eject box [E].

When the trailing edge of the master passes the roller, the pressure plate [D] begins to compress the master into the box.

Before this process is complete, the original scanning and master making has already started, and the drum will then rotate to the master making position.

Master Eject Mechanism

Overview



Two photo sensors (the 1st and 2nd drum position sensors) and the feeler on the rear drum flange determine the drum position. The drum is at the home position when the feeler actuates the 1st drum position sensor. At this position, the drum master clamper, which clamps the leading edge of the master onto the drum, is located at the bottom of the drum. (For details, refer to Drum Drive Mechanism in the Drum section.)

The drum turns 114.5 degrees from the home position to reach the master eject position (there is no sensor for master eject position detection – main motor encoder pulses only). As soon as the drum stops, the clamper motor [B] starts to open the drum master clamper [F]. The master pick-up roller [D] moves against the drum at the same time, because it is connected through an idle gear.

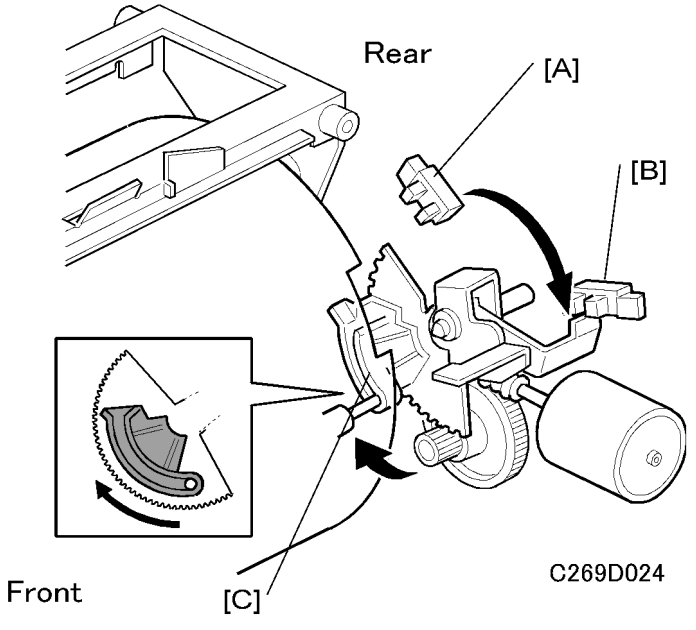
A link plate connects the drum guide [E] to the clamper opening arm [A]. So, when the arm moves, the drum guide also moves, and this locks the drum position.

Note

- To lock the drum, the drum guide catches one of two studs at different positions on the drum. The drum guide catches one stud at the master eject position [C], and the other stud at the master making position.

- The drum master clamper also opens when the drum is at the master making position. However, it uses a different clamper-opening arm. For details, refer to the Master Making section.
- Do not clean the inside of the master clamper with alcohol or other strong solvents. Use a cloth dampened with water. This prevents the magnetic force from weakening. This part requires periodic cleaning.

Drum Lock Mechanism



The clamper motor drives the drum guide [C]. The clamper closed position sensor [A] and clamper open position sensor [B] monitor the position of the drum guide.

When the drum reaches the master eject position, the drum guide moves until the clamper open position sensor [B] is actuated then deactuated (the actuator must go through the sensor). This engages the stud on the rear drum flange.

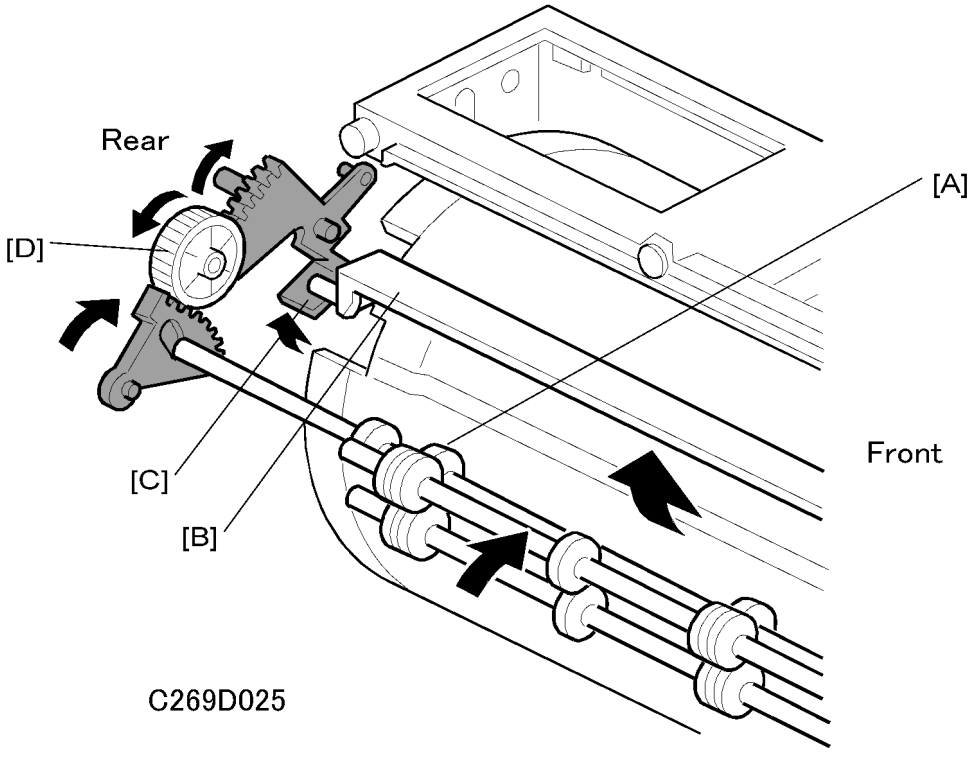
Before the drum starts rotating to the master making position, the drum guide returns to the home position. The clamper closed position sensor [A] determines this position.

Note

- The same drum guide also moves when the drum is at the master making position. (There is another stud on the rear drum flange, which is used to secure the drum at the master making position.)
- A link plate at the master eject position synchronizes the master clamper with the drum guide movement.
- To open the clamper, the drum guide (with the clamper opening arm) must move a greater distance than at the master making position. Therefore, at the master eject position, the drum guide moves (to

open the master clamper) until the clamper open position sensor [B] turns on (interrupted by the feeler) and then turns off again, as shown in the diagram. Refer to the Master Feed section to compare the two mechanisms.

Master Pick-up Roller Drive and Master Clamper Open

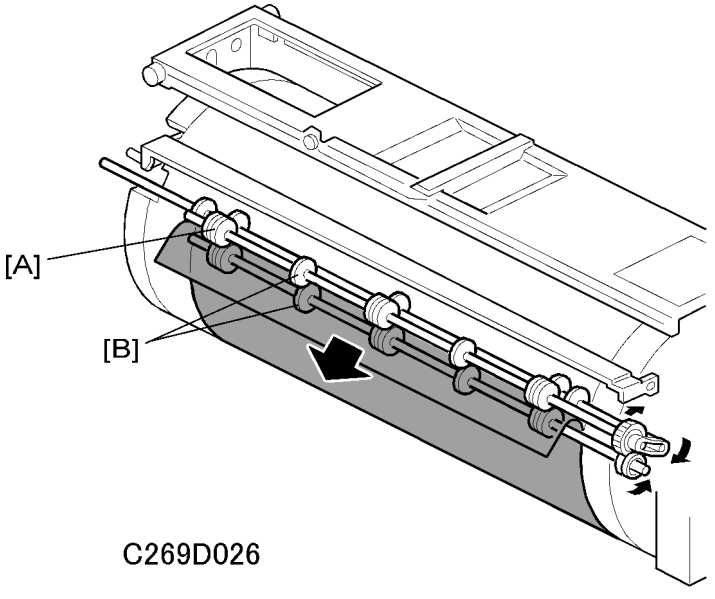


When the clamper motor opens the drum master clamper [B], the master pick-up roller [A] contacts the leading edge of the master on the drum. The clamper motor moves the master pick-up roller against the drum through the idle gear [D], while driving the clamper opening arm [C].

At the same time as the drum master clamper [B] closes after the master is picked up, the master pick-up roller [A] also moves back to the original position.

The drum guide is also released at the same time. The drum continues turning towards the master making position while the used master is removed from the drum.

Master Eject and Transportation

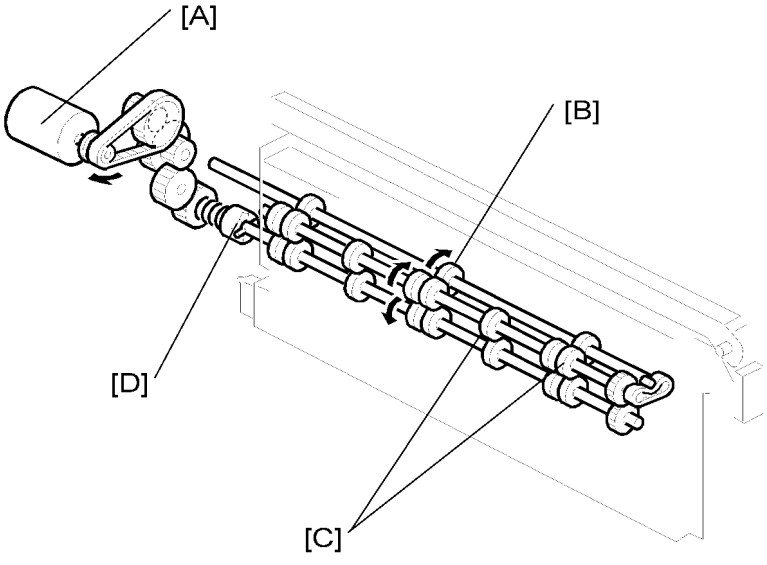


The master pick-up roller [A] and the upper and lower master eject rollers [B] all turn together. They start turning as soon as the drum reaches the master eject position.

The rollers stop once the leading area of the master is picked up from the drum. (The master eject sensor detects this.) Then, when the drum starts turning, they turn on again to feed the ejected master to the eject box while the drum turns towards the master making position.

The master eject sensor (not shown) is located just under the lower master eject roller, and it monitors the master feeding. If the master is not properly picked up, i.e. it does not activate the sensor; the operation panel displays a master eject jam message.

Master Eject Roller Unit Drive



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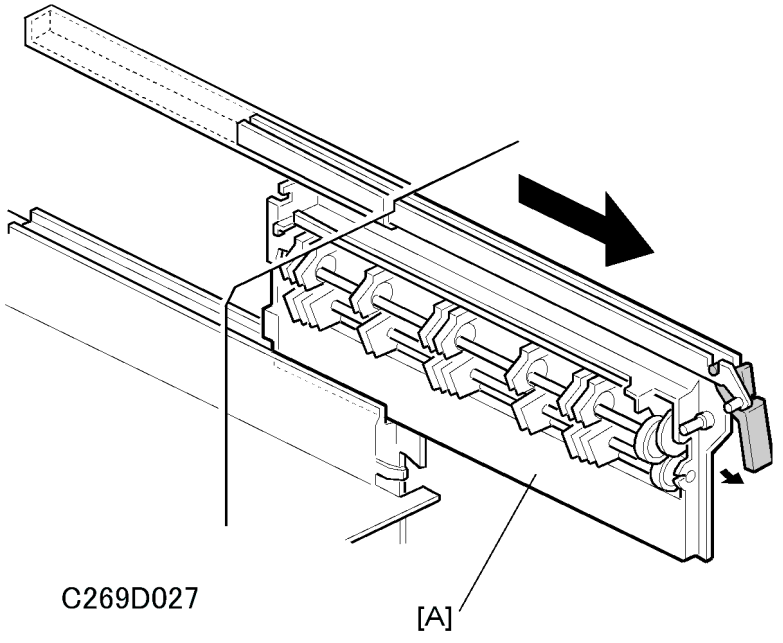
The master eject motor [A] turns the master pick-up roller [B] with the upper and lower master eject rollers [C].

When the unit is slid out (explained below), the joint [D] disengages.

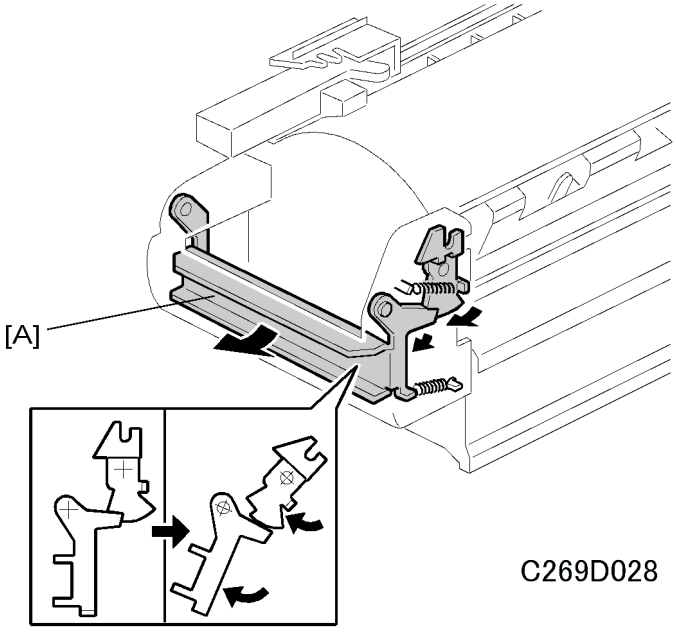
Master Eject Roller Unit Slide-out Mechanism



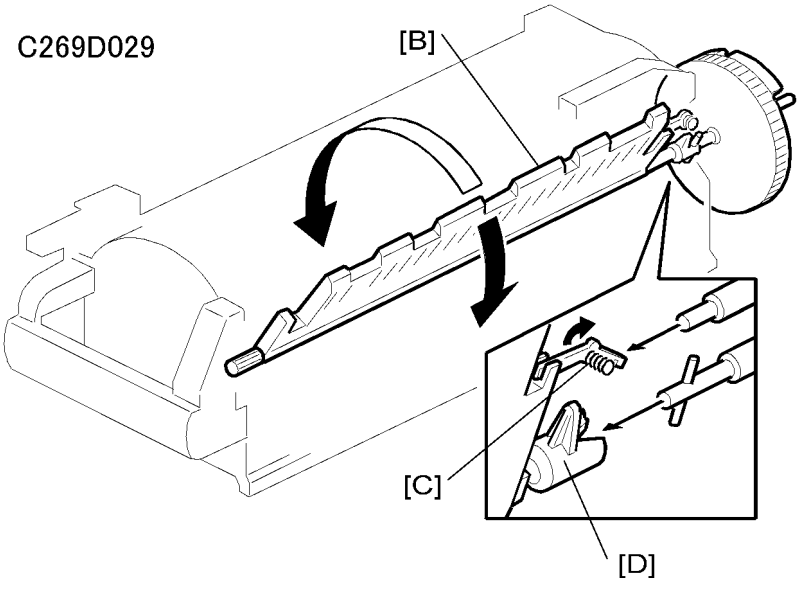
The master eject roller unit [A] can be slid out of the machine as shown for easy master jam removal.

The unit contains the master pick-up roller, upper and lower master eject rollers, and the master eject sensor.

Master Eject Box Mechanism



The user can slide the master eject box out from the operation side of the machine. The front handle of the box [A] has a lock mechanism as shown above.



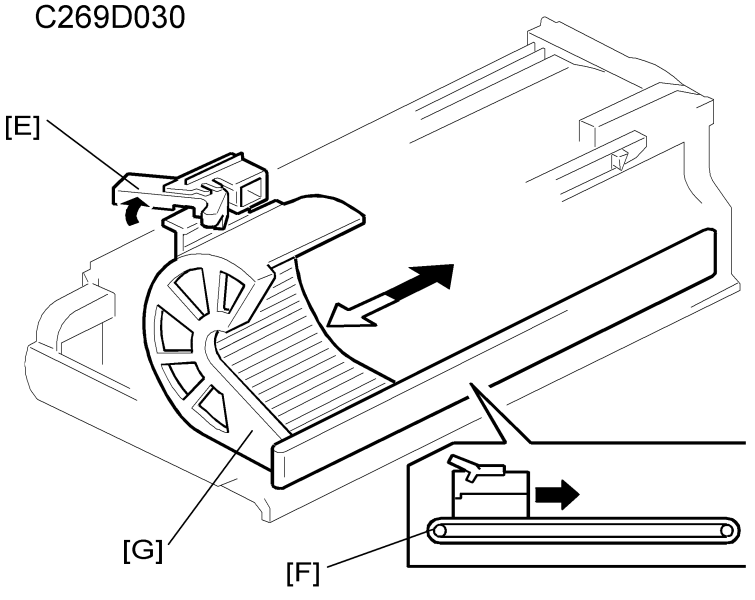
The master eject box contains a pressure plate [B], which compresses the ejected masters in the box.

The pressure plate also works as a guide plate feeding the ejected master into the box.

An independent dc motor, the pressure plate motor, drives the pressure plate. The motor is in the pressure plate drive unit, on the rear frame of the machine separate from the master eject box.

When the master eject box is slid out, the joint [D] for the pressure plate drive disengages. At the same time, the lock lever [C] turns, due to tension from a spring, to hold the pressure plate [B] in the home position.

When the master eject box is re-installed, the drive joint [D] is connected and the pressure plate lock lever [C] is released as shown above.

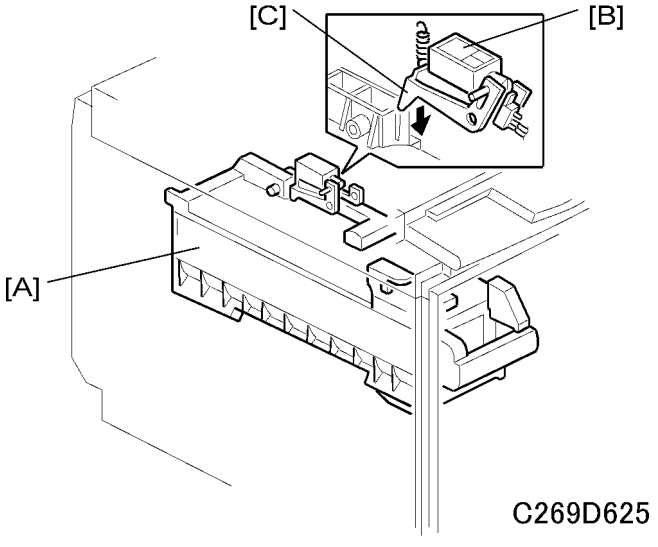


The ejected masters in the box can be taken out by sliding the eject lever [E]. The inner bottom case [G] moves towards the rear of the box.

Masters are ejected from an open door at the rear of the box. The side opposite the eject lever side [E] of the inner bottom case is connected to a belt [F]. This helps the inner bottom case move smoothly.

When the master eject box is removed, a push switch (the eject box set sensor) turns off, and the operation panel displays a message.

Master Eject Box Lock Mechanism



In the 'higher' security mode, the master eject box [A] cannot be taken out. The master eject box lock solenoid [B] pushes down the lever [C] and locks the master eject box.

This type of solenoid (magnetic latching solenoid) stays in position when power is turned off. Another pulse of power is necessary to return the solenoid to the initial position. As a result, the box remains locked when power is switched off.

A sensor (not shown in this diagram) detects the status of the lock mechanism.

When the master is being ejected and compressed, the master eject box is locked regardless of the setting of the security mode.

⚠CAUTION

- Do not try to take out the master eject box while the higher security mode is on.

To select higher security mode, set User Tools → System Settings → Administrator Tools → Security Option to 'Higher'.

Pressure Plate Drive Mechanism

Overview

There are three phases.

- Homing

At power on or when recovering from an error or jam, the machine makes sure that the pressure plate is at home position. This is because, if certain errors occur, the pressure plate may not be in the home position at the start of a job

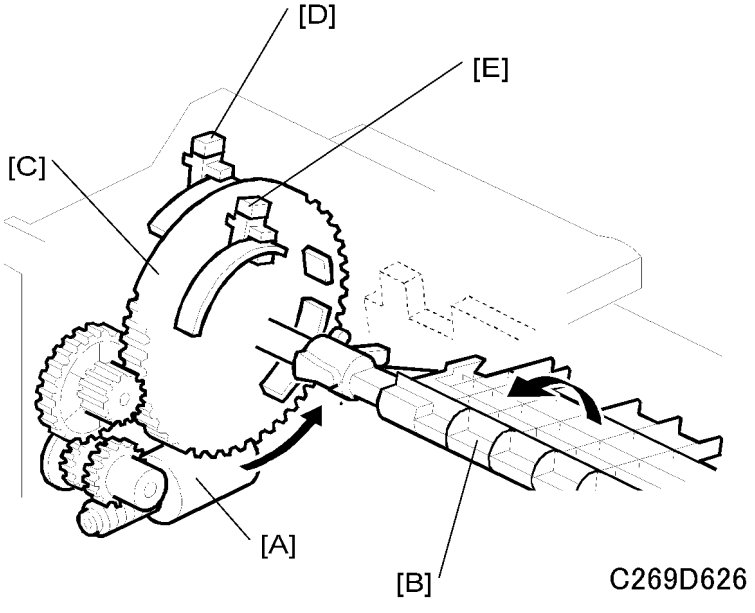
- Master ejection

The pressure plate rotates into a position where it can act as a feed guide for the used master on its way to the eject box.

- Compression

The pressure plate compresses the master into the box.

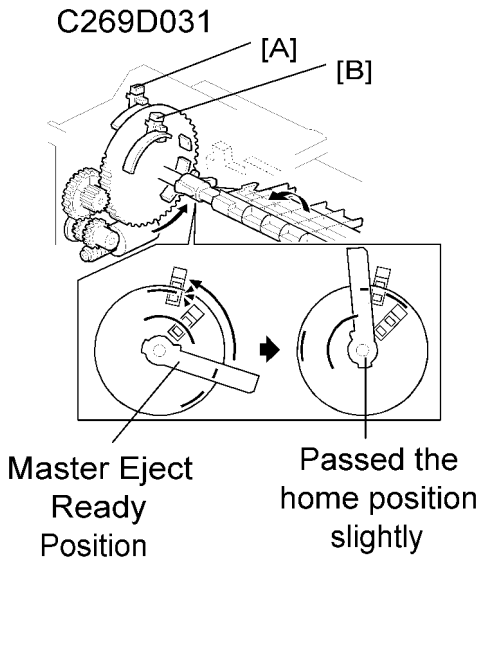
Drive

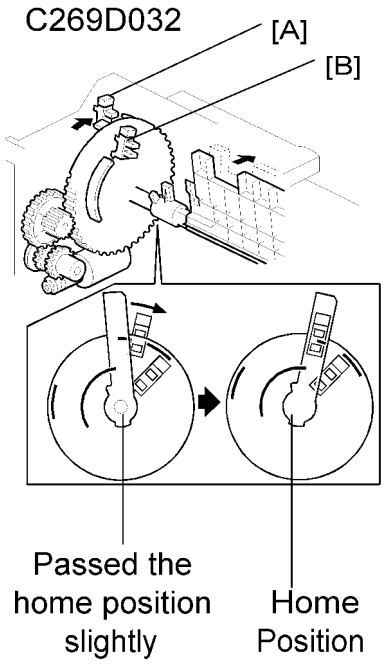


The pressure plate motor [A] drives the pressure plate [B] through the pressure plate gear [C]. This gear contains actuators for the home position sensor [D] and the limit position sensor [E]. These two sensors monitor the pressure plate position.

The diagram shows a front view of the mechanism. The actuators are on the rear of the pressure plate gear, which is shown as see-through for ease of viewing.

Homing Operation





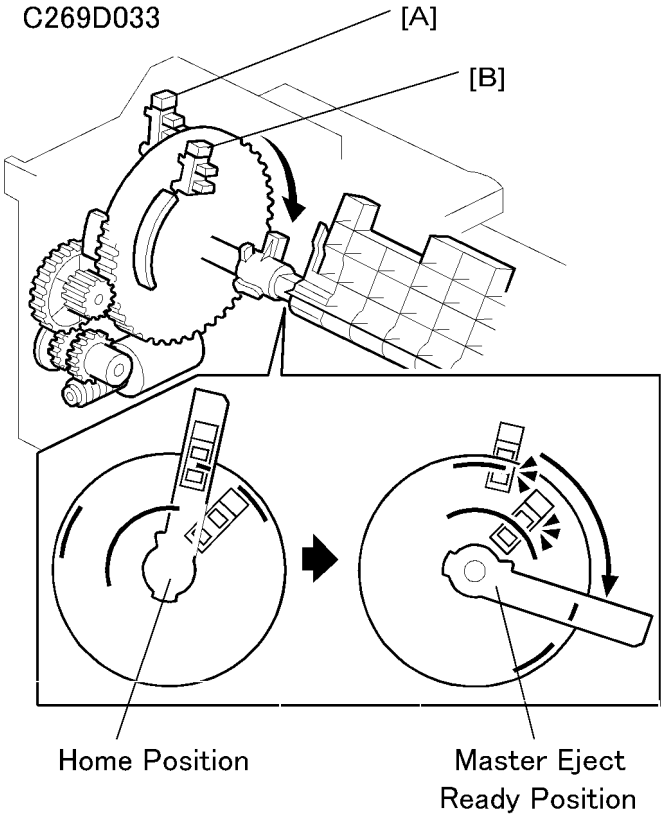
At power on or when recovering from an error or jam condition, the machine carries out the pressure plate homing operation.

If certain errors occur, the pressure plate may not be in the home position. The homing operation starts by turning the pressure plate toward the drum and then it returns to the home position.

The homing operation is as follows:

1. The pressure plate turns clockwise (as seen from the operation side) until both the pressure plate HP sensor [A] and the limit position sensor [B] are actuated.
2. As shown in the upper right diagram, the pressure plate turns counterclockwise until the home position sensor [A] is actuated twice then de-activated. The status of the sensor [A] changes: on → off → on → off.
3. The pressure plate has just slightly passed the home position. Then, as shown in the lower right diagram, the pressure plate again turns clockwise to return to the exact home position. The home position sensor status changes now from: off → on → off.

Shift to the Master Eject Position



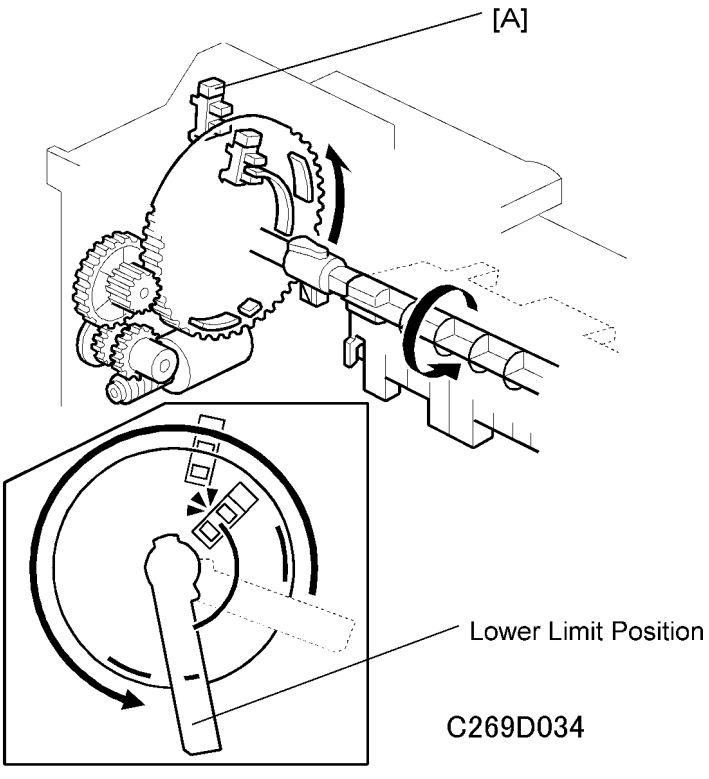
When the Start key is pressed to make a new master, the drum turns to the master eject position. During this period, the pressure plate travels to the master eject ready position.

The pressure plate turns clockwise (as seen from the operation side) until both the pressure plate HP sensor [A] and the limit position sensor [B] are actuated.

Ejected Master Compression

When the ejected master has been fed to the master eject box, the pressure plate compresses the master. During this operation, the machine can recognize how full the eject box is by monitoring the lower limit and home position sensors.

When there are no or very few masters in the box

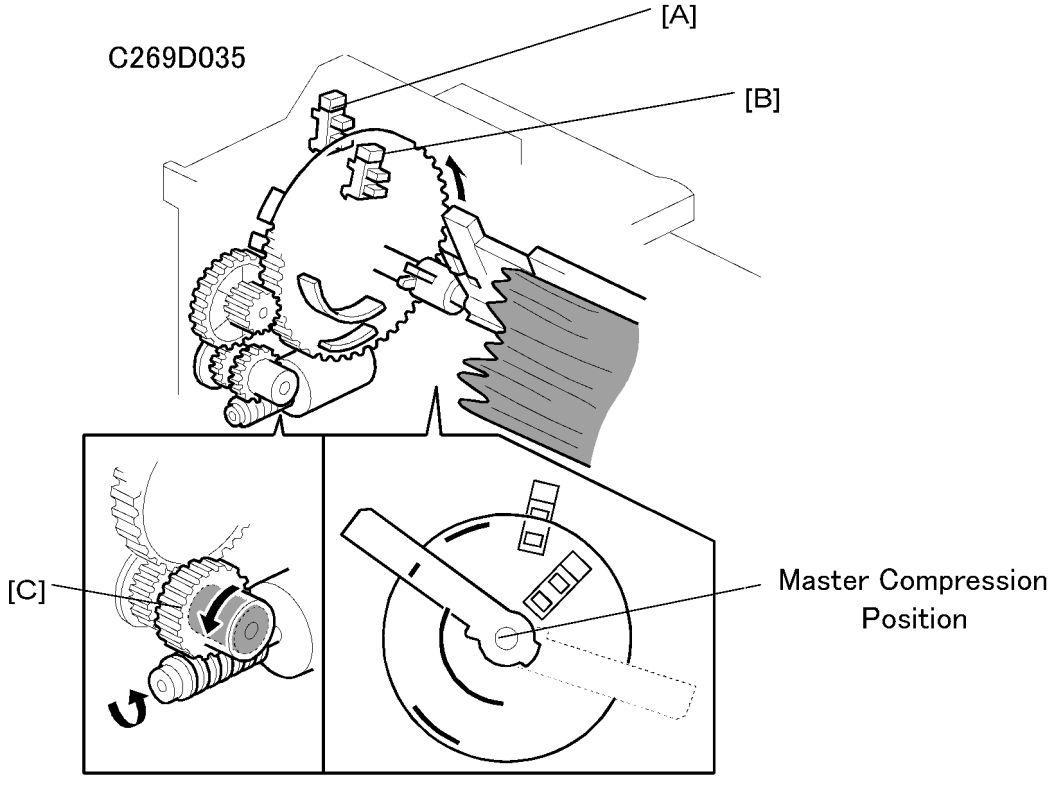


If there are no or only a few masters in the box, the pressure plate can move to its lowest position. The pressure plate limit position sensor detects this position.

The pressure plate turns counterclockwise from the master eject ready position until the limit position sensor [B] has been actuated twice. The sensor status changes: on → off → on.

The pressure plate stays at the lower limit position for 2 seconds, then returns to the home position.

When there are a lot of masters



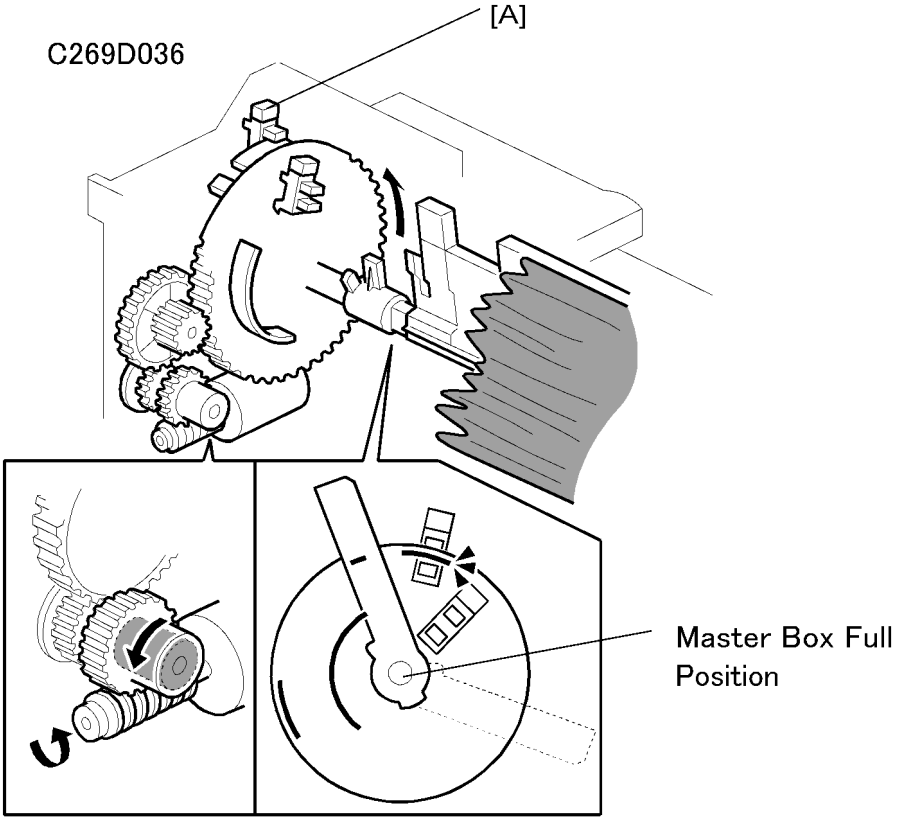
If there are a lot of used masters in the box, the pressure plate cannot move to the lower limit position.

If the lower limit position sensor [B] is not actuated within 7 seconds after the pressure plate starts traveling from the master eject ready position, the pressure plate motor stops.

The pressure plate stays in the same position for 2 seconds to compress the masters. Then, it returns to the home position.

There is a torque limiter [C] built into the gear. When the built-up masters in the box block pressure plate movement, the torque limiter allows this gear to slip.

Master Box Full Detection Mechanism



As explained above, the pressure plate motion range narrows as the ejected masters build up in the box. The stopping position of the pressure plate therefore gets closer to the home position.

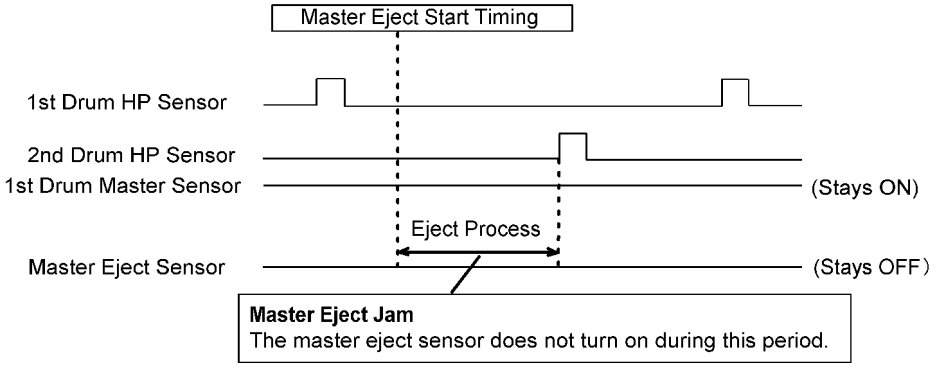
When the pressure plate cannot travel past the master box full position from the master eject ready position, this means that the master box is full.

In this case, the home position sensor [A] remains actuated as shown on the right.

The home position sensor status changes (from the master eject ready position): on → off → on → off → on, and stays on. This means the master box is full and the operation panel displays a message.

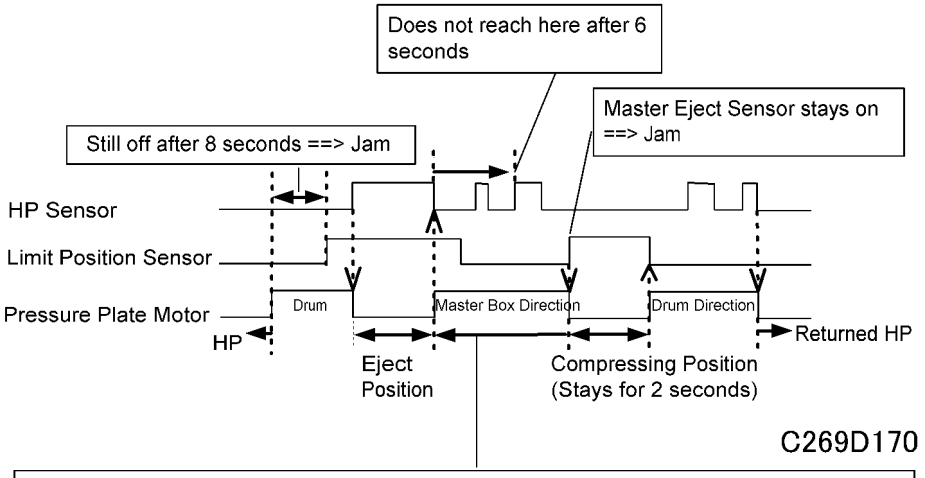
Master Eject Jam Timing Charts

Master Eject jam (B jam)



The master eject sensor under the master eject roller detects master eject jams. When the master eject sensor does not detect a master from when the drum starts until the 2nd drum position sensor turns on, a master eject jam (B jam) will occur. Then, the drum turns to home position, and the machine stops.

Master compression error (E jam)



Check during rotation in the master box direction - Check Timing - When one of the following occurs: ・When Limit Position Sensor turns on. ・4.5 seconds passes after motor turns on (A3 master) 3.5 seconds passes after motor turns on (A4 master)	Number of HP Sensor On or Off Edges (First on edge is just after motor starts.) ・5 times ==> Normal ・4 times ==> Master box full ・Less than 4 ==> Pressure plate locked (SC400 lights)

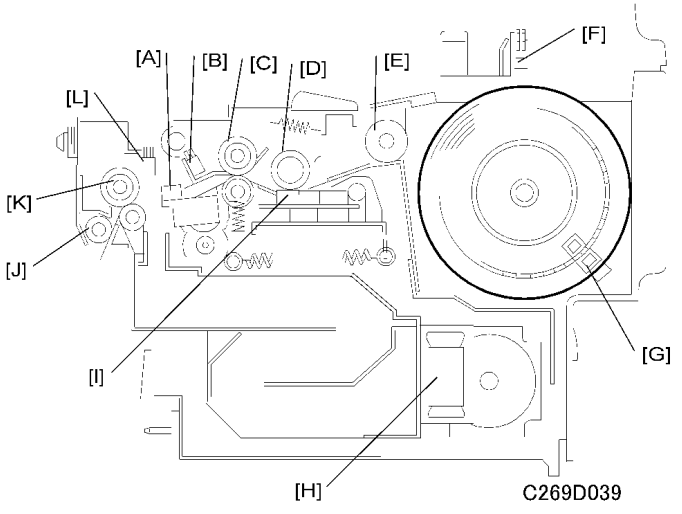
This timing chart shows how the machine counts the number of home position sensor on and off edges to check if the eject box is full or if the mechanism is jammed.

The signal is checked when:

- The limit position sensor turns on – this is when the pressure plate has turned all the way to the lower limit position inside the box, which is only possible if the box is fairly empty.
- At 4.5 seconds (A3 master) and 3.5 seconds (A4 master) after the motor turns on.

Master Feed

Overview



A: Cutter	G: Master Amount Sensor
B: Master Set Sensor	H: Master Vacuum Fans
C: Tension Roller	I: Thermal Head
D: Platen Roller	J: Clamper Tension Roller
E: Master Set Roller	K: Master Feed Control Roller
F: Master End Sensor	L: Master Edge Sensor

Original scanning starts when an original is set and the Start key is pressed. Master making begins at the same time. Although master ejecting is done first, scanning starts very soon after.

The master is a low fiber content paper coated with a thin heat-sensitive film. The heating elements of the thermal head [I] burn the film to copy the scanned image.

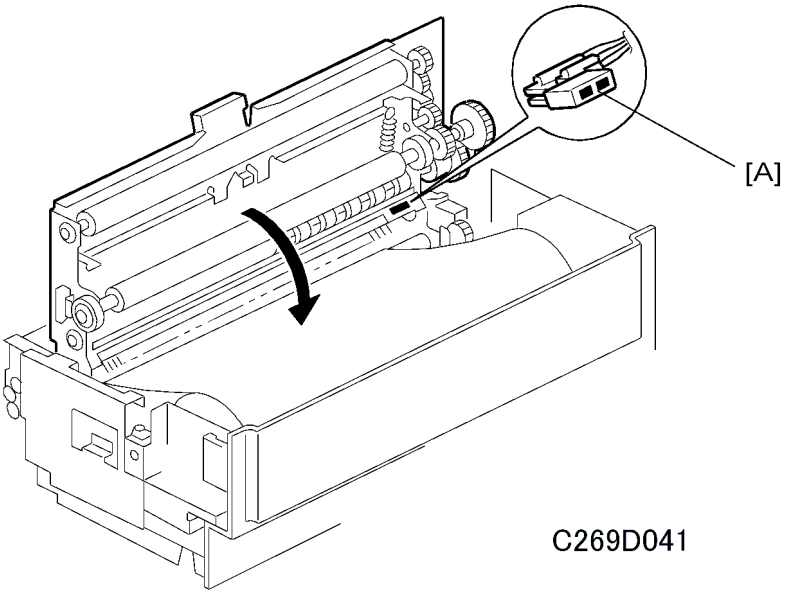
The master is fed while the thermal head develops the image on it. The master vacuum fans [H] temporarily suck the fed master into the master buffer duct. This is done because the used master is still being ejected from the drum. When the drum comes to the master making position, the master is fed to the drum and the drum master clamper on the drum clamps the master.

The drum then turns to wrap the master around the drum. When the master has been pulled out of the duct and is pulled tight at the cutter, the cutter [A] cuts the master.

At the same time as the master is wrapping, a sheet of paper, called the trial print, is fed. This ensures that ink transfers to the master on the drum, and that there is a sufficient density of ink for the print run to start. The drum then returns to the home position and is ready for printing.

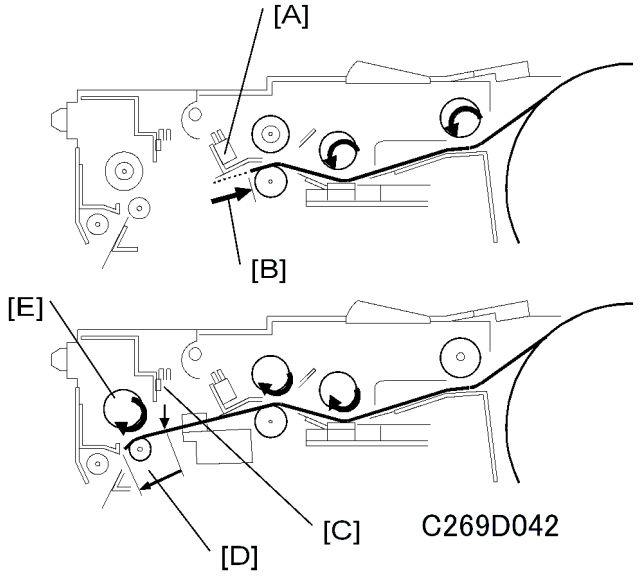
Master Set Mechanism

Master Roll Set



The master set sensor [A] checks to see if the master roll was installed properly.

Master Feed and Stop Control (Edge Detection)



After the master making unit is inserted, the master set sensor [A] detects the leading edge of the master. The master is fed in reverse [B] until the master set sensor turns off.

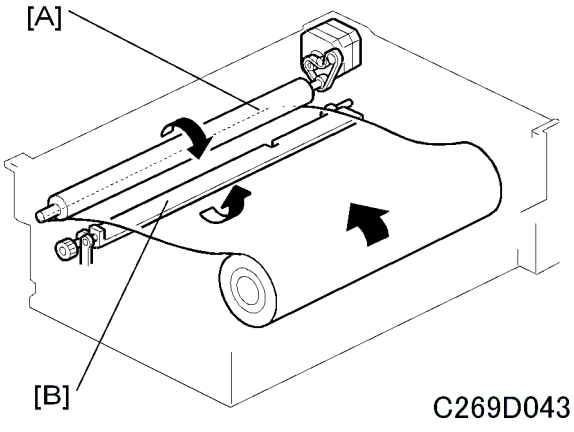
After that, the master is fed forwards, and the master edge sensor [C] checks the leading edge of the master.

The master is fed an additional 21 mm [D] after the master edge sensor [C] turns on. It is now caught by the master feed control roller [E] and it stops. This is the stand-by position for master making.

Note

- The master set mechanism does not start until the master set sensor [A] turns on. If the sensor does not turn on, a master set error occurs.
- A master feed error occurs if the master set sensor does not turn OFF for more than 5 seconds while the master is fed in reverse.

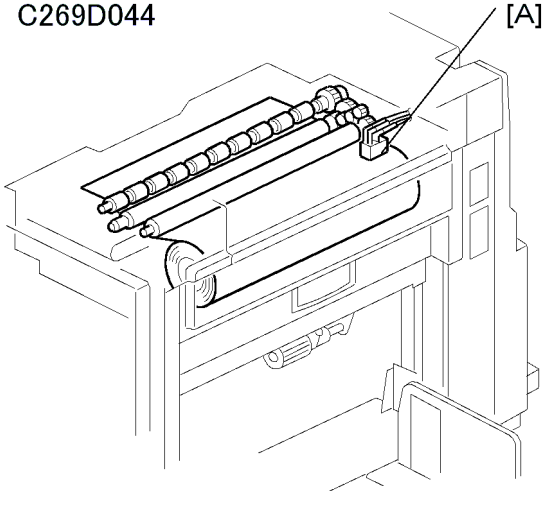
Master Buffer Duct Entrance Control



While the master is being transported to the master feed control roller [A], the duct entrance solenoid closes the master buffer duct entrance plate [B]. This prevents the duct entrance from catching the leading edge of the master.

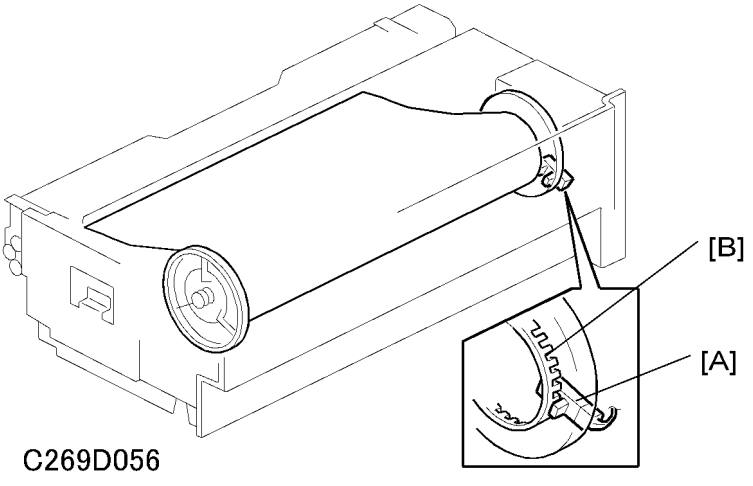
After the master feed control roller [A] catches the master leading edge, the entrance plate is opened. (The normal position of the entrance plate is open.)

Master End Detection



There is a solid-fill black area at the end of the master roll. When the master end sensor [A] detects this area, the operation panel displays the master end message.

Master Amount Detection



The master amount sensor [A] detects the amount of master that remains on the roll. To do this, it counts the slits [B] in the flange while the flange turns. The speed of rotation increases when the diameter of the master roll decreases. From the measured speed of rotation, the CPU calculates the remaining amount of master on the roll.

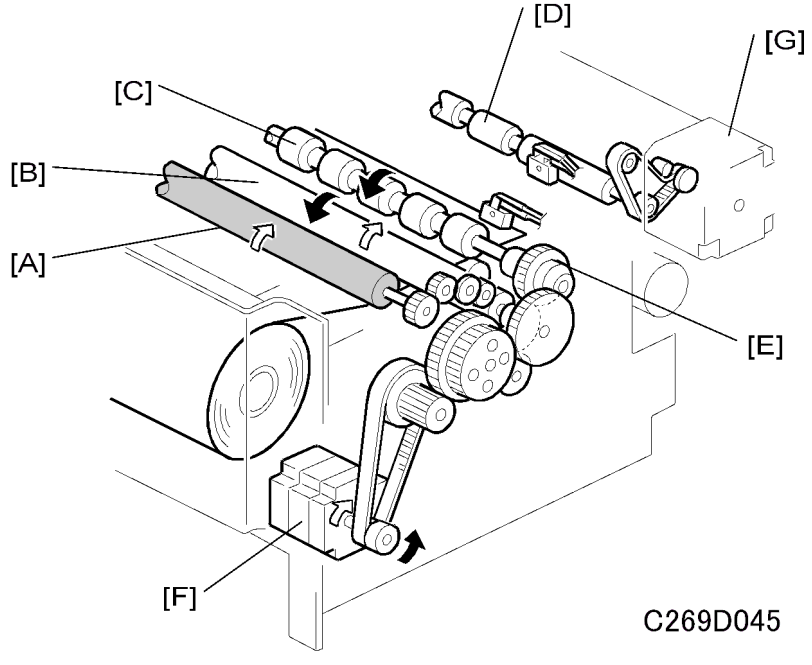
The display panel shows the remaining master amount when the main switch is turned on, if the remaining amount of master is less than half.

Note

- User Tools → System Settings → Mode Setting → Master/Ink Remaining Volume must be "On". The default is "Off".

Master Making and Feed Mechanism

Master Feed Mechanism



The master feed motor [F], a stepper motor, drives the master set [A], platen [B] and tension [C] rollers.

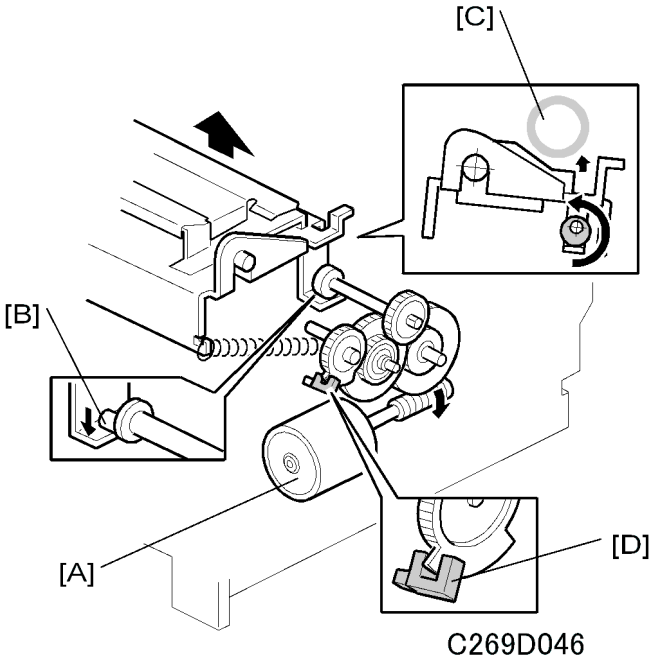
The master feed control motor [G] drives the master feed control roller [D].

The tension roller feeds the master slightly faster than the platen roller, to prevent the master from creasing. Therefore, the master between the platen roller and thermal head is always under tension.

There is a torque limiter [E] built into the tension roller drive gear. This allows the tension roller to become free from the master feed motor drive when the master is under excessive tension, to prevent damage to the master.

In the diagram, the black arrows show the roller directions when the master is fed forwards. The white arrows show the mechanism when it feeds the master in reverse.

Platen Roller Pressure Release



The platen release motor [A] gives half a turn to the platen release cam [B] to apply or release the platen roller [C] pressure. As the motor turns, the actuator on the gear interrupts the platen release sensor [D]. When the pressure is released, the actuator interrupts the sensor.

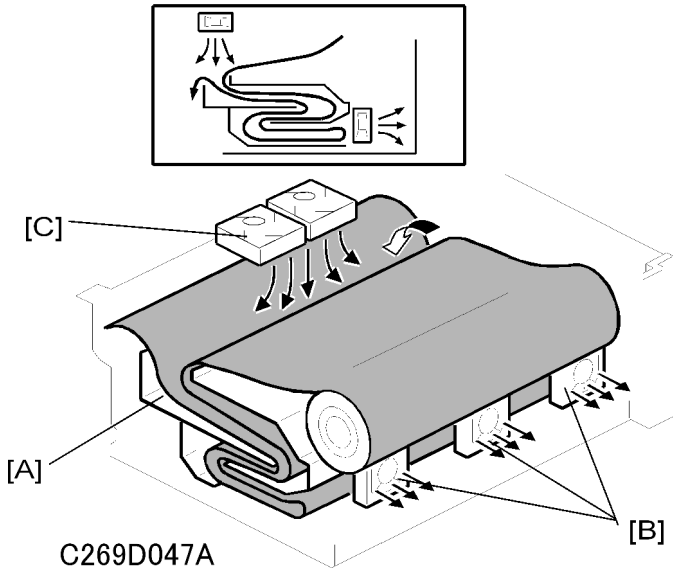
Note

- When installing the gear with the actuator, remember that the setting position depends on the platen release cam position. For details, refer to the Replacement and Adjustment section.

Just before master making, the platen release motor starts turning until the sensor is inactive; this indicates that the platen pressure is now applied to prepare for master making.

When master making is complete, the motor turns again until the sensor is activated, releasing the platen pressure. This allows the user to remove a jammed master. Also, in standby mode, there is no pressure between platen roller and thermal head, so that the user can take out the master. Also, this makes the life of the thermal head longer, and prevents the platen roller from being bent.

Master Buffer Mechanism



To minimize master processing time, the master is stored in the master buffer duct [A] after the thermal head transfers the image to it. The stored master is fed out from the duct when the drum reaches the master making position after master ejecting.

The master buffer duct is located under the master feed path. A two-level chamber inside the duct can hold a sufficient length of the master for A3 printing.

As soon as master making starts, the three master vacuum fans [B] start turning, creating suction to guide the master into the duct [A]. At this time, the master feed control roller has already caught the leading edge of the master. This roller does not start turning until the drum reaches the master making position and the master clamper opens.

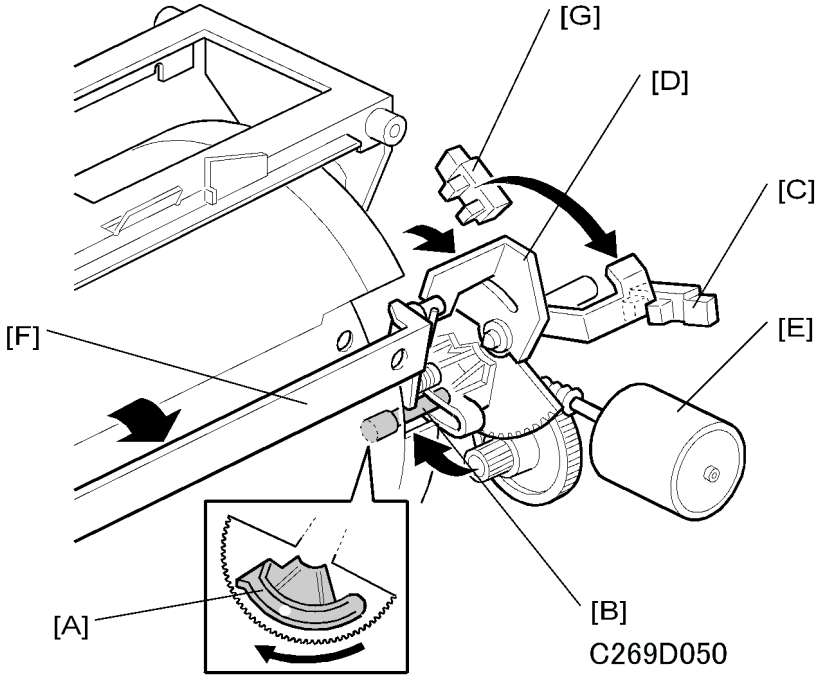
The master is fed while the thermal head writes the image on it. As the leading edge of the master stops, the suction guides the fed master into the master buffer duct and stores it as shown in the above diagram.

When the drum comes to the master making position, the master feed control roller starts turning and feeds out the master that is stored in the duct.

The master buffer fans [C] provide air to make sure that the master does not stick together in the master buffer duct.

Wrapping the Master around the Drum

Drum Lock and Master Clamper Open



The drum guide [A] holds the drum at the master eject and master making positions.

When the drum reaches the master making position, the drum guide moves to engage the stud [B] on the rear drum flange until the clamper open position sensor [C] is actuated. (The other stud was used for the master eject position.)

The master clamper opening arm [D] is just above the drum guide. The arm is different from the one used for opening the master clamper at the master eject position. The clamper motor [E] drives the arm and opens the master clamper [F], in synchronization with the drum guide movement.

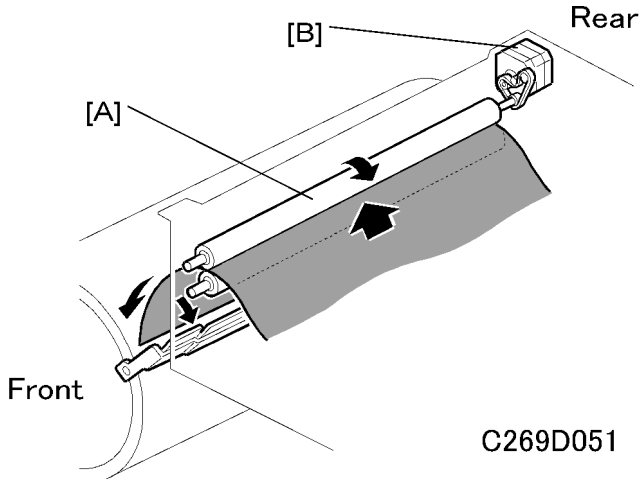
The drum guide moves (to open the master clamper) until the clamper open position sensor is interrupted by the feeler. Then it stops immediately (unlike at the master eject position of the drum) as shown in the diagram.

Before the drum starts turning to start wrapping the master on the drum, the drum guide returns to the home position until the clamper close position sensor [G] is activated. The master clamper opening arm also returns, closing the master clamper.

⚠CAUTION

- Do not use alcohol to clean the magnet of the master clamper.

Master Feed Control Roller Mechanism



The master feed control roller [A] is driven by the master feed control motor [B] as shown. The master feed control roller turns in the following cases:

- When a master roll is put in the machine, the master is fed until the master feed control roller catches the leading edge of the master.
- During master clamping, the master feed control roller turns and sends the leading edge to the clamper position.
- While the master is being wrapped around the drum, the master feed control roller turns to feed the master, in synchronization with the drum rotation.

Master Clamping and Wrapping around the Drum

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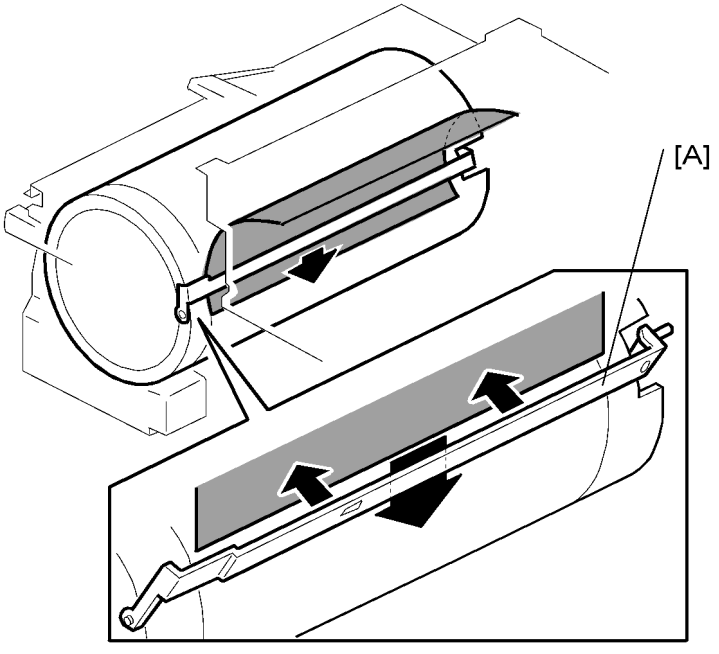


The master feed control motor turns on to feed out the master from the master buffer duct. The master is fed out 46.5 mm and reaches the drum master clamper [A]. The master feed control motor turns off temporarily.

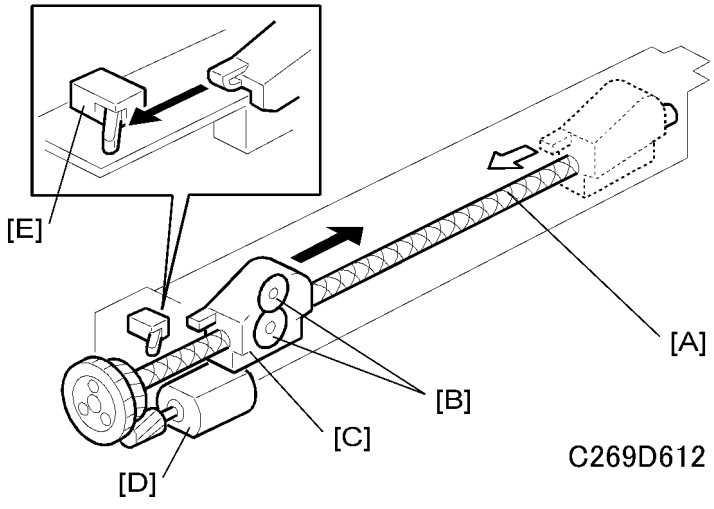
The master clamper is closed and the drum starts turning to wrap the master around the drum. At the same time, the master feed control motor turns on again to feed the master, synchronizing it with the drum rotation.

When master making is complete and the master is stored in the master buffer duct, the drum turns continuously to wrap the master. The cutter cuts the master when there is no master left in the duct, and the master at the cutter is stretched tightly; this ensures a clean cut.

A sheet of paper, called the trial print, is fed at the same time as the master wrapping. To ensure that ink transfers to the master on the drum, the drum rotates at its lowest speed (16 rpm). This ensures that the print run starts up with a sufficient ink density.

The drum then returns to the home position, ready for printing.

Cutter Mechanism

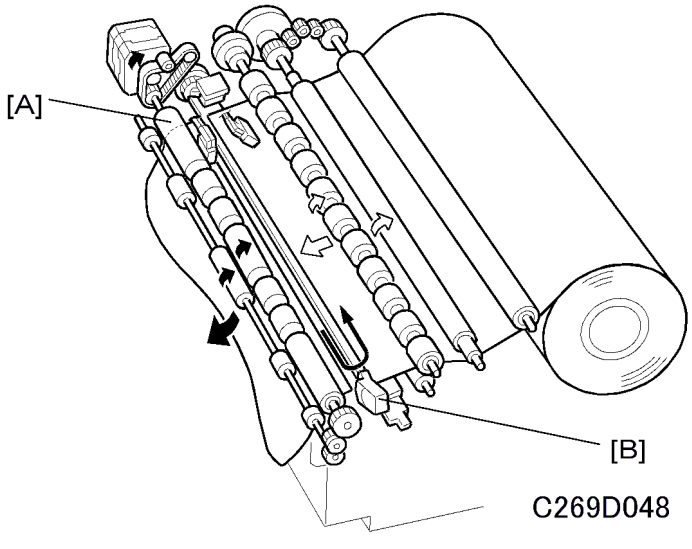


The cutter motor [D] drives the screw shaft [A], moving the cutter holder [C] forward and backward.

There are two cutter blades [B] in the holder. While the cutter holder [C] travels to the front (the operation side of the machine), the blades cut the master. The cutter motor keeps turning in one direction. However, the cutter holder returns to the home position when it reaches the front end of the cutter unit because of the two different spirals threaded on the screw shaft [A].

When the cutter holder reaches the home position, the cutter home position sensor [E] is activated by the holder and the motor stops.

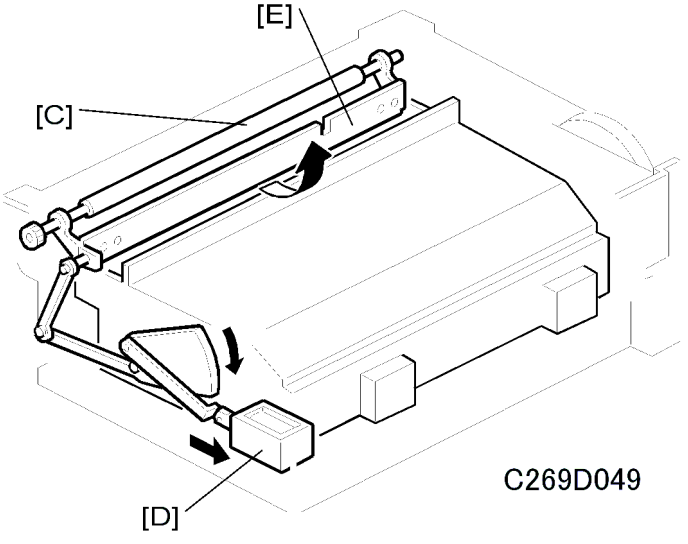
Master Buffer Duct Entrance Control



When the thermal head has finished making the master and the master has been fed out of the duct, the cutter [B] will cut the master.

To prepare for the next master making, the master feed motor turns until the master feed control roller [A] catches the leading edge of the master roll. The leading edge of the roll is fed 30 mm past the cutting position, then it is stopped.

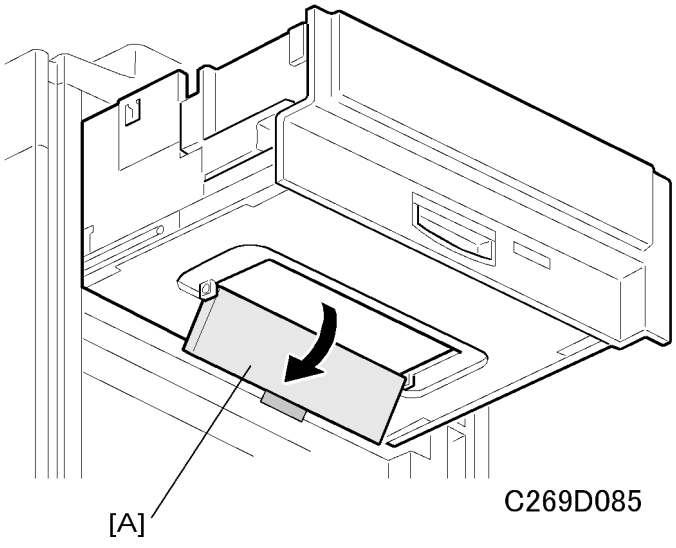
At this time, the master edge sensor is not used to detect when to stop the master. The master edge sensor only controls the master stop position at the master feed control roller after a roll is put into the machine.



While the master is being transported to the master feed control roller [C], the duct entrance solenoid [D] closes the master buffer duct entrance plate [E]. This prevents the duct entrance from catching the leading edge of the master.

After the master feed control roller [C] catches the master leading edge, the entrance plate is opened. (The normal position of the entrance plate is open.)

Opening the Door for Misfed Master Removal

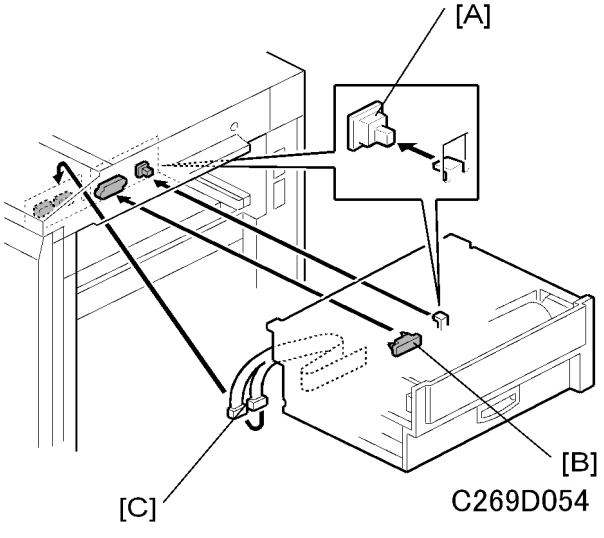


If pieces of the master remain in the master buffer duct, open the door [A] to remove them. Normally, pieces of master do not remain in the duct. Therefore, the door is only for emergency cases.

Also there is a jam removal dial to manually rotate the master feed rollers.

Master Making Unit Set Mechanism

Master Making Unit Slide-out Mechanism

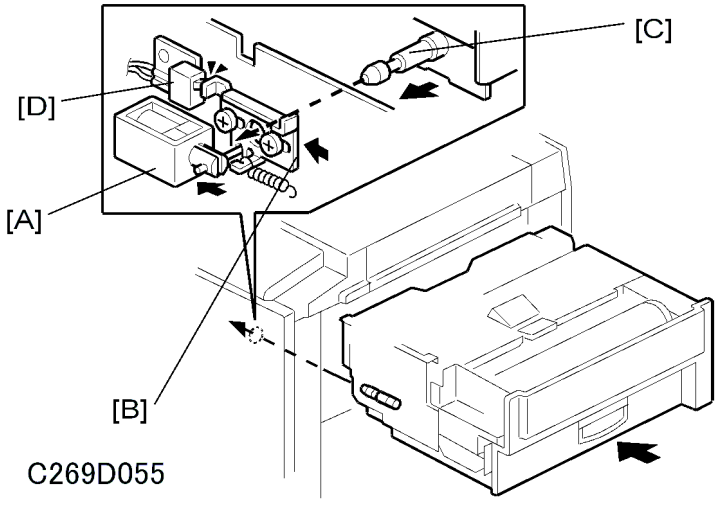


The master making unit can be slid out along the guide rails.

There are one drawer connector [B] and two cable connectors [C]

The master making unit set sensor [A] (a push switch) detects when the unit is out. The operation panel displays a message in this case.

Master Making Unit Lock Mechanism



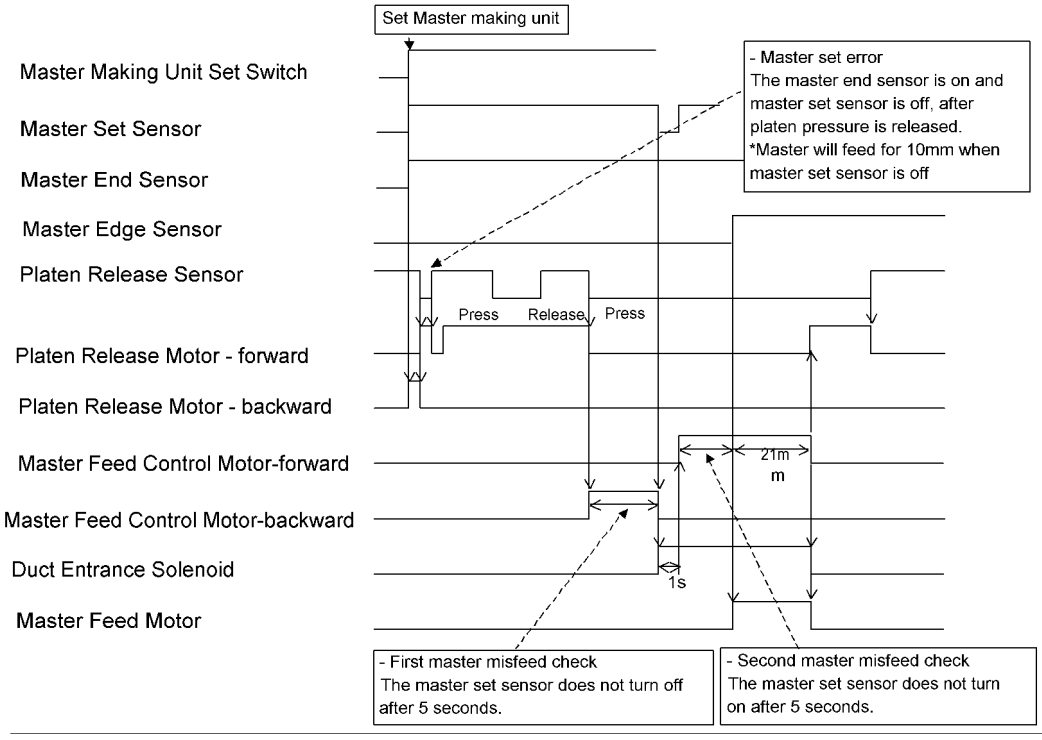
During master making or master feeding, the master making unit lock solenoid [A] moves the lock [B] and holds a pin [C] on the master making unit.

The master making unit lock detector [D] detects when the mechanism is locked.

This mechanism prevents the user from pulling out the master making unit during master making or master feeding.

Master Jam, Cutter Error, and Clamp Error Detection

Master Set Error and Misfeed



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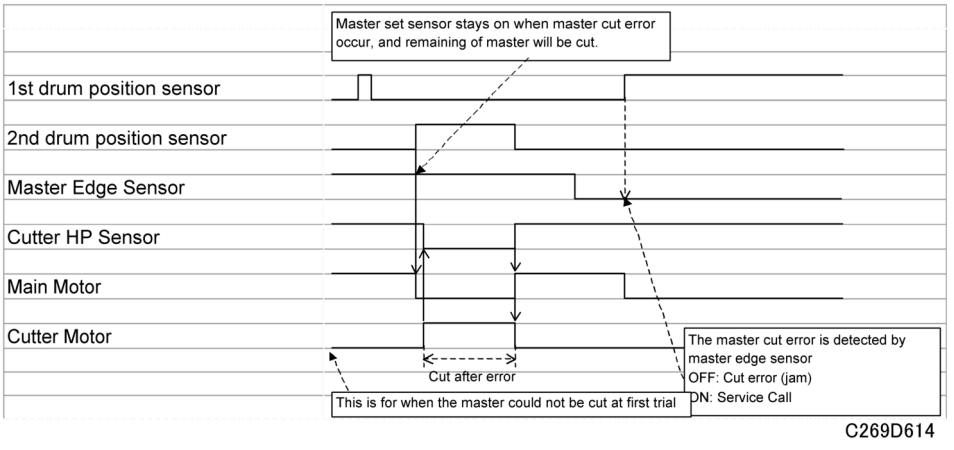
The machine detects a master with the master end and set sensors when a master making unit is put in the machine. If there is a master roll in the master making unit, the master is fed to the master making ready position. During this movement, the master edge sensor checks for a jam. The same jam detection when preparing for the next master making.

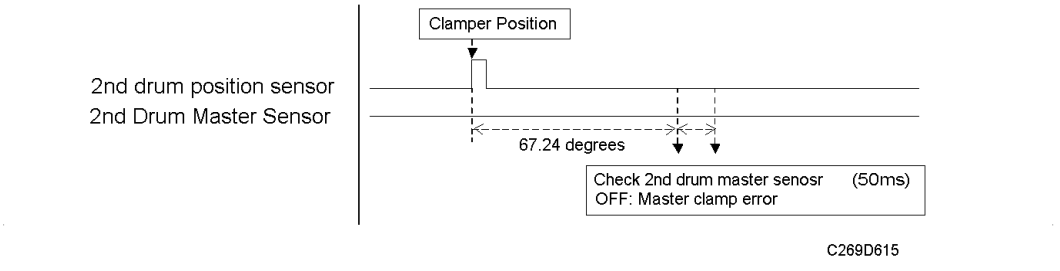
Master Cut Error



SC 300 (Main motor lock) occurs if the master is not cut after several attempts after master making.

6

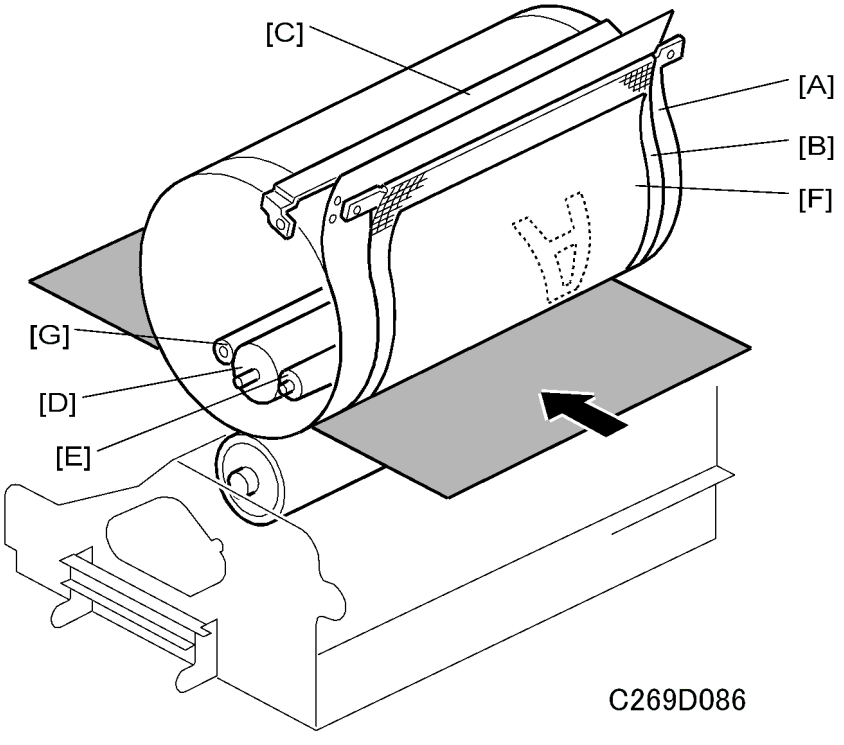
Master Clamp Error



The drum master sensor detects if the drum clamper has clamped the master.

Drum

Overview



The drum surface is composed of a stainless-steel screen (metal screen [A]) and a three-layer polyester screen (cloth screen [B]). In addition, a drum master clamper [C] clamps the leading edge of the master wrapped around the drum.

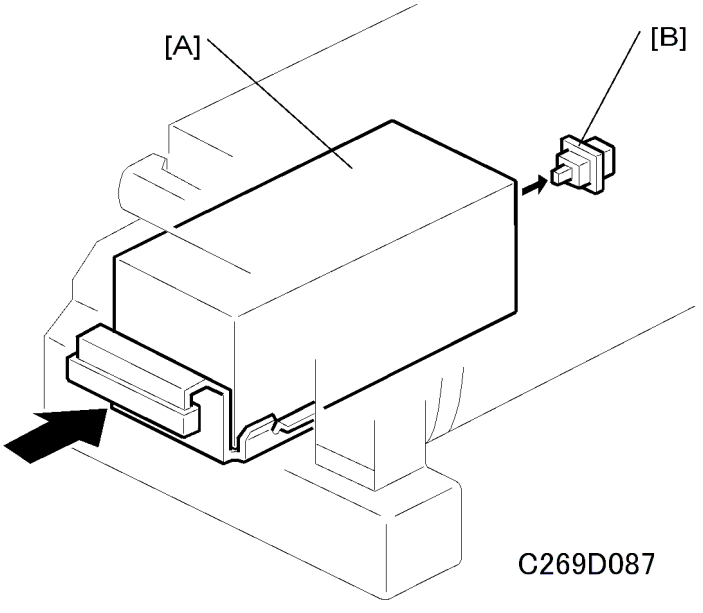
Inside the drum are the ink roller [D] and doctor roller [E], which create a precisely maintained gap, known as the doctor gap, to supply a thin layer of ink on the screens and master [F].

This machine uses the drum idling roller [G] to supply ink onto the screens and master before printing. The length of time the machine was not in use determines the idling supply time. This ensures that the first print will have sufficient ink density even after the machine was not used for a long time.

This machine does not have a quality blade. This is because the properties of the ink used with this model are different, and the blade is not necessary.

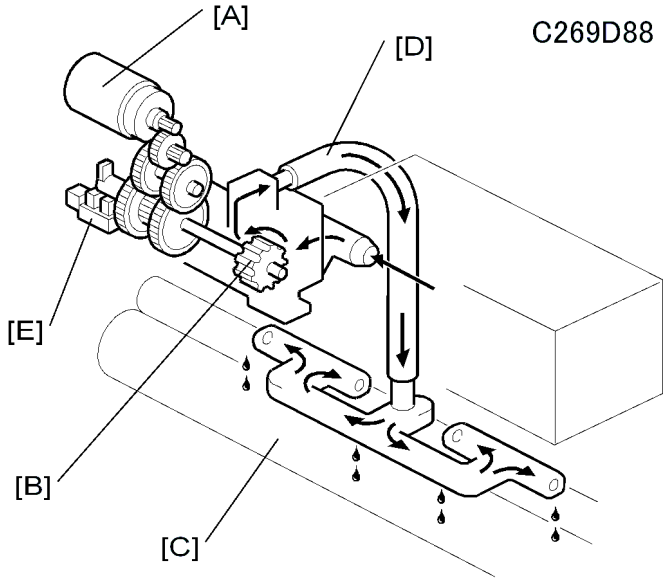
Ink Supply and Kneading Mechanism

Ink Cartridge Installation



The ink cartridge [A] is in the drum. The ink cartridge set sensor [B] (a push switch) detects the presence of the ink cartridge.

Ink Supply Mechanism



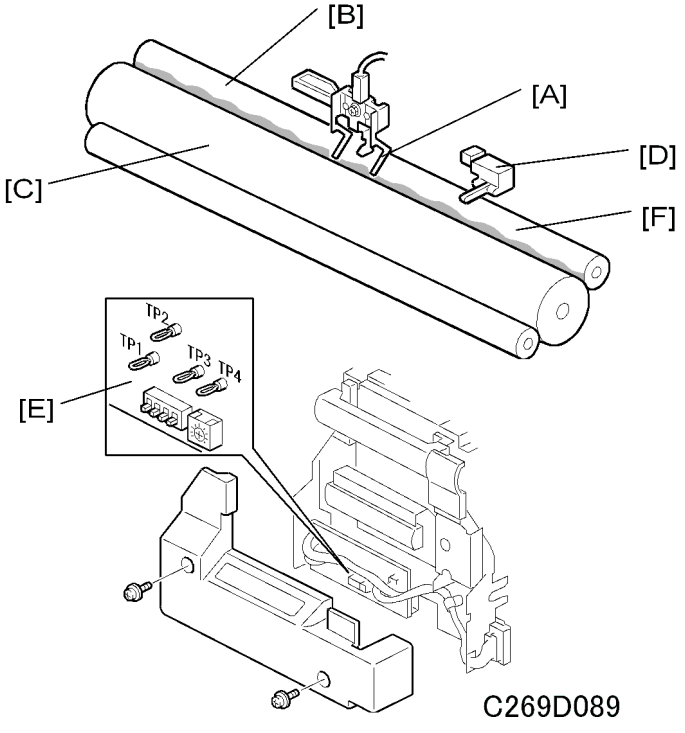
The ink supply mechanism is completely inside the drum. The ink pump motor [A] drives the ink pump [B], supplying ink from the ink cartridge to the ink roller [C] via the ink distributor [D].

Ink Pump Operation Monitoring

The ink pump sensor [E] monitors the number of rotations that the ink pump makes. The feeler on the shaft turns the sensor on at each complete turn of the shaft.

SP1-020-3 can be used to check the number of ink pump revolutions.

Ink Detection Board



The ink detection pins [A] function as a capacitor electrode and detect the capacitance between the ink [B] and doctor [C] rollers. The capacitance level changes with the ink level. When the ink level is high, the pins touch ink, and the capacitance increases. When the ink level is low, the pins do not touch the ink and the capacitance therefore decreases. Consequently, by detecting the capacitance between the pins, the ink supply motor maintains the ink level.

The display panel shows the remaining ink amount when the main switch is turned on, if the remaining amount of ink is less than half. The remaining ink is estimated from the number of revolutions of the ink pump. Because of this, when the user replaces the ink cartridge, the user should install a full cartridge, or this mechanism will not be reliable.

Note

- User Tools – System Settings – Mode Setting – Master/Ink Remaining Volume must be "On". The default is "Off".

If the ink detection pins are defective, the ink flow detector [D] acts as a back-up to detect excess ink. This prevents excessive ink supply and ink overflow inside the drum. When too much ink is supplied, the pin [F] of the ink flow detector moves up, and this turns the sensor on.

When the ink pump motor turns on for more than 40 seconds, and ink still does not come to the drum, the machine detects that there is no ink in the ink cartridge and shows an ink end warning on the operation panel.

The ink detection board [E], which includes the ink detection circuit, is also inside the drum. There are test pins (TP's) and a potentiometer (VR901) for ink detection adjustment.

Drum Type Detection

There are also dip switches on the ink detection board (see the diagram at the top of the next page). To use these switches, you must remove a cover (2 screws). The settings depend on the drum type in the following manner:

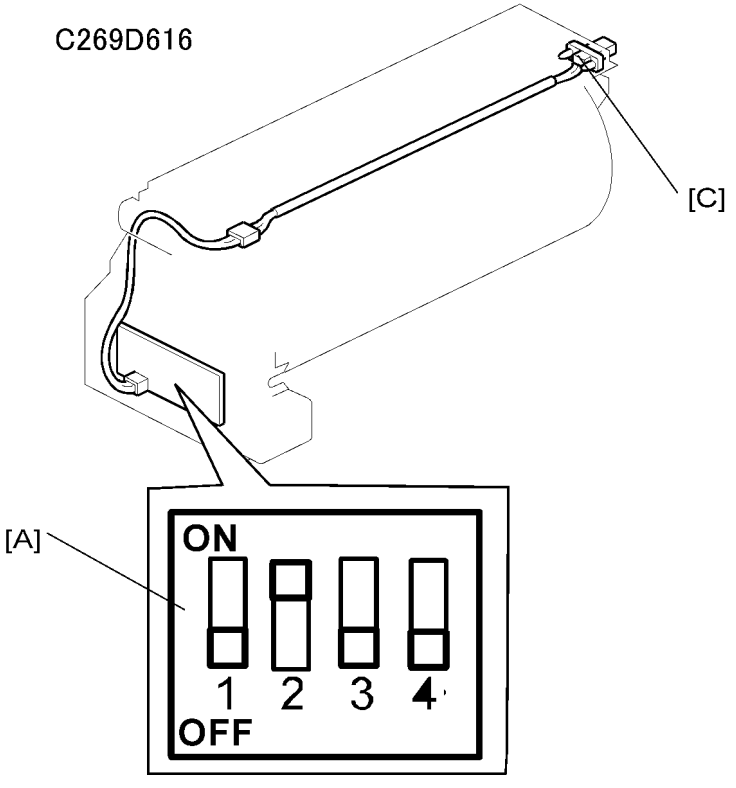
DPS 901	-1	-2	-3	-4
Standard Drum A3/DLT	On	On	OFF	OFF
Color Drum A3/DLT	OFF	On	OFF	OFF
Not used	On	OFF	OFF	OFF
Not used	OFF	OFF	OFF	OFF

'Standard' means 'Black ink'.

Note

- If the CPU detects that all dip switches are off, it assumes that there is no drum in the machine.
- DIPSW-3 is used for C639. Please do not change the setting, or image problems will occur or an error will be displayed.
- DIPSW-4 is not used.

Color Drum ID Detection



With dip switches and SP settings, the print counters for each color can be defined, and the color of the drum in the machine can be checked with a network utility.

When the drum type detection dip switch on the ink detection board [A] is set to 'color drum' (DIPSW 901-1 is off and 901-2 is on), then you can set the DPS902 dip switches [B] to specify the ID of the color.

The connecter [C] is for color drum ID detection and ink flow detection.

Four color IDs can be recognized.

DPS902	-1	-2
ID0	OFF	OFF
ID1	ON	OFF
ID2	OFF	ON
ID3	ON	ON

Then, with SP 2-010-1 to –4, you can specify the meaning of each of these 4 ID codes.

- 2-010-1 specifies the meaning of ID0
- 2-010-2 specifies the meaning of ID1
- 2-010-3 specifies the meaning of ID2
- 2-010-4 specifies the meaning of ID3

There are 15 possible colors that can be specified with SP 2-010-1 to -4.

Allocation of color codes								
0	1	2	3	4	5	6	7	8
Other	Red	Blue	Green	Brown	Gray	Yellow	Purple	Maroon
9	10	11	12	13	14			
Navy	Orange	Teal	Red Base	Blue Base	Yellow Base			

Default: 0 (other)

For example, you install a drum with DPS 902-1 and -2 both set to OFF (this means 'ID0'). If this drum contains blue ink, then set SP 2-010-1 to 2 (blue). Then 'blue' will be shown on the display panel when this drum is installed.

The names in the above table are fixed in the software. So, for example, if the drum contains gold-coloured ink, the selected color should be 14 (yellow base).

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

The process is as follows.

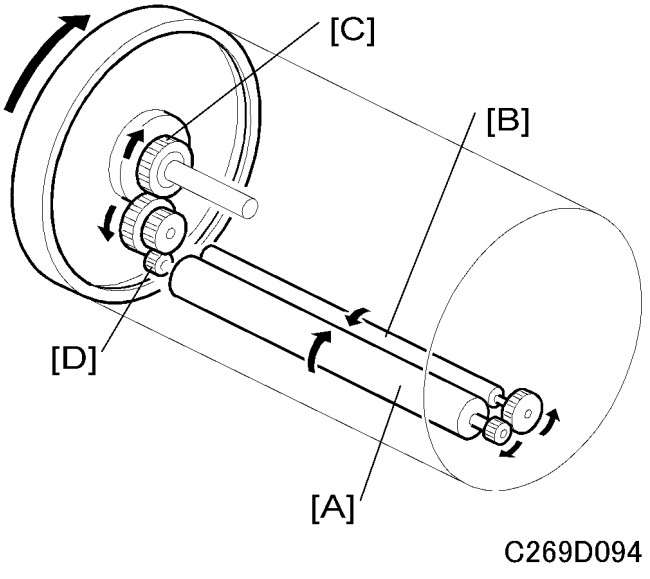
1. Set an original.
2. Push the Start button.
3. The drum rotates.
4. The machine detects a new drum
5. Ink is supplied automatically.
6. If the machine detects the ink before 26 seconds, go to step 8.
7. If the machine does not detect the ink before 26 seconds, go to step 7.

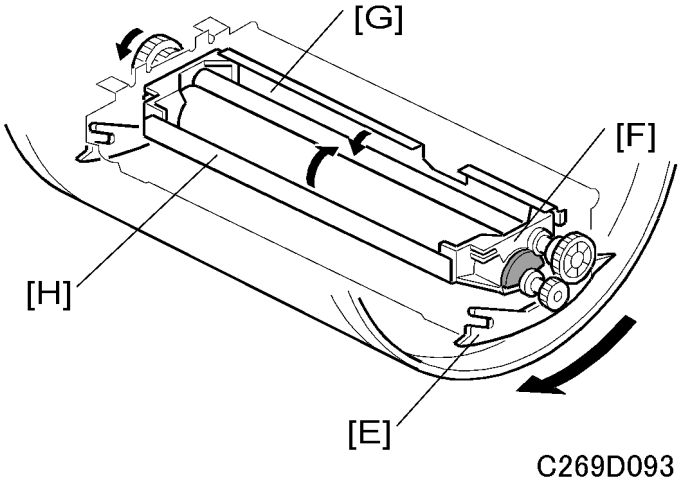
8. A blank master is wrapped around the drum, and the drum and pressure cylinder rotate, with pressure applied to the drum. Then the blank master is removed. Go to step 8.
9. Master making is started for the original that you set.

Note

- There is also a manual ink supply procedure, like for previous machines.
- "0" + "Economy Mode"
- Procedure:
- 1. Press the "Master Making" key to light the Master Making indicator.
- 2. On the screen, push 'Make Master Options'.
- 3. Hold down the '0' key, and at the same time push 'Economy Mode Level 1' or 'Economy Mode Level 2'.

Ink Kneading Mechanism





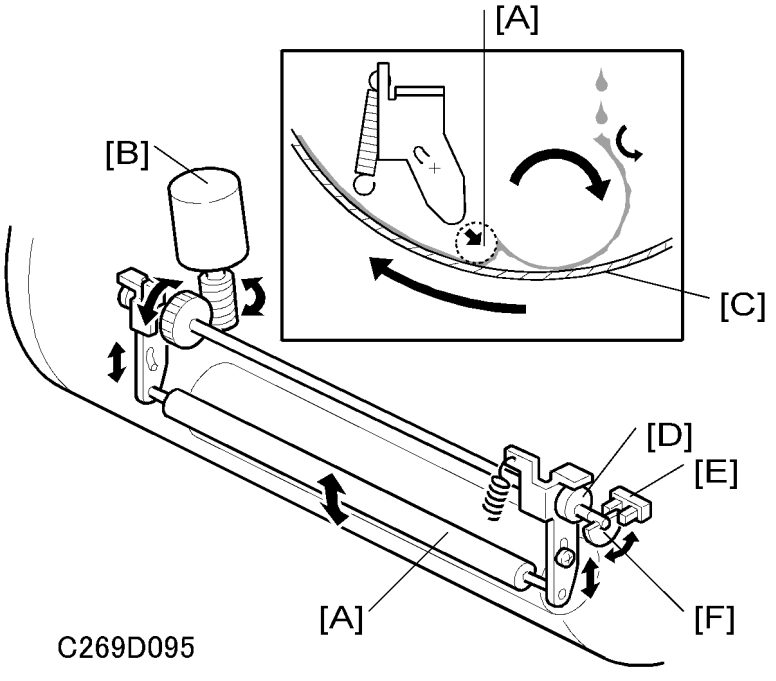
A gear [C] on the drum shaft drives the ink [A] and doctor [B] rollers. The doctor roller spreads the ink evenly on the ink roller. The ink roller drive gear [D] has a one-way clutch to prevent the ink roller from being manually turned in the reverse direction.

The ink roller only touches the screen during the printing process. During the printing process, ink passes to the paper through holes in the screens and the master. This is because the pressure cylinder below the drum holds the drum screen and the master against the ink roller during printing.

The ink roller blade [E] (white plastic) and separation plate [F] (white plastic) scrape off ink build-up on both ends of the ink and doctor rollers.

Metal plates [G] and [H] reduce the amount of ink leakage, if a leak occurs.

Drum Idling Mechanism



Quality Start Mode

In Quality Start mode, the machine enters the drum idling mode before printing. This ensures that the first print has sufficient ink density even if the machine was not used for a long time. When the machine is printing (Trial print, 1st print, 2nd print, etc.), the drum idling roller is not used.

The user selects Quality Start mode by pressing a key on the operation panel. The number of idling rotations is fixed at 7. However, a user tool can change this number (User Tools → System Settings → Mode Settings → No of Idling Rotations: Quality Start).

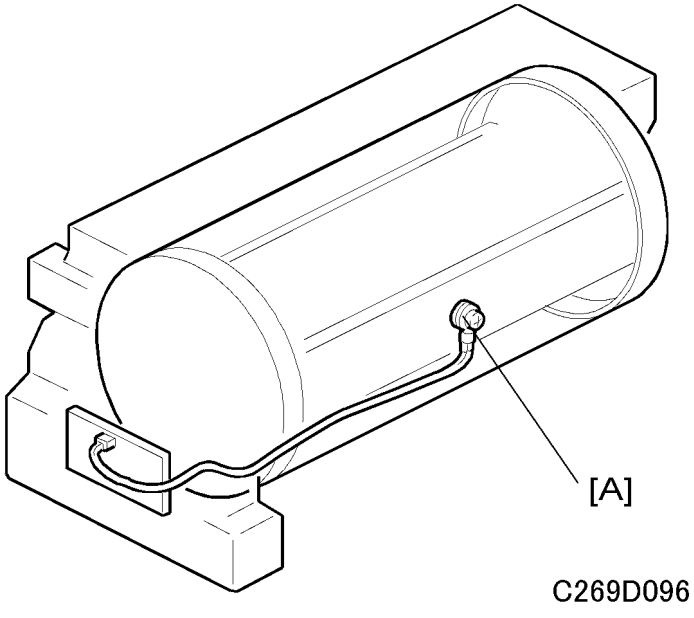
Note

- In Quality Start mode, the drum idling motion starts before printing, when the Start key is pressed. However, if there is no master on the drum, drum idling is not done.
- Even if the Quality Start mode is active, and there is no master on the drum, drum idling is skipped although the LED on the operation panel turns on. When printing for the next original starts, the machine enters drum idling mode if a large enough master is wrapped around the drum (it will not be done for an A4 master on an A3 drum).

The drum idling roller [A] puts the ink onto the screen and master before printing. The idling roller motor [B] turns to press the drum idling roller against the inner surface of the drum screen [C]. A spring under tension supplies additional force for this.

The motor turns the cam [D], moving the drum idling roller into contact and away from the drum screen. The actuator disk [F] interrupts the idling roller HP sensor [E] when the drum idling roller is in contact with the drum screen.

Auto Quality Start Mode



Auto Quality Start is done if the user does not select Quality Start mode. (Auto Quality Start can be disabled with a user tool: System Settings – Mode Setting –Auto Quality Start Setting).

In Auto Quality Start mode, the idling motion depends on how long the machine was not in use and on the temperature detected by the thermistor [A] in the drum.

The CPU detects a low temperature condition if the thermistor [A] reports approximately 19 °C or lower. If the detected temperature is 29 °C or higher, it is a high temperature condition.

The number of drum idling rotations depends on temperature and period of machine inactivity, as shown in the following table.

A user tool can change the number of rotations for each of these conditions (System Settings → Mode Setting → No of Idling Rotations: Auto Quality Start).

Period/ Temperature	Less than 4 hours	4 to 24 hours	24 to 72 hours	Over 72 hours
High (29 °C or higher)	0	5	5	5
Normal (19 to 29 °C)	0	5	5	5
Low (19 °C or lower)	0	7	7	7

Note

- The drum rotation speed during idling is fixed at 16 rpm.

Drum Rotation Speed during Printing

The drum rotation speed varies during printing as shown in the table below.

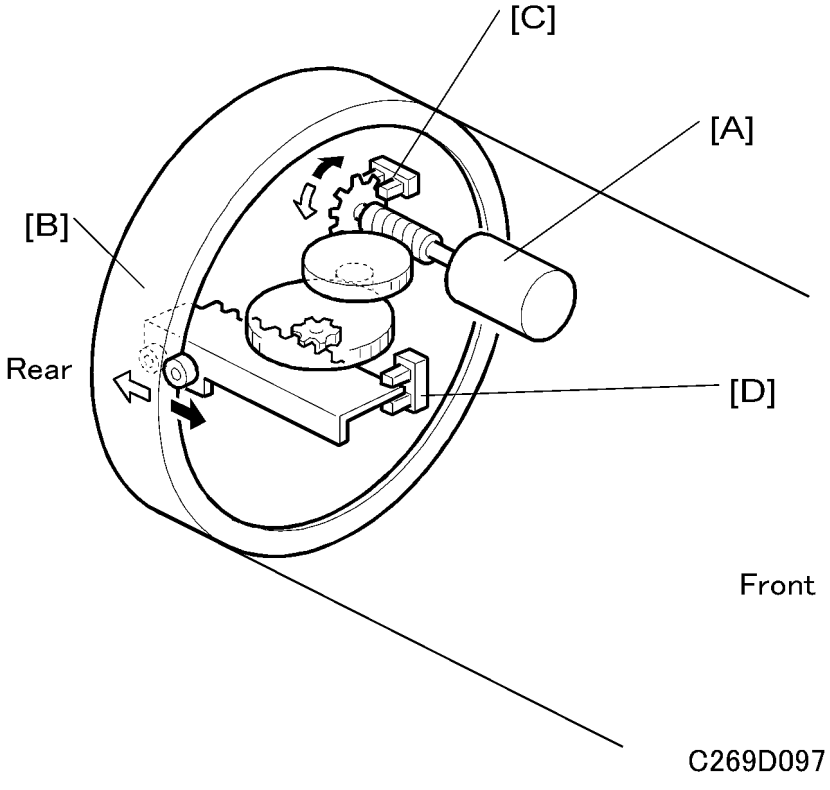
- Change of drum rotation speed (rpm) with temperature -

Temperature	Trial Print	1st Print	2nd Print	3rd Print	4th Print	5th Print	6th Print	7th Print
High (29 °C or higher)	16	90	105	120	135	135	135	135
Normal (19 to 29 °C)	16	75	90	105	120	135	135	135
Low (19 °C or lower)	16	60	75	90	105	120	135	135

Note

- These figures apply to the highest printing speed (speed 6, which is at 135 rpm).

Drum Shift Mechanism for Image Side-To-Side Shift



The image side-to-side shift function shifts the outer drum sleeve (with master) from front to back.

The shifting mechanism is inside the drum. It consists of the drum shift motor [A] and a rack and pinion mechanism.

The motor can turn in either direction by the image shift amount set at the operation panel. The motor moves the rear drum flange [B] via the rack and pinion, as shown. At the same time, it rotates the pulse disk. This allows the drum shift sensor [C] to generate pulse signals for sending to the CPU. The CPU detects the amount of shift with these signals and controls motor on/off time.

The maximum shift range, in both directions, is 10 mm from home position. The drum shift HP sensor [D] ensures that the outer drum sleeve returns to the home position.

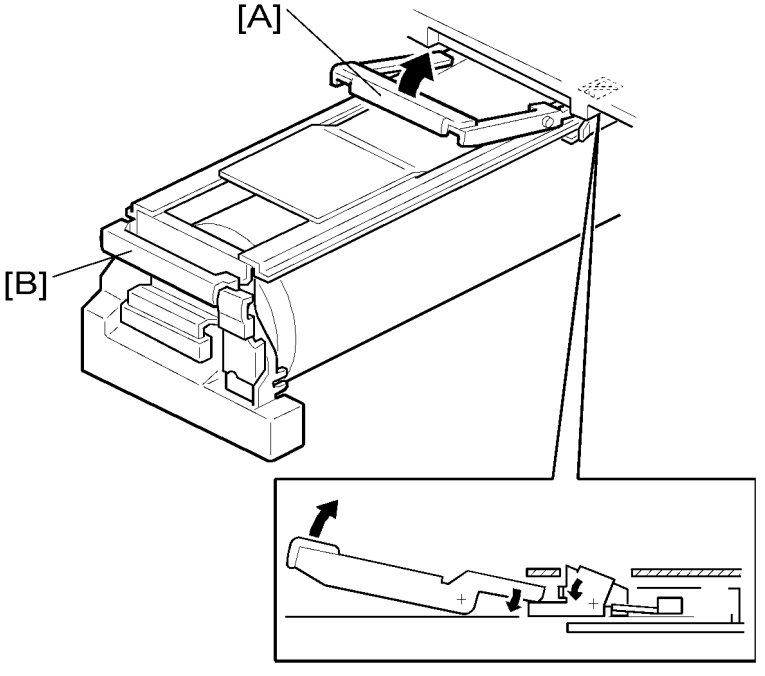
When the outer sleeve returns to the home position, it activates the sensor, stopping the drum shift motor.

In duplex mode, the front and rear images are moved by the same amount, because both images are on the same master. They cannot be adjusted individually.

Image up/down shifting (in the sub-scan direction) is done by changing the timing for the start of paper feed. These can be adjusted individually.

Drum Set Mechanism

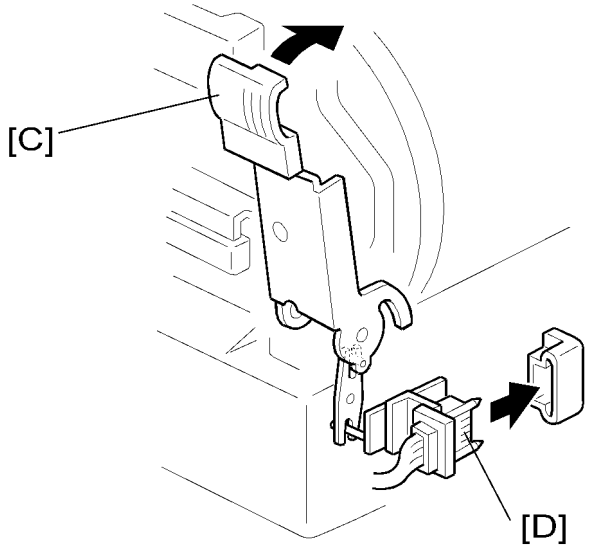
Upper Handle and Lock



There are two grips ([A] and [B]) to hold the drum.

When the upper grip [A] is pulled up, it releases the drum locking mechanism.

Front Lock Lever



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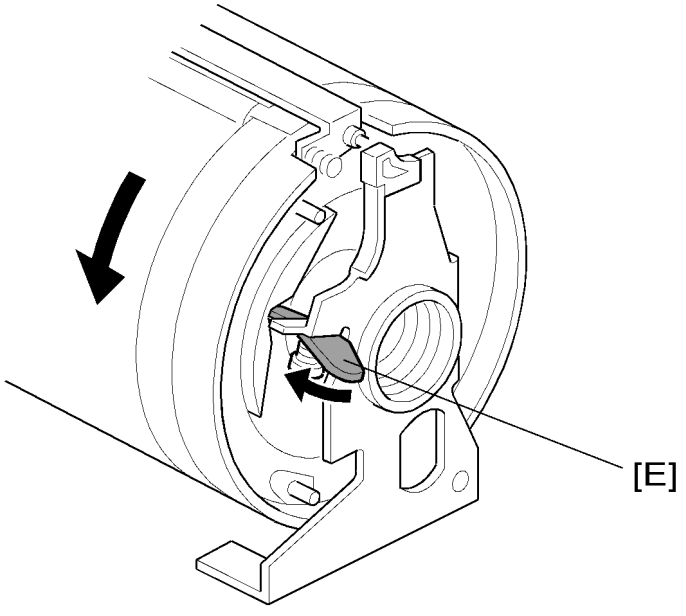
When the drum is set correctly and the front lever [C] is raised, the drum is locked into position. The connector [D] allows electrical contact for the drum components.

Drum Rotation Lock Mechanism



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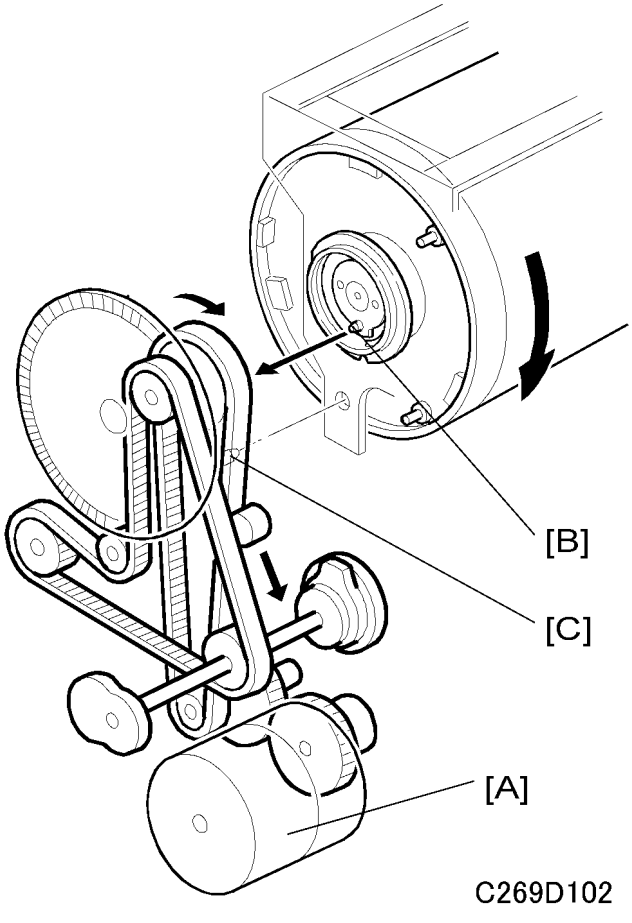
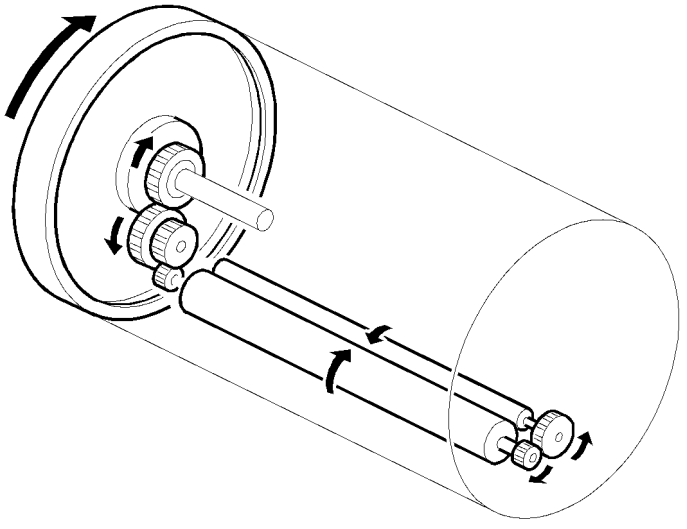
The rotation stopper [E] prevents the drum from turning when it is removed from the machine.

When the drum is replaced, contact with the rear frame disengages the stopper [E] and releases the lock.

Drum Drive Mechanism





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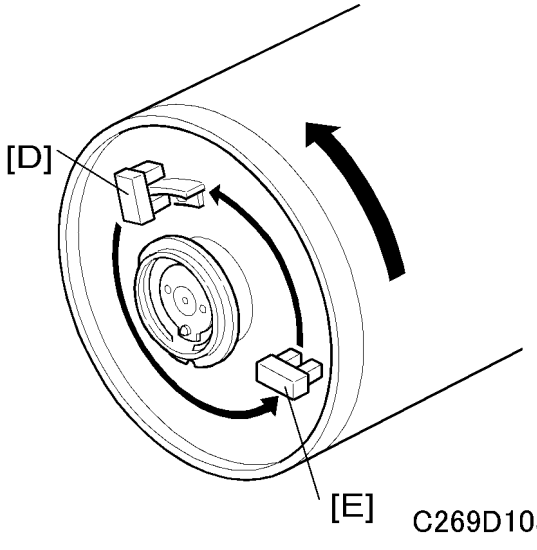

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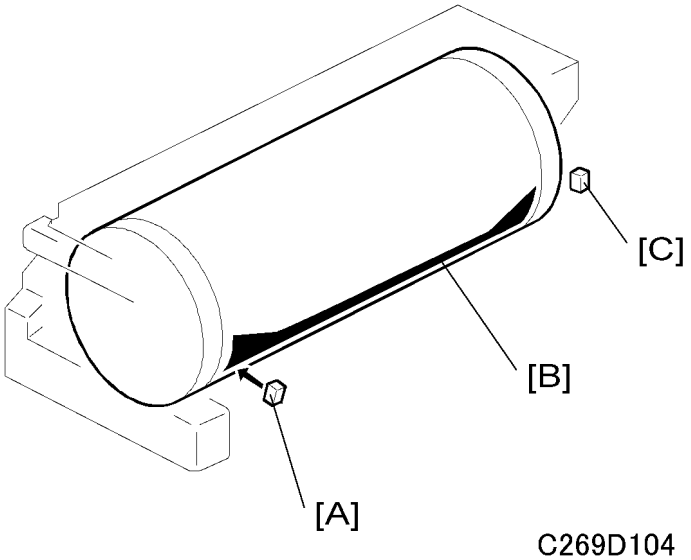
The main motor [A] drives the drum via the timing belt. When the drum is set in the machine, the drum drive pin [B] on the joint disk engages the drum drive gear [C]. This transmits the main motor drive to the drum unit.

The main motor [A] contains an encoder to send pulses to the main motor control board. The CPU monitors the pulses and controls the drum speed and stop positions. The 1st and 2nd drum position sensors [D, E] check the position of the drum. The actuator on the rear drum flange activates these sensors as the drum turns.

There are three drum stop positions: home, master eject, and master making. The CPU starts counting the main motor encoder pulses when these sensors are activated. Certain pulse counts are assigned to each drum stop position. The CPU can stop the drum at the desired positions.

At the home and master making positions, the drum de-actuates the relevant sensor. This ensures that the drum stops in the exact position, even after high-speed rotation. The 1st drum position sensor [D] corresponds to the home position and the 2nd drum position sensor [E] corresponds to the master making position.

Master Detection



The 1st drum master sensor [A] detects a master on the drum.

If a master is on the drum, the black patch [B] is covered and the sensor detects the light reflected from the master. Printing starts when the start key is pressed. If an original has been set, the old master is ejected from the drum before making a new master.

If no master is on the drum, the black patch is exposed. The black patch does not reflect light back to the sensor. The machine will skip the master eject process and immediately begin making a new master.

A similar sensor, the 2nd drum master sensor [C], is located at the other side of the drum. This sensor determines if the master making process correctly wrapped the master around the drum.

The drum starts turning soon after the drum master clamper clamps the leading edge of the master. The 2nd drum master sensor checks for the presence of the master (master clamping error check). If a master is not detected, a clamping error occurred. The master feed stops, the drum returns to the home position, and the machine displays a master feed jam message.

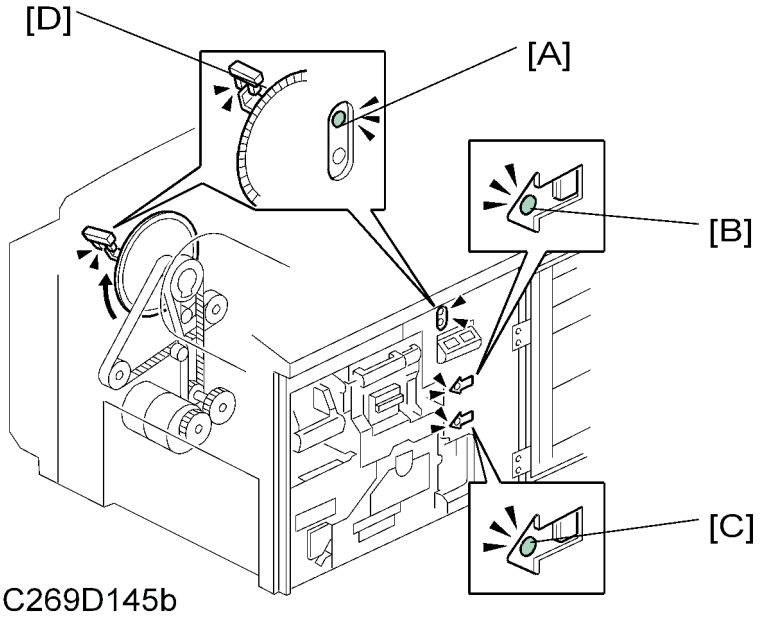
The 1st drum master sensor cannot check for master clamping errors, because the black patch has moved.

Both sensors use the same black patch [B] to detect the master.

Note

- In this model, the black patch on the drum is larger.
- The patch ensures that the master pick-up roller in the master eject roller unit contacts the drum surface evenly at this part of the drum, resulting in even pressure from the roller all across the drum.

Engine Home Position Detection



LED [A] informs the operator when the drum is at the exact home position. The home position is when either the LED is green, or not turned on. At this time, the whole of the print engine is at home position. When the red LED is on, the engine is not at home position.

When LED [A] is green, the drum and duplex unit still cannot be removed.

To remove the drum, if the machine is not in security mode, the user must press the button next to LED [B]. Then a solenoid releases the drum, and LED [B] turns on (green). Then the drum can be pulled out.

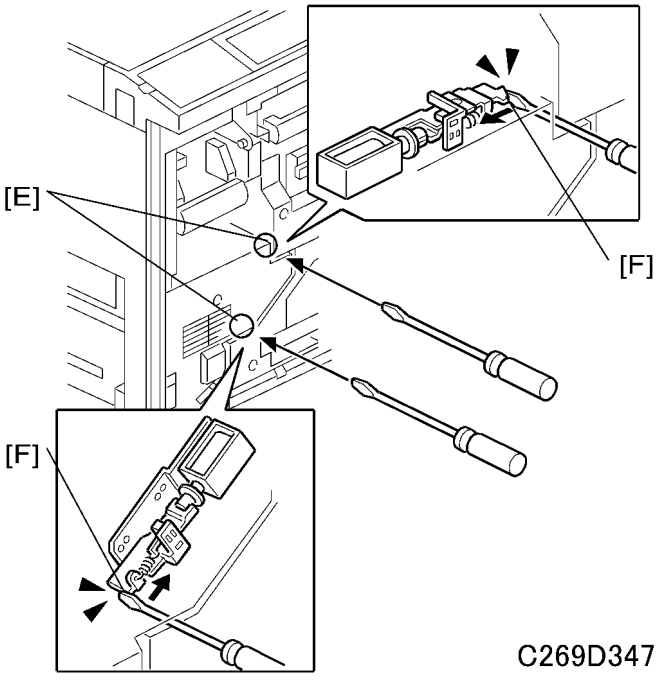
To remove the duplex unit (this can be done even in security mode), the user must press the button next to LED [C]. Then a different solenoid releases the duplex unit, and LED [C] turns on (green). Also, LED [A] turns off, to tell the user that the drum cannot be removed (see below). Then the duplex unit can be pulled out.

The 3rd drum home position sensor [D] detects when the print engine is at home position.

Note

- If the red LED below LED [A] is lit, close the front door. The green LED [A] will turn on soon, because the machine always initializes itself after the front door is opened/closed..
- The drum cannot be pulled out when the security mode is turned on. When the security mode is on, the drum is not at home position so the red LED is on. Cancel the security mode before you open the front door, if you want to move the drum to the home position.

The user cannot pull out the drum and duplex units at the same time. In other words, LEDs [B] and [C] cannot light at the same time (the diagram shows them both lit, but this should never happen).

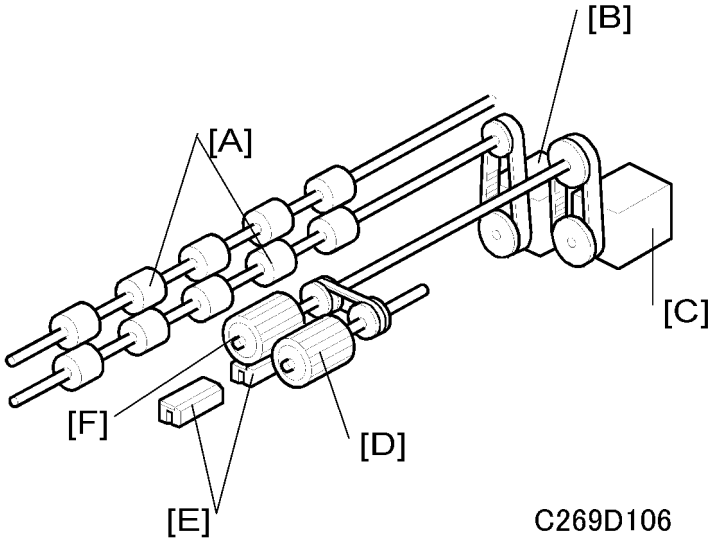


When the technician must pull out the drum and duplex units at the same time for service purposes, insert a screwdriver into [E] and push the solenoid plungers [F] to unlock.

- The upper of the two solenoids unlocks the drum.
- The lower of the two solenoids unlocks the duplex unit.

Paper Feed

Overview



Feed and Separation

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

An independent stepper motor (the paper feed motor [C]) drives the paper feed roller and paper pick-up roller. This allows more precise control than the usual main motor/magnetic clutch system.

Feed/Separation Pressure

The strength of the paper feed roller and the friction pad pressure against the paper depend on the paper type selected at the operation panel. Each component has a separate dc motor to adjust the pressure. The operator is free from complicated adjustments for paper feed and separation pressures.

There are two friction pads [E]. The machine automatically selects the correct one for the paper type that is set by the user.

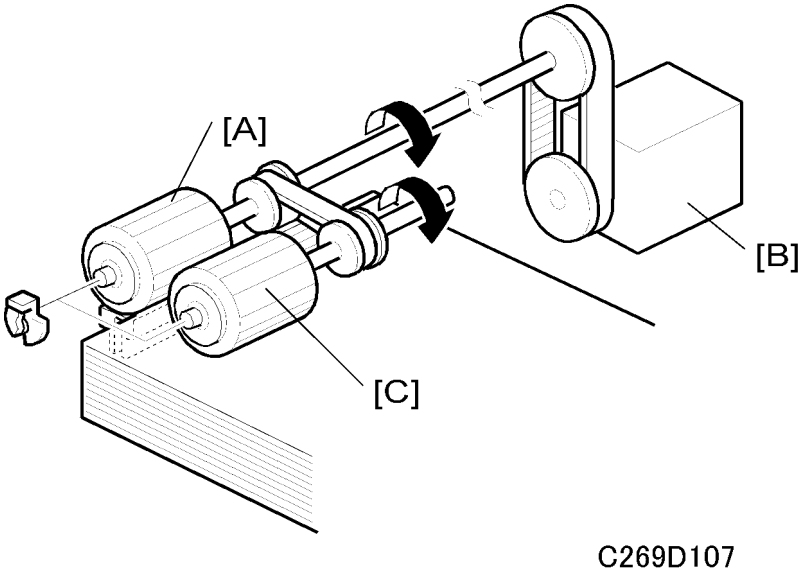
Registration

Also, an independent stepper motor (the registration motor [B]) controls the registration roller. The registration roller synchronizes paper feed timing with the image on the drum. The registration roller starts rotating after the paper has come in contact with the rollers and has been aligned.

Paper feed timing around the registration roller is monitored by two different photo-sensors. One is located before the registration roller, and the other is after the registration roller. These sensors are also essential for paper feed control.

Paper Feed Mechanism

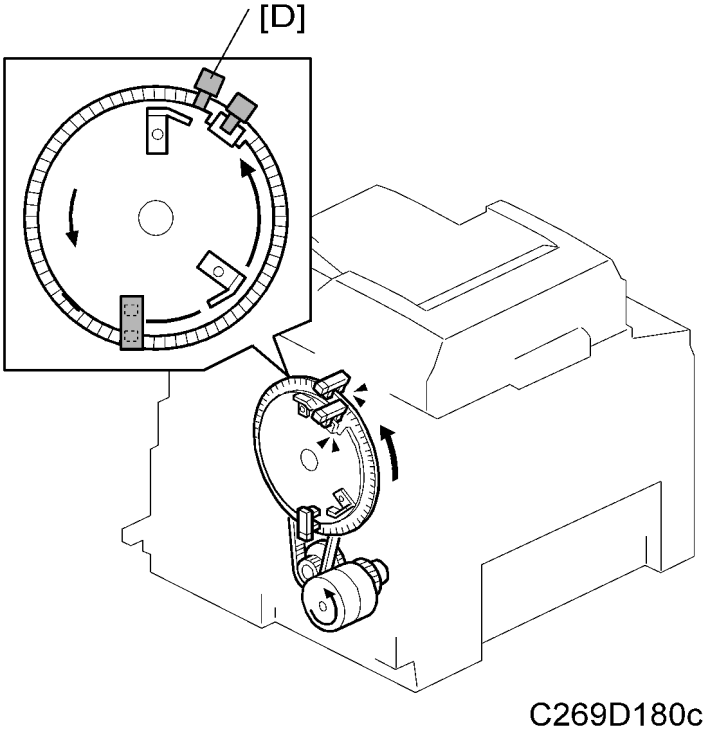
Mechanism



C269D107

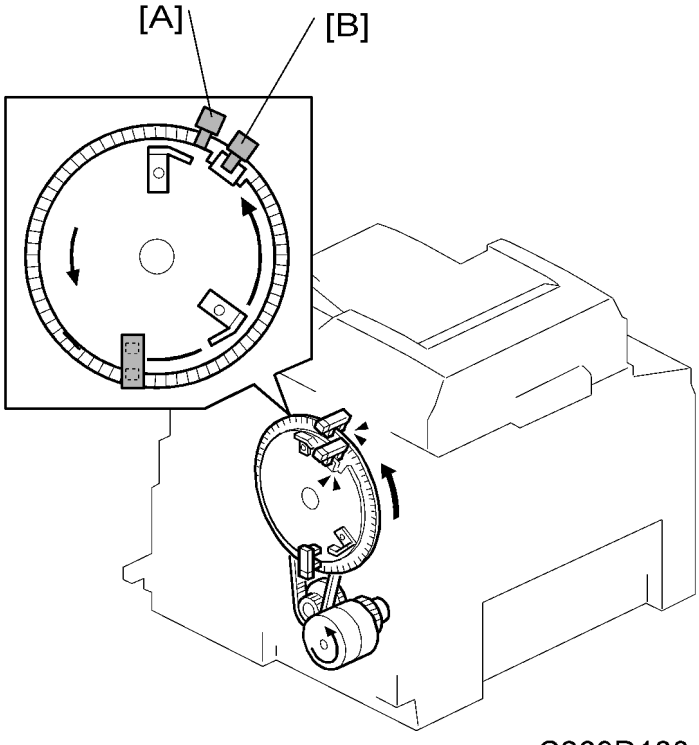
The paper feed motor [B] drives the paper pick-up roller [C] and the paper feed roller [A]. There is a one-way clutch in the paper feed roller. When the roller stops and paper is fed by the registration rollers, the one-way clutch ensures that the paper feed roller does not resist the paper feed.

Paper Feed Motor Start Timing



The paper feed motor will start at a fixed time after the main drive encoder sensor [D] detects that the engine has turned 168 degrees from the home position.

Main Drive Encoder

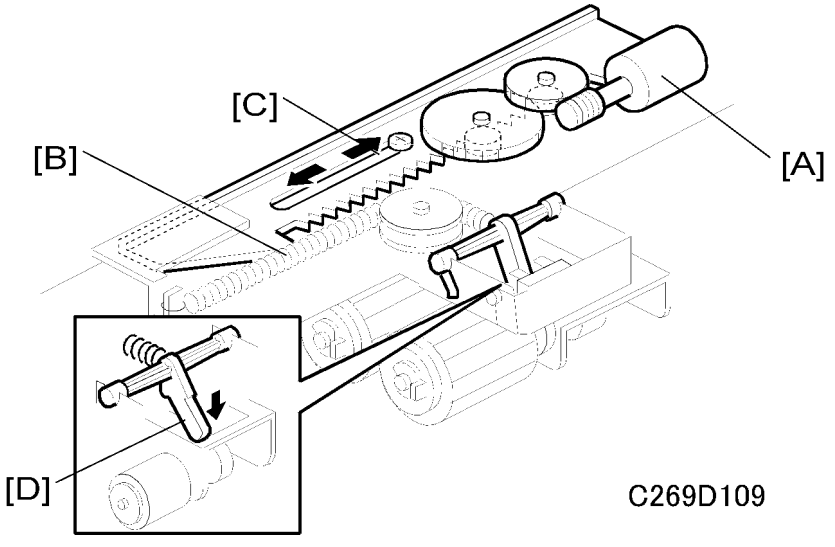


The encoder sensor [A] monitors the rotation of the main drive encoder wheel. It detects the speed of rotation of the drum, and is used for timing the paper feed and registration motors.

The 3rd drum position sensor [B] detects when the drum is at home position (when the notch in the encoder wheel enters the sensor).

Paper Feed/Separation Pressure Adjustment Mechanism

Paper Feed Pressure

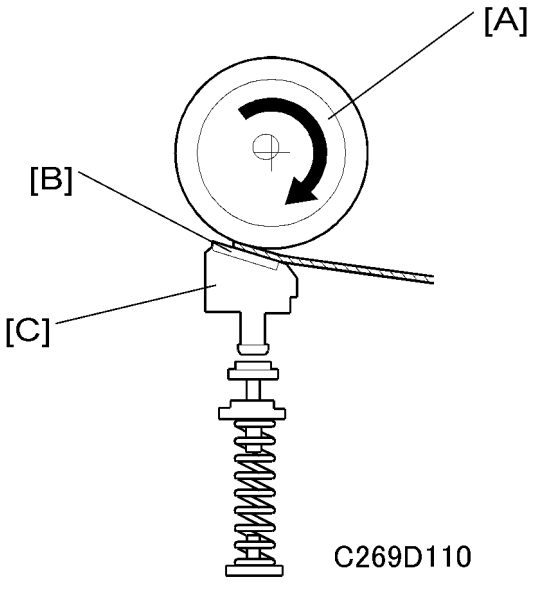


The feed pressure motor [A] rotates, pulling or releasing the spring [B] through the rack [C]. The lever [D] moves up or down depending on the tension of the spring. If the spring is pulled, the lever moves upwards, reducing the paper feed pressure.

The position of the rack [C] is detected by the feed pressure detection board (not shown).

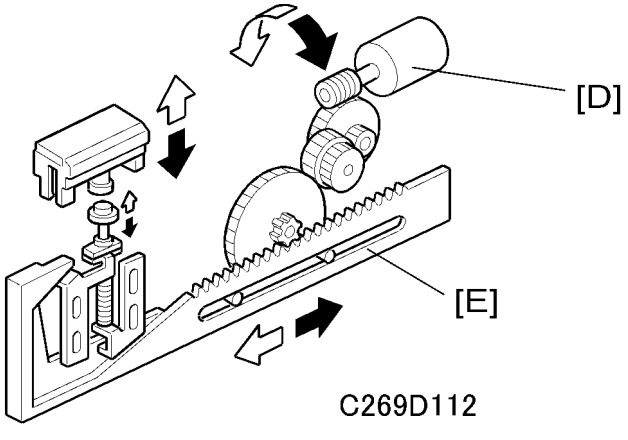
Paper Separation Pressure

The paper separation pressure, the paper feed pressure and the friction pad that is used for separation depends on the paper type selected at the operation panel. When the paper type is changed, the three motors automatically turn to change the pressure settings and friction pad block.



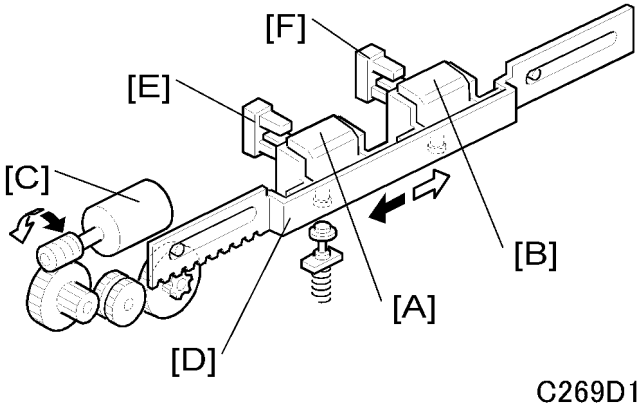
The top sheet of the paper is separated from the paper stack by the friction between the paper feed roller [A] and the friction pad [B], and fed to the registration roller.

The friction pad [B] is mounted on a block [C], and spring pressure is applied to this block. As explained later, the spring pressure is changed by a dc motor to adjust the paper separation pressure.



The direction of paper separation pressure motor [D] rotation depends on the signal from the CPU. The rack [E] moves from side to side, moving the friction pad base up or down. This changes the spring pressure against the friction pad block.

Friction Pad Exchange Mechanism



C269D111

The friction pad ([A] or [B]) that is used depends on the paper type setting, and the settings of SP 6-011.

To use the normal pad [A], the friction pad shift motor [C] drives the rack [D]. When friction pad position sensors 1 [E] and 2 [F] are both actuated, the friction pad shift motor stops.

To use the custom pad [B], the friction pad shift motor [C] drives the rack [D]. When only friction pad position sensor 1 is actuated, the friction pad shift motor stops.

Paper Types

The user can select the paper type before starting the job. The feed and separation pressures used for the job will depend on the selected paper type (the machine automatically adjusts these pressures to suit the selected paper type).

The possible paper type settings are standard, thick, thin and special. Two additional settings for paper types can be customized as 'user 1' and 'user 2'.

For the 'user 1' and 'user 2' paper types, the user can choose from six settings using a user tool (System Settings – Mode Setting – Paper Type: User). The user tool settings give the machine a rough idea of what type of paper the user is using as types User 1 and User 2. The six user tool settings are as follows.

- Standard, no feed (Standard paper type, non feed likely)
- Standard, double feed (Standard paper type, double feed likely)
- Thick, no feed (Thick paper type, non feed likely)
- Thick, double feed (Thick paper type, double feed likely)
- Thick, medium (Thick paper type, with intermediate chances of double and non-feed)
- Thin, very thin (Thin paper type, non feed likely)

Pressure Settings for Each Paper Type

For each of these paper types (standard, thick, thin, special, user 1, user 2), the user has two settings: 'Misfeed' and 'Double Feed'. Each of these two settings has three possible values: Standard, Sometimes, Frequently (the user selects one of these depending on how the machine is performing).

The pressures for each setting can be adjusted with SP mode (SP 6-009 'Misfeed – Paper Feed Pressure' and SP6-010 'Double feed – Separation Press').

- SP 6-009 adjusts the feed pressures that are applied for each of the user's three possible 'misfeed' settings for each paper type.
- SP 6-010 adjusts the separation pressures that are applied for each of the user's three possible 'double feed' settings for each paper type.

Other Factors affected by the selected Paper Type

The paper type selected for a job also affects the paper separation pressure and paper delivery wing position.

- SP6-011: Friction pad type for standard, special, thick, thin, user 1, and user 2 type paper
- SP6-013: Paper delivery wing position for standard, special, thick, thin, user 1, and user 2 type paper

Default Settings

The following table shows the default settings for each paper type. For the pressure, the higher the SP mode value, the higher the pressure.

	Feed pressure: Jam Occurrence			Feed pressure: Jam Occurrence			Wing Guides
Paper Type	Very few	Some-times	Frequ-ently	Very few	Some-times	Frequ-ently	
Standard	3	5	6	3	5	6	Up
Thick	4	5	6	1	2	4	Down
Special	3	4	5	1	2	4	Down
Thin	1	3	5	2	4	6	Up
User 1	5	6	6	2	4	6	Up
User 2	5	6	6	2	4	6	Up

For details about the wing guides, see 'Paper Delivery'.

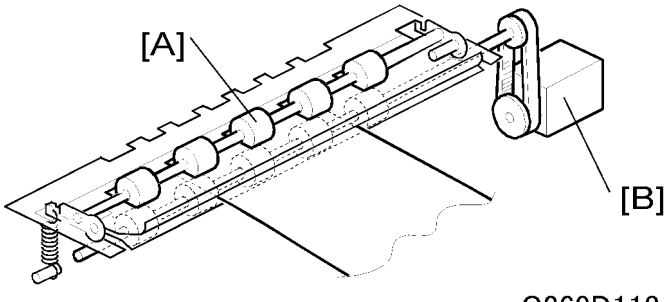
When the temperature is 19 degrees C or lower (detected by the drum thermistor), the value of the pressure is automatically increased by 1 for standard paper and thick paper. This is done for both feed pressure and separation pressure. For this feature to operate, the following SPs must be set to 'ON' (the default is 'ON').

- SP6-010-19: Normal Paper - Low Temperature Mode

- SP6-010-20: Thick Paper - Low Temperature Mode

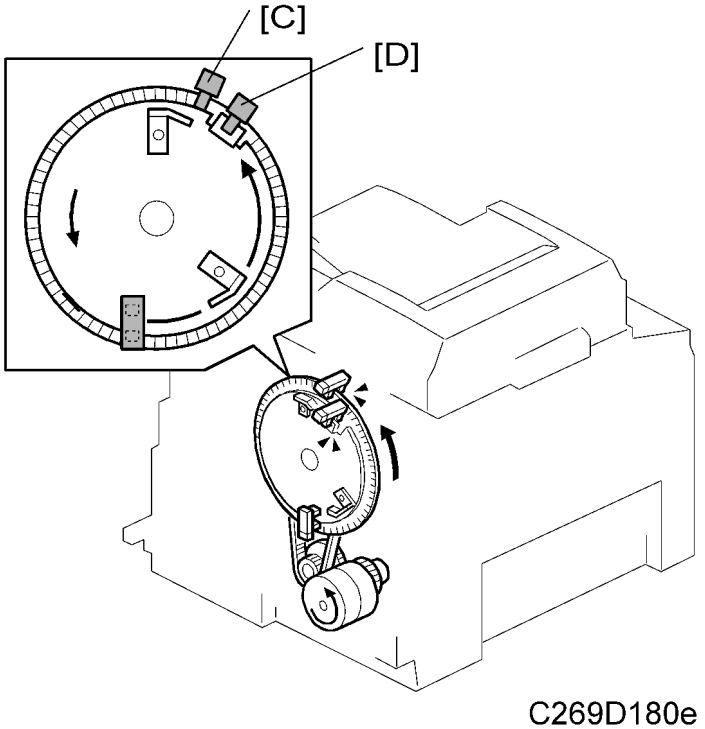
Paper Registration Mechanism

Registration Roller Drive



C269D113

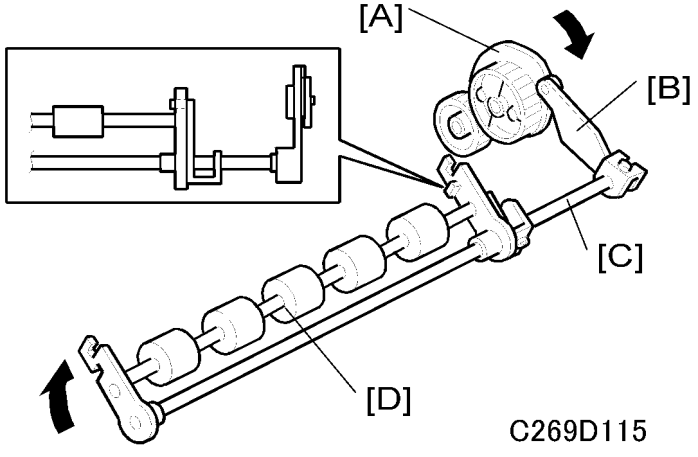
The lower registration roller [A] is driven by the registration motor [B] (stepper motor). When the paper comes into contact with the rollers, the motor remains stopped to create a buckle in the paper to obtain precise paper registration and to prevent paper skew.



C269D180e

The Registration Motor turns on a short time after the main drive encoder [C] is 300 degrees from engine home position (engine home position is detected by the 3rd drum position sensor [D]).

Registration Roller Up/Down Mechanism

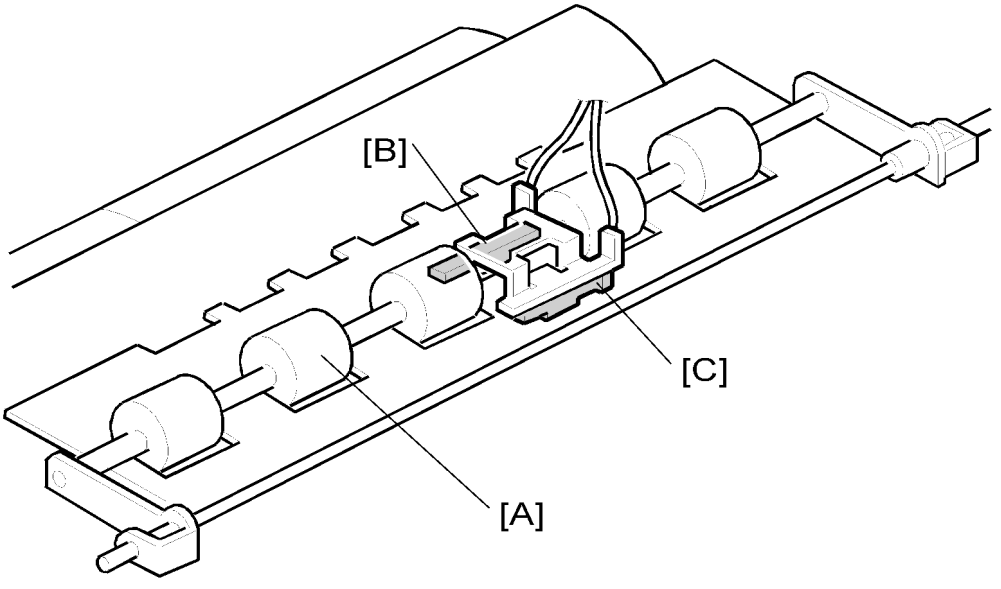


After the paper is between the drum and the press roller, the upper registration roller is released from the lower registration roller. This is to prevent interference from the registration rollers while the paper is being fed by the drum and the press roller.

When the high point of the cam [A] on the drum drive gear reaches the cam follower [B] (a bearing), the shaft [C] rotates clockwise (as seen from the operation side) to release the upper registration roller [D] from the lower registration roller.

Paper Feed Control Mechanism

Registration Roller



C269D116

The paper feed timing around the registration roller [A] is monitored by two different photo-sensors. The first is the paper registration sensor [C], which is located before the registration roller. The second sensor is the paper feed timing sensor [B], which is located after the registration roller.

The paper registration sensor [C] detects the paper arriving at the registration roller. The paper feed motor start timing is determined by this sensor. When the paper comes into contact with the rollers, the motor remains stopped to create a buckle in the paper to obtain precise paper registration and to prevent paper skew. The motor starts turning a pre-determined period after the sensor is activated by the paper. The sensor is also used to detect jams.

Paper Slip Correction

The paper feed timing sensor [B] is also used to detect paper jams. It is also used to compensate for delays in paper feed caused by slippage at the registration roller.

The CPU monitors the paper feed timing sensor after the registration motor starts turning. If the sensor turns on late, the CPU determines that there has been slippage at the registration roller. Depending on the size of the delay, the registration motor speeds up to recover the delay.

Feed Speed Correction

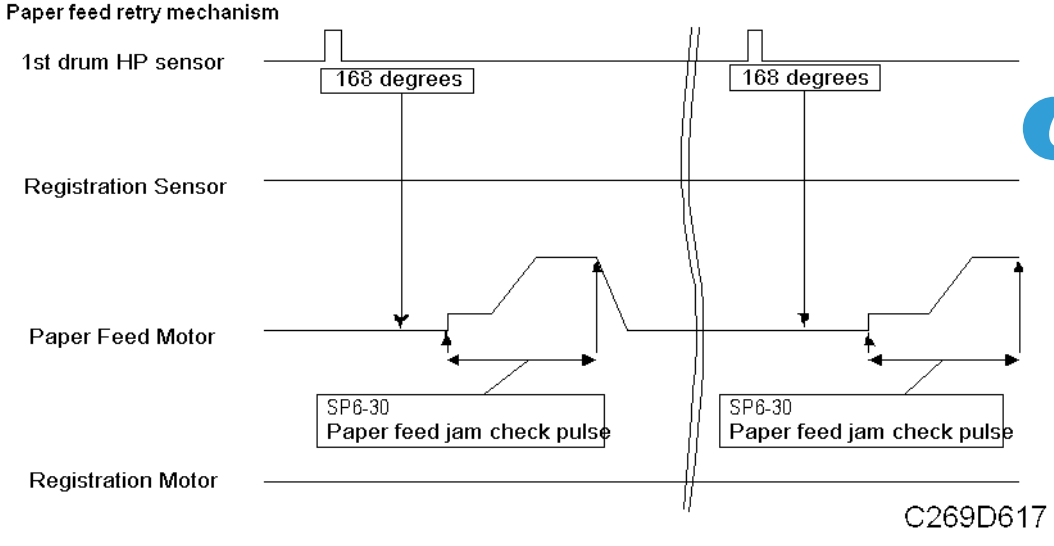
The rotation speed of the drum depends on the print speed. The paper is fed in at a higher speed than the drum rotation speed. When paper reaches the drum, the paper feed speed will be same as drum rotation speed.

Paper Feed Retry Mechanism

When paper is misfed at the paper feed table and does not go into the machine (the registration sensor does not detect paper), the drum continues to turn without pressure and without paper.

Then, when the main drive encoder is at 168 degrees from the home position, the paper feed motor starts to feed the paper again.

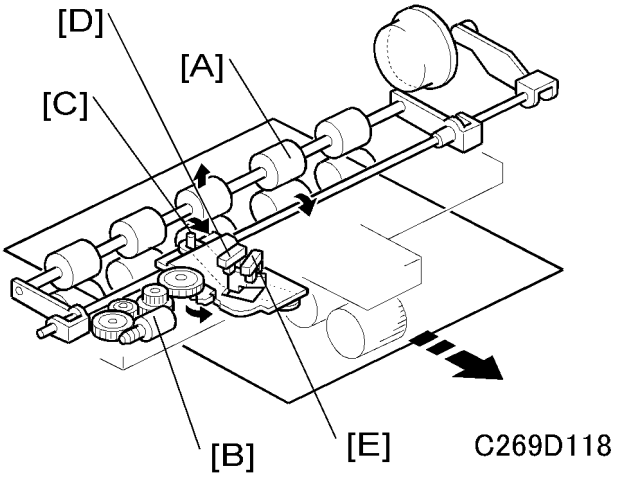
But, if the registration sensor again does not turn on, 'A jam' will display.



Note

- This mechanism works only during printing. It does not work for the trial print.

Registration Roller Pressure Release Mechanism



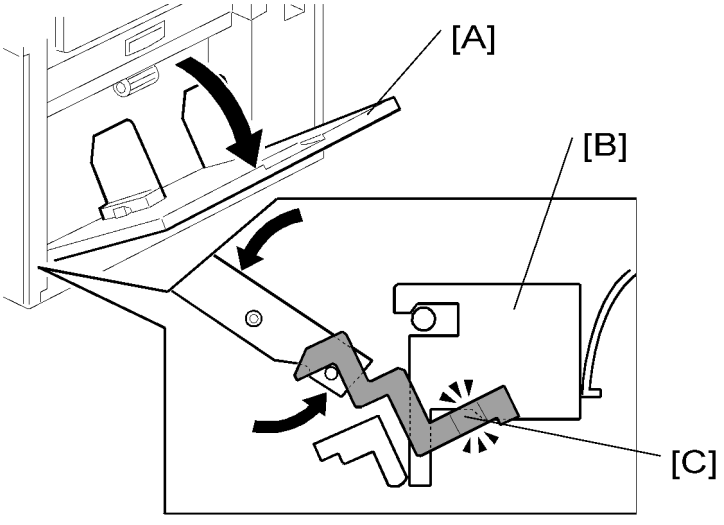
When a jam occurs at the paper registration roller [A], the pressure of the registration roller will be released so that the jammed paper can be removed easily.

The registration press motor [B] turns and pushes down the pin [C]. This releases the pressure of the registration roller.

The registration roller press sensor [D] detects when the registration roller is in the correct position for paper feed.

The registration roller release sensor [E] detects when the registration roller is in the correct position for jam removal.

Paper Table Angle Adjustment Mechanism

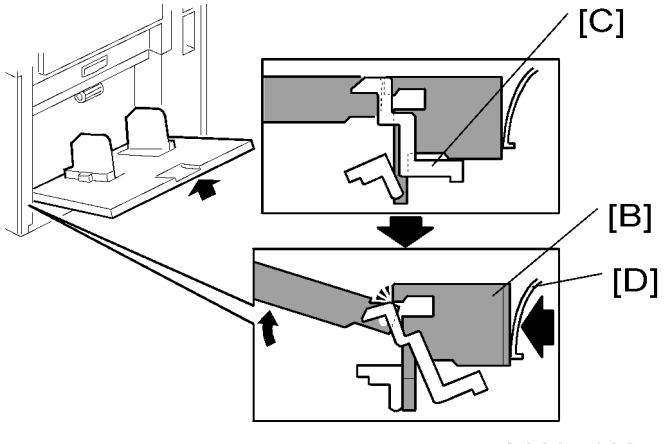


C269D121

There are two paper table open positions: level, and 15 degrees upward slant. Normally the paper table is set at the level position.

The 15 degrees upward slant position is used to feed special types of paper, such as envelopes, which are difficult to feed at the level position. In the slanted position, the tray capacity is reduced.

As the paper table [A] is lowered from the closed position, the pin on the lever [C] engages the cutout in the lock bracket [B]. Then, the paper table stops at the level position.

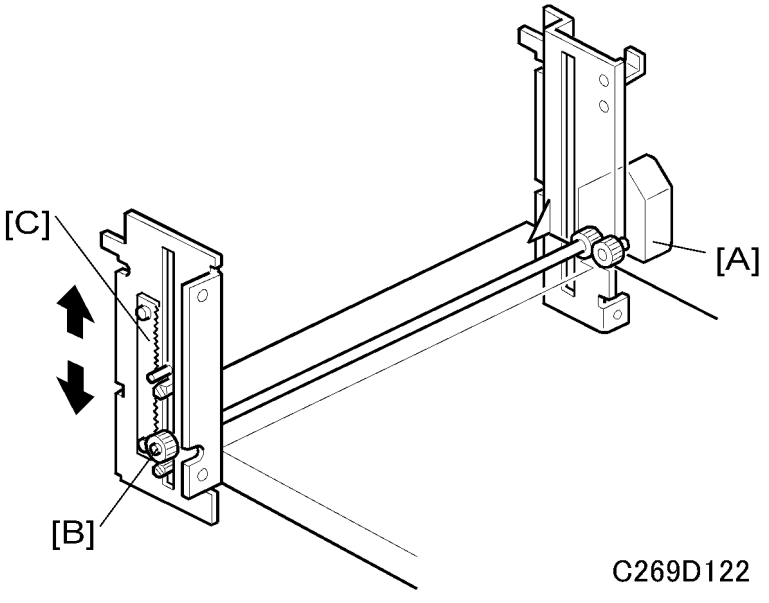


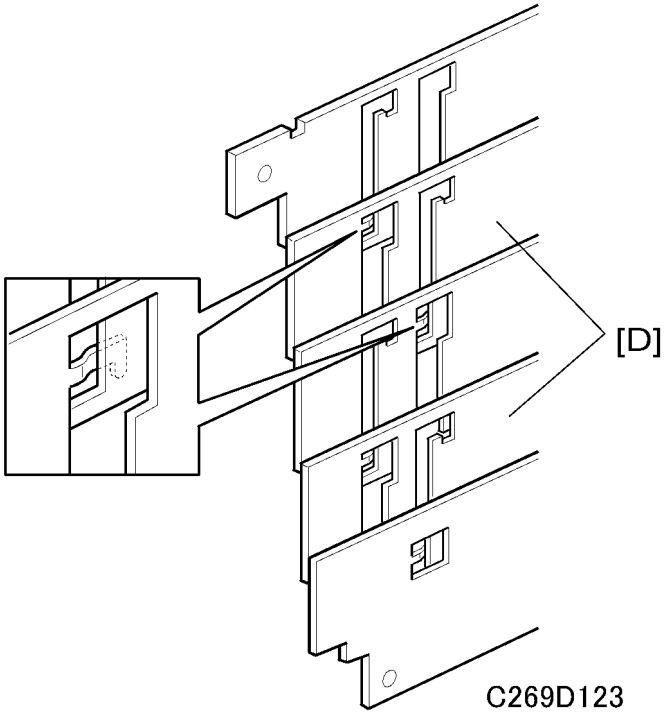
C269D120

When the paper table is slightly raised from the level position, the spring plate [D] pushes the lock bracket [B], and the pin on the lever [C] disengages. This stops the table at the 15 degrees upward slant position.

Paper Table Up/Down Mechanism

Paper Table Drive Mechanism





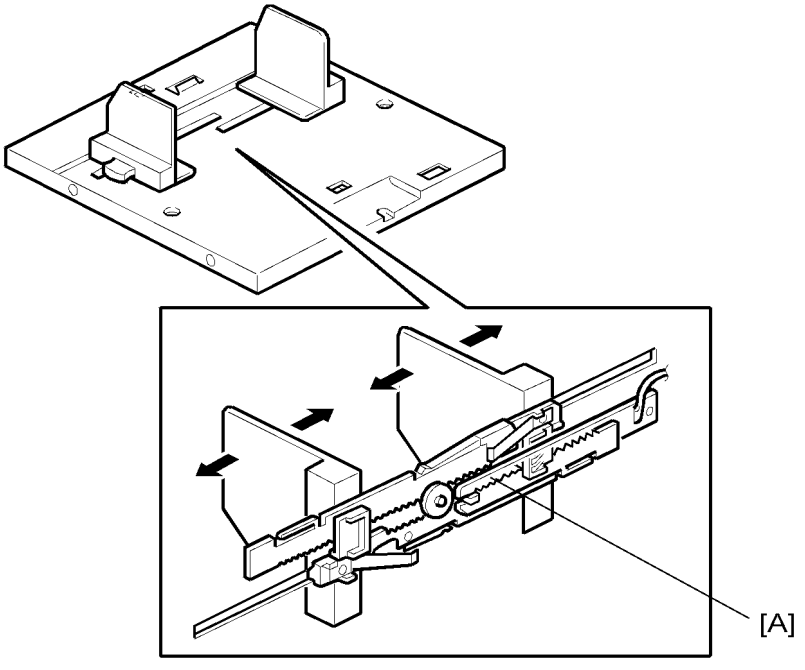
An independent dc motor, the paper table motor [A], drives the paper table. When the motor turns, the pinion [B] turns along the rack [C], moving the paper table up or down.

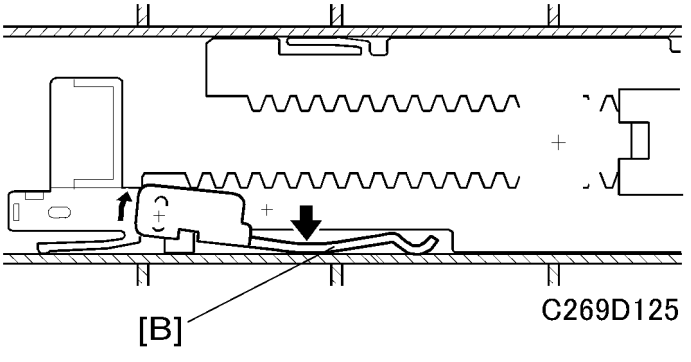
To reduce noise, there is a shutter cover below the table, which is a combination of 5 plates. The shutter closes the opening beneath the paper table when the table is lifted up.

Note

- Although each plate of the shutter looks similar, only the second and fourth plates [D] from the top are the same in shape. The other plates are all different from each other. Be sure to re-assemble in the correct sequence.

Paper Side Fence Mechanism





The left and right side fences move together due to a rack and pinion mechanism.

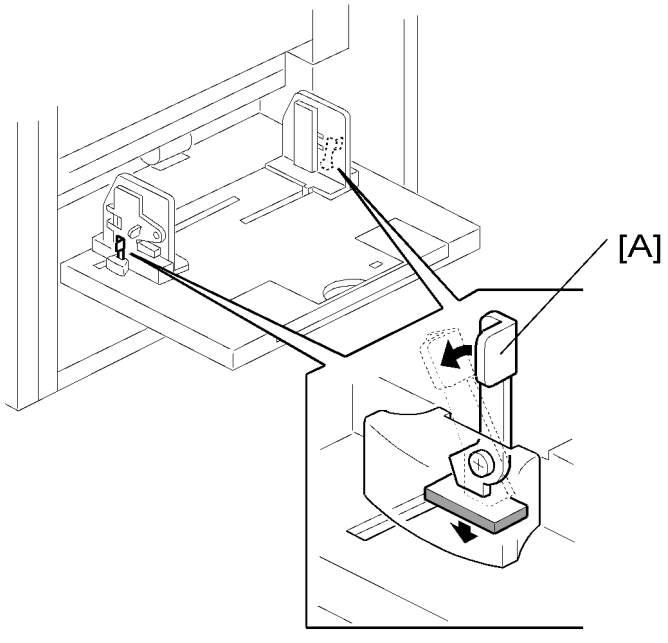
The actuator plate [A] is attached to the rack. This actuates the paper width detection board, to detect the position of the side fences (see Paper Size and Paper End Detection).

The side plate friction pads on the front and rear paper side fences prevent multiple feed. These are especially useful when thin paper is used.

There are two spring plates [B] applying pressure against the racks (one spring plate each for the right and left racks). Normally, there is no pressure applied to the racks. However, during long copy runs, the side

plates may move away from the sides of the stack. By adjusting the position of the spring plates, the side fence pressure can be increased.

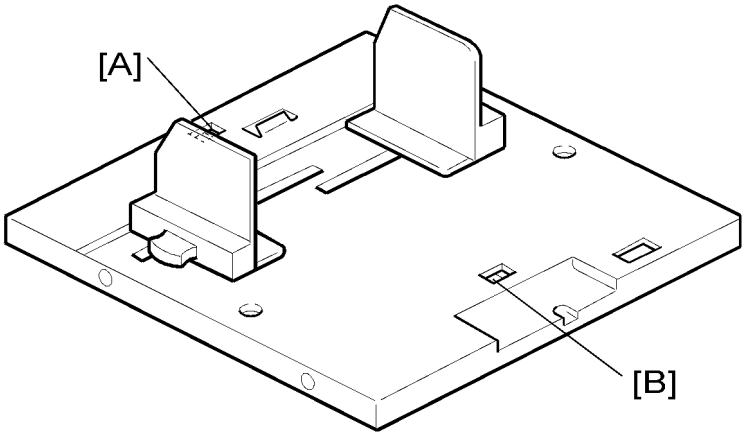
Side Fence Lock Lever



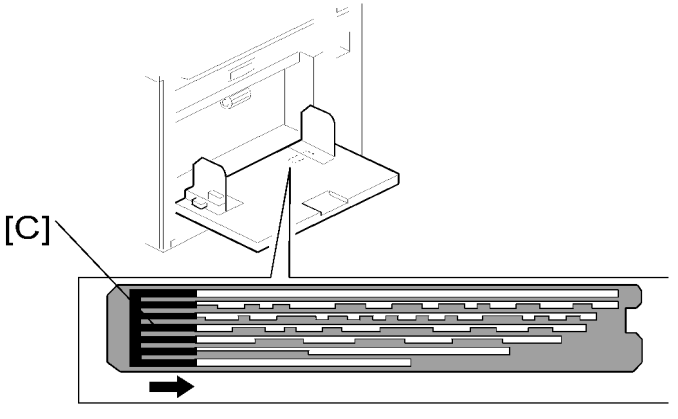
To prevent the side fences from moving during printing, the user can push down the levers [A].

Detection Mechanisms

Paper Size and Paper End Detection



C269D128



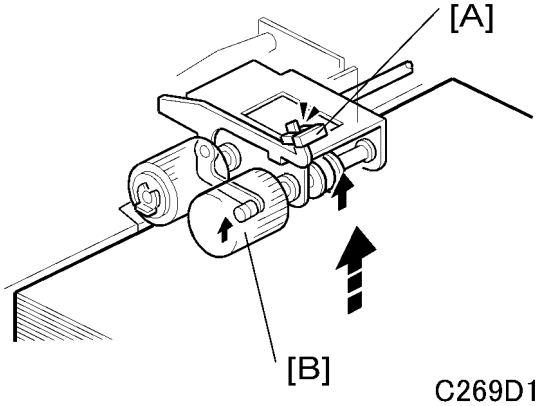
C269D127

When paper is placed on the paper table, the paper end sensor [A], which is a reflective photosensor, is activated.

If B4 sized (or 8 1/2" x 14") paper or larger is set on the paper table, the paper length sensor [B] is activated.

The actuator plate [C] is attached to the rack for the paper side fences. The paper width detection board detects the position of the side fences. The paper size data is sent to the CPU in combination with the status of the paper length sensor.

Table Upper/Lower Limit Detection and Paper Height Control



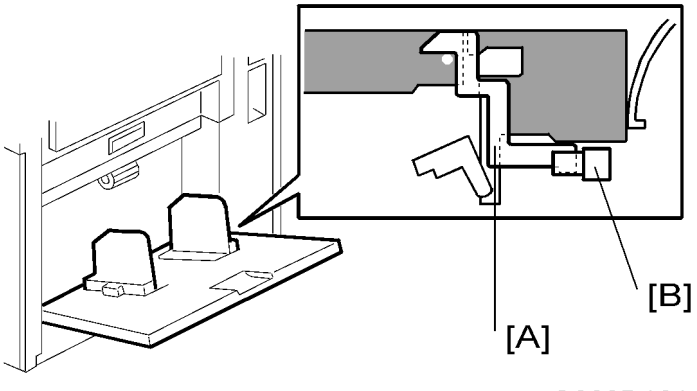
C269D130

When the paper table moves up, the top of the paper stack contacts the pick-up roller [B], lifting it up. Then, when the paper height sensor [A] is actuated, the paper table stops.

During a printing run, sheets are fed from the stack, and the pick-up roller lowers. When the paper height sensor 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 paper table lower limit sensor (not shown), which is located beside the paper table motor.

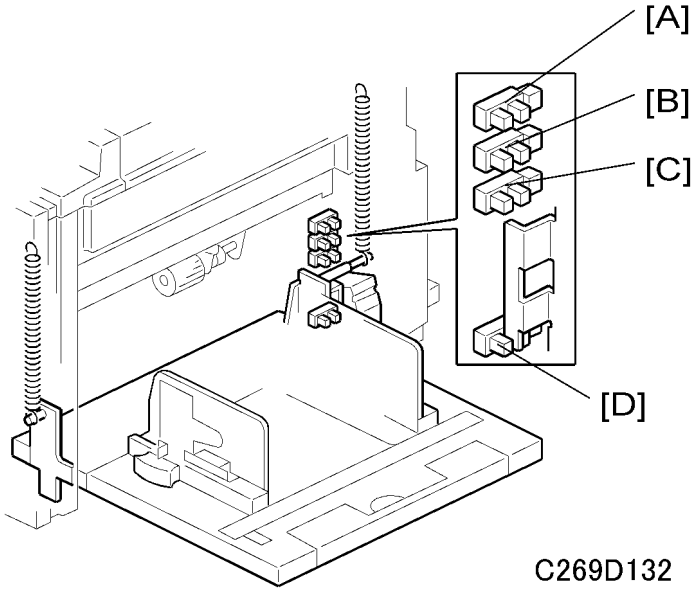
Paper Table Open Detection



C269D131

When the paper table is open, the lever [A] activates the paper table set sensor [B]. If the paper table remains closed and the sensor is not activated, guidance will be displayed on the operation panel.

Paper Amount Detection



The combination of on/off signals from the remaining paper sensors 1, 2, and 3 ([A] [B] [C]) and the paper table lower limit sensor [D] detect the amount of paper on the paper feed table.

The machine checks the amount of paper when the paper feed table moves up and the paper height sensor turns on.

There are 5 levels (0, 25, 50, 75, 100%), and the current level can be checked with a network utility.

Amount	Height	Amount 1 [A]	Amount 2 [B]	Amount 3 [C]	Lower limit [D]
25%	ON	ON	OFF/ON*1	OFF/ON*1	OFF
50%	ON	OFF	ON	OFF/ON*1	OFF
75%	ON	OFF	OFF	ON	OFF
100%	ON	OFF	OFF	OFF	OFF/ON*1

*1: Either OFF or ON

Note

- The paper end sensor detects when the level gets to 0%.

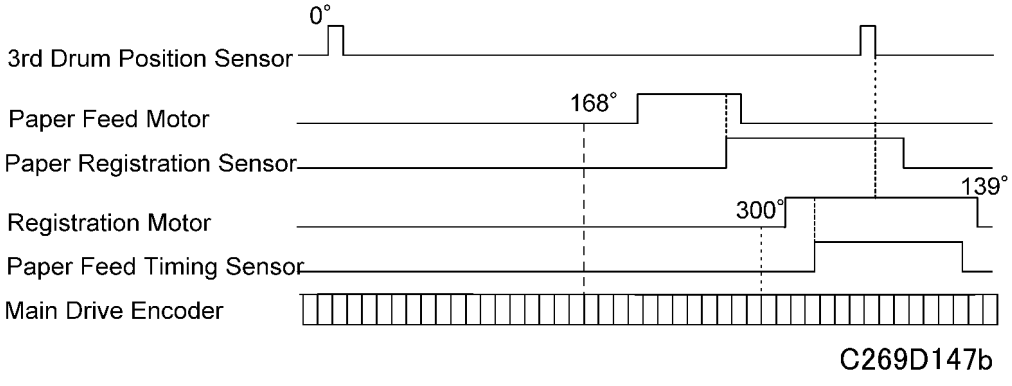
The data from the remaining paper sensors is stored when the paper feed tray goes down after printing, and the machine continues to display the correct amount of remaining paper.

But, in the following situations, the machine does not detect the paper amount. Because of this, the machine displays a temporary amount until the next detection.

- When paper is taken off or added to the paper feed table.
- When power turns on or after recovery from energy saver mode.

Paper Feed Timing

Timing



The paper feed motor will start to rotate at a short time after the drum rotates 168 degrees from the home position (the 168-degree position is detected by the main drive encoder sensor).

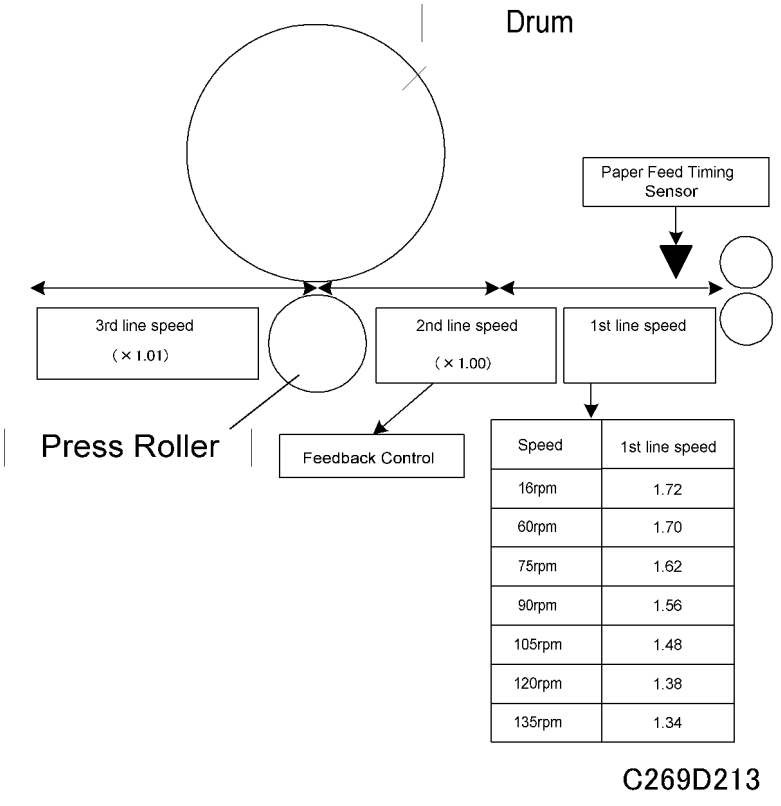
The paper feed motor will turn off a short time after the paper registration sensor turns on. This ensures that the paper is buckled sufficiently at the registration roller, to prevent skew.

The Registration Motor turns on a short time after the main drive encoder is 300 degrees from engine home position (engine home position is detected by the 3rd drum position sensor)

The Paper Feed Timing Sensor turns on after the Registration Motor turns on, and the machine starts counting the pulses of the registration motor.

The registration motor stops at 139 degrees after the 3rd drum position sensor detected home position.

Speed Control



Speed	1st line speed
16rpm	1.72
60rpm	1.70
75rpm	1.62
90rpm	1.56
105rpm	1.48
120rpm	1.38
135rpm	1.34

From the feed roller to the registration roller, paper is always fed at the same speed (maximum speed 6). If the printing speed is changed manually, the drum rotation speed is changed but the feed speed from the feed motor remains the same.

Then, the drum and registration roller rotation must be timed so that the image on the master on the drum meets the correct part of the paper at the nip between the drum and press roller.

To do this, first the registration roller feeds paper faster than the drum rotation by a set factor as shown in the above diagram. For example, if the print speed is 90, then the registration roller turns 1.56 times as quickly as the drum. This is the '1st line speed' as shown above, and it is different for each print speed.

When the registration roller starts to turn at the 1st line speed, the machine starts to count the pulses of the registration motor. Also, the machine counts the number of main drive encoder pulses since drum home position (since the 3rd drum position sensor turned on), When these two numbers are the same, the registration roller speed is reduced to the same speed as the drum rotation. This is the '2nd line speed'.

During this phase, the machine detects the speed of drum rotation by monitoring the main drive encoder, and the machine adjusts the speed of the registration motor by feedback control, to make sure that the registration rollers turn at the same speed as the drum.

The combination of 1st line speed and 2nd line speed are designed for each print speed so that the leading edge of the image arrives at the nip between drum and press roller at the correct time.

After the leading edge of the paper reaches the nip between the drum and the press roller, the machine uses the main drive encoder to control the registration rollers at a speed that is 1.01 times as fast as the drum (3rd line speed).

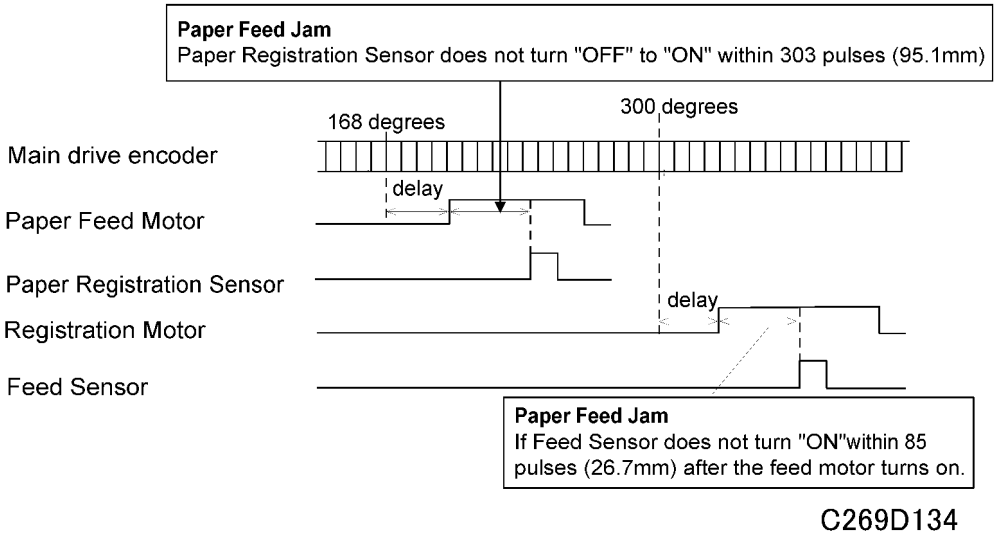
Main Drive Speed Reduction for the Final Page of a Duplex Job

The main drive slows its rotation after printing the back page on the last sheet and before starting to print the front page. This is because incorrect paper registration occurs if paper is fed at high speed from the duplex unit, if the press roller does not slow down when printing the last front page. So for the last sheet of paper, printing is a little slower.

The amount of time needed to slow the drum rotation depends on the printing speed.

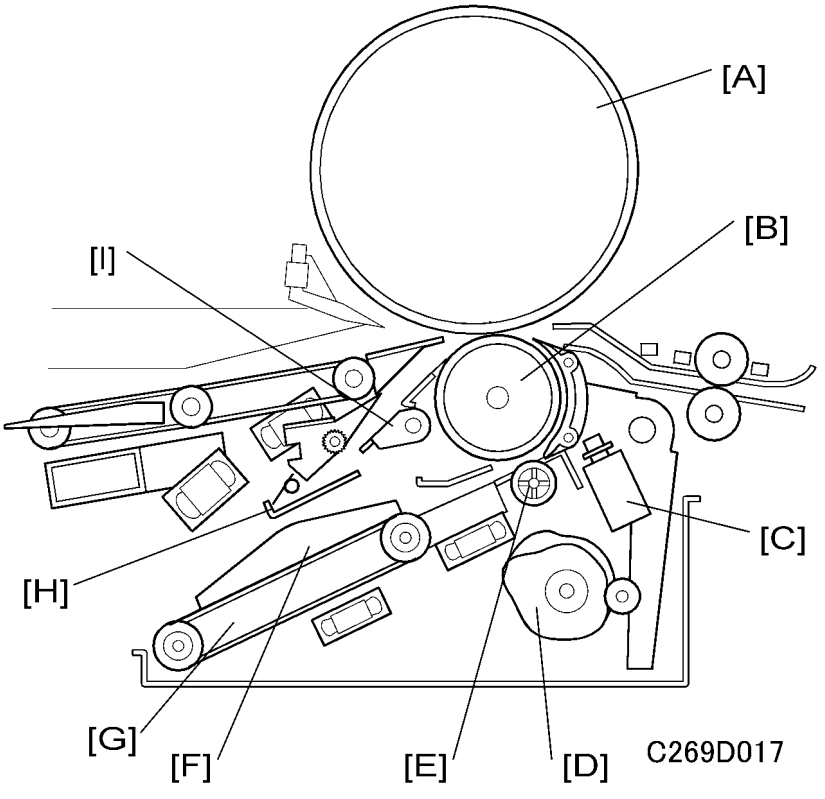
Printing Speed	Rotation time
120 ppm	3.0 seconds
105 ppm	2.4 seconds
90 ppm	1.8 seconds
75 ppm	0.9 seconds

Paper feed jam (A jam)



Printing and Duplex

Layout

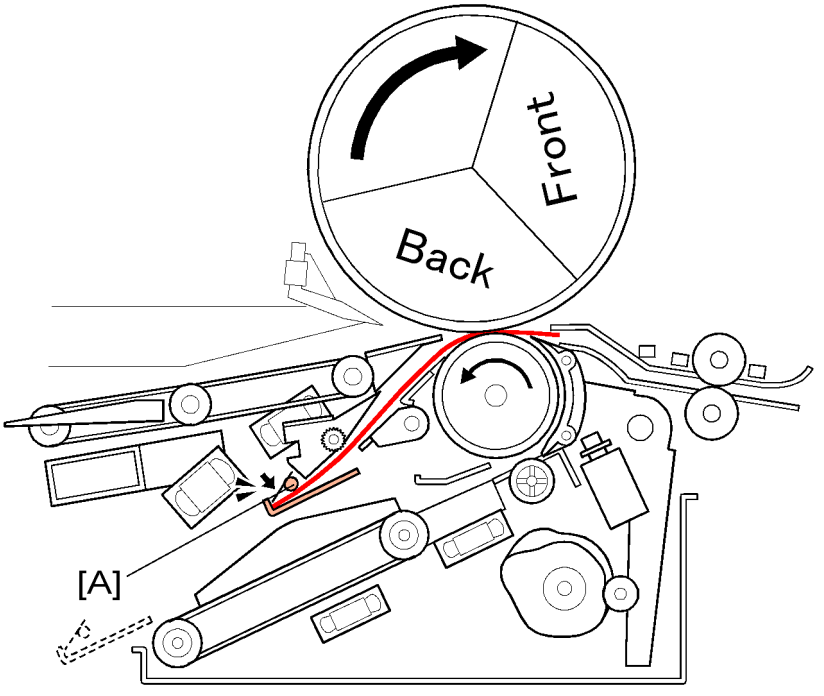


[A]: Drum	[F]: Duplex feed unit paper guides
[B]: Press roller	[G]: Duplex feed unit
[C]: Duplex feed roller solenoid	[H]: Duplex clamper
[D]: Print pressure cam	[I]: Paper drop guide
[E]: Duplex feed roller	

Configuration

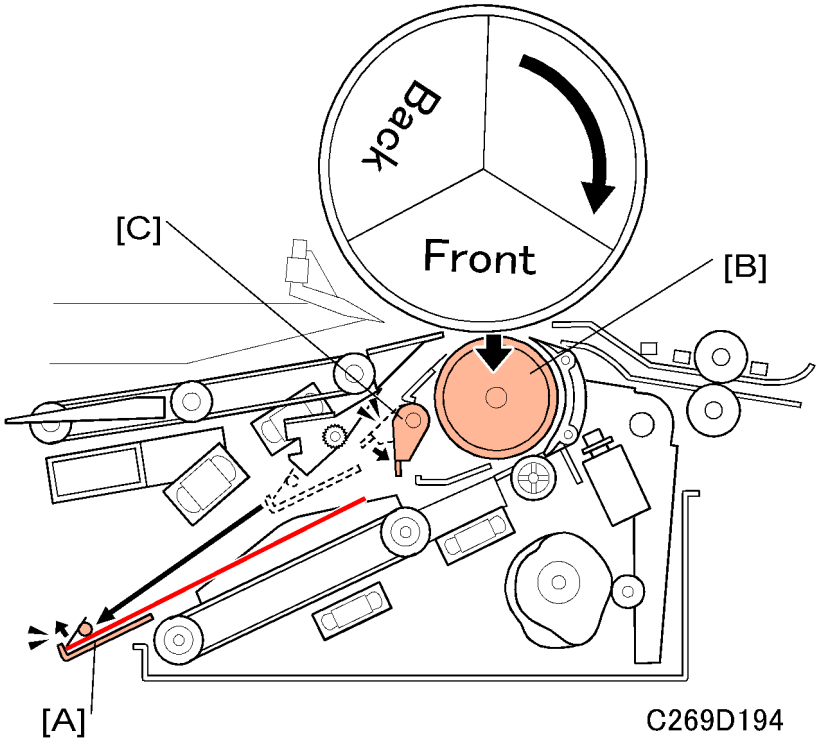
Duplex Printing	
Press roller	• Reference value from Ink roller is 1.0mm. • Size: 69mm × 300mm (diameter × length). • Coated with glass beads to reduce the transfer of ink from the paper when printing in duplex mode.
Duplex Clamper	• Paper leading edge clamping and transport. • The clamp holds 8 ±1.5mm of paper at the paper edge.
Duplex Transport Unit	• Transportation uses two flat belts. • The amount of movement of the paper guide plate depends on the paper size. • The unit contains four blower fans.
Drive and Print Pressure Release	• Print pressure uses a pair of springs (one at each end) and an adjustable spring at the center of the unit. • The print pressure is adjusted by compressing the variable spring at the center. • The timing for application of print pressure has three patterns (the pattern that is used depends on the type of printing, or the side of the page that is being printed; details are explained later). To change the pattern, the machine uses the print pressure shift cam.

Paper Path

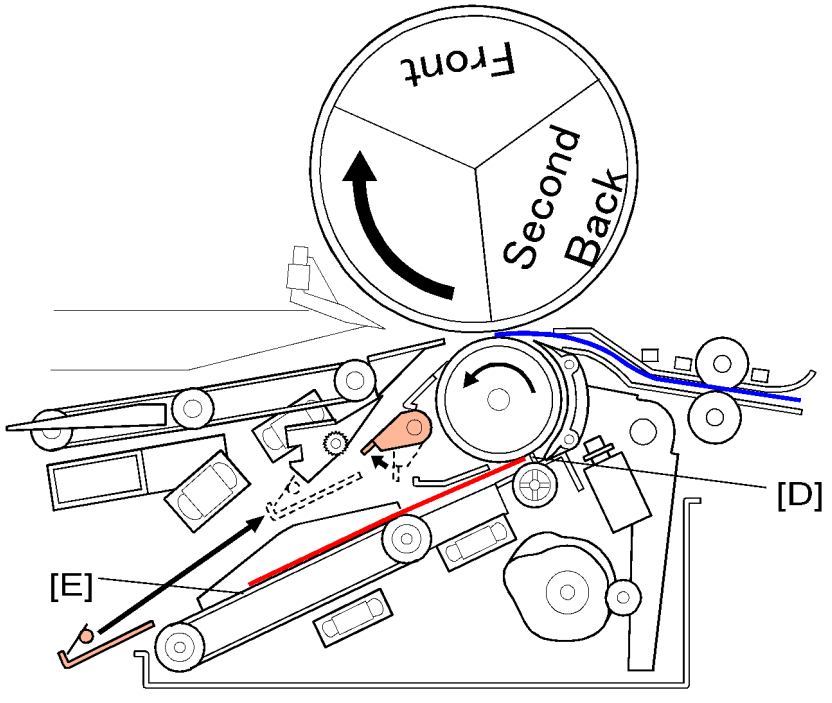


C269D193

1. The paper is fed from the paper feed table. The back side is printed first. Then, the duplex clamper [A] clamps the leading edge of the paper.

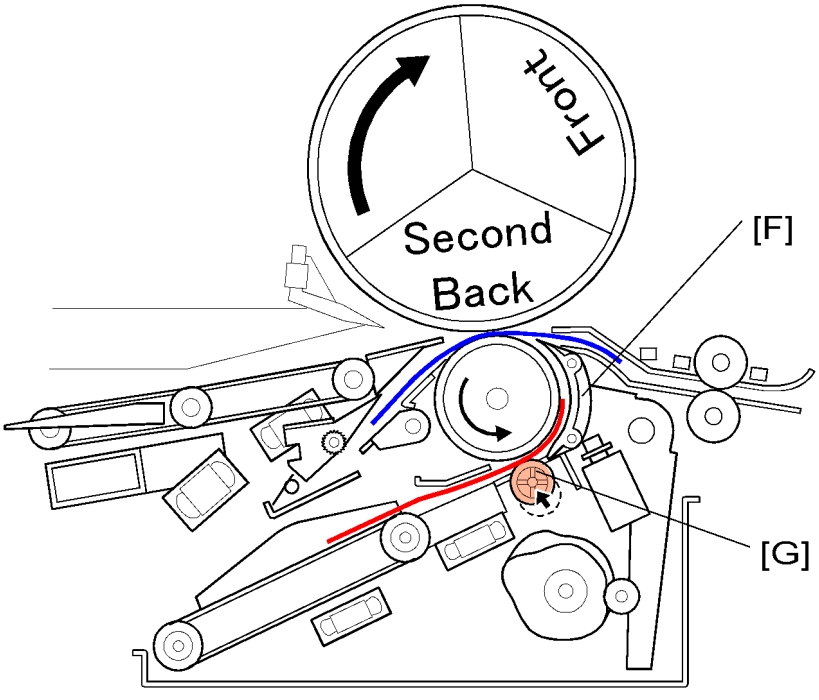


2. The paper, now clamped by the duplex clamper [A], is pulled away from the drum and press roller [B], towards the left side of the machine. At the same time, the paper drop guide [C] moves down, to make sure that the trailing edge of the paper drops down to the duplex feed unit.



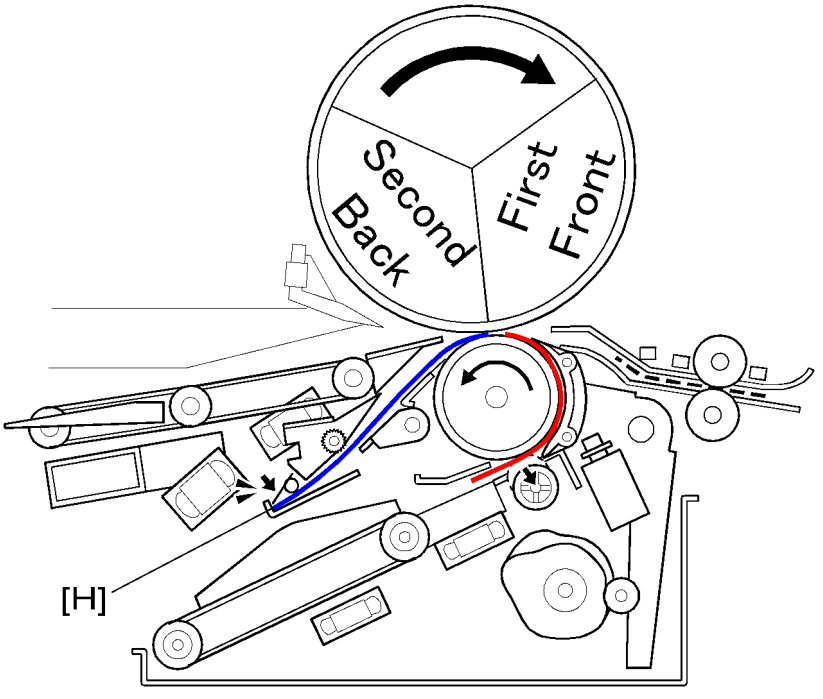
C269D195

3. The paper on the duplex feed unit [E] feeds back into the machine, and stops at the duplex feed stopper [D]. As the same time, the second sheet of paper feeds to the drum.



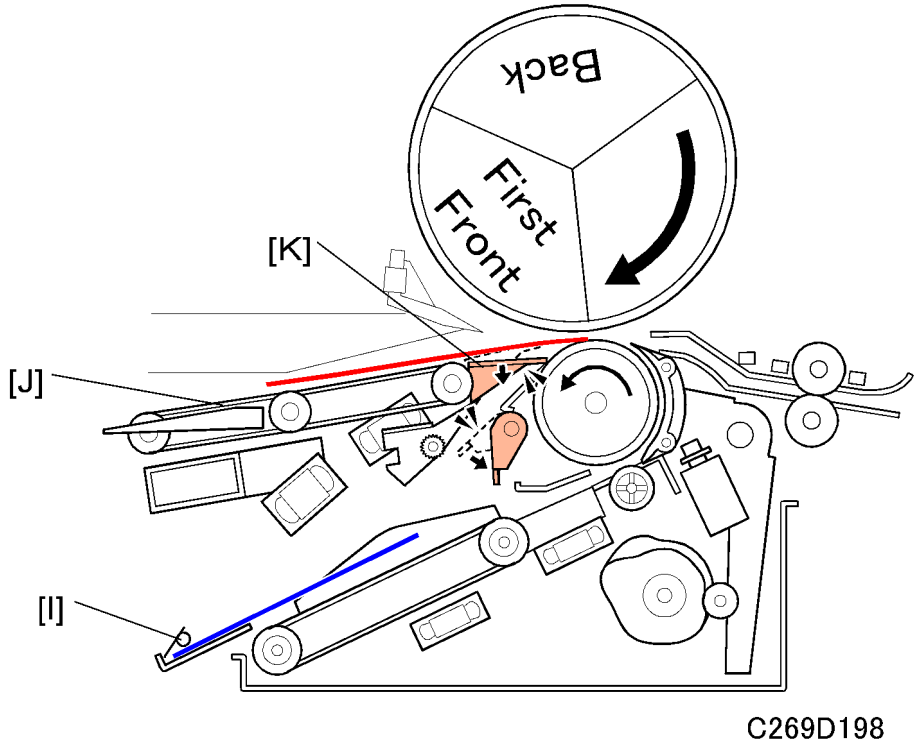
C269D196

4. The duplex feed roller [G] goes up and the first sheet of paper feeds to the duplex feed guide [F]. As the same time, the machine prints the back side of the second sheet of paper.



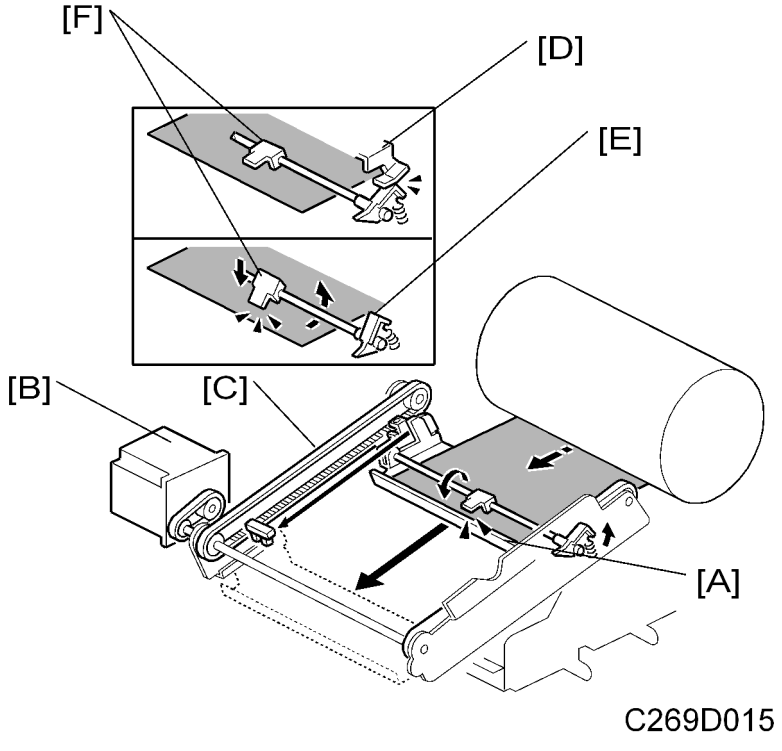
C269D197

5. The duplex clamper [H] clamps the second sheet of paper. At the same time, the machine prints the front side of the first sheet of paper.



6. The second sheet feeds to the duplex feed unit [I]. At, as the same time, the machine prints on the front side of the first sheet, and feeds it to the paper delivery unit [J]. To feed the paper out to the delivery table, the duplex junction gate [K] moves down (to feed paper to the duplex feed unit, the junction gate stays up).

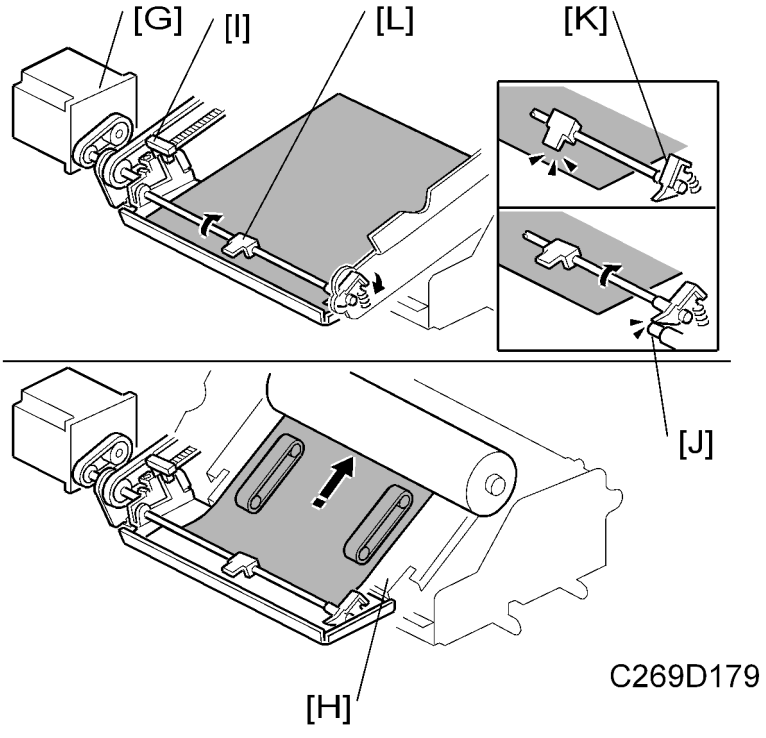
Duplex Clamper Unit



The duplex clamper unit [A] is moved by the duplex clamper motor [B], through timing belts [C] at each side.

Before the paper is fed to the duplex clamper unit, the bracket [D] above the clamper unit holds lever [E] down, and the clamper [F] is up.

When the leading edge of the paper is in the clamper unit, the motor [B] starts, and the lever [E] moves away from under the bracket [D]. The clamper [F] then moves down to hold the leading edge of the paper.

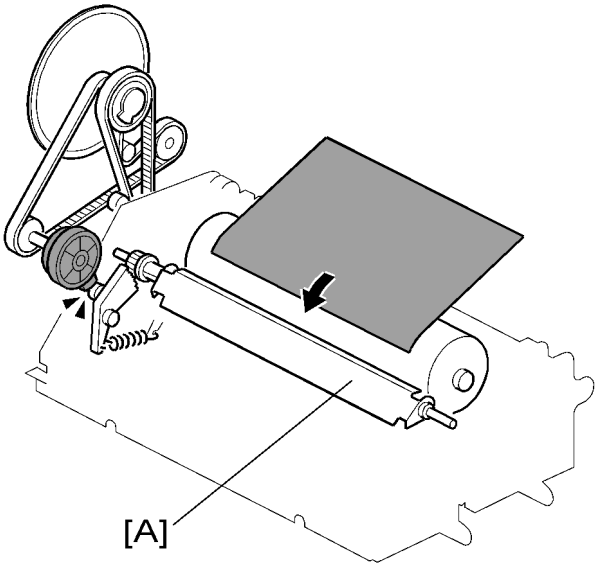


The duplex clamper motor [G] moves the duplex clamper unit, with the paper, to the duplex paper feed unit [H].

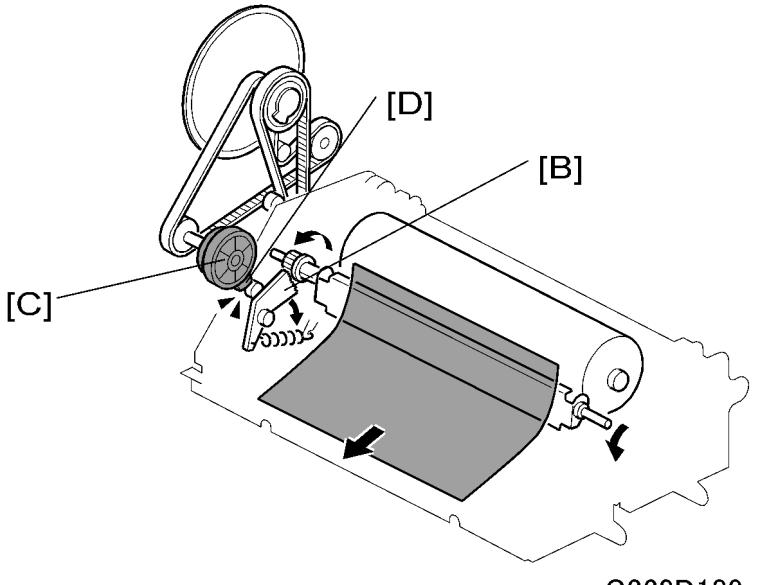
An actuator on the side of the clamper turns on the duplex clamper sensor [I] when the clamper has moved all the way back. At the same time, a projection [J] on the side of the duplex feed unit pushes up the lever [K]. Then, the duplex clamper [L] releases the leading edge of the paper and the paper drops onto the duplex paper feed unit.

The duplex clamper sensor triggers the start of the duplex transport belt motor, which feeds the paper back into the machine. After the machine feeds the paper back into the machine, the duplex clamper moves back up to receive the next sheet of paper.

Paper Drop Guide



C269D188



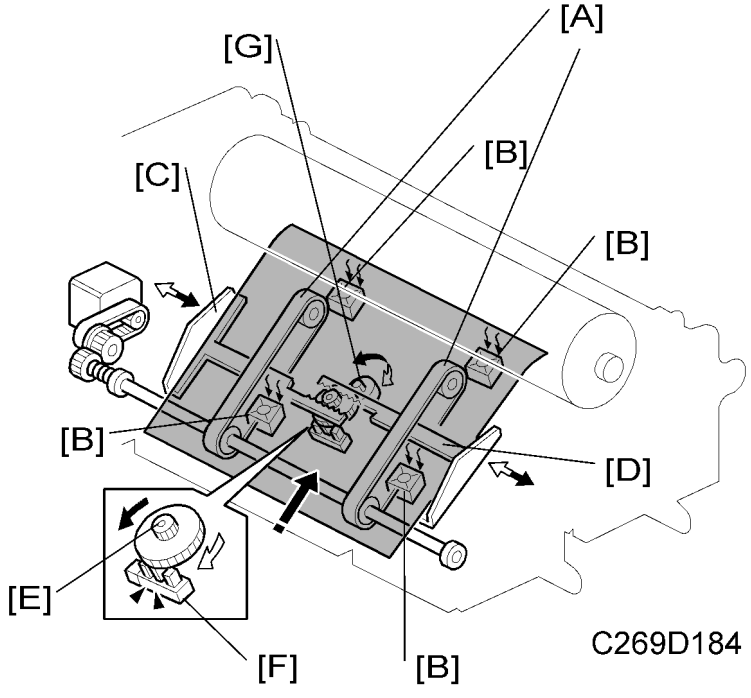
C269D189

The paper drop guide [A] moves down to let the trailing edge of paper fall onto the duplex paper feed unit.

The drop guide arm [B] moves along the tab of the cam [D] on the exit pawl gear [C]. The paper drop guide moves down when the drop guide arm is at the low point of the cam.

The exit pawl gear [C] is turned by the main motor.

Duplex Paper Feed Unit



After it receives the paper from the duplex clamper unit, the duplex paper feed unit feeds the paper to the drum again. The belts [A] start to move after the duplex clamper sensor detects the duplex clamper unit. As the same time, 4 fans [B] under the unit provide suction to hold the paper on the belt and prevent the paper from moving around.

The duplex paper guides [C] prevent the paper slipping from side to side.

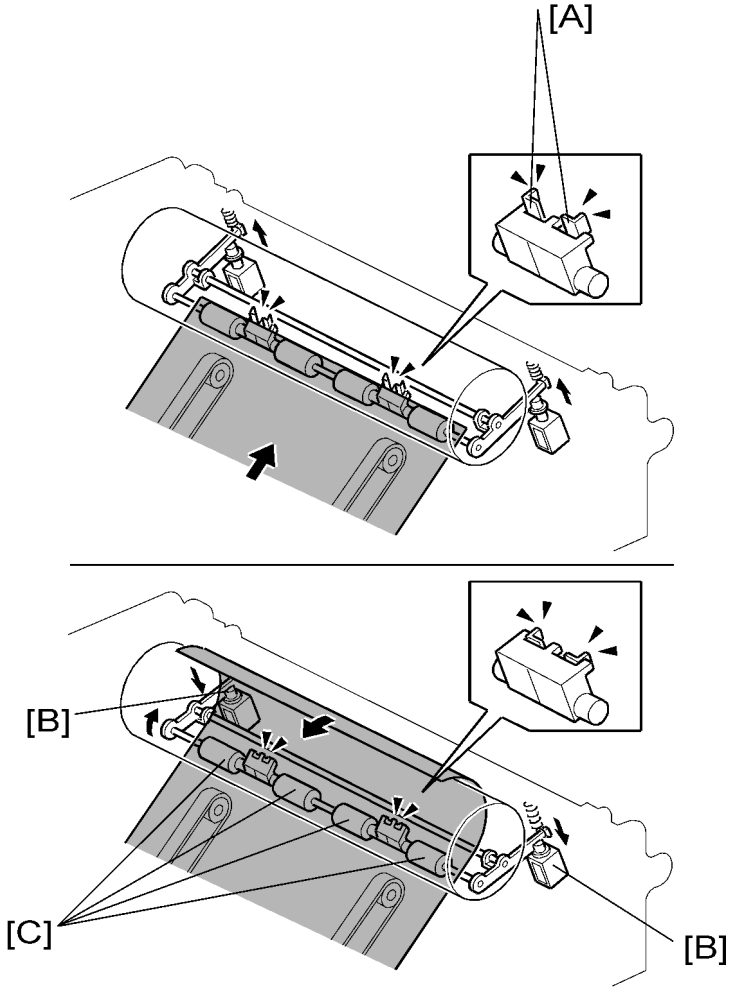
The rack [D] and pinion [E] control the width between the guides. The gap is widest when the paper guide HP sensor [F] detects the actuator on the pinion. The paper guide motor [G] controls the duplex paper guides.

The duplex transport belt motor drives the belts [A].

Note

- The default position of the duplex paper guides is at the widest position, and paper is fed without the guides.
- If customers complain of side-to-side registration errors during duplexing, instruct them to turn on the following user tool: Mode Setting – Duplex Unit Paper Guide Settings (default: Fixed Max Width). But if the guides are used, jams are more likely to occur in the duplex unit.

Duplex Feed Roller

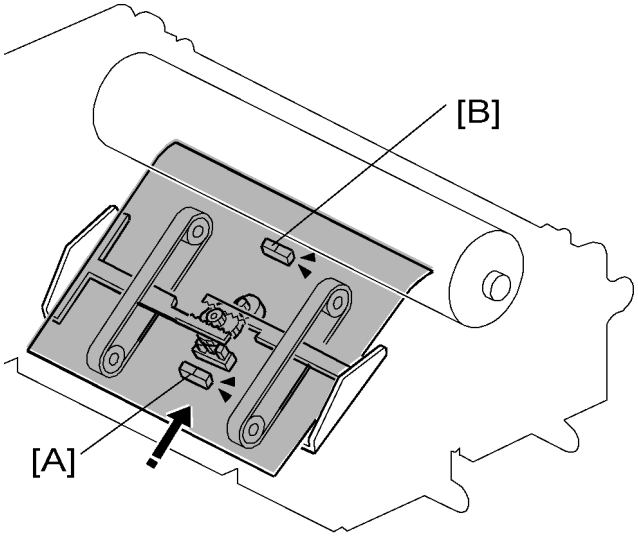


C269D185

The duplex paper feed unit delivers the paper until the duplex feed stopper [A]. When it is the correct time to feed the paper, the duplex feed roller solenoids [B] (one each at front and back) move the duplex feed roller [C] up. The roller pushes the paper above the level of the stoppers, and up against the press roller, and the paper feeds back into the machine.

The duplex feed roller is turned by pressure with the press roller. It is not driven directly by a motor.

Jam Detection

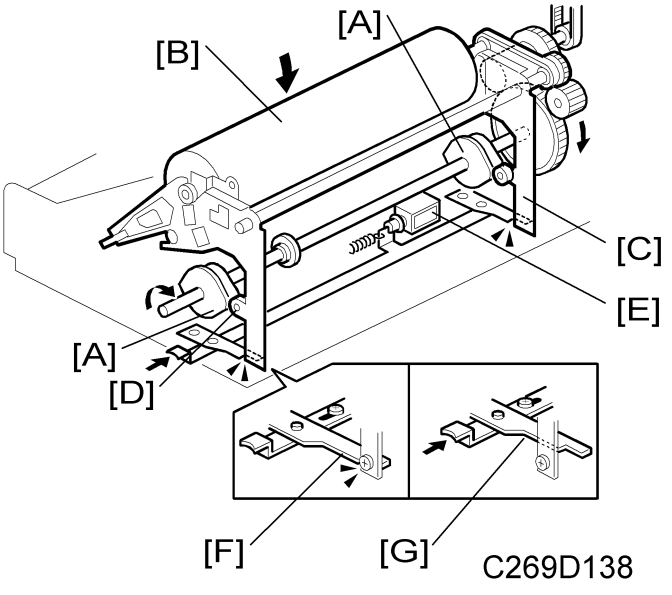


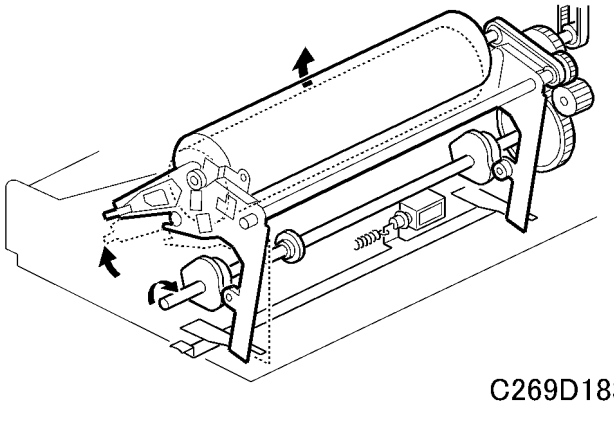
C269D186

The duplex trailing edge sensor [A] detects if the paper is fed into the duplex paper feed unit.

The duplex leading edge sensor [B] detects if the paper is fed back to the drum.

Printing Pressure Release Mechanism





The print pressure cam [A] controls the up/down motion of the press roller[B], through the print pressure arm [C], to apply pressure between the drum and press roller at the correct times.

- When a high point on the cam [A] pushes the cam follower [D] on the print pressure arm [B] (as shown in the upper diagram), the press roller is pulled down, away from the drum, and printing pressure is released.
- When a low point on the cam pushes the cam follower (as shown in the lower diagram), the press roller moves up towards the drum, and printing pressure is applied.

The main motor turns the cam, as well as the drum and press roller. Sometimes, it is necessary to hold the press roller away from the drum while the main motor is turning, for example, during drum idling (printing

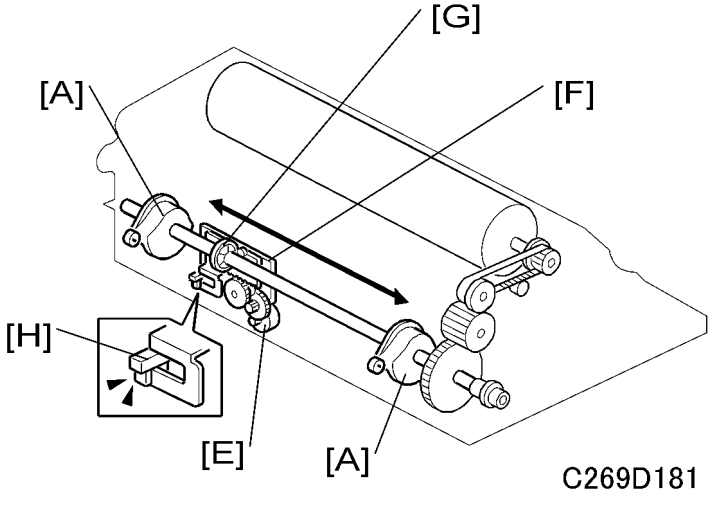
is not being done at this time, so we do not want to get ink on the press roller). To do this, the pressure release solenoid [E] turns on. Then, when a low point on the cam reaches the cam follower, the tab [F] stops the print pressure arm, so that it cannot move back to the left (as shown above). This means that it cannot push the press roller up against the drum. When the solenoid turns off, the print pressure arm is not stopped [G], and the press roller can move towards and away from the drum as the cam rotates.

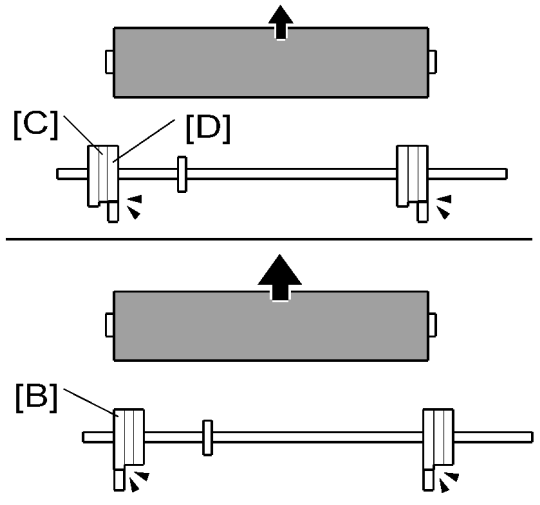
During standby mode:

- A high point on the cam is at the cam follower, and printing pressure is released.
- The solenoid is holding the print pressure arm [F], so that pressure will not be applied between the drum and the press roller if the mechanism is turned manually.

Print Pressure Cam Shifting Mechanism

Description of the Mechanism





C269D182

To make a duplex print, two A4 images are made on one A3 master, as we shall see later. Because of this, the print pressure contact and release timing will be different for various stages of printing. So, one cam is not enough. To ensure that print pressure is applied and released at the correct times during the different phases of duplex printing, the print pressure cam contains three cams in the same assembly [A]. These are as follows.

- [B]: 'Back side' cam, applies pressure only for the back side image. Also used for single-sided A4 printing (LEF).
- [C]: 'Both sides' cam, applies printing pressure for two A4 images (back side and front side images). Also used for A3 printing (A3 is single-sided only; there is no A3 duplex printing)
- [D]: 'Front side' cam, applies pressure only for the front side image

The print pressure cam switch motor [E] moves the rack [F] through the gears, and then the rack moves the fin [G]. The fin is attached to the axis, and pushes the cam to the left or right until the correct cam is in position to move the print pressure arm. The print pressure cam HP sensor [H] detects the position of the cam.

Note

- The cam will always move to the 'both sides' cam after master making so that the user can check the trial print (except in 'continuous mode'), after printing, and during stand by mode. The 'both sides cam' position is a home position; when the machine stops, the cam always moves to the 'both sides cam'.

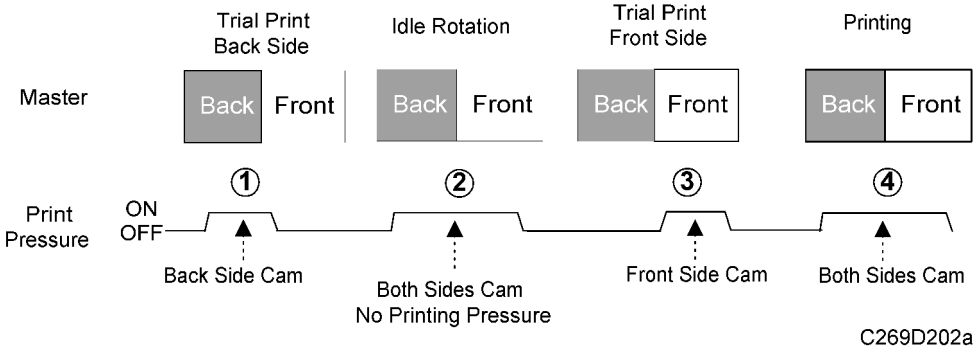
Summary

Printing Condition	Printing Pressure Cam
Single side printing	Both sides cam

Printing Condition	Printing Pressure Cam
Single side printing (A4 master cut)	Back side cam
Both sides printing	Back side cam, Front side cam, Both sides cam.

Cam Position Timing for Different Stages of Printing

Duplex Print (Start Master Making)



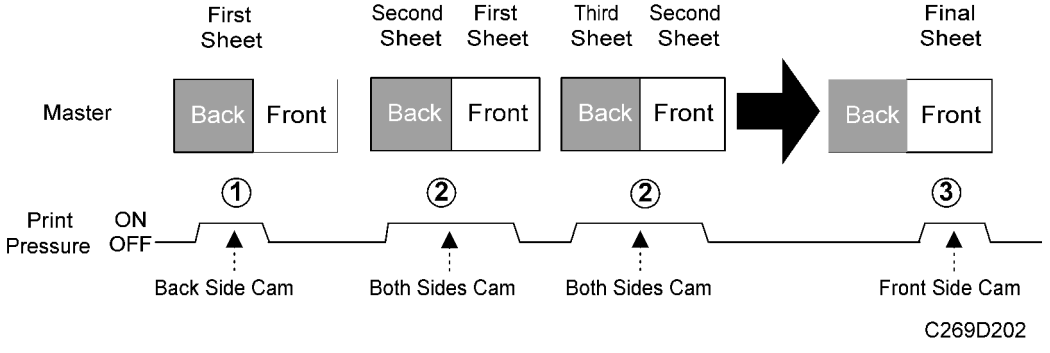
1. Back side trial print: Both sides cam (standby position) ➡ ① Back side cam (trial print, back side)

2. Front side trial print: ① Back side cam ➡ ② Both sides cam (one idle rotation; printing pressure is disengaged by the pressure release solenoid) ➡ ③ Front side cam (trial print, front side)

3a. Continue printing: ② Front side cam ➡ ④ Both sides cam (standby position, so that the user can check the trial print), then continue printing (back side cam first, see below)

3b. Not continue printing: ② Front side cam ➡ ④ Both sides cam (standby position), then stop the machine

Duplex Print (Start Printing)

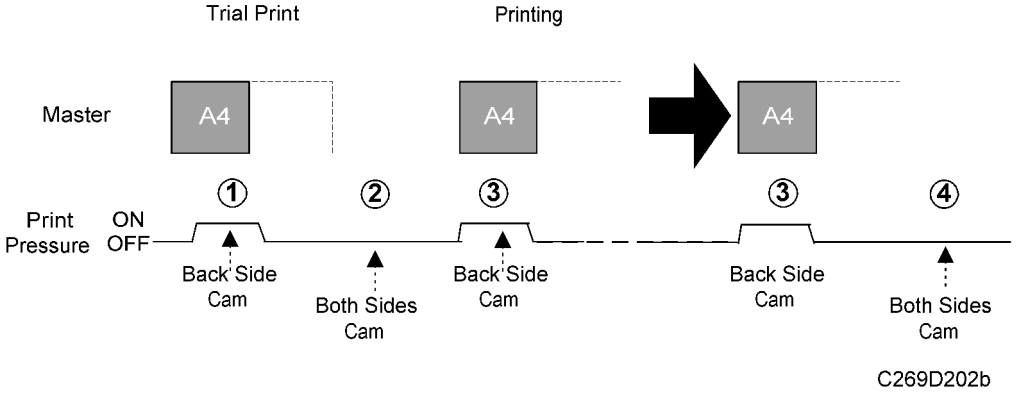


1. First sheet (Back side): Both sides cam (standby position) ➡ ① Back side cam (ready to print the first image, which is the back side of the first sheet)

2. Second sheet (Back side) and first sheet (front side) : ① Back side cam ➡ ② Both sides cam: continue printing until the final page

3. Final sheet: ② Both sides cam ➡ ③ Front side cam (ready to print the final image, which is the front side of the final sheet) ➡ Both sides cam (standby position, to prepare to make the next master)

One-sided Print with A4-LEF Master, using ADF (Start Master Making)



1. Trial Print: Both sides cam (standby position) ➡ ① Back side cam (trial print, A4 master)

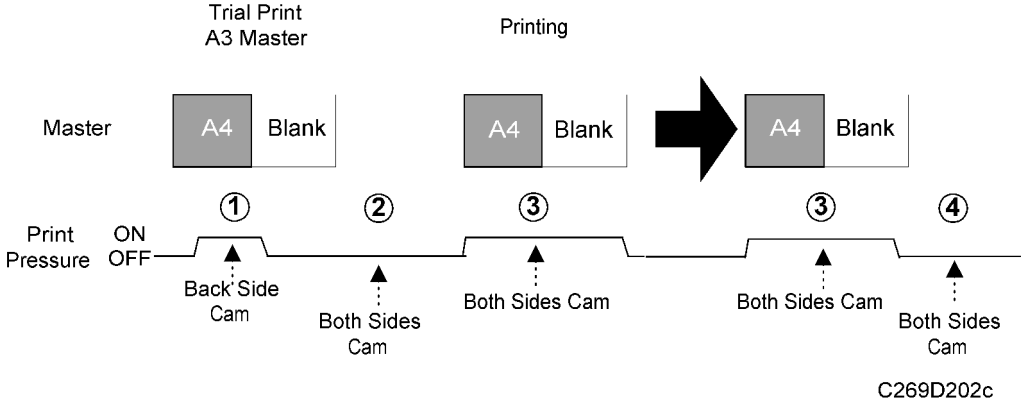
2. Continue printing: ① Back side cam ➡ ② Both sides cam (standby position, so that the user can check the trial print), then continue printing with the back side cam (see below)

2'. Not continue printing: ① Back side cam ➡ Both sides cam (standby position, the machine stops)

One-sided Print with A4-LEF Master, using ADF (Start Printing)

1. Printing: ② Both sides cam ➡ ③ Back side cam (printing, with A4 master) ➡ ④ Both sides cam (standby position, to prepare to make the next master)

One-sided Print with A4-LEF Master, Using ADF (Start Master Making – Last Page from ADF)



1. Trial print: Both sides cam (standby position) ➨ ① Back side cam (trial print, with an A3 master – see the note below)

Note

- When the ADF feeds the original (or if the data is being printed from a PC), the machine can detect if the original is the last page or not. So, if the page is not the last page, the machine cuts an A4 master, and if it is the last page, the machine cuts an A3 master. But, if the original is scanned with the book scanner, the machine cannot detect if it is the last page, so the machine always cuts an A3 master. In fact, this machine does not allow A4 printing in book scanner mode.
- The reason for all this is to make sure that the last master that is wrapped around the drum is A3, to prevent the ink on the drum from becoming dry.

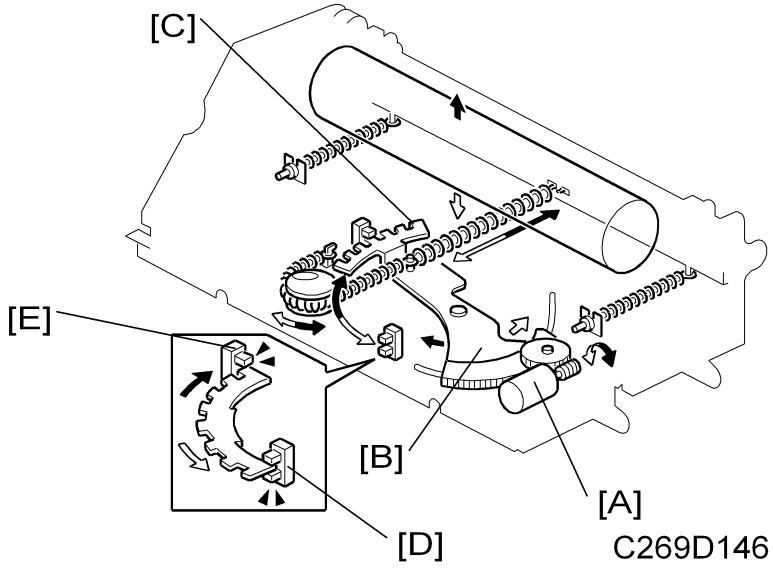
2. Trial print: ① Back side cam ➨ ② Both sides cam (so that the user can check the trial print) ➨ ③ Both sides cam, (continue printing, with A3 master)

Note

- Just before the trial print, the machine detects that this is the last original and the machine will cut an A3 master, and the both sides cam will be used to apply printing pressure.

3. Stop machine: ④ Both sides cam (standby position)

Print Pressure Adjustment Mechanism



Mechanism

The printing pressure will be changed automatically, depending on the temperature and printing speed, to keep a constant print density.

The printing pressure adjustment motor [A] rotates the printing pressure adjustment gear [B], and the printing pressure will be monitored by the rotation of encoder [C].

Two sensors detect the position of the encoder: printing pressure adjustment HP sensor [D] and printing pressure encoder sensor. [E].

When the machine is in stand-by mode, the pressure will be at setting '0' (note that setting 0 does not mean 'zero pressure'). The printing pressure encoder sensor detects the pressure setting "0". When the machine starts to print, the encoder moves to home position, detected by the printing pressure adjustment HP sensor. After that the pressure will be changed depending on the temperature and print speed (see the table below). The printing pressure is detected by the number of notches in the encoder passing the printing pressure encoder sensor.

	Very low Less than 15ºC	Low 15~19 ºC	Normal 19~25 ºC	High 25~29 ºC	Very high More than 29ºC
Trial	0	0	0	0	0
60 rpm	1	1	1	0	0
75 rpm	2	1	1	0	0
90 rpm	3	2	2	1	1
105 rpm	4	3	2	2	2
120 rpm	5	4	3	2	2
135 rpm	6	5	4	3	3

Note

- Printing pressure -- 6: Strongest, 0: Weakest
- Printing pressure "0" does not mean that there is no pressure.
- The print pressure for each setting in the above table can be adjusted with SP6-049 ~ SP6-053 (print pressure). Also, you can change all settings at the same time by the same amount with SP2-006-18 (print pressure shift amount) and 2-006-19 (for duplex printing).
- If you do not want the pressure to change with print speed and temperature, set SP 2-006-16 to 'on'. Then the pressure will always be the same as the value that is set with SP 2-006-17.

⚠CAUTION

- If the pressure is too high, the master will become wrinkled.

Auto print (Master making to printing)

1. When master making starts, the print pressure will change to the 'trial print' pressure. (Immediately after the machine power is turned on or recovers from energy saving, the print pressure will change to the home position and then move to the trial print position.)
2. After the trial print goes out from the machine, the pressure will change to the 'first print' pressure.
3. After the first print goes out from the machine, the pressure will change to the correct pressure setting.
4. When the print speed is changed, the pressure will change depending on the new speed setting.

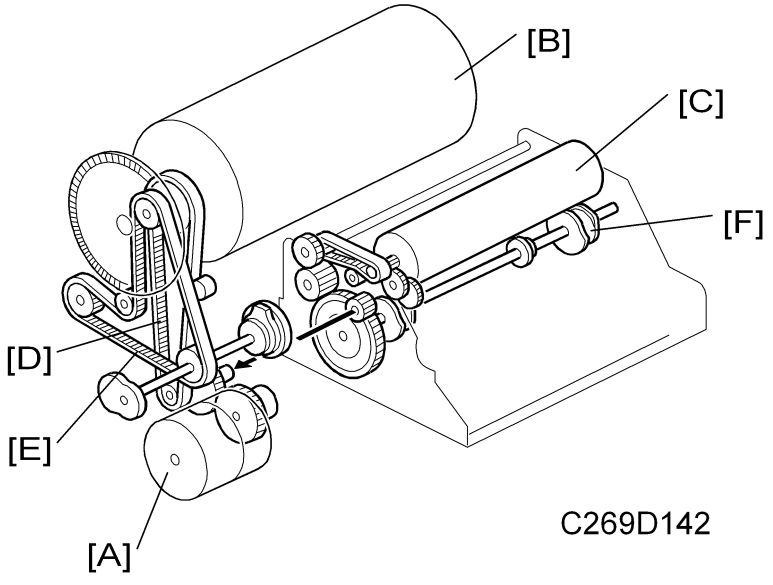
Only master making

When master making starts, the print pressure will change to the 'trial print' pressure. (Immediately after the machine power is turned on or recovers from energy saving, the print pressure will change to the home position and then move to the trial print position.)

Only printing

1. When printing starts, the pressure will move to the 'first print' pressure. (Immediately after the machine power is turned on or recovers from energy saving, the print pressure will change to the home position and then move to the trial print position.)
2. After the first print goes out from the machine, the pressure will change to the correct pressure setting.
3. When the print speed is changed, the pressure will change depending on the new speed setting.

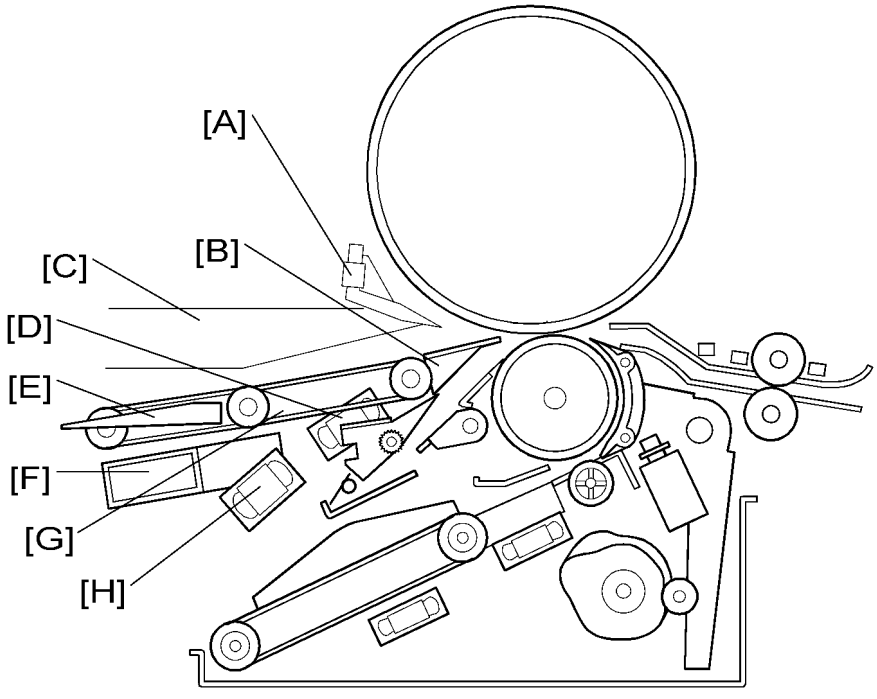
Drive Mechanism

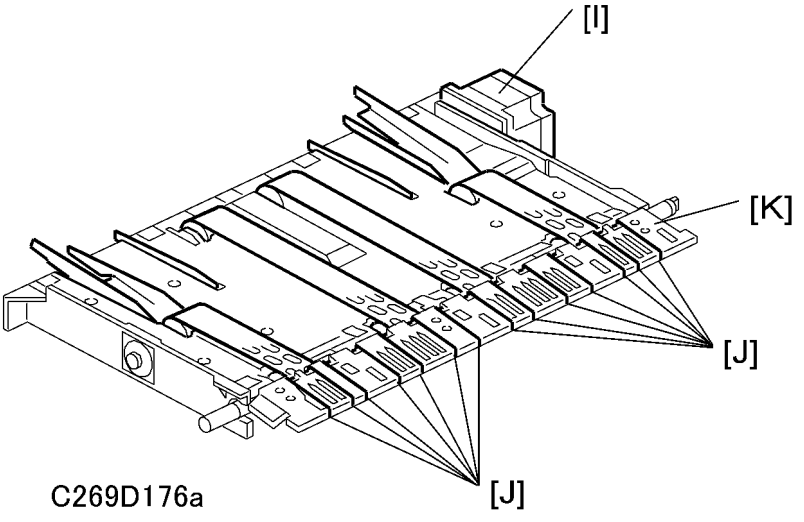


The main motor [A] drives both the drum [B] and press roller [C]. The main drive belt [D] transmits power to the drum through gears, and the drive belt [E] transmits power to the press roller through the gears. Also, gears transmit power from the main motor to the printing pressure cam [F].

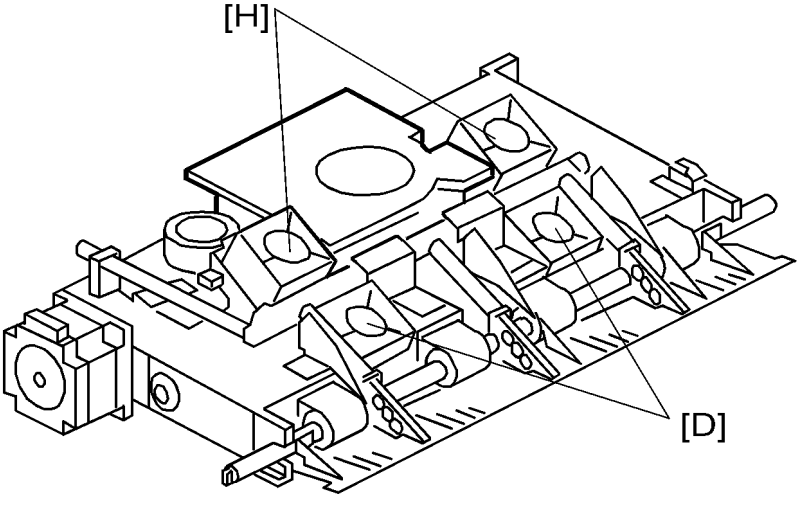
Paper Delivery

Layout





C269D176a

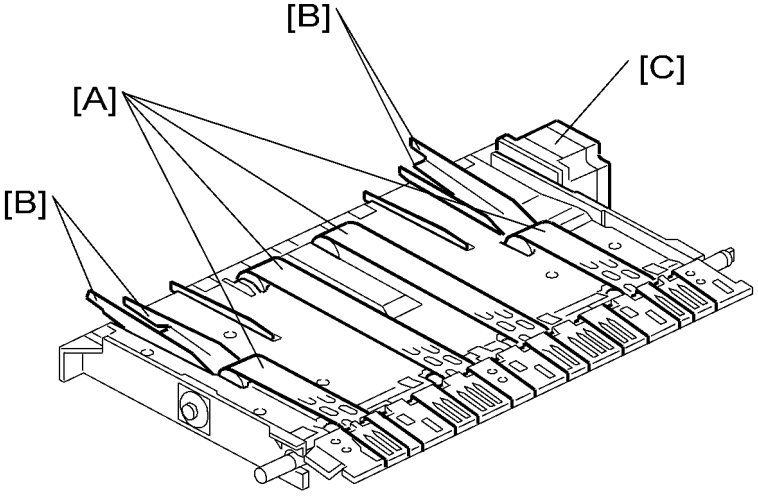


C269D178a

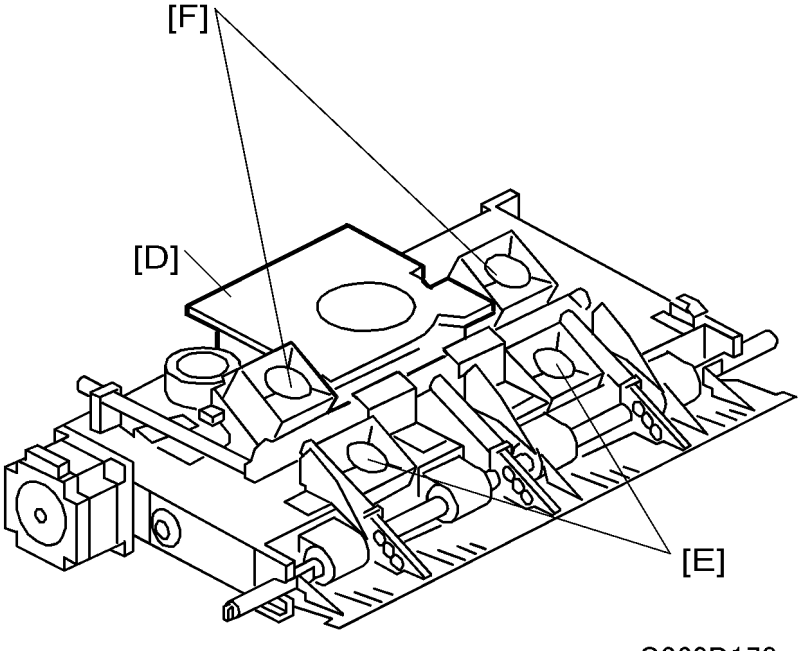
[A]: Paper exit pawl	[G]: Paper Delivery Unit
[B]: Junction Gate	[H]: Duplex Blower Fans
[C]: Air Knife Fan	[I]: Paper Delivery Motor
[D]: Delivery Suction Fans	[J]: Wire Guides
[E]: Paper Guide Plate	[K]: Junction Guide Plate
[F]: Transport Suction Fan	

Paper Delivery Unit

Overview



C269D176



C269D178c

The paper delivery unit consists of four rubber belts [A], paper wing guides [B], 3 suction fans [D], [E], and 2 blower fans [F].

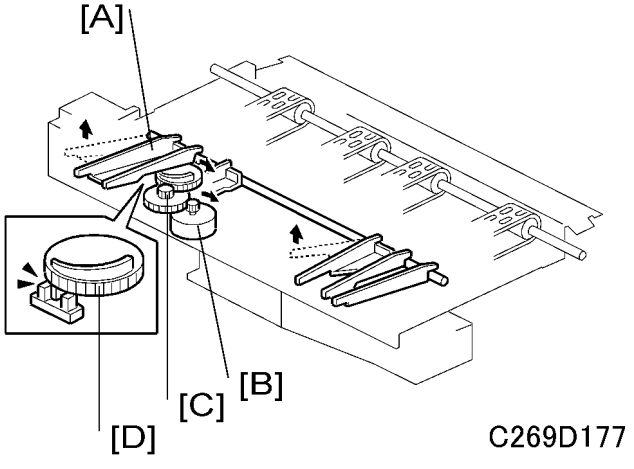
The rubber belts are driven by the paper delivery motor [C]. They feed the paper, which is held against the belts by suction generated by the duplex unit suction fan [E].

The duplex unit blower fan [F] is used only for duplex printing. It blows the paper, which is printed on one side, towards the duplex paper delivery unit.

Note

- When you clean the belts, do not use a cloth or paper towel. The surface of the belts is like sandpaper and the dust will stick to the belts if a paper towel is scraped on the surface.
- Use the adhesive side of packing tape to remove foreign material from the belts.

Paper Wing Guide Height Adjustment



The paper wing guides [A] lift the side of the paper as it leaves the delivery unit. This stiffens the paper so that the leading edge of the paper will not sag and brush against the sheets on the delivery table. This prevents the ink on freshly printed sheets from being smeared.

The height of the paper wing guide [A] is changed automatically by the wing guide motor [B], depending on the paper size and type, and the type of print job (one-sided, duplex). To adjust the angle, the paper wing guide motor [B] turns the gear [C]. The top of the gear [D] has a cam, which contacts the paper guide plate at the rear side of the machine, and the shaft moves the wing guide at the front of the machine. When the gear turns, the paper wing guide moves up or down.

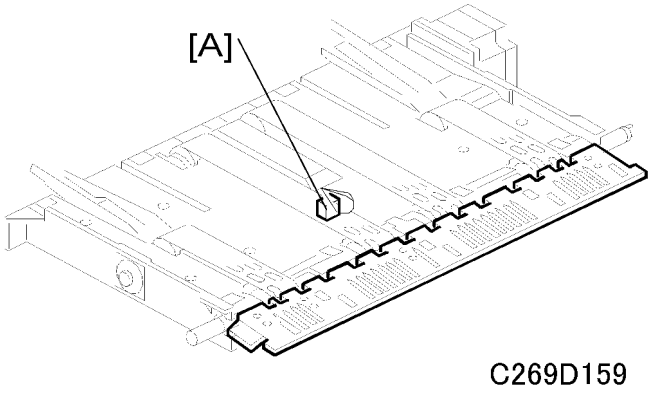
The paper wing guide HP sensor under the gear [D] controls the mechanism.

The angle of the paper wing guide will be changed when printing starts, depending on the paper type, paper size, and type of print job, as shown below.

Print type	Size	Paper type	Height (degrees of the angle)	Default setting
One-sided	(A3~B4)	Normal, Thin	16	Up
One-sided	(A3~B4)	Thick	13	-
One-sided	(~A4 LEF)	Normal, Thin	10	-
One-sided	(~A4 LEF)	Thick	16	-
One-sided	(~B4 SEF)	Normal, Thin	17.5	-
One-sided	(~B4 SEF)	Thick	13	-
Duplex			13	Down

The angle of the paper guide wings for each paper type can be adjusted with SP mode (SP6-013). In addition, the angle can be fixed for all paper types at the upper or lower position with a user tool (System Settings – Mode Settings – Deflector Angle), to override the SP6-013 setting.

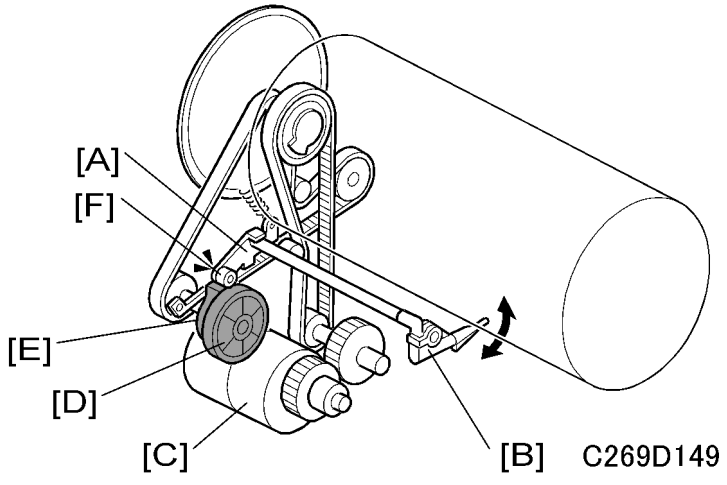
Paper Exit Sensor



The paper exit sensor [A] checks that the paper does not wrap around the drum and exits correctly.

Paper Separation from the Drum

Exit Pawl Drive Mechanism



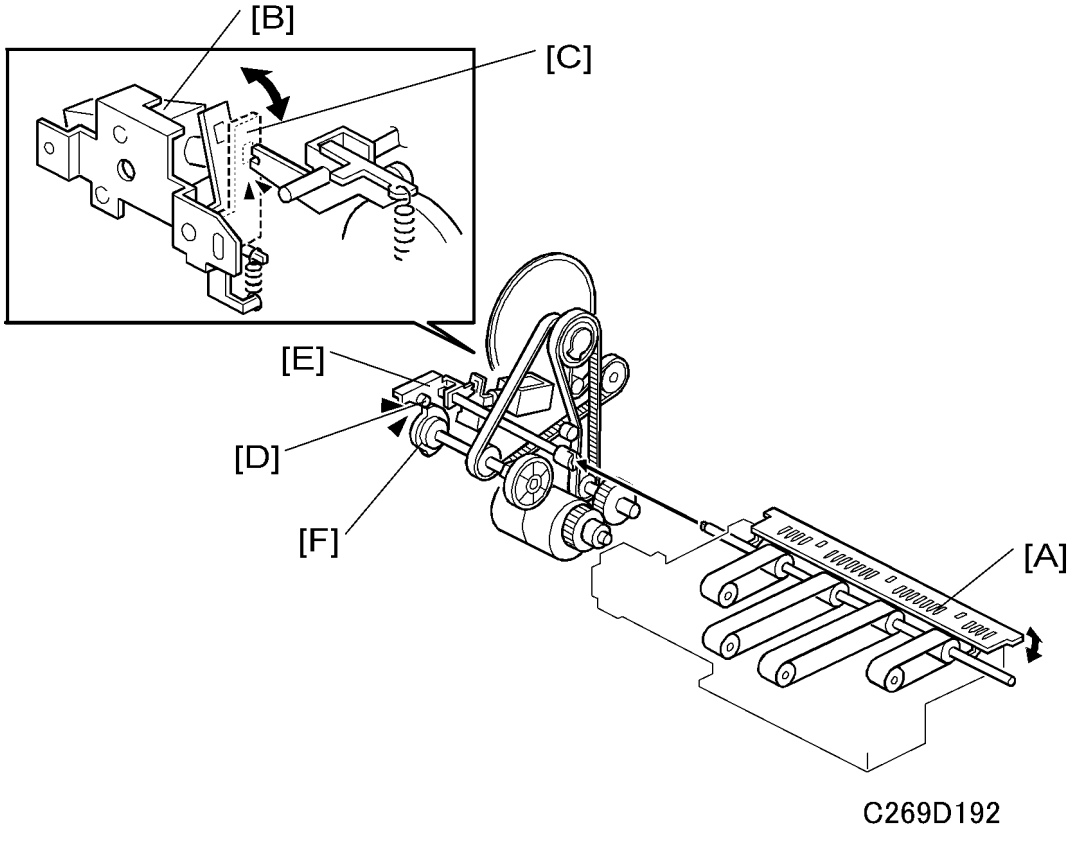
The exit pawl [B] is located close to the drum, in order to prevent the paper from being wrapped around the drum, and it guides the center of the paper. There is air flow through the exit pawl (described later).

As the drum rotates and the master clamper approaches the exit pawl, the exit pawl moves away from the drum.

As the main motor [C] turns, the exit pawl drive gear [D] turns. This gear contains a cam [E]. The cam follower [F] on the exit pawl lever [A] rides on the cam. The exit pawl is connected to the exit pawl lever. The lever turns clockwise when the cam follower rides on the high point of the cam, and the exit pawl moves away from the drum. This happens when the master clamper on the drum is approaching the exit pawl.

When the master clamper moves away from the exit pawl, the cam follower is now riding along the low point of the cam. Therefore, the exit pawl moves nearer the drum surface due to tension from a spring. When printing pressure is not applied, the exit pawl is held away from the drum.

Junction Gate Plate Mechanism



The junction gate plate [A] guides the paper to the paper delivery table or the duplex unit. There is air flow at the junction gate (described later), to ensure that paper separates from the drum.

When printing starts, the junction gate release solenoid [B] turns ON, and the junction gate stopper [C] will release the gate.

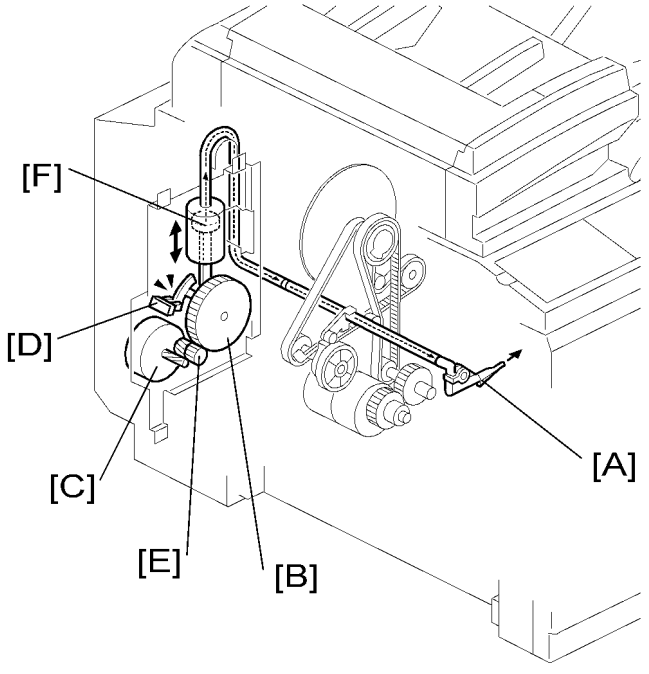
The cam follower [D] on the exit pawl lever [E] rides on the cam [F].

When the cam follower rides on the lowest point of the cam, the junction gate plate goes up and paper is guided to the duplex unit. When the solenoid is OFF, the stopper does not release the gate, and the junction gate plate does not move and paper will go to the paper delivery table.

Note

- Refer to Replacement and Adjustment for how to adjust the gap between the junction gate plate and the drum.

Exit Pawl Pump Mechanism

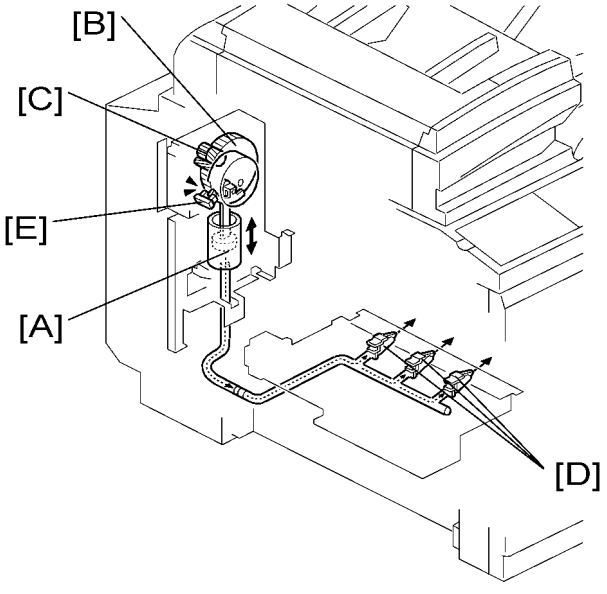


C269D190

The exit pawl pump motor [C] turns gear [B], and piston [E] is moved by the gear. The pump sends air to the exit pawl [A] when the piston moves. The air removes the printed paper from the drum. The air comes out when the paper is fed to the paper delivery table.

The position of the piston is monitored by the exit pawl pump HP sensor [D].

Junction Gate Pump Mechanism

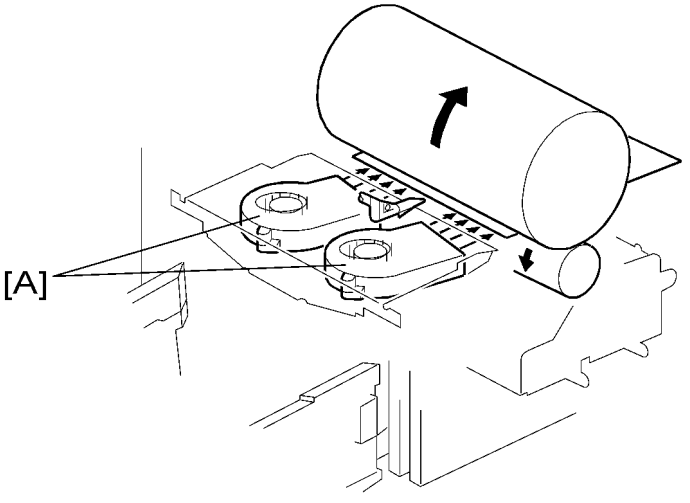


C269D191

The junction gate pump [A] turns gear [B], and piston [C] is moved by the gear. The pump sends air to the junction gate [D]. The air removes the printed paper from the drum when the paper is fed to the duplex unit (the junction gate is up after the back side of the page is printed).

The position of the piston is monitored by the junction gate HP sensor [E].

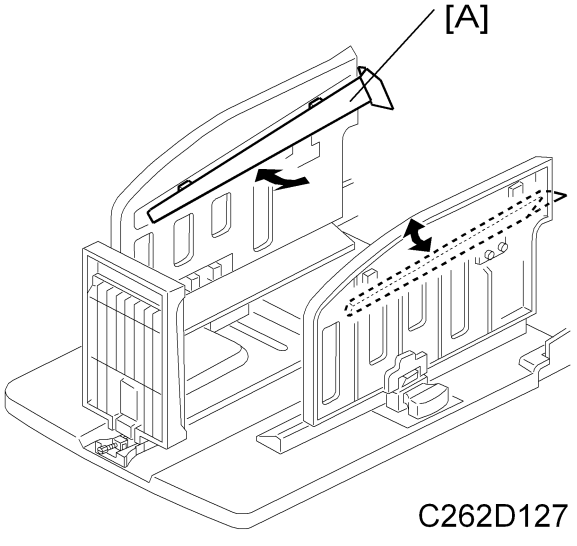
Air Knife Mechanism



There are two air knife fans [A] above the paper delivery unit. These fans blow air against the leading edge of the paper that is just fed from the drum. This helps to separate the paper from the drum.

Paper Delivery Table

Paper Guide

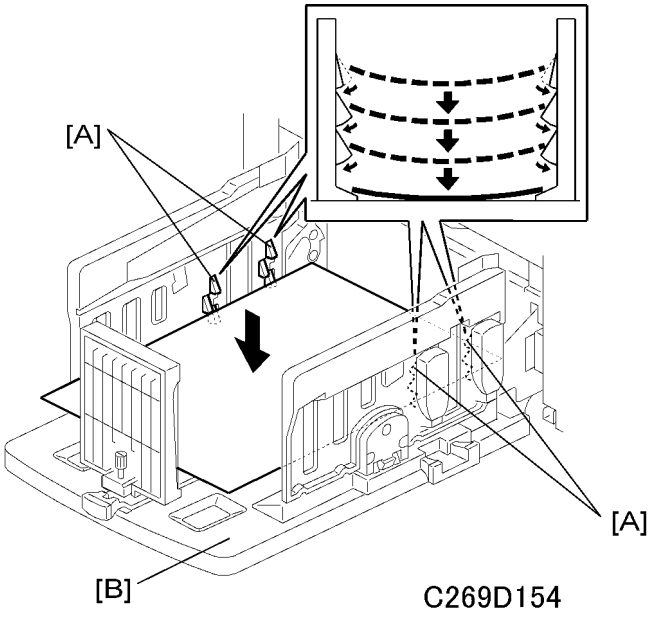


The paper delivery table consists of the rear side fence, front side fence, and end fence. The angle of the small paper guide [A] on each side fence can be changed by pulling the small paper guide.

The small guides help to stack the paper more evenly on the table. Both edges of the paper are guided by the guides as the copy is fed out. Then, the paper is rapidly fed out against the end plate for stacking.

See the next section for how to set these guides for each paper type.

Adjustable Buffer Fins



The printed paper bends upwards easily. This causes uneven stacking and ink stains on the back of the paper on the delivery table. The buffer fins [A] on the paper delivery table [B] lift the edges of the paper, to prevent this problem. When the paper is fed to the delivery table, these plates catch the edges of the paper, and the paper falls in an inverted "U" shape, as shown in the diagram, with a gap between each sheet. The plates catching the edges also make the paper fall more slowly, and the ink dries before the paper reaches the stack.

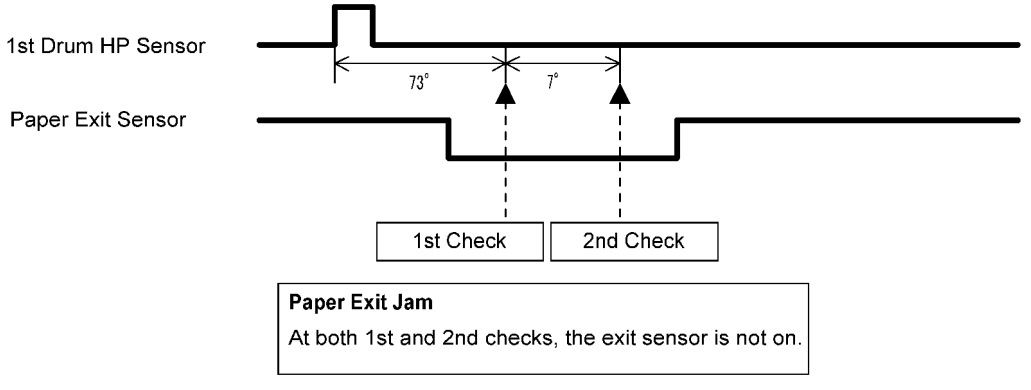
The following table shows the recommended positions for these plates (and for the paper guide wings) for each paper type.

Paper Weight	Paper Size	Paper Guide	Plate
128 g/m^2 or thicker	A3 SEF, 11" x 17" SEF, B4 JIS SEF	Lower the wings	Down
	A4 SEF LEF, B5 JIS SEF LEF	Lower the wings	Down

52.3 g/m^2-128 g/m^2	A3 SEF, 11" x 17" SEF, B4 JIS SEF	Raise the wings fully	Up
	A4 SEF LEF, B5 JIS SEF LEF	Raise the wings to about 45 degrees	Up
52.3 g/m^2 or thinner	A3 SEF, 11" x 17" SEF, B4 JIS SEF	Raise the wings to about 45 degrees	Down
	A4 SEF LEF, B5 JIS SEF LEF	Raise the wings to about 45 degrees	Down

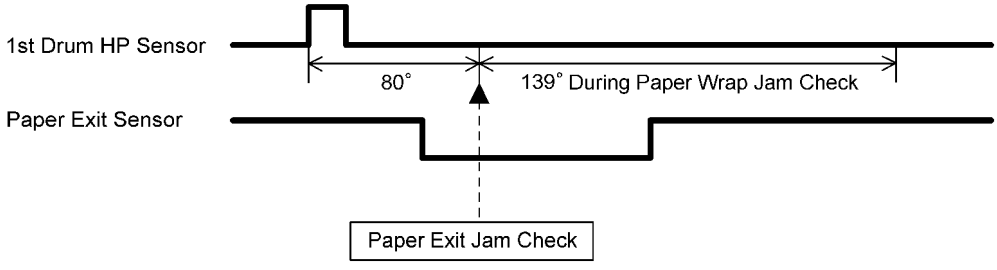
Paper Exit Jam Detection

Paper exit jam (one side print: C jam)



C269D167a

Paper Upper Wrapping jam (B jam)



Paper Upper Wrapping Jam
Sensor does not turn OFF after Paper Exit Jam Check and during Paper Upper Wrapping Jam Check.

C269D169

Security Mode

The security mode protects users from looking at other user's originals.

Function of Security Mode

In the security mode, these two things are protected.

- The master eject box cannot be pulled out (master eject box lock mechanism)
- The drum cannot be pulled out (this is because it moves from the drum home position to the master making position)

How to Enable and Disable Security Mode

The security mode is enabled and disabled with a user tool (System Settings – Administrator Tools – Security Option: Set to 'High' to enable).

When you want to remove the master eject box or drum, the security mode must be disabled temporarily. To do this, you can push the 'Security' button on the display and then enter the password.

You can also use SP8-007-3 to disable the security mode temporarily. Then, after you turn the main switch off and on, the security mode will recover.

⚠CAUTION

- Do not disable the security mode unless you have permission from the administrator

Specifications of Security Mode

The 'additional print' feature cannot be used.

When security mode is disabled temporarily, security mode cannot be enabled if the machine indicates that the cover is open or the master eject box is not installed correctly.

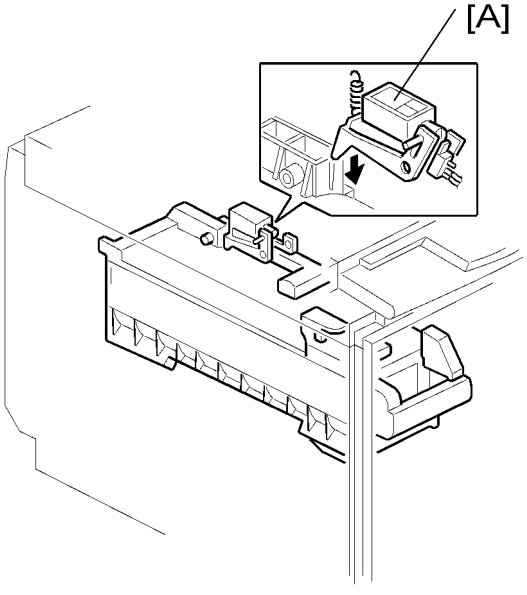
When security mode is disabled temporarily, the master eject box will be locked when security mode is enabled again. But if there is no master on the drum, the drum does not go to the security mode position (this is the master making position). It stays at home position, and it can be removed.

- If security mode was not disabled temporarily, the drum goes to the security mode position and cannot be removed, even if there is no master on the drum.

When security mode is disabled temporarily during printing, the master eject box will be locked when security mode is enabled again. If the machine stops during the job, the drum goes to home position and it can be removed.

- If security mode was not disabled temporarily and the machine stops during a job, the drum goes to the security mode position and cannot be removed.

Master Eject Box Lock Mechanism



C269D164

In security mode, the master eject box lock solenoid [A] moves lever [B] and locks the master eject box. Then, the master eject box cannot be removed.

And also, the master eject box is locked during master compression, regardless of security mode.

Note

- Don't remove the master eject box while Security mode is ON. This could break the mechanism. Turn OFF security mode and remove the eject box after the machine stops.

Machine Operation in Security Mode

These two settings control machine operation.

- The user tool (System Settings – Administrator Tools – Security Option)
- The Security button on the right side of the display panel.

This table shows what the machine does for each set of settings.

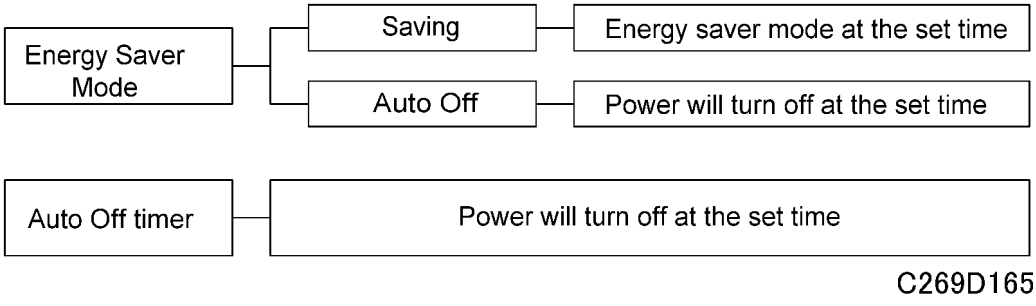
	User Tool Setting: Normal	User Tool Setting: Higher
Security Button: Not pressed	Additional prints are possible The drum can be removed	Not applicable: Security button always enabled if 'Higher' is selected.

	User Tool Setting: Normal	User Tool Setting: Higher
	The master eject box can be removed	
Security Button: Pressed	Additional prints are not possible (the administrator also cannot do this) The drum cannot be removed (the administrator also cannot do this) The master eject box can be removed Note: The security button goes off at the end of the job, and the above security features are disabled. So, to keep your master secure at the end of the job, press the Security button again at the end of the job.	Additional prints are not possible (the administrator also cannot do this) The drum cannot be removed (the administrator also cannot do this) The master eject box cannot be removed, except by the administrator

Auto Off Mode

To meet environmental concerns, this machine has energy saving mode and auto off mode.

- Energy saver mode: The machine goes into a low-power mode
- Auto off mode: The main switch will be turned off automatically by a solenoid.



The mode that is used is set with a user tool (System Settings – Mode Setting – Energy Saver Option).

The machine goes into the selected mode at a set time after the end of a job, if the machine is not used. This time is set with a user tool (System Settings – Timer Settings – Energy Saver Timer).

There is also a 'timed auto-off mode'. In this mode, the machine will automatically go to auto off mode at a set time every day. The time is set with a user tool (System Settings – Timer Settings – Auto Off Timer). You use the same user tool to enable or disable this feature.

Specifications:

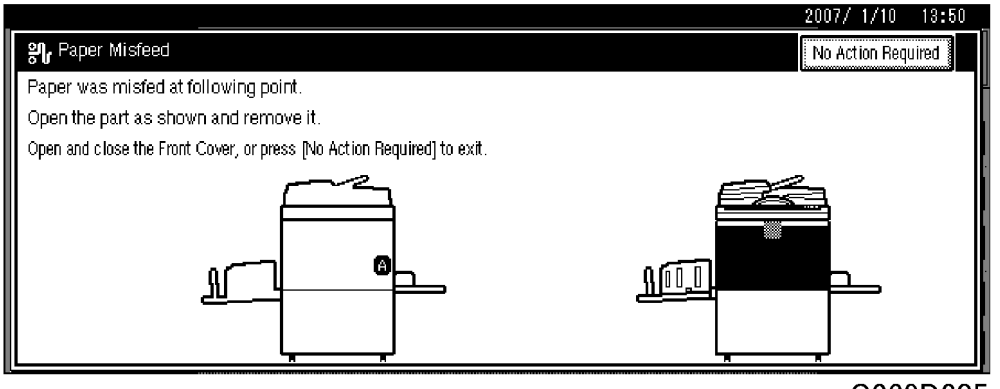
While the online LED lights or blinks, the auto off mode does not turn on. But, if the auto off timer is set, the main switch will turn off at the set time.

The auto off timer does not turn the machine off if the machine power is turned on within 5 minutes before the auto off time.

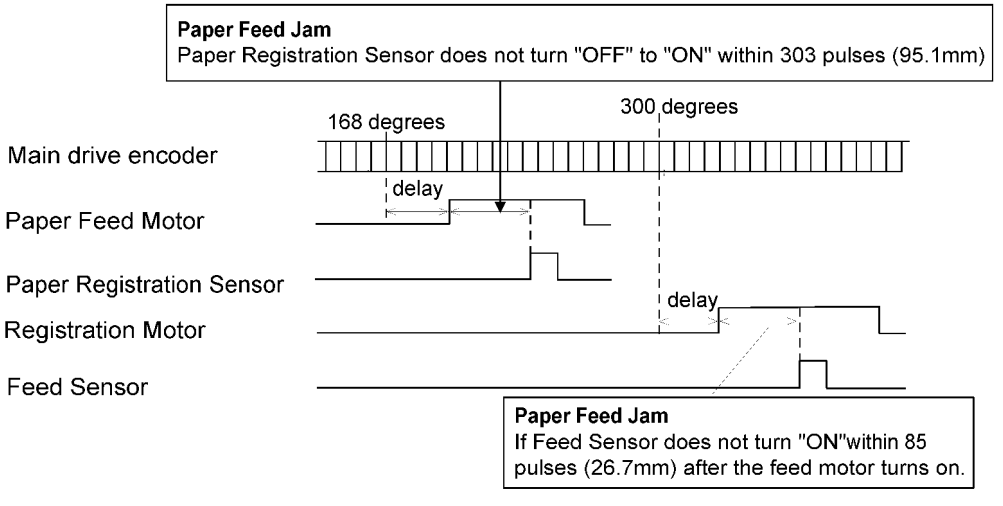
The auto off timer does not turn the machine off if the machine is being used when the auto off time comes. The timer will not turn the machine off until the auto off time on the next day.

Error Detection

Paper Feed Error Detection (A Jam)

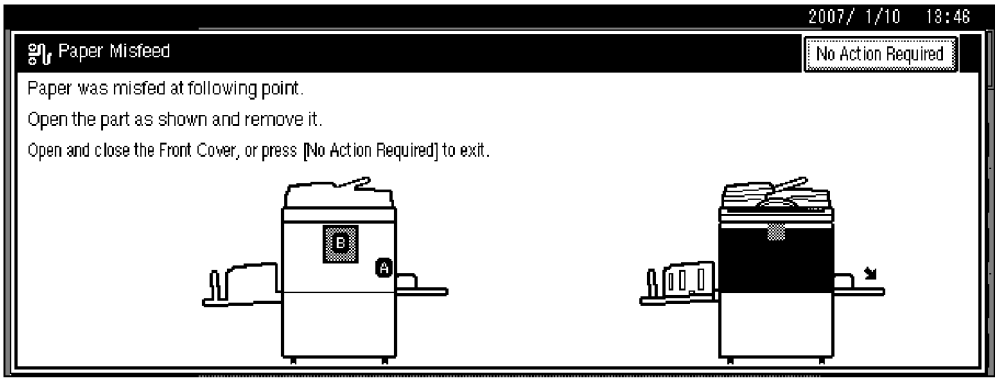


C269D205



C269D134

Paper Feed Error Detection (A, B Jam)



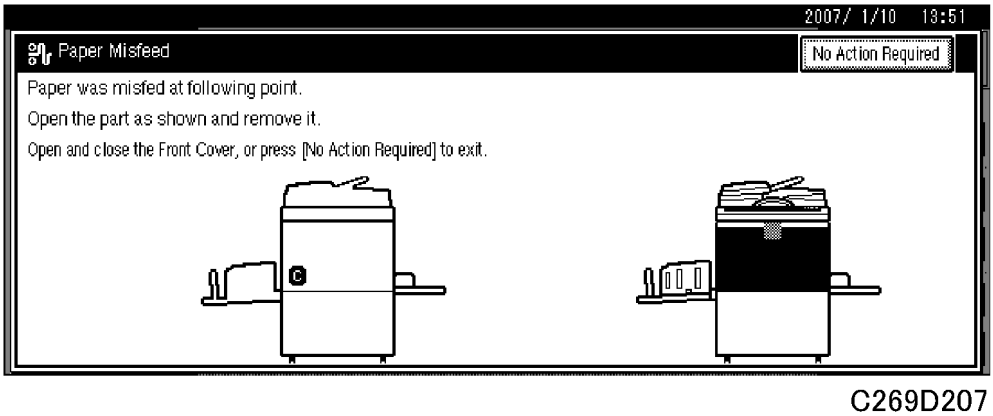
C269D206

The machine detects an error if one of these occurs:

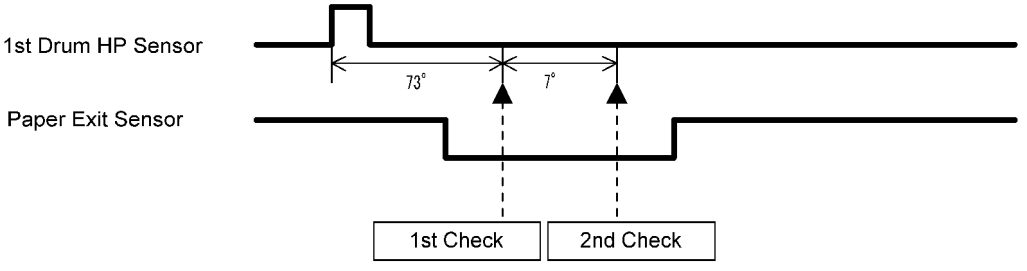
- The paper registration sensor and paper feed timing sensor are both on immediately after the main switch is turned on.
- During printing, paper upper wrapping is detected, but after the drum stops, the paper feed timing sensor is also on.

Paper Delivery Error Detection

Paper Delivery Error (Single Mode: C Jam)



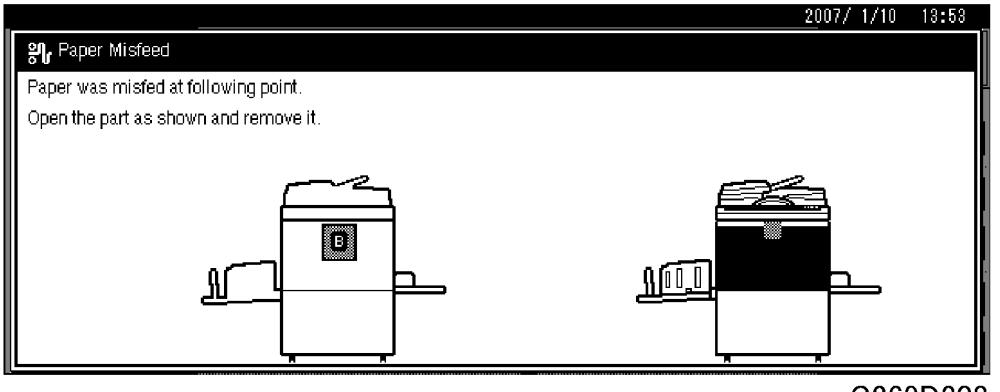
C269D207



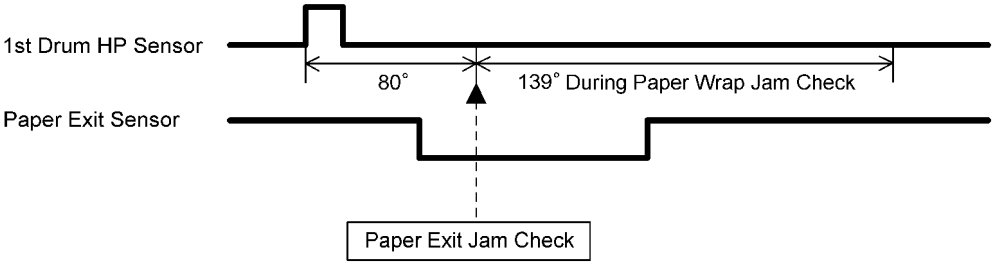
Paper Exit Jam
At both 1st and 2nd checks, the exit sensor is not on.

C269D167a

Paper Upper Wrapping Detection (Single Mode: B Jam)



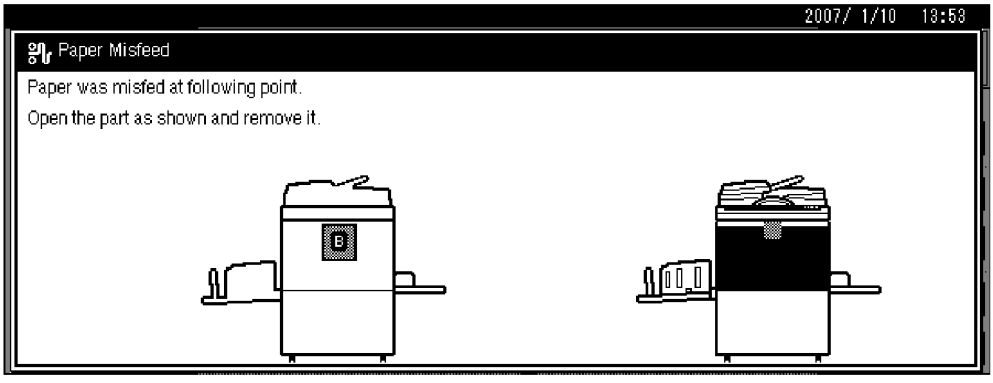
C269D208



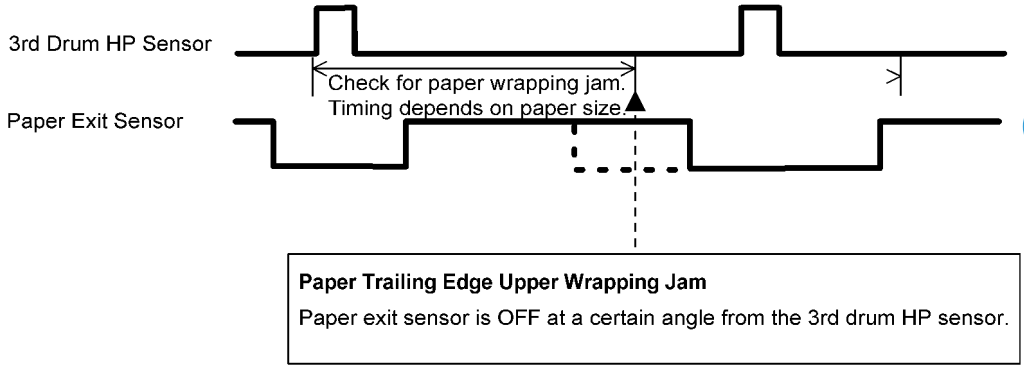
Paper Upper Wrapping Jam
Sensor does not turn OFF after Paper Exit Jam Check and during Paper Upper Wrapping Jam Check.

C269D169

Paper Trailing Edge Upper Wrapping Detection (Single Mode: B Jam)



C269D208



C269D214

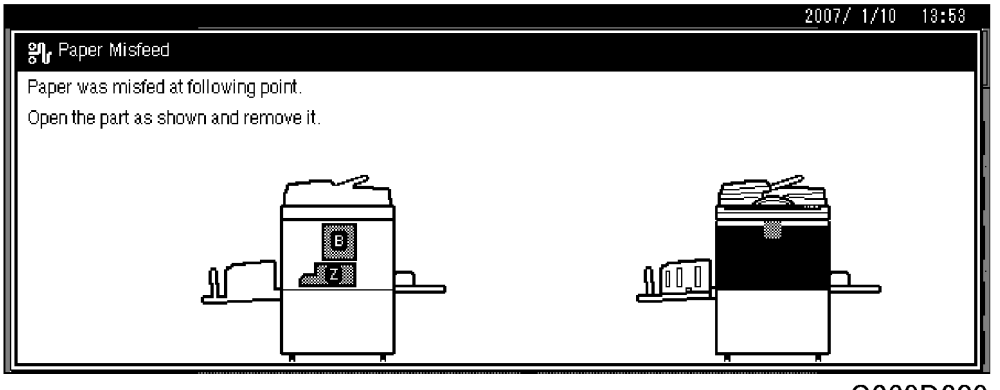
Cause:

The paper exit sensor is already OFF at a certain angle from the 3rd drum home position sensor during paper feed, after the paper exit sensor turned ON.

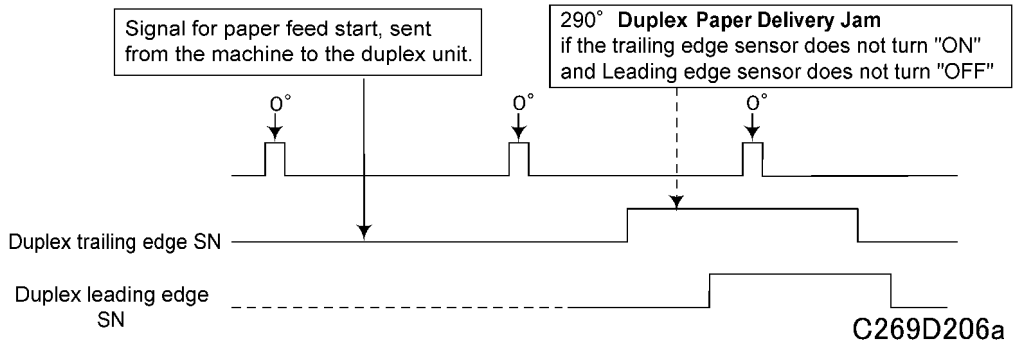
Paper Size	Detect Angle
B5 LEF	226°
A4 LEF	244°
B5 SEF	274°
A4 SEF	300°
B5 SEF	336°

Paper Size	Detect Angle
A3 SEF	378°

Duplex Paper Delivery Jam (B, Z Jam)



C269D209

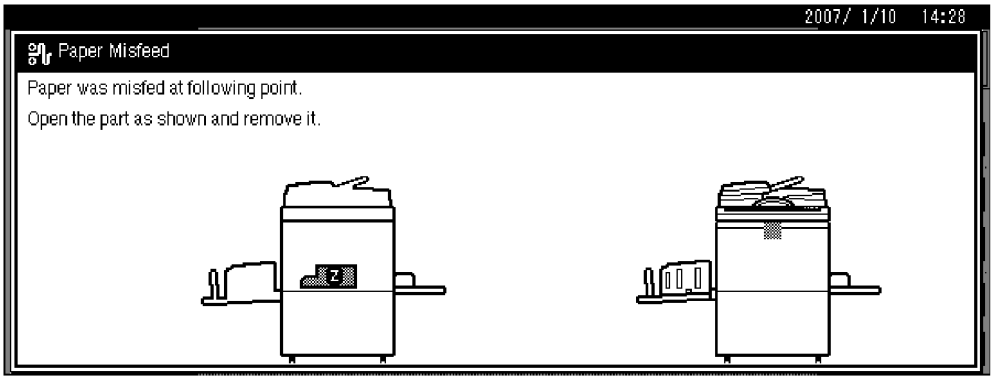


C269D206a

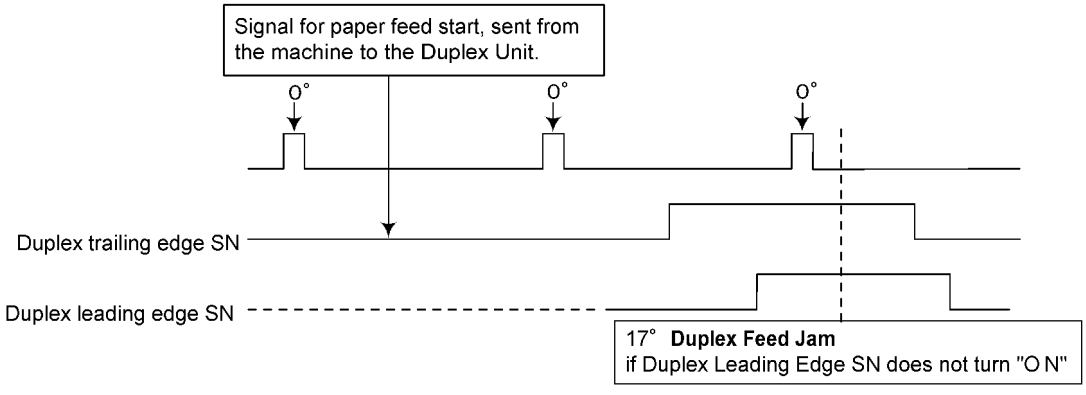
Cause:

The duplex trailing edge sensor (jam 2 sensor) is “ON” and the leading edge sensor (jam 1 sensor) is “OFF” at 290 degrees from the 3rd Drum Home Position Sensor when transporting the paper after printing on the back side.

Duplex Feed Jam (Z Jam)



C269D210

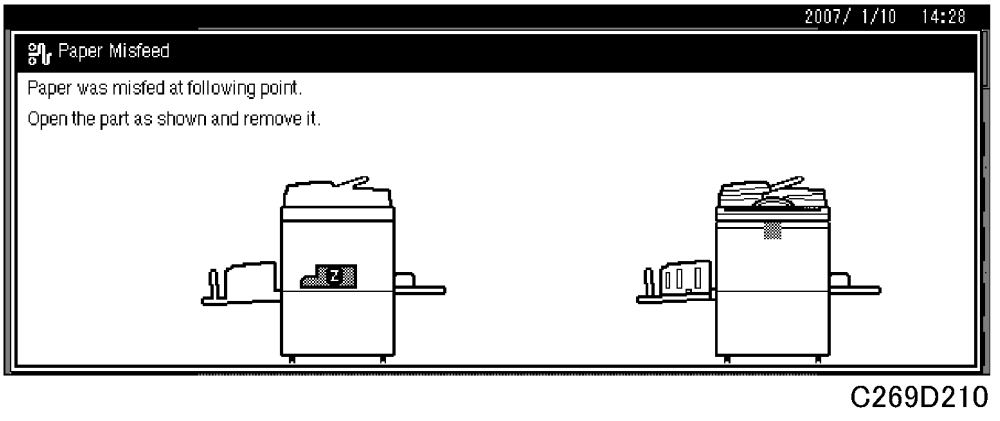


C269D207a

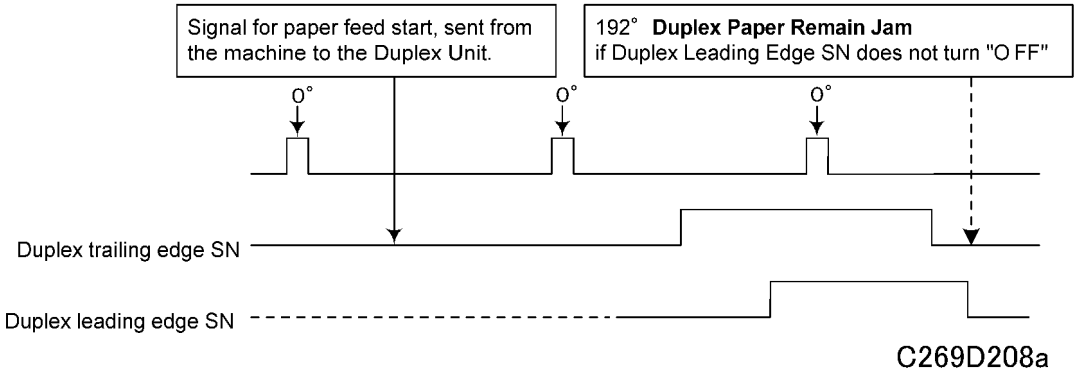
Cause:

The duplex leading edge sensor is “OFF” at 17 degrees from the 3rd Drum Home Position Sensor during paper feed to the duplex transport belt.

Duplex Paper Remain Jam (Z Jam)



C269D210

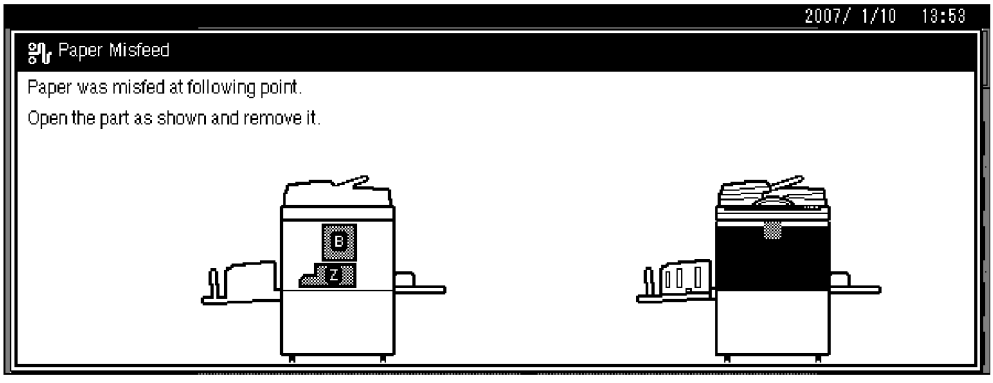


C269D208a

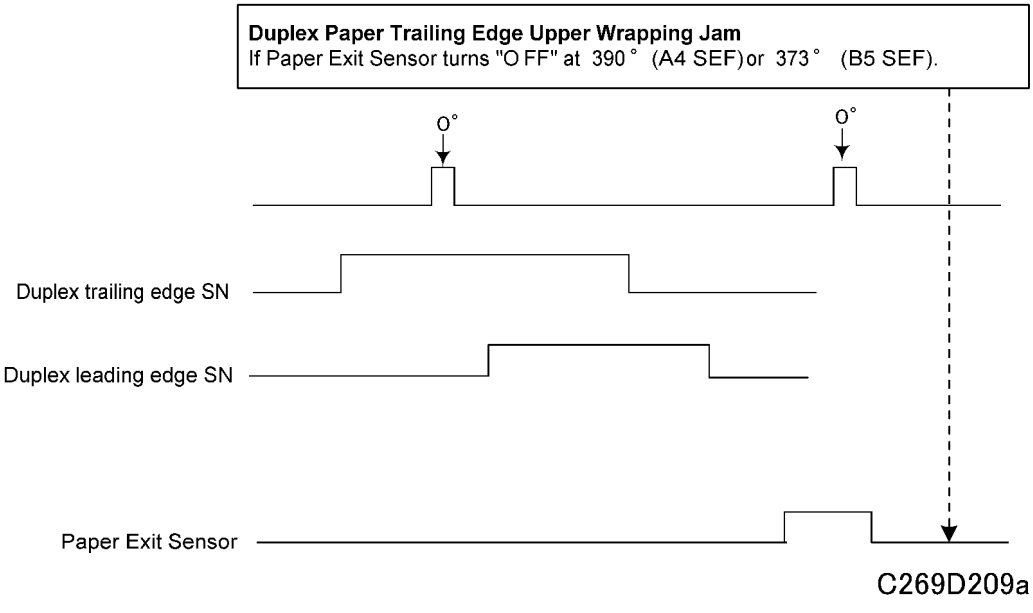
Cause:

The duplex trailing edge sensor (Jam 2 sensor) is “ON” at 192 degrees from the 3rd drum home position sensor during paper feed for front-side printing from the duplex unit, and the Duplex Unit Feed Roller Solenoid is ON.

Duplex Paper Trailing Edge Upper Wrapping Jam (B, Z Jam)



C269D209

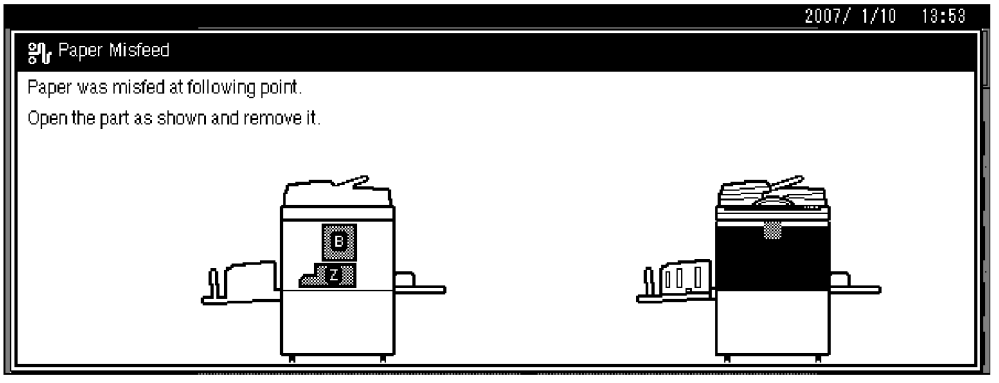


C269D209a

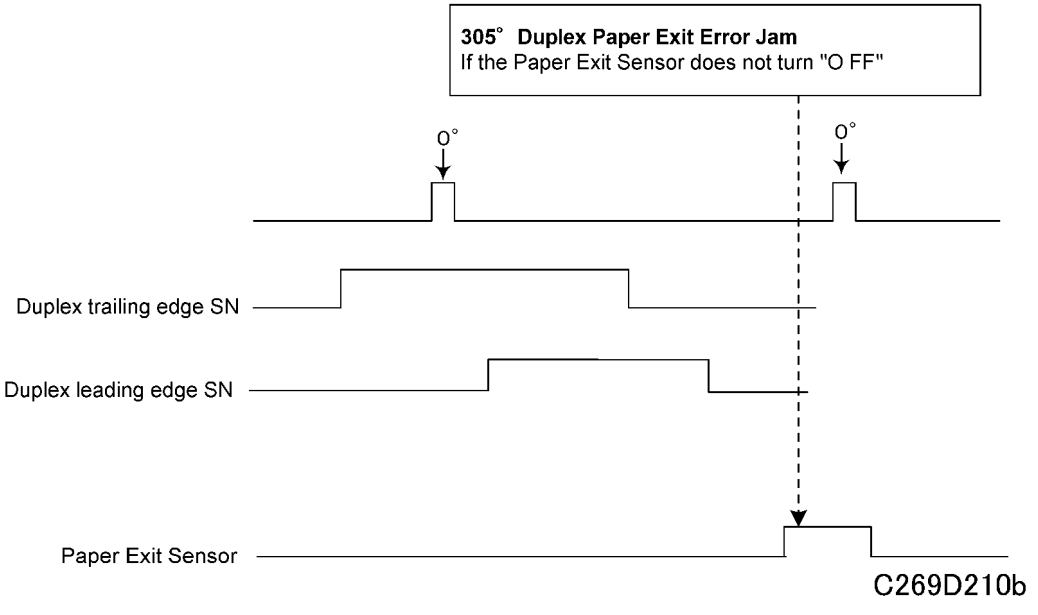
Cause:

The Paper Exit sensor is "OFF" at 390 degrees (A4 SEF) or 373 degrees (B5 SEF) from the 3rd Drum Home Position Sensor when printing the front side.

Duplex Paper Exit Error Jam (B, Z Jam)



C269D209

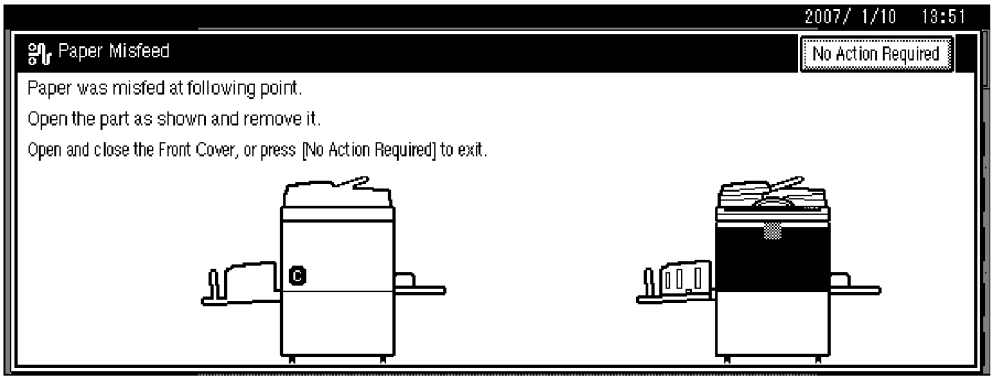


C269D210b

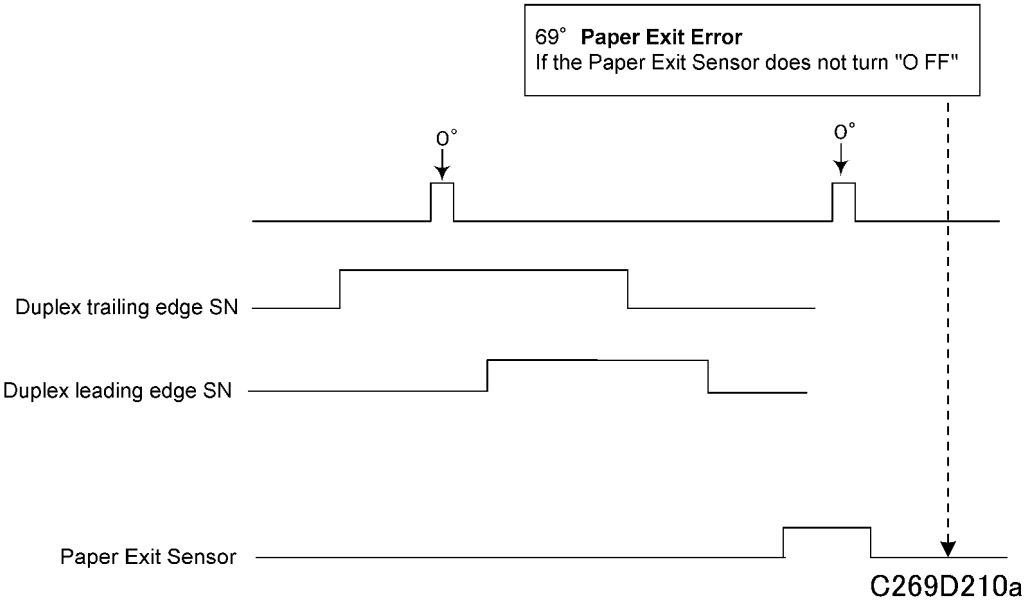
Cause:

When printing the front side, the Paper Exit sensor is “OFF” at 305 degrees from the 3rd Drum Home Position Sensor when printing the front side.

Duplex Paper Delivery Jam (Duplex Print: C Jam)



C269D207

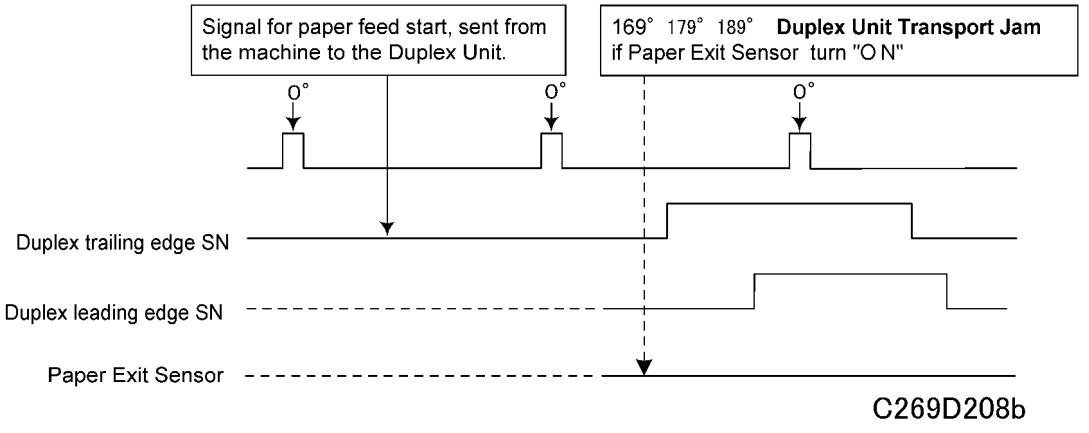


C269D210a

Cause:

The Paper Exit sensor is “ON” at 69 degrees from the 3rd Drum Home Position Sensor when printing the front side.

Duplex Unit Transport Jam



Cause:

The Paper Exit sensor is "ON" at 169° (or 179° or 189°) degrees from the 3rd Drum Home Position Sensor when printing the back side.

This means that the paper finished printing on the back side does not go to the duplex transport, or does not eject to the paper exit table directly.

6

Jam Indication When You Turn On the Power

Paper Registration	Paper Feed Timing	Paper Exit	Duplex Leading Edge / Trailing Edge	Jam	Display
ON	OFF	-	-	Paper misfeed	A
OFF	ON	-	-	Paper upper wrapping misfeed	B
ON	ON	-	-	Paper feed timing misfeed	A, B
-	-	ON	-	Paper exit misfeed	C
-	-	-	ON	Duplex Paper Remain Jam	Z

Jam Indication during Single-Side Printing

Check if sensors do not turn on

Paper Registration	Paper Feed Timing	Paper Exit	Jam	Display
Not ON	-	-	Paper misfeed	A
-	Not ON	-	Paper registration misfeed	A
-	OFF	Not ON	Paper upper wrapping misfeed	B
-	-	Not OFF	Paper exit misfeed	C

Jam Indication during Duplex Printing

Check if sensors do not turn on

Paper Registration	Paper Feed Timing	Duplex Trailing Edge	Duplex Leading Edge	Paper Exit	Jam	Display
Not ON	-	-	-	-	Paper misfeed	A
-	Not ON	-	-	-	Paper registration misfeed	A
-	OFF	Not ON	-	-	Duplex Paper Delivery Jam	B, Z
-	-	OFF	Not ON	-	Duplex Feed Jam	Z
-	-	-	Not OFF	-	Duplex Paper Remain Jam	Z
-	-	-	OFF	Not ON	Duplex Paper Trailing Edge Upper Wrapping Jam	B, Z
-	-	-		Not OFF	Duplex Paper Delivery Jam	C

Jam Display When the Drum Stops at Home Position Because of Paper Upper Wrapping

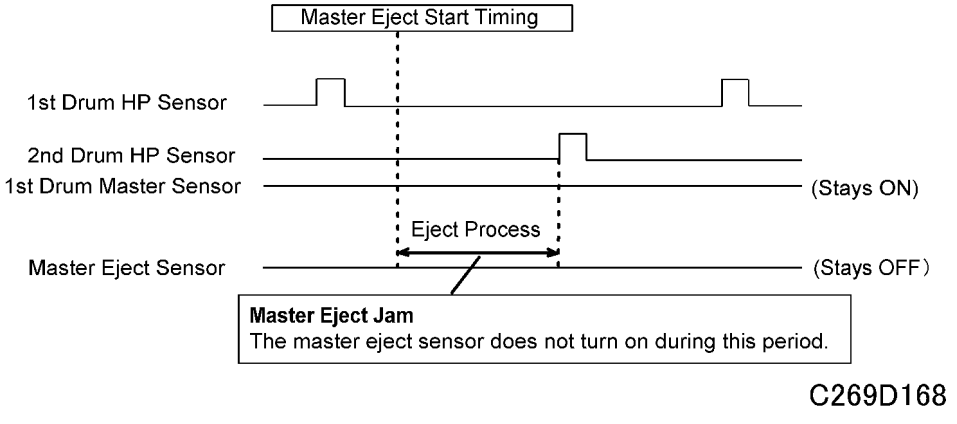
Paper Registration	Paper Feed Timing	Paper Exit	Jam	Display
-	ON	Not ON	Paper feed timing misfeed	A, B

-: ON or OFF

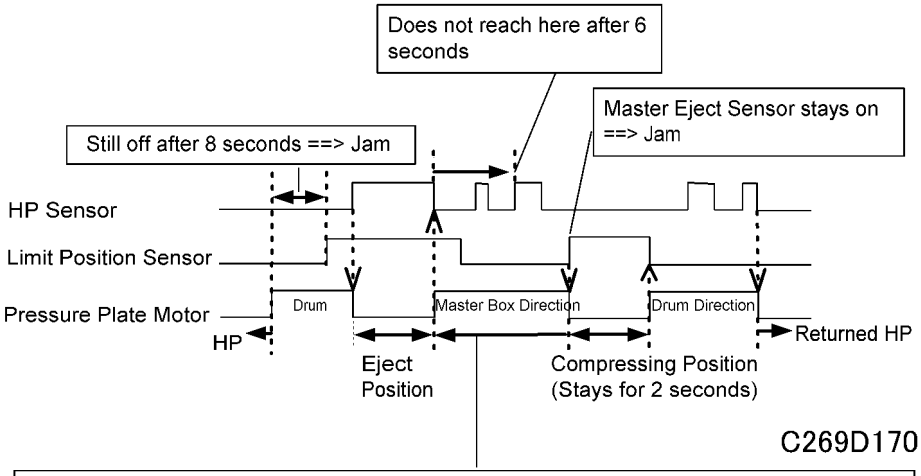
ON: Paper is detected by the sensor
OFF: Paper is not detected by the sensor
Not ON: Paper should be detected by the sensor, but it is not
Not OFF: Paper should not be detected by the sensor, but it is

Master Eject Error Detection

Error of Master Pick-up from Drum (B Jam)



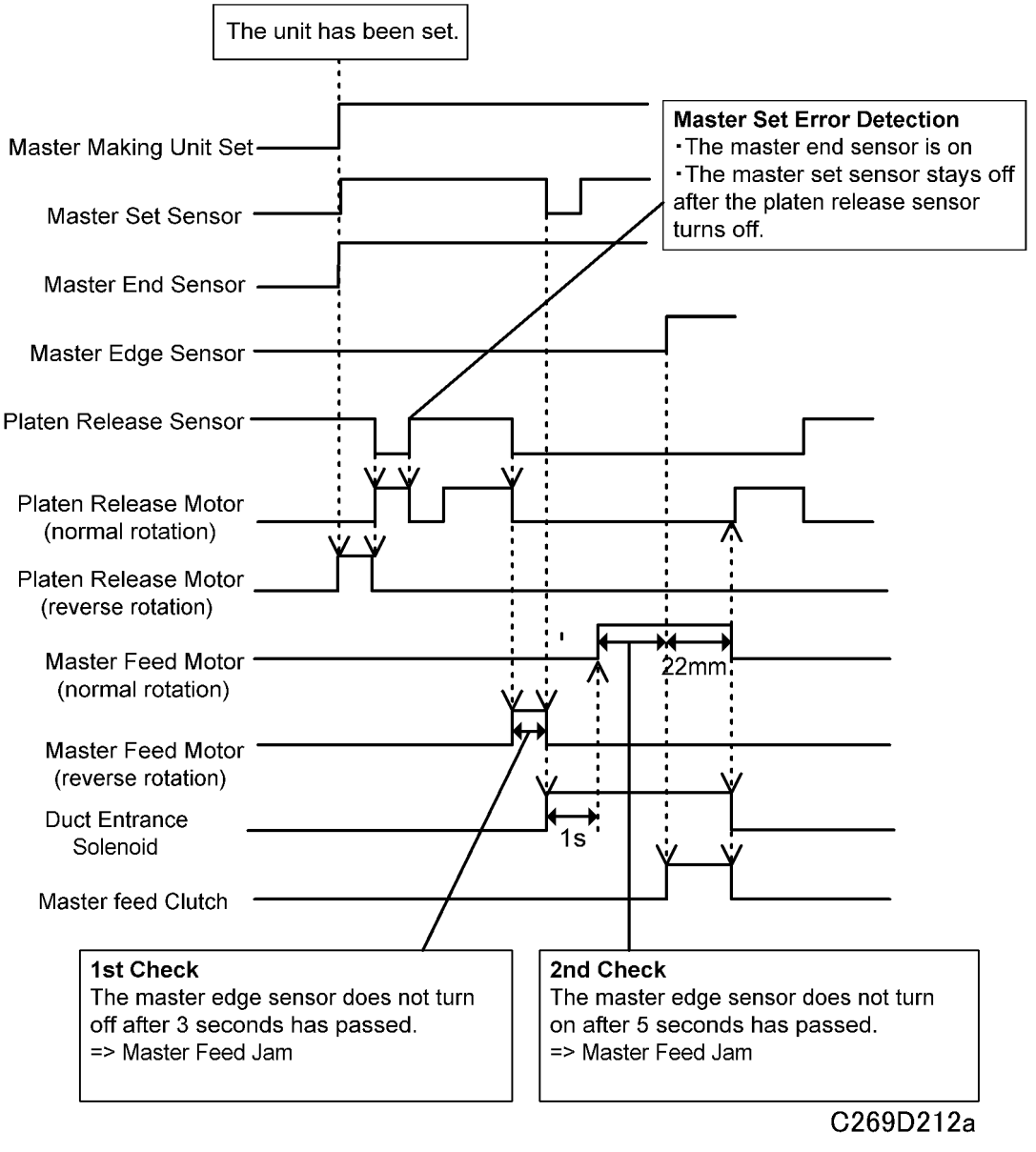
Master Eject and Compression Error (E Jam)



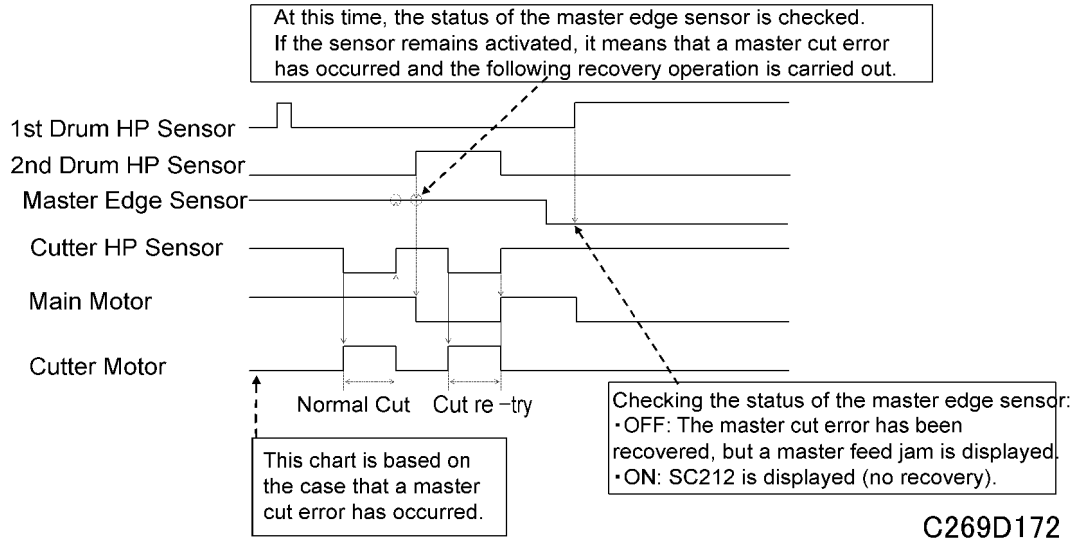
Check during rotation in the master box direction - Check Timing - When one of the following occurs: ・When Limit Position Sensor turns on. ・4.5 seconds passes after motor turns on (A3 master) 3.5 seconds passes after motor turns on (A4 master)	Number of HP Sensor On or Off Edges (First on edge is just after motor starts.) ・5 times ==> Normal ・4 times ==> Master box full ・Less than 4 ==> Pressure plate locked (SC400 lights)

Error Detection during Master Making

Master Set and Feed Error (D Jam)

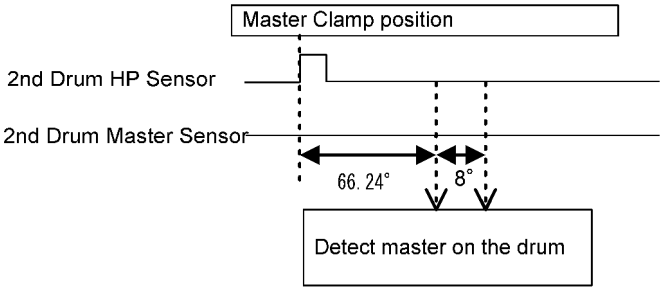


Master Cut Error (B Jam)



C269D172

Error while Clamping the Master to the Drum (B, D Jam)



C269D173

7. Specifications

General Specifications

Printing Mechanism

Configuration:	Floor Standing
Master Process:	Digital with 400 dpi thermal head – C269
Scanning (Pixel Density):	600 dpi CCD
Originals:	Sheet/Book (Less than 10 kg)
Printing process:	Fully automatic one-drum stencil system, with one drum and a duplex unit.
Original Size:	Platen: Maximum 300 x 432 mm / 11.8" x 17.0" ADF: Maximum 297 x 864 mm / 11.7" x 34.0", Minimum 148 x 210 mm / 5.8" x 8.3"
Print Paper Size:	One-sided Maximum: 325 x 447 mm / 12.8" x 17.6" Minimum: 70 x 148 mm / 2.8" x 5.8" Duplex A4, B5
Print Paper Weight:	One-sided 47.1 to 209.3 g/m^2, 12.5 to 55.6 lb. Duplex 64.0 to 104.7 g/m^2, 17.0 to 28.0 lb.
Printing Area:	One-sided A3 machine: 290 x 410 mm DLT machine: 11.4" x16.5" Duplex A3 machine: 290 x 200 mm

	DLT machine: 11.4" x 8.0"
Printing Speed:	Print paper size B4 SEF or shorter (364 mm): 60, 75, 90, 105, 120, 135 sheets/minute (6 steps) Print paper sizes longer than B4 SEF (364 mm) or Duplex mode: 60, 75, 90, 105, 120 sheets/minute (5 steps)
Master Eject Box Capacity:	A3 / DLT drum: 100 masters Low temperature: 90 masters
Magnification Ratios:	4 enlargement and 5 reduction A3 version: 200%, 141%, 122%, 115%, 100%, 93%, 87%, 82%, 71%, 61%, 50% DLT version: 200%, 155%, 129%, 121%, 100%, 93%, 85%, 77%, 74%, 65%, 50%
Zoom:	50% to 200% (1% steps)
Power Source:	North America: 120 V, 60 Hz Europe, Asia: 220 – 240 V, 50/60 Hz
Power Consumption:	

C269	Mainframe + ADF + LCS + HDD + 802.11b + PS3 module + RAM			
	US		EU, AA	
	Single Side Mode	Duplex Mode	Single Side Mode	Duplex Mode
Copying 60 rpm	Not above 250 W	Not above 340 W	Not above 235 W	Not above 325 W
Copying 90 rpm	Not above 270 W	Not above 370 W	Not above 260 W	Not above 350 W
Copying 120 rpm	Not above 300 W	Not above 390 W	Not above 285 W	Not above 385 W
Copying 135 rpm	Not above 320 W	-	Not above 305 W	-
Master making	Not above	Not above 450 W	Not above 340 W	Not above 430 W

	380 W			
Standby	Not above 60 W		Not above 60 W	
Standby (ecology mode)	Not above 5 W		Not above 7 W	

Noise Emission		
	Single Side Mode	Duplex Mode
Sound Power Level		
Standby	52 dB	52 dB
Copying 60 rpm	73 dB	76 dB
Copying 90 rpm	76 dB	79 dB
Copying 120 rpm	79 dB	81 dB
Copying 135 rpm	81 dB	-
Operating Position Sound Power Level		
Standby	33 dB	35 dB
Copying 60 rpm	58 dB	61 dB
Copying 90 rpm	61 dB	64 dB
Copying 120 rpm	64 dB	66 dB
Copying 135 rpm	66 dB	-

Dimensions (W x D x H)	Table Closed: 750 x 720 x 1020mm (29.5 x 28.3 x 44.5") Table Opened: 1420 x 720 x 1130mm (55.9 x 28.3 x 40.2") Measured with the ADF and the table
Weight:	With Platen: 115kg (253.5lb) With ADF: 122kg (268.9 lb)
Master Process Time:	One-sided ADF: Not more than 20 seconds (A4 copying)

	Not more than 28 seconds (A3 copying) Platen: Not more than 12 seconds (A4 copying) Not more than 16 seconds (A3 copying) Duplex ADF: Not more than 45 seconds (A4 copying)
Paper Table Capacity:	1,000 sheets (55 kg / 64 g/m^2 / 20 lb)
Paper Delivery Table Capacity:	1,000 sheets (55 kg / 64 g/m^2 / 17 lb) 1,000 sheets (20 lb paper)
Leading Edge Margin:	6 ±3 mm
Trailing Edge Margin:	2 mm
Side Registration Adjustable Range:	±10 mm Minimum adjustment unit: 0.25 mm
Vertical Registration Adjustable Range:	One-sided A3 drum : ±15 mm DLT drum : ±10 mm Duplex A3 drum : ±7.5 mm DLT drum : ±2.5 mm Minimum adjustment unit: 0.25 mm
Master Type:	Thermal master roll type: 320 mm width, 115 m/roll Yield: 200 masters/roll (A3 Drum) 190 master/roll (DLT Drum) Maximum run length per master: 4,000 prints
Master Storage Conditions:	Temperature: 0 °C to 40 °C Humidity: 10% to 95% RH Recommended maximum storage period: Can be used up to one year after production date (if a package is opened, use the ink as soon as possible)

	Stack max: 4 cartons **Note:** Avoid areas that get direct sunlight.
Ink Type:	1000 ml cartridge type Available colors: Red, Blue, Green, Brown, Gray, Yellow, Purple, Maroon, Navy, Orange, Teal, Violet, Gold, Hunter Green, Burgundy, Reflex blue
Ink Storage Conditions:	Temperature: -5 °C to 40 °C (Optimum conditions: 15 °C to 25 °C) Humidity: 10% to 95% RH (Optimum conditions: 20% to 70% RH) Recommended maximum storage period: Can be used up to 18 months after production date (if a package is opened, use the ink as soon as possible) Stack max: 10 cartons **Note:** Avoid locations that get direct sunlight.
Optional Equipment:	• Color drum • Platen cover • Auto document feeder • TC-IIR • LS3000R • Tape marker • PC Controller PS3 module HDD kit RAM module: SDRAM128, 256MB IEEE 802.11b Wireless LAN IEEE1284

Controller Hardware

Index	Specification
Page Language	RPCS Adobe PostScript (Option)
RAM	128M - Normal (64M+64M DIMM) 320M - Maximum (128M+256M (Option))
Interface	100BASE-TX/10BASE-T USB1.1/2.0 IEEE1284 (Option) IEEE802.11b (Option)
Fonts loading	Arial (RPCS)
	Optional Fonts: 3 AlbertusMT, 4 AntiqueOlive, Apple-Chancery, 4 Aria l,4 AvantGarde, 6 Bodoni, 4 Bookma, Carta, Chicago, 3 Clarendon, 4 Cooper, Coronet-Regular, 4 Courier, 4 EuroStile, Geneva, 9 GillSans, 5 Goudy, 12 Helvetica, 5 HoeflerText, 4 Joanna, 4 LetterGothic, 4 LubalinGraph, MariGold, Monaco, MonaLisa-Recut, 4 NewCenturySchlbk, NewYork, 4 Optima, Oxford, 3 Palatino, 3 StempelGaramond, Symbol, Tekton, 4 Times, 4 TimesNewRomanPS, Univers, 4 Univers-Bold, 4 Univers-Condensed, 2 Univers-Extended, 2 Univers-Light, Wingdings-Regular, ZapfChancery-MediumItalic, ZapfDingbats
HDD	1 drive slot (Option)
Compliant OS	Windows 95/98/Me Windows NT 4.0 Windows 2000/XP/Server2003 Mac OS 8.6 to 9.2.1 (for optional PS3 module) Mac OS 10.1 or later (for optional PS3 module)
Prepackaged Application	PS3 Setting Utility (Mac OS) Ridoc IO Admin/Navi (Windows2000/XP)

Index	Specification
	Ridoc Desk 2000 LT
CPU	TMPR4955BFG-300
ASIC	T6TM1TB-0101 (Piccolo)
Program ROM	Flash ROM 16M (on board)
Font RAM	ROM 8M (on board mask)
SD card slot	1 slot for version up ECU/ACU/Operation panel/Postscript.

Network

Index	Specification
Interface	100BASE-TX/10BASE-T
Frame type	IEEE802.3u
Protocol	TCP/IP, IPX/SPX, NetBEUI, AppleTalk

MEMO