Gestetner® LANIER RICOH savin®

B125/B275
SERVICE MANUAL

Gestetner

LANIER

RICOH

SAVIN

B125/B275
SERVICE MANUAL

RICOH GROUP COMPANIES

Gestetner® LANIER RICOH savin®

B125/B275
SERVICE MANUAL

WARNING

LEGEND

PRODUCT CODE	COMPANY			
	GESTETNER	LANIER	RICOH	SAVIN
B125	A045	LW310	Aficio 240W	2400WD
B275	A045	LW310	Aficio 240W	2400WD

NOTE: *The B275 is a ROHS compliant B125.*

DOCUMENTATION HISTORY

REV. NO.	DATE	COMMENTS
*	4/2004	Original Printing
1	1/2007	B275 ROHS Compliant Added

B125/B275
TABLE OF CONTENTS

INSTALLATION

PREVENTIVE MAINTENANCE

REPLACEMENT AND ADJUSTMENT

TROUBLESHOOTING

SERVICE TABLES

DETAILED DESCRIPTIONS

SPECIFICATIONS

Conventions Used in this Manual

This manual uses several symbols.

Symbol	What it means
☛	Refer to section number
📖 CT	See Core Tech Manual for details
🔩	Screw
🔌	Connector
ℂ	E-ring
🔗	Clip ring
🗜	Clamp
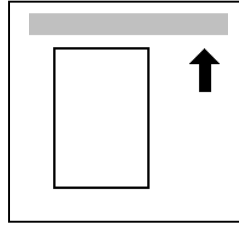
Lengthwise, SEF
(Short Edge Feed)
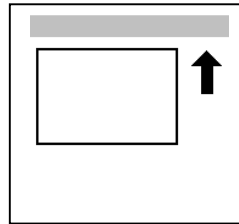
Sideways, LEF
(Long Edge Feed)

Cautions, Notes, etc.

The following headings provide special information:

> ⚠WARNING
>
> **FAILURE TO OBEY WARNING INFORMATION COULD RESULT IN SERIOUS INJURY OR DEATH.**

> ⚠CAUTION
>
> **Obey these guidelines to ensure safe operation and prevent minor injuries.**

Important: Obey these guidelines to avoid problems such as misfeeds, damage to originals, loss of valuable data and to prevent damage to the machine.

NOTE: This information provides tips and advice about how to best service the machine.

INSTALLATION

PREVENTIVE MAINTENANCE

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INSTALLATION

1. INSTALLATION PROCEDURE

1.1 PREPARATION

1.1.1 ENVIRONMENT

1. Temperature Range: 10°C to 30°C (50°F to 86°F)

2. Humidity Range: 15% to 90% RH

3. Ambient Illumination: Less than 1,500 Lux (do not expose the machine directly to light from the sun).

4. Ventilation: More than 30m^3/hr/person in the work area

5. Ambient Dust: Less than 0.10 mg/m^3

6. If the installation area has air-conditioners or heaters, put the machine in a location that agrees with these conditions:
    a) Where there are no sudden temperature changes from low to high, or high to low.
    b) Where it will not be directly exposed to cool air from an air conditioner in the summer.
    c) Where it will not be directly exposed to reflected heat from a space heater in the winter.

7. Do not install the machine in an area filled with gases that can cause corrosion.

8. Do not install the machine in areas higher than 2,000 m (6,500 ft) above sea level.

9. Put the machine on a strong and level surface.

10. Do not install the machine in an area where there are frequent strong vibrations.

1.1.2 MINIMUM SPACE REQUIREMENTS

Back 600 mm

Left 600 mm

Right 600 mm
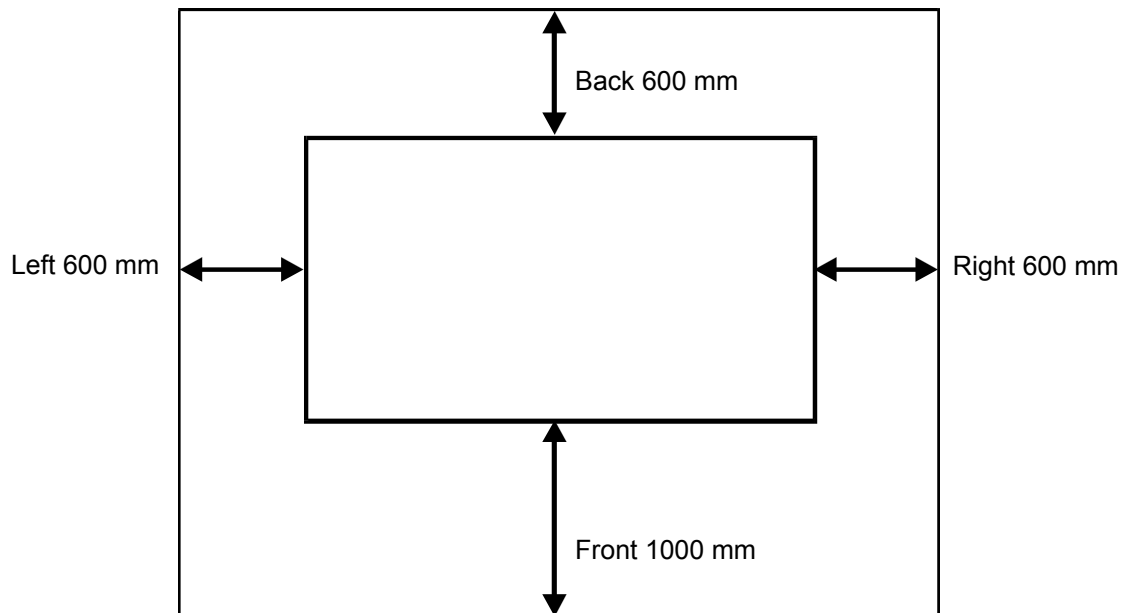
Front 1000 mm

1. Front: 1000 mm (40")
2. Back: 600 mm (23")
3. Right: 600 mm (23")
4. Left: 600 mm (23")

1.1.3 MACHINE LEVEL

1. Front to back: Not more than 5 mm from level
2. Right to left: Not more than 0.15/1000 mm from level.

1.1.4 POWER SOURCE

The machine must be installed in a building that has protection against electrical malfunctions by a circuit breaker, or an equivalent device. Such devices are necessary to give the machine protection for over-current and short circuits

1. Input Voltage Level: 120V, 60 Hz
                                           15 A or more for the U.S.A. version

                                           220-240V, 50/60 Hz
                                           10A or more for the European version

2. Permissible Voltage Fluctuation: ± 10%

3. Do not set objects on the power cord.

NOTE: 1) Make sure the plug is firmly inserted in the outlet.
         2) Do not connect the machine to the same power source as other
            devices.

1.1.5 INSTALLATION OVERVIEW

Installation Flow

This copier has these options.

- **Roll feeder**. You can install a roll feeder with one roll (B641) or two rolls (B642). You can also install a universal paper cassette in the roll feeder. You cannot install the paper cassette without the roll feeder.
- **Table**. Used as an alternative to the roll feeder, it contains only the lower stacker.
- **Hard disk**. You can install one hard disk in the copier.
- **Interface unit**. Lets the copier connect to a PC that contains the optional printer/scanner controller (this PC is referred to as the 'server PC'). If you install the interface unit and HDD in the machine, install the HDD unit first.
- **Stamp Board**. This is necessary for all the stamp features (page numbering, date stamps, background numbering). For the preset stamps, user stamps, and watermarks, the HDD is also necessary.

Here is a summary of the sequence recommended for installation of all these options together.

Installation Flow Diagram

Copier Pre-Installation	Remove the copier from its box. Remove all packing material and tape. Put the copier on the roll feeder or the table. ⬇
Roll Feeder (or Table) Installation	Install the roll feeder (do not do the SP settings at this time). Put the copier on top of the roll feeder. Complete the roll feeder installation and installation of other options before you complete the copier installation. ⬇
Install Other Options	1. Paper Cassette 2. HDD 3. Interface PCB (Unit) 4. Stamp Board ⬇
SP and User Tool Settings for Installation	Do all the SP and User Tool settings for the copier and the installed options. ⬇
Copier Final Installation	Complete the installation of the copier after you put it on the roll feeder or table, and after you install all options. Do some sample copies to check the operation of the copier and installed options. ⬇
Printer/Scanner	Install the printer/scanner options and do a function check. For installation instructions, refer to the installation manual for the Printer/Scanner controller.

SP and User Tool Settings Required for Installation

This is a summary of the important SP settings that are necessary for this installation.

Quick Reference for Installation SP and User Tool Settings

This is a summary of the SP and User Tool settings necessary for installation. For more details, see 1.2.3.

Main Machine Installation		
SP 2923 002	Cleaning Blade Set Mode	Applies a thin layer of toner to the drum. This prevents scratches on the drum when the machine power comes on for the first time.
SP 3001 005	ID Sensor Setting – Developer Initialization	Initializes the ID sensor for auto process control.
SP 1960	Optional Paper Setting	Enables installed options: Roll feeder (1 or 2 rolls), paper cassette. This setting is not necessary if no paper feed options are installed. (The default setting is for the manual feed table.)
User Tool	General Features> Tray Paper Size	Sets the paper sizes for the roll(s) installed in the roll feeder and the optional paper cassette. Do this setting for the manual feed table (Bypass Tray), even if no paper feed options are installed.
User Tool	General Features> Tray Paper Type	Sets the paper types for the roll(s) installed in the roll feeder and the optional paper cassette. Do this setting for the manual feed table (Bypass Tray), even if no paper feed options are installed.
User Tool	Date and Time	Check the date and time setting. If they are not correct, set the correct date and time.
User Tool	Original Paper Size	For NA only. Select either "Engineering" or "Architecture" (whichever is used most frequently) for automatic original width detection.
Roll Feeder Installation		
SP1920	Cut Length Adjustment	Sets the cut length settings for the rolls installed in the roll feeder. These settings are different for each machine. The settings are on a label attached to the right side of the roll feeder drawer.
SP1001 001	Leading Edge Registration – Roll Feed	Adjust if necessary for Roll Feeder B641/B642.
SP1002 001	Side-to-Side Registration – Roll 1	Adjust if necessary for Roll Feeder B641/B642.
SP1002 002	Side-to-Side Registration – Roll 2	Adjust if necessary for Roll Feeder B642 only.
Paper Cassette		
SP1001 003	Leading Edge Registration – Cut Paper Tray	Adjust if necessary for Paper Cassette B643.
SP1002 003	Side-to-Side Registration – Cut Paper Tray	
HDD Installation		
SP4960 015	HDD Connection On/Off	Enables the HDD after it is installed. The machine will not detect the HDD until this SP is done. This SP must be done before the HDD can be formatted.
SP4960 003	Formatting	The HDD must be formatted. Formatting requires about 25 min.
Stamp Board Installation		
SP5137	Stamp Function On/Off	Enables the stamp board after it is installed. The machine will not detect the stamp board until this SP is done.

1.2 COPIER INSTALLATION

NOTE: Always have the Service Manual with you. The installation procedures are not shipped with the machine.

1.2.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Original Output Guides	6
2. Upper Output Stacker	2
3. Upper Output Guide	1
4. Copy Exit Selection Lever	1
5. NECR	1
6. Cloth – Exposure Glass	1
7. Operating Instruction Holder	1
8. Studs	2
9. Operation Panel Anchor Screws	3
10. Flat Brush (Fusing Unit Guide Spurs)	1
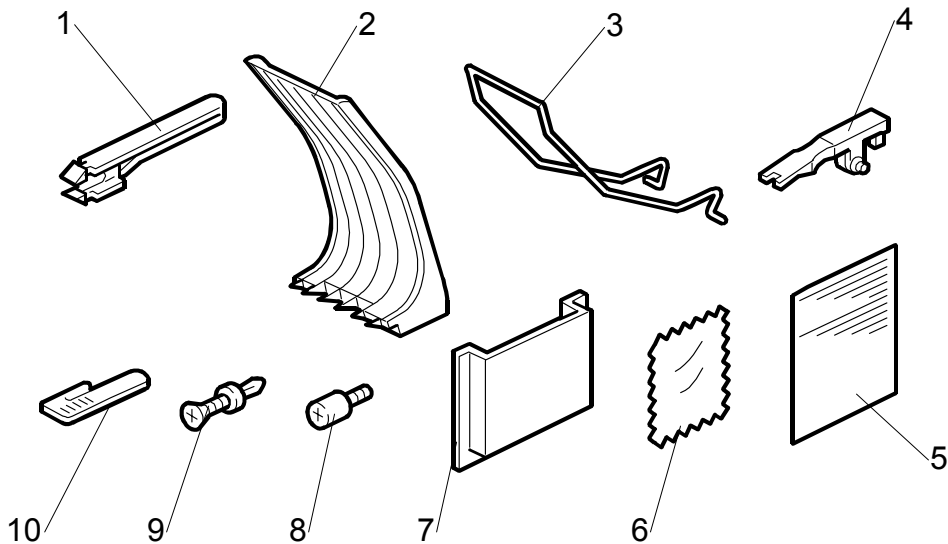
1.2.2 COPIER PRE-INSTALLATION PROCEDURE

Removing the Shipping Material
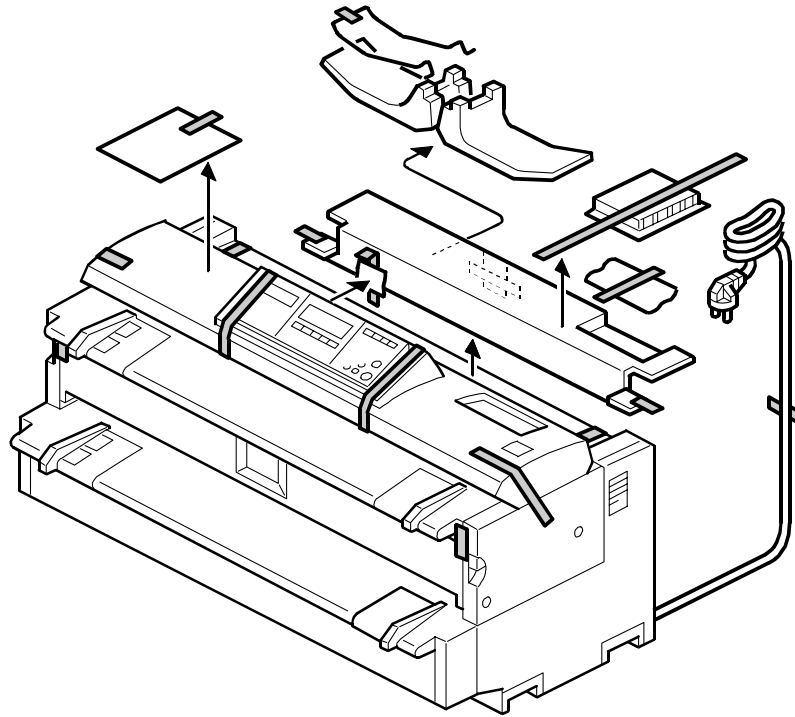
⚠CAUTION
Do not connect the power cord to the power source during these installation procedures until the procedure tells you to do this.

1. Remove all the orange tape and packing materials from the copier.

Set the Operation Panel Position
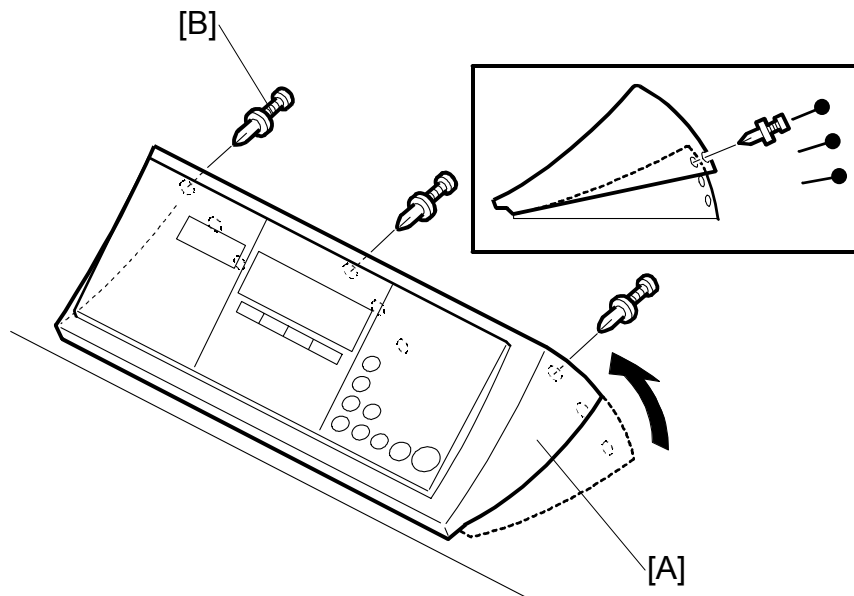
You can adjust the position of the operation panel to decrease reflections from overhead lighting.

1. Lift or lower the operation panel [A] to one the three sets of holes to position the panel at the necessary height.

2. Push each anchor screw [B] into its hole ($\mathscr{F}$ x 3).
    NOTE: It is not necessary to tighten the screws.

    If it is necessary to remove the anchor screws [B] and adjust the height:

    1) Loosen each screw until the anchor is loose.
    2) Pull the screws from their holes.
    3) Push each screw into its new hole.

Setting the Copier on the Roll Feeder or Table

Roll Feeder

Table
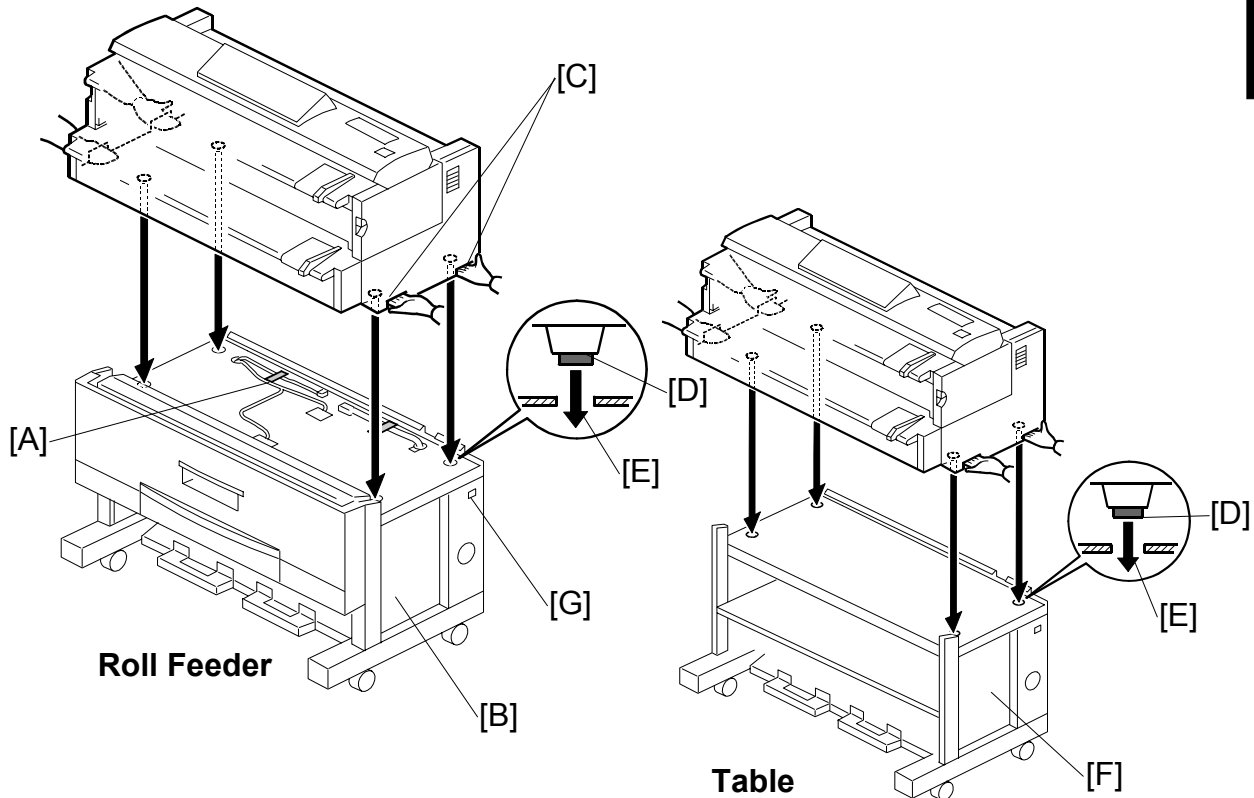
1. Do not remove the shipping tape from the connectors [A] of the roll feeder [B]. This prevents damage to the connectors when the copier is put on top of the roll feeder.

> ⚠**CAUTION**
>
> **The copy machine weighs 231 lb. (105 kg). Two or more customer engineers are necessary to lift the copier and set it on the roll feeder or table. There are two handles in recesses on each side of the copier. To prevent injury or damage to the machine, always use these handles to lift the copier.**

2. Lift the machine, and set its rubber feet [D] into the holes [E] on the top of the roll feeder [B] or table [F].
    NOTE: With one person at each end of the machine, use the two handles [C] on each end of the machine to lift it.

3. Make sure that you put the rubber feet of the copier into the holes on top of the roll feeder or table.

4. Check the dehumidifier switch [G]. Make sure that it is OFF. If it is ON, set it to OFF.
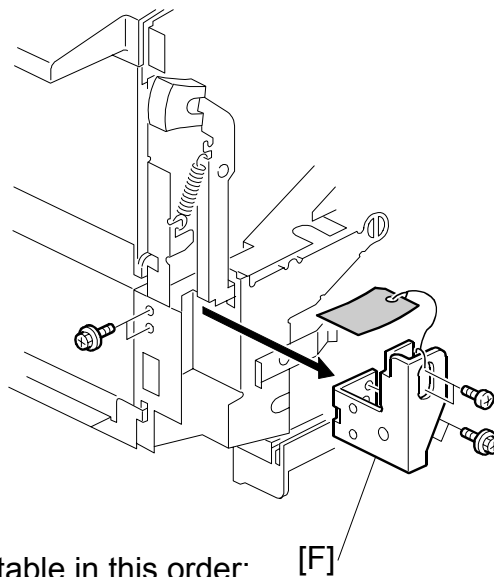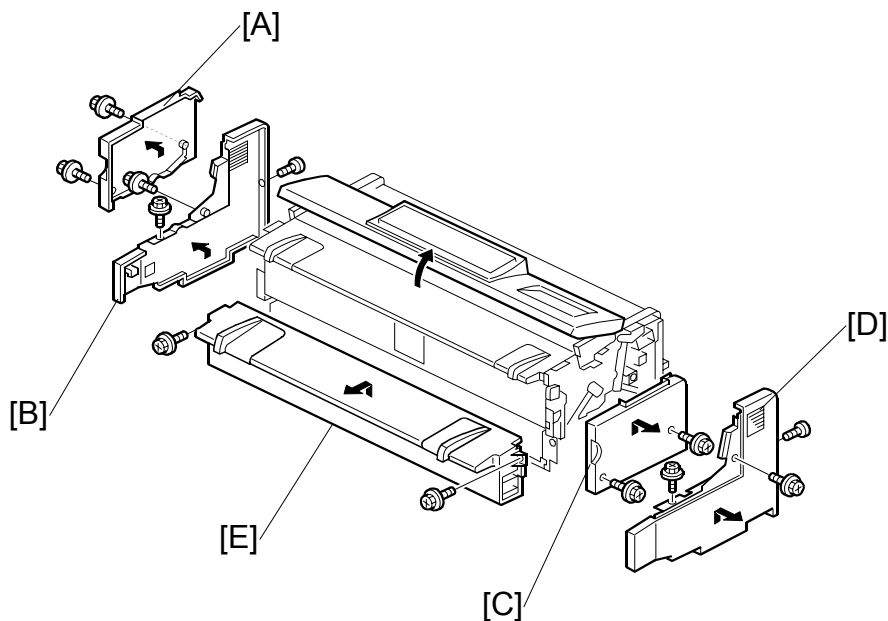
5. Remove the covers and manual feed table in this order:
   1) Upper left cover [A] (🔩 x 2)
   2) Left cover [B] (🔩 x 3)
   3) Upper right cover [C] (🔩 x 2)
   4) Right cover [D] (🔩 x 3)
   5) Manual feed table [E] (🔩 x 2). (If the roll feeder is installed, open the drawer of the roll feeder before you remove this part.)

6. Remove the right transport lock plate [F] (🔩 x 6).

7. Remove the left transport lock plate (🔩 x 6).

[A]

[C]

[B]
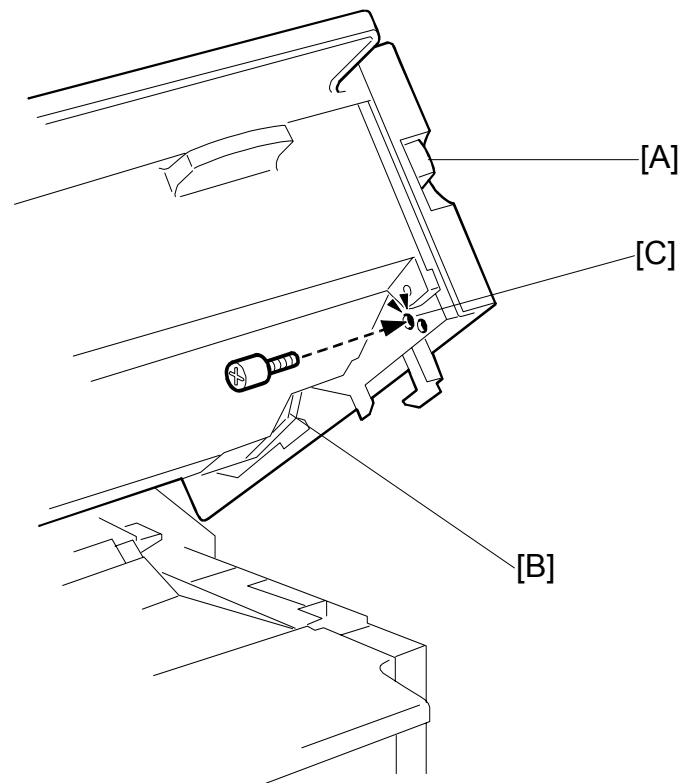
8. Push up the buttons [A] on the left and right sides of the upper unit to release and open it.

9. Install the studs [B] on the right side and the left side.
   NOTE: You must fasten each stud in the upper hole [C] on both sides.

10. Close the upper unit.

Leveling the Copier and Attaching Leg Covers
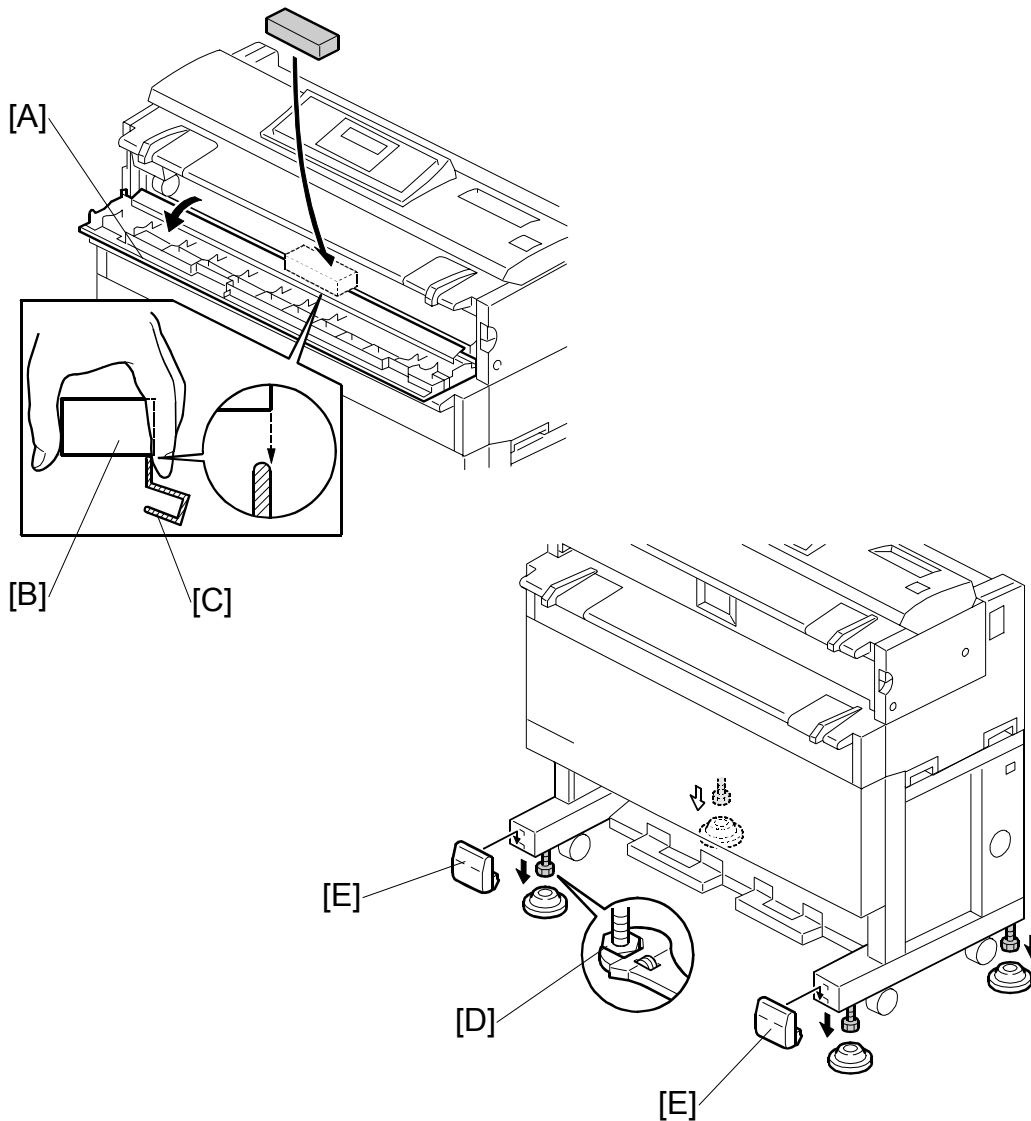
1. Open the toner hopper cover [A].

2. Set a level [B] on the plate [C] of the development unit.

3. Put the level on the machine as shown.

4. Use a wrench to adjust the nuts [D] on each foot to lift or lower the machine at each corner.
    NOTE: The machine must not be more than 1.5 mm from level over a span of 1 meter (39.37 inches (from right to left).

5. Attach the leg covers [E] to the left and right leg.
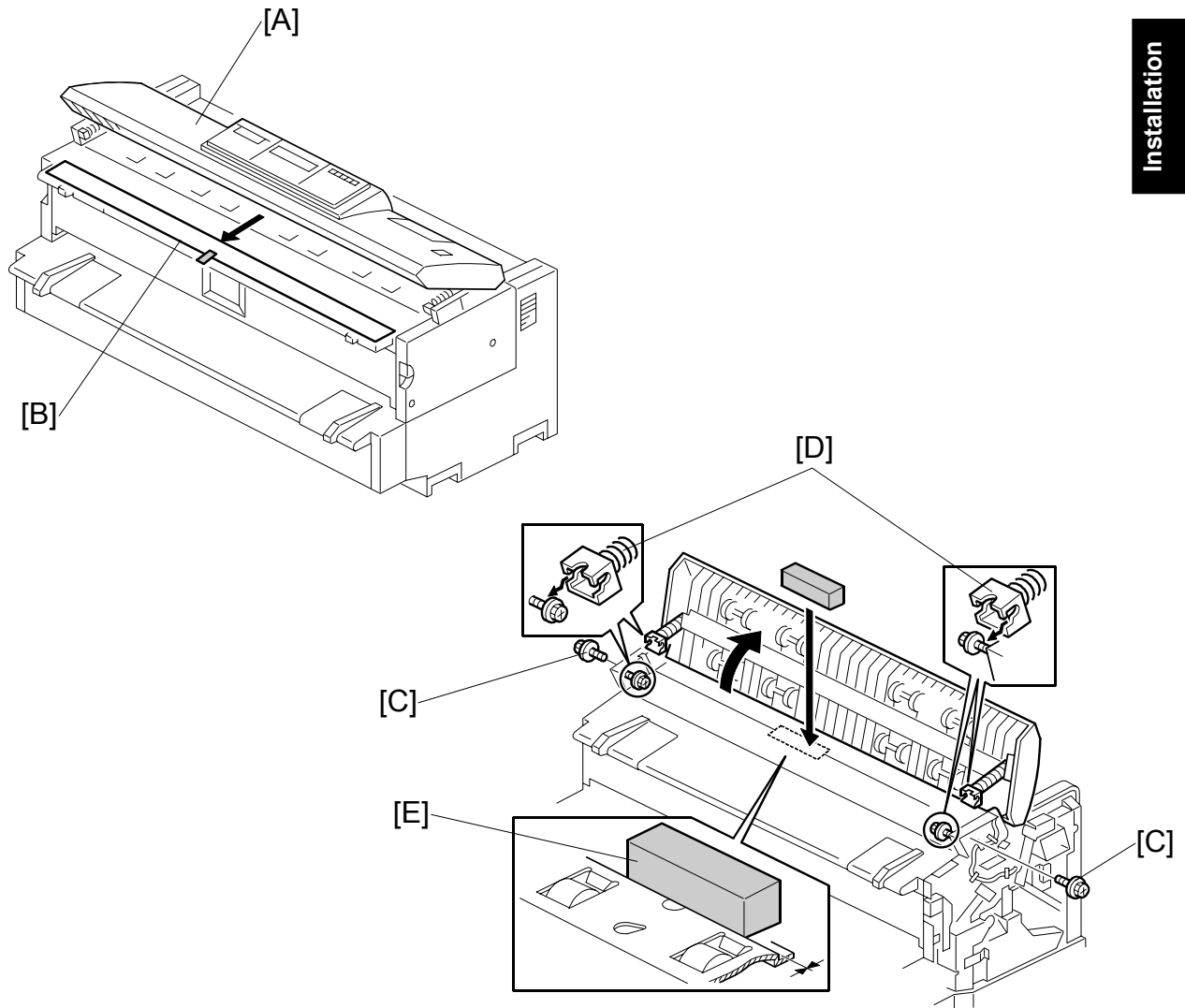
6. Raise the original feed unit [A].

7. Remove the protective sheet and tape [B].

8. Remove the lock screws [C] ($\mathscr{F}$ x 2)

9. On the left and right sides, lift the hinges [D] off the support screws and lift the unit to the vertical position. (Do not remove the support screws.)

10. Put the level [E] on the exposure glass.

11. Use a wrench to adjust the nuts on each foot to lift or lower the machine at each corner.
    NOTE: The machine must not be more than 1.5 mm from level over a span of 1 meter (39.37 inches (from right to left).

12. Reattach the hinges and fasten the lock screws removed in Step 8.
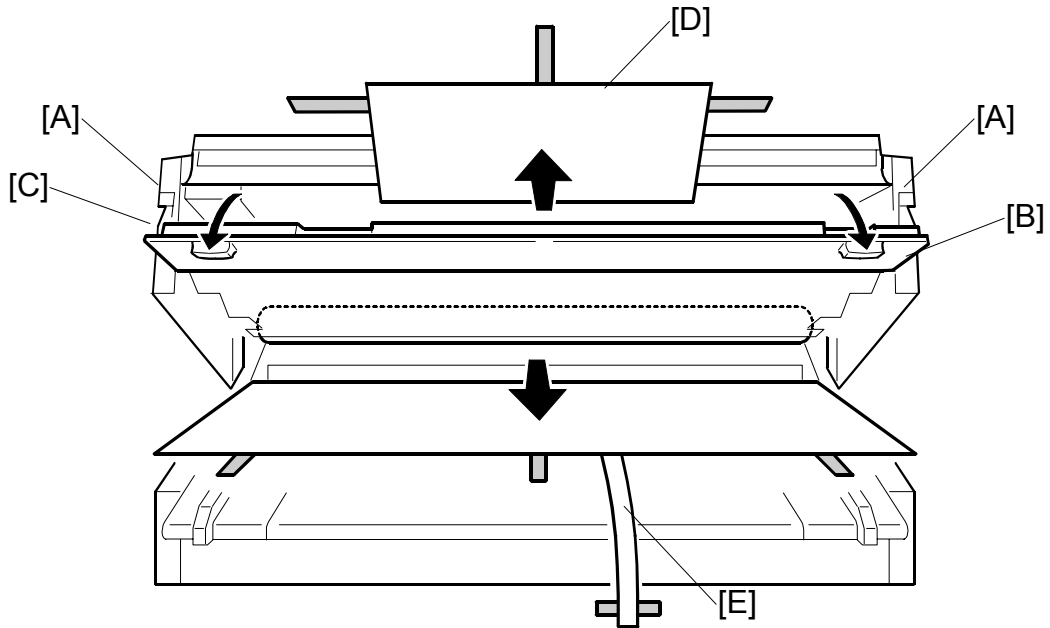
Developer

1. Push up the buttons [A] to release the upper unit. Then lift the upper unit [B].
2. Open the toner hopper cover [C].
3. Remove all tape and packing materials [D] in the upper unit.
4. Pull out the drum protection sheet [E].
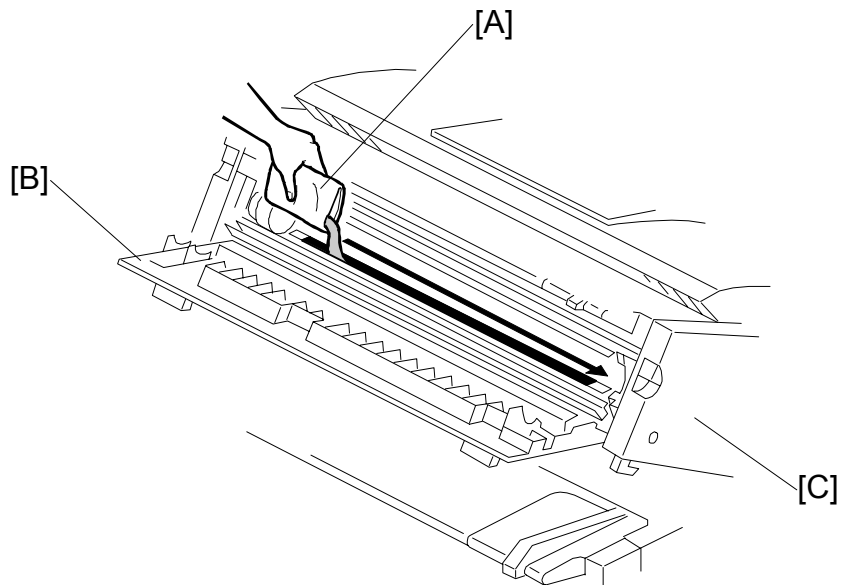
5. Add one 1 kg pack of developer to the development unit. Do not add the second pack at this time.
    *   Open the first pack of developer [A]. Notice the developer lot number on the edge of the bag
    *   Slowly add the developer from the first pack into the development unit. Move the pack from left to right until the pack is empty.
    *   All parts of the opening in the development unit must receive equal quantities of developer.

6. Close the toner hopper cover [B].

7. Close the upper unit [C].

8. Connect the power supply cord. Switch the main power switch on. The main motor switches on and distributes the developer evenly inside the development unit.

9. Switch the main power switch off and disconnect the power cord.

10. Open the upper unit.

11. Open the toner hopper cover.

12. Open the second 1 kg pack of developer, then slowly add it to the development unit. Move the pack from left to right until it is empty.

13. Use a clean cloth to clean the edges around the slot of the development unit.

Toner Cartridge and ID Sensor Initialization

[C]

[D]

[A]

[B]
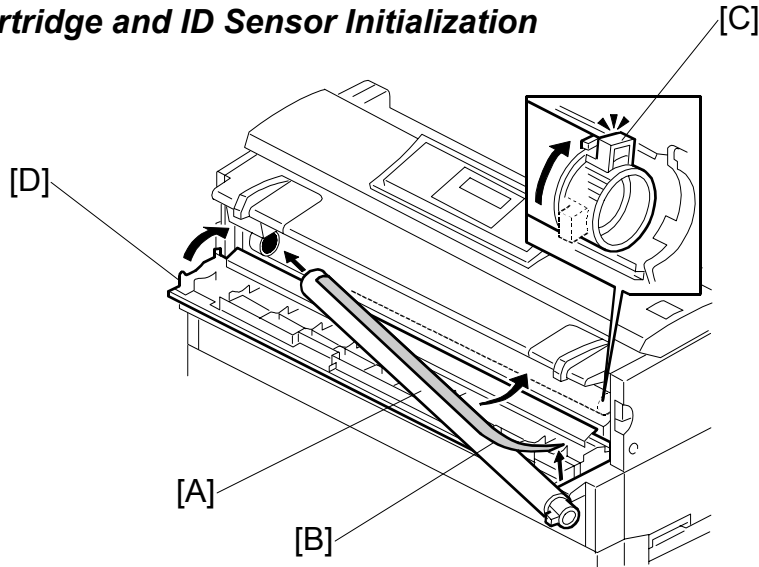
1. Carefully shake the toner cartridge [A] about 10 times. This makes sure that there are no clumps of toner in the cartridge.

2. Set the toner cartridge in the machine.

3. Pull up the tape [B] then pull it across the toner cartridge from right to left to remove the tape.

4. On the right end of the toner cartridge, turn the knob [C] clockwise until it stops.

5. Close the toner hopper cover [D].

6. Close the upper unit. Make sure that the upper unit locks on left and right sides.

7. Switch the main power switch on.

8. Input the developer lot number found on the edge of the developer pack.
   • Go into the SP mode and use SP5998.
NOTE: Go to 1.2.3 Installation SP Settings, for additional information regarding going into and using SP mode access.
   • Push a number key (0-9) to input a number.
   • To input a hyphen press ⊙/⁕ once, then push #.
   • To input a letter, push ⊙/⁕ again and again until the necessary letter (A-Z) is shown, then push #.
   • If the entry immediately after a letter is a number, push the number key. (You do not need to push #.)

9. Do SP2923 002 (Cleaning Blade Set Mode). This applies a thin layer of toner to the bare drum.
   • Push ⊠, then ①⓪⑦, then push ©/⊚ and hold it for 3 seconds.
   • Push ① to select the Copy SP group.
   • Push ②⑨②③⓪⓪② then push #.
   • Push ① to start.

[A]
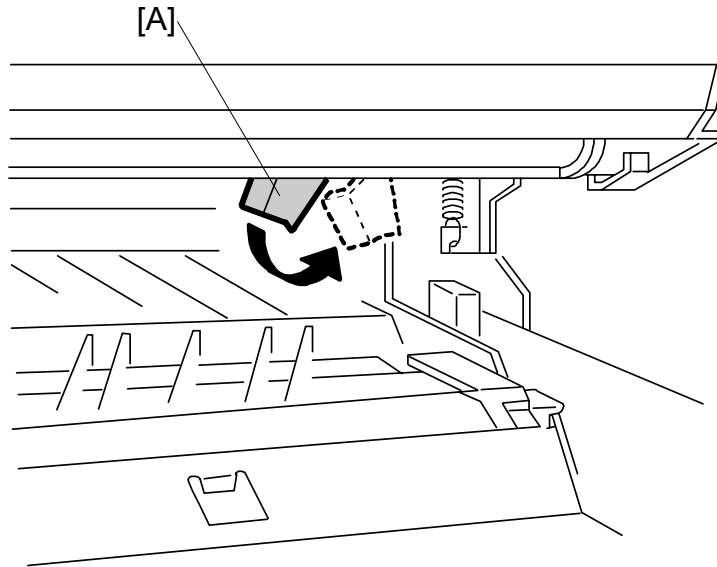
10. Open the upper unit.

11. Push the cleaning-blade release lever [A] to the right.
    NOTE: The cleaning-blade release lever keeps the cleaning blade away from the drum during transportation. To prevent damage to the drum, before you move the copier to a different location, be sure to push this lever to the left.

12. Close the upper unit.

13. Do SP3001 005 (ID Sensor Setting – ID Sensor/Developer Initialization) to initialize the developer and ID sensor.
    - Push ⊛, then ①⓪⑦, then push ©/© and hold it for 3 seconds.
    - Push ①.
    - Push ③⓪⓪①⓪⓪⑤ then ⌗.
    - Push ① to start. Initialization requires several minutes.

14. If you will install one or more of the options in this table, do these installations at this time:

Option	Go to Section
Roll Feeder, Paper Cassette	1.3
Paper Cassette	1.4
HDD	1.5
Interface Board	1.6
Stamp Board	1.7
Table	1.8

If no options are to be installed, go to "1.2.4 Copier Final Installation" to complete the installation of the copier.

1.2.3 INSTALLATION SP SETTINGS

Using the SP Mode

To go into and use the SP mode

1. Push Ⓢ.

2. Push ①⓪⑦.

3. Push and hold Ⓒ⁄Ⓢ for 3 seconds.

4. Input the group number ("1" for "Copier"). Then input the full SP number to go directly to the SP code screen.

5. To input an SP number:
   - Do not put a hyphen (-) between the first 4 digits and the last 3 digits.
   - If the 2nd half of the SP code is only 1 or 2 digits, input the zeros that are in front. For example, if the 2nd number is 1 or 12, push ⓪⓪① or ⓪①②.
   - If you input only the first 4 digits of an SP that has some sub levels, the first SP code (001) will be shown. Push the key below "PrevMenu" or "NextMenu" to show the SP. Then push the key below "Set" or push #.

6. Set the adjustment value.
   - If a minus sign (-) is necessary, push •⁄✻ to change the +/- sign.
   - If a decimal point is necessary, do not push the decimal point button. For example, to input "-1.3", push •⁄✻ for the minus sign, then push ①③.
   - If you make an error, push Ⓒ⁄Ⓢ to reset the setting, then try again. You cannot correct it with a new entry.

7. Push the key below "Set" on the LCD, or push # to enable the setting that you made.

To go out of SP mode

1. Push the key on the operation panel below "Exit" one time or more, until you are back at the initial copy screen.

2. Switch the main power switch off, then switch it on again.
   NOTE: You must do this to enable the SP values that you input.

SP1960: Optional Paper Settings

You must enable the paper supply options with this SP setting each time you add an option.

NOTE: This setting is not necessary if the machine is installed without the roller feeder and paper cassette options.

Do SP1960 to enable the options that you installed.

0:	Manual feed table only (no options)
1:	Roll Feeder with Roll 1 only
2:	Roll Feeder with Roll 1, Roll 2
3:	Roll Feeder with Roll 1, Paper Cassette
4:	Roll Feeder with Roll 1, Roll 2, Paper Cassette.

- If two paper rolls are installed, Roll 1 is the front paper roll and Roll 2 is the rear paper roll.
- For example, to set the machine for Roll 1, Roll 2, and the paper cassette, push ④ then push "Set".

SP1920: Cut Length Adjustment (for Roll Feeder)

If you installed the optional roll feeder, do this procedure.

1. Do the settings for SP1920. These are the cut length SP settings for the rolls (there are two settings for each roll).

2. Check the label on the right side of the roll feeder drawer. Do the settings written on the label.

Roll	SP No.	Name	Set To:
Roll 1	1920 111	Cut Length Adjustment: 1st Roll, 297 mm, Plain Paper	See label.
Roll 1	1920 115	Cut Length Adjustment: 1st Roll, 1189 mm, Plain Paper	
Roll 2	1920 211	Cut Length Adjustment: 2nd Roll, 297 mm, Plain Paper	
Roll 2	1920 215	Cut Length Adjustment: 2nd Roll, 1189 mm, Plain Paper	

3. Switch the main power switch off, then switch it on again.

Select "Architecture" or "Engineering" (NA Only)

Check the User Tool setting to determine whether "Architecture" or "Engineering" is selected for automatic width detection.

1. Push the "User Tools" key ◈ then select ① "System Settings"> ① "General Features.

2. Push ⓪③ to select "03 Orig. Paper Size".

3. Select "Engineering" or "Architecture" (whichever is used most frequently by the operator).

Select the Paper Size and Type with User Tools

1. Push the "User Tools" key ◈ then select ① "System Settings"> ① "General Features.

2. Push ⓪④ to select "04 Tray Paper Size".

   The "1 Bypass Tray" selection is shown with the selections for each installed paper supply option. Selections are shown only for installed options.

   If you installed all the options, you will also see "2 Paper Roll 1, 3 Paper Roll 2", and "4 Cut Paper Tray".

   If selections for the installed options are not shown:

   - Do the procedure in the section immediately before this to enable the paper feed options.
   - Make sure that you switch the main power switch off then back on to enable the paper feed options.
   - If you did not switch the main power switch off then back on to enable the selections done for SP1960, the selections for paper size will not be shown.

3. To set the paper size for the manual feed table and each option:
   1) Push the applicable number on the 10-key pad.
   2) Push the right or left arrow key to highlight the applicable size.
   3) Push the key below "OK". The display changes to the one that was shown before.
   4) Do this procedure again until the paper sizes for each paper supply option are set.

4. Push the key below "Prev Menu", then push the key below "Next".

5. Push ⓪⑤ to select "05 Tray Paper Type"

6. To set the paper type for the manual feed table (bypass tray) and each option:
   1) Push the applicable number on the 10-key pad.
   2) Push the right or left arrow key to highlight the applicable size.
   3) Push the key below "OK". The display changes to the one that was shown before.
   4) Do this procedure again until the paper types for each paper supply option are set.

$\Longrightarrow$ *SP4960 015 Enable the HDD*

If you installed the optional hard disk drive, do this procedure.

1. Do SP4960 015 (HDD Connection On/Off) and set "1" (Enable) to enable the hard disk unit.

2. Switch the main power switch off, then switch it back on.

NOTE: The HDD is formatted during production. Formatting is not necessary during installation.

$\Longrightarrow$*SP4960 003 Format the HDD*

Should re-formatting of the HDD be necessary, perform SP4960-003.

1. SP4960 003 (Formatting) to format the hard disk.
    *   About 25 minutes are necessary to format the disk.
    *   The display shows the quantity of formatting that is completed, until the display gets to 100%.

Important: Never switch the power off while the machine is formatting the hard disk.

SP5137 Stamp Function On/Off

1. Do SP5137, and set "1" to enable the stamp board.

2. Switch the main power switch off, then switch it back on.

1.2.4 COPIER FINAL INSTALLATION PROCEDURE

Copy Trays, Guides, Original Exit Selection Lever
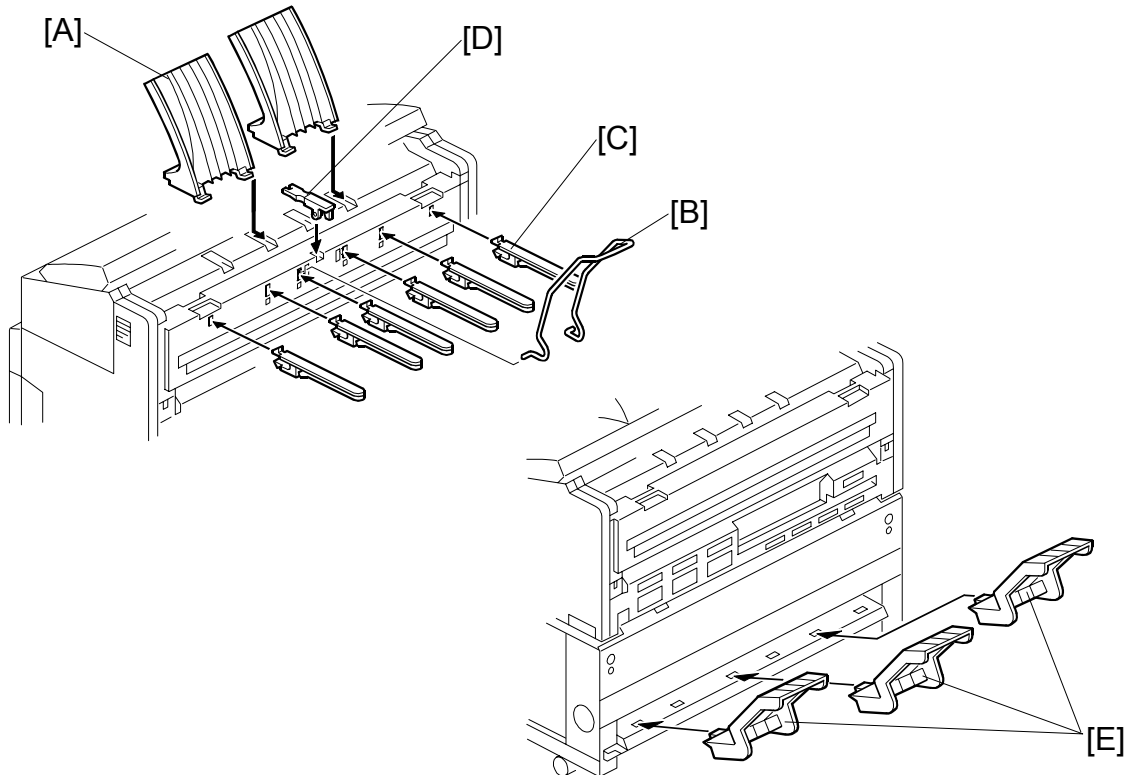
1. Attach the upper output stackers [A] on top of the machine.

2. Attach the upper output guide [B].

3. Attach the original output guides [C].
    NOTE: The original feeds out to these guides only when the upper output
    stackers [A] are removed.

4. Attach the copy-exit selection lever [D].

5. Keep the copy-exit selection lever at the vertical position for usual operation.
    *   When the lever is up, the user can push the "Upper Copy Output" key to
        feed copies out one of these two paths: a) at the top or b) straight-through at
        the rear.
    *   When the lever is down, the "Upper Copy Output" key is disabled and copies
        always feed out straight-through at the rear of the copier.
    *   To enable the "Upper Copy Output" selector key again, lift the lever to the
        vertical position.

6. Attach the lower output trays to the lower rear of the roller feeder or table. (x 3).

Copy Check

Scan an original to confirm that the copier operates correctly.

1. Set an original or test pattern face down on the original feed tray.

2. After about 1 second, the machine holds the original, stops again for 1 second, then feeds it.

3. Do a sample copy from the by-pass tray or the roller feeder and paper cassette if these options are installed.

4. If the copied image is not in the correct position, do SP2941 (IPU Test Pattern) and print pattern 11. For instructions on leading edge and side-to-side adjustments, see the "SP Adjustments" section of "3 Replacement and Adjustment".

Roll Feeder Adjustments

SP No.	Name	Comment
SP1001 001	Leading Edge Registration – Roll Feed	B641/B642
SP1002 001	Side-to-Side Registration – Paper Roll 1	B641/B642
SP1002 002	Side-to-Side Registration – Paper Roll 2	B642 only

Paper Cassette Adjustments

SP No.	Name
SP1001 003	Leading Edge Registration – Cut Paper Tray
SP1002 003	Side-to-Side Registration – Cut Paper Tray

1.2.5 MOVING THE COPIER

- If you must move the copier to a different building, open the paper feed section and push the cleaning blade lever to the left. This keeps the cleaning blade away from the drum while you move the copier.
- If you must move the copier to a different location in the same building, it is not necessary to do this procedure. Also, it is not necessary to disconnect the copier from the roll feeder or table.

Important: Always push low on the roll feeder or table to move the copier. If you do not do this, you can twist and possibly cause damage to the copier. Do not push on the copier while it is installed on top of the roll feeder or table.

- To prepare the machine for transport to a different building, disconnect the copier and the roller feeder (or table). Attach the drawer to the frame with tape, or the roll feeder drawer will fall out of the table frame.
- Lift the copier with one person on each end of the copier. Be sure to use the handles in recesses on the sides of the copier. Do not tilt the machine more than 30° from the horizontal, or developer and toner will spill.)

1.3 ROLL FEEDER INSTALLATION

1.3.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Lower Output Trays	3
2. Leg Covers	2
3. Movable Guides	6
4. Shoes	4
5. Joint Brackets (Left, Right)	2
6. Screws (Blue)	9
7. Screws (Cosmetic Silver)	4
8. Harness Brackets	2
9. Mylars – Wide	2
10. Mylars – Narrow	2
11. Guide Plate	1
12. Nylon clamps	1
13. Harness clamp	1
14. Ferrite Core	1
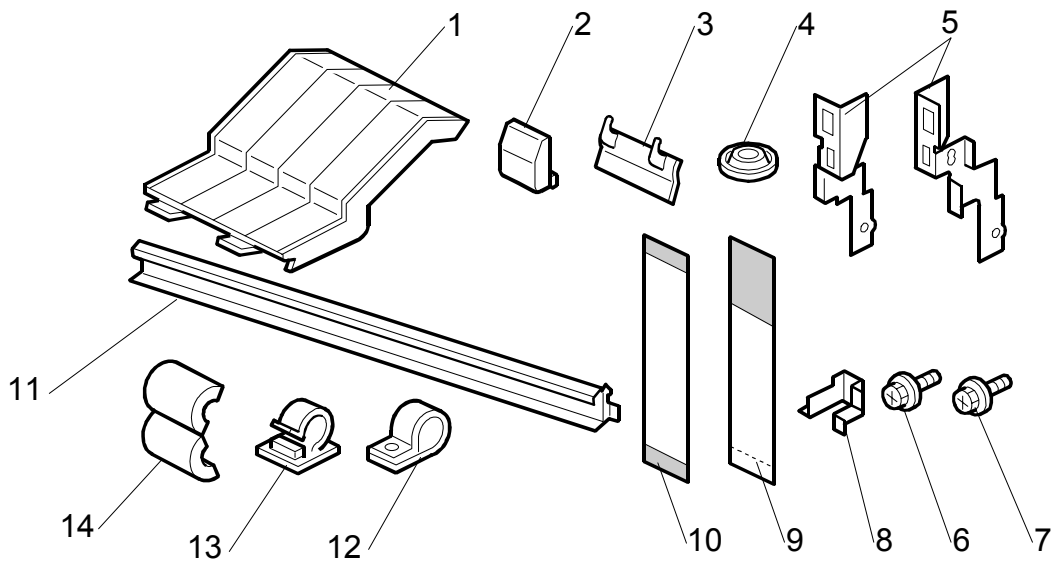
1.3.2 ROLL FEEDER INSTALLATION PROCEDURE

Setting the Copier on the Roll Feeder

Set the copier on the roll feeder. Follow the instructions in "Setting the Copier on the Roll Feeder or Table" on page 1-9.

Leveling the Copier and Attaching Leg Covers

Make sure that the copier is level, and attach the leg covers. Follow the instructions in "Leveling the Copier and Attaching Leg Covers" on page 1-12.

Opening the Roll Feeder and Removing Shipping Material
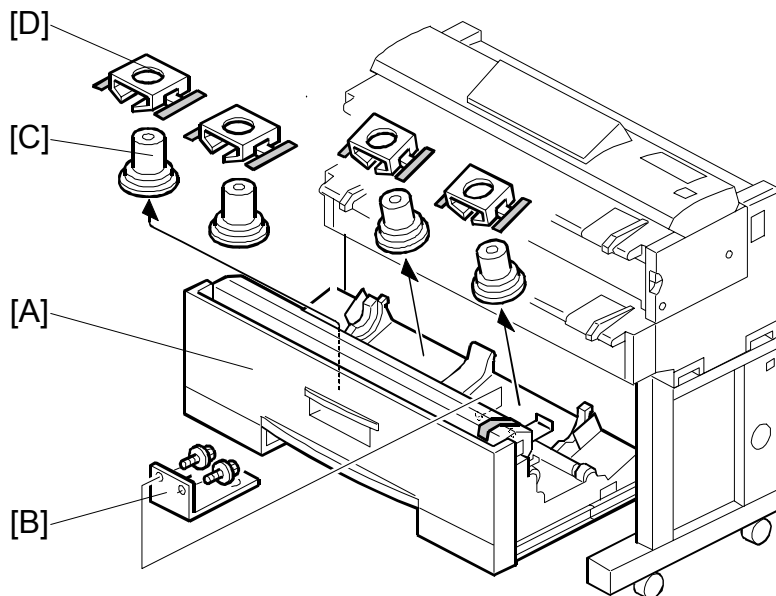
Important:

- The drawer of the roll feeder is locked and cannot be opened until the copier is set on top of the roller feeder.
- Do not try to open the drawer of the roll feeder until after you set the copier on top of the roll feeder.

1. Open the drawer [A] of the roll feeder.

2. Remove the spring lock plate [B] ($\mathscr{F}$ x 2).

3. Remove the roll paper holders [C] and cardboard packing [D].
   NOTE: Roll Feeder B641 has 2 holders, and Roll Feeder B642 has 4 holders (shown above).

4. Remove other tape or packing material in the roll feeder.

Attaching the Swinging Guide Plates
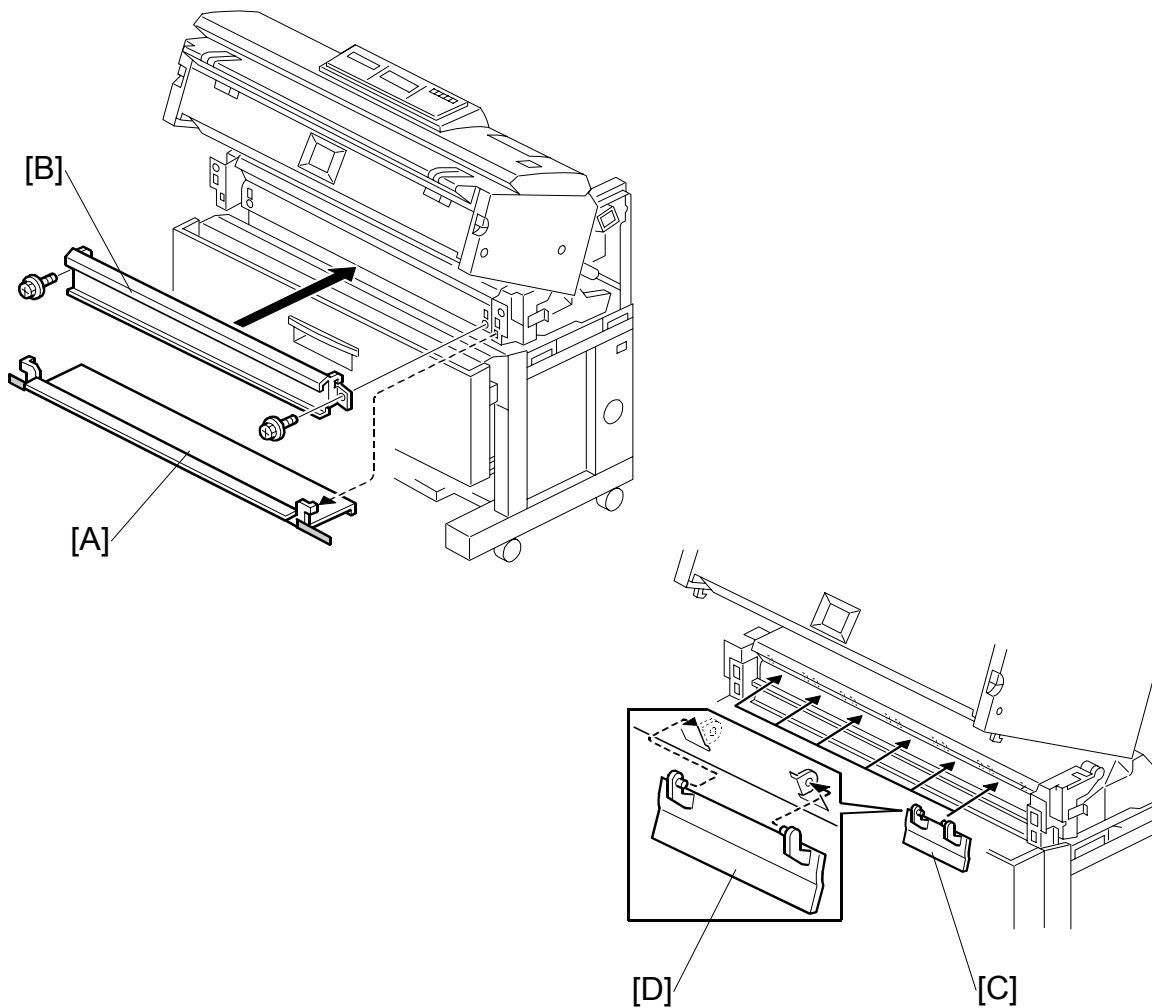
⚠CAUTION
Keep the power cord disconnected when you do these procedures.

1. Remove the protector plate [A] (no screws).

2. Install the guide plate [B] (✐ x 2 Blue). Hang the hooks on each end; this puts the plate in the correct position to be installed.

3. Attach the movable guide plates [C] (x6).
   - Each plate is the same. It is not possible to install a plate in the incorrect position.
   - Attach each plate with the ribbed side down.
   - Move the hinges [D] a small distance apart. This lets the tabs attach quickly into the holes.

4. Lift each plate and let it fall, to make sure that they move smoothly on the hinges.

Connecting the Copier and Roll Feeder
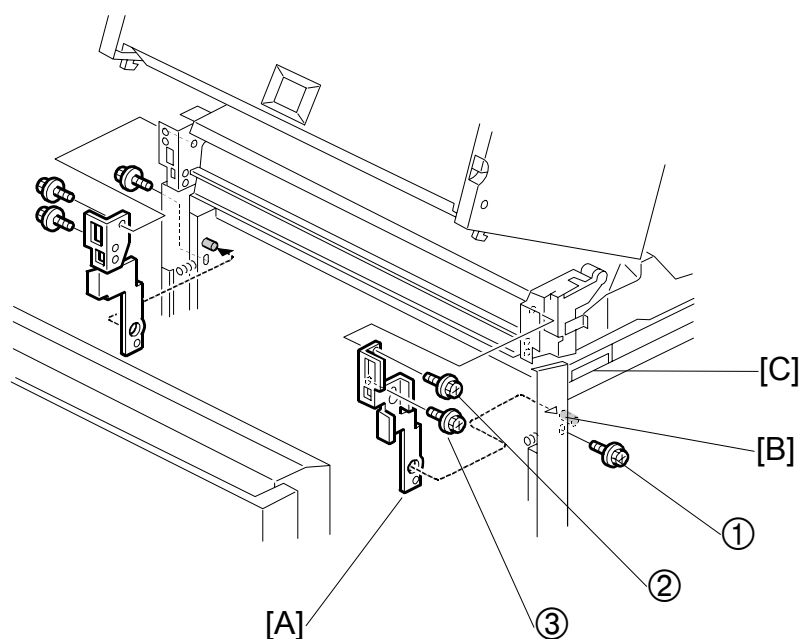
1. Attach the right joint bracket (the spindle [B] must go through the hole [A] in the bracket). At the same time, align the plate with the holes for the three screws (blue).

2. Attach screws ①, ② but do not tighten them.

3. While you lift the copier by its handle [C], set screw ③ in the lower hole of the keyhole cutout and tighten it.

4. Tighten screws ① and ②.

5. Do the above procedure again for the left joint bracket.

6. Reattach the manual feed table (𝒫 x 2). Follow the instructions in "Setting the Copier on the Roll Feeder or Table" on page 1-10.

7. Reattach the left and right covers (𝒫 x 3 each)
    NOTE: Make sure that you attach the longer screws (thin thread) at the rear sides of the covers.

8. Close the upper unit.
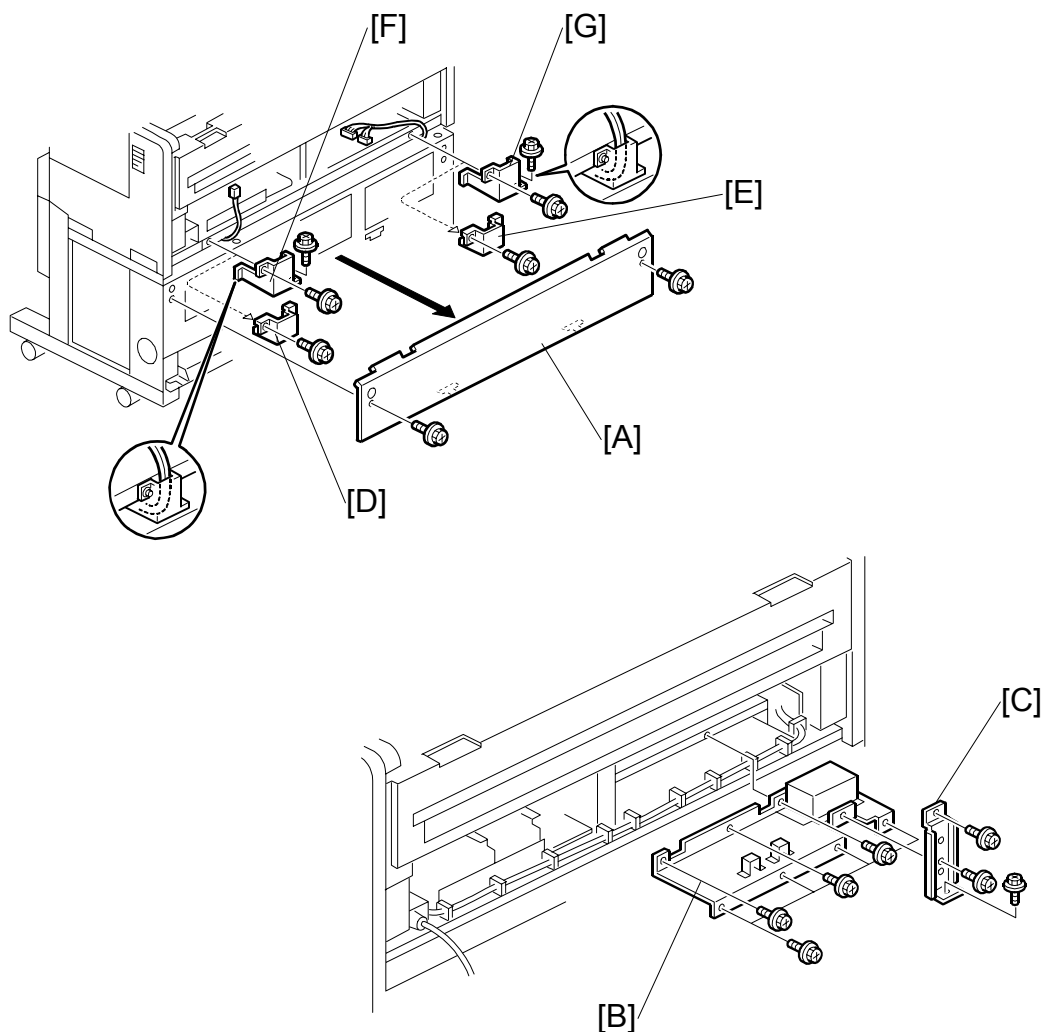
9. Remove the rear cover of the copier ($\mathscr{F}$ x 2).

10. Remove the rear plate [A] of the roll feeder ($\mathscr{F}$ x 2).

11. Remove the shield cover [B] ($\mathscr{F}$ x 7).

12. Remove the ground plate [C] ($\mathscr{F}$ x 3).

13. Remove the left and right metal brackets [D, E] ($\mathscr{F}$ x 1 each). (Discard these brackets and screws.)

14. Remove the shipping tape from the roll feeder harnesses between the bottom of the copier and top of the roll feeder.

15. Put the left harness (🖵 x 1) through the left bracket [F] and attach the left bracket ($\mathscr{F}$ x 2) (use 1 of the screws from the accessories).

16. Put the right harness (🖵 x 2) [G] through the right bracket and attach the right bracket ($\mathscr{F}$ x 2) (use 1 of the screws from the accessories).
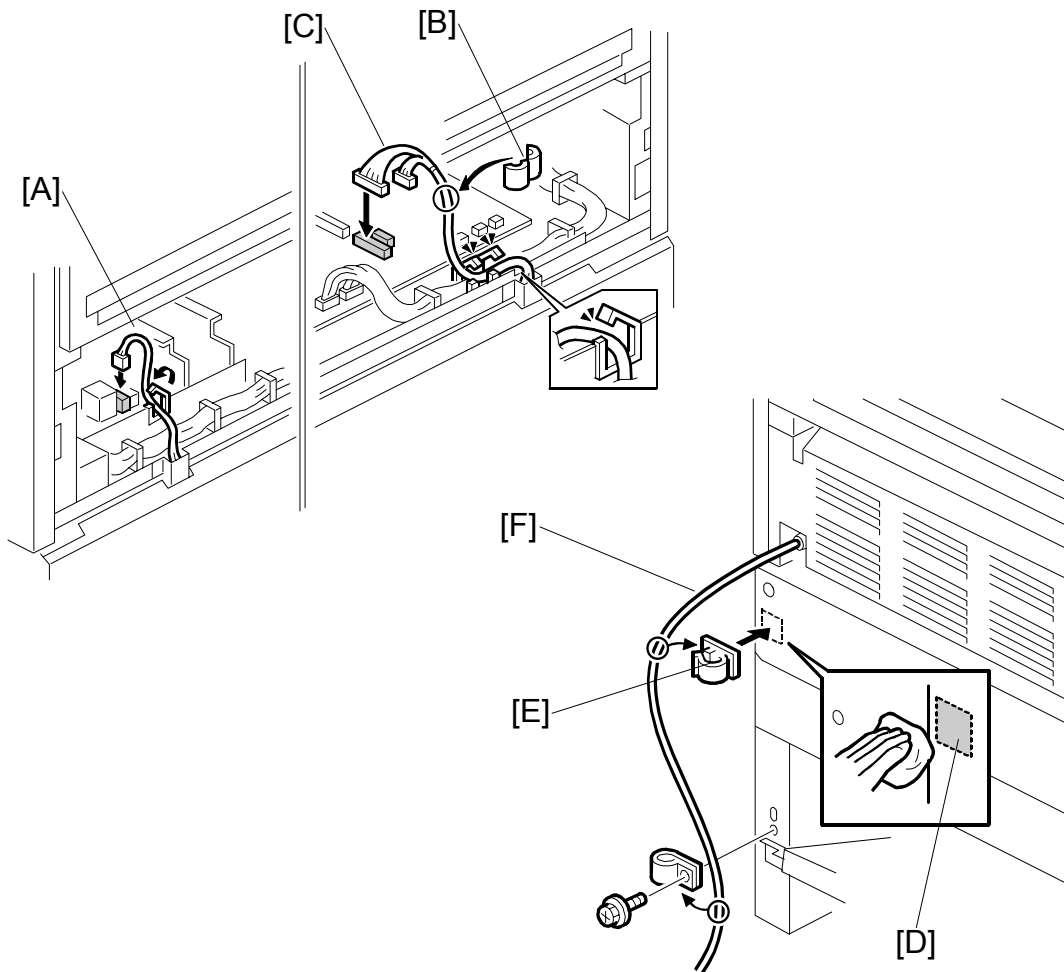
17. Connect the left harness [A] (🔲 x 1, 🔩 x 1).

18. Attach the ferrite core [B] to the right harness [C] between the harness clamps.

19. Connect the right harness (🔲 x 2, 🔩 x 2).

20. Reattach the shield cover (🔩 x 10).

21. Reattach the rear cover of the copier.

22. Reattach the rear plate of the roll feeder (🔩 x 2).

23. Clean the rear plate [D] with alcohol.

24. Attach the harness clamp [E].

25. Clamp the power cord [F] to the roll feeder (🔩 x 1).
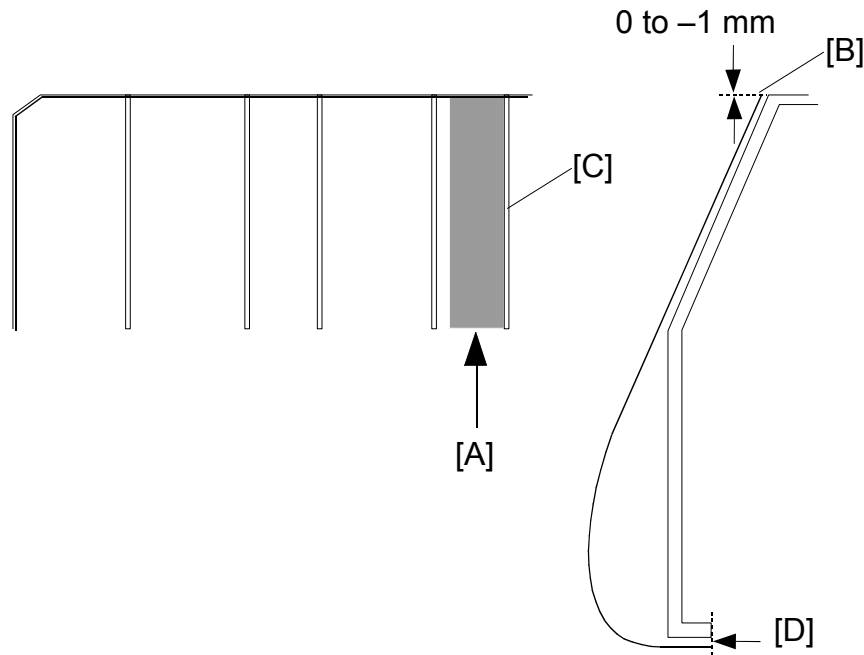
Attach the Mylars to the Copier

0 to –1 mm

[B]

[C]

[A]

[D]

In this procedure, you will attach the narrow mylars (x2) to the rear cover of the copier. To attach the wide mylars (x2) to the backplate of the roll feeder, see the section after this one.

1. If the rear cover is attached to the copier, remove it (🖉 x 2).

2. Find the 5th space [A] from the left end of the rear cover.

3. Use a clean cloth, moist with a small quantity of alcohol, to clean this area and the bottom edge of the cover.

4. Remove the tape from each end of one of the narrow mylars.

5. Attach one end to the top edge of the cover [B].
    NOTE: The top edge must be flat and parallel to the edge of the cover. The right edge of the mylar must be parallel to ridge [C].

6. Attach the other end of the mylar to the bottom edge of the cover [D].

7. Do this procedure again to attach the other narrow mylar to the right side of the cover.

8. Reattach the cover at the rear of the copier (🖉 x 2).

Attach the Mylars to the Back of the Roll Feeder

In this procedure, you will attach the wide mylars [A] to the rear plate [B] of the table.

1. On the left side of the rear plate, find the straight line [C] and "⌐ ","⌐" patterns [D].

2. Use a clean cloth, moist with a small quantity of alcohol, to clean this area and the bottom edge of the cover.

3. Remove the tape from each end of one of the wide mylars.

4. Align the end with the narrow tape with the top edge [E] of the rear plate. Make sure that the right edge is parallel to the vertical lines on the plate, then push down.

5. Turn the end with the wide tape against the plate, and align its corner [F] with the inverted "L" pattern embossed on the plate, then push it against the rear plate.

6. Make sure that the tape surfaces are pushed fully against the rear plate.

Installing the Paper Rolls

If you will install the optional paper cassette (☞1.4), do this before you install the paper rolls. If you do not do this, you must remove Roll 2 before you can install the optional paper cassette.

To install the paper rolls, follow the instructions on the decal on the top edge of the roll feeder drawer.

NOTE: The SP settings necessary for the roll feeder are in section 1.2.3.

1.4 PAPER CASSETTE INSTALLATION

1.4.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Paper Cassette Unit	1
2. Screws	4
3. Harness Clamps	4
4. Paper Cassette (Universal Type)	1
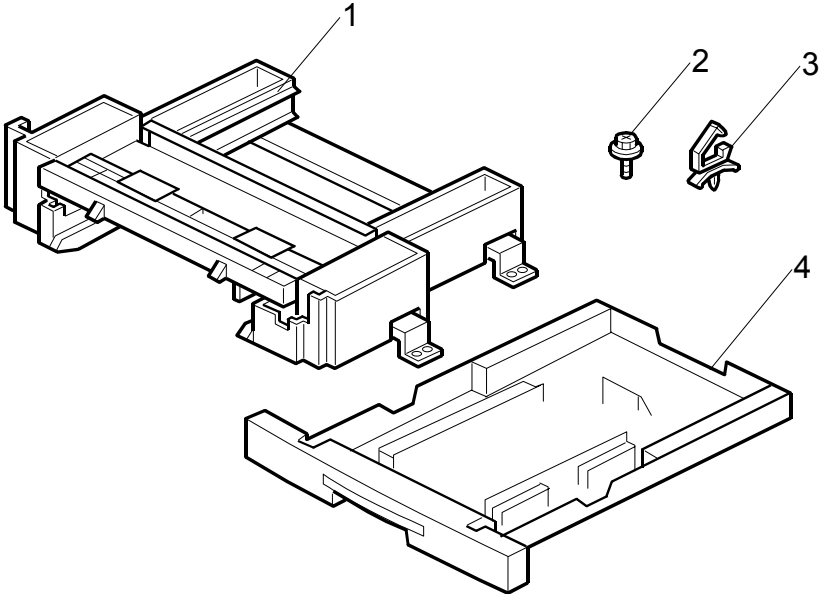
1.4.2 PAPER CASSETTE INSTALLATION PROCEDURE
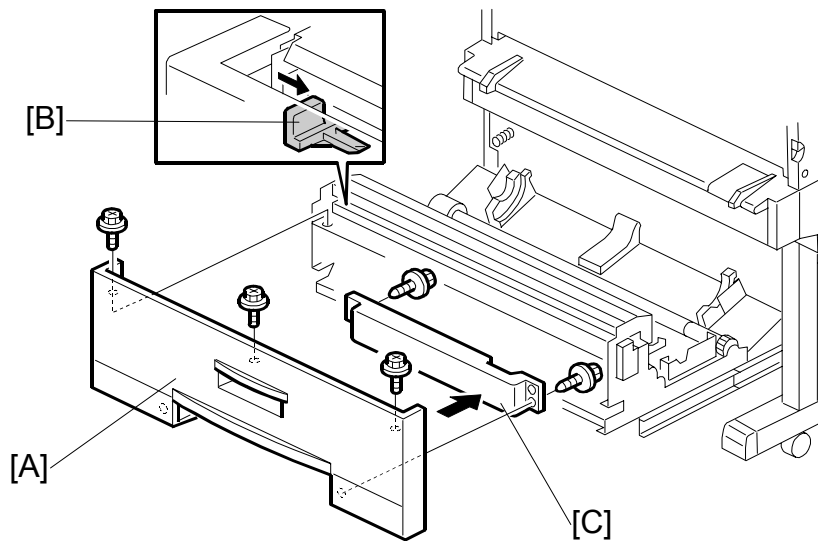
⚠**CAUTION**

Keep the power cord disconnected when you do this procedure.

1. Open the drawer of the roll feeder.

2. Remove the front cover [A] of the roll feeder (🗝 x 3)
   NOTE: If you cannot see the screw on the left or right side of the front cover, push the cutter [B] away from the top of the screw.

3. Remove the knockout [C] (🗝 x 2).

4. If Roll 2 is installed, remove it.

5. Remove the paper cassette from the paper cassette unit.

6. Push the cutter completely to the left.
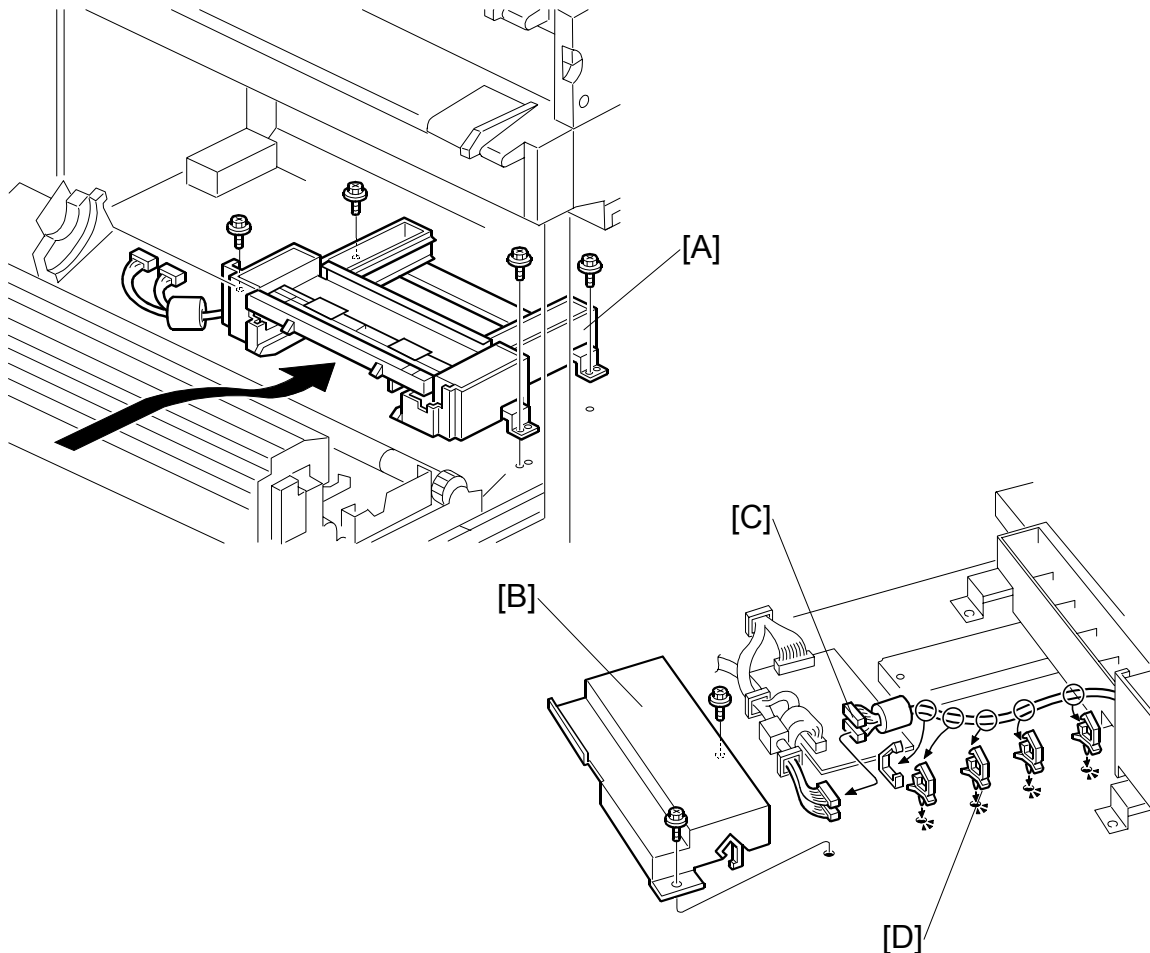
7. Remove the rear plate of the roll feeder (✐ x 2).

8. Put the cassette unit [A] in the copier. The bosses must go through the holes in the flanges of the cassette unit. Then, attach the cassette unit (✐ x 4).

9. From the front, remove the board cover [B] (✐ x 2, ▧ x 1).

10. From the rear of the roll feeder, connect the paper-cassette-unit connectors [C] (▤ x 2) to the copier.

11. From the front, attach the 4 harness clamps [D] (▧ x 4), put the connector cable through the open clamps, then close the clamps.

12. Reattach the board cover, front cover, and rear cover of the roll feeder.

13. Reinstall the paper rolls, and close the drawer of the roll feeder.

14. Put the paper cassette in the paper cassette unit.
    NOTE: Do the SP settings for the paper cassette (see section 1.2.3) after you complete all installation procedures.

1.5 HDD INSTALLATION

1.5.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. HDD Unit	1
2. IPU Harness (1 Large, 1 Small Connector)	1
3. PSU Harness (2 Small Connectors)	1
4. Decal	1
5. Screw	1
6. Nylon Clamp	1
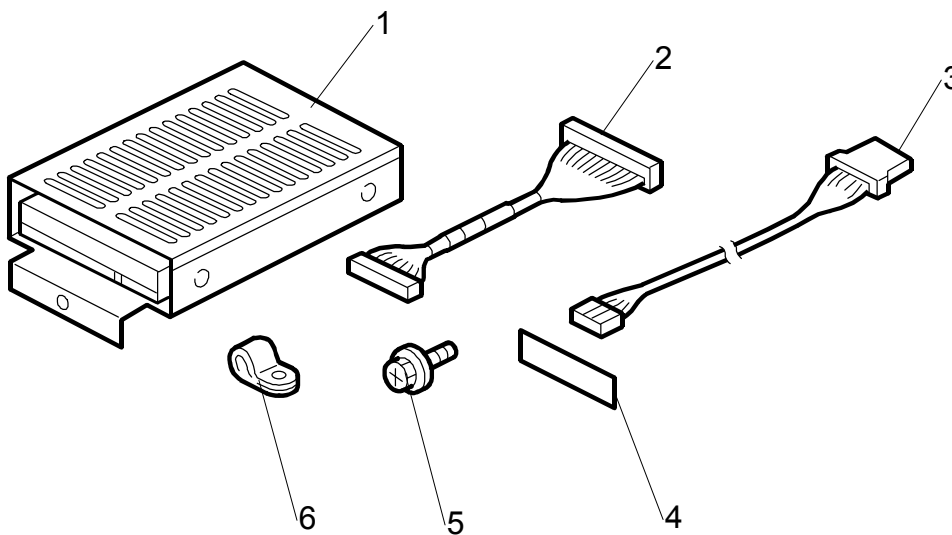
1.5.2 HDD INSTALLATION PROCEDURE
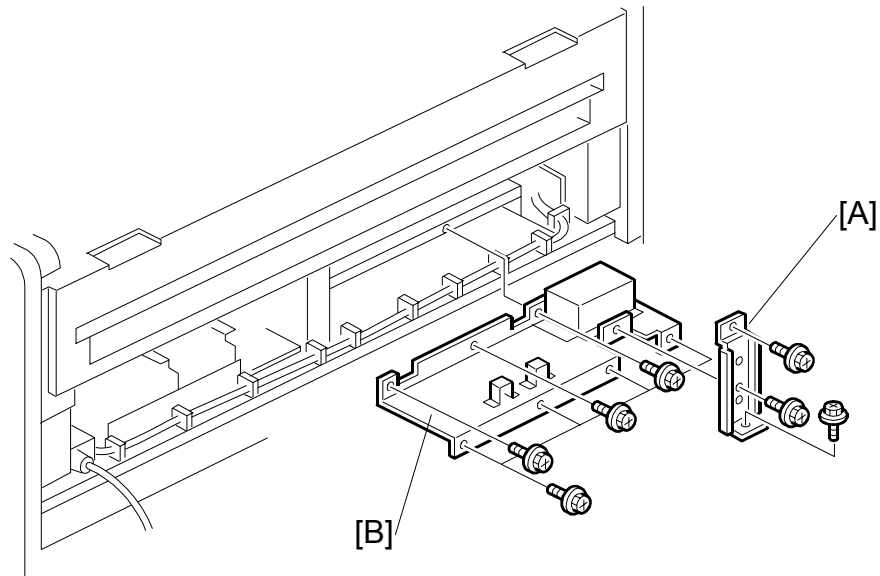
⚠**CAUTION**

Keep the power cord unplugged when doing the following procedure.

---

1. Remove the rear cover (🗝 x 2).

2. Remove the ground plate [A] (🗝 x 3).

3. Remove the PCB shield cover [B] (🗝 x 7).
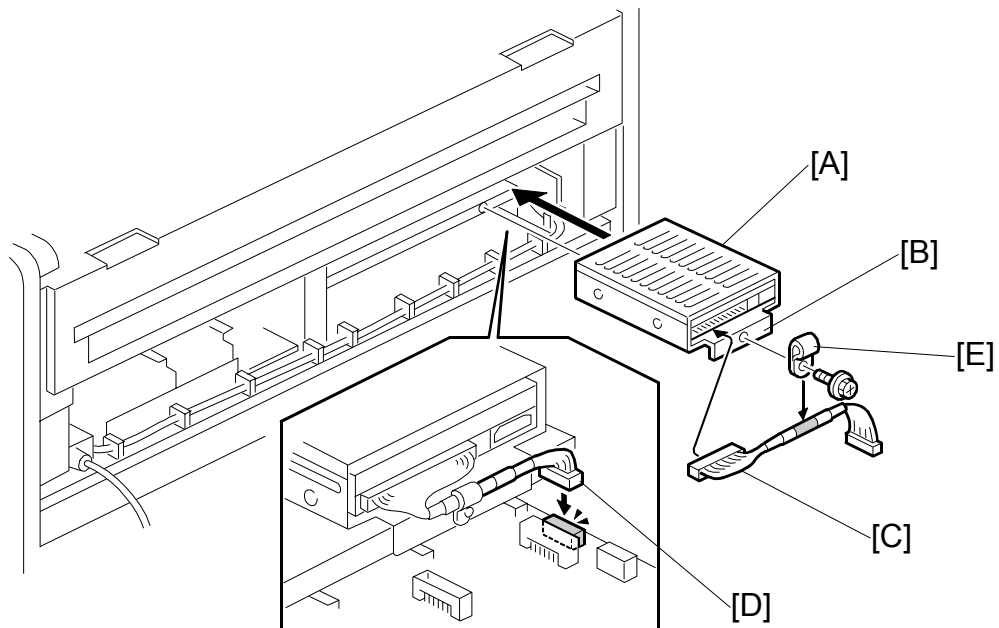
4. Set the HDD [A] on the right side of the shelf.
   - Make sure that the leaf plate on the bottom of the HDD moves into the hole in the shelf.
   - Make sure that the hole [B] in the HDD support bracket is aligned with the hole in the edge of the shelf.

5. Connect the large connector [C] of the IPU harness to the rear side of the HDD unit.

6. Connect the other end of the IPU harness [D] to the IPU board at CN260.

7. Close the nylon clamp [E] on the shield mesh of the IPU harness. Attach the nylon clamp to the lower edge of the HDD unit ($\mathbb{F}$ x 1).
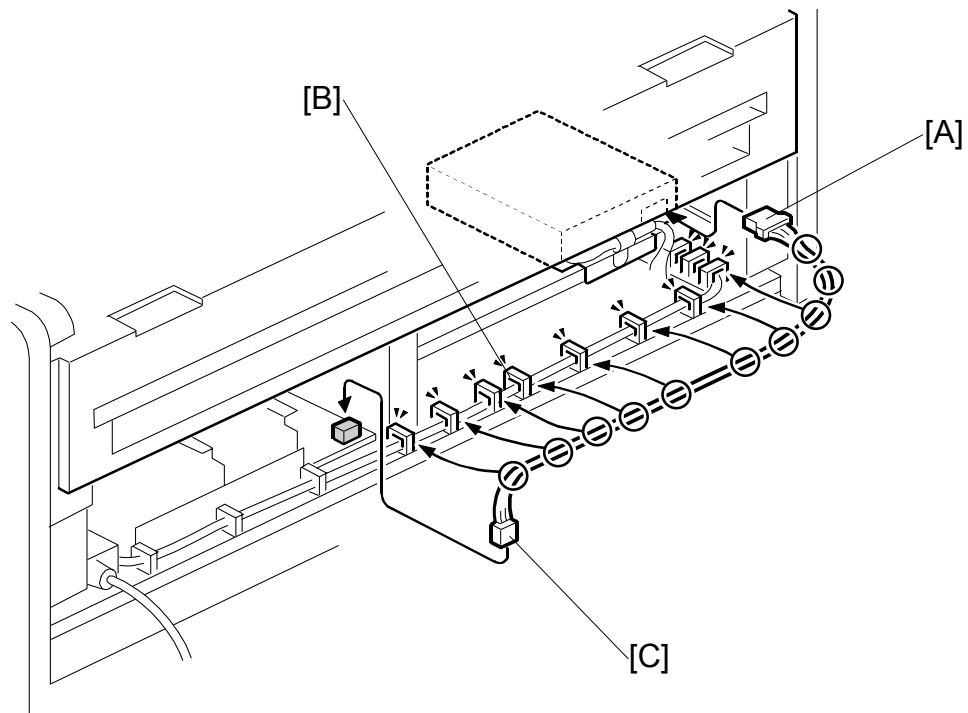
8. Connect the larger connector [A] of the PSU harness to the rear side of the HDD unit.

9. Open the harness clamps [B] between the HDD unit and the IPU on the left side (⬚ x 10).

10. Put the PSU harness into each saddle. Then lock each clamp (⬚ x 10).

11. Connect the PSU harness [C] to the PSU board at CN161.

12. Reattach the rear cover to the copier (🔩 x 2).

13. Use a clean cloth, moist with a small quantity of alcohol, to clean an area near the lower edge of the rear cover.

14. Remove the decal (B663171020) from its paper, and attach it to the rear cover.
    NOTE: The SP settings necessary for the HDD are in section 1.2.3. Do these settings after you complete all other installation procedures.

1.6 INTERFACE BOARD INSTALLATION

1.6.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Interface Unit Cover	1
2. Interface Unit	1
3. Nylon Clamps (Large)	1
4. Harness Clamp	1
5. Screws M3 x 8	4
M4 x 8	1
6. Nylon Clamps (Small)	1
7. Connector Cable (Bayonet Type) x 1	1
8. Interface Cable	1
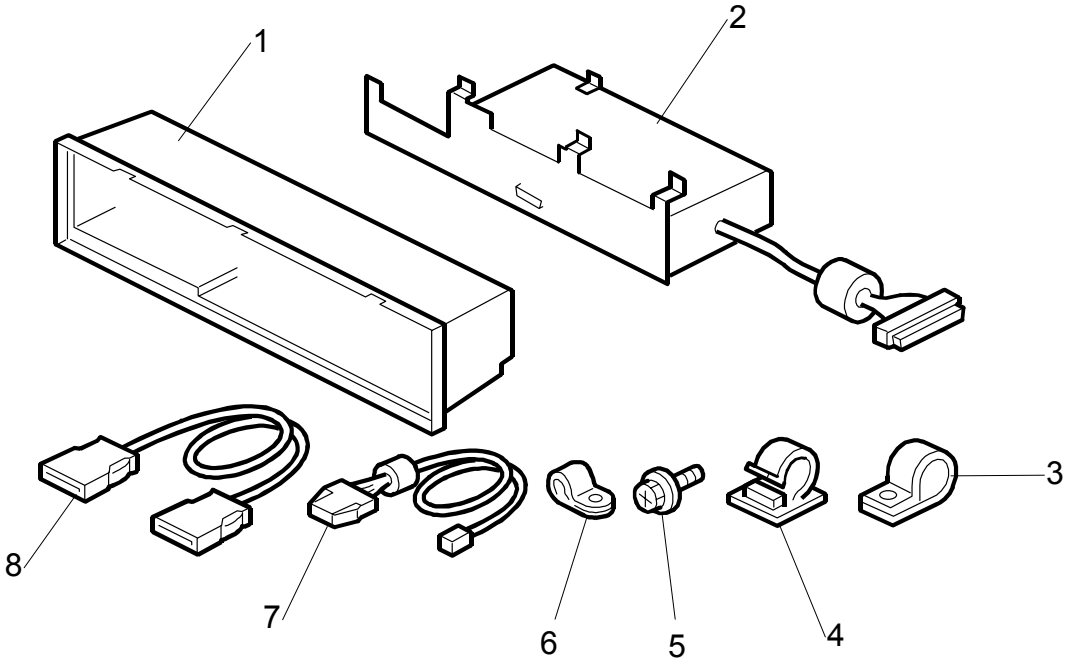
1.6.2 INTERFACE UNIT INSTALLATION PROCEDURE
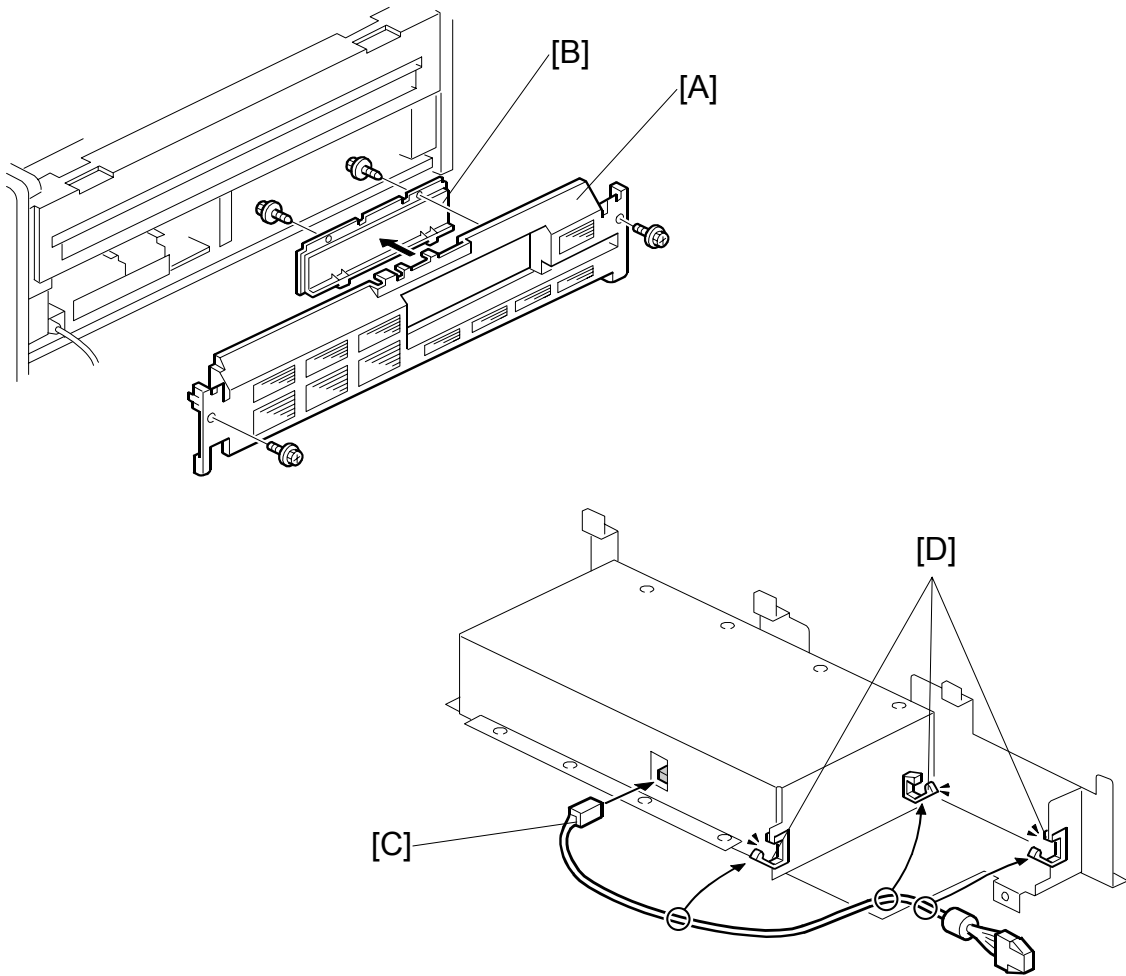
> ⚠️**CAUTION**
> **Keep the power cord disconnected when you do this procedure.**

1. Remove the rear cover [A] (🔩 x 2).
2. Remove the knockout [B] from the rear cover (🔩 x 2).
3. Connect the small end [C] of the bayonet connector cable to the interface unit.
4. Install the cable through the harness clamps [D] (📎 x 3).
5. Close the clamps.
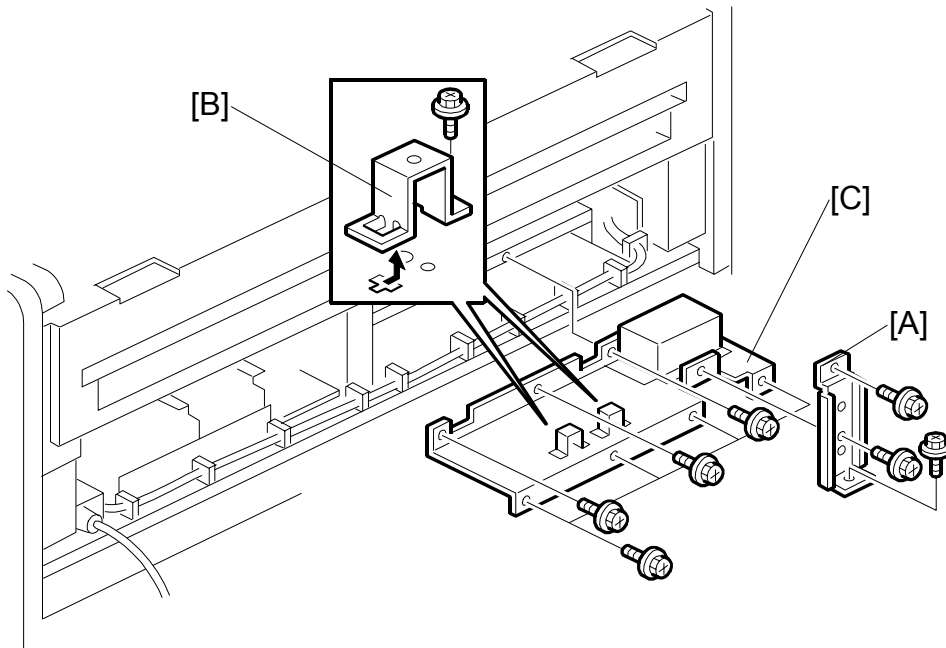
6. Remove the ground plate [A] ($\mathbb{\hat{F}}$ x 3).

7. Remove the brackets [B] ($\mathbb{\hat{F}}$ x 1 each)

8. Remove the PCB shield cover [C] ($\mathbb{\hat{F}}$ x 7).

INTERFACE BOARD INSTALLATION
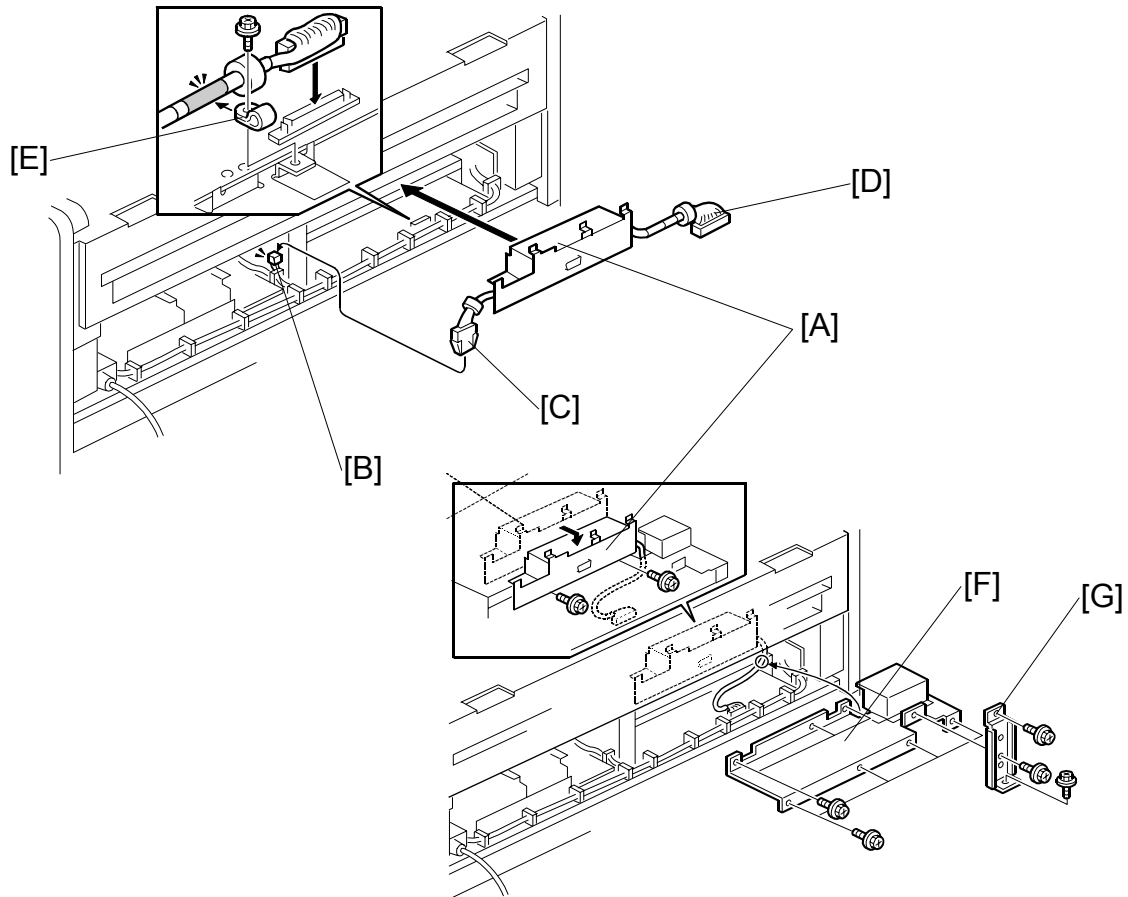
9. Put the interface unit [A] on the shelf.

10. On the left side of the interface unit, open the harness clamp [B] on the left to release the connector.

11. Connect the bayonet connector [C] from the interface unit to the connector on the left. Then close the clamp on the harness.

12. On the right side of the interface connector, connect the D-connector [D] to the board.

13. Attach the nylon clamp [E] to the D-connector cable and the copier frame (🔧 x 1, 🔩 x 1).

14. Reattach the PCB shield cover [F] (🔩 x 7).
    NOTE: If Stamp board option is available proceed to section 1.7.

15. Reattach the ground plate [G] (🔩 x 3).

16. Put the interface unit on the shelf and attach it (🔩 x 2).
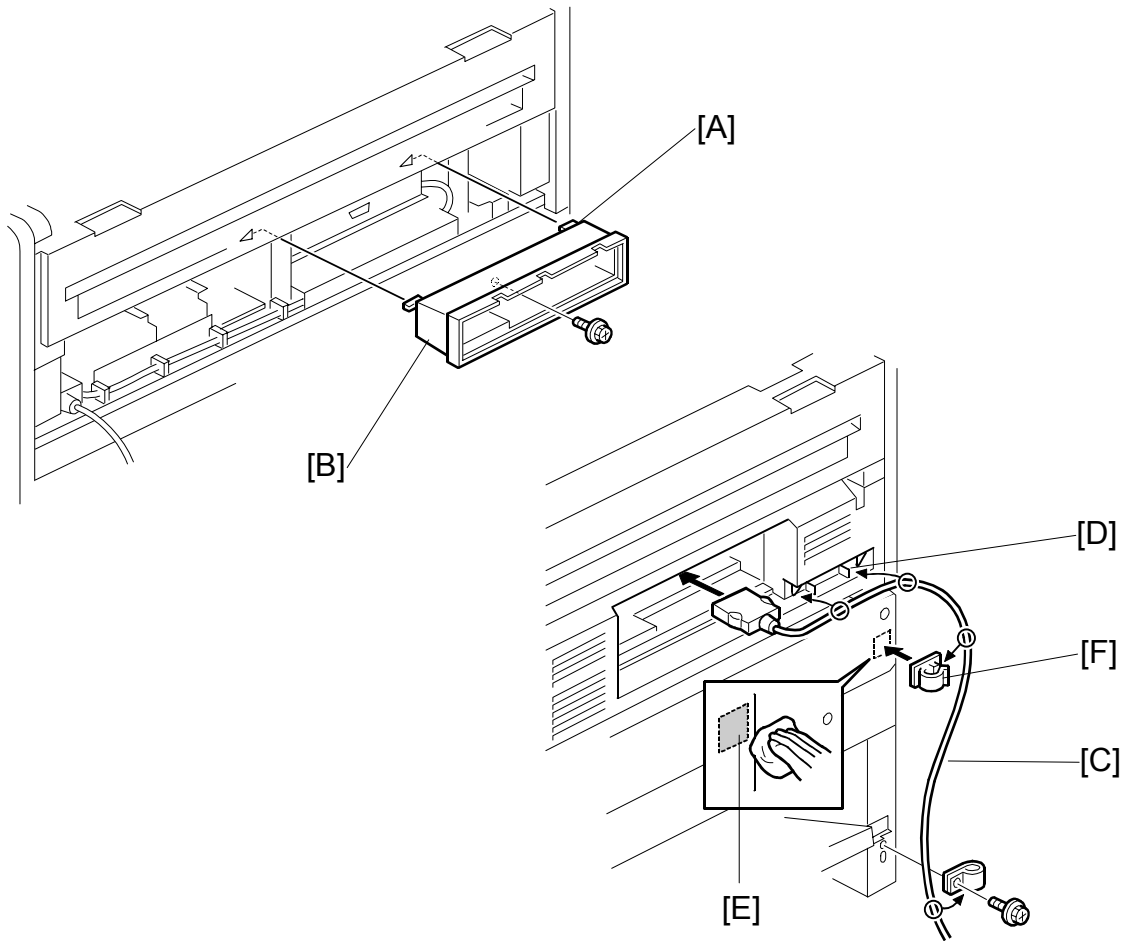
17. Attach the hooks [A] on the top edge of the cover bracket to the top of the interface unit.

18. Attach the cover [B] to the interface unit (🔩 x 1).

19. Reattach the rear cover of the copier (🔩 x 2).

20. At the rear of the copier, attach the interface cable [C] to the interface unit.

21. Attach the cable to the hooks [D] on the cover.

22. Clean the rear plate [E] of the roll feeder with alcohol.

23. Attach the harness clamp [F].

24. Clamp the cable to the roll feeder (🔩 x 1).

25. Attach the other end of the interface cable to the printer controller (server PC).
    NOTE: No SP settings are necessary for the interface unit.

1.7 STAMP BOARD INSTALLATION

1.7.1 ACCESSORY CHECK

Description   **Q'ty**

  1. Stamp Board... 1

1.7.2 STAMP BOARD INSTALLATION PROCEDURE
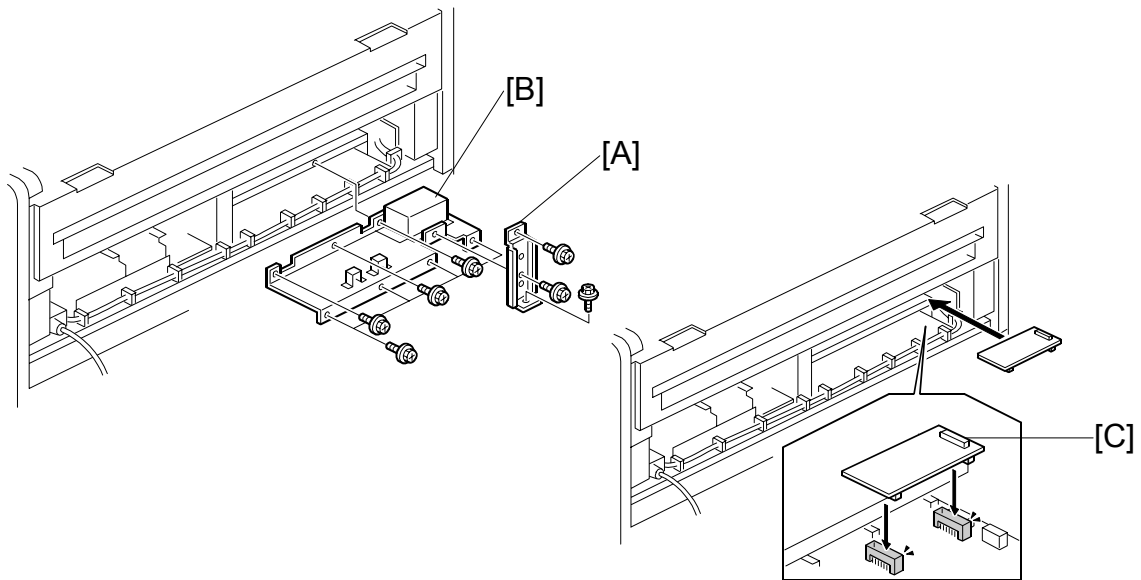
⚠ **CAUTION**
Keep the power cord disconnected when you do this procedure.

1.   Remove the back cover (🖉 x 2).

2.   Remove the ground plate [A] (🖉 x 3).

3.   Remove PCB shield cover [B] (🖉 x 7).

4.   Install the stamp board [C] on the IPU board [B].

5.   Connect the power cord. Switch the main power switch on.

6.   Do SP5137 Stamp Function (On/Off) to enable the stamp function. For more instructions, see section 1.2.3.

7.   Switch the main power switch off. Disconnect the machine power cord.

8.   Reassemble the machine.

1.8 TABLE INSTALLATION

1.8.1 TABLE ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Lower Output Trays	3
2. Leg Covers	2
3. Shoes	4
4. Joint Brackets (Left, Right)	2
5. Screws (Blue)	9
6. Mylars – Wide	2
7. Mylars – Narrow	2
8. Guide Plate	1
9. Nylon Clamp	1
10. Harness Clamp	1
11. Stopper Bracket – End Fence (for NA Version (-57) Only)	2
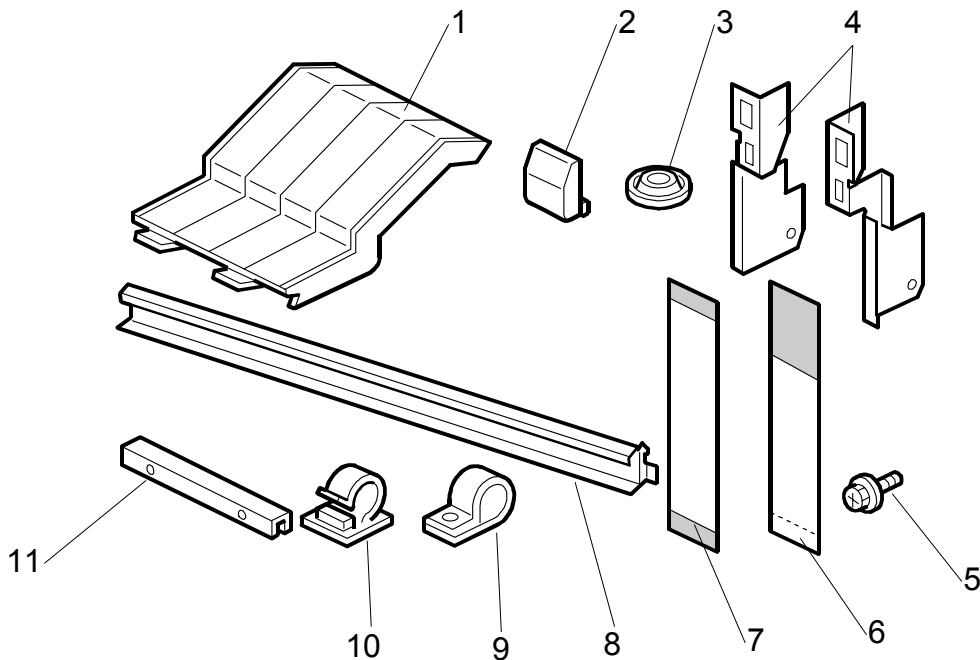
1.8.2 TABLE INSTALLATION PROCEDURE

Setting the Copier on the Table

Set the copier on the table. Follow the instructions in "Setting the Copier on the Roll Feeder or Table" on pages 1-9 to 1-12

Leveling the Copier and Attaching Leg Covers

Make the copier level. Attach the leg covers. Follow the instructions in "Leveling the Copier and Attaching Leg Covers" on page 1-12.

Attaching the Guide Plate
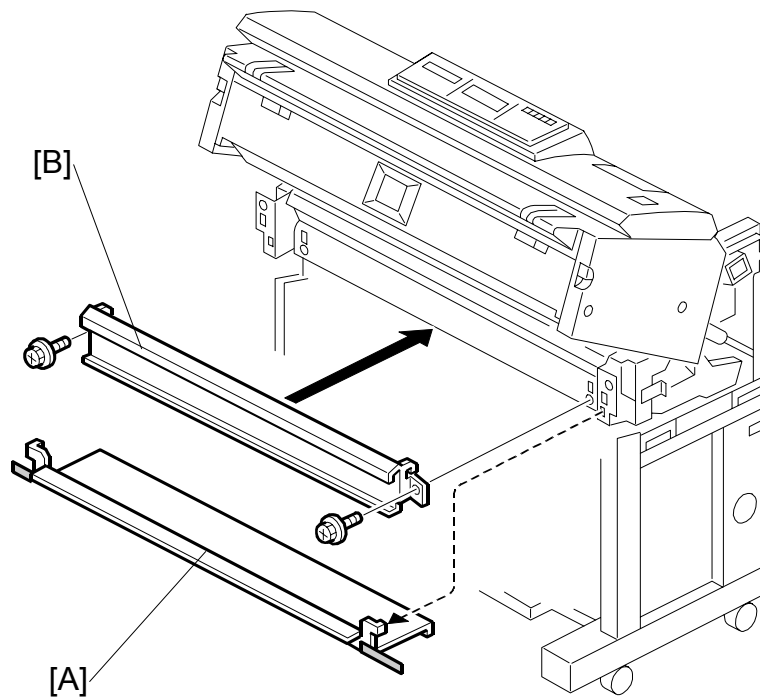
⚠**CAUTION**
Keep the power cord disconnected when you do this procedure.

1. Remove the protector plate [A] (no screws).

2. Install the guide plate [B] (✎ x 2 Blue). Hang the hooks on each ends; this puts the plate in the correct position to be installed.

Connecting the Copier and Table
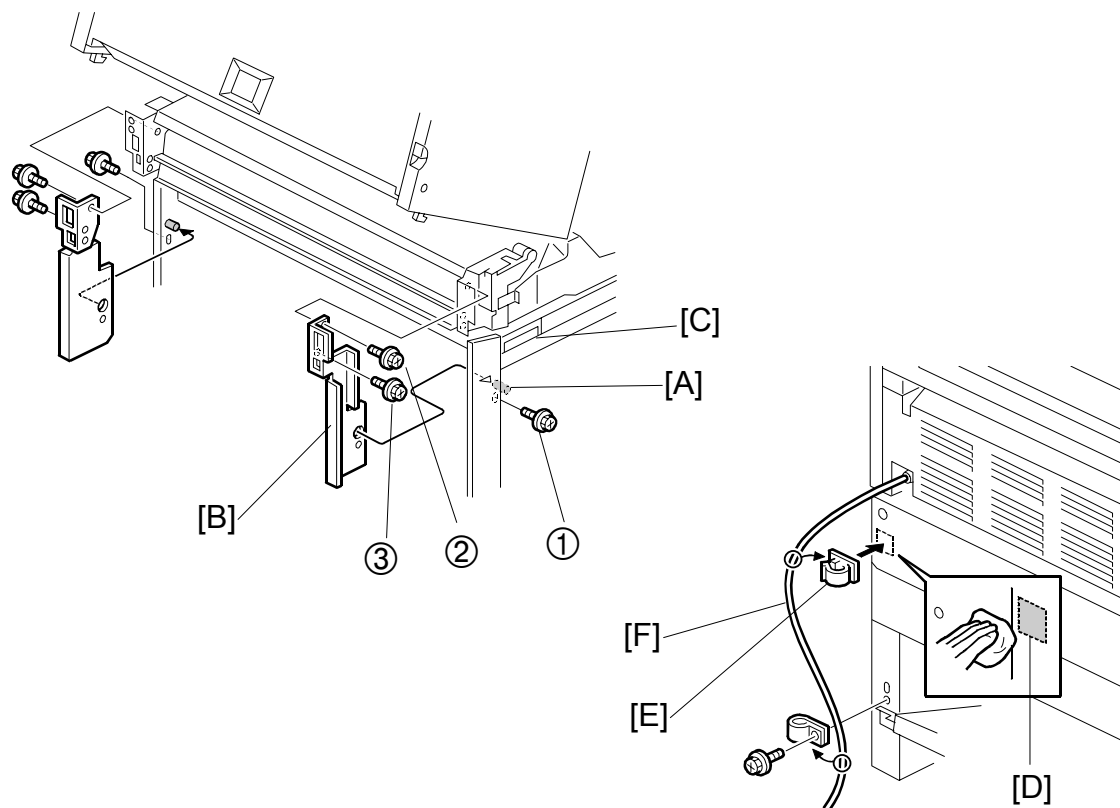
1. Put the spindle [A] through the hole [B] in the right joint bracket. Align the plate with the holes for the three screws (blue).

2. Attach screws ①, ② but do not tighten them.

3. While you lift the copier by its handle [C], set screw ③ in the lower hole of the keyhole cutout and tighten it.

4. Tighten screws ① and ②.

5. Do the above procedure again for the left joint bracket.

6. Reattach the manual feed table (✍ x 2).

7. Reattach the left and right covers (✍ x 3 each)
   NOTE: Make sure that you attach the longer screws (thin thread) at the rear sides of the covers.

8. Close the upper unit.

9. Clear the rear plate [D] of the table with alcohol.

10. Attach the harness clamp [E].

11. Clamp the power cord [F] to the table (✍ x 1).

Attach the Mylars to the Copier

0 to –1 mm [B]

[C]

[A]

[D]

In this procedure, you will attach the narrow mylars (x2) to the rear cover of the copier. To attach the wide mylars (x2) to the backplate of the roll feeder, see the section after this one.

1. If the rear cover is attached to the copier, remove it ($\mathscr{F}$ x 2).

2. Find the 5th space [A] from the left end of the rear cover.

3. Use a clean cloth, moist with a small quantity of alcohol, to clean this area and the bottom edge of the cover.

4. Remove the tape from each end of one of the narrow mylars.

5. Attach one end to the top edge of the cover [B].
   NOTE: The top edge must be flat and parallel to the edge of the cover. The right edge of the mylar must be parallel to ridge [C].

6. Attach the other end of the mylar to the bottom edge of the cover [D].

7. Do this procedure again to attach the other narrow mylar to the right side of the cover.

8. Reattach the cover to the back of the copier ($\mathscr{F}$ x 2).

Attach the Mylars to the Back of the Table

In this procedure, you will attach the wide mylars [A] to the rear plate [B] of the table.

1. On the left side of the rear plate, find the straight line [C] and "┐","┌" patterns [D].

2. Use a clean cloth, moist with a small quantity of alcohol, to clean this area and the bottom edge of the cover.

3. Remove the tape from each end of one of the wide mylars.

4. Align the end with the narrow tape with the top edge [E] of the rear plate. Make sure that the right edge is parallel to the vertical lines on the plate, then push down.

5. Turn the end with the wide tape against the plate, and align its corner [F] with the inverted "L" pattern embossed on the plate , then push it against the rear plate.

6. Make sure that the tape surfaces are pushed fully against the rear plate.

Attaching the Stopper Bracket
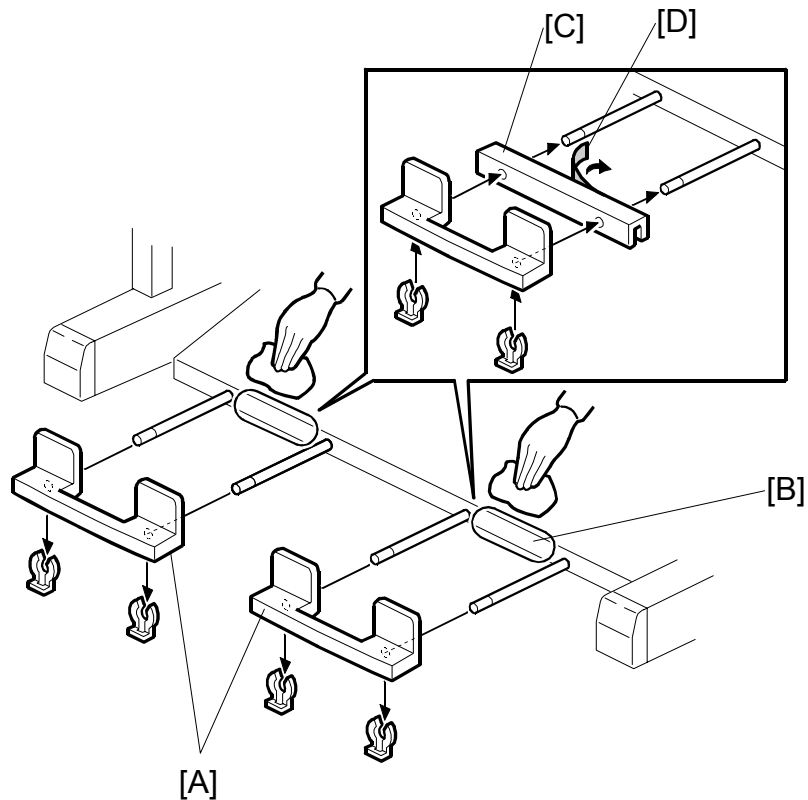
NOTE: This stopper bracket is only for machines in North America that use inch paper sizes.

1. Remove the stoppers [A] (⌐ x 2 each).

2. Use a clean cloth soaked in alcohol to clean the surfaces [B] where the stopper brackets [C] will be attached.

3. Remove the double-sided tape [D] from the rear of each bracket.

4. Install each bracket and stopper on the arms.

5. Lock each stopper in the correct position (⌐ x 2 each).

PREVENTIVE MAINTENANCE

2. PREVENTIVE MAINTENANCE

2.1 PM TABLE

Key for the PM Table

Letter	Action
A	Adjust
C	Clean
I	Inspect
L	Lubricate
R	Replace

NOTE: Units of measure in the PM Interval column*:
Metric: 1,000 meters, Feet: 1,000 feet, Prints: 1,000 prints/A1 LEF or D

2.1.1 COPIER (B125)

Description	Q'ty	PM Interval			PM	Comments
		Metric	**Feet**	**Prints**		
Original Feed Rollers		5.5	18.0	9.3	C	Alcohol or damp cloth
Original Exit Rollers		5.5	18.0	9.3	C	
Platen Plate		5.5	18.0	9.3	C	
Original Width, Set, Registration, Exit Sensors		33.0	108.0	55.8	C	Blower brush
Original Table		5.5	18.0	9.3	C	Dry cloth
Exposure Glass		5.5	18.0	9.3	C	Damp cloth or glass cleaner
CIS Surfaces		5.5	18.0	9.3	C	Alcohol or lens paper
Development						
Developer	2	27.5	90.0	46.5	R	Replace if necessary.
Development Filter		5.5	18.0	9.3	C	Dry cloth or vacuum cleaner
Development Roller Gear		5.5	18.0	9.3	I	
Development Lower Casing		5.5	18.0	9.3	C	Dry cloth.
Cleaning						
Cleaning Blade	1	11.0	36.0	18.6	I/R	Replace if necessary.
Cleaning Entrance Seal		11.0	36.0	18.6	C	Lens paper or dry cloth.
Side Seals		11.0	36.0	18.6	C	
Inside Cleaning Unit		11.0	36.0	18.6	I	Dry cloth or vacuum cleaner
Used Toner Bottle		5.5	18.0	9.3	C	Empty used toner
Registration						
Registration Rollers		5.5	18.0	9.3	C	Alcohol with cloth
Paper Registration Sensor		5.5	18.0	9.3	C	Blower brush

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PM TABLE

Description	Q'ty	PM Interval			PM	Comments
		Metric	Feet	Prints		
Around the Drum						
Charge Corona Wire	1	11.0	36.0	18.6	C/R	Replace if necessary.
Corona Wire Cleaner	1	5.5	18.0	9.3	R	
Charge Corona Casing		5.5	18.0	9.3	C	Damp cloth
Grid Wires		5.5	18.0	9.3	C	Lens paper
Transfer Corona Wire	1	11.0	36.0	18.6	C/R	Replace if necessary.
Separation Corona Wire	1	11.0	36.0	18.6	C/R	
T&S Unit Casing and Guides		5.5	18.0	9.3	C	Lens paper or dry cloth.
Quenching Lamp		5.5	18.0	9.3	C	Lens paper or dry cloth
ID Sensor		5.5	18.0	9.3	C	Dry cloth
Pick-off Pawl		5.5	18.0	9.3	C	
LPH (LED Print Heads)		5.5	18.0	9.3	C	Lens paper or alcohol. After cleaning, touch to discharge static. **Important:** Use no other chemical cleaners!
Fusing Unit						
Hot Roller	1	27.5	90.0	46.5	R	Replace if necessary.
Fusing Cleaning Roller	1	27.5	90.0	46.5	R	Always replace with hot roller.
Hot Roller Bushings	1	27.5	90.0	46.5	R	Always replace with hot roller. Lubricate.
Pressure Roller	1	33.0	108.0	55.8	R	Replace if necessary.
Hot Roller Strippers		5.5	18.0	9.3	C	Dry cloth.
Pressure Roller Strippers		5.5	18.0	9.3	C	
Hot Roller Thermistor		11.0	36.0	18.6	C	
Pressure Roller Thermistor		11.0	36.0	18.6	C	
Fusing Exit Guide Plate		5.5	18.0	9.3	C	
Paper Junction Gate		5.5	18.0	9.3	C	
Fusing Entrance Guide Spurs		5.5	18.0	9.3	C	Cleaner brush Alcohol, dry cloth at every visit. (☛2.2)
Fusing Exit Rollers		11.0	36.0	18.6	C	Alcohol, dry cloth
Fusing Exit Sensor		5.5	18.0	9.3	C	Blower brush
Fusing Gears		5.5	18.0	9.3	L	Barrierta – S552R
Mechanical Drive Section						
Drum Drive Gears		5.5	18.0	9.3	L	Silicone Grease G501.
Development Drive Gears		5.5	18.0	9.3	L	
Fusing Drive Gears		5.5	18.0	9.3	L	
Timing Belts		5.5	18.0	9.3	I	Adjust tension if necessary

Description	Q'ty	PM Interval			PM	Comments
		Metric	Feet	Prints		
Others						
Ozone Filter	1	5.5	18.0	9.3	R	
Line Speed & Magnification Adjustments					A	Adjust after replacing rollers. For details, see "SP Adjustments" in Section 3.

Preventive Maintenance

2.1.2 ROLL FEEDER (B641/B642)

Description	Q'ty	PM Interval			PM	Comments
		Metric	Feet	Prints		
Cutter unit		5.5	18.0	9.3	C	Blower brush, dry cloth. (Estimated service life: 127 K cuts)
Feed Rollers		5.5	18.0	9.3	C	Alcohol with cloth
Exit Rollers		5.5	18.0	9.3	C	
Exit Sensor		11.0	36.0	18.6	C	Blower brush or dry cloth
Roll End Sensors 3, 4 (EXP)		11.0	36.0	18.6	C	

2.1.3 PAPER CASSETTE (B643)

Description	Q'ty	PM Interval			PM	Comments
		Metric	Feet	Prints		
Feed Roller	1	16.5	54.0	27.9	C/R	Replace if necessary
Friction Pad	1	16.5	54.0	27.9	C/R	
Grip Rollers		5.5	18.0	9.3	C	Blower brush or dry cloth
Relay Sensor		11.0	36.0	18.6	C	

2.2 CLEANING THE ENTRANCE SPURS
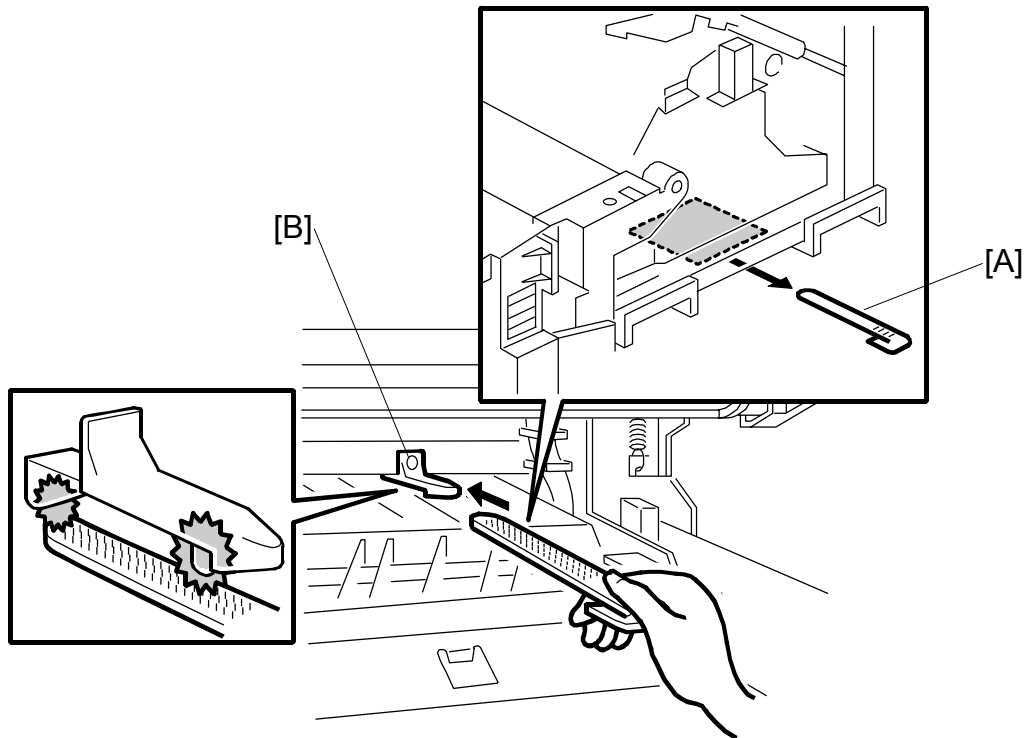
1. Open the upper unit.

2. Retrieve the flat brush from [A] from its storage location.

3. Use the flat brush to clean the 5 entrance spurs [B].

Important:

• Be sure to return the flat brush to its storage location when you are finished.

2.3 LUBRICATION POINTS

2.3.1 DEVELOPMENT SECTION

④ (Sleeve)

③

②

[A]

①
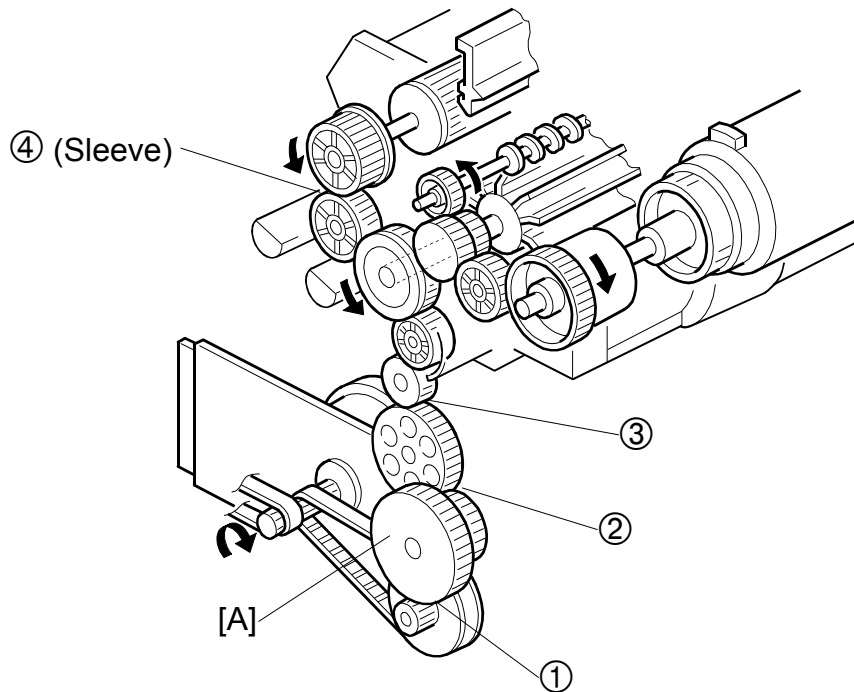
Preventive Maintenance

Development Unit Gears	(Silicone Grease G501). Apply at the points shown by the numbers in the drawing.
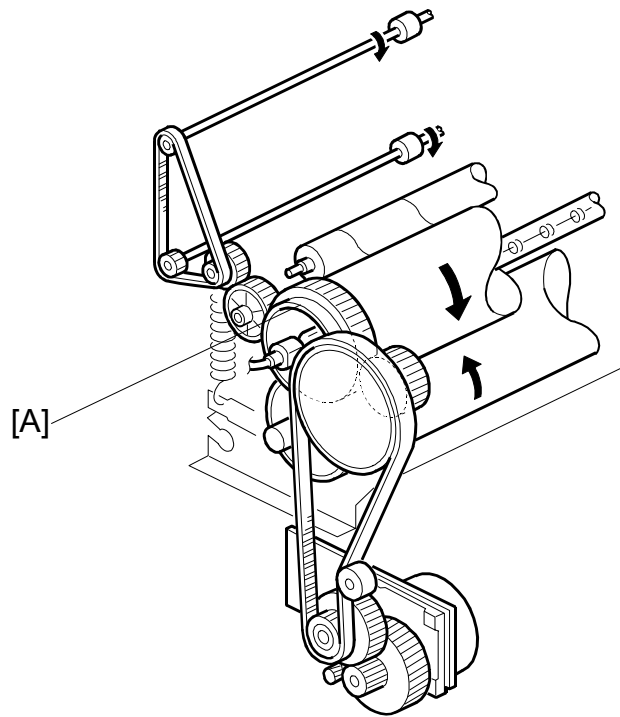
2.3.2 FUSING GEARS

[A]: Fusing Gears (Barrieta S552R). Apply to the surface of the rim.

REPLACEMENT AND ADJUSTMENT

3. REPLACEMENT AND ADJUSTMENT

3.1 COMMON PROCEDURES

3.1.1 BEFORE WORKING ON THE MACHINE
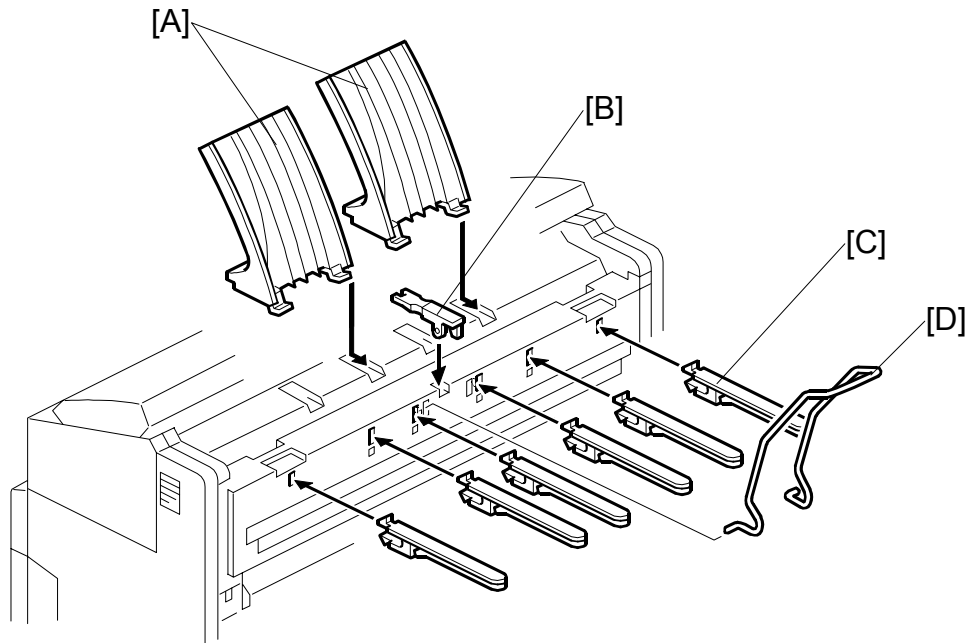
Always remove these items before you start work on the machine:

[A]: Upper output stackers (x 2)
[B]: Copy exit selection lever (x 1)
[C]: Original output guides (x 6)
[D]: Upper output guide (x 1)
Lower output trays (x 3) (not shown)

Reinstallation

- The copy-exit selection lever must be up. In this position, the user can set the paper feed exit on the operation panel with the "Upper Copy Output" key. This key is disabled with the lever down and the copies always feed out at the rear.

3.1.2 SIDE COVERS
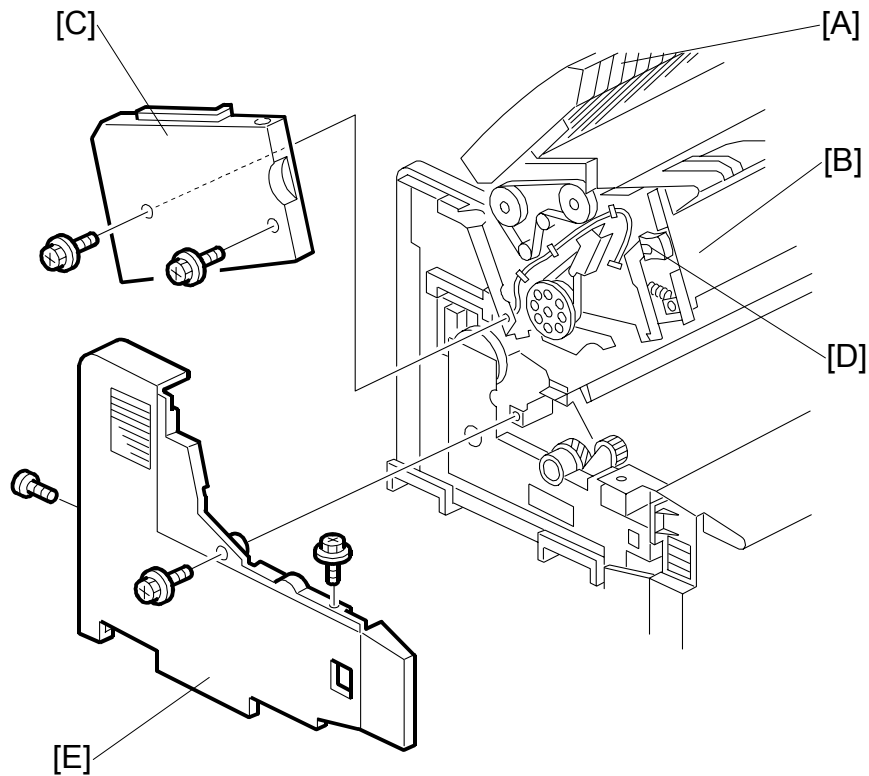
1. Open the original feed unit [A].

2. Open the upper unit [B].

3. Remove the left upper cover [C] (✐ x 2).
   NOTE: If necessary, push in the release button [D] to remove the cover.

4. Remove the left cover [E] (✐ x 3).

5. Do Steps 3 and 4 to remove the right upper cover and right cover.

Reinstallation

- Make sure the original feed unit and upper unit are open.
- Always install the lower covers before the upper covers.
- If necessary, push in the upper unit release buttons [D] when you attach the upper covers.

3.1.3 REAR COVER
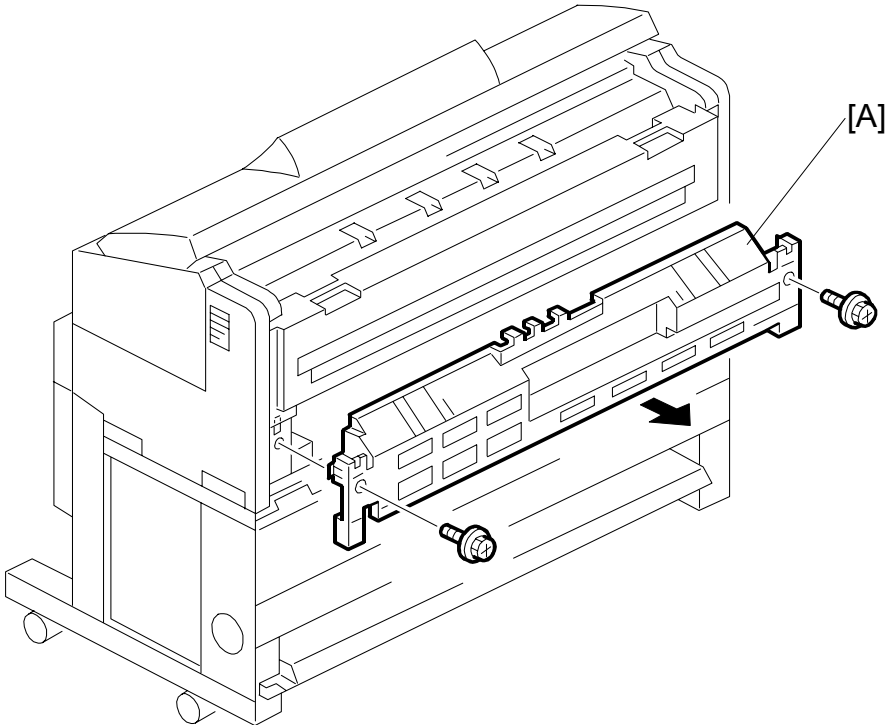
[A]: Rear cover ($\mathscr{P}$ x 2)

3.1.4 PAPER EXIT UNIT
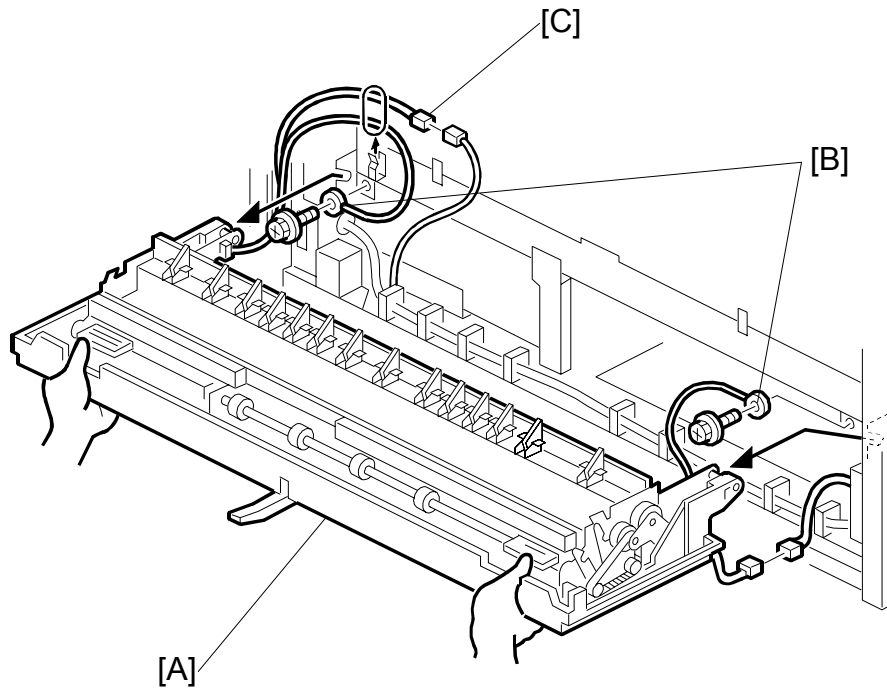
1. Remove the rear cover ($\mathscr{F}$ x 2). (☛3.1.3)

2. Open the paper exit unit and exit cover [A].

3. Disconnect the ground wires [B] and connectors [C] (🔩 x 3, 🔌 x 2, $\mathscr{F}$ x 2).

4. Lift the paper exit unit approximately 30° from horizontal. Pull the ends of the shaft out of the left and right hinges.

3.1.5 UNLOCKING, RAISING THE ORIGINAL UNIT
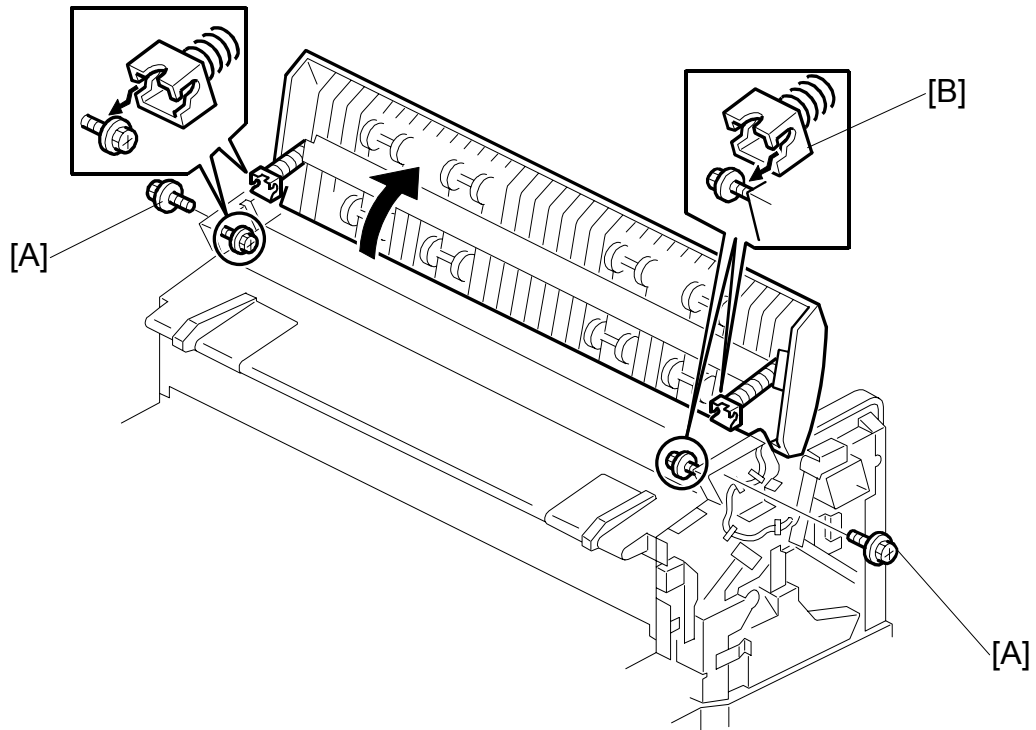
1. Open the upper unit

2. Remove the lock screws [A] (✏ x 2)

3. On the left and right sides, lift the hinges [B] off the support screws and lift the unit to the vertical position. (Do not remove the support screws.)

3.1.6 REMOVING THE ORIGINAL FEED UNIT
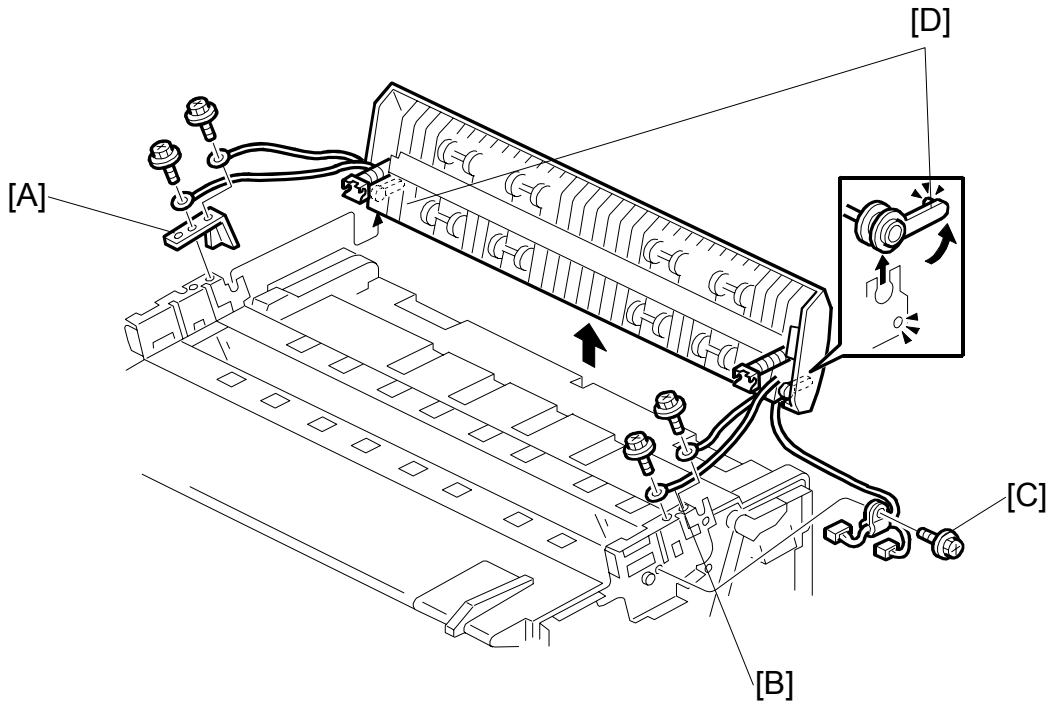
1. Unlock the original unit and lift it. (☛3.1.5)

2. Remove the plate [A] and disconnect the 2 ground wires (🔩 x 2).

3. On the right side, disconnect the ground wires [B] (x2) (🔩 x 2).

4. Disconnect the connectors [C] (🔌 x 3, 🔌 x 3, 🔩 x 1 with nylon clamp).

5. On the ends of the original unit shaft, move the Teflon arms [C] out of the holes and lift them to the horizontal.

6. Hold the Teflon arms up. At the same time, lower the original feed unit in your direction. When it is approximately 70° from the vertical, lift it off the top of the machine.

7. Be sure to remove the Teflon arms from the ends of the shaft.

3.1.7 RAISING AND LOCKING THE SCANNER UNIT
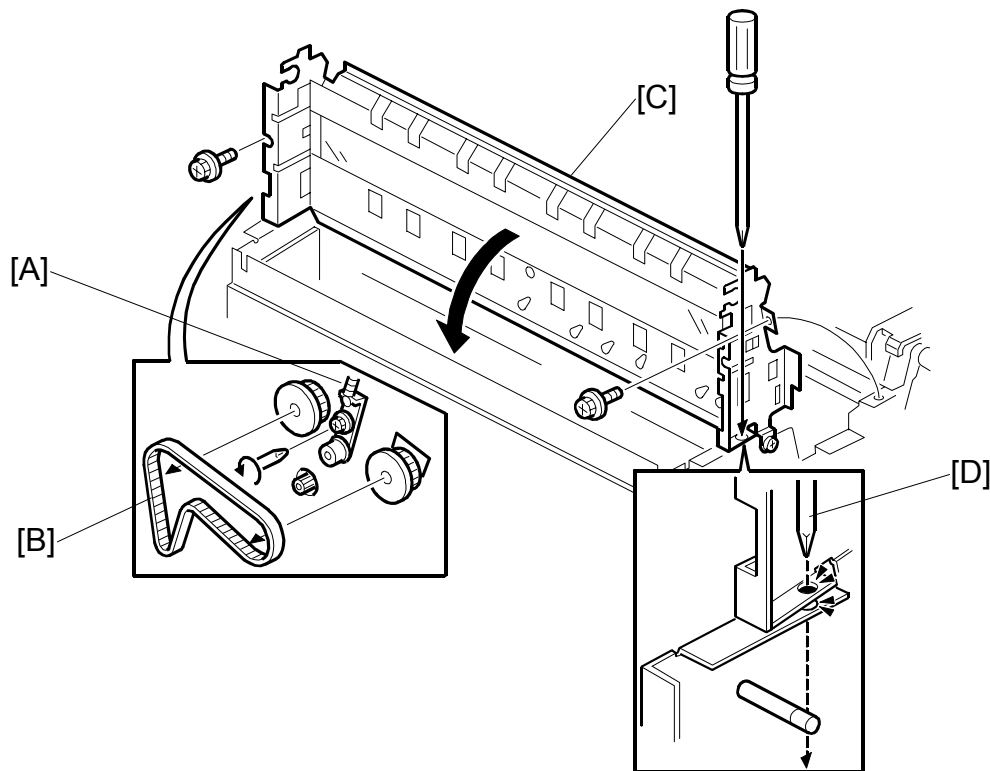
1. Remove the original feed unit. (☛ 3.1.6)

2. Loosen the spring [A] and remove the scanner motor belt [B].

3. Tighten the screw again to make sure that the screw and spring do not fall off.

4. Lift the scanner unit [C]

5. Put a long screwdriver [D] through the holes to lock the scanner unit in the "up position".

Important: Always lock the scanner with a screwdriver when it is in the "up position".

3.1.8 TONER HOPPER COVER

[A]

[B]
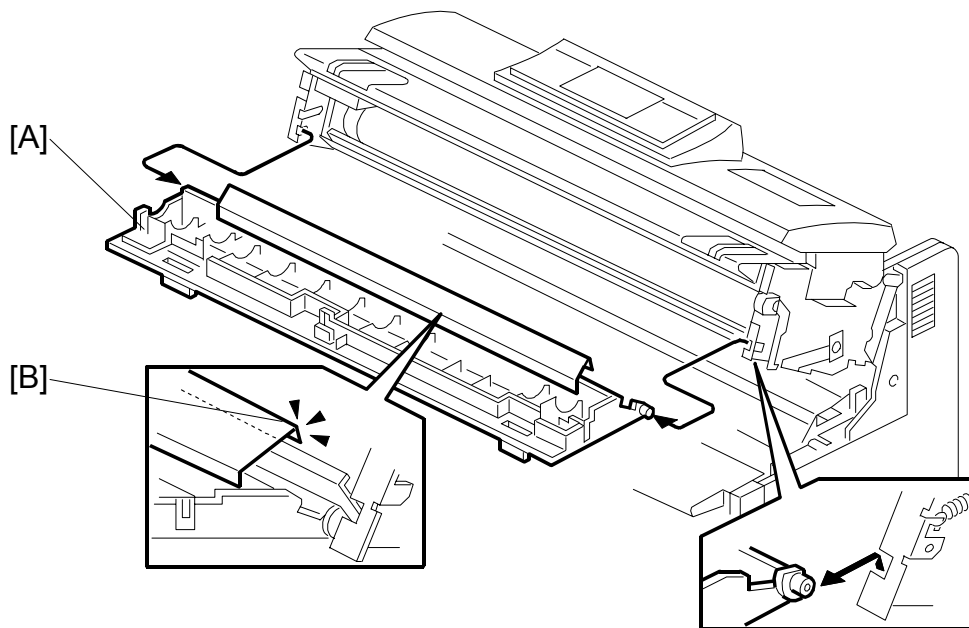
1. Side covers. (☛3.1.2)
2. Toner hopper cover [A].

Reinstallation

- Make sure that the bent edge of the mylar [B] is attached around the edge of the plate.

3.1.9 IDLE REGISTRATION ROLLER PANEL
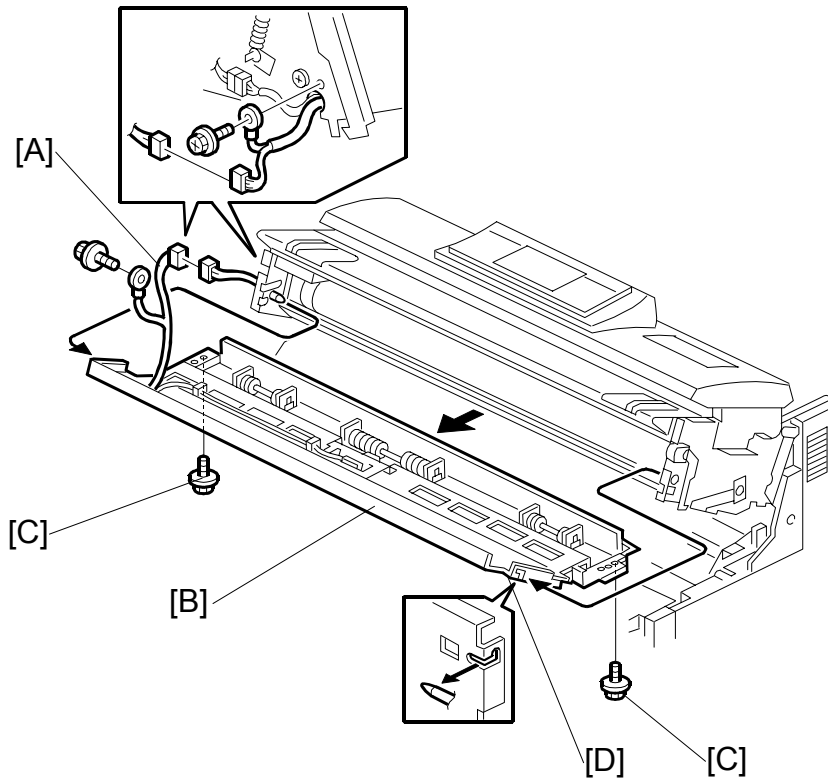
1. Open the upper unit.
2. Side covers. (☛ 3.1.2)
3. Toner hopper cover (☛ 3.1.8)
4. Disconnect the connector and ground wire [A] (🔌 x 1, 🔩 x 1).
5. Idle registration roller panel [B] (🔩 x 2)
   - Remove the two rear screws [C] first and let the panel come down. Use a very short screwdriver to remove the rear screws.
   - Disconnect the panel from the stud screw on the right side first [D], then the left side. Do not remove the stud screws.

⟹ 3.1.10 ORIGINAL FEED TABLE, ORIGINAL FEED SENSOR COVER
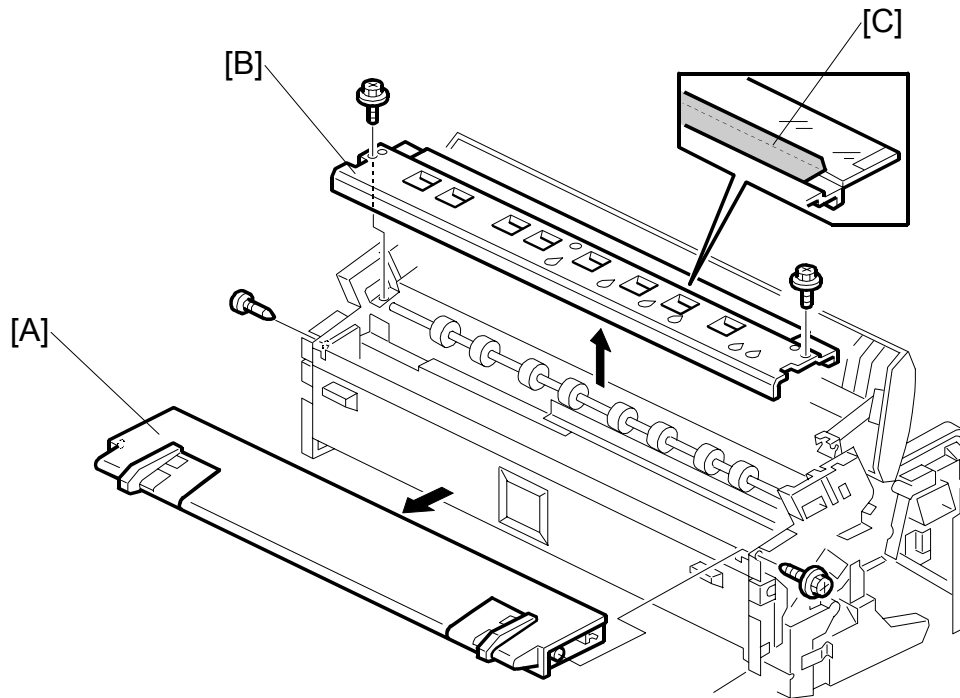
Unlock and lift the original feed unit. (☛3.1.5)

Open the upper unit.

Side covers (☛ 3.1.2)

⟹ [A]: Original feed table (🔩 x 2)

[B]: Original feed sensor cover (🔩 x 2)

Reinstallation

• Make sure that the mylar [C] is on the front edge of the exposure glass.

3.1.11 DRAWER FRONT COVER
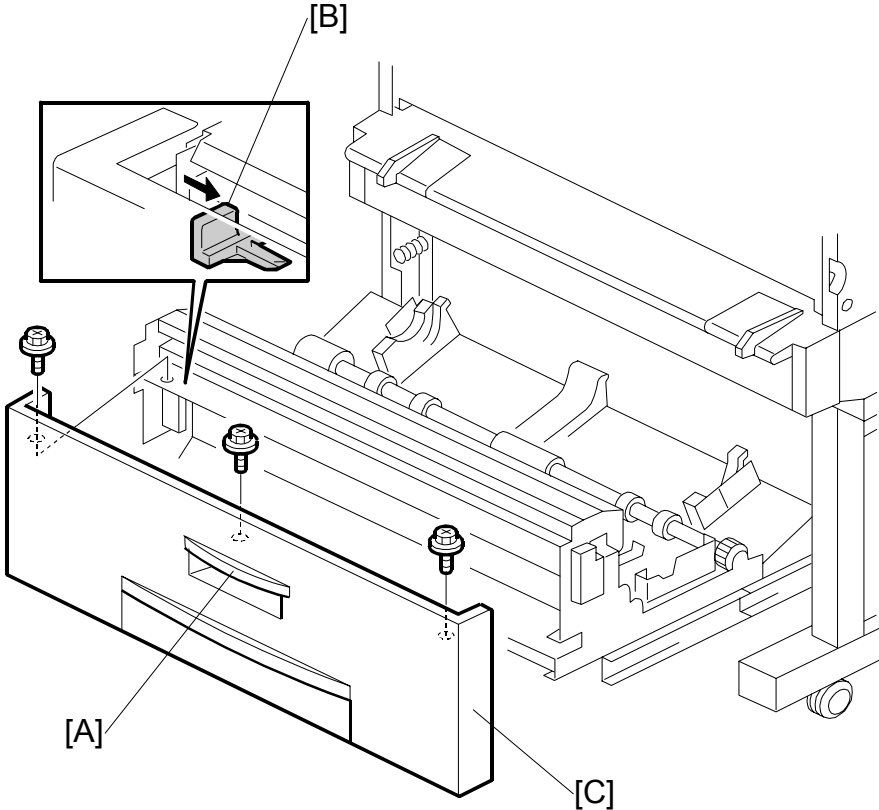
[A]: Open the front drawer of the roll feeder.
[B]: Push the cutter to the right.
[C]: Front cover ($\mathscr{F}$ x 3)

3.2 SCANNER

3.2.1 ORIGINAL WIDTH SENSORS, ORIGINAL SET SENSOR, SCANNER SWITCH
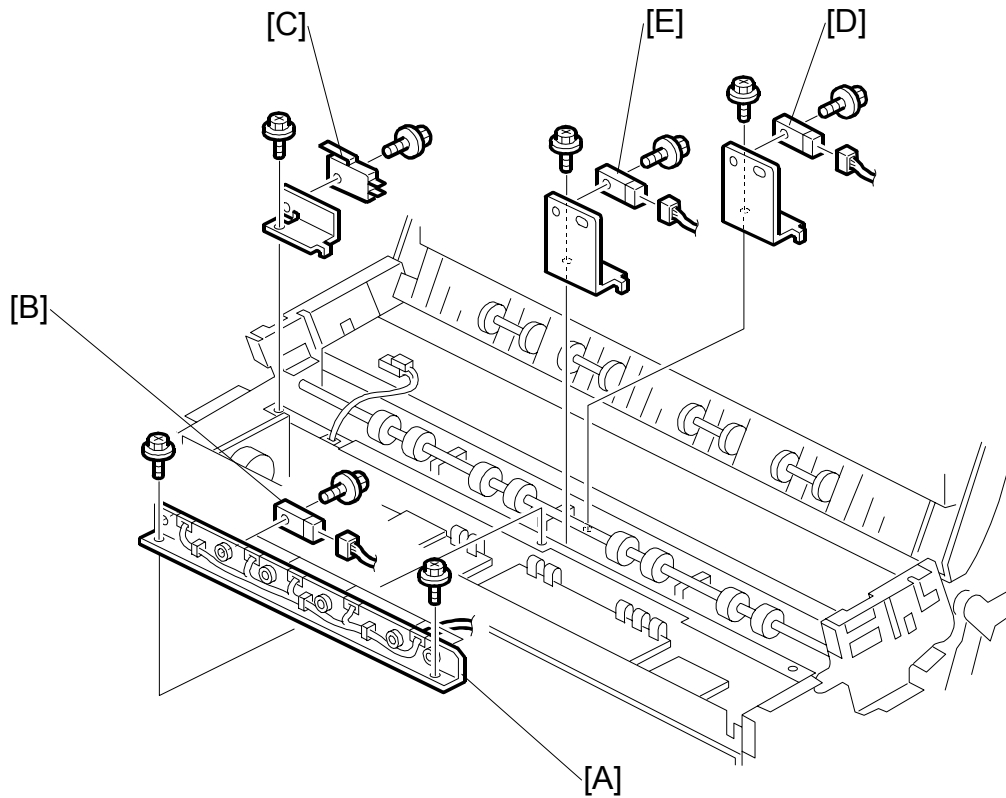
Manual feed table, original feed sensor cover (☛ 3.1.10)

[A]: Original width sensor bracket (🔌 x 2)
[B]: Original width sensors (🔌 x 1, 🔩 x 1 each)
[C]: Scanner switch (🔌 x 1, 🔩 x 2)
[D]: Registration sensor (🔌 x 1, 🔩 x 2)
[E]: Original set sensor (🔌 x 1, 🔩 x 2)

3.2.2 ORIGINAL FEED UNIT ROLLERS
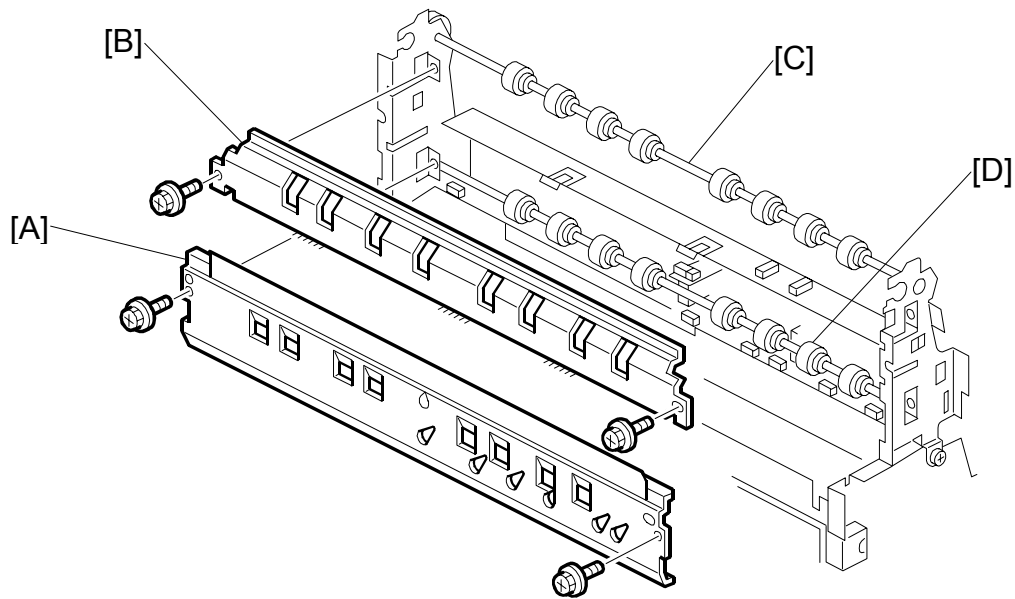
Lift and lock the scanner unit. (☛ 3.1.7)

[A]: Original width sensor cover

[B]: Original exit roller cover (📌 x 2)

[C]: Original exit rollers (ℂ x 2, bushings x 2)

[D]: Original feed rollers (ℂ x 2, bushings x 2)

Reinstallation

After you replace the original feed roller or the original exit roller, do the CIS sub scan test and adjustment, as shown below.
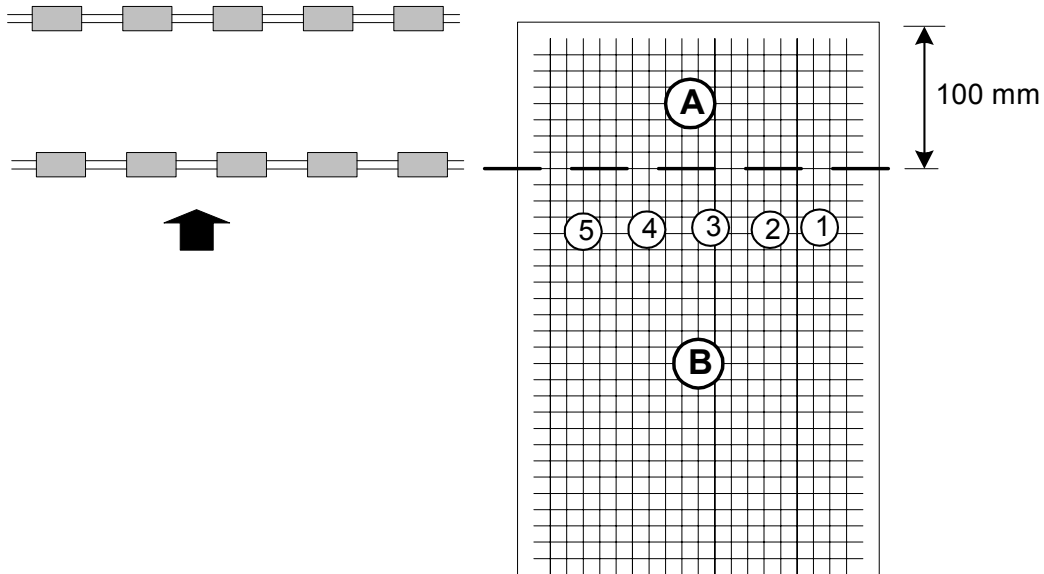
1. Do SP2941 (IPU Test Pattern) and print Pattern 11.

2. Make a copy of the Pattern 11 output that you made in step 1.

3. On the copy, first, check Area "B".
   - If the lines at all the joints are correct (not broken), go to the next step. The joints are labeled 1 to 5 in the diagram; these joints are at the same locations as the joints between segments of the CIS.
   - If the lines are broken at a joint, do SP4972 to adjust them (☞3.11.2). Then go to the next step.

4. Next, check Area "A".
   NOTE: Area A (100 mm) is the distance that the original is fed by only the feed roller, until the original exit roller gets and feeds the original.
   - If the lines at the joints in Area A are correct (not broken), the procedure is completed.
   - If the lines are broken at a joint, do SP4965 to adjust them (adjust by trial and error). Then go back to step 3 and check again.

3.2.3 EXPOSURE GLASS
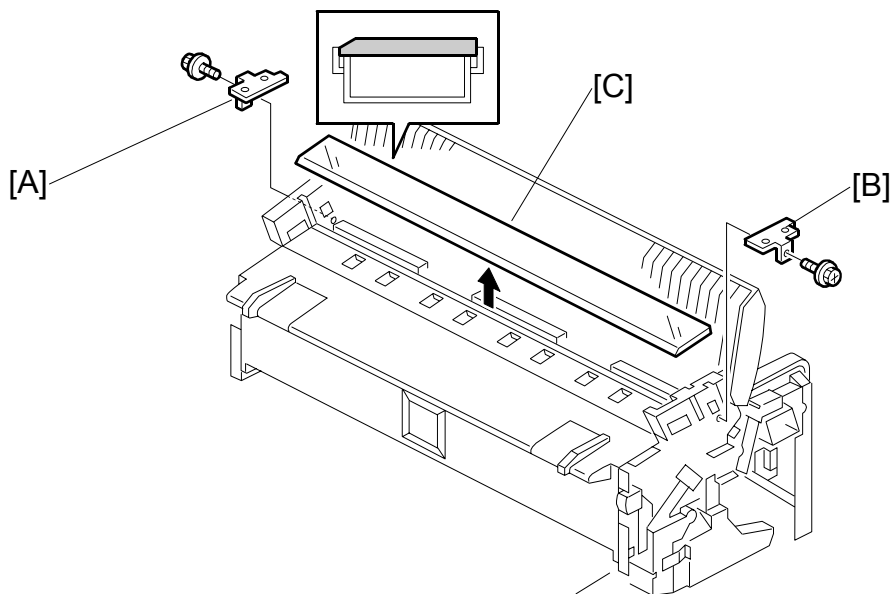
Unlock and lift the original feed unit. (☛ 3.1.6)

Side covers (☛ 3.1.2)

[A]: Left exposure glass plate (🔩 x 1)
[B]: Right exposure glass plate (🔩 x 1)
[C]: Exposure glass.

Important: The exposure glass is very long and thin. It is very easy to break.

Reinstallation

- Make sure that the mylar is on top of the beveled edge of the exposure plate
- Make sure that the black seal is below the rear edge of the exposure glass. The rear edge of the exposure glass must be on its metal supports and not in front of them.

3.2.4 CIS

Rear View
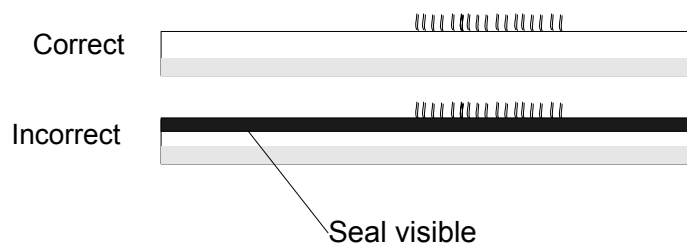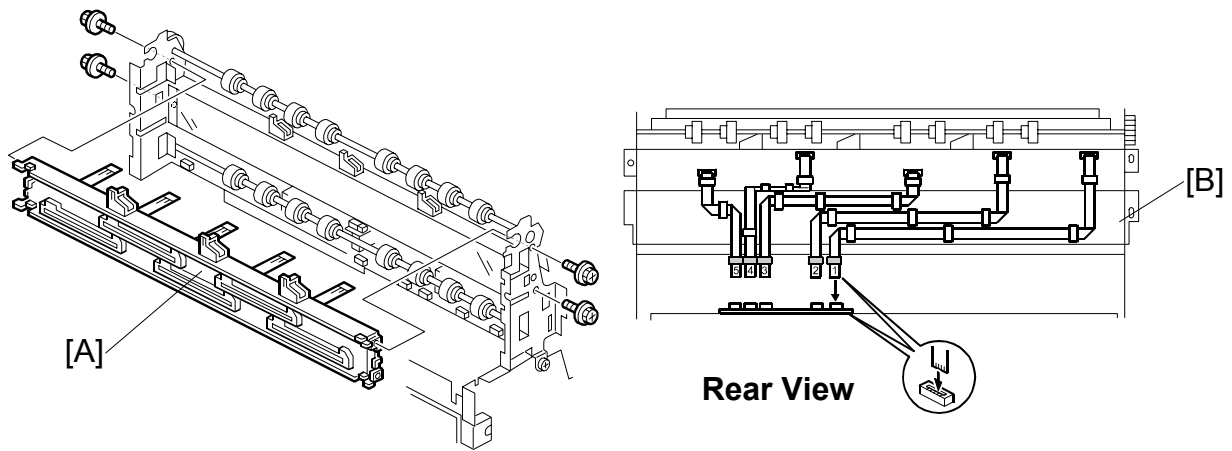
Lift and lock the scanner unit. (☛ 3.1.7)

Original width sensor cover, original exit roller cover (☛ 3.1.10)

[A]: At the rear, open the CIS ribbon harness clamps (🗐 x 11)
    NOTE: Open only the harness clamps connected to the plate. Do not open the clamps on the bottom of the CIS unit.

[B]: CIS unit (🖐 x 5, ✏ x 4)
    NOTE: Be sure to disconnect each ferrite core.

Reinstallation

After you replace the CIS, do the following procedure:

1. Read the values for SP4972 that are printed on the label attached to the CIS replacement unit.
    NOTE: The label is attached to replacement CIS units only.

2. Do SP4972 and input the 8 values.

3. Do SP2941 and print Pattern 11 to check the CIS.

4. Adjust if necessary. (☛3.11.2)

5. Do SP4428 002 (Image Scan Adjustment – Start) to adjust the standard white
    level.
    1) Go into SP mode 4428 002 and push Enter (#).
    2) Push "1". The machine shows "In Progress".
    3) Put a stack of 5 sheets of A1 LEF paper on the original feed table. Use plain
       white paper of a type used by the customer. The machine feeds the stack
       part of the way into the scanner. After approximately 20 seconds, the
       machine feeds stack through and out of the scanner. Then the display will
       change to "Finished".
    4) Push "Exit" three times.
    5) Switch the main power off, then back on.

6. Do SP4428 001 (Image Scan Adjustment – Flag Display) to check that the
    white level was adjusted.

3.2.5 SMDB, VDB
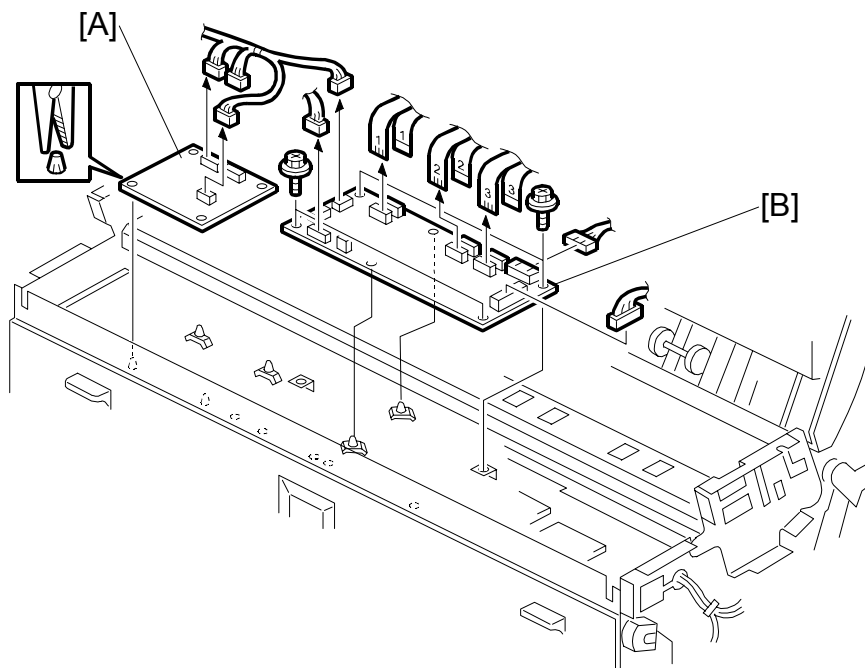
Side covers (☛ 3.1.2)

Manual feed table, original feed sensor cover (☛3.1.10)

[A]: SMDB (⬚ x 3, standoffs x 4)

[B]: VDB (ribbon connectors x 6, ⬚ x 4, ✐ x 4)

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3.2.6 SIB, CGB POWER PACK
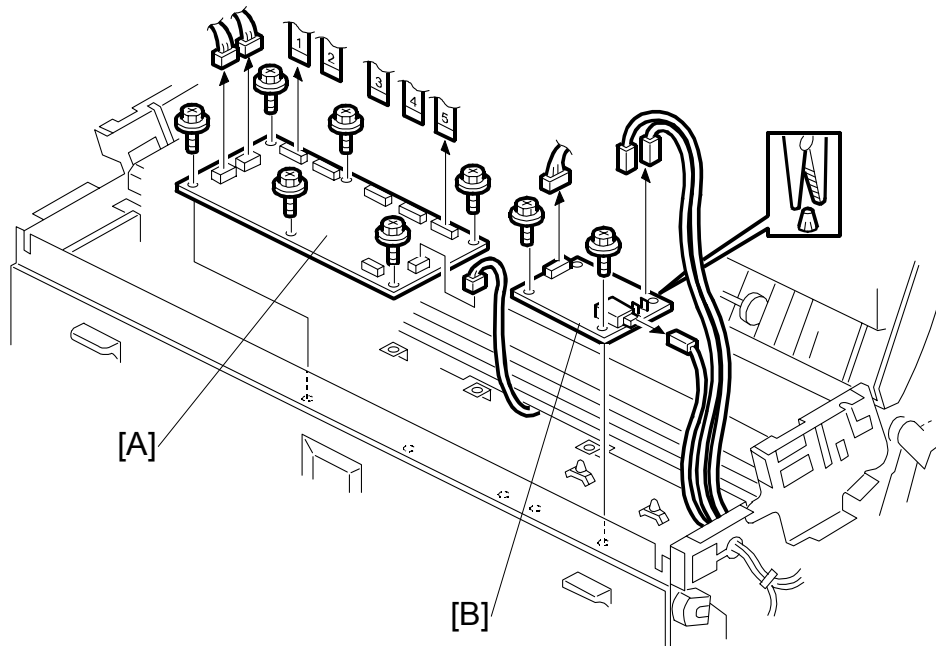
Side covers (☛ 3.1.2)

Manual feed table, original feed sensor cover (☛ 3.1.10)

[A]: SIB (🖾 x 3, ribbon connectors x 5, 🖉 x 6)

[B]: CGB power pack (🖾 x 4, 🖉 x 2, standoffs x 2)

3.3 AROUND THE DRUM

3.3.1 CHARGE CORONA WIRE, GRID WIRE, WIRE CLEANER

Rear
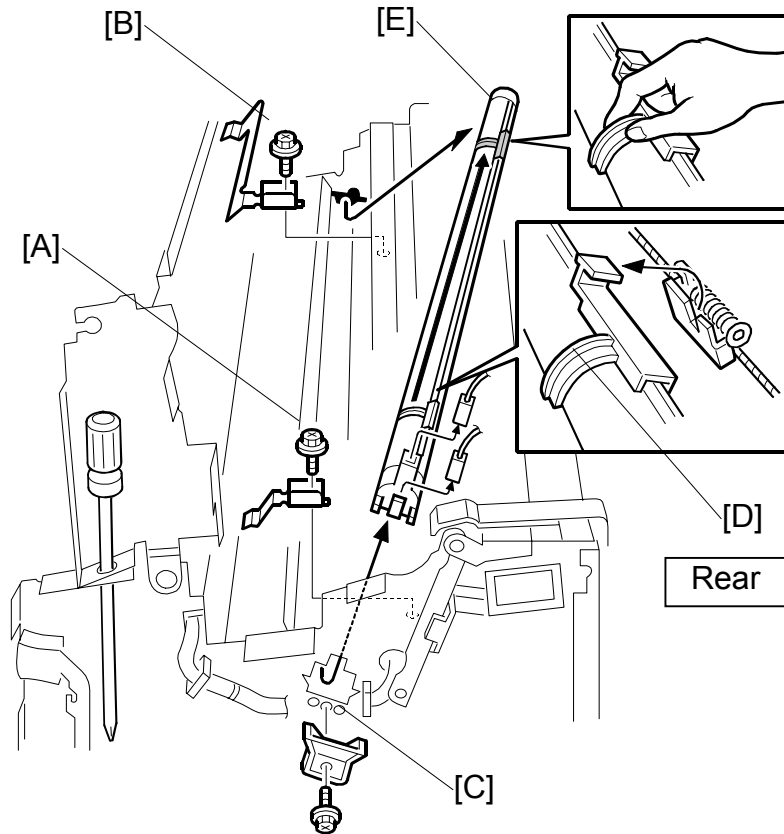
Remove the OPC drum (☛ 3.5)

NOTE: With the drum directly under the charge corona, damage to the drum will occur if the corona unit is dropped.

Lift and lock the scanner unit (☛ 3.1.7)

Scanner motor (☛ 3.8.1)

[A]: Leaf spring (🔩x 1)
[B]: Leaf spring (🔩x 1)
[C]: End plate (🔩x 1)
[D]: Disconnect the cleaning pad and then move it to the left.
[E]: Charge corona unit (🔩 x 2)

Reinstallation

- Put the left end into the hole on the left first (viewed from the rear of the machine). Then, put the right end into the hole on the right.
- Attach the right plate [D], then the left plate [C].
- Make sure the T-bar of the cleaning pad [E] is connected to the guide wire.
- After you replace the charge corona wire, do SP2803 (Corona Wire Cleaning) to clean the new corona wire.
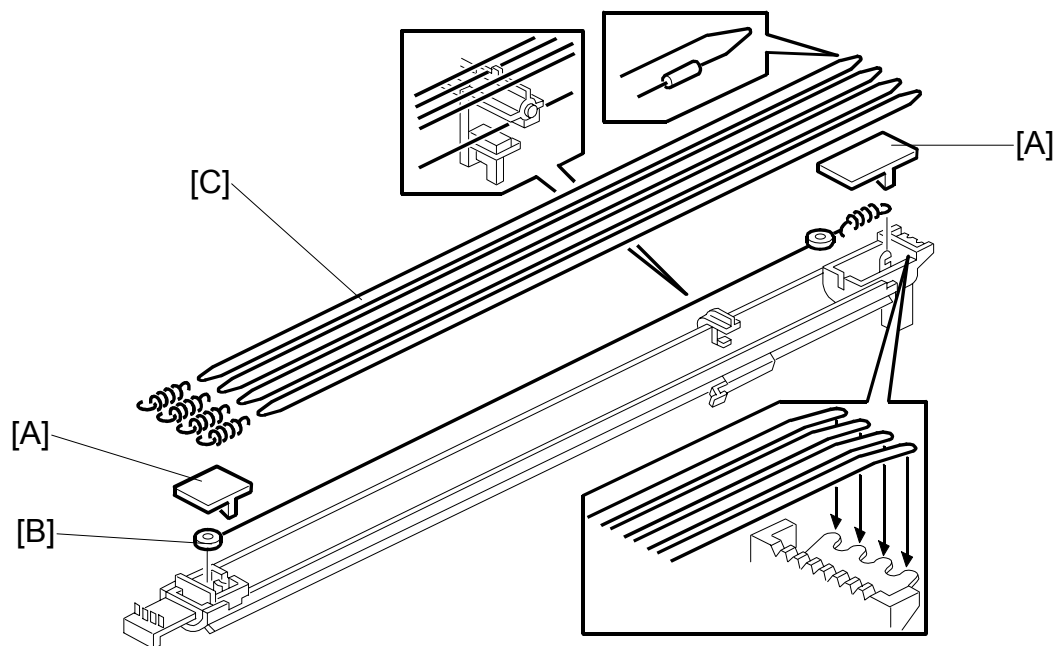
Charge corona unit (☛ 3.3.1)

[A]: Two cover plates (pressure release)
[B]: Charge corona wire (x1)
[C]: Charge corona grid (pairs x 4)

3.3.2 QUENCHING LAMPS
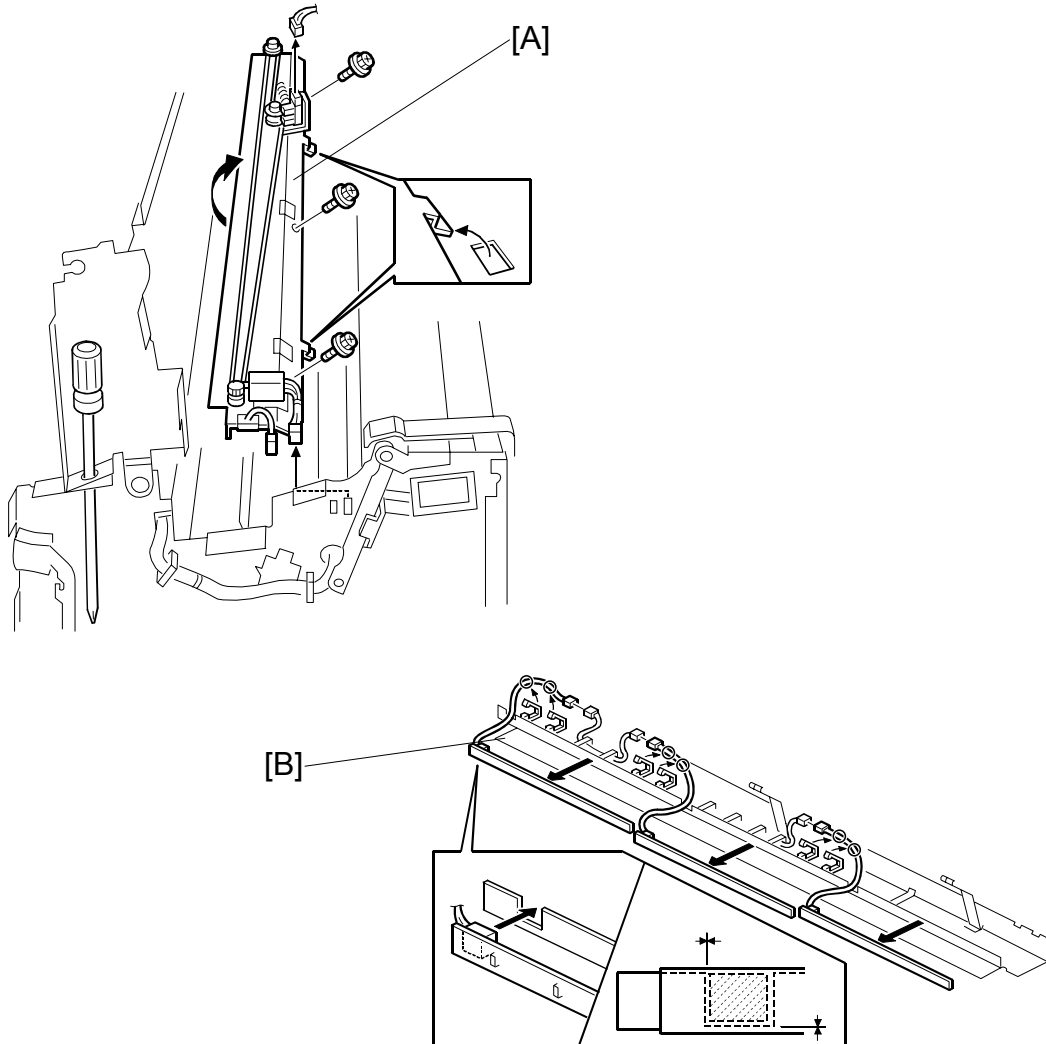
OPC drum unit (☛3.5.1)

[A]: Quenching lamp unit (⬚ x 3, ✒ x 3)
[B]: Quenching lamps (x3) (⬚ x all, ⬚ x 3)

NOTE: The quenching lamps are attached to the plate with double-sided tape.

3.3.3 LPH (LED PRINT HEAD)
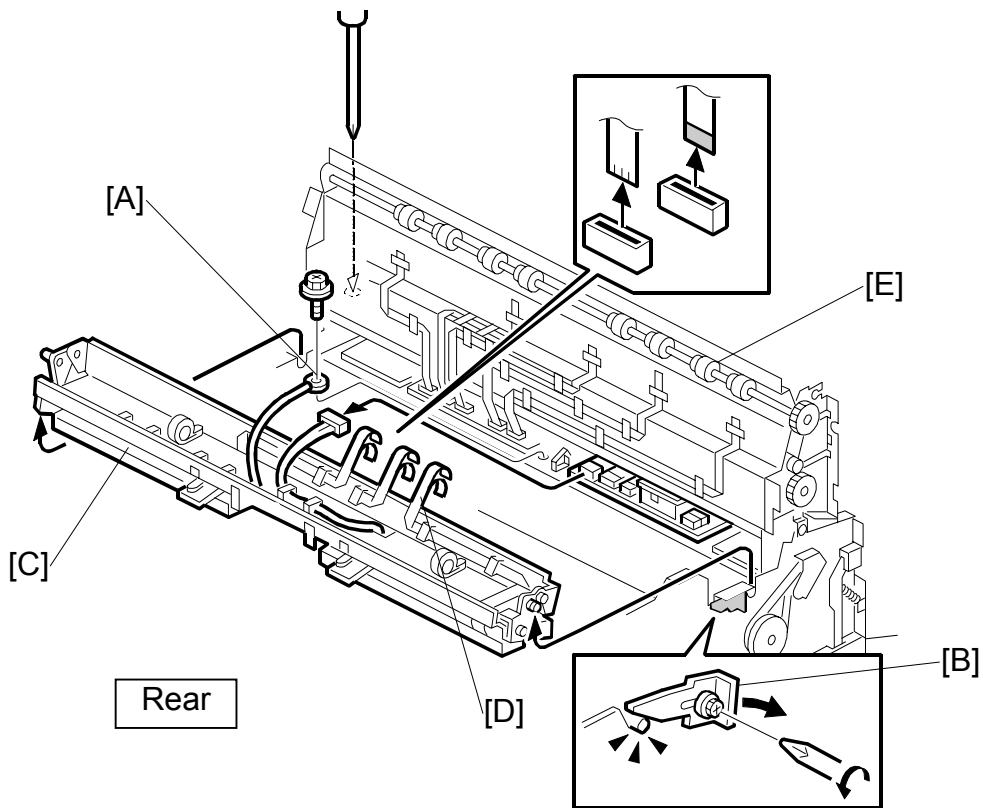
Original feed unit (☛ 3.1.6)

Lift and lock the scanner unit (☛ 3.1.7)

[A]: Ground wire (🔩 x 1).
[B]: On each side of the machine, loosen the screws and move the plates to the rear as shown.
[C]: LPH (🔩 x 1, 🔩 x 1)
[D]: LPH (🔩 x 6 ribbons). Connect the 3 ribbon connectors with the blue tabs at the rear.
[E]: After you remove the LPH, lower the scanning unit to prevent damage to the OPC drum.

Reinstallation

1. Adjust the position of the LPH until it is level.

2. Set the plates [B] lightly against the studs on each side. Then tighten the screws.

Important:

- Do not push the plates forward with force against the LPH studs.
- If the studs are pushed forward, this could cause the LPH to move out of position and cause images to be too dark.

1. Do SP2943 and input the values that are printed on the label attached to the replacement unit. (☛3.11.3)

2. Do SP2965 and input the values that are printed on the label attached to the replacement unit. (☛3.11.3)

3. Make a test print and adjust if necessary. (☛3.11.3)

Replacement and Adjustment

3.3.4 TRANSFER CORONA, SEPARATION CORONA WIRES
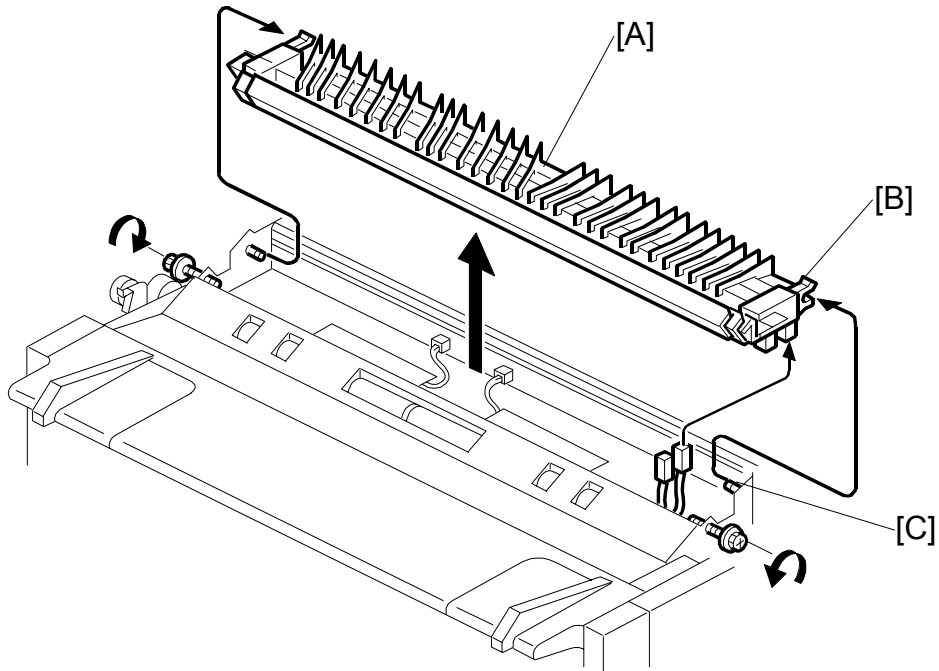
Open the upper unit.

Side covers (☛ 3.1.2)

[A]: Transfer unit (🔌 x 2, 🔩 x 2)

Reinstallation

- At each end of the unit, make sure that the tabs [B] are fully engaged with the studs [C].
- When the tabs are engaged correctly, the caps on the end are fully level.
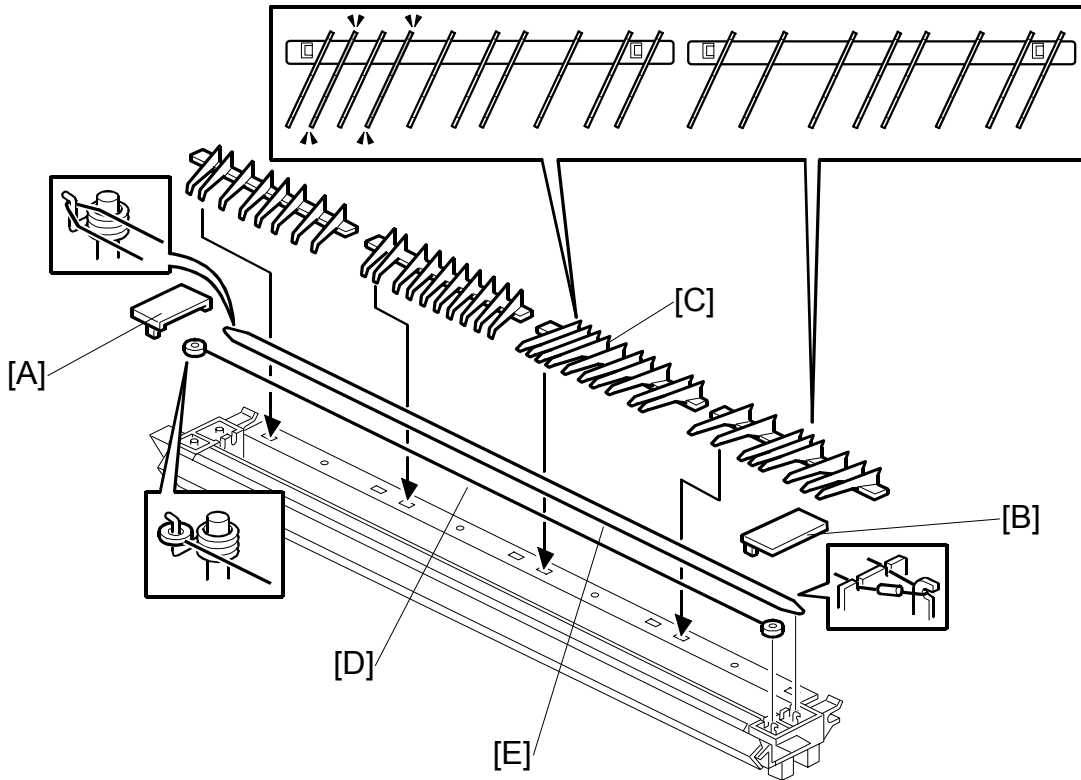
Transfer unit (☛ 3.3.4)

[A]: Left cap (tab release)
[B]: Right cap (tab release)

NOTE: To remove a paper guide, lift it a small distance and move it in the direction of the center. Make a note of the position of each guide. Each guide must be installed at its original position.

[C]: Paper guides (x4)
[D]: Transfer wire
[E]: Separation wires

Reinstallation

- Each paper guide pair must be installed at its original position.
- For each pair, the high guide is set on the outer side and the low guide is set on the inner side.
- If each guide is not installed at its original position, this will cause paper to wrinkle.

3.4 DEVELOPMENT

3.4.1 DEVELOPMENT UNIT
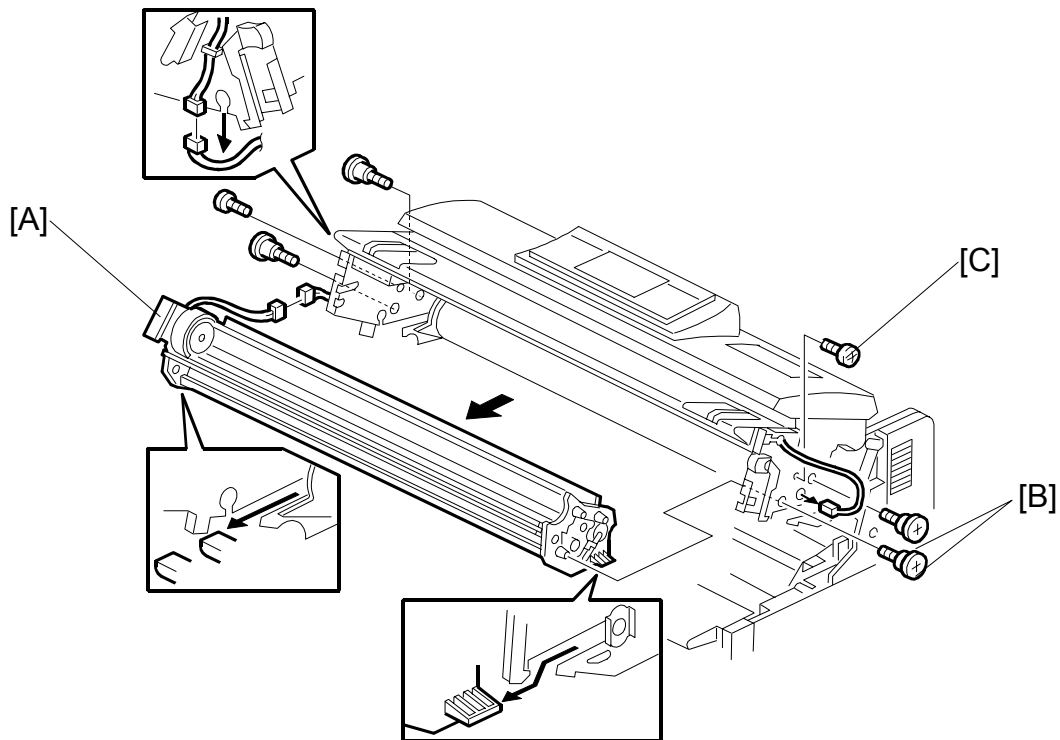
Lift the upper unit.
Side covers (☛3.1.2)
⟹ Original feed table (☛ 3.1.10)
Toner hopper cover (☛ 3.1.8)
Idle registration roller panel (☛ 3.1.9)
Toner cartridge

[A]: Development unit (⬚ x 2, ✄ x 6)

⚠ **CAUTION**

The development unit is very heavy. Pull it out slowly.

Reinstallation

• Attach the large shoulder screws [B] on each side first, then attach the flat-head screws [C].

3.4.2 DEVELOPER

[A]

[D]

[B]

[C]
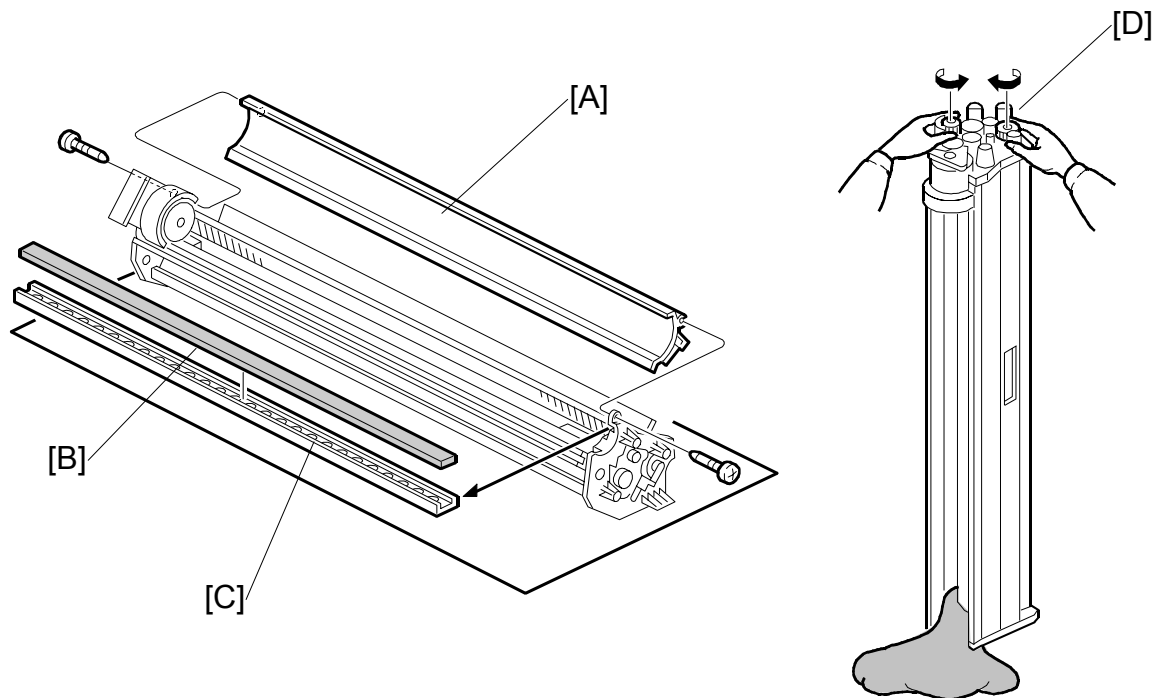
Replacement and Adjustment

1. Remove the development unit (☛ 3.4)
   NOTE: Do not bend the bias terminal.

2. Put the development unit on a large sheet of paper.

3. Remove the casing [A] for the toner supply unit (𝒫 x 2)

4. Remove the development filter [B] and bracket [C].

5. Hold the development unit above the paper with the gears up.

6. Turn the paddle roller [D] clockwise until all developer is out of the unit.

7. Clean the development unit (specially the right end), the development filter, and development filter bracket.

⟹ 8. Install the Development Unit.

9. Install the Idle Registration Roller Panel.

10. Install the Toner Hopper Cover and open it.

$\Longrightarrow$
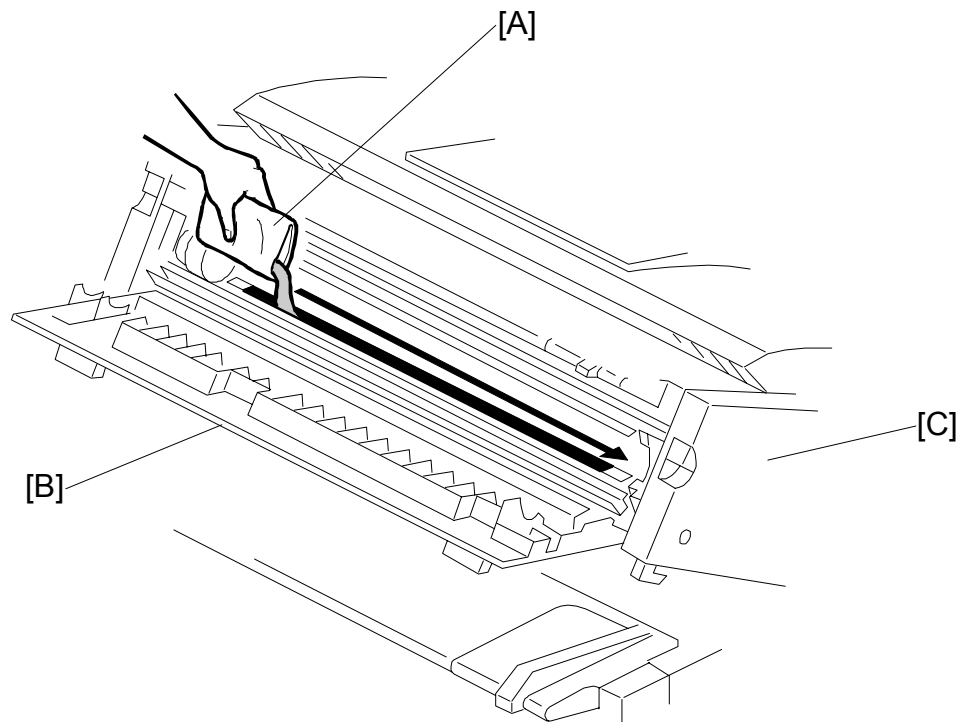
11. Add one (1 kg) pack of developer. Do not add the second pack at this time.
   - Open the first developer pack [A].
   - Slowly add the first pack of developer to the development unit. Move the pack from left to right until it is empty.
   - Make sure that the developer is applied equally across the slot of the development unit.

12. Close the toner hopper cover [B].

13. Close the upper unit [C].

14. Connect the power supply cord. Switch the main power switch on.

15. Do SP5804 015 (Output Check – Main Motor) to start the main motor. This supplies developer to the development unit.

16. Push "1" to start the motor and let it operate for 30 seconds.

17. Push "0" to stop the motor.

18. Switch the main power switch off.

19. Open the upper unit.

$\Longrightarrow$

20. Open the toner hopper cover.

21. Open the second 1 kg pack of developer and slowly add it to the development unit. Move the pack from left to right until it is empty.

22. Use a clean cloth to clean the edges around the slot of the development unit.

23. Close the upper unit. Make sure that the upper unit locks on each side.

24. Switch the main power switch on.

25. Input the lot number of the developer. The lot number is embossed on the edge of the developer pack.
    - Go into the SP mode and use SP5998.
    - Push a number key (0-9) to input a number.
    - To input a hyphen press ⊙ⁿ* once, then push #.
    - To input a letter, push ⊙ⁿ* again and again until the necessary letter (A-Z) is shown, then push #.
    If the entry immediately after a letter is a number, push the number key. (You do not need to push #.)

26. Do SP3001 007 (Developer Initialization) to prepare the new developer.

NOTE: If replacing the ID Sensor or OPC Drum with new developer, use SP3001-005 to initialize the new ID Sensor or OPC Drum with new developer.

Replacement and Adjustment

3.4.3 PAPER SET SENSOR, REGISTRATION SENSOR
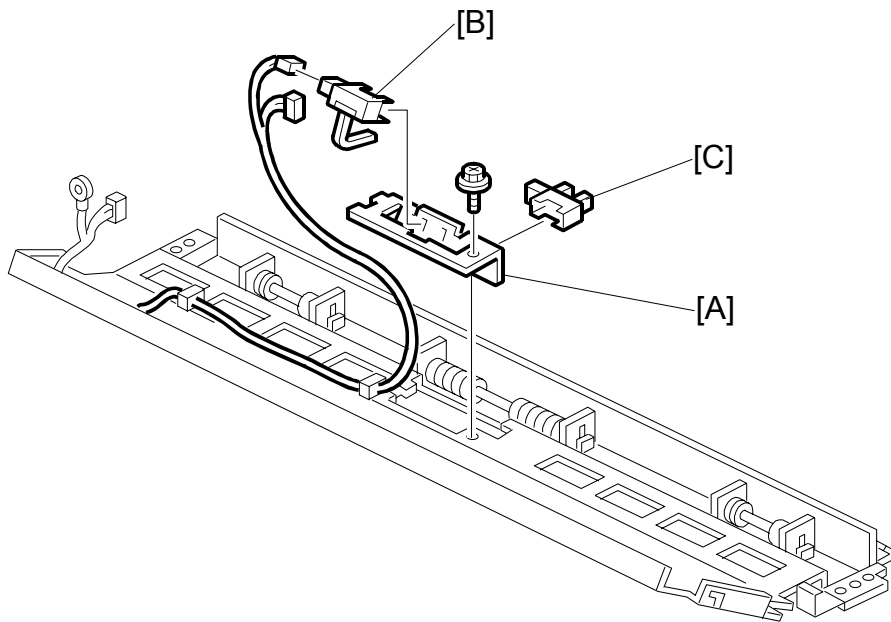
Idle registration roller panel (☛ 3.1.9)

[A]: Sensor bracket (🖉 x 1)

[B]: Paper set sensor (📇 x 1)

[C]: Registration sensor (📇 x 1)

3.4.4 TONER SUPPLY CLUTCH
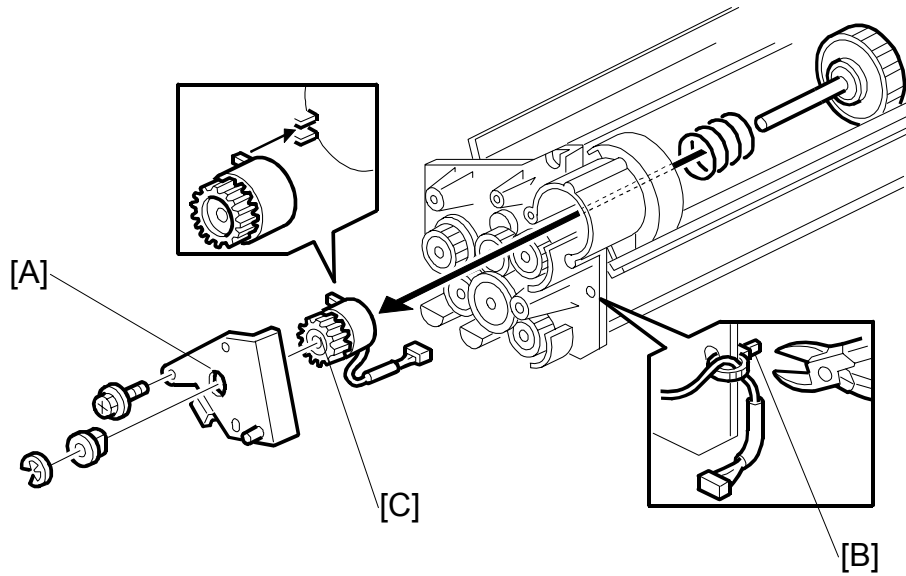
Development unit (☛ 3.4)

[A]: Plate (🔩 x 1)

[B]: Cut the harness clamp.

[C]: Toner supply clutch (🔌 1 x, ℂ x 1, bushing x 1)

    NOTE: The stopper is spring-loaded and will come out suddenly after you remove the e-ring.

3.4.5 DEVELOPMENT FILTER
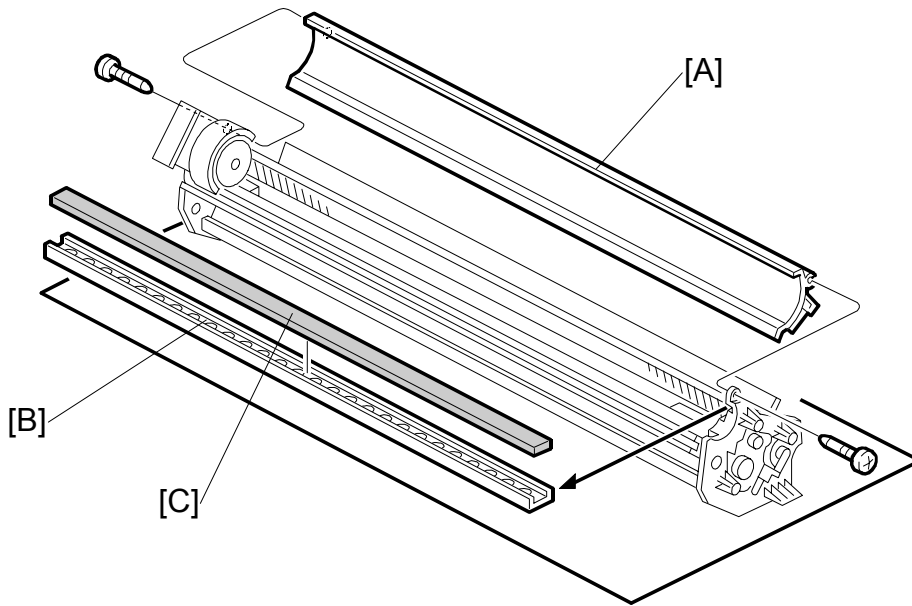
Development unit (☛ 3.4)

[A]: Development unit casing (🔩 x 2)
[B]: Filter rack
[C]: Filter

3.4.6 USED TONER COLLECTION BOTTLE, TONER OVERFLOW SENSOR
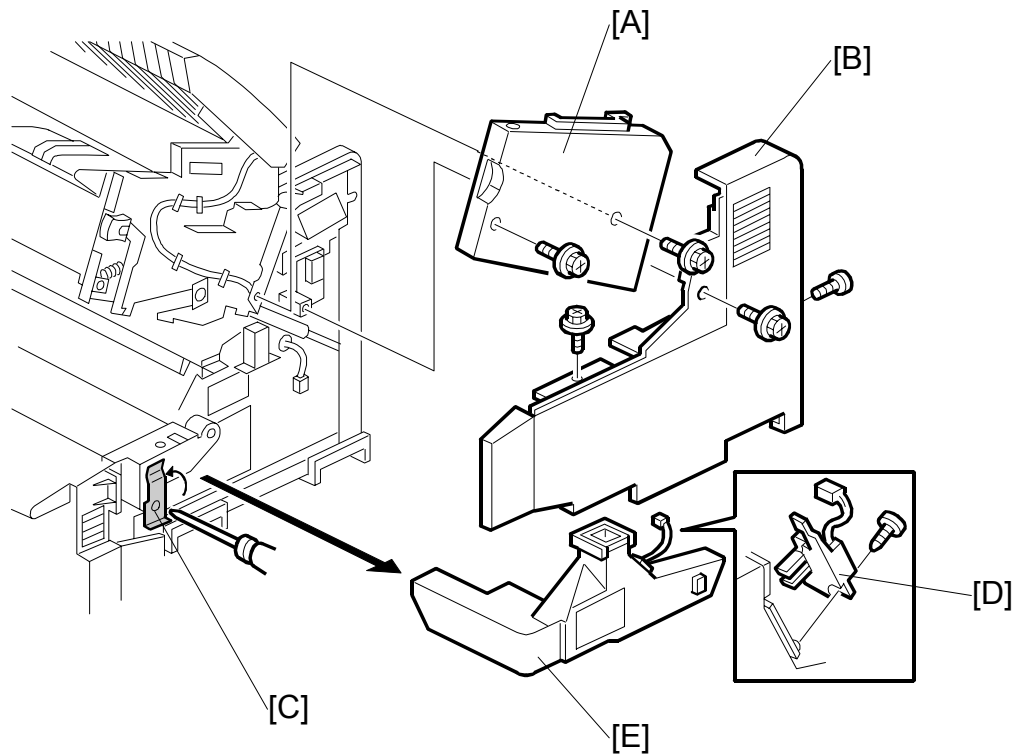
Lift the original feed unit.

Lift the upper unit.

[A]: Right upper cover (🔩 x 2)

[B]: Right cover (🔩 x 3)

[C]: Loosen the leaf spring and lift it.

[D]: Toner overflow sensor (🔌 x 1, 🔩 x 1)

[E]: Toner collection bottle

3.5 DRUM

3.5.1 DRUM UNIT
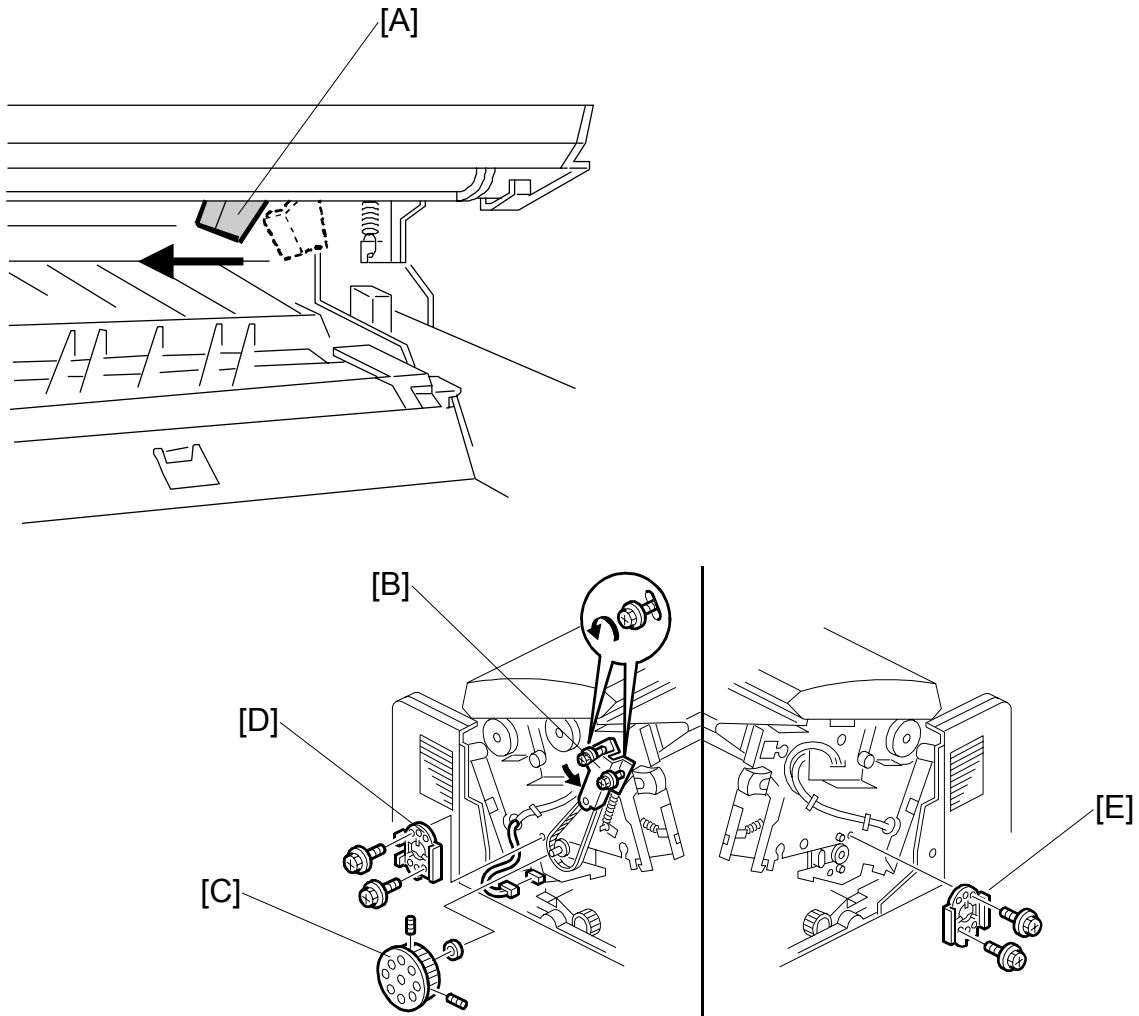
[A]: Open the upper unit and set the cleaning blade release lever to the left.

Development unit (☞ 3.4)

[B]: Drive belt plate, drive belt (🔩 x 2)

[C]: Drum gear, white Teflon bushing. Use the long end of a hexagonal wrench to loosen the two lock screws. Then remove the gear wheel.

[D]: Left hub of drum shaft (🔩 x 2)

[E]: Right hub of drum shaft (🔩 x 2)

Reinstallation

- Be sure to tighten the hexagonal lock screws in the drum gear.
- Set the cleaning-blade release lever to the right.
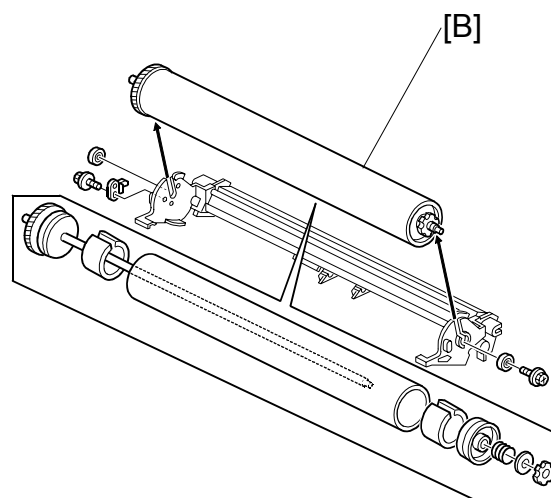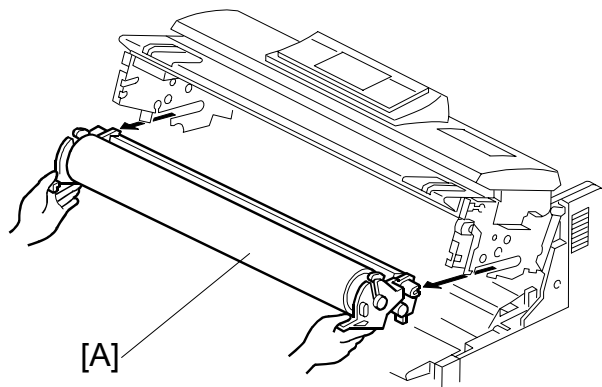
1. Drum unit [A]

> **⚠CAUTION**
>
> **The drum unit is very heavy. Pull it out slowly.**

   Important: Do not touch the surface of the drum.

2. Drum [B] ($\mathscr{P}$ x 2. bushings x 2, plate x 1)

Reinstallation

After you replace the drum:

- Do SP2923 (Cleaning Blade Set Mode). This applies toner to the drum and blade to decrease friction between the drum and the cleaning blade. If you do this, scratches on the drum or a bent cleaning blade are less possible to occur.
- Do SP3001 006 (ID Sensor Settings – ID Sensor Initialization) to reset the ID sensor.

3.5.2 CLEANING BLADE
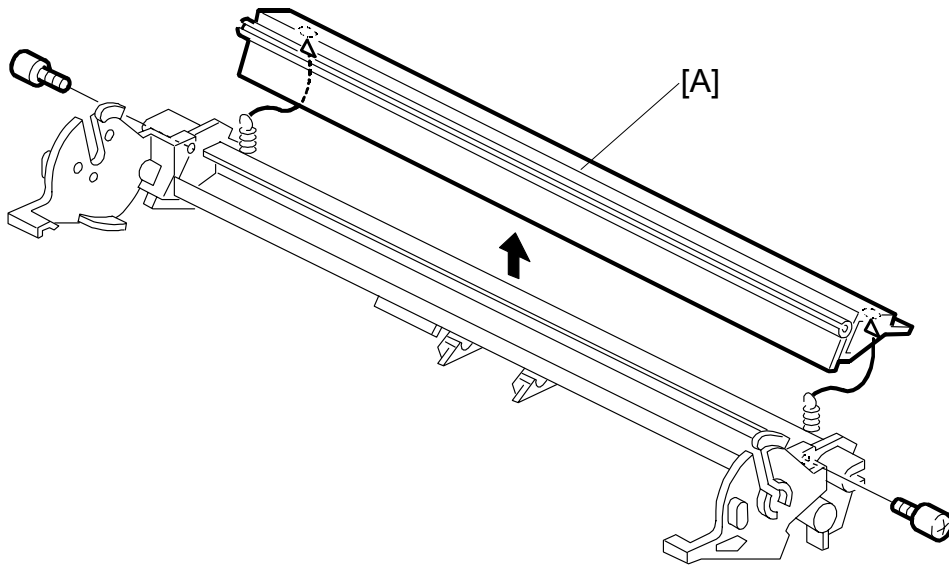
1. Cleaning blade [A] (🔩 x 2, springs x 2)

Reinstallation

After you replace the cleaning blade:

• Do SP2923 (Cleaning Blade Set Mode). This applies toner to the drum and blade to decrease friction between the drum and the cleaning blade. If you do this, scratches on the drum or a bent cleaning blade are less possible to occur.

3.5.3 ID SENSOR, PICK-OFF PAWLS, PICK-OFF PAWL SOLENOID
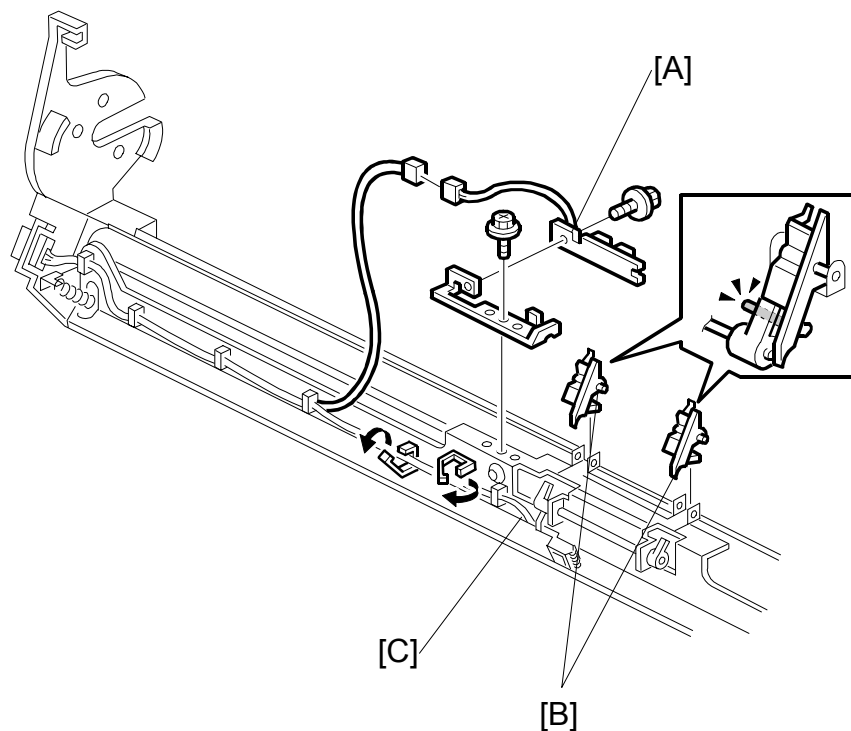
Drum (☞ 3.5.1)

Cleaning blade (☞ 3.5.2)

[A]: ID sensor (🔌 x 3, ▣ x 1, ✎ x 1)
[B]: Pick-off pawls (x2) (pressure release).
[C]: Pick-off pawl solenoid (▣ x 2, ✎ x 1)

Reinstallation

- Do SP3001 006 (ID Sensor Settings - ID Sensor Initialization) to reset the sensor if you replaced it.
- If the ID sensor is damaged and cannot be replaced immediately, set SP2208 003 (Toner Supply Setting – Toner Supply Mode) to "1". Then the customer can continue to use the machine until a new ID sensor is available. After you install a new ID sensor, reset this SP to 0.

3.6 PAPER FEED

3.6.1 REGISTRATION CLUTCH, REGISTRATION ROLLER
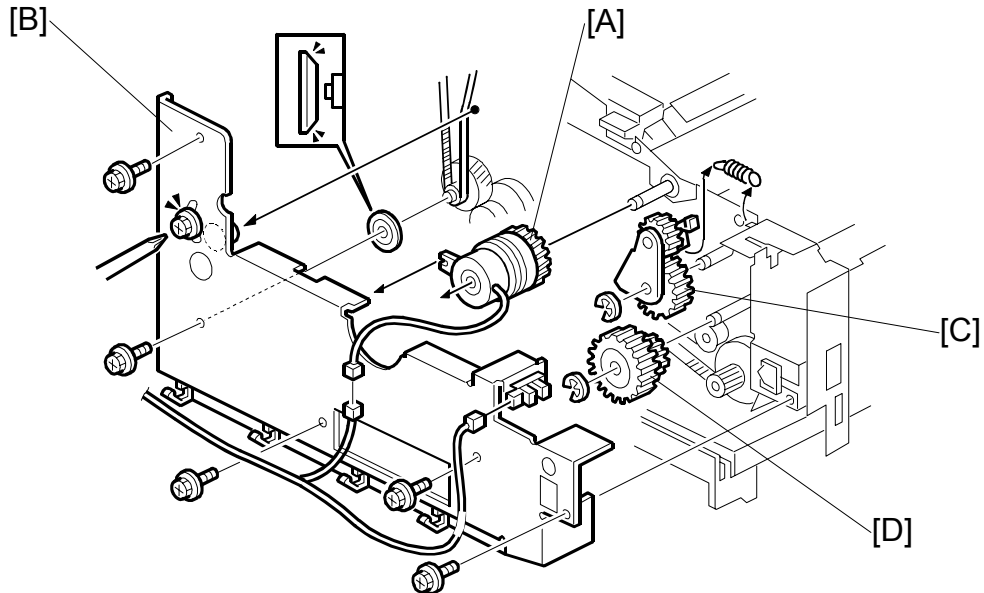
Side covers (☛ 3.1.2)

[A]: Registration clutch (🔩 x 1, 🔌 x 1)
[B]: Gear cover plate (🔩 x 5, cap x 1, drive belt x 1)
[C]: Gear (Ⓒ x 1, spring x 1)
[D]: Gear (Ⓒ x 1)
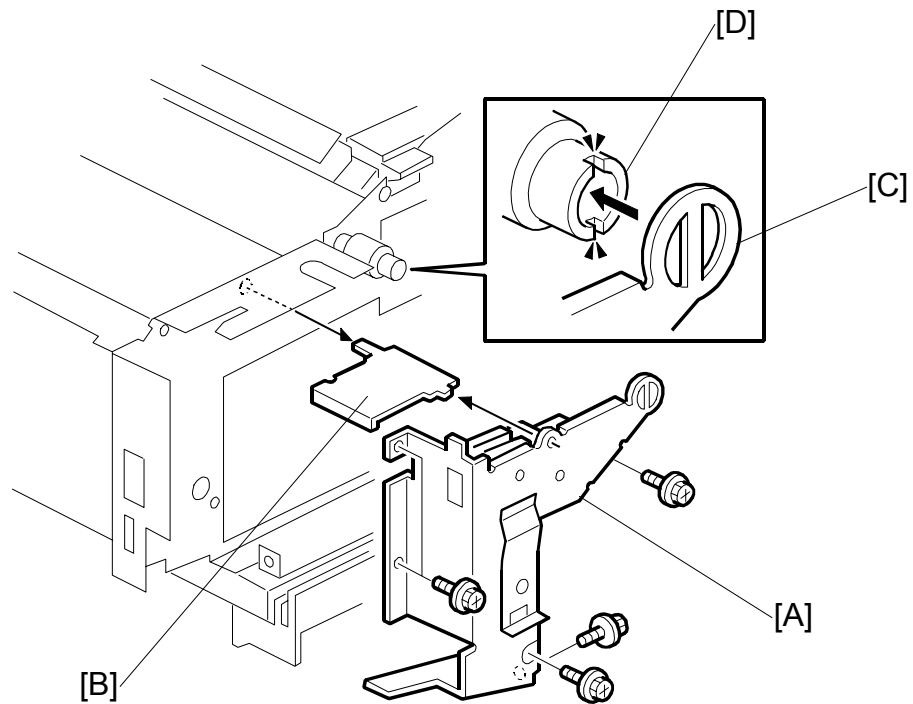
[A]: Cover plate (🔩 x 5)
[B]: Switch pressure plate

Reinstallation

Make sure that the vertical brace [C] is locked in the cutouts in the ceramic clutch [D].
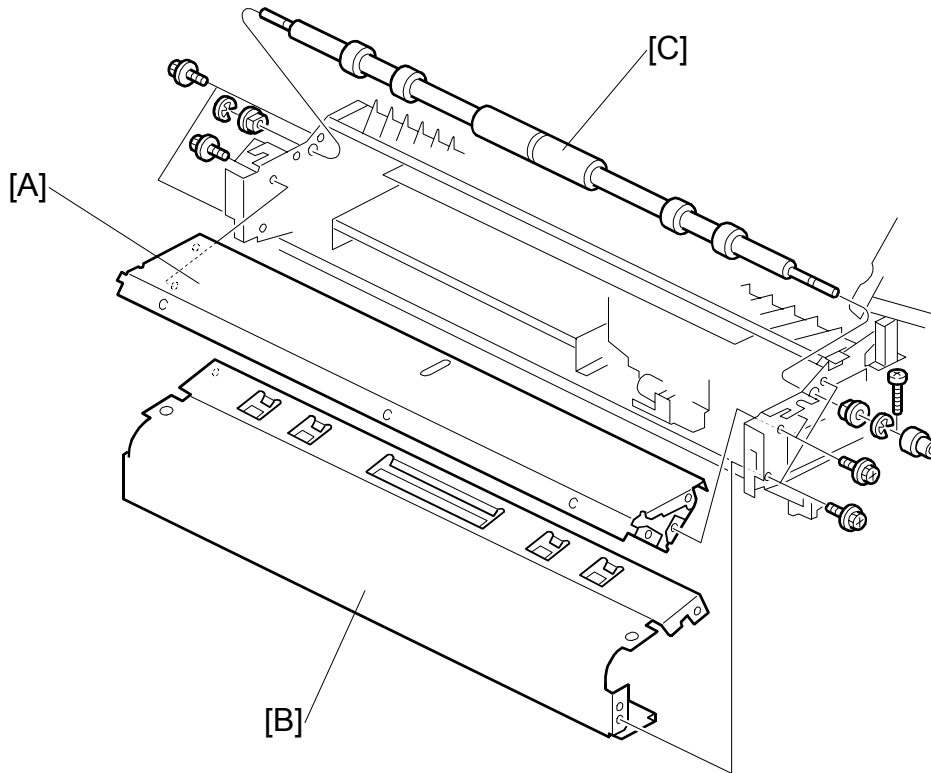
Used toner collection bottle (☛3.4.6)

[A]: Front plate (✏ x 4)

[B]: Transport roller dust cover (✏ x 4)

[C]: Registration roller (Ⓒ x 2, bushings x 2, torque limiter x 1, ✏ x1)

3.6.2 ROLL 1 PAPER FEED CLUTCH, FEED ROLLER
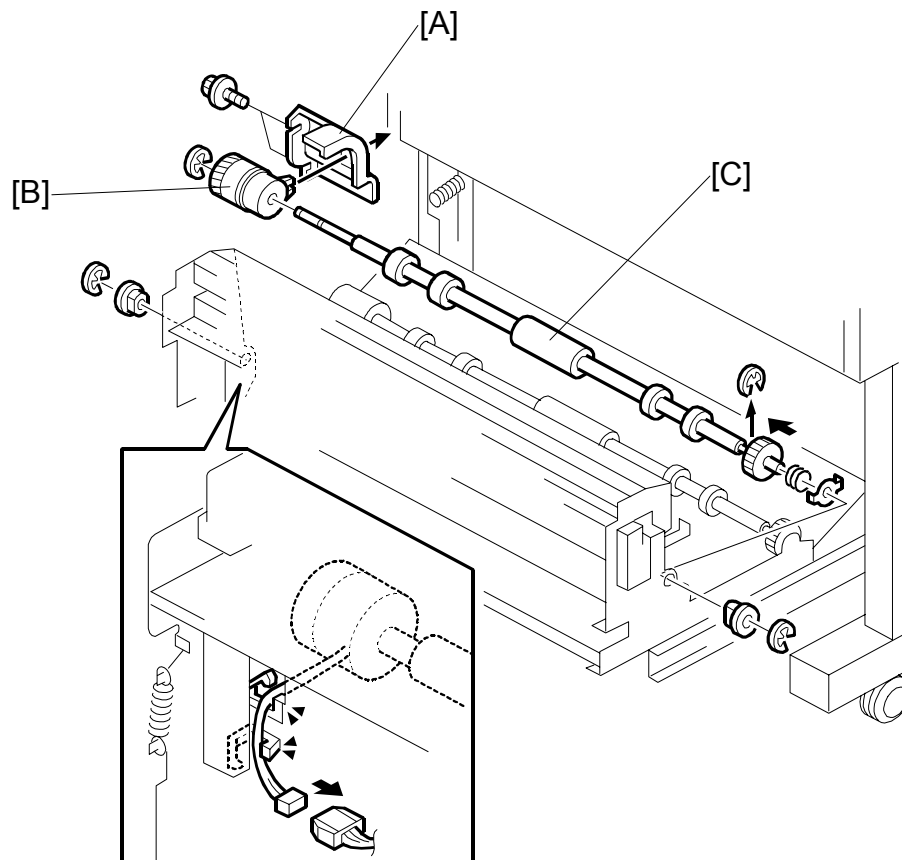
Open the roll feeder drawer.

Remove the paper rolls.

[A]: Roll 1 feed clutch cover ($\hat{\mathscr{F}}$ x 2)

[B]: Roll 1 feed clutch (🖘 x 1, ℂ x 1)

[C]: Roll 1 feed rollers (ℂ x 4, bushings x 2)

After you replace the roller or the clutch, adjust the cut length with SP1920 111 and SP 1920 115. (☛3.11.1)

3.6.3 ROLL 2 PAPER CLUTCH, FEED ROLLER
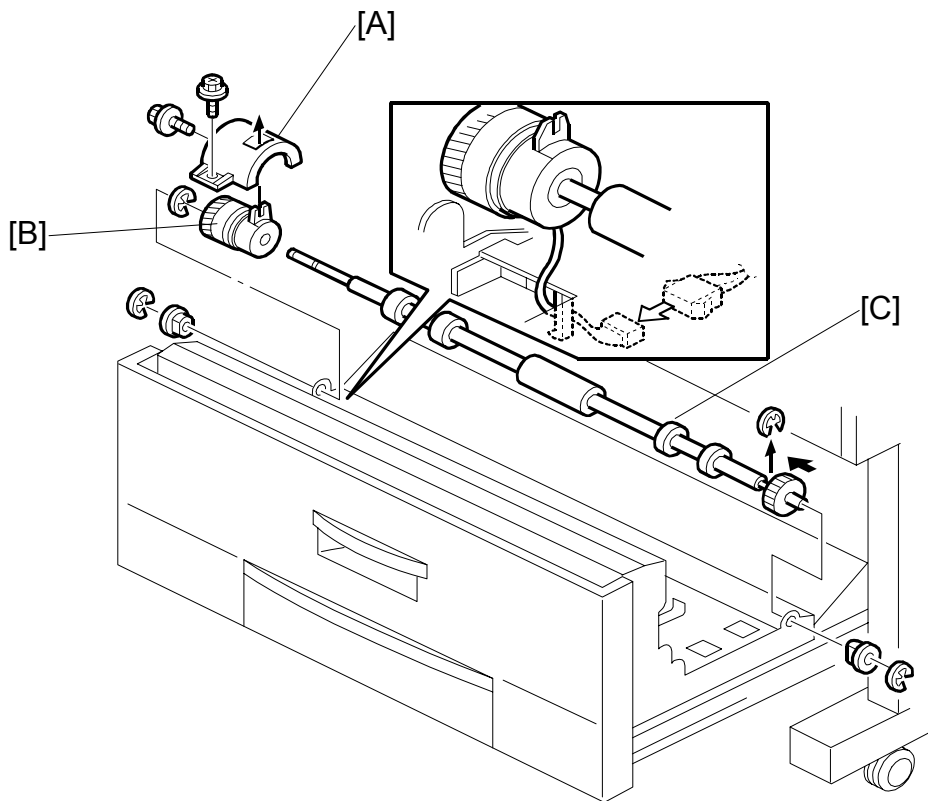
NOTE: The procedure is for the B642 only.

Open the roll feeder drawer.

Remove paper roll 2 (at the rear).

[A]: Roll 2 feed clutch cover (🗲 x 2)

[B]: Roll 2 feed clutch (🗲 x 1, ℂ x 1)

[C]: Roll 2 feed rollers (ℂ x 4, bushings x 2)

After you replace the roller or the clutch, adjust the cut length with SP 1920 211 and SP 1920 215. (☛3.11.1)

3.6.4 RF EXIT SENSOR
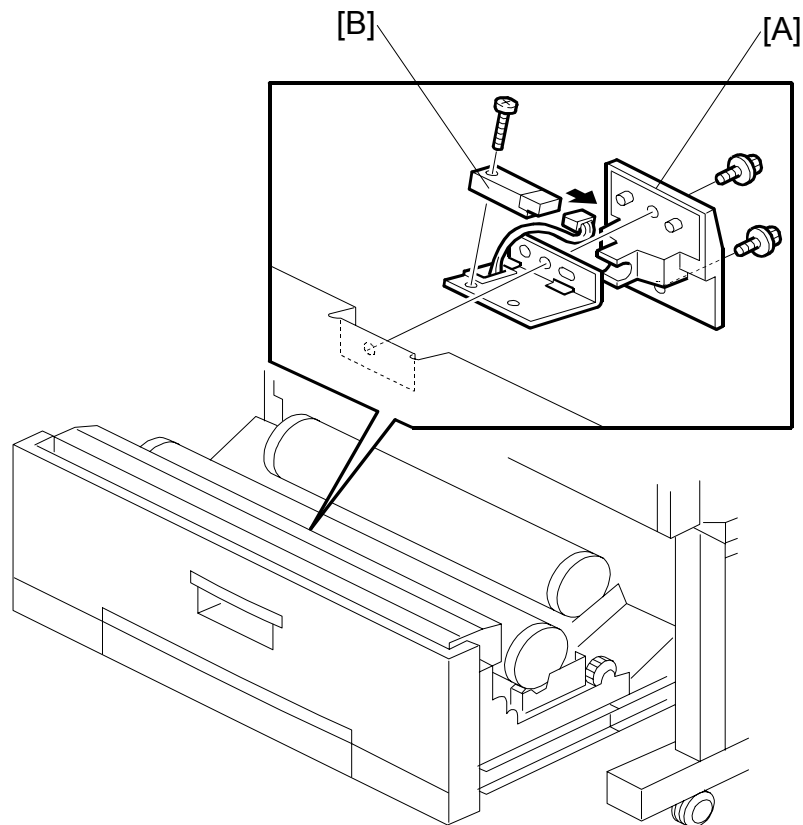
Open the drawer of the roll feeder.

[A]: Plate (🔩 x 2)

[B]: RF exit sensor (🔌 x 1, 🔩 x 1)

3.6.5 ROLL FEED MOTOR

Below the front left corner of the roll feeder
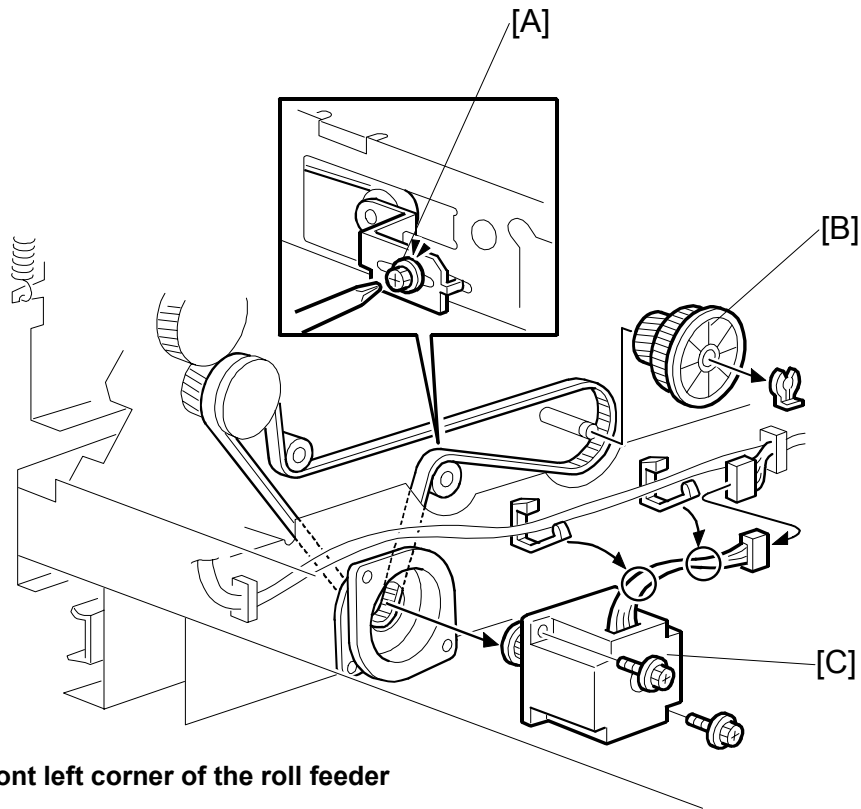
Open the roll feeder drawer.

Drawer front cover (☛ 3.1.11)

[A]: Loosen belt tension bracket.
[B]: Gear (⚙ x1)
[C]: Roll feeder motor (🔌 x 2, 🔩 x 1, ✐ x 2)

3.6.6 CUTTER: MOTOR, HP SENSORS
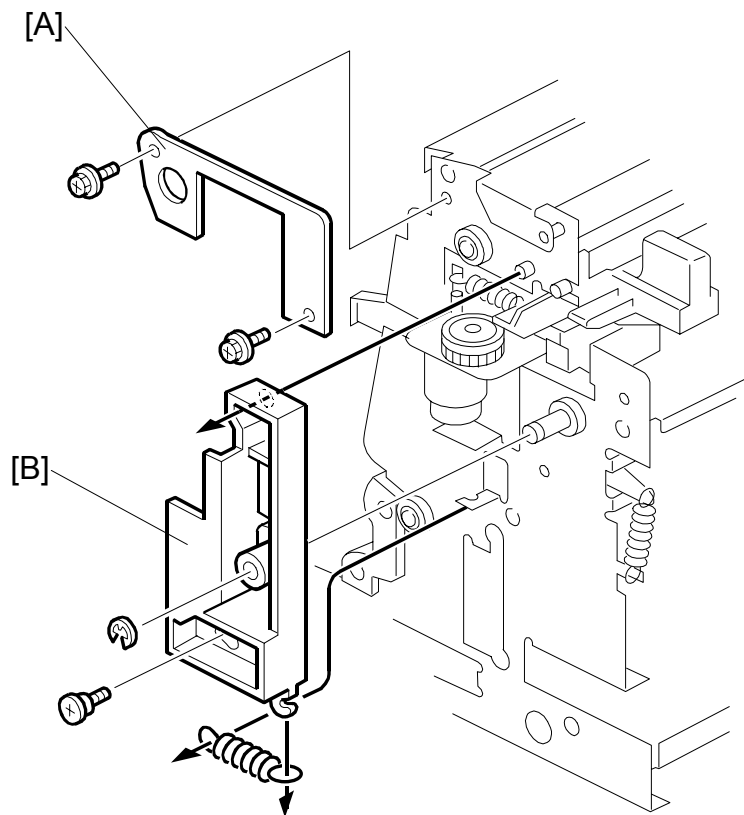
Drawer front cover (☛ 3.1.11)

[A]: Upper bracket (🔧 x 2)

[B]: Lower bracket (spring x 1, 🔧 x 1, Ⓒ x 1)
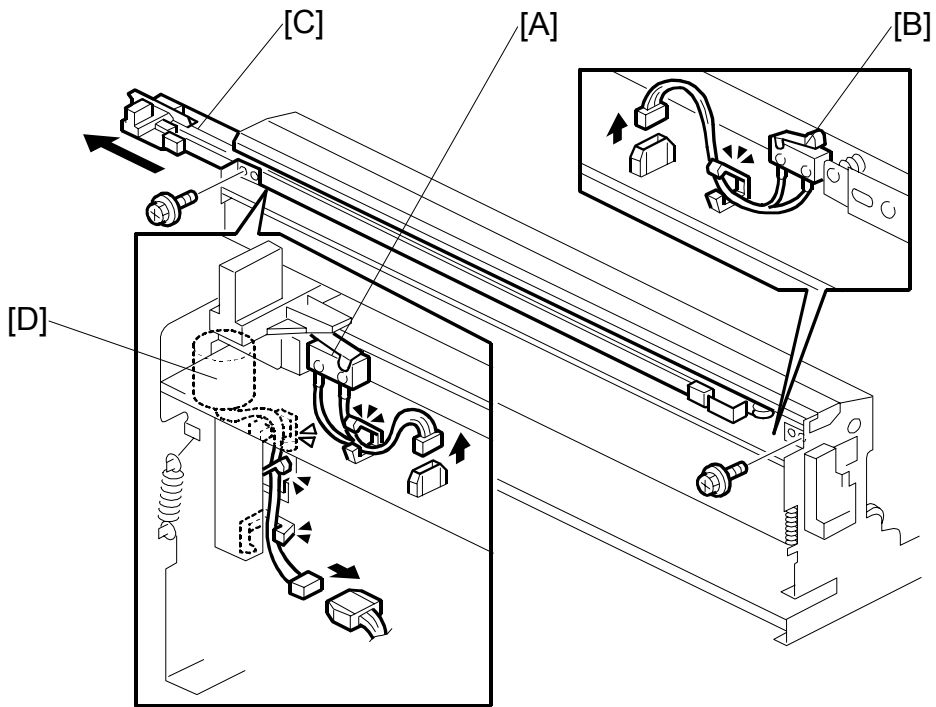
[A]: Right cutter HP switch (⬚ x 1, ⬚ x 1)
[B]: Left cutter HP switch (⬚ x 1, ⬚ x 1)
[C]: Cutter, race, and motor assembly (⬚ x 3, ⬚ x 3, ⬚ x 2)
[D]: Cutter motor (⬚ x 2)

3.6.7 ROLL PAPER END SENSORS
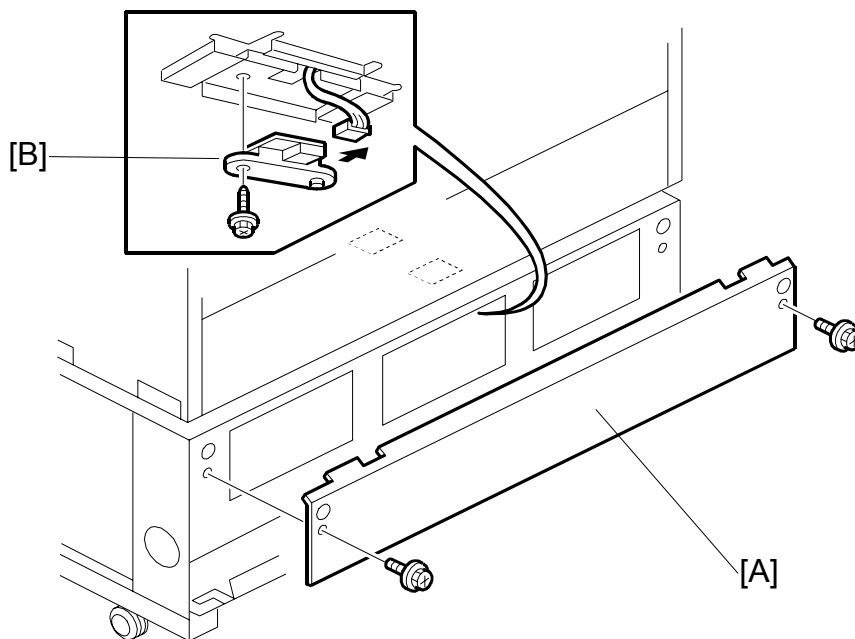
Open the roll feeder drawer.

[A]: Roll feeder back plate (🔩 x 2)

[B]: Roll end sensors (🔩 x 1, 🔩 x 1 each)

    NOTE: The Roll Feeder B641 has one roll end sensor, and the Roll Feeder B642 has two roll end sensors.

Replacement and Adjustment

3.6.8 CASSETTE FEED ROLLER
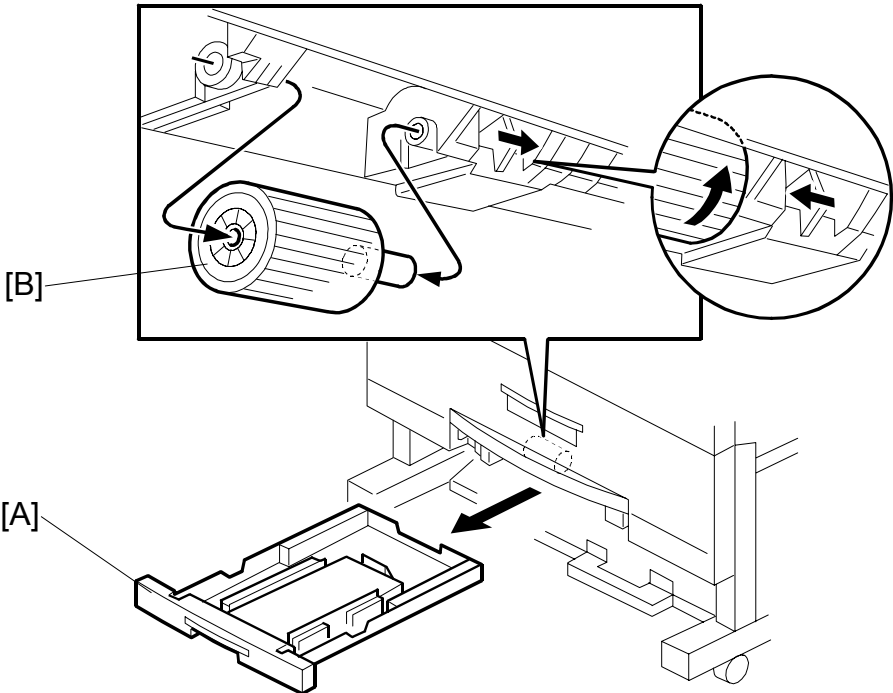
[A]: Paper cassette
[B]: Cassette feed roller

3.6.9 CASSETTE RELAY SENSOR, CASSETTE END SENSOR
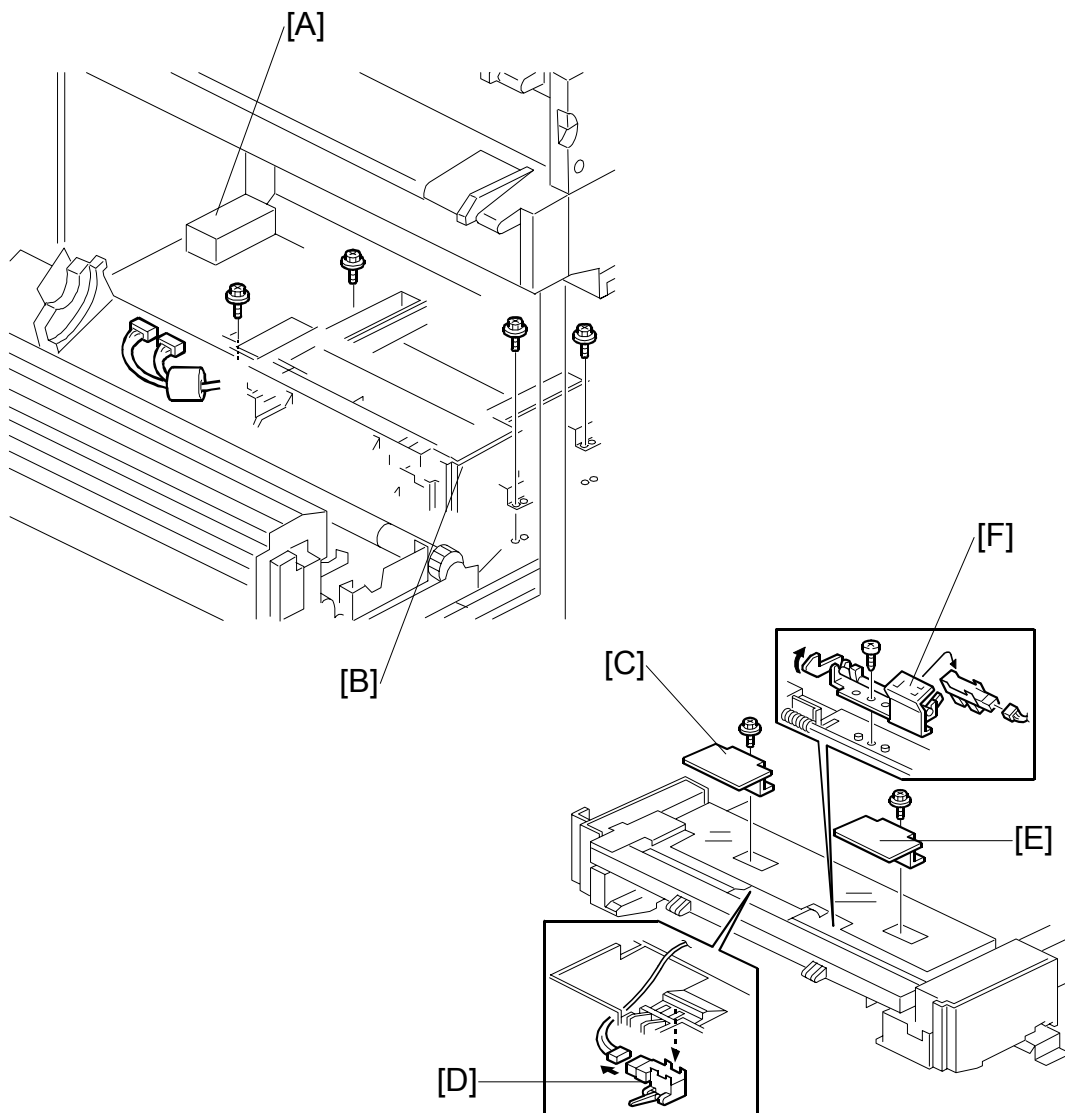
Open the roll feeder drawer and remove the paper cassette.

Roll feeder rear plate ($\mathscr{F}$ x 2 Blue)

[A]: RFDB shield plate ($\mathscr{F}$ x 2).

[B]: Paper cassette unit (⬚ x 4, ⬚ x 2, $\mathscr{F}$ x 4)
     NOTE: Pull the unit to the rear, then remove it from the front.

[C]: Relay sensor plate ($\mathscr{F}$ x 1)

[D]: Relay sensor (⬚ x 1, pinch release x 2)

[E]: Cassette end sensor plate ($\mathscr{F}$ x 1)

[F]: Cassette end sensor (⬚ x 1, $\mathscr{F}$ x 1, pinch release x 3)

3.6.10 CASSETTE FEED MOTOR, CASSETTE OPEN SENSOR
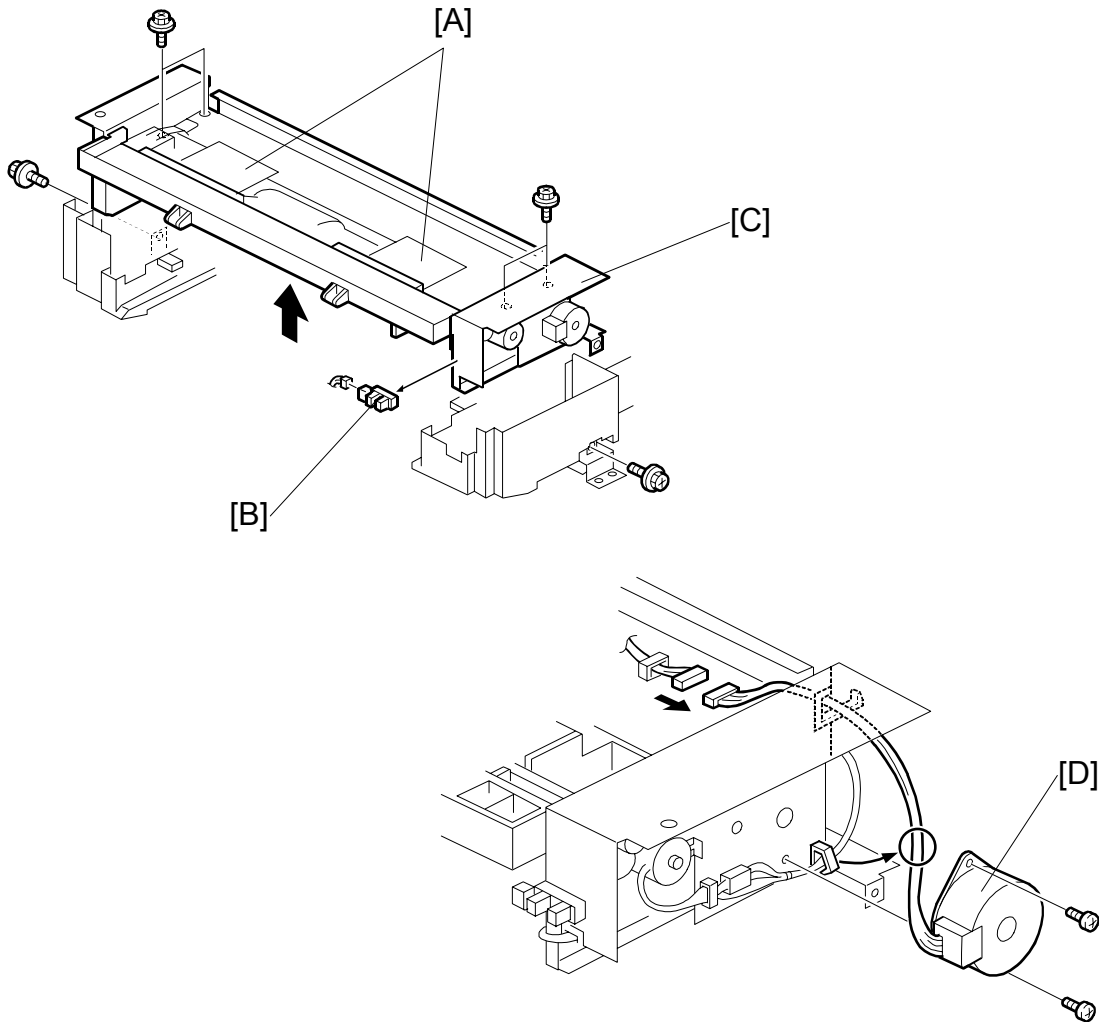
Open the roll feeder drawer and remove the paper cassette unit.

[A]: Relay sensor plate, cassette end sensor plate ($\hat{\mathscr{F}}$ x 1 each)

[B]: Cassette open sensor (⬚ x 1, pinch release x 2)

[C]: Paper cassette feed assembly ($\hat{\mathscr{F}}$ x 6)

[D]: Paper cassette motor (⬚ x 2, ⬚ x 1, $\hat{\mathscr{F}}$ x 2)

3.6.11 CASSETTE FEED CLUTCH
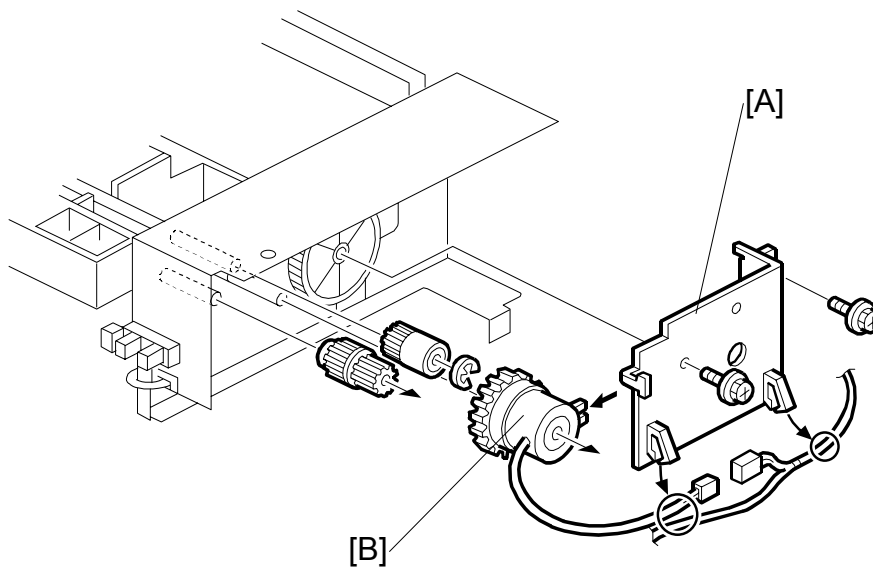
Cassette feed motor (☛ 3.6.10)

[A]: Motor mount plate (🔩 x 2)
[B]: Cassette feed clutch (🔗 x 2, 🔩 x 1)

3.7 FUSING SECTION

3.7.1 PRESSURE SPRING ADJUSTMENT

Rear   Front
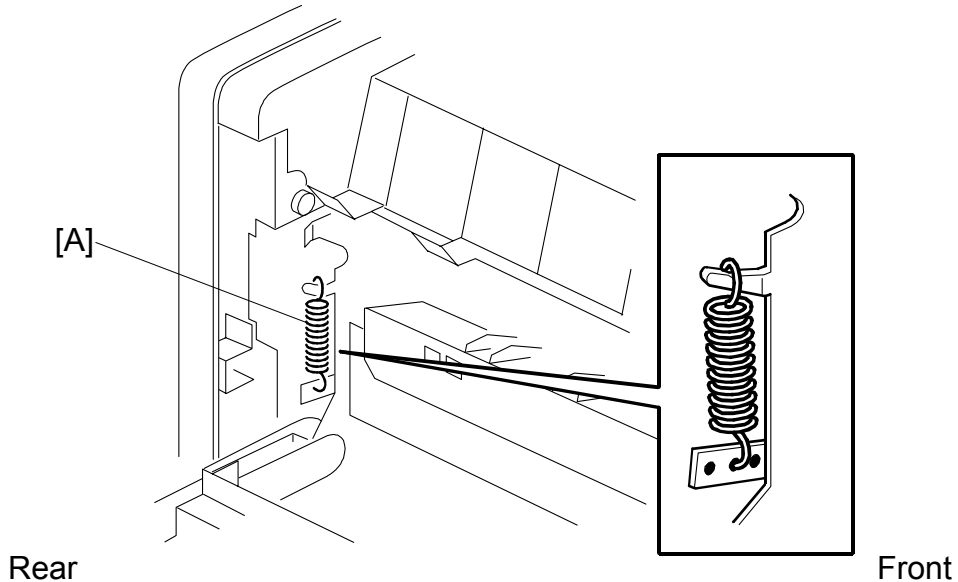
1. Open the exit cover and exit unit together.

2. To adjust the pressure, disconnect the spring [A] and connect it to a different hole.

Center:	Standard tension, standard pressure.
Front (toward the pressure roller):	Less tension, less pressure. Set to this position to decrease wrinkling
Rear (away from the pressure roller:	More tension, more pressure. Can give better fusing with thick paper.

NOTE: Wrinkling occurs more frequently for some types of paper and film than for others. Adjust only when necessary.

3.7.2 HOT ROLLER STRIPPERS
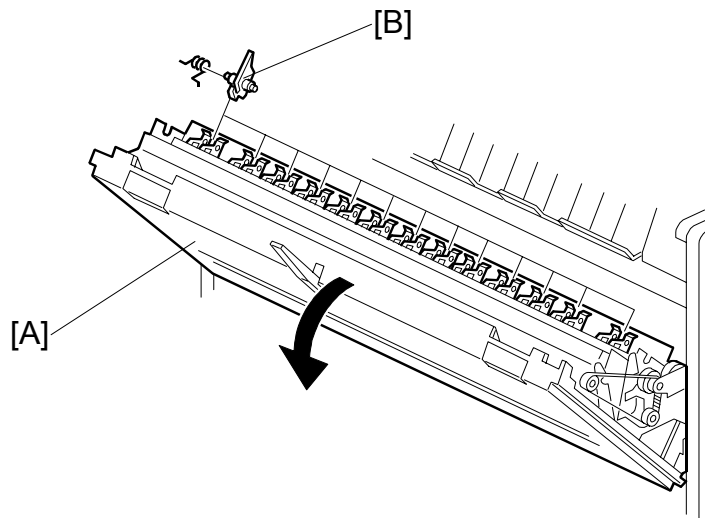
[A]: Open the paper exit cover and paper exit unit together.
[B]: Hot roller strippers (pressure release, spring x 1 each)

3.7.3 PRESSURE ROLLER STRIPPERS
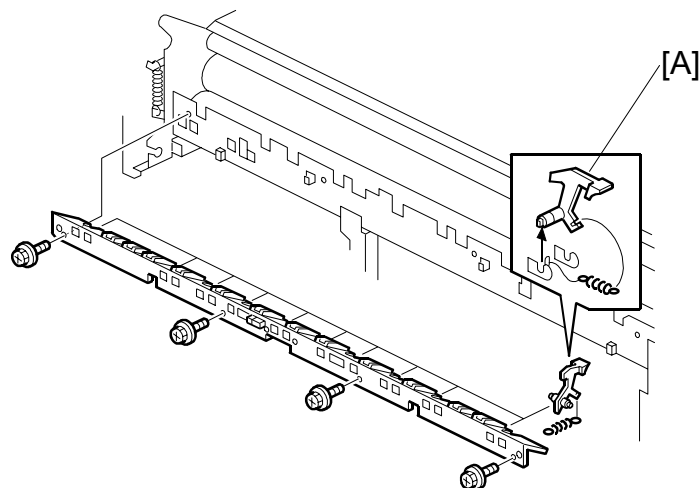
Rear cover (✎ x 2) (☛ 3.1.3)

Paper exit unit and exit cover (☛ 3.1.4)

[A]: Pressure roller strippers (spring x 1)
   NOTE: There are 11 pressure roller strippers. To remove them, push back and pull out.

3.7.4 PRESSURE ROLLER THERMISTOR, FUSING EXIT SENSOR

Rear cover ($\hat{\mathscr{F}}$ x 2) (☛ 3.1.3)

Paper exit unit (☛ 3.1.4)

[A]: Pressure roller thermistor (▣〽 x 1, $\hat{\mathscr{F}}$ x 2)

[B]: Fusing exit sensor (▣〽 x 1, $\hat{\mathscr{F}}$ x 1)
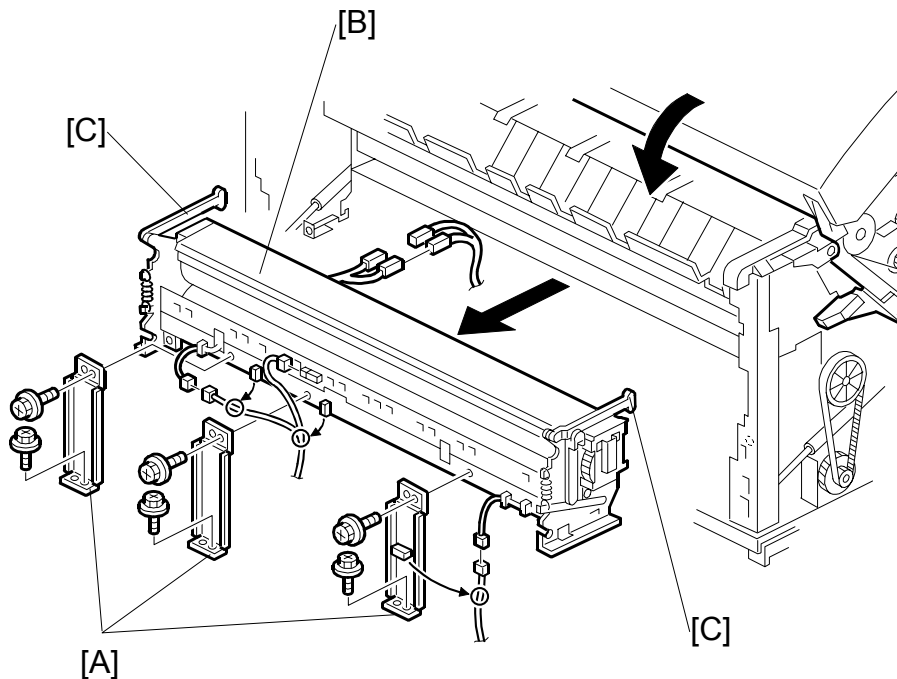
3.7.5 FUSING UNIT

⚠**CAUTION**

Switch the main power switch off. Then disconnect the machine from its power source. Let the fusing unit become cool for 10 minutes or more before you remove it.

Open the upper unit.

Paper exit unit (☛ 3.1.4)

Pressure roller thermistor, fusing exit sensor (☛ 3.7.4)

[A]: Braces (x3) (🔩 x 2 each)
    NOTE: Install the brace with attached harness clamp in the center.
[B]: Fusing unit (🔌 x 2, 🔩 x 2)
[C]: Push down the levers when you remove the fusing unit.

⚠**CAUTION**

The fusing unit is heavy. Pull it out slowly.

Reinstallation

- Make sure that the upper unit is open when you install the fusing unit.
- Push down on the levers [C] while you set the fusing unit in the machine.
- Connect the color coded connectors correctly when you reconnect the fusing unit:
    Europe: Blue → Blue, White → White
    North America: Red → Red, White → White

3.7.6 FUSING CLEANING ROLLER
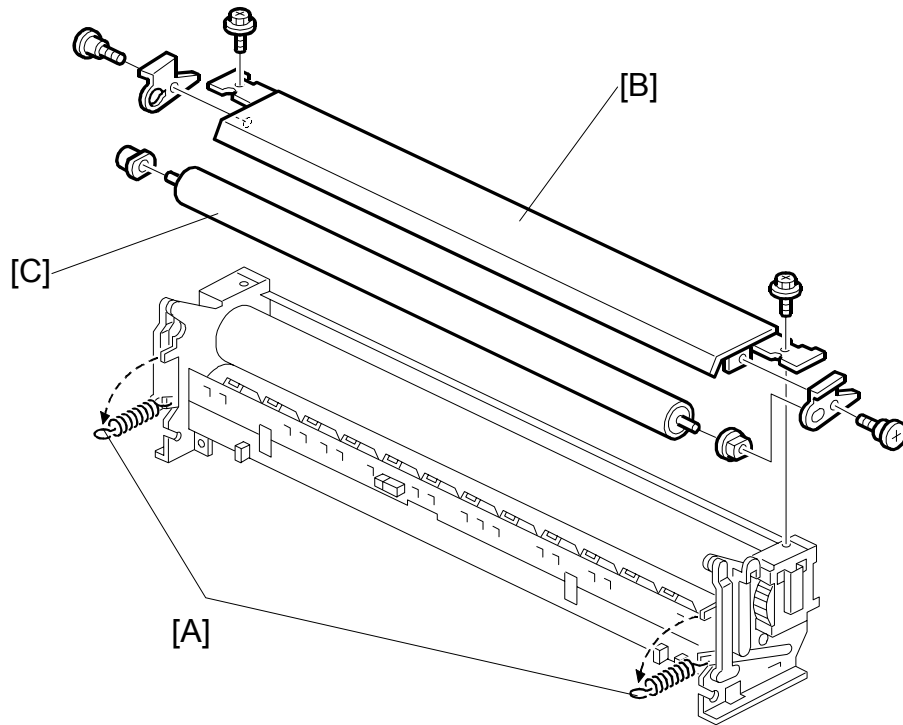
Fusing unit (☛ 3.7.5)

[A]: Springs (x2)

[B]: Felt plate (🔩 x 2)

[C]: Fusing cleaning roller (🔩 x 2, bushings x 2)

    NOTE: The brown bushing is on the right; the white bushing is on the left.

3.7.7 FUSING LAMP
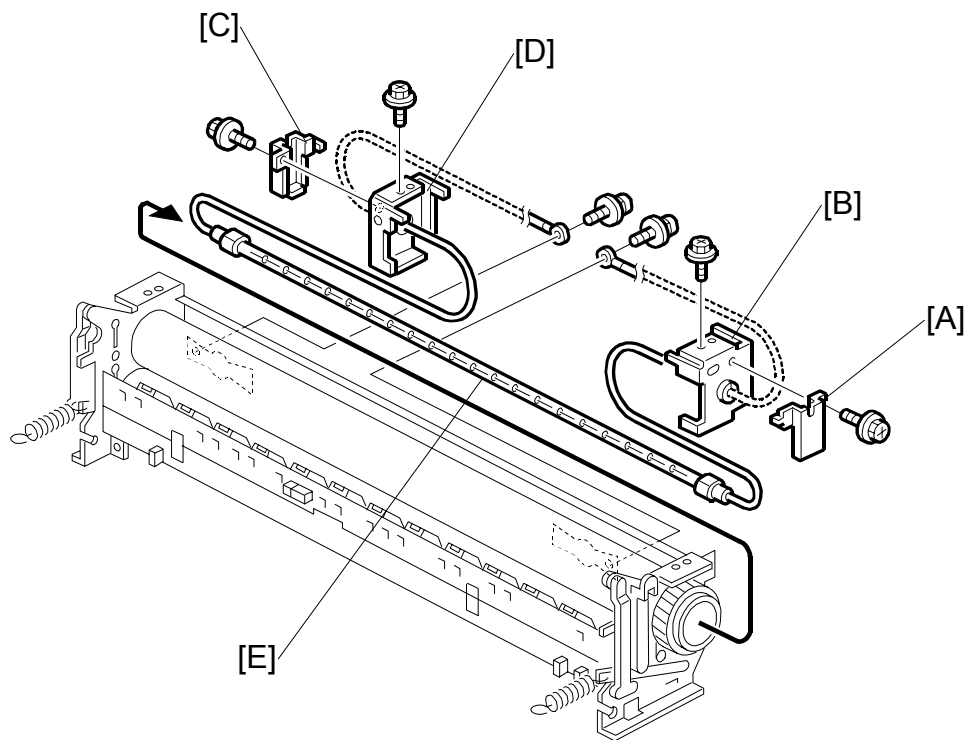
Fusing cleaning roller (☛ 3.7.6)

[A]: Right plate (🔩 x 1)

[B]: Right support (🔩 x 1)

[C]: Left plate (🔩 x 1)

[D]: Left support (🔩 x 1)

   NOTE: This is the support with the anti-static brush.

[E]: Fusing lamp (🔩 x 1, metal harness clamps x 2)

Reinstallation

- Make sure that the ends of the fusing lamp are given support by the rubber grommets of the right support [B] and left support [D].
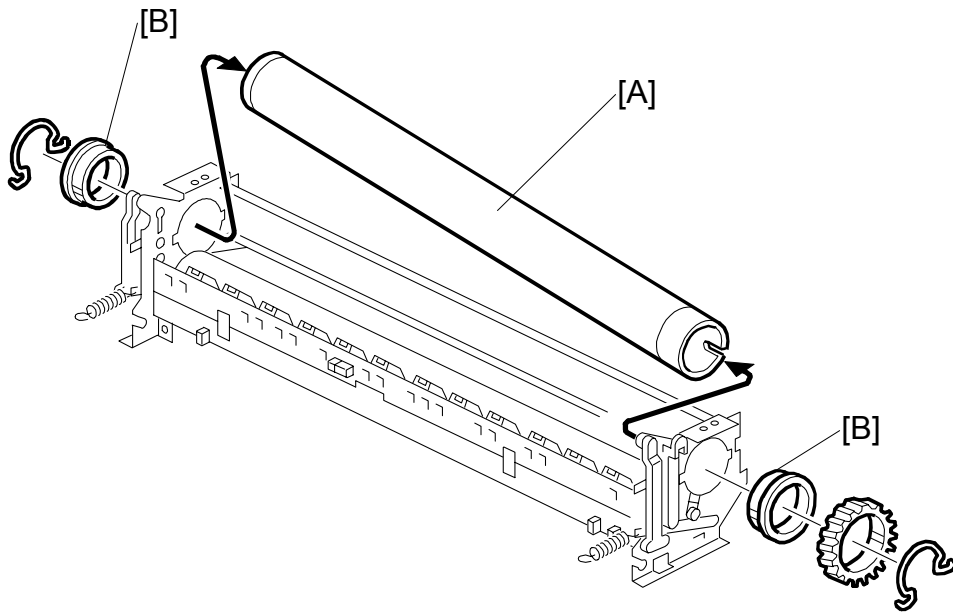
3.7.8 HOT ROLLER

Fusing lamp (☛ 3.7.7)

[A]: Hot roller (springs x 2, sleeve bearings x 2, gear x 1)

[B]: Lubricate with Barrierta – S552R (x2)

3.7.9 PRESSURE ROLLER
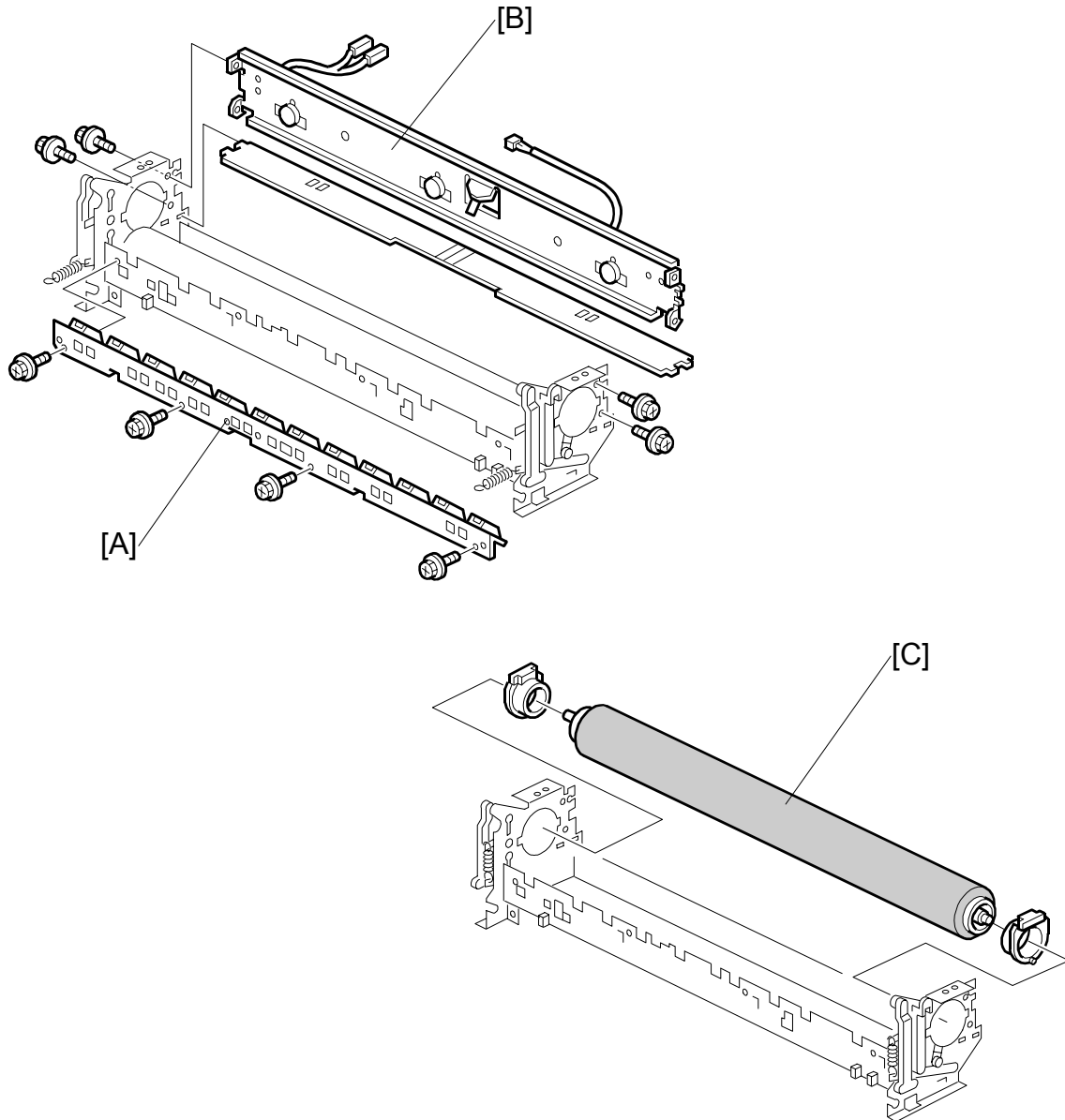
Hot roller (☛ 3.7.8)

[A]: Pressure roller plate ($\hat{\mathscr{F}}$ x 4)
[B]: Thermistor/Thermostat plate ($\hat{\mathscr{F}}$ x 4)
[C]: Pressure roller (sleeve bearings x 2)

3.7.10 HOT ROLLER THERMISTOR, THERMOSTATS
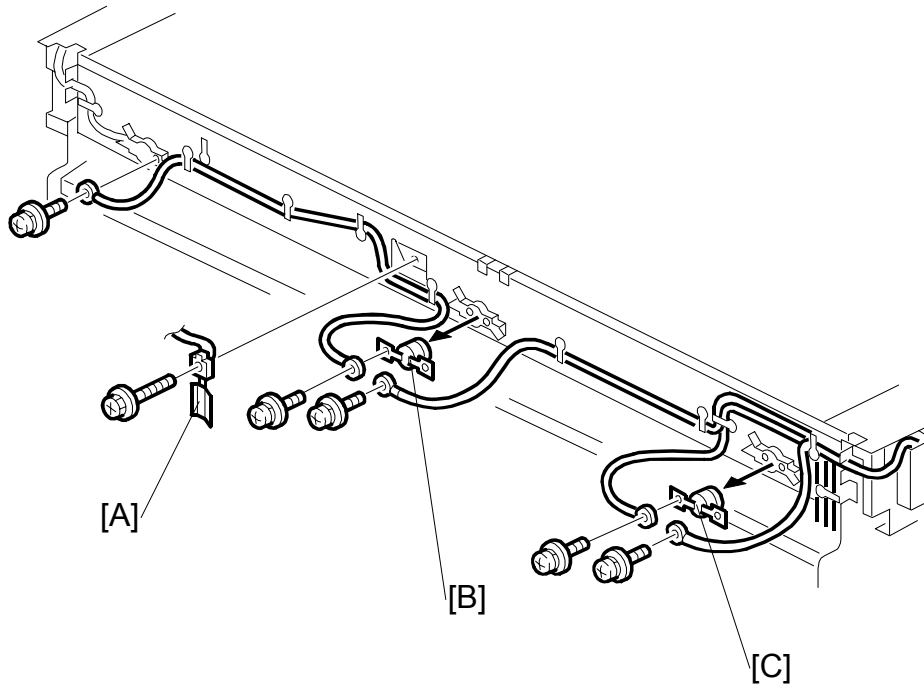
Fusing unit (☛ 3.7.5)

[A]: Hot roller thermistor (x1) (𝄛 x 1)

[B]: Thermostat 2 – 199°C (𝄛 M3x6 x 2)

[C]: Thermostat 1 – 200°C (𝄛 M3x6 x 2)

Reinstallation

• The thermostats (199°C and 200°C) must be installed at [C] and [D]. "199" and "200" are clearly shown on the edge of each thermostat.

3.8 MOTORS

3.8.1 SCANNER MOTOR
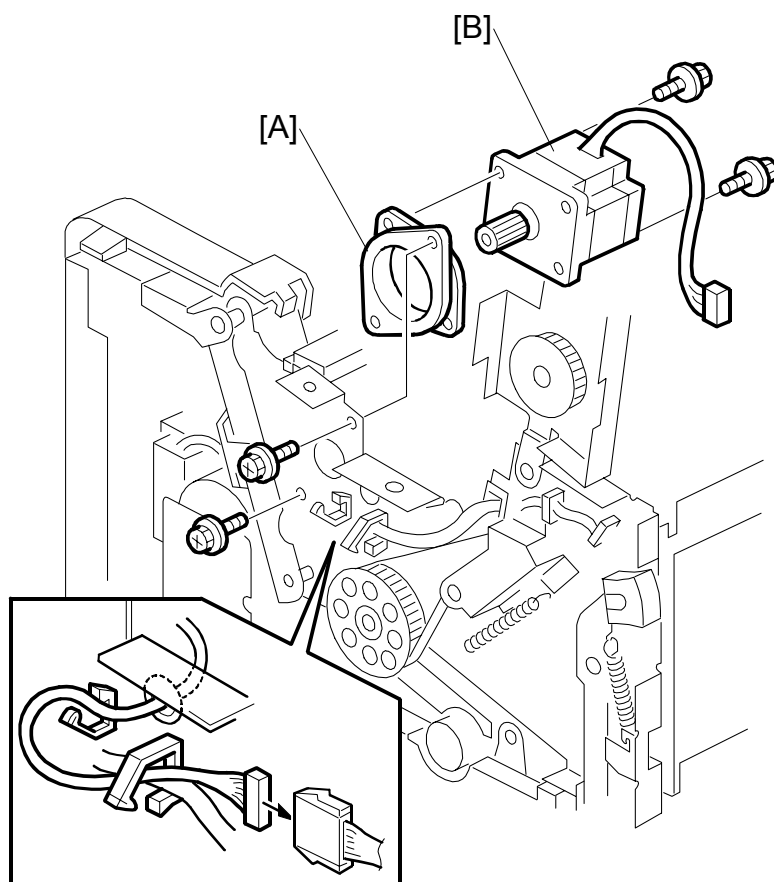
Original feed unit (☞ 3.1.6)

Lift and lock the scanning unit (☞ 3.1.7)

[A]: Scanner motor assembly (🔩 x 2, 🔌 x 1, 🔩 x 2)
[B]: Scanner motor (🔌 x 2)

3.8.2 DRUM MOTOR

[B]

[A]
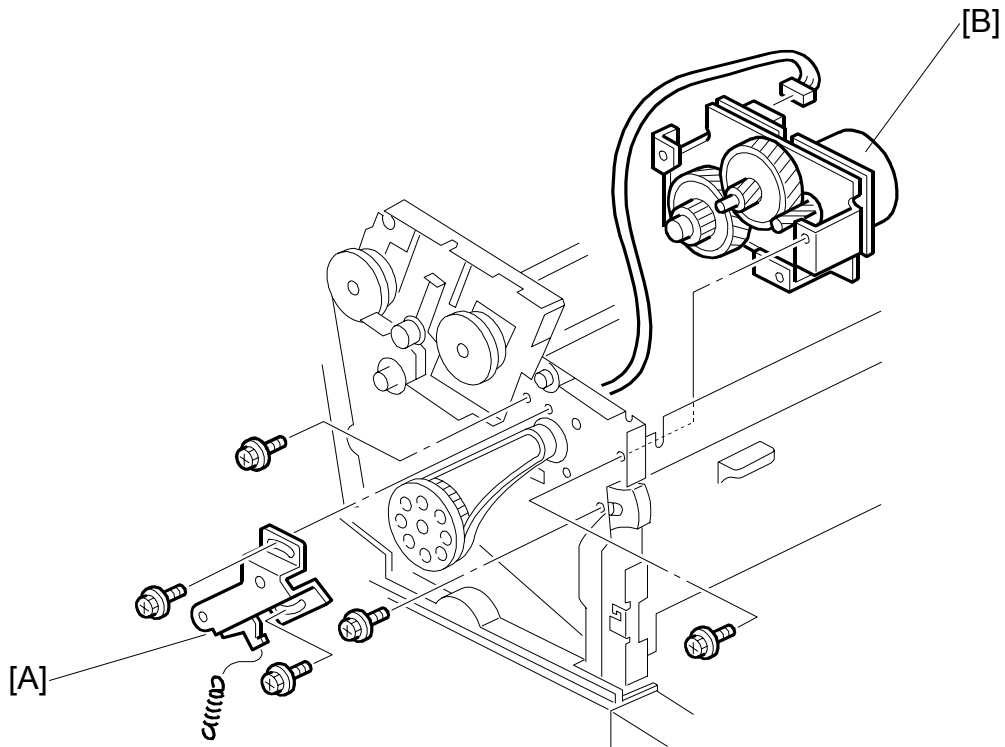
Original feed unit (☛ 3.1.6)

Lift and lock the scanning unit (☛ 3.1.7)

[A]: Belt tension plate (🔩 x 2, spring x 1)
[B]: Drum motor (🔌 x 1, 🔩 x 3)

3.8.3 FUSING MOTOR, MAIN MOTOR
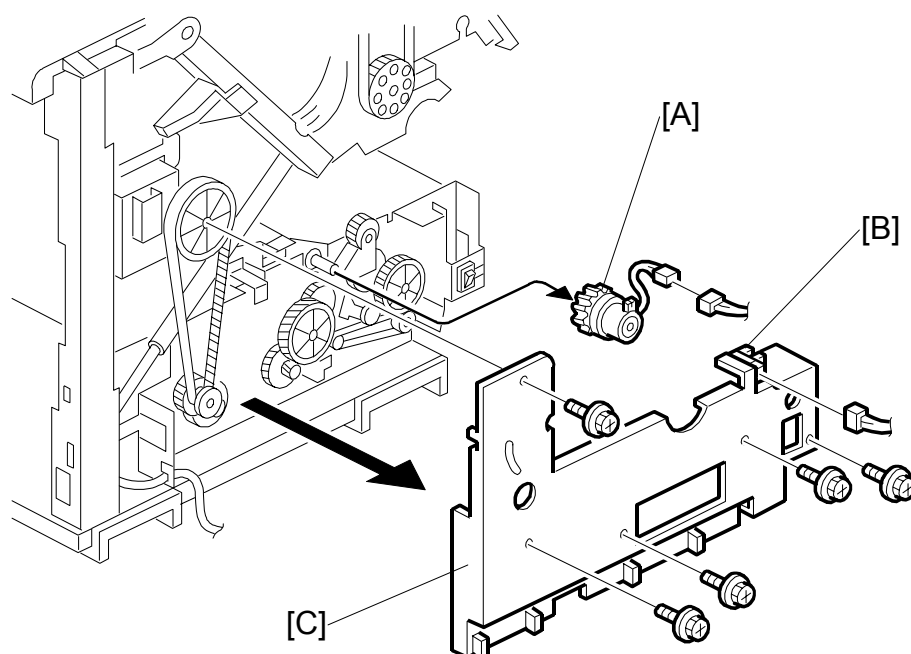
Open the upper unit.

Side covers (☛3.1.2)

[A]: Registration clutch (🔩 x 1, 🔌 x 1)

[B]: Upper unit sensor (🔌 x 1, 🔩 x 4)

[C]: Gear cover plate (🔩 x 4, 🔧 x 5)

Replacement and Adjustment
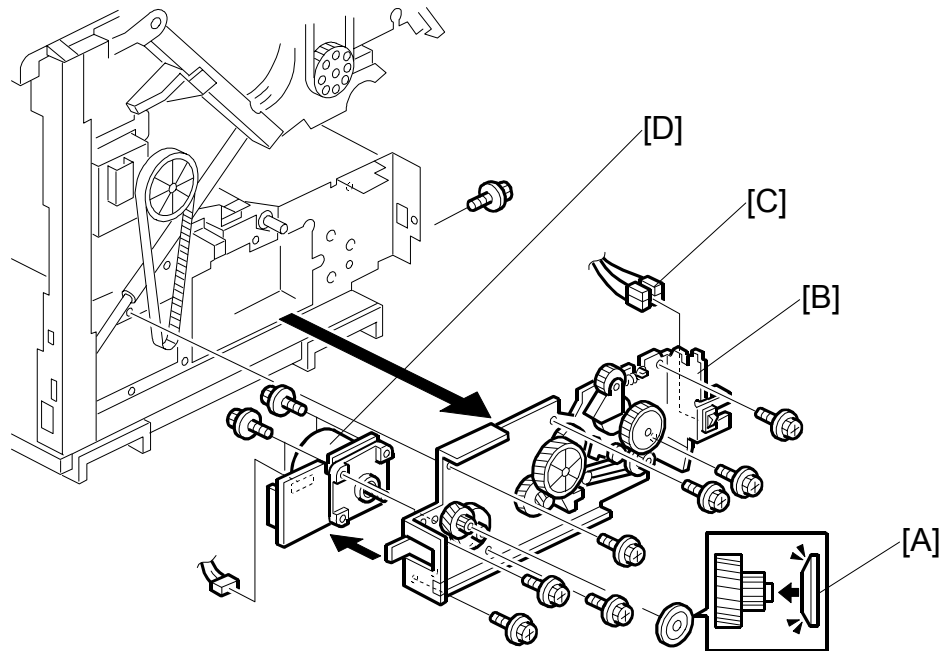
[A]: Timing belt and cap
[B]: Motor mount plate (🔩 x 8)
[C]: Main power switch connector (🔌 x 1, 🔌 x 1).
[D]: Fusing motor (🔌 x 1, 🔩 x 4)

Reinstallation

If it is not easy to connect the connector at the rear of the motor when you install the motor mount plate:

- Remove the rear cover.
- At the left rear corner of the copier, open two or three harness clamps to release the motor harnesses. This will decrease the tension in the harnesses.
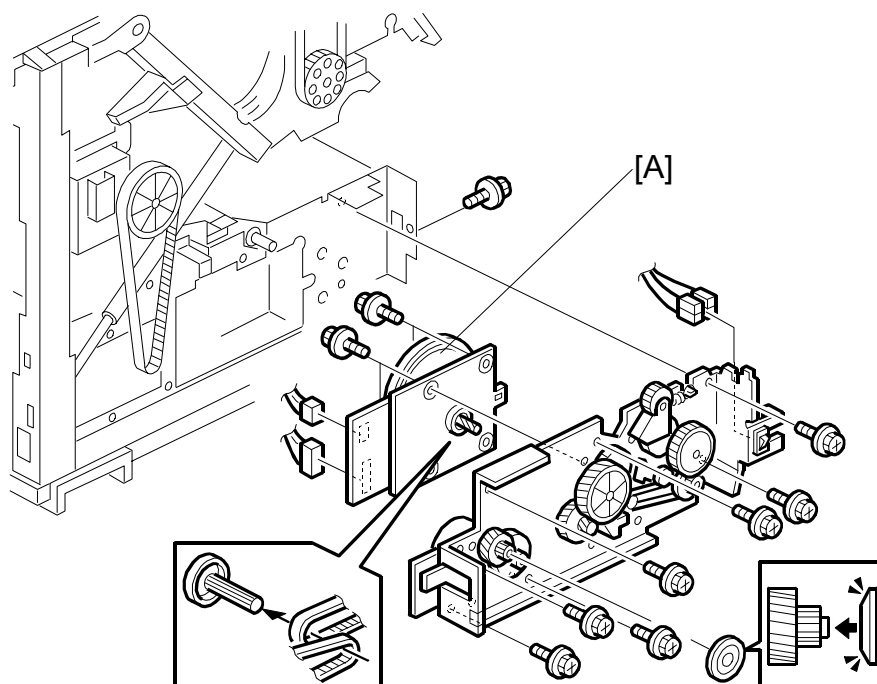
Remove the gear cover plate and motor mount plate. (Please refer to the two pages before this one.)

[A]: Main motor (🔌 x 2, drive belts x 2, 🔩 x 4)

Reinstallation

If it is not easy to connect the connector to the rear of the motor when you install the motor mount plate:

- Remove the rear cover.
- At the left rear corner of the copier, open two or three harness clamps to release the motor harnesses. This will decrease the tension in the harnesses.

3.8.4 USED TONER BOTTLE MOTOR
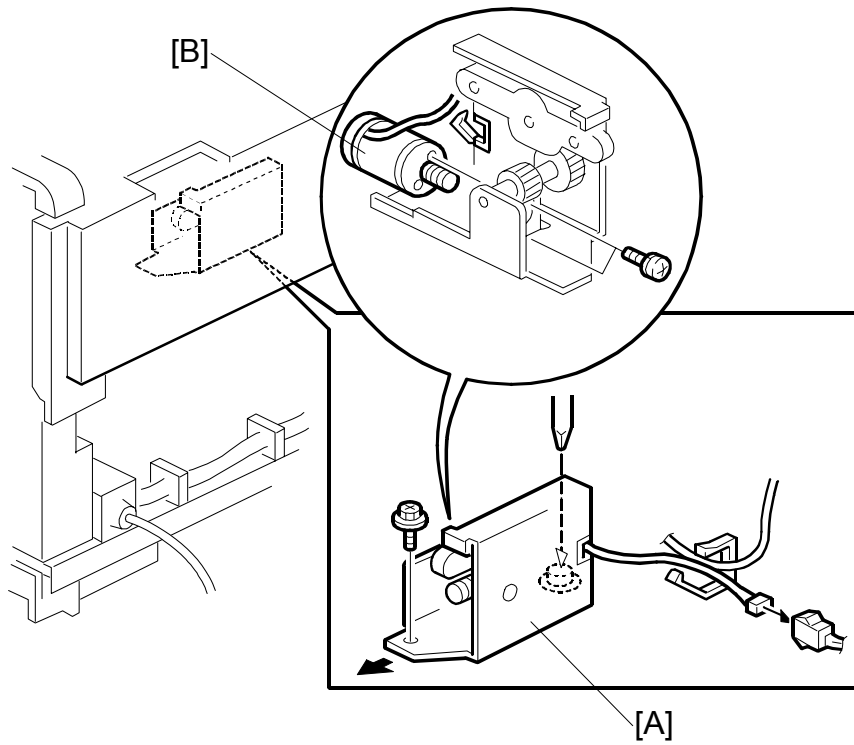
PSU (☛ 3.9.2)

Toner collection bottle (☛ 3.4.6)

T&S power pack (☛ 3.9.4)

[A]: Motor plate (🖰 x 1, 🖰 x 1, 🖋 x 2)
[B]: Motor (🖋 x 2)

3.9 BOARDS

3.9.1 MCU/IPU
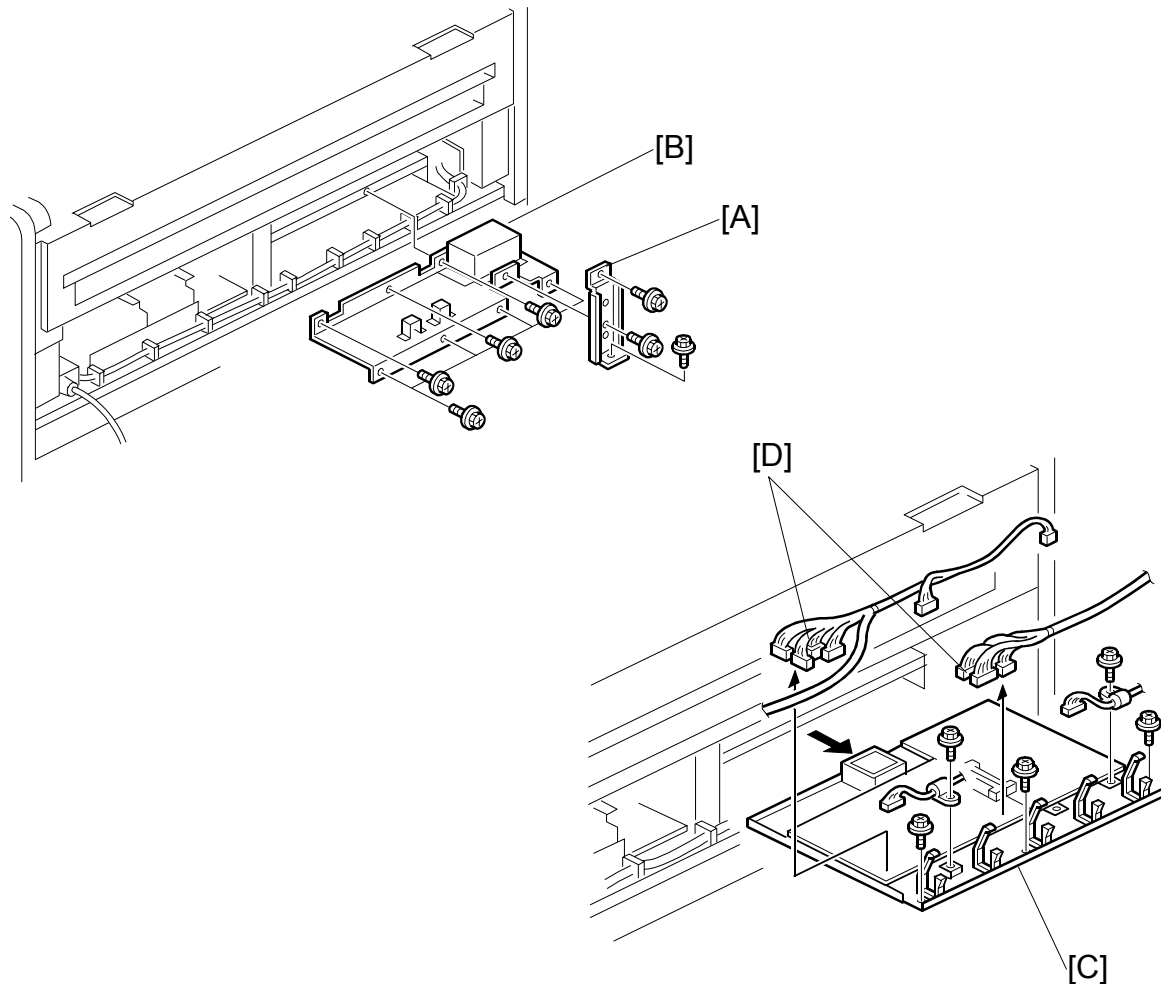
Rear cover (☛3.1.3)

Paper exit unit (☛3.1.4)

[A]: Brace (🔩 x 3)
[B]: Board shield plate (🔩 x 7)
[C]: MCU/IPU board tray (🔩 x 3, 🔌 x all, ▣ x 15 (MCU), ▣ x 5 (IPU))
[D]: Lift the harnesses to remove the MCU/IPU tray.

BOARDS
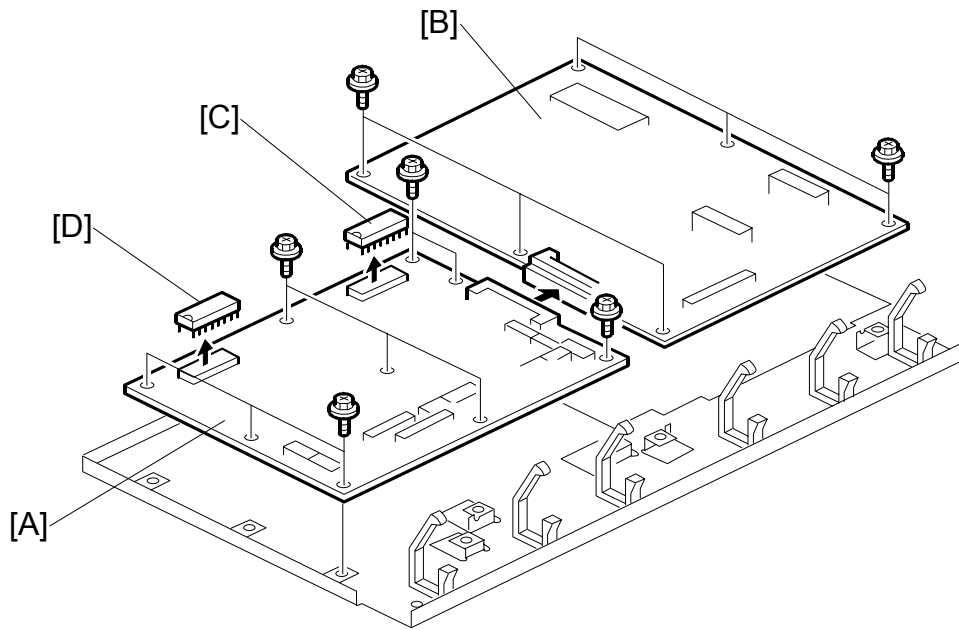
[A]: MCU Board (✐ x 9)
[B]: IPU Board (✐ x 6)
[C]: NVRAM(Data)
[D]: NVRAM (Counter)
   (☛3.9.3): Install the NVRAM from the old MCU board on the new MCU board.

3.9.2 PSU

[A]

[B]

[C]
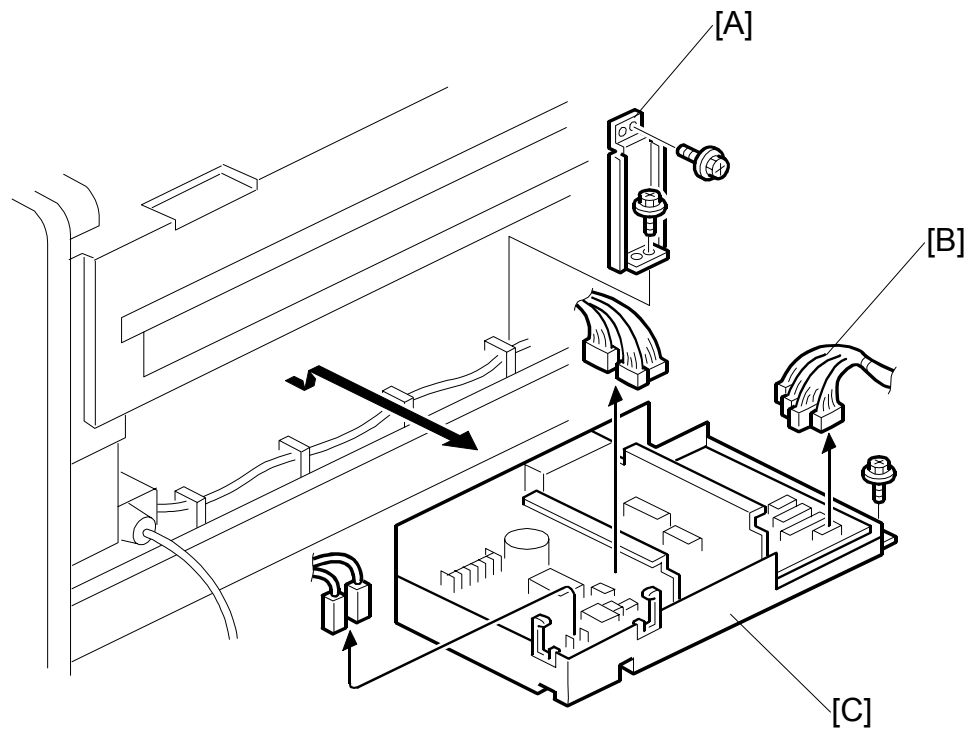
Rear cover (☛ 3.1.3)

Paper exit unit (☛ 3.1.4)

[A]: Braces (x2) (🔩 x 2 each)
[B]: PSU connectors ((🔌x all, 🔋 x 9)
[C]: PSU tray (🔩 x 1)

Replacement and Adjustment

3.9.3 NVRAM

NVRAM Upload
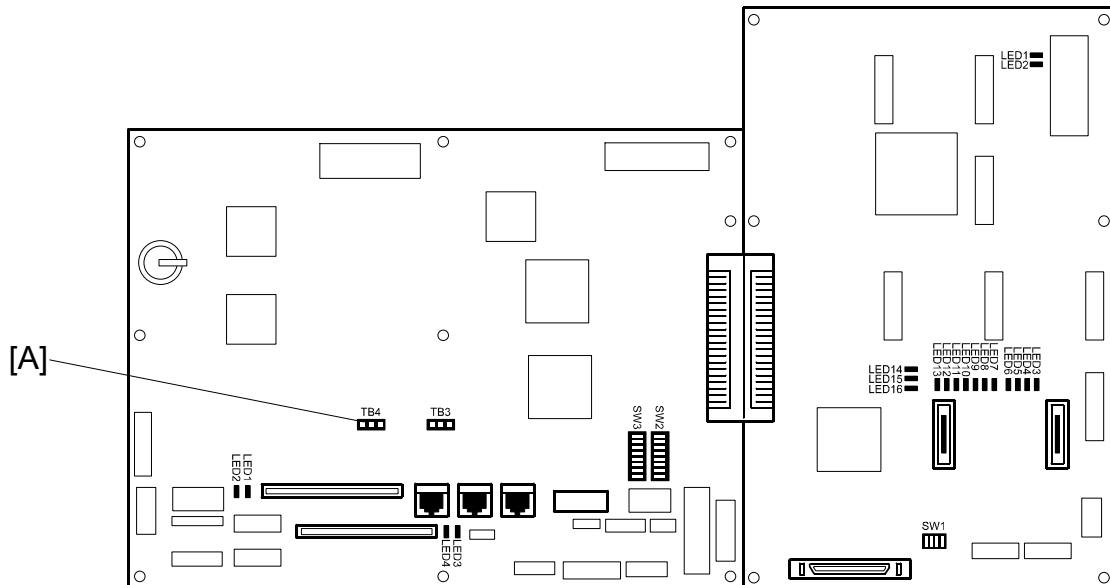
If the electronic counter does not operate correctly, replace the NVRAM.

1. Switch the main power switch off.

2. Remove the rear cover. ($\mathscr{F}$ x 2)

3. Remove the MCU/IPU shield plate. (☛3.9.1)

4. On the MCU, move the jumper [A] from TB4 1-2 to TB4 to 2-3.

5. Put the IC card in the SCU socket (rear slot).

6. Switch the main power switch on.

7. Go into the SP mode and do SP5824 (Upload NVRAM Data). When the upload is completed, follow the instructions on the LCD to complete the procedure.

8. Put the MCU jumper back to TB4 1-2.
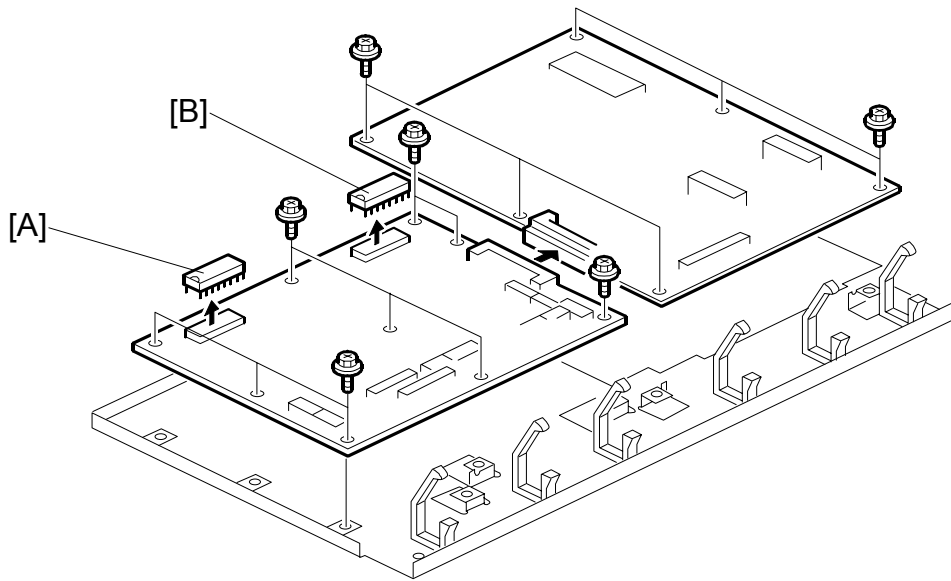
NVRAM Removal

1. Switch the main power switch off. Disconnect the machine power cord.

2. Remove the MCU/IPU tray. (☞3.9.1)

3. Pull the NVRAM chip [A, B] from the MCU board and replace it with a new chip.
   [A]: NVRAM (Counter)
   [B]: NVRAM (Data)

4. Reinstall the MCU/IPU board.

NVRAM Download

NOTE: This SP must be done together with SP5811 (Machine Serial Number) after you replace the NVRAM.

1. Switch the main power switch off.

⟹2. On the MCU (previous page), move the jumper [A] from TB4 1-2 to TB4 to 2-3.

3. Make sure that the IC card with the downloaded NVRAM data is in the SCU socket.

4. Switch the main power switch on.

5. Go into SP mode and do SP5825 (Download NVRAM Data).

6. Push the key on the LCD to start the download.

7. When the download is completed, follow the instructions on the LCD to complete the procedure.

8. Switch the main power switch off.

9. Remove the jumper from TB4 2-3 and move it back to TB4 1-2.

10. Switch the main power switch on.

11. Do SP 5811 (Machine Serial Number) to set the serial number.
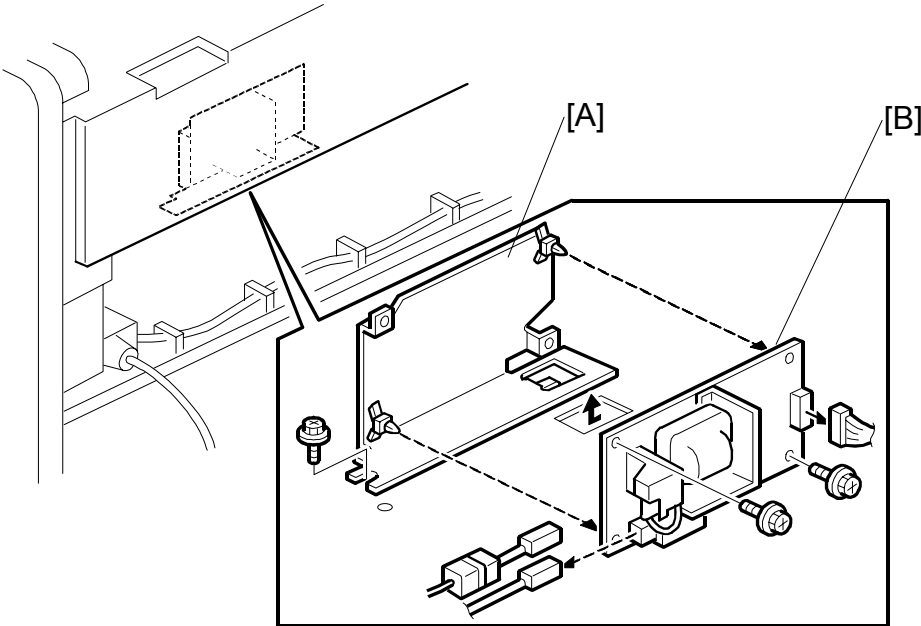
3.9.4 T&S POWER PACK

PSU tray (☛ 3.9.2)

[A]: T&S power pack mounting plate (⌧ x 2, ⌧ x 3, ⌧ x 1)
[B]: T&S power pack (⌧ x 2)

3.9.5 RFDB (ROLL FEEDER DRIVE BOARD)
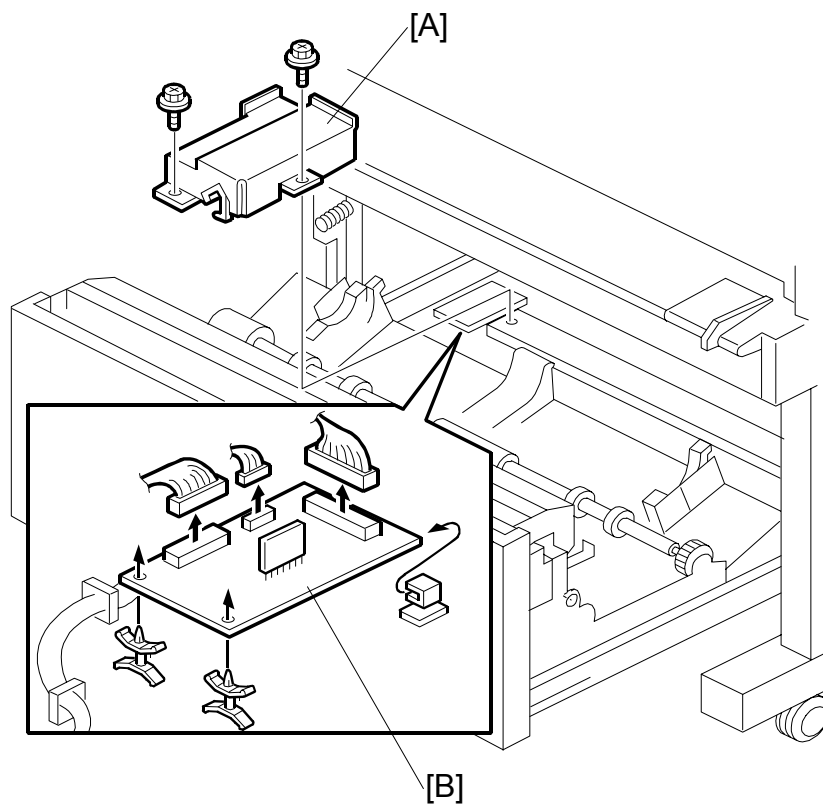
Open the roll feeder drawer.

Remove the rear plate of the roll feeder (📎 x 2 blue)

[A]: Shield plate (📎 x 2)
[B]: RFDB (📎 x 3, standoffs x 2)

3.9.6 SFDB (SHEET FEED DRIVE BOARD)
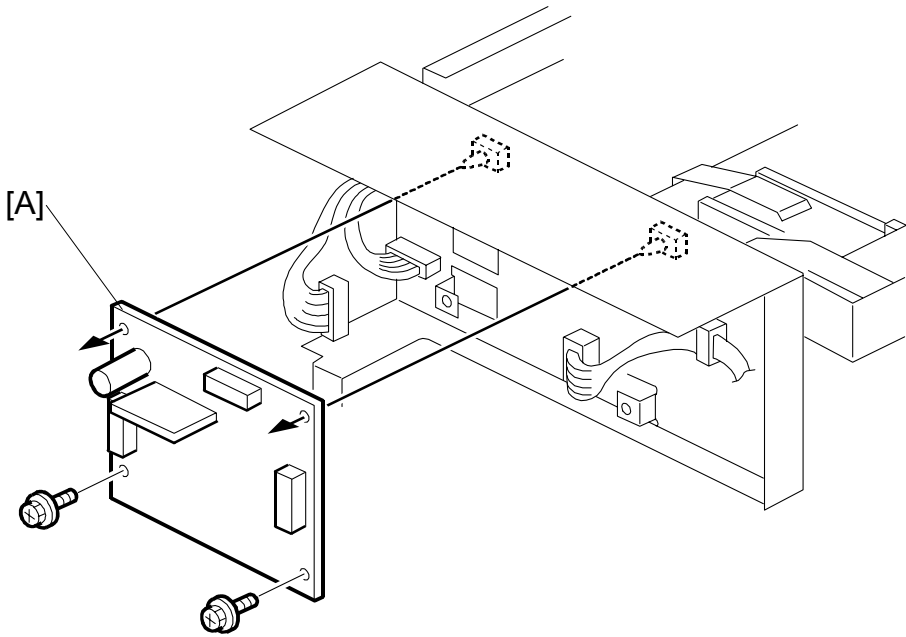
Paper cassette unit (☛ 3.6.9)

[A]: SFDB (🔧 x 2, 🔩 x 2, standoffs x 2)

3.10 OTHER

3.10.1 HDD REPLACEMENT
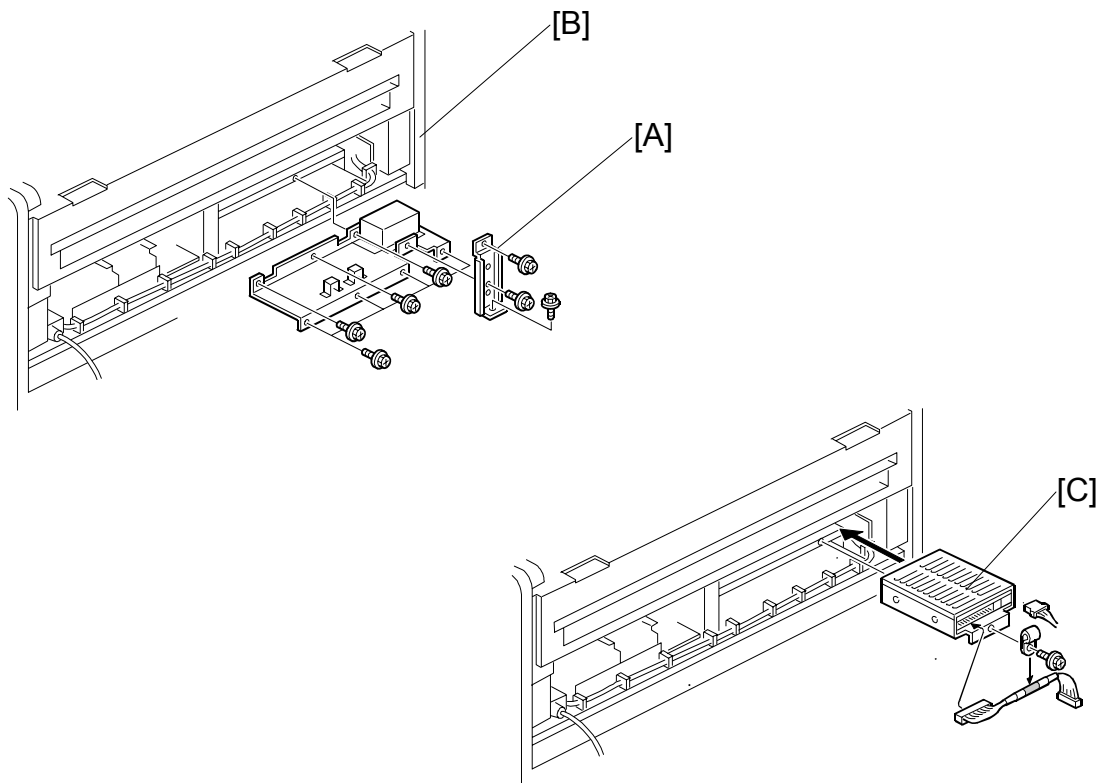
Rear cover (🔩 x 2)
Interface cover plate (if installed) (🔩 x 1)
Right vertical brace (🔩 x 2)

[A]: Ground plate [A] (🔩 x 3)
[B]: PCB shield cover [B] (🔩 x 7)
[C]: HDD unit (🔌 x 2, 🔩 x 1)

OTHER

[A]

[B]

[C]

[B]
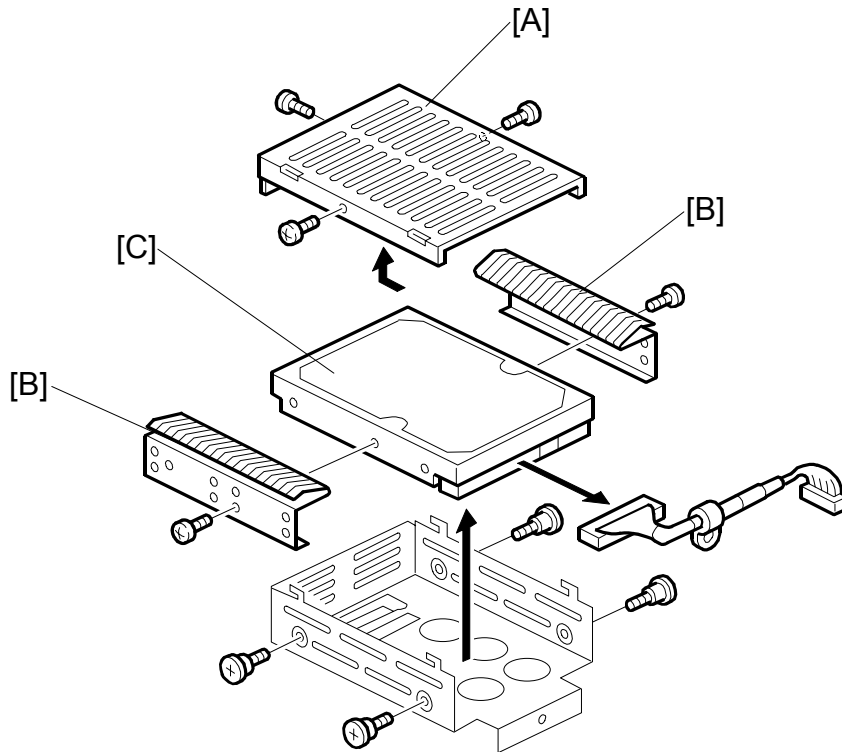
[A]: HDD cover ($\mathscr{P}$ x 3)
[B]: HDD ground plates ($\mathscr{P}$ x 2)
[C]: HDD ($\mathscr{P}$ x 4)

Reinstallation

- If a new HDD is not available, do SP4960 015 (HDD – HDD Connection On/Off) to disable the HDD connection. This lets the customer use the machine until a replacement HDD can be installed.
- Do SP4960 003 (HDD – Formatting) to format the new HDD. Approximately 25 minutes are necessary for formatting.

3.10.2 COOLING FAN, OZONE FILTER

[A]: Rear top cover (⬚ x 1, ⬚x1, ⬚x2)
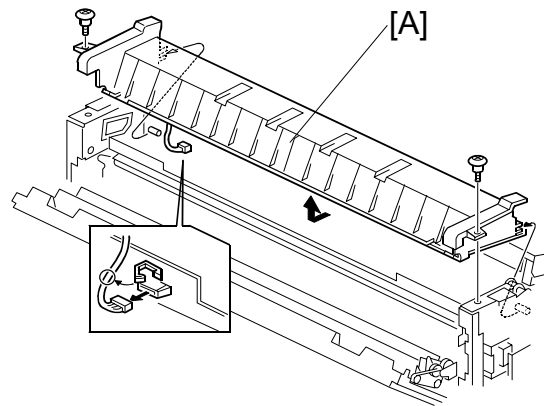
[B]: Plates (press release)
[C]: Ozone filter
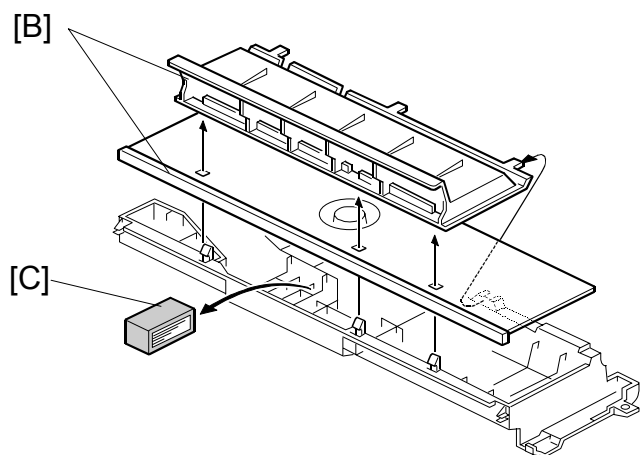
[D]: Cooling fan (⬚ x 1, ⬚ x 3)
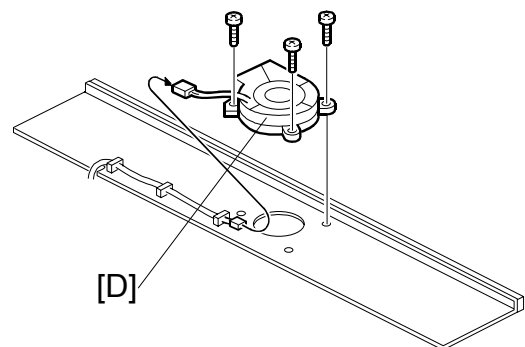
3.11 SP ADJUSTMENTS

3.11.1 IMAGE ADJUSTMENT

Do these adjustments if output is unsatisfactory. Before you start to measure and adjust, let the test print output become cool for three minutes.

NOTE: Always do these adjustments in the sequence given in Steps 1~13 below.

Step 1: Check the Registration Line Speed

1. Do these SPs in the sequence shown in this table:

SP	Setting	Comments
SP1918 001	0%	SP1918 001 (Main/Fusing Motor Setting – Speed Reduction %)

2. With SP2941, print Pattern 11 three times.

3. From the leading edge, measure the distance between the 2nd line and the 30th line on each pattern.

4. Make sure that the measured distance is between 151.0 and 151.5 mm.

5. If the distance is longer than 151.5 mm, adjust SP1919 until the distance is in the correct range.

6. After adjustment, set SP1918 001 to 0.3%.

Step 2: Magnification for Paper Type: Plain

1. With SP2941 (IPU Pattern), print Pattern 11 three times.

2. Do these SPs magnification correction in the sequence shown in this table:

SP	Comments
SP4911 001	Measure the average distance between row 20 from the leading edge to row 204. The length must be 997 mm. Adjust this SP until the length is 997 mm, if the measured length is shorter or longer.
SP4911 002	Measure the average distance from the edge to column 150. The width must be 812.8 mm. Adjust this SP until the width is 812.5 mm, if the measured width is wider or narrower.

Step 3: Scanning Magnification

1. Make a 1:1 copy of the A0 SEF Magnification Chart with plain roll paper.
   NOTE: You can use a different test chart, if it has lines 1000 mm long in the sub-scan direction and 700 mm long in the main-scan direction.

2. Measure the length and width of the images on the original and the copy.

3. Do these SPs in the sequence shown in this table, if the measurements are not in the standard range:

SP	Standard	Comments
SP4008	Less than ±0.5	Scanner Sub Scan Magnification
SP4101	Less than ±0.5	Scanner Main Scan Magnification

Step 4: Magnification for Paper Type: Translucent

1. Make a 1:1 copy of the A0 SEF Magnification Chart with translucent (tracing) paper.
   NOTE: You can use a different test chart, if it has lines 1000 mm long in the sub-scan direction and 700 mm long in the main-scan direction.

2. Measure the length and width of the images on the original and the copy.

3. Do the same measurements for "Magnification for Paper Type: Plain".

4. Do these SPs in the sequence shown in this table, if the measurements are not in the standard range:

SP	Standard	Comments
SP4911 003	Less than ±0.5	Correct Copy Magnification for Paper Type – Translucent Vertical
SP4911 004	Less than ±0.5	Correct Copy Magnification for Paper Type – Translucent Horizontal

Step 5: Magnification for Paper Type: Film

1. Make a 1:1 copy of the A0 SEF Magnification Chart with film.
   NOTE: You can use a different test chart, if it has lines 1000 mm long in the sub-scan direction and 700 mm long in the main-scan direction.

2. Measure the length and width of the images on the original and the copy.

3. Do the same measurements for "Magnification for Paper Type: Plain".

4. Do these SPs in the sequence shown in this table, if the measurements are not in the standard range:

SP	Standard	Comments
SP4911 005	Less than ±0.5	Correct Copy Magnification for Paper Type – Film Vertical
SP4911 006	Less than ±0.5	Correct Copy Magnification for Paper Type – Film Horizontal

Replacement and Adjustment

Step 6: Scanner Mask Setting

SP	Set To:	Comments
SP4012 001	0	Scanner Erase Margin – Leading Edge
SP4012 002	0	Scanner Erase Margin – Trailing Edge
SP4012 003	0	Scanner Erase Margin – Left
SP4012 004	0	Scanner Erase Margin – Right

Step 7: Erase Margins

Set these SPs to "5" to make measurement easier:

SP	Set To:	Comments
SP2101 001	5	Printing Erase Margin – Copy – Leading Edge
SP2101 002	5	Printing Erase Margin – Copy – Trailing Edge
SP2101 003	5	Printing Erase Margin – Copy – Left Edge
SP2101 004	5	Printing Erase Margin – Copy – Right Edge

Step 8: Printer: Leading Edge, Side-to-Side Registration

1. Use plain paper to print the IPU test pattern (SP2941 001, Pattern 11) for each paper feed station installed on the machine:
    - Manual feed (bypass)
    - Roll Feeder Roll 1
    - Roll Feeder Roll 2
    - Paper Cassette

Paper Feed

Sub Scan 5±0.5 mm

Main Scan 5±0.5 mm
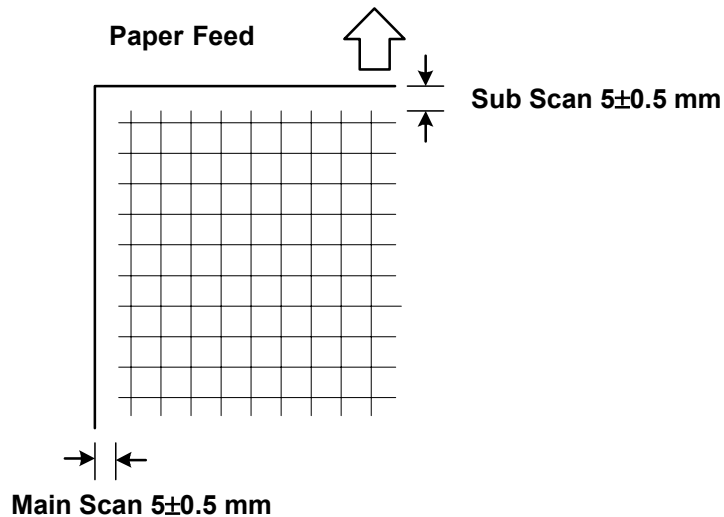
2. Measure the gaps for the leading edge and side-to-side registration.

3. Adjust these SPs if a measurement is not in the standard range.

SP	Standard:	Comments
SP1001 001		Leading Edge Registration - Roll
SP1001 003		Leading Edge Registration – Paper Cassette
SP1001 005		Leading Edge Registration – Bypass Feed
SP1002 001	5±0.5 mm	Side-to-Side Registration – 1st Roll
SP1002 002		Side-to-Side Registration – 2nd Roll
SP1002 003		Side-to-Side Registration – Paper Cassette
SP1002 004		Side-to-Side Registration – Bypass Feed

Step 9: Scanner Mask Setting

Do these SPs to replace the "0" settings done in **Step 6**.

SP	Set To:	Comments
SP4012 001		Scanner Erase Margin – Leading Edge
SP4012 002	0	Scanner Erase Margin – Trailing Edge
SP4012 003		Scanner Erase Margin – Left Edge
SP4012 004		Scanner Erase Margin – Right

Step 10: Erase Margins

Do these SPs to replace the settings done in **Step 7**.

SP	Set To:	Comments
SP2101 001		Leading Edge
SP2101 002	0	Trailing Edge
SP2101 003		Left Edge
SP2101 004		Right Edge

Step 11: Scanner Registration

1. Use the A1 LEF Test Chart to make a 1:1 copy on plain A1 LEF paper.

2. On the copy, measure the gap between the chart image and the leading edge and left edge.

3. Adjust these SPs if necessary:

SP	Standard	Comments
SP4010	±3 mm	Scanner Sub Scan Registration
SP4011	±2.8 mm	Scanner Main Scan Registration

Replacement and Adjustment

Step 12: Printer: Cut Length

The following SPs are necessary for this step:

- SP1920 111 (Cut Length Adjustment - 1st Roll, 297 mm/11" or 12", Plain Paper
- SP1920 115 (Cut Length Adjustment -1st Roll, 1189 mm/44" or 48", Plain Paper
- SP1920 211 (Cut Length Adjustment - 2nd Roll, 297 mm/11" or 12", Plain Paper
- SP1920 215 (Cut Length Adjustment - 2nd Roll, 1189 mm/44" or 48", Plain Paper
- SP1920 001~238 (Cut Length Adjustment)

1. Use the Preset Cut feature to make standard cuts of plain paper for these sizes:

Size	Orientation
A3	Sideways
A1	Lengthways
A0	Lengthways
A	Sideways (Eng. 11")
B	Sideways (Eng. 17")
D	Lengthways (Eng. 34")
E	Lengthways (Eng. 44")

2. Measure the cuts and check them against the standards of this table.

Cut Length (mm)	Cut Tolerance (mm)
Less than 297	±3
420 ~ 1189	±5
~2000	±6
=3000	±11
~4000	±14

3. If a measurement is not in the standard range of tolerance, adjust SP1920 001~238 for each roll, paper width, and paper type.

Step 13: Synchro Cut (Trailing Edge Registration)

The following SPs are necessary for this step:

- SP4961 001 (Original Adjustment – Synchro Cut Adjustment 210 mm)
- SP4961 002 (Original Adjustment – Synchro Cut Adjustment 1000 mm)
- SP4961 003 (Original Adjustment – Original Length Display)

1. Prepare two originals
   - 1 original 210 mm long (A4 LEF)
   - 1 original 1000 mm long (measure and cut)

2. Go into the SP mode and do SP4961 001.

3. Push the Interrupt key and copy the 210 mm sheet that you prepared in Step 1.

4. Push the Interrupt key and go back to the SP mode.

5. Do SP4961 003 to check the scan length.

6. If the display is different, adjust with SP4961 001.

7. Push the Interrupt key and do SP4961 002.

8. Push the Interrupt key and scan the 1000 mm sheet that you prepared in Step 1.

9. Push the interrupt key to go back to the SP mode.

10. Do SP4961 003 to check the scan length.

11. If the display is different, adjust with SP4961 002.

Cut Length (mm)	Cut Tolerance (mm)
Less than 297	±4.50
~594	±5.00
~841	±6.00
~1189	±8.50
~2000	±18.0
~3000	±27.0
~3600	±33.0

Replacement and Adjustment

⟹3.11.2 CIS

To Print the CIS Adjustment Pattern

1. Open the roll feeder drawer and cut off a sheet manually from a roll. (Turn the manual feed knob to feed the paper then push the cutter from side to side to cut.)

2. Close the roll feeder drawer.

3. Go into the SP (Copy) mode.

4. Push the Interrupt (⇉) key to show the main screen.

5. On the operation panel, manually select one of the rolls as the paper feed station.

6. Put the blank sheet of paper on the original feed tray and feed it into the original feed unit. A cross hatch pattern prints. This is the printed original pattern that will be used for the following tests and adjustments. Mark the back of this print "ORIGINAL".

7. Push the Interrupt (⇉) key to go back to the SP mode.

8. Use SP 4973 003 and push ⌗. SP4973-003 is currently set at "0" and alignment correction occurs.

9. Push ①, then push the key below "Set". SP4973-003 is now set at "1" and alignment correction is disabled.

10. Push the key below "Exit" three times to get out of the SP mode.

11. In copy mode, copy the pattern you made at Step 6. This time the copy that prints will be without alignment correction and any misalignment will be visible.

	CIS-2			CIS-4	
CIS 1		CIS 3			CIS 5
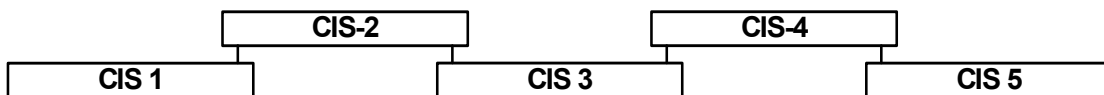
Abc CIS-5	CIS-4	CIS-3	CIS-2	CIS-1

CIS 4-5   CIS 3-4   CIS 2-3   CIS 1-2

When you look at the printed pattern, the number sequence of the CIS joints is opposite, with CIS-5 on the left through CIS-1 on the right as shown in the diagram above.

12. After you complete the CIS adjustment (next two pages), reset SP4973 003 to "0," to select alignment correction.

To Adjust the Image at the CIS Joints

1. Check the printed pattern to find if the dots are aligned at CIS 1-2.

2. If they are aligned correctly, no adjustment is necessary.

   -or-

   If they are not aligned correctly, do the next step.

   Here are two samples where the outputs are not aligned correctly.
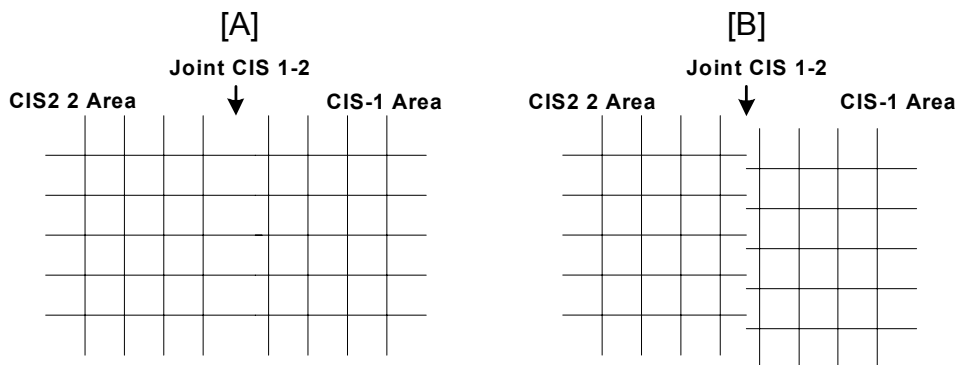
- The lines at CIS 1-2 [A] are wider than usual. If the lines are wider (as shown above) or less wide than the other lines, adjust the main scan offset at CIS 1-2 (SP4972 001).
- The lines at CIS 1-2 [B] are not aligned. If the output from CIS 1 is lower (as shown above) or higher, adjust the sub scan offset at CIS 1-2 (SP4972 005).

To adjust the main scan offset for Example [A]

The output from CIS 1 is too far to the right.

3. Do SP4972 001 and adjust the setting.
   - Adjust the position of CIS 1. The position of CIS 2 does not move.
   - If the area at the joint is too wide, set a smaller value.
   - If the area at the joint is too narrow, set a larger value.
   - In the example [A], you must set a smaller value.

To adjust the sub scan offset for Example [B]

The output from CIS 1 is lower than the output from CIS 2.

4. Do SP4972 005 and adjust the setting.
   - Adjust the position of CIS 1. The position of CIS 2 does not move.
   - If the CIS 1 area is higher than the CIS 2 area, set a larger value.
   - If the CIS 1 area is lower than the CIS 2 area, set a smaller value.
   - In the example shown [B], you must decrease the value for CIS 1.

5. Print one more pattern and check CIS 1-2.

6. Do this procedure again from Step 1 until the image at CIS 1-2 is correct.

7. Do this procedure for the other joints (CIS 2-3, CIS 3-4, CIS 4-5)

   The "Effect" column in this table tells you which area moves with the adjustment, and which area does not move.

4972	CIS Main/Sub Scan Offset Adjustment [0~2047/**638**/1]		
		Joint	**Effect**
001	Main Scan Offset – Interval 1-2	CIS 1-2	CIS 1 moves. CIS 2 does not move.
002	Main Scan Offset – Interval 2-3	CIS 2-3	CIS 3 moves. CIS 2 does not move.
003	Main Scan Offset – Interval 3-4	CIS 3-4	CIS 4 moves. CIS 3 does not move.
004	Main Scan Offset – Interval 4-5	CIS 4-5	CIS 5 moves. CIS 4 does not move.
005	Sub Scan Offset – Interval 1-2	CIS 1-2	CIS 1 moves. CIS 2 does not move.
006	Sub Scan Offset – Interval 2-3	CIS 2-3	CIS 3 moves. CIS 2 does not move.
007	Sub Scan Offset – Interval 3-4	CIS 3-4	CIS 4 moves. CIS 3 does not move.
008	Sub Scan Offset – Interval 4-5	CIS 4-5	CIS 5 moves. CIS 4 does not move.

3.11.3 LPH

Doing SP Adjustment Settings for a Replacement LPH

1. Remove the replacement LPH from its box.

2. Read the label attached to the replacement LPH and note of the settings for SP2965 and SP2943.
   NOTE: This label is attached to the replacement LPH only.

3. Remove the old LPH and install the new LPH unit.

4. Do SP2965 001, 002 and enter the settings you read from the label attached to the LPH replacement unit.

5. Do SP2943 001-006 and enter the settings you read from the label attached to the replacement unit.

6. Print a test print in the IPU Test Pattern mode to make sure that the LPH joints are aligned correctly. (See below.)

7. Print IPU Test Pattern 51 to confirm that the LPH is functioning normally.

To Print Pattern IPU Test Pattern 51

1. Open the roll feeder drawer. Cut off a sheet manually from a roll.

2. Close the roll feeder drawer.

3. Go into the SP mode.

4. Do SP2941 (IPU Test Pattern. Press "Set" twice, enter "**51**" then press "Set".

5. Push the Interrupt key (⇄) to go to the copy display.

6. Use one of the rolls as the paper feed station.

7. Feed the blank sheet of paper into the original feed unit to print Pattern 51.

8. Check the printed pattern:
   - If you see vertical white or black lines, do the vertical line adjustments (page 3-88).
   - If you see the areas are not aligned, do the misalignment adjustments (page 3-90).
   - If you see vertical white/black lines and misalignment, do the vertical line adjustment first.

Main Scan Adjustment: White, Black Vertical Lines

1. Check the printed pattern at LPH 1-2 for white or black lines.

2. If there are no lines, no adjustment is necessary.
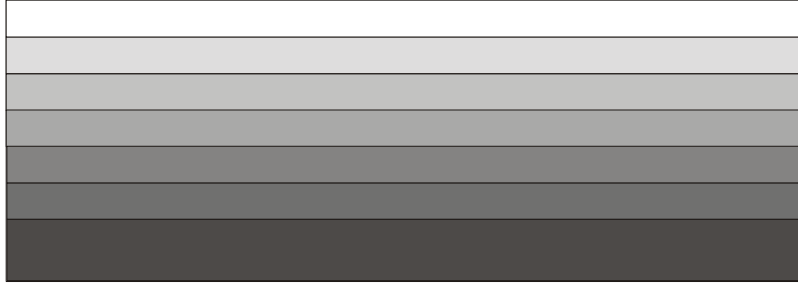
Normal Pattern

If you see white or black lines at LPH 1-2, go to the next step.
- White lines occur if too few LEDs come on at the joint.
- Black lines occur if too many LEDs come on at the joint.
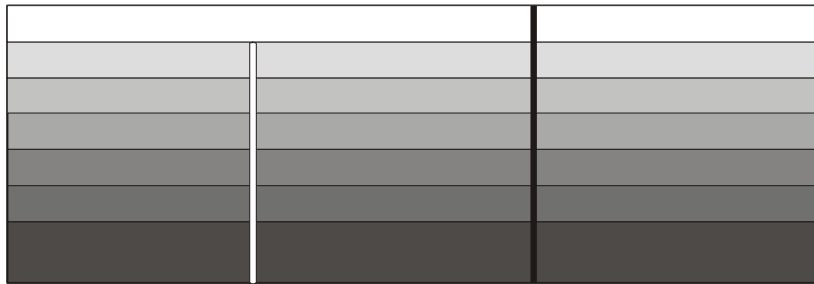
Abnormal Pattern

3. If the left line is <u>white</u>, adjust SP2965 001 to a smaller value.

   -or-

   If the left line is <u>black</u>, adjust SP2965 001 to a larger value.

4. If the right line is <u>white</u>, adjust SP2965 002 to a smaller value.

   -or-

   If the right line is <u>black</u>, adjust SP2965 002 to a larger value.

5. After the adjustment, feed the wide original again to print one more pattern. Then check the effect of your adjustment.

6. Do this procedure again to adjust the lines until they are weak; the lines cannot be fully erased.

Main Scan Adjustment: LED Light Level at LPH Joints

After you do the previous procedure to adjust the main scan at the LPH joints, you can do a fine adjustment on this area. To do this, you increase or decrease the intensity of the light from the four LEDs at the joints.

Replacement and Adjustment
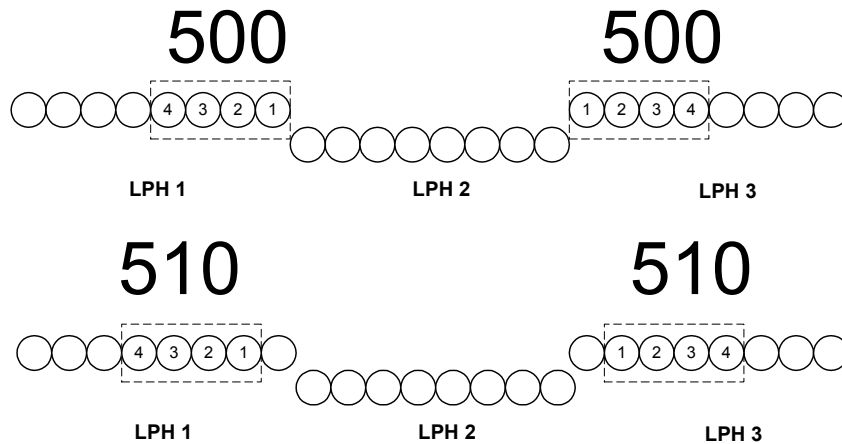
"500" are the default settings for LPH 1-2 and LPH 2-3.

If you change the 2nd digit of the value for LPH 1-2 (500 to 5<u>1</u>0) with SP2965 001, this moves the four LEDs by one position to the <u>left</u>.

If you change the 2nd digit of the value for LPH 2-3 (500 to 5<u>1</u>0) with SP2965 002, this moves the four LEDs by one position to the <u>right</u>.

If you change the 3rd digit of LPH 1-2 or LPH 2-3 (510 to 51<u>2</u>, for example), this increases the quantity of light from LEDs 1, 2, 3, 4 in the illustration.

The quantity of light can be adjusted for each LED independently with SP2947 (Power Correction). But, this fine adjustment is usually not necessary in the field. For more, see "4. Service Tables".

To Adjust the LPH for Misalignment

[A]   [B]
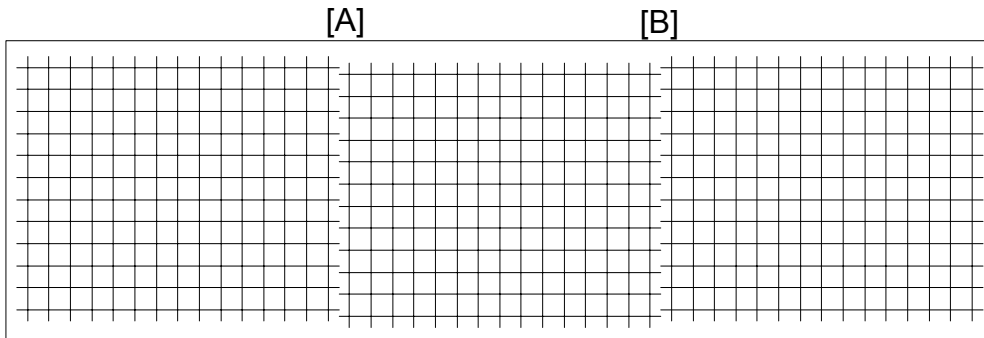
Broken lines [A] or [B] in the IPU Test Pattern (SP2941 11) show incorrect sub scan timing at one or both joints.

1. Go into the SP mode, and do SP2965 003 for LPH 1-2
    *   Adjust the position of LPH 2 (LPH 1 does not move).
    *   If LPH 2 is higher than LPH 1, set a larger value.
    *   If LPH 2 is lower than LPH 1, set a smaller value.

2. Print one more pattern with SP2941 11) and check the alignment at the joints.

3. Do this procedure again until the pattern at the joint is correct.

4. Do SP2965 004 for LPH 2-3
    *   Adjust the position of LPH 3 to LPH 2 (LPH 2 is the standard).
    *   If LPH 3 is higher than LPH 2, set a larger value.
    *   If LPH 3 is lower than LPH 2, set a smaller value.

5. Do this procedure again until the pattern at the joint is correct.

The hot roller and pressure roller have a slight spindle shape. The circumference at the ends of the rollers [A] is slightly larger than the circumference at the centers [B].
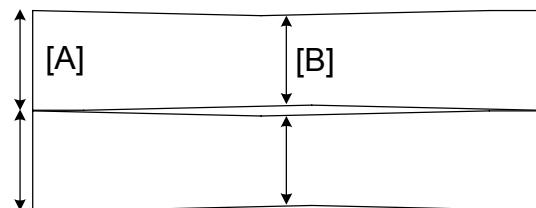
This makes sure that there is always sufficient pressure on the paper between the roller ends. But, this difference in circumference also causes a small difference in the speed of paper feed. The paper transport speed at the ends is slightly faster than at the center. Also, because the centers of the rollers bend in slightly, this increases the risk of slipping at the center with paper less wide than 420 mm.

For users who always use paper wider than 420 mm, do the sub scan adjustments for the LPH joints with SP2965 003, 004.

For users who use paper that is less than 420 mm wide, do the sub scan adjustments for the LPH joints with SP2965 006, 007 after you input the values of SP 2965 003 and 004 from the decal.

3.11.4 LPH DENSITY

To Print the R-10 Pattern 51

1. Open the roll feeder drawer. Cut off a sheet manually from a roll.

2. Close the roll feeder drawer.

3. Go into the SP mode. Input 2941 and push ⓗ.

4. Push ⑤①. Then push the key below "Set".

5. Push the Interrupt (⇄) key to show the main screen.

6. On the operation panel, set one of the rolls as the paper feed station.

7. Put the blank sheet of paper on the original feed tray, and feed it into the original feed unit. The pattern prints.

8. Push the Interrupt (⇄) key to go back to the SP mode.

9. Push the key below "Exit" three times to go out from the SP mode.

10. Check the density of the patterns in LPH 1, LPH 2, and LPH 3.

    If density is equal for all areas, no adjustment is necessary. If the density is not equal, do the procedure below.

To Correct Pattern Density

1. Do SP2943 001~006.

   This SP makes the output of one LPH block brighter or darker. Also, there are different adjustments for odd-numbered pixels and even-numbered pixels.

2. Adjust the density for LPH 1.
   - SP2943 001 adjusts the density for odd-numbered pixels.
     SP2943 002 adjusts the density for even-numbered pixels.
   - If the density is too dark, set a smaller value.
   - If the density is too light, set a larger value.

3. Print Pattern 51 again and check the density.

4. Do this procedure until the density is the same for LPH1, LPH2, and LPH3.
   - LPH2: SP2943 003 for odd-numbered pixels, 2943 004 for even-numbered pixels.
     LPH3: SP2943 005 for odd-numbered pixels, 2943 006 for even-numbered pixels.

TROUBLESHOOTING

4. TROUBLESHOOTING

4.1 SERVICE CALL CONDITIONS

4.1.1 SUMMARY

There are 4 levels of service call conditions

Level	Definition	Reset Procedure
A	Fusing unit SCs shown on the operation panel. The machine is disabled. The user cannot reset the SC.	Go into the SP mode. Set the main power switch to "off" then to "on".
B	These SCs disable only the features that use the defective item. The user does not see these SCs in usual conditions. But, they are shown on the operation panel when the defective feature is used.	Set the main power switch to "off" then to "on".
C	SCs that are not shown on the operation panel. They are recorded internally.	Recorded only.
D	These SCs are shown on the operation panel. To reset these SCs, turn the operation switch or main power switch off and on. These SCs are shown again if the error occurs again.	Set the operation switch or the main power switch to "off" then to "on".

NOTE: 1) If the problem is in an electrical circuit board, disconnect then connect the board connectors again before you replace the PCB.
2) If the problem is a motor lock, check the mechanical load before you replace a motor or sensor.
3) When a Level A or Level B SC occurs while the machine is in the SP mode, the SC number will not be shown. If this occurs, check the SC number after the machine goes out from the SP mode. This does not include Level B codes.
4) Many SC codes contain more than one level (SC303-1, SC303-2, SC303-3, and others). Some SC codes can show a "-1", even if there is only one level.

Trouble-
shooting

4.2 SC CODE DESCRIPTIONS

4.2.1 SC1XXX

There are no Group 1 SC codes for this machine.

4.2.2 SC2XXX

There are no Group 2 SC codes for this machine

4.2.3 SC3XXX

Group 3 SP codes are related to image making.

300	D	Charge Corona Output Error	
		The charge-corona feedback voltage was less than 1 V for more than 200 ms.	• Replace the charge corona unit. • Replace the high voltage cable. • Clean or replace the corona wire. • Check the CGB power pack fuse, connection. • Replace the CGB power pack.

305	D	Charge Corona Wire Cleaner Error	
305-3		The charge wire cleaner did not a) come from the home position within 5 s, or b) did not go back to the home position in 3.7 s or less. This is because of wire cleaner overload.	• Switch the main power switch off/on. • Check the wire cleaner unit for a blockage or broken parts.
		Temporary Solution: Use SP2804 to disable the charge-corona cleaner function.	

330	B	Writing ASIC Signal Error	
		At power on, the stamp function could not start.	• Check the setting of SP5137. If the stamp option is installed, this SP must be enabled. If the stamp option is not installed, this SP must be disabled. • Check the stamp board connections. • Replace the defective stamp board.
		Temporary Solution: Use SP5137 to disable the stamp function.	

360-1	D	Hard Disk Connection Error	
360-1		The machine could not detect the HDD connection.	• Check the connections between the HDD and hard disk controller. • Check the HDD power connector. • Replace the HDD. • Replace the MCU.
		Temporary Solution: Use SP4960 015 to disable HDD access. In this condition, the customer can use the machine until a replacement HDD becomes available.	

361	D	Hard Disk Read Errors	
	361-1	Bad Sectors Max.: HDD1	• Do SP4960-1 (HDD Media Check).
	361-3	Verify Error: HDD1	
	361-5	Formatting Error: HDD1	• Do SP4906 003 to format the HDD.
	361-7	Device Error: HDD1	
	361-9	Device Error: HDD1	• If formatting the HDD fails, replace the HDD.
		• Bad sector data was written to NVRAM during operation. These bad sectors will not be used to read from or write to the hard disk. • Bad sectors were made on the hard disk during the hard disk check done with SP4960-1. There were too many bad sector errors for the MSU (Memory Super-charger Unit) to control. Do SP4906 003 to format the hard disk. • Bad sectors were made on the hard disk when the hard disk was formatted with SP4960-3. The hard disk must be replaced (too many bad sectors).	

362	D	IMAC (Image Memory Access Controller) error	
		During data transfer in memory at the IPU, an error occurred during data compression with ASIC (IMAC). The ASIC controls data compression.	
	362-1	Video Input Error	• Update the firmware.
	362-2	Video Output Error	• If the firmware update does not stop the problem, replace the IPU board.
	362-4	Operation Mode Match Error	
	362-16	Function Failure	
	362-51	DMA Send Error	• Update all software modules if this problem continues.
		Note: More than one of these errors can occur together. If more than one of these errors occurs together, the SC number is the sum of the SC error codes. For example, if SC362-5 is shown, SC362-1 and SC362-4 occurred together.	

Trouble-shooting

SC CODE DESCRIPTIONS

380	D	MSU Output Error	
		Just after the machine was switched on, it could not detect that the MSU (Memory Super-charger Unit) was set.	• Replace the IPU.

392	D	Development Bias Error	
392-1		The development bias feedback voltage was less than 0.5 V for longer than 200 ms while the PWM duty value was more than 5% (indicating a development bias leak).	• Check the MCU connectors. • Check the harness on the MCU for damage. • Replace the high voltage cable. • Replace the CGB power pack.

4.2.4 SC4XXX

Group 4 SC codes are also related to image making.

400	D	ID Sensor Auto Adjustment Error	
		Vsg did not get to 4 ±0.2 V when the ID sensor was adjusted automatically in the SP mode.	• Clean the ID sensor. • Check the ID sensor harness and connector. • Replace the ID sensor. • Replace the MCU. • Replace the development unit. • Replace the CGB power pack.

401	D	ID Sensor Vsg Error	
		The Vsg level was detected lower than 2.5 V two times.	• Clean the ID sensor. • Check the ID sensor harness and connector. • Replace the ID sensor. • Replace the MCU. • Replace the development unit. • Replace the CGB power pack.

402	D	ID Sensor Vsp Error	
		The Vsp level was detected at 0 V or more than 2.5 V for 2 consecutive copies.	• Under the left upper cover, make sure that the hex screw of the main drive gear of the drum is tight. • Clean the ID sensor. • Check the ID sensor harness and connector. • Replace the ID sensor. • Replace the MCU. • Replace the development unit. • Replace the CGB power pack.

440	D	Transfer Output Error	
		A high voltage feedback voltage of less than 1.0 V was detected for 200 ms.	• Check and replace the high voltage cable if necessary. • Replace the CGB power pack.

460-1	D	DC Separation Corona Output Error	
460-1		A dc separation feedback voltage of less than 1.0 V was detected after more than 200 ms while the PWM duty value was more than 15%.	• Check and replace the high voltage cable if necessary. • Replace the CGB power pack.

Trouble-shooting

4.2.5 SC5XXX

Group 5 SC codes are related to:
- Paper feed
- Paper transport in the paper path
- Fusing

508	D	Cutter Error	
		The left and right cutter HP sensors stayed on or off more than 2 seconds.	• Check the connections of the HP sensors on the left and right side. • Replace the HP sensors.
		Temporary Solution To use the machine until it is repaired, the customer can use the manual feed tray as the default paper-feed source: User Tools> 1 System Settings> 1 General Features> 17 Feed Start Method> Bypass	

520	D	Main Motor Error	
		The lock signal goes LOW after the motor starts and gets to the set speed. If the main motor lock signal stayed HIGH for 5 seconds during motor operation, the motor stopped because of overloading.	• Check that the motor drive path is not overloaded. • Replace the motor harness. • Replace the motor.

521	D	Drum Motor Error	
		The lock signal goes LOW after the motor starts and gets to the set speed. If the drum motor lock signal stayed HIGH for 5 seconds during motor operation, the motor stopped because of overloading.	• Check that the motor drive path is not overloaded. • Replace the motor.

522	D	**Fusing Unit Drive Motor Error**	
		The lock signal goes LOW after the motor starts and gets to the set speed. If the fusing motor lock signal stayed HIGH for 5 seconds during motor operation, the motor stopped because of overloading.	• Check that the motor drive path is not overloaded. • Replace the motor.

530	D	**Fusing Unit Ventilation Fan Error**	
		The lock signal goes LOW after the motor starts and gets to the set speed. If the fan motor lock signal stayed HIGH for 5 seconds during motor operation, the motor stopped because of overloading.	• Check that the motor is not overloaded. • Replace the motor.

541	A	**Fusing Thermistor Errors**	
541-1		Fusing Thermistor Error 1	
		• The measured temperature of the hot roller stayed below 7°C (44.6^{o}F) for 60 seconds after the machine was switched on. -or- • During machine operation the hot roller temperature fell to and stayed at 7°C (44.6^{o}F) for 40 seconds.	• Make sure that the thermistor is set correctly. • Make sure that the thermistor cable is connected. • Replace the thermistor.
541-2		Fusing Thermistor Error 2	
		The analog voltage input from the hot roller temperature was less than 2 V for three measurements. The thermistor has short-circuited.	• Replace the thermistor.

Trouble-shooting

542	A	Fusing Temperature Warm-up Error	
→		The hot roller did not get to the ready temperature within 4 minutes 30 sec.: • After the machine was switched on. • After the upper unit or roll feeder drawer was closed. • During warm-up.	• Check the fusing lamp connections. • Replace the fusing lamp. • Replace the MCU. • Check the hot roller thermistor. Make sure that it is straight and is touching the hot roller.

		Note: The ready temperature is determined by the state of the machine at recovery:
		• Ready Temp. = Target Fusing Temp.
		  (if power on or recovery starts when the hot roller is 80°C or higher).
		• Ready Temp. = Target Fusing Temp. – 15°C
		  (if power on or recovery starts when the hot roller is less that 80°C.)
		• Ready Temp. = Target Fusing Temp. – 30°C (if power on or recover starts with pressure roller inching control on.)	

543	A	Fusing Lamp Overheated: Error 1 (Software)	
		A fusing temperature more than 230 °C (446°F) was detected 3 times (measured at 180 ms intervals). **Note**: A shorted triac or other problem could cause the fusing lamp to stay on.	• Replace the MCU.

544	A	Fusing Lamp Overheated: Error 2 (Hardware)	
		A short circuit in the triac on the MCU caused the fusing temperature control to stop or operate incorrectly. A special circuit on the MCU monitors the temperature of the board. The temperature around the board was more than 235°C.	
544-1		Latch Signal On (50 ms)	• Replace the MCU.
544-2		Signal On (1 s)	

545	A	Fusing Lamp Overheated: Error 3	
		After it got to the ready temperature, the fusing lamp stayed on at full power for 50 seconds while the hot roller did not turn.	• Correct the position of the thermistor on the hot roller. • Replace the fusing lamp harness. • Replace the MCU.

546	A	Fusing Temperature Errors	
546-1		Fusing Temperature Error 1	
		Fusing temperature goes up and down quickly, more than 20°C (68°C) at 1 sec. intervals.	• Check the thermistor connection. • Check the fusing lamp connections. • Replace the MCU.
546 –2		Fusing Temperature Error 2	
		temperature goes up and down during a long interval, by 20°C (68°C) more than 3 times during a 60 sec. interval.	

547	D	Zero-Cross Signal Errors	
		The zero-cross signal from the ac power supply makes a trigger pulse to control the supply of power. It automatically detects 50/60 Hz.	
547-1		Zero-Cross Signal Error 1	
		Just after the machine was switched on, an unusual frequency was detected in the power supply 3 times at 50 ms intervals.	• Check that the frequency of the power supply to the machine is correct. • Replace the PSU. • Replace the MCU
547-2		Zero-Cross Signal Error 2	
		No zero-cross signal detected for 3 sec.: • At machine power on. • After a door or cover is closed.	
547-3		Zero-Cross Signal Error 3	
		No zero-cross signal detected with 10 tries and the interrupt count was less than or equal to 45.	
549-4		Zero-Cross Signal Error 4	
		No zero-cross signal detected with 10 tries and the interrupt count was less than or equal to 66.	

548	A	Fusing Lamps Disconnected	
		The fusing temperature did not get to 100°C within 2 min. after the machine was switched on.	• Check the fusing lamp harness connections. • Replace the fusing lamps. • Replace the AC drive board.

Trouble-shooting

549	A	Pressure Roller Thermistor Errors	
549-1		Pressure Roller Thermistor Error 1	
		Fusing temperature control detected that the analog voltage output by the pressure roller thermistor was more than 5V. The pressure roller thermistor is disconnected.	• Check the thermistor connection. • Replace the thermistor. • Replace the MCU.
549-2		Pressure Roller Thermistor Error 2	
		Fusing temperature control detected (2 times at 1.5 sec. intervals) that the analog voltage output by the pressure roller thermistor was less than 0.2 V. The pressure roller thermistor has short-circuited.	

4.2.6 SC6XXX

Group 6 SC codes are for communication errors.

601	D	Communication Error Between IPU and CIS	
		A break signal was detected after the communication connection. A communication error was sent back 3 times.	• Update the software. • Replace the MCU.

605	D	Communication Error Between Controller and ECU	
		One of these problems occurred: • Serial communication error • Serial data overflowed in the receive data buffer.	• Replace the MCU.

630	C	CSS Communication Error (Japan Only)	
		The machine sent a report on its condition, but CSS detected an error. There is a problem on the telephone line between the machine location and the CSS center.	• No action necessary.

632	D	MK1 Communication Error 1: No Answer to ACK (Japan Only)	
		The optional counter device did not send an ACK signal 100 ms after one frame was sent, even after the same data was sent 3 times.	• Check the serial line harnesses and connectors at the counter device, the relay board, and the controller. • Replace the counter device. • Replace the MCU.

633	D	MK1 Communication Error 2: BREAK Received (Japan Only)	
		A LOW break signal was received while the optional counter device was connected to the communication circuit.	• Check the serial line harnesses and connectors at the counter device, the relay board, and the controller. • Replace the counter device. • Replace the MCU.

Trouble-
shooting

634	D	MK1 Communication Error 3: Backup RAM (Japan Only)	
		The optional counter device sent an error because there is a malfunction in the backup RAM.	• Check the serial line harnesses and connectors at the counter device, the relay board, and the controller. • Replace the counter device. • Replace the MCU.

635	D	MK1 Communication Error 4: Low Battery (Japan Only)	
		The optional counter device sent an error because the battery voltage is unusual. There is a malfunction in the counter device control board or the backup battery.	• Check the serial line harnesses and connectors at the counter device, the relay board, and the controller. • Replace the counter device. • Replace the MCU.

4.2.7 SC7XXX

There are no Group 7 SC codes for this machine.

4.2.8 SC8XXX

There are no Group 8 SC codes for this machine.

4.2.9 SC9XXX

900	D	Electrical Total Counter	
		The electrical counter is not connected.	• Replace NVRAM chips.

901	D	Mechanical Total Counter	
		The mechanical counter is not connected.	• Check the mechanical counter connection. • Replace the mechanical counter.

980	D	HDD Access Error	
980-1		IDNF error (HDD1)	
980-3		ABRT error (HDD1)	
980-5		Sequence error (HDD1)	
		An incorrect parameter was sent from the ECU (Engine Control Unit) to the HDC (Hard Disk Controller).	• Update the MCU firmware.

981	D	HDD Response Errors	
981-1		Power Off Wait (HDD1)	
		No signal from the hard disk in the 5 sec. after the ECU (Engine Control Unit) chip on the main board sent read/write commands to the HDC (Hard Disk Controller).	• Check the HDD Connectors. • Check the HDD and make sure that it is not loose. • Update the MCU firmware. • Replace the HDD.
981-3		DMA Transfer Answer Wait (HDD1)	
		No signal from the hard disk in the 15 sec. after the ECU (Engine Control Unit) chip on the main board sent read/write commands to the HDC (Hard Disk Controller).	
981-5		Spindle Motor Answer Wait (HDD1)	
		No signal from the hard disk in the 60 sec. after the ECU (Engine Control Unit) chip on the main board sent read/write commands to the HDC (Hard Disk Controller).	

Trouble-shooting

SC CODE DESCRIPTIONS

991	D	**Software Error 1: SCU**	
		There was an unusual operation by the software because of: • An incorrect argument in the program. • An incorrect internal parameter. • Work memory not sufficient. • An error occurred that could not be detected by other SC codes.	• Set the main power switch to "off" then to "on". • Go into the SP mode. • Input "0" for SP7405 to display the data for SC991, which includes the software file name, line number, and variable.

992	D	**Software Error 2: ECU**	
		There was an unusual operation by the software because of: • An incorrect argument in the program. • An incorrect internal parameter. • Work memory not sufficient. • An error occurred that could not be detected by other SC codes.	• Set the main power switch to "off" then to "on". • Go into the SP mode. • Input "0" for SP7405 to display the data for SC992, which includes the software file name, line number, and variable.

4.3 JAM CODE TABLES

When a copier jam occurs:

- The jam indicator lights (⸉⸉).
- A diagram on the LCD shows you where the jam is, with instructions to help you remove the problem.
- The "Code" numbers in the table are also shown. Use SP 7507 to see the most recent codes.
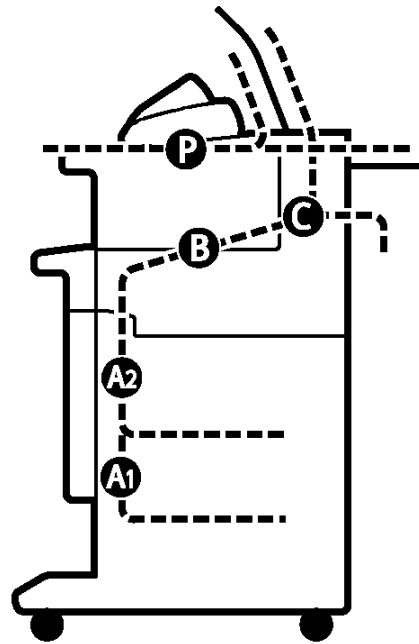
Key for "Location" Column

P: Original feed
C: Fusing unit
B: Copy paper registration
A2:   Roll feed (from optional roll feeder)
A1:   Cut sheet feed (for optional paper cassette)

4.3.1 COPIER JAM TABLES

NOTE:
1) You must open and close the upper unit to release a jam at the fusing unit.
2) If the user opens and closes the paper exit cover during copying, this is not recorded in the jam record.
3) An original or paper feed jam that occurs just after the main power switch or operation switch comes on is not recorded in the jam record.

PJ Code	Meaning	Location	Comment
1	Roll End Sensor (EXP)	B	A sheet of paper is in the manual feed table at power on.
2	Registration Sensor	B	A sheet of paper is at the registration sensor in the manual paper feed path at power on.
3	Fusing Exit Sensor	C	A sheet of paper is at the fusing exit sensor (after the fusing unit) at power on.
40	Key Counter Jam	B	The key counter was disconnected during a copy job.
51	Paper Removal: Manual Feed	B	The paper was pulled out of the manual feed tray during a copy job.
53	Manual Paper Feed with RF Selected	B	A sheet of paper was put in the manual feed tray with the roll feeder set as the paper source for the copy job.
55	Main Motor Overrun	B	The paper length is 650 mm longer than the maximum permitted for the manual feed tray or roll feeder.

Trouble-shooting

JAM CODE TABLES

PJ Code	Meaning	Location	Comment
60	Registration Sensor OFF	B	The leading edge fed 0.5 sec. before the time permitted for 30 mm of feed.
61	Registration Sensor ON	B	The leading edge fed 0.5 sec. after the time permitted for 30 mm of feed.
62	Registration Sensor OFF	B	The trailing edge fed 0.5 sec. after the time permitted for 30 mm of feed.
70	Fusing Exit Sensor OFF	C	The leading edge fed 0.83 sec. before the time permitted for 50 mm of feed.
71	Fusing Exit Sensor ON	C	The leading edge fed 0.83 sec. after the time permitted for 50 mm of feed.
72	Fusing Exit Sensor OFF	C	The trailing edge fed 1 sec. after the time permitted for 60 mm of feed.
81	RF Exit Sensor ON	A2	The leading edge fed 0.5 sec. before the time permitted for 30 mm of feed.
86	Relay Sensor ON	A1	The leading edge fed 0.5 sec. after the time permitted for 30 mm of feed.
87	Relay Sensor OFF	A1	The trailing edge fed 0.5 sec. after the time permitted for 30 mm of feed.
88	Cassette Jam Sensor OFF	A1	The trailing edge fed 0.5 mm after the time permitted for 30 mm of feed. (The sheet from the paper cassette did not pre-feed.)
91	RF Drawer Open During Copying	A2	After the roll paper RF exit sensor came ON, the roll feeder drawer was opened.
92	Cassette Pulled Out During Copying	A2	The paper cassette was pulled out of the roll feeder while the paper cassette motor was operating.
98	Roll Paper Too Short	A2	The RF exit sensor of the roll feeder went OFF 0.83 sec. before the time allowed for 60 mm of feed.
99	Roll Paper Too Long	A2	The RF exit sensor of the roll feeder went OFF 0.83 sec. after the time allowed for 60 mm of feed.

4.3.2 SCANNER JAM TABLES

Scanner Ready Check Jams

These jams (DJ01~DJ08) occur if there is an original in the original feed path at these times:

- Just after the machine power comes on
- When the machine comes back to normal operation from an energy save mode.

Code	Meaning	Location	Comments
DJ01	Original Set Sensor (A4: 81/2, 9")	P	The original set sensor (A4: 81/2, 9") is ON.
DJ02	Original Registration Sensor	P	The original registration sensor is ON.
DJ03	A0 (34", 36") Sensor	P	The A0 (34", 36") original size sensor is ON.
DJ04	A1 (22", 24") Sensor	P	The A1 (22", 24") original size sensor is ON.
DJ05	A2 (17", 18") Sensor	P	The A2 (17", 18") original size sensor is ON.
DJ06	A3 (11", 12") Sensor	P	The A3 (11", 12") original size sensor is ON.
DJ07	Original Exit Sensor	P	The original exit sensor is ON.
DJ08	30"/36" Sensor	P	The 30"/36" sensor is ON.
DJ15	Original Scan Unit Open	P	The original scanner unit on top of the machine is open.
DJ16	Upper Unit Exit Cover Open	P	The upper unit is not closed, or the release is not locked.
DJ17	Original Skewed	P	The original was not straight when it was put in. The size of the original used for the job was not the same as data sent from the original size sensors when the registration sensor detected the leading edge.
DJ20	Registration Sensor 1	P	The original registration sensor came on before the original started to feed.
DJ21	Registration Sensor 2	P	The registration sensor did not detect the leading edge after the motor operated for the time necessary to feed 15 mm. The original scan job did not start even after a start command was received from the IPU because the original set sensor switched OFF.
DJ22	Registration Sensor 3	P	The original set sensor detected the trailing edge and went OFF. But the registration sensor did not go OFF, even after the feed rollers turned for the time necessary to feed the original 20 mm longer than the paper length.
DJ25	Original Exit Sensor 1	P	The original exit sensor was ON when the machine started to scan the leading edge.

Trouble-shooting

JAM CODE TABLES

Code	Meaning	Location	Comments
DJ26	Original Exit Sensor 2	P	The original registration sensor detected the leading edge and came ON. But the original exit sensor stayed OFF, a long time after the leading edge should get to the exit rollers.
DJ27	Original Exit Sensor 3	P	The registration sensor detected the trailing edge and went OFF. But the original exit sensor stayed ON.
DJ30	Next Original Time Limit	P	The next original was set on the original feed table too early. The wait time for setting the next original did not become expired. The original set sensor detected the trailing edge of the first original. But the paper set sensor detected the leading edge of the next original before the IPU received the scan end signal.
DJ31	Maximum Length Exceeded	P	The length of the original was more than the maximum length.
DJ32	Original Removed	P	The original was removed before scanning completed. The original set sensor and original registration sensor detected the leading edge. But the registration sensor went OFF before the set sensor went OFF.
DJ40	Original Stop	P	The user pushed the Scanner Stop button to remove the original. **Note**: This is recorded in the jam record (the count for original jams by location and most recent jams).

4.4 COVER OPEN

Location	Shut Off Lines	Display
Scanner Switch	Scanner motor (24 dc line)	Cover Open
Upper Unit Switch	Toner supply clutch, paper registration clutch, drum motor, main motor, CGB power pack, cooling fan, paper junction gate solenoid, quenching lamp, pick-off pawl solenoid, fusing motor, T&S power pack (24 V dc line), fusing lamp (power relay/ac line)	
Toner Hopper Cover Switch	Toner supply clutch, paper registration clutch, drum motor, main motor, CGB power pack (24 V dc line)	
Exit Cover Switch	Cooling fan, paper junction gate solenoid, quenching lamp, pick-off pawl solenoid, fusing motor, T&S power pack (24 V dc line), fusing lamp (power relay/ac line)	
Drawer Connector	Roll feed motor, cutter motor, roll feed clutches (24 V dc line)	

Trouble-shooting

4.5 BLOWN FUSE TABLE

PCB	Fuse No.	Specification		Symptom
		120V	220 – 240 V	
PSU	FU001	15 A/125 V ac	T6.3 A/250 V	No power to fusing lamp
	FU002	T2 A/250 V		No power to dehumidifiers
	FU101	T10 A/250 V ac	T6.3 A/250 V	No power to dc lines
	FU301	T6.3 A/250 V		No power to dc 24 V lines
	FU302			
	FU303			
RFDB	FU501	T2 A/250 V		No power to the roll feeder motor, cutter motor, clutches
SMDB	FU701			No power to the scanner motor
SFDB	FU601	T1 A/250 V		No power to the cassette feed motor, paper feed clutch
Circuit Breaker	CP101	15 A 125/250 V ac		No power to power supply, dead machine

4.6 IMAGE DATA PROCESSING FLOW CHART

4.6.1 DATA FLOW IN 1-TO-1 COPY MODE
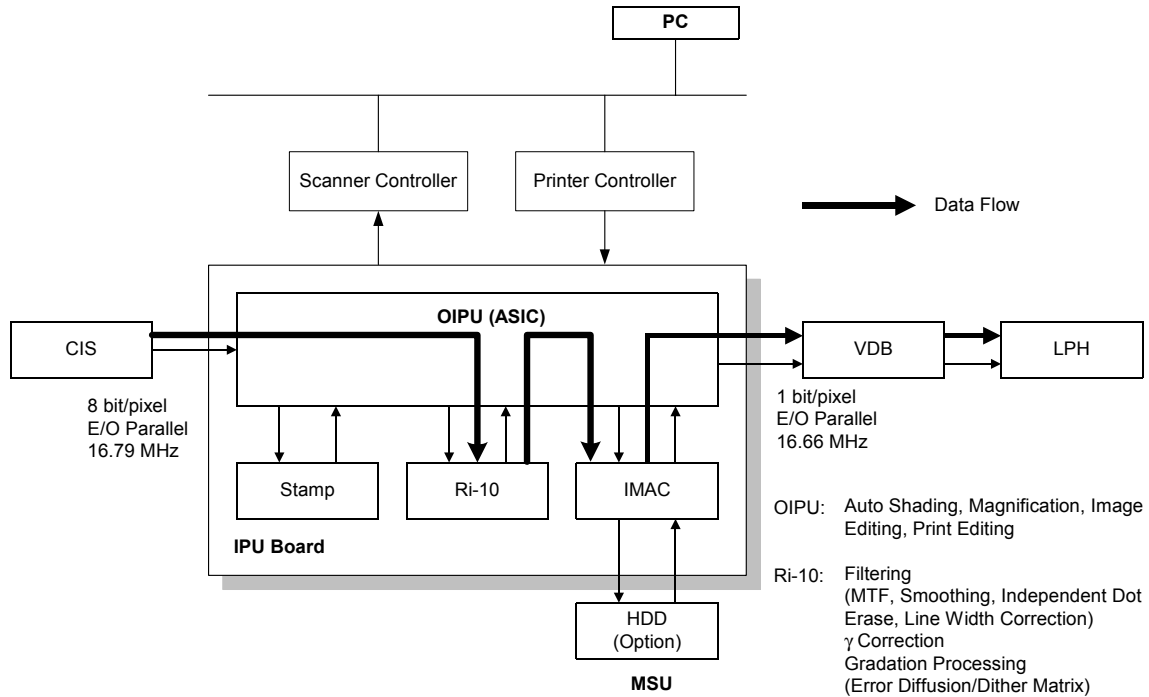
4.6.2 DATA FLOW IN REPEAT COPY MODE
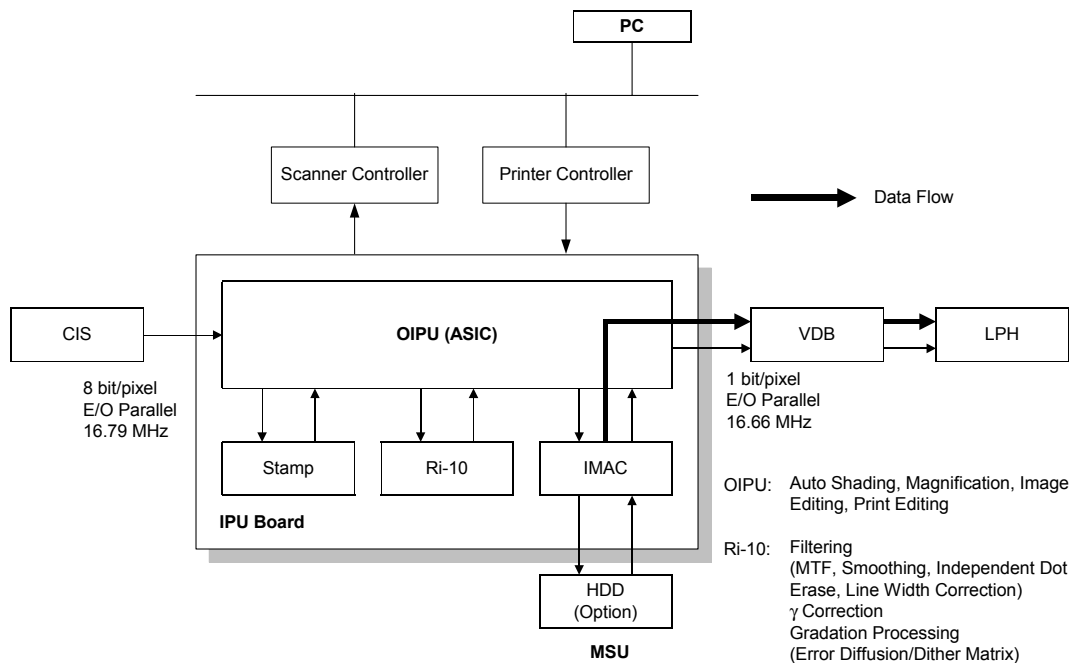
4.6.3 DATA FLOW IN SCANNING MODE

Data Flow

8 bit/pixel
E/O Parallel
16.79 MHz

1 bit/pixel
E/O Parallel
16.66 MHz

OIPU: Auto Shading, Magnification, Image
Editing, Print Editing

Ri-10: Filtering
(MTF, Smoothing, Independent Dot
Erase, Line Width Correction)
γ Correction
Gradation Processing
(Error Diffusion/Dither Matrix)
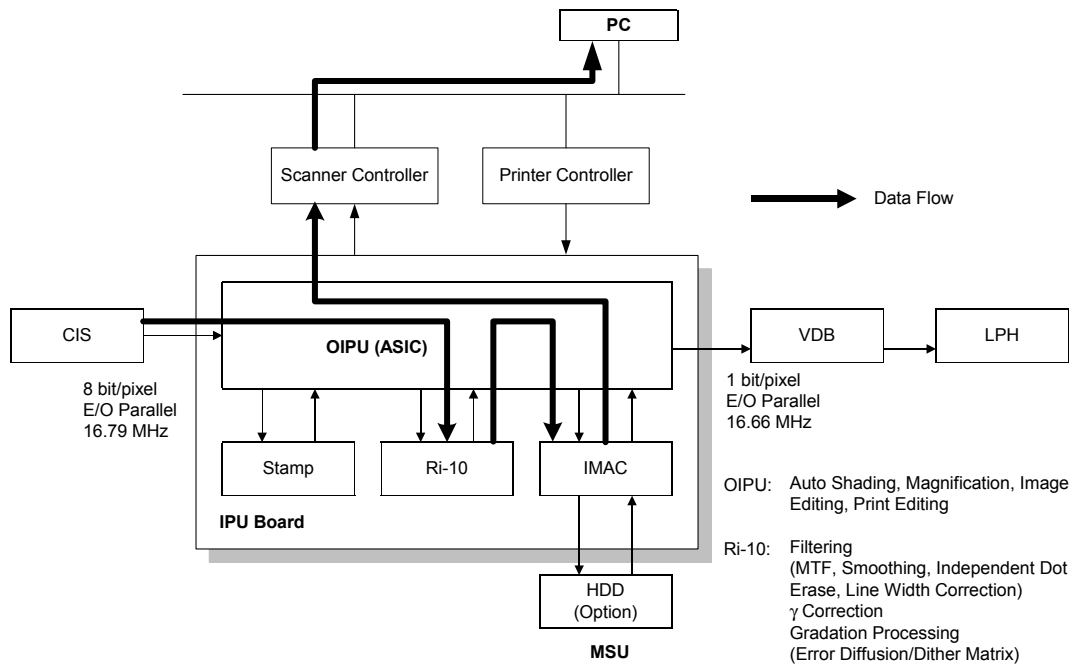
4.6.4 DATA FLOW IN PRINTING MODE (STANDARD SIZES)

Data Flow

8 bit/pixel
E/O Parallel
16.79 MHz

1 bit/pixel
E/O Parallel
16.66 MHz

OIPU: Auto Shading, Magnification, Image
Editing, Print Editing

Ri-10: Filtering
(MTF, Smoothing, Independent Dot
Erase, Line Width Correction)
γ Correction
Gradation Processing
(Error Diffusion/Dither Matrix)
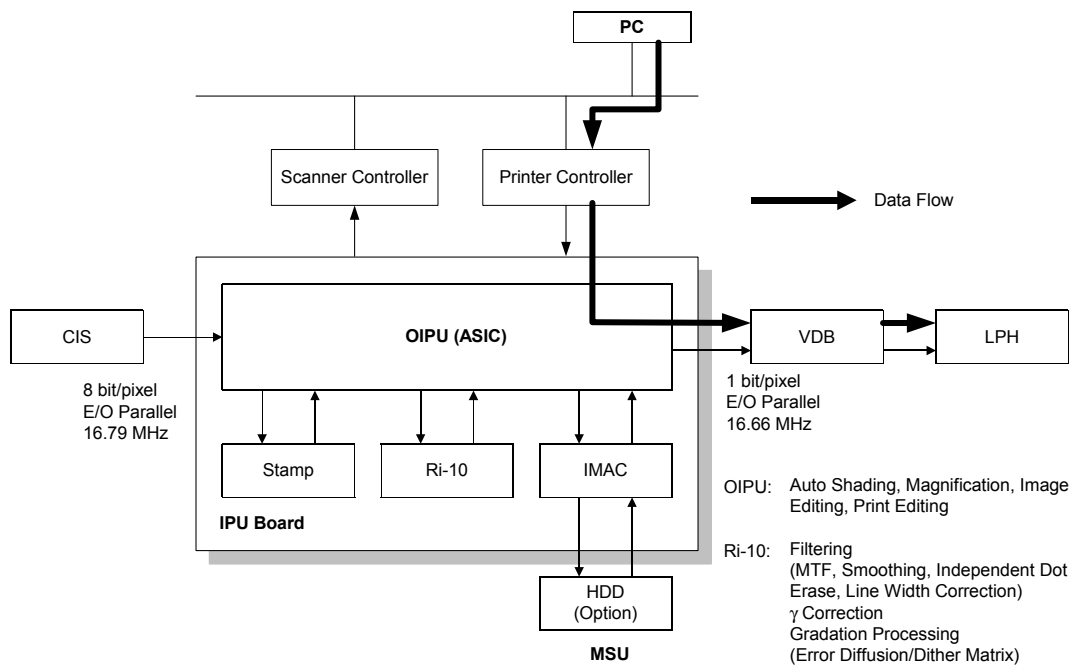
Trouble-shooting

4.6.5 DATA FLOW IN PRINTING MODE (LONG)
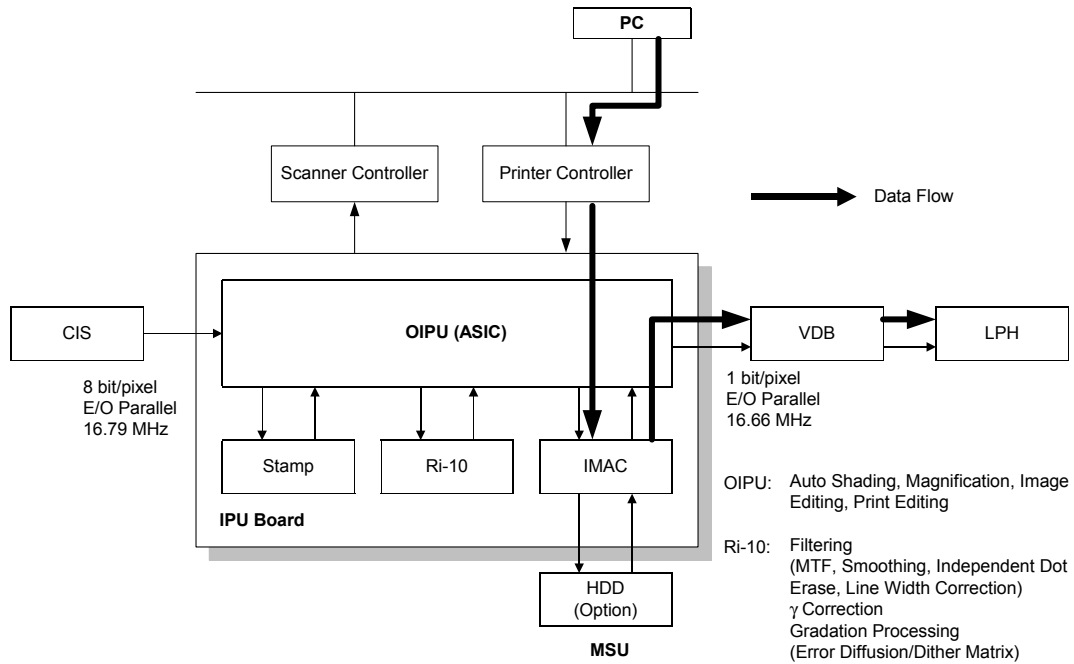
4.6.6 DATA FLOW IN TEST PATTERN PRINTING
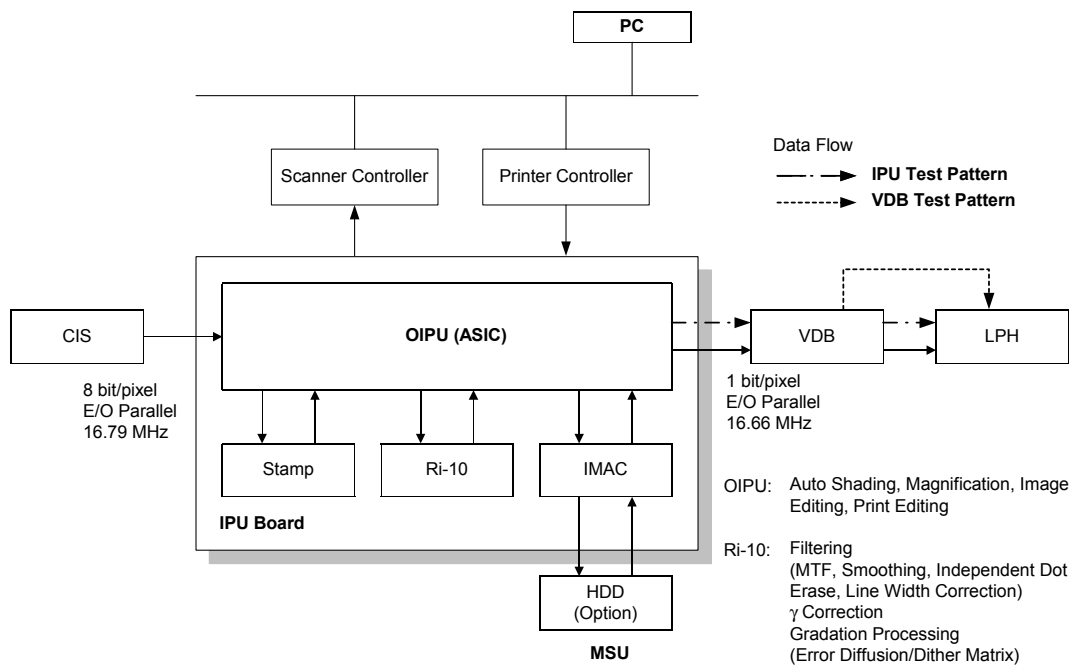
4.6.7 IMAGE PROBLEM TROUBLESHOOTING

4.6.8 FLOW CHART

```
                    ┌─────────────┐
                   ╱   Image       ╲
                  ╱    Problem       ╲
                   ╲                ╱
                    └──────┬──────┘
                           │
                           ▼
         ◇ VDB Test      NG   ◇ Problem image   YES   ┌──────────────┐
         ◇ pattern ─────────▶ ◇ area 1/3 unit. ──────▶│ LPH Defective │
         ◇ output ◇            ◇              ◇        └──────────────┘
            │                      │ NO                      ▲
            │ OK                   ▼                         │
            │              ┌──────────────┐                 │ NG
            │              │ VDB Defective │─────────────────┘
            ▼              └──────────────┘
         ◇ IPU Test      NG   ┌──────────────────┐
         ◇ pattern ─────────▶ │ IPU Defective or │
         ◇ output ◇           │ Harness defective│
            │                 │ between the IPU  │
            │ OK              │ and the VDB.     │
            │                 └──────────────────┘
            ▼
         ◇ SIB Test      NG   ┌──────────────────┐
         ◇ Pattern ─────────▶ │ SIB defective or │
         ◇ Output ◇           │ harness between  │
            │                 │ IPU and SIB      │
            │ OK              │ defective        │
            │                 └──────────────────┘
            ▼
      ┌──────────────┐
      │ SIB defective │
      │ CIS defective │
      └──────────────┘
```
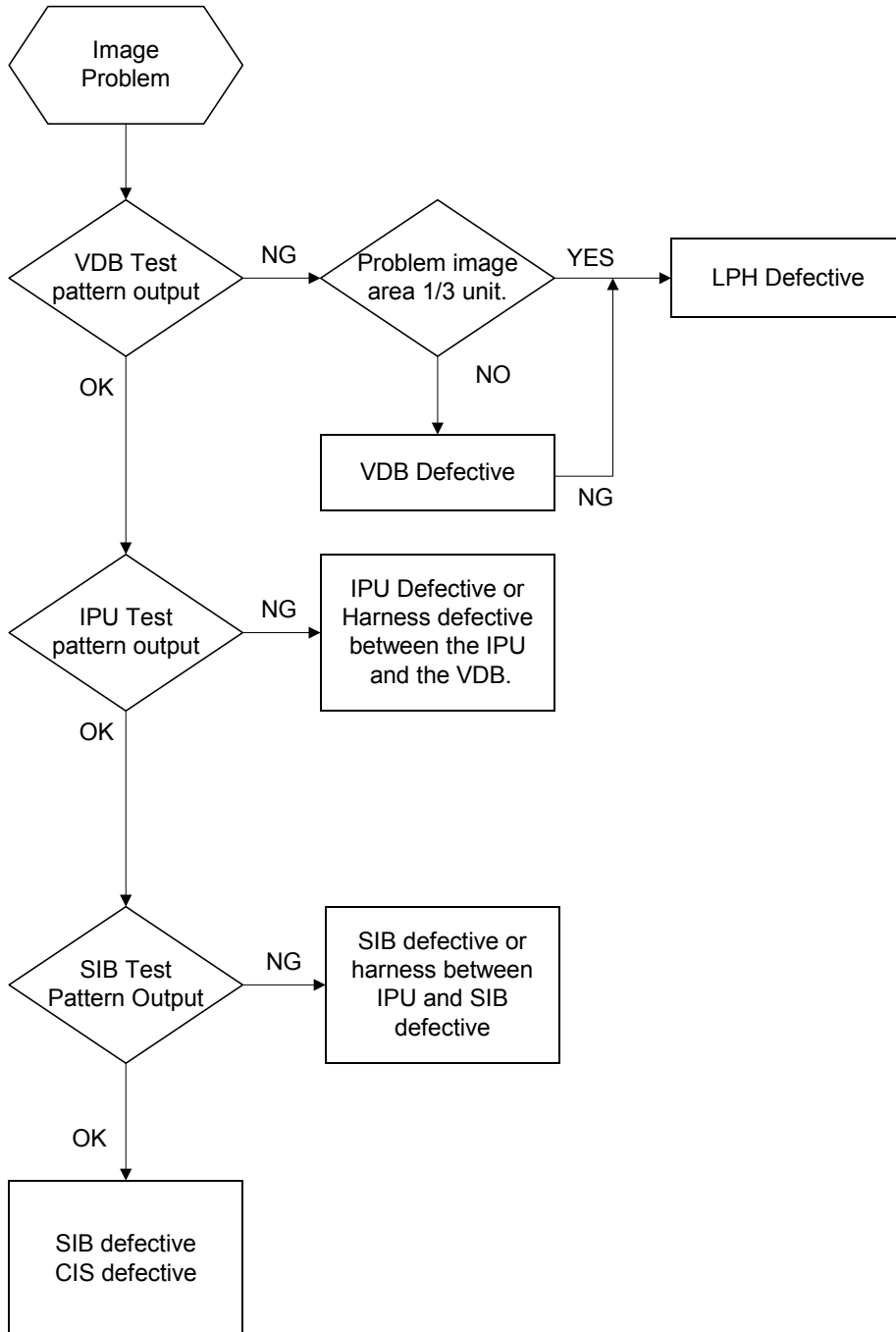
NOTE: For the VDB/IPU test patterns, use SP2942.

4.6.9 SCANNING

1. No image (blank copy/print, or no image with only vertical black lines on the output)

Possible causes:

    1) Connection problem between CIS and IPU.
    2) CIS defective
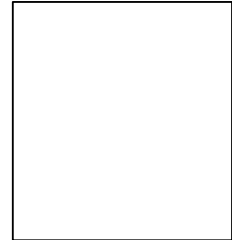
2. No image (solid black copy/print, or no image with only vertical white lines on the output)

Possible causes:

    1) Connection problem between CIS and IPU.
    2) CIS defective

3. Light image

Possible causes:

    1) Low CIS output
    2) IPU board defective
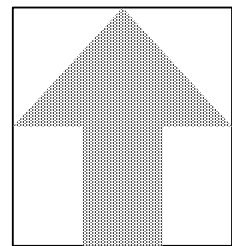
4. Vertical black lines

Possible causes:

    1) Dirty exposure glass
    2) CIS defective
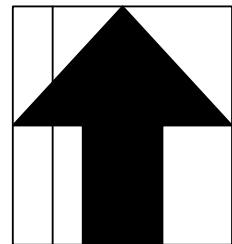
5. Vertical white lines

Possible causes:

    1) Dirty exposure glass
    2) Dirt or scratches on the white plate above the CIS
    3) CIS defective
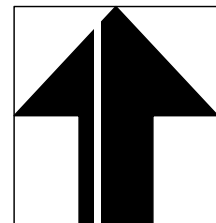
6. Black or white bands with no image-width 1/8 A0 (E) size

Possible causes:

    1) Connection problem between CIS and IPU
    2) CIS output error
    3) IPU board adjustment error
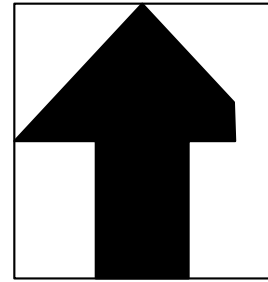
7. White lines every 1mm pitch in halftone areas

Possible causes:

    CIS defective
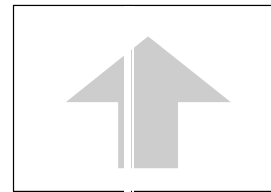
8. Bands/lines every 8mm pitch in halftone areas

Possible causes:

    LPH defective
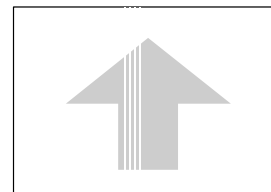
Trouble-shooting

4.6.10 PRINTING

1. No Image (blank copy/print)

Possible causes:

    1) VDB board defective
    2) IPU board defective
    3) LPH (LED head) defective
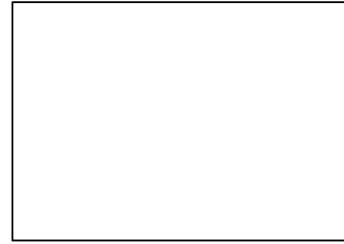
2. Band with no image-width 1/3 of image

Possible causes:

    1) Connection problem between VDB and LPH
    2) LPH head defective
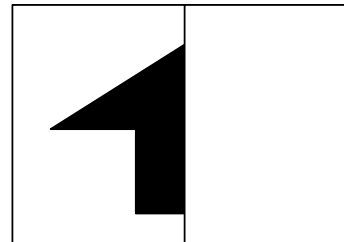
3. Alternating black bands of 65 mm/130 mm

Possible cause:

$\Longrightarrow$ IPU defective
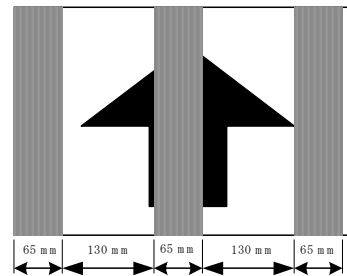
4.6.11 BOARD LEDS

This section shows the functions of the LEDs on the most important boards. The tables show the LEDs on the IPU, MCU, VDB, SIB, and PSU.
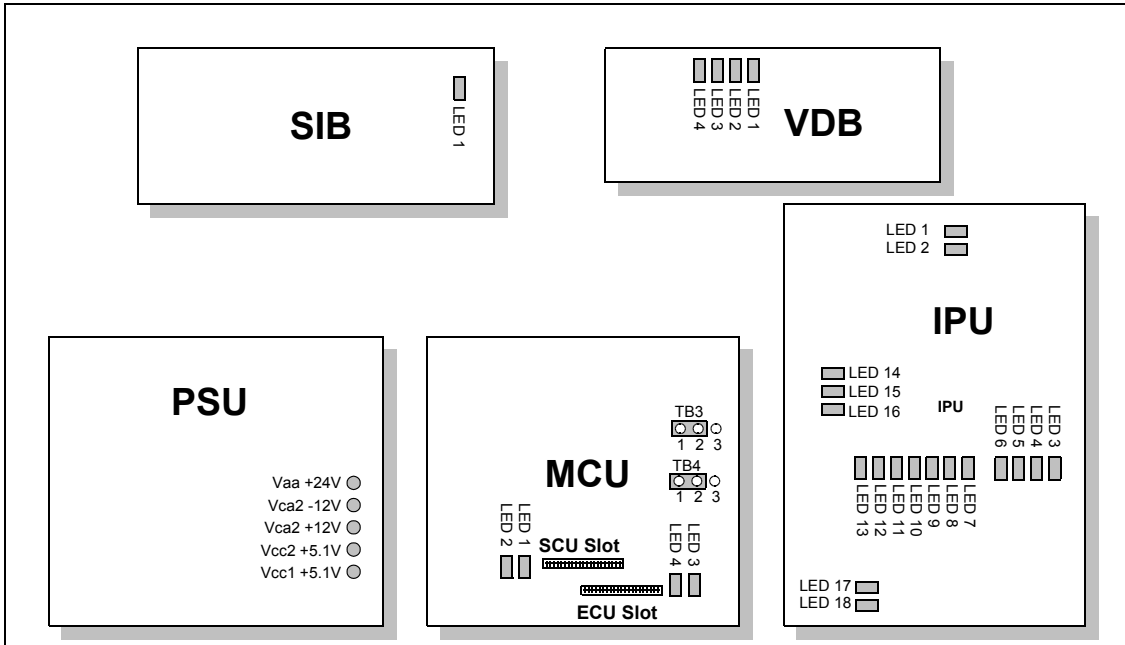
(Copier Back)

This illustration shows the LEDs from the rear of the copier.

- To see the LEDs near the SCU and ECU slots, you must remove the rear cover of the copier.
- To update the copier firmware, the memory card that holds the ECU and SCU programs is connected to the ECU slot and the SCU slot.
- Jumper TB4 is moved from 1-2 to 2-3 to do the NVRAM upload and download procedure with SP5824 and SP5825.

IMAGE DATA PROCESSING FLOW CHART

IPU LEDs

No.	Color	Meaning
LED 1	GREEN	Not used.
LED 2	GREEN	Flashes while the HDC (Hard Disk Controller) operates.
LED 3	GREEN	Flashes when an LSYNC signal (VORES) comes from the VDIP (ASIC).
LED 4	GREEN	Flashes when an LGATE signal (ACC01) comes from the VDIP (ASIC).
LED 5	GREEN	Lights when an FGATE signal comes from the VDIP (ASIC).
LED 6	GREEN	Lights when an XBFGATE signal comes from the VDIP (ASIC). (This is the FGATE signal output to the MCU.)
LED 7	GREEN	Lights when the input data signal (LSB) of the printer application is "1".
LED 8	ORANGE	Lights when the even-numbered data to the scanner application (MSB) is "0".
LED 9	GREEN	Lights when the odd-numbered data to the scanner application (MSB) is "0".
LED 10	GREEN	Lights when the even-numbered data (MSB) from the scanner (SIB) is "0".
LED 11	ORANGE	Lights when the odd-numbered data to the printer (VDB) is "0".
LED 12	ORANGE	Lights when the even-numbered data to the printer (VDB) is "0".
LED 13	GREEN	Lights when the odd-numbered data (MSB) from the scanner (SIB) is "0".
LED 14	GREEN	Flashes when the Ri-10-1 module on the IPU operates. (During image processing, this LED goes off and on, and starts to flash again when image processing is completed.)
LED 15	GREEN	Flashes when the Ri-10-2 module on the IPU operates. (During image processing, this LED goes off and on, and starts to flash again when image processing is completed.)
LED 16	GREEN	Flashes when the Ri-10-3 module on the IPU operates. (During image processing, this LED goes off and on, and starts to flash again when image processing is completed.)
LED 17	GREEN	Lights when an FGATE signal from the scanner (SIB) is input.
LED 18	GREEN	Lights when an FGATE signal is output to the printer (VDB).

MCU LEDs

No.	Color	Meaning
LED 1	GREEN	Flashes quickly while data is downloaded from the IC flash memory card. Lights and stays on during normal operation.
LED 2	GREEN	Lights and stays on while SCU data is downloaded from the IC flash memory card. After the download is finished, goes off and stays off during normal operation.
LED 3	ORANGE	Flashes quickly while data is downloaded from the IC flash memory card. Lights and stays on during normal operation.
LED 4	ORANGE	Lights and stays on while ECU data is downloaded from the IC flash memory card. After the download is finished, goes off and stays off during normal operation.

TB3: Switching the CSS Circuit

Pin No.	Definition	Initial	Comment
1-2 Pin	Terminal (120Ω) Enabled	O	Circuit connection, machine independent or terminated.
2-3 Pin	Terminal (120Ω) Disabled	X	Circuit connection, main machine relay.

TB4: IC Card Setting

Pin No.	Definition	Initial	Comment
1-2 Pin	SWP Enabled	O	This is the normal operation setting.
2-3 Pin	SWP Disabled	X	Lets you put an IC card in the SCU slot so you can upload and download NVRAM data with SP5824 and SP5825.

VDB LEDs

No.	Color	Meaning
LED 1	GREEN	Lights for LPH2 print data (1-bit) from the VDIP (ASIC).
LED 2	GREEN	Flashes at power on while a test signal confirms that the VDIP control operation is normal.
LED 3	GREEN	Lights when the RFGATE signal is created by the VDIP (ASIC) during image exposure.
LED 4	GREEN	Lights while the VDIP (ASIC) calibrates the amount of LPH light.

SIB LEDs

No.	Color	Meaning
LED 1	ORANGE	Lights at power on while a test signal confirms that CPLD control operation is normal.

Trouble-shooting

IMAGE DATA PROCESSING FLOW CHART

PSU LEDs

No.	Color	Meaning	
Vaa +24 V	GREEN	ON	Normal
		OFF	• The machine has entered the energy save mode (Energy Star). • PSU defective, or the +24 V system has shorted or is defective.
Vca2 –12 V	GREEN	ON	Normal
		OFF	• The machine has entered the energy save mode (Energy Star). • PSU defective, or the –12 V system has shorted or is defective.
Vca2 +12 V	GREEN	ON	Normal
		OFF	• The machine has entered the energy save mode (Energy Star). • PSU defective, or the +12 V system (HDD) has shorted or is defective.
Vcc +5.1 V	GREEN	ON	Normal
		OFF	• The machine has entered the energy save mode (Energy Star). • PSU defective, or the +5.1 system (Vcc2) has shorted or is defective.
Vcc1 +5.1 V	GREEN	ON	Normal. Also remains on in auto off mode.
		OFF	• PSU defective, or the +5.1 system (Vcc1) has shorted or is defective.

SERVICE TABLES

5. SERVICE TABLES

5.1 USING THE SP MODE

5.1.1 DIRECT ENTRY

Normal Direct Entry

1. Go into the SP mode.
   - Push ⬚.
   - Push ①⓪⑦.
   - Push and hold ℃/⊘ for 3 seconds.

   The initial SP mode screen is shown.

```
┌──────────────────────────────────────┐
│ ▓ SP mode          Select number ▇   │
│ ────────────────────────────────────  │
│ 1 Copy                                │
│ X.XX B125XXXXO/B125XXXXO  ┌────────┐  │
│                           │  Exit  │  │
│                           └────────┘  │
└──────────────────────────────────────┘
```

2. Push ① to select the Copy SP group.

```
┌──────────────────────────────────────┐
│ [Service]              SP-xxxx-xxx    │
│ ────────────────────────────────────  │
│ SP-Mode Class 1 No. Select            │
│ Class No.    1<Feed>                  │
│ ┌────────┐┌────────┐┌──────┐┌──────┐  │
│ │PrevMenu││NextMenu││ Set  ││ Exit │  │
│ └────────┘└────────┘└──────┘└──────┘  │
└──────────────────────────────────────┘
```
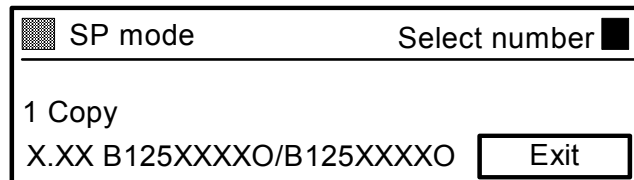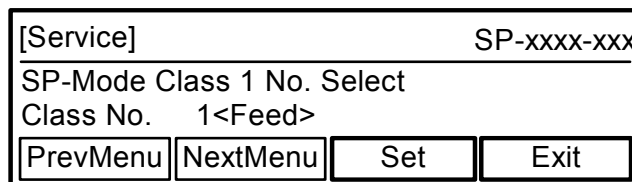
3. Input the full number of the SP code. Then push ⌗.

   When you input the number:
   - Do not input a hyphen (-) between the first 4 digits and the last 3 digits.
   - If the 2nd half of the SP code is only 1 or 2 digits, input the zeros that are in front. For example, if the 2nd number is 1 or 12, push ⓪⓪① or ⓪①②.
   - If you input only the first 4 digits of an SP that has some sub levels, the first SP code (001) will be shown. Push the key below "PrevMenu" or "NextMenu" to show the SP. Then push the key below "Set" or push ⌗.

Service Tables

4. Set the adjustment value.
   - If a minus sign (-) is necessary, push Ⓒ⁄⁕ to change the +/- sign.
   - If a decimal point is necessary, do not push the decimal point button. For example, to input "-1.3", push Ⓒ⁄⁕ for the minus sign, then push ①③.
   - If you make an error, push Ⓒ⁄⊘ to reset the setting, then try again. You cannot correct it with a new entry.

5. Push the key below "Set" on the LCD, or push ⌗ to enable the setting you have just input.

6. To go out of SP mode, push the key on the operation panel below "Exit" one or more times until you see the initial copy screen.

7. Switch the main power switch off. Then switch it on again.
   NOTE: You must switch the main power switch off then on again to enable the SP codes that you have just input.

Rapid Direct Entry

1. Refer to the "Service Tables" in this section to find the SP code.

2. Go into the SP mode.
   - Push ⊠.
   - Push ①⓪⑦.
   - Push and hold Ⓒ⁄⊘ for 3 seconds.

3. Input the group number. Then input the full number to go directly to the SP code screen. It is not necessary to stop until the screens show.

   Examples

① (Copy) ②⓪⓪①⓪⓪②	Shows the setting screen for SP2001 002.
① (Copy) ②⓪⓪①	Shows the setting screen for the first level below SP2001 (001).
	To see the level before or after, push "PrevMenu" or "NextMenu".
	With SP2001-xxx on the display, input the full number again to go directly to 2001 002.

5.2 SOFTWARE UPGRADE

The MCU (Main Control Unit) board flash-memory contains the software for this machine. To upgrade the software, one IC card is necessary. This card contains the SCU and ECU firmware.

To copy the software into the flash memory on the MCU board, put the cards in the slots as shown in the procedure.

Important:

- Always switch the main power switch off before you connect or remove an IC card.
- Keep the main switch on during software installation.
- Make sure to prevent damage to IC cards from heat, humid air, and sunlight.
- Use IC cards carefully to prevent damage.
- Do not put an IC card in each slot at the same time.

5.2.1 UPGRADING FIRMWARE

1. Switch the main power switch off.

2. Remove the rear cover, the interface cover (if it is installed), and the MCU/IPU board shield plate. For how to do this, refer to "3. Replacement and Adjustment".
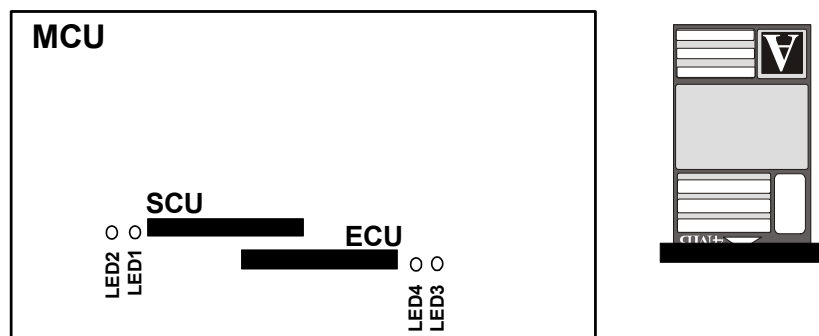
3. Put the IC card in the ECU slot. Side "A" must face out and be inverted.

4. Switch the main power switch on. Look at LED4 and LED3 on the right end of the ECU slot.
   - "Please wait" comes on the LCD of the operation panel.
   - LED4 lights orange. If this LED does not light, stop the machine power, make sure that the IC card is connected fully, then switch the main power switch on.
   - LED3 flashes orange quickly.

5. Wait for approximately 3 minutes. When LED4 goes off and LED3 starts to flash orange slowly at two-flash intervals, the ECU upgrade is completed.

6. Switch the main power switch off.

7. Remove the IC card from the ECU slot.

8. With its A side to the front, put the IC card in the SCU slot [C].

9. Switch the main power switch on. Look at LED2 and LED1 on the left end [D] of the SCU slot.

10. Wait for approximately 4 minutes.
    - LED2 lights green.
    - LED1 flashes green quickly. When LED2 goes off and LED1 starts to flash green slowly at two-flash intervals, the SCU upgrade is finished.

11. Switch the main power switch off.

12. Remove the IC card from the SCU slot. This completes the firmware update procedure.

13. Attach the rear cover and the interface board cover.

14. Start the main machine power and continue normal operation.

If the LEDs did not change to show the end of the procedure, then the upgrade did not end correctly. Switch the main power switch off and do the procedure again.

5.3 INITIAL SETTINGS

5.3.1 USER TOOLS

System Settings

Push the "User Tools" key to go into the user tools mode. The initial user tool mode screen is shown.

```
┌─────────────────────────────────────┐
│ ▓ User Tools        Specify No. ■   │
│─────────────────────────────────────│
│ 1. System Settings   2. Copier Features │
│                                     │
│                         ┌──────────┐│
│                         │  Exit    ││
│                         └──────────┘│
└─────────────────────────────────────┘
```
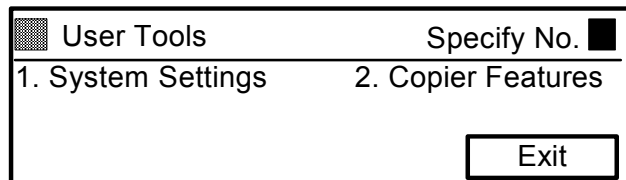
• Push ① for "System Settings"

```
┌─────────────────────────────────────┐
│ ▓ System Settings    Specify No. ■  │
│─────────────────────────────────────│
│ 1. General Features  2. Timer Settings │
│ 3. Key Op. Tools                    │
│                       ┌───────────┐ │
│                       │ PrevMenu  │ │
│                       └───────────┘ │
└─────────────────────────────────────┘
```
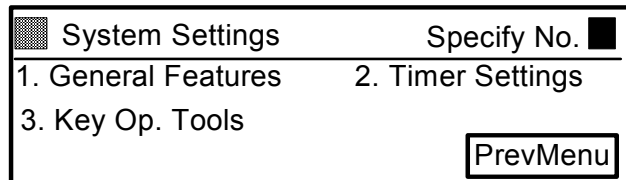
• Push the applicable number on the 10-key pad to open the menus for ① General Features, ② Timer Settings, or ③ Key Operator Tools.
• To open submenus for two-digit numbers with a zero at the start, you must input the two numbers. If a user tool has a number "01" or "02" for example, you must push ⓪① or ⓪②.
• Only 4 items can be shown on the LCD. Push "Next" to see the next 4 items.
• Push "Prev" to show the previous items.
• Push "PrevMenu" to go back to the initial user tools screen.
• To go back to the initial copier display, push the "User Tools" key. (You can also push the key below "Exit" on the LCD to go out from the user tools.)

Service Tables

INITIAL SETTINGS

In the tables below:

- The "Paper Roll 1" and "Paper Roll 2" selections are shown only after installation of the optional roll feeder.
- "Cut Paper Tray" is shown only after installation of the optional paper cassette in the roll feeder.

1. General Features

	Item			Default Setting
01	Adj. Cut Length			0 mm (0 in.)
02	Fusing Adjustment			Plain: 3 (center notch)
				Translucent: 2
				Film: 3 (center notch)
				Note: Please refer to the "Fusing Mode Selection Tables" below.
03	Org. Size Detect			A Series/Architecture
04	Tray Paper Size			
	Metric		**Inch**	
	Bypass Tray: Under 420 mm Width		Bypass Tray: Under 17" Width	
	Paper Roll 1: A Series 841 mm		Paper Roll 1: Engineering 34"	
	Paper Roll 2: A Series 420 mm		Paper Roll 2: Engineering 18"	
	Cut Paper Tray: A Series A4 SEF		Cut Paper Tray: 12" x 18" SEF	
05	Tray Paper Type			Bypass Tray: Plain
				Paper Roll 1: Plain
				Paper Roll 2: Plain
				Cut Paper Tray: Plain
06	Orig. Edge Hold			Off
07	Output Tray			Lower
08	Orig. Feed Delay 1			1 sec.
09	Orig. Feed Delay 2			On: 1 sec.
NA	**EU**			
	10	Auto Roll Switch		0 (Disabled)
10	11	Fine Ratio: Copier		0.0%
11	12	Panel Tone		On
12	13	Warm Up Notice		On
13	14	Copy Count Disp.		Up
14	15	Feed Start Method		Auto
15	16	Display Contrast		Center
16	17	Paper Volume		Paper Roll 1: 100%
				Paper Roll 2: 100%
17	18	Adj. Print Position		Paper Roll 1: 0.0 mm
				Paper Roll 2: 0.0 mm
				Cut Paper: 0.0 mm
18	19	Adj. Scan Position		0
19		Original Size		11"
20	20	Print Image Prior.		Thin Lines

Fusing Mode Selection Tables

With this user tool, the user must set the type of paper that is used for the job.

User Tools ⬦→ 1. System Settings→ 1. General Features→ 02 Fusing Adjustment

NOTE: **Bold** numbers in the tables below show the default settings (standard).

Fusing Mode Selection Table: Europe/Asia

Paper Type	Mode				
	1	2	3	4	5
Plain	110 g/m^2	90 g/m^2	**70 g/m^2**	60 g/m^2	50 g/m^2
Translucent	70~90 g/m^2	**70~80 g/m^2**	70~80 g/m^2	50~70 g/m^2	50~60 g/m^2
Film	**0.07 ~0.095 mm**				

Fusing Mode Selection Table: NA

Paper Type	Mode				
	1	2	3	4	5
Plain	29.3 lb.	23.9 lb.	**18.6 lb.**	15.9 lb.	13.3 lb.
Translucent	18.6~29.3 lb.	**18.6~21.3 lb.**	18.6~21.3 lb.	13.3~18.6 lb.	13.3~15.9 lb.
Film	**2.8~3.7 mil**				

NOTE: If Translucent paper wrinkles when using Mode 2, try Mode 1.

2 Timer Settings

In the table below:

- "Energy Saver" must not be adjusted unless the customer agrees.
- The customer engineer must check and adjust the shaded items when the machine is installed.

Item		Default Setting
01	Auto Off Timer [1]	14 min.
02	Energy Saver (Lower Power Mode)	7 min.
03	Panel Off Timer	On 60 sec.
04	System Auto Reset	On 60 sec.
05	Date	None
06	Time	None

3 Key Operator Tools

Item		Default Setting
3 Key Operator Tools		
01	User Code Manage.	All Off
02	Key Operator Code	Off
03	AOF (Always On)	On
04	Optional HDD	Off
05	Tray Prob Setting	Do not use Bypass

[1] Adjusts auto off for Energy Star and must not be changed unless the customer agrees.

Copier Features

- Push the "User Tools" key to go into the user tools mode. The initial user tool mode screen is shown.

```
┌─────────────────────────────────────────┐
│ ▓ User Tools              Specify No. ■  │
│ ─────────────────────────────────────── │
│ 1. System Settings    2. Copier Features │
│                                          │
│                          ┌──────────┐    │
│                          │   Exit   │    │
│                          └──────────┘    │
└─────────────────────────────────────────┘
```

- Push ② for "Copier Features"

```
┌─────────────────────────────────────────┐
│ ▓ Copier Features         Specify No. ■  │
│ ─────────────────────────────────────── │
│ 1. General Features   2. Reproduction Ratio │
│ 3. Edit               4. Key Op. Tools   │
│                          ┌──────────┐    │
│                          │ PrevMenu │    │
│                          └──────────┘    │
└─────────────────────────────────────────┘
```

- Push the applicable key on the 10-key pad to use an item in the menu.

1. General Features

Item		Default Setting	
01	Change Initial Mode	Standard	
02	Copier Auto Reset Timer	60 sec.	
03	Original Priority	Text	
04	Auto Density Priority	On	
05	Adjust Scan Density	4	
06	Auto Paper Select Priority	On	
07	Paper Tray Priority	Paper Roll 1	
08	Copy Start Method	Auto	
09	Original Size Detect	Auto	
10	Max. Number of Sets	20 sheets	
11	Noise Reduction	Text:	Off
		Text/Photo:	Off
		Photo:	Off
		Drawing:	Off
		Pale:	Off
		Generation Copy:	Off
		Background Lines:	Off
		Sharpen Text:	Off
12	Original Mode Quality	Text:	Normal
		Text/Photo:	Normal
		Photo:	Normal
		Drawing:	Normal
		Pale:	Normal
		Generation Copy:	Normal
		Background Lines:	Normal
12	Original Mode Quality	Sharpen Text:	Normal
13	Original Mode Density	Text:	Normal
		Text/Photo:	Normal
		Photo:	Normal
		Drawing:	Normal
		Pale:	Normal
		Generation Copy:	Normal
		Background Lines:	Normal
		Sharpen Text:	Normal
14	Copy Mode in Sort	Copy After Scan	
15	Sample Copy Pattern	0 mm	
16	Partial Copy Size	Start Position: 0 mm Copy Size: 280 mm	
17	Count Display	Original	
18	Rotate Copy in APS	On	

Service Tables

2. Reproduction Ratio

	Item	Default Setting
01	User Reduce/Enlarge Ratio: 1-3	100%
02	Preset Reduce/Enlarge Priority	Metric Version: 100% Inch Version: (Engineering): 100% Inch Version: (Architecture): 100%
03	User Auto Reduce/Enlarge	Metric Version: None (1-to-1) Inch Version (Engineering): None (1-to-1) Inch Version (Architecture): None (1-to-1)
04	User Auto Reduce/Enlarge Original	Vertical

3. Edit

	Item	Default Setting
01	Margin Adjustment	Metric Version: Top +20 mm, Bottom +20 Inch Version: Top +0.8", Bottom +0.8"
02	Shift Image	Metric Version: Up 20 mm, Right 20 mm Inch Version: Up 0.8", Right 0.8"
03	Erase Border Width	Metric Version: 10 mm Inch Version: 0.4"
04	Repeat Separation Line	Metric Version: 10 mm Inch Version: 0.4"
05	Double Copies Separation Line	2 x Copies Separation Line
06	Program/Delete Overlay Format	Prog. Overlay Function

4. Stamp*

	Item		Default Setting
01	Format Priority		MM/DD/YYYY
02	Stamp Settings		
	01	Orientation	Normal
	02	Position	(upper left)
	03	Size	1X

⟹ * The "Stamp" feature will not display until the stamp board has been installed and the stamp feature has been switched on with SP5137 (Stamp Function On/Off).

5. Key Operator Tools

	Item	Default Setting
01	Program/Change/Delete User Code	---
02	Display/Clear/Print Counter Per Code	---

5.4   PRINTING TEST PATTERNS

5.4.1 IMAGE PROCESSING TEST PATTERNS

Print an IPU Test Pattern if you have problems with image processing (poor halftones, line widths, etc.)

1. Open the roll feeder drawer and manually cut off a sheet 914 mm (W) x 297 mm (L) (36" x 11") from a roll. (Turn the manual feed knob to feed the paper then push the cutter from side to side to cut.)

2. Close the roll feeder drawer.

3. Go into the SP mode. (☞5.1)

4. Input 2941 001 (IPU Test Pattern – Pattern), then push ⌗.

5. Input a number from the menu in the table below, and then push ⌗.

6. Push the Interrupt (⇥) key to show the main screen.
    NOTE: If it is necessary to adjust print settings, use the Interrupt (⇥) key to move between the initial screen and the SP mode screen.

7. On the operation panel, set one of the rolls as the paper feed station.

8. Put the blank sheet of paper on the original feed tray and feed it into the original feed unit. The pattern prints.

9. Push the Interrupt (⇥) key to go back to the SP mode.

Item	Pattern
0	No pattern
1	Gray scale 1: 128 dots, 16 grades, Vertical gray scale
2	Gray scale 2: 16 dots, 256 grades, Vertical gray scale
3	Gray scale 3: 256 lines, 16 grades, Horizontal gray scale
4	Gray scale 4: 16 lines, 256 grades, Horizontal gray scale
5	Density patch
6	Vertical line 256 dots
7	Vertical line 1 dot
8	Vertical line 2 dots
9	Horizontal line 1 dot
10	Horizontal line 2 dots
11	Cross stripe 1 dot
12	Cross stripe 2 dots
13	Slanting cross stripe 1 dot (128-dot interval)
14	Slanting cross stripe 1 dot - even/odd reversal (128-dot interval)
15	Slanting cross stripe 2 dots (128-dot interval)
16	Slanting cross stripe 2 dots - even/odd reversal (128-dot interval)
17	Slanting cross stripe 1 dot (64-dot interval)
18	Slanting cross stripe 1 dot - even/odd reversal (64-dot interval)
19	Rope pattern 1 dot
20	Rope pattern 1 dot main scan even/odd reversal
21	Rope pattern 2 dots

Service Tables

PRINTING TEST PATTERNS

Item	Pattern
22	Rope pattern 1 dot main scan even/odd reversal
23	Rope pattern
24	Frequency characteristic - Vertical
25	Frequency characteristic - Horizontal
26	Frequency characteristic - Vertical/Horizontal
27	Gray scale 5 - Vertical/Horizontal
28	Gray scale 6 - Vertical/Horizontal
29	Black
30	White
32	Gray scale 7 - Vertical/Horizontal
33	Independent 1 dot (16-dot interval)
34	Independent 1 dot (32-dot interval)
35	Independent 1 dot (64-dot interval)
36	Independent 1 dot (128-dot interval)
37	Independent 1 dot (256-dot interval)
38	Independent 2 dots (16-dot interval)
39	Independent 2 dots (32-dot interval)
40	Independent 2 dots (64-dot interval)
41	Independent 2 dots (128-dot interval)
42	Independent 2 dots (256-dot interval)
43	Independent 1 dot (4-dot interval)
44	Independent 1 dot (8-dot interval)
45	Independent 2 dots (8-dot interval)

Patterns 51~58 are used to print the Ri-10 Patterns

51	Pattern 1: 8-step grayscale
52	Pattern 2: 1-dot grid
53	Pattern 3: 2-dot grid
54	Pattern 4: 1-dot pattern (trellis)
55	Patten 5: 2-dot pattern (trellis)
56	Pattern 6: 1-dot independent dot
57	Pattern 7: 2-dot independent dot
58	Pattern 8: 16-bit counter

5.4.2 IMAGE DATA PATH TEST PATTERNS

Print an IPU test pattern to check that the CIS and IPU operate correctly. Print a VDB test pattern to check that the LPH and VDB operate correctly.

1. Open the roll feeder drawer and manually cut off a sheet 914 mm (W) x 297 mm (L) (36" x 11") from a roll. (Turn the manual feed knob to feed the paper then push the cutter from side to side to cut.)

2. Close the roll feeder drawer.

3. Go into the SP mode. (☛5.1)

4. Input 2942 001 (Print Test Pattern - Mode) and push ⌗. Then input either IPU or VDB.

5. Input 2942 003 (Print Test Pattern - Pattern) and push ⌗.

6. Input a number from the menu in the table below, and then push ⌗.

7. Push the Interrupt (⇥) key to show the main screen.
   NOTE: If it is necessary to adjust print settings, use the Interrupt (⇥) key to move between the initial screen and the SP mode screen.

8. On the operation panel, set one of the rolls as the paper feed station.

9. Put the blank sheet of paper on the original feed tray and feed it into the original feed unit. The pattern prints.

10. Push the Interrupt (⇥) key to go back to the SP mode.

Item	Pattern	Remarks
0	No pattern	
1	Vertical line 2 dots (5.4-mm pitch)	
2	Horizontal line 2 dots (5.4-mm pitch)	To check the jitter deviation of the printer engine
3	Vertical line 2 dots	
4	Basic frame (AOT)	
5	Grid pattern	To check the magnification deviation in the printer engine

NOTE: 1) Do not push other keys until the print is completed.
   2) The output has the same width as the original.

Service Tables

5.5 INPUT CHECK

You can check the sensors and switches with SP5803.

- Go into one of the modes in the tables.
- In each mode, the display shows an 8-digit number. The digits are given numbers 7 to 0 from left to right.
- Each bit shows the on/off condition of a sensor or switch with a 0 or 1. For example:

Display	**1 1 0 0 0 0 1 0**
Bit	7 6 5 4 3 2 1 0

[1] P1E	Input	Status
bit-7	Toner overflow sensor	0: End, 1: Not end
bit-6	Paper registration sensor	0: Paper present, 1: No paper
bit-5	Not used	---
bit-4	Original exit sensor	0: Home position, 1: Not home pos.
bit-3	RF Set sensor	0: Closed, 1: Open
bit-2	Not used	---
bit-1	Paper set sensor	0: Paper present, 1: No paper
bit-0	Fusing exit sensor	0: Paper present, 1: No paper

[2] P1F	Input	Status
bit-7	Exit cover switch (24 V)	0: Closed, 1: Open
bit-6	Toner hopper cover switch (24 V)	0: Closed, 1: Open
bit-5	Upper unit switch (24 V)	0: Closed, 1: Open
bit-4	Upper unit sensor (5 V)	1: Closed, 0: Open
bit-3	Fusing motor	1: Locked, 0: Operating
bit-2	Drum motor	1: Locked, 0: Operating
bit-1	Exit cover sensor	1:Closed, 0: Open
bit-0	Main motor	0: Locked, 1: Operating

[3] P1H	Input	Status
bit-7	Not used	---
bit-6	Not used	---
bit-5	Not used	---
bit-4	Zero cross	0: On, 1: Off
bit-3	Key card set (Japan only)	0: Set, 1: Not set
bit-2	Key counter set (Japan only)	0: Set, 1: Not set
bit-1	Fusing overheat	0: Normal, 1: Overheat
bit-0	Fusing latch overheat	0: Normal, 1: Overheat

[4] P2E	Input	Status
bit-7	Not used	---
bit-6	Not used	---
bit-5	Not used	---
bit-4	Not used	---
bit-3	Not used	---
bit-2	Not used	---
bit-1	Cutter HP switch – Right	0: Home position, 1: Not home pos.
bit-0	Cutter HP switch – Left	0: Home position, 1: Not home pos.

[5] P2F	Input	Status
bit-7	Cassette end sensor	0: Paper present, 1: Paper End
bit-6	Roll end sensor 2	0: Paper present, 1: Paper End
bit-5	Roll end sensor 1	0: Paper present, 1: Paper End
bit-4	Relay sensor	0: Paper present, 1: No paper
bit-3	Roll end sensor 4	1: Paper present, 0: No paper
bit-2	Roll end sensor 3	1: Paper present, 0: No paper
bit-1	Cassette set sensor	1: Closed, 0: Open
bit-0	RF exit sensor	1: Paper present, 0: No paper

[6] P1C	Input	Status
bit-7	Not used	---
bit-6	Not used	---
bit-5	Not used	---
bit-4	Not used	---
bit-3	I/O port SW** content	**DFU**
bit-2	I/O port SW** content	**DFU**
bit-1	I/O port SW** content	**DFU**
bit-0	I/O port SW** content	**DFU**

[7] IRI	Input	Status
These settings are used during machine design to detect the settings of the DIP switches on the MCU (Main Control Unit) board.		

Service Tables

INPUT CHECK

[8] Scanner 1	Input	Status
bit-7	Org. size sensor 30" (914 mm)	1000 0000
bit-6	Org. size A4/A sensor (Org. set sensor)	0100 0000
bit-5	Org. size A3/B sensor	0010 0000
bit-4	Org. size A2/C sensor	0001 0000
bit-3	Org. size A1/D sensor	0000 1000
bit-2	Org. size A0/E sensor	0000 0100
bit-1	Org. registration sensor	0000 0010
bit-0	Org. set sensor (Org. size A4 sensor)	0000 0001

[9] Scanner 2	Input	Status
bit-7	Not used	---
bit-6	Not used	---
bit-5	Not used	---
bit-4	Foot switch (Japan only)	0000 0000
bit-3	Original exit sensor (straight)	0000 1000
bit-2	Scanner open	0000 0100
bit-1	Scanner stop switch	0000 0010
bit-0	Main power switch	0000 0001

For tables "[8] Scanner 1" and "[9] Scanner 2", the "Status" column shows the reading if only one sensor is on. If more than one sensor is on (for example, when there is a wide sheet of paper in the original feeder), more than one of the digits will be set to 1.

5.6 OUTPUT CHECK

You can check the operation of these parts with SP5804.

Item	Parts
1	Roll feed clutch 1
2	Roll feed clutch 2
3	Cassette feed clutch
4	Not used
5	Not used
6	Registration Clutch
7	Paper Junction Gate Sol.
8	Cooling Fan Motor
9	Not used
10	Roll Feed Motor - Forward
11	Roll Feed Motor - Reverse
12	Cassette Feed Motor - Forward
13	Not used
14	Cutter Motor
15	Main Motor
16	Fusing Motor
17	Drum Motor – Forward
18	Drum Motor – Reverse
19	Not used
20	Not used
21	Not used
22	Charge Corona Wire Cleaner Motor
23	**DFU**
24	Toner Supply Clutch
25	Pick-off Pawl Solenoid
26	Used Toner Bottle Motor
27	Not used
28	Not used
29	Not used
30	Quenching Lamp
31	ID Sensor LED (Center)
32	Charge Corona
33	Charge Grid – Image Area
34	Charge Grid – ID Sensor Pattern
35	Charge Corona + Grid – Image Area
36	Development Bias – Image Area
37	Development Bias – ID Sensor Pattern
38	Transfer Corona – Plain Paper: Leading Edge Only
39	Transfer Corona – Plain Paper: Other Than Leading Edge
40	Separation Corona – Plain Paper: Leading Edge
41	Separation Corona – Plain Paper: Other Than Leading Edge
42	Total Counter
43	Dehumidifier
44	Not used
45	Not used

Service Tables

OUTPUT CHECK

Item	Parts
46	Not used
47	Not used
48	Not used
49	Not used
50	Drum Potential Measuring Mode
51	Not used
52	Not used
53	Scanner Feed Motor – Forward
54	Not used
55	CIS LED

5.7 SP (SERVICE PROGRAM) MODE TABLES

SP Table Key

Notation	What it means
[range/**default** step]	Example: [-9 ~ +9/**+3.0**/0.1 mm step]. Setting can be adjusted in the range ±9, value reset to +3.0 after and NVRAM reset, and the value can be changed in 0.1 mm steps with each key push.
DFU	"Design or Factory Use". Do not change this value. The factory default setting provides optimum performance.
Not Used	These SPs may appear in the menus but these codes are not used and may be disabled. Executing these SPs has no effect.
Japan only	This feature or item is for Japan only. Do not change this value.
RDS (Concord) Only	Refers to the "Remote Diagnostic System" also called "Concord".

SP1-XXX Feed

1001		Leading Edge Registration	
	001	Roll Feed	Adjusts the leading edge registration for printing.
	003	Cut Paper Tray	[-10.0 ~ +10.0/**0.0**/0.1 mm step]
	005	By-pass feed	*To move the image down the page, increase the value.*

1002		Side-to-Side Registration	
	001	Paper Roll 1	Adjusts the side-to-side registration for printing.
	002	Paper Roll 2	[-10.0 ~ +10.0/**0.0**/0.1 mm step]
	003	Cut Paper Tray	• To move the start position to the right, increase the value (+). • To move the start position to the left, decrease the value (–).
	005	By-pass feed	**Note**: If you use paper 914 mm wide, adjust in the range of ±2 mm. If you set the adjustment out of this range, part of the image will be cut off.

1104	Fusing Temperature Control **DFU**
	Sets the type of fusing temperature control. Be sure to switch the main power switch off and on after adjustment. [0~1/**0**,/1] **0: Pressure Roller Temp. Feedback** 1: No Pressure Roller Temp. Feedback

Service Tables

1105	Fusing Temp. Adj.	
	Be sure to switch the main power switch off and on after adjustment.	
001	Copy Ready Temperature	Sets the copy ready fusing temperature. The setting is the difference from the target fusing temperature that is set with SP 1107. **DFU** [-20 ~ +20/**-5**/1°C] Copying can start at this temperature, before the hot roller reaches its target temperature (SP1107).
002	Constant Temperature Control	Sets the fusing temperature for the machine ready condition. **DFU** [120 ~ 210/**165**/1°C step]
003	Low Power Mode	Sets the fusing temperature for low power mode. [80 ~ 165/**105**/1°C step]
005	Fusing Temperature Calibration	Calibrates the scale for the fusing temperature settings. **DFU** [-10 ~ +10/**0**/1°C step]
006	Pressure Temp. Calibration	Calibrates the scale for the pressure temperature control. **DFU** [-10 ~ +10/**0**/1°C step]

1106	Fusing Temperature Display
	Displays the hot roller and pressure roller temperatures. Enter "1106", push ⊕ , then input "2" to display the two temperatures.

1107	Target Temperature of Hot Roller	
	Sets the target fusing temperature of the hot roller. • After you adjust these SPs, you must switch the main power switch off and on. • Mode 1 to 5 refers to the paper thickness set for "Fusing Adjustment" in the User Tools. For more, see page 5-7.	
001	Plain Paper: Mode 1	[120~220/**195**/5°C] **DFU**
002	Plain Paper: Mode 2	[120~220/**185**/5°C] **DFU**
003	Plain Paper: Mode 3	[120~220/**175**/5°C] **DFU**
004	Plain Paper: Mode 4	[120~220/**165**/5°C] **DFU**
005	Plain Paper: Mode 5	[120~220/**175**/5°C] **DFU**
006	Translucent Paper: Mode 1	[120~220/**195**/5°C] **DFU**
007	Translucent Paper: Mode 2	[120~220/**195**/5°C] **DFU**
008	Translucent Paper: Mode 3	[120~220/**195**/5°C] **DFU**
009	Translucent Paper: Mode 4	[120~220/**175**/5°C] **DFU**
010	Translucent Paper: Mode 5	[120~220/**170**/5°C] **DFU**
011	Film: Mode 1	[120~220/**195**/5°C] **DFU**
012	Film: Mode 2	[120~220/**190**/5°C] **DFU**
013	Film: Mode 3	[120~220/**185**/5°C] **DFU**
014	Film: Mode 4	[120~220/**185**/5°C] **DFU**
015	Film: Mode 5	[120~220/**170**/5°C] **DFU**

1108	Target Temperature: Pressure Roller	
	Sets the target fusing temperature of the pressure roller.	
	• These temperatures are used for pressure roller feedback. Pressure roller feedback is not used if SP1104 is set to "1".	
	Notes	
	• Mode 1 to 5 refers to the paper thickness set for "Fusing Adjustment" in the User Tools. For more, see 5.3.1.	
	• After you adjust these SPs, you must switch the main power switch off and on.	
001	Plain Paper: Mode 1	[60~180/**100**/5°C] **DFU**
002	Plain Paper: Mode 2	[60~180/**65**/5°C] **DFU**
003	Plain Paper: Mode 3	[60~180/**60**/5°C] **DFU**
004	Plain Paper: Mode 4	[60~180/**60**/5°C] **DFU**
005	Plain Paper: Mode 5	[60~180/**60**/5°C] **DFU**
006	Translucent Paper: Mode 1	[60~180/**100**/5°C] **DFU**
007	Translucent Paper: Mode 2	[60~180/**65**/5°C] **DFU**
008	Translucent Paper: Mode 3	[60~180/**60**/5°C] **DFU**
009	Translucent Paper: Mode 4	[60~180/**60**/5°C] **DFU**
010	Translucent Paper: Mode 5	[60~180/**60**/5°C] **DFU**
011	Film: Mode 1	[60~180/**60**/5°C] **DFU**
012	Film: Mode 2	[60~180/**60**/5°C] **DFU**
013	Film: Mode 3	[60~180/**60**/5°C] **DFU**
014	Film: Mode 4	[60~180/**60**/5°C] **DFU**
015	Film: Mode 5	[60~180/**60**/5°C] **DFU**

1109	Start Temperature: Pressure Roller	
	To enable "inching", set this SP to 5 or higher.	
	When inching control is on, the fusing motor turns the hot roller and pressure roller freely without copy paper between the rollers. This prevents wrinkling with tracing (translucent) paper and thick paper.	
001	Plain	[0~30/**0**/5°C]
002	Translucent	
003	Film	

Service Tables

1801		Feed Motor Speed Adjustment	
		These SPs adjust the speed of roll feed for the type of paper (adjusts the speed of the roll feeder motor). Use these SPs to prevent print density that is not equal, and scratchy images, in these conditions: • Copying originals with large quantities of black. • Copying originals with a large quantity of black near the trailing edge. • Using the Positive/Negative (image reverse) feature with repeat copying. For more, refer to the "Setting Scale" table below.	
	001	Plain Paper	[-50~+50/**4**/1] **DFU**
	002	Translucent Paper	[-50~+50/**0**/1] **DFU**
	003	Film	[-50~+50/**4**/1] **DFU**

Setting Scale

Setting	Rate	Speed (mm/s)
-50	4.60	62.76
-40	3.68	62.21
-30	2.76	61.66
-20	1.84	61.10
-10	0.92	60.55
0	0	60.00
+10	-0.92	59.45
+20	-1.84	58.90
+30	-2.76	58.34
+40	-3.68	57.79
+50	-4.60	57.24

⟹

1900	Fusing/Drum Gap Adjustment **Not Used**

1911	By-pass Feed Start Timing	Adjusts the time that the customer has to adjust the paper skew manually when by-pass (manual) paper feed is used. [1.0~8.0/**2.0**/0.1 second step]

1912		Feed Motor Speed Correction	
	001	1st Roll	Adjusts the feed motor speed. **DFU**
	002	2nd Roll	[-15 ~ +15/**0**/1%]
	003	Cut Paper	

1914		Drum Motor Speed Adjustment	
		Adjusts the drum motor speed.	
	001	Over 420 mm	[-20~+20/**5**/1] **DFU**
	002	Below 420 mm	[-20~+20/**0**/1] **DFU**

⟹

1916		Fusing Motor Speed Adjustment	
		SP1916 001~013 adjust the basic fusing motor speed and correct the speed for different widths of paper to prevent skew in the paper feed path. The adjustment that the machine applies is the sum of the base speed (1916 001), the width adjustment (1916 010 to 013), and the paper type adjustment (1916 021 to 045).	
	001	Base Speed	[-100~+100/**8**/2] **DFU**
	010	Width > 611 mm	[-100~+100/**0**/2] **DFU**
	011	Width 461~610 mm	[-100~+100/**4**/2] **DFU**
	012	Width 298~460 mm	[-100~+100/**8**/2] **DFU**
	013	Width < 297 mm	[-100~+100/**16**/2] **DFU**
		Notes: • SP1916 021~045 adjust the fusing motor speed for the paper type that is set with the "Fusing Adjustment" User Tool: User Tools→ 1. System Settings→ 1. General Features→ 02 Fusing Adjustment. • "Mode 1~5" below refer to the paper thickness set with the User Tool "02 Fusing Adjustment".	
	021	Plain Paper Mode 1	[-100~+100/**0**/2] **DFU**
	022	Plain Paper Mode 2	
	023	Plain Paper Mode 3	
	024	Plain Paper Mode 4	
	025	Plain Paper Mode 5	[-100~+100/**22**/2] **DFU**
	031	Translucent Mode 1	[-100~+100/**18**/2] **DFU**
	032	Translucent Mode 2	
	033	Translucent Mode 3	
	034	Translucent Mode 4	
	035	Translucent Mode 5	[-100~+100/**28**/2] **DFU**
	041	Film Mode 1	[-100~+100/**20**/2] **DFU**
	042	Film Mode 2	
	043	Film Mode 3	
	044	Film Mode 4	[-100~+100/**36**/2] **DFU**
	045	Film Mode 5	[-100~+100/**16**/2] **DFU**

Service Tables

SP (SERVICE PROGRAM) MODE TABLES

1918	Main/Fusing Motor Setting	
	These two SP modes adjust the rate of the speed reduction between the main motor and the fusing motor. During normal operation, the line speed in the fusing unit is slightly faster than the line speed at registration. This keeps the paper lightly stretched to prevent wrinkling and skewing. But, if the speed of the drum becomes slower, because of a change in the quantity of buckle at the registration roller, the tension on the paper will pull on the drum and turn it more quickly than the main motor. This can cause image distortion at the two LPH joints. To prevent this problem, use this SP to decrease the speed of the fusing motor. This reduces the line speed slightly but keeps the correct paper tension between the fusing unit and registration roller to prevent skewing. **Note**: SP1919 must always be adjusted before SP1918.	
001	Speed Reduction %	Sets the rate of speed reduction between the main motor and fusing motor. **DFU** [0.000~9.999/**0.300**/0.001%]
002	Speed Reduction Timing	Sets the length of paper to feed before the speed reduction rate set with SP1918 001 has an effect. **DFU** [0~5000/**150**/1 mm]

1919	Main Motor Speed Adjustment **DFU**
	Adjusts the speed of the main motor. The settings of SP1918 (Main/Fusing Motor Setting) override this SP setting if SP1918 has been adjusted. SP1919 should always be adjusted before SP1918 is adjusted. [-40~+40/ **-10** /1] After you replace the registration roller, the new roller could have a slightly different diameter (by a maximum of 0.1 mm). If the main motor is too slow for the new registration roller, then the tension on the paper between the fusing unit and registration roller is not sufficient. This can cause wrinkling in the paper path, and this causes white areas, scratchiness, and stripper pawl marks on images. When these problems occur, use this SP to decrease the speed of the main motor. This SP is DFU, but you sometimes must adjust it as explained in section 3.11.1. **Notes**: • For each step (±1) change, the speed is adjusted ±0.075%. • It may be necessary to adjust this SP if the image is not normal after you replace the registration roller.

1920		Cut Length Adjustment	
	111	1st Roll, 297 mm/11" or 12", Plain Paper	Adjusts the 297-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	112	1st Roll, 420 mm/17" or 18", Plain Paper	Adjusts the 420-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	113	1st Roll, 594 mm/22" or 24", Plain Paper	Adjusts the 594-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	114	1st Roll, 841 mm/32" or 34", Plain Paper	Adjusts the 841-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	115	1st Roll, 1189 mm/44" or 48", Plain Paper	Adjusts the 1189-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	116	1st Roll, 2000 mm/78", Plain Paper	Adjusts the 2000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	117	1st Roll, 3600 mm/141", Plain Paper	Adjusts the 3600-mm cut length. [-30.0 ~ +30.0/**0.0**/0.1 mm]
	118	1st Roll, 6000 mm/236", Plain Paper	Adjusts the 6000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	121	1st Roll, 297 mm/11" or 12", Translucent	Adjusts the 297-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	122	1st Roll, 420 mm/17" or 18", Translucent	Adjusts the 420-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	123	1st Roll, 594 mm/22" or 24", Translucent	Adjusts the 594-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	124	1st Roll, 841 mm/32" or 34", Translucent	Adjusts the 841-mm cut length. [-20.0 ~ +20.0/**0.0**/0.1 mm]
	125	1st Roll, 1189 mm/44" or 48", Translucent	Adjusts the 1189-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	126	1st Roll, 2000 mm/78", Translucent	Adjusts the 2000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	127	1st Roll, 3600 mm/141", Translucent	Adjusts the 3600-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	128	1st Roll, 6000 mm/236", Translucent	Adjusts the 6000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	131	1st Roll, 297 mm/11" or 12", Film	Adjusts the 297-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	132	1st Roll, 420 mm/17" or 18", Film	Adjusts the 420-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	133	1st Roll, 594 mm/22" or 24", Film	Adjusts the 594-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	134	1st Roll, 841 mm/32" or 34", Film	Adjusts the 841-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	135	1st Roll, 1189 mm/44" or 48", Film	Adjusts the 1189-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	136	1st Roll, 2000 mm/78", Film	Adjusts the 2000-mm cut length. [-30.0 ~ +30.0/**0.0**/0.1 mm]
	137	1st Roll, 3600 mm/141", Film	Adjusts the 3600-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	138	1st Roll, 6000 mm/236", Film	Adjusts the 6000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	211	2nd Roll, 297 mm/11" or 12", Plain Paper	Adjusts the 297-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	212	2nd Roll, 420 mm/17" or 18", Plain Paper	Adjusts the 420-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]

Service Tables

1920		Cut Length Adjustment	
	213	2nd Roll, 594 mm/22" or 24", Plain Paper	Adjusts the 594-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	214	2nd Roll, 841 mm/32" or 34", Plain Paper	Adjusts the 841-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	215	2nd Roll, 1189 mm/44" or 48", Plain Paper	Adjusts the 1189-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	216	2nd Roll, 2000 mm/78", Plain Paper	Adjusts the 2000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	217	2nd Roll, 3600 mm/141", Plain Paper	Adjusts the 3600-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	218	2nd Roll, 6000 mm/236", Plain Paper	Adjusts the 6000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	221	2nd Roll, 297 mm/11" or 12", Translucent	Adjusts the 297-mm cut length. [-10.0 ~ +10.0/**0.0**/0.1 mm]
	222	2nd Roll, 420 mm/17" or 18", Translucent	Adjusts the 420-mm cut length. [-10.0 ~ +10.0/**0.0**/0.1 mm]
	223	2nd Roll, 594 mm/22" or 24", Translucent	Adjusts the 594-mm cut length. [-10.0 ~ +10.0/**0.0**/0.1 mm]
	224	2nd Roll, 841 mm/32" or 34", Translucent	Adjusts the 841-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	225	2nd Roll, 1189 mm/44" or 48", Translucent	Adjusts the 1189-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	226	2nd Roll, 2000 mm/78", Translucent	Adjusts the 2000-mm cut length. [-30.0 ~ +30.0/**0**/0.1 mm]
	227	2nd Roll, 3600 mm/141", Translucent	Adjusts the 3600-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	228	2nd Roll, 6000 mm/236", Translucent	Adjusts the 6000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	231	2nd Roll, 297 mm/11" or 12", Film	Adjusts the 297-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	232	2nd Roll, 420 mm/17" or 18", Film	Adjusts the 420-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	233	2nd Roll, 594 mm/22" or 24", Film	Adjusts the 594-mm cut length. [-10.0 ~ +10.0/**0**/0.1 mm]
	234	2nd Roll, 841 mm/32" or 34", Film	Adjusts the 841-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	235	2nd Roll, 1189 mm/44" or 48", Film	Adjusts the 1189-mm cut length. [-20.0 ~ +20.0/**0**/0.1 mm]
	236	2nd Roll, 2000 mm/78", Film	Adjusts the 2000-mm cut length. [-30.0 ~ +30.0/**0**/1 mm]
	237	2nd Roll, 3600 mm/141", Film	Adjusts the 3600-mm cut length. [-30.0 ~ +30.0/**0**/0.1 mm]
	238	2nd Roll, 6000 mm/236", Film	Adjusts the 6000-mm cut length. [-30.0 ~ +30.0/**0.0**/0.1 mm]

$\Longrightarrow$

1955	Transport Fan Rotation **Not Used**

1960	Optional Paper Setting
	Enables the roll feeder or the paper cassette after they are installed. Do this SP after the installation of the roll feeder or the paper cassette, or the machine will not detect the roll feeder or the paper cassette. [0~4/**0**/1] **0**: No options. Paper feed from manual feed table (bypass) only. 1: Roll Feeder – Roll 1 only. 2: Roll Feeder – Roll 2 3: Roll Feeder – 1 Roll + Paper Cassette 4: Roll Feeder – 2 Roll + Paper Cassette

1962	Overseas Machine Setting **DFU**
	Enables and disables the roll paper end sensors 1 and 2. [0~1/**1**/1] 0: Disables the roll-paper end sensors 1 and 2. **Japan only**. **1**: Enables the roll-paper end sensors 1 and 2. Do not change this setting outside Japan. **Notes**: • In Japan, the roll-paper end sensors 1 and 2 (attached above the rolls) detect the black color of the empty roll core. • Outside Japan, the roll core can be a different color. Because of this, the roll end sensors 3 and 4 (in front of the feed rollers of the roll feeder) must be enabled to detect the trailing edge of the roll paper at the end of the roll.

Service Tables

SP2-XXX Drum

2001		Charge Corona Adjustment	
	001	Image Area	Adjusts the charge corona output. **DFU** [505~1530/**1220**/1 µA step]
	002	Grid for Image Area	Adjusts the charge grid output. **DFU** [162~1080/**770**/1 V step]
	003	Grid for ID Sensor Pattern	Adjusts the charge grid output for the ID sensor pattern. **DFU** [162~1080/**635**/1 V step]

2101		Printing Erase Margin - Copy	
		Adjusts the quantity of erase for copy mode (quantity of white space).	
	001	Leading Edge	[0.0 ~ 10/**0**/0.5 mm step]
	002	Trailing Edge	
	003	Left Edge	
	004	Right Edge	

2102		Printing Erase Margin - Printer	
		Adjusts the quantity of erase for print mode (quantity of white space).	
	001	Leading Edge	[0.0 ~ 10/**0**/0.5 mm step]
	002	Trailing Edge	
	003	Left Edge	
	004	Right Edge	

2201		Development Bias Adjustment	
	001	Image Area	Sets the development bias to adjust the toner quantity for the image area. [-56 ~ -952/**-650**/1 V step]
	002	ID Sensor Pattern – Low Duty Copy Jobs	Sets the development bias to adjust the toner quantity for the ID sensor pattern. [-56 ~ -952/**-340**/1 V step]
	003	ID Sensor Pattern – High Duty Copy Jobs	Sets the development bias to adjust the toner quantity for the ID sensor pattern. **DFU** [56 ~ 952/**445**/1 V step]
	004	Copy Jobs	Sets the mode used to make the ID sensor pattern. **DFU** [0~1/**0**/1] **0: Low Duty Mode** 1: High Duty Mode

2207		Forced Toner Supply	
	001	Forced Toner Supply	Push the start key to do a forced toner supply. If switched on, this SP supplies more toner to make light copies darker. Each time this SP is done, toner is supplied one time. After doing this SP, make a copy and check the copy density.

2208		Toner Supply Setting	
	001	Gain	Sets the toner supply capacity for the job load. [0~3/**1**/1] 0: H (Low) **1: M (Medium)** 2: H (High) 3: HH (Very High)
	002	Supply Pause Level	**Not Used**
	003	Toner Supply Mode	Sets the toner supply mode. **0: Detect Mode** 1: Fixed Mode If the ID sensor is damaged and cannot be replaced immediately, set this SP to "1". Then, the customer can continue to use the machine until a new ID sensor is available. After you install a new ID sensor, reset the SP to 0.

2301		Transfer Corona Output:	
	001	Plain Paper - Leading Edge	Adjusts the transfer output power. **DFU** [0~230/**60**/1 mm]
	002	Plain Paper - Central Image	
	003	Plain Paper - Trailing Edge	
	004	Plain Paper - Coefficient	Adjusts the transfer output coefficient for the leading edge, central image, and trailing edge. **DFU** [1.0~2.0/**1.0**/0.2 step]
	005	Translucent - Leading Edge	Adjusts the transfer output power. **DFU** [0~230/**60**/1 mm] **DFU**
	006	Translucent - Central Image	
	007	Translucent - Trailing Edge	
	008	Translucent - Coefficient	Adjusts the transfer output coefficient for the leading edge, central image, and trailing edge. **DFU** [1.0~2.0/**1.0**/0.2 step]
	009	Film - Leading Edge	Adjusts the transfer output power. **DFU** [0~230/**80**/1 mm]
	010	Film - Central Image	
	011	Film - Trailing Edge	
	012	Film - Coefficient	Adjusts the transfer output coefficient for the leading edge, central image, and trailing edge. **DFU** [1.0 ~ 2.0/**1.0**/0.2 step]

2401	Separation DC Timing Adj.
	Adjusts the separation dc timing. **DFU** [0 ~ 300/**100**/4 mm step]

2402	Separation AC Voltage Setting:
	Adjusts the separation ac voltage. **DFU** [18~466/**280**/1 V step]

Service
Tables

SP (SERVICE PROGRAM) MODE TABLES

2403	Separation DC Voltage Setting	
	Adjusts the separation dc voltage. If this setting is too high, toner will go back from the paper to the drum after transfer. The separation dc voltage can be set for plain paper, translucent paper, and film for: • The leading edge • Areas of the sheet other than the leading edge	
001	Plain – Leading Edge	[0.0 ~ -66/ **-25**/0.1] **DFU**
002	Plain – Central Image	[0.0 ~ -66/ **-15**/0.1] **DFU**
003	Translucent – Leading Edge	[0.0 ~ -66/ **-25**/0.1] **DFU**
004	Translucent – Central Image	[0.0 ~ -66/ **-15**/0.1] **DFU**
005	Film – Leading Edge	[0.0 ~ -66/ **-25**/0.1] **DFU**
006	Film – Central Image	[0.0 ~ -66/ **-15**/0.1] **DFU**
007	Plain – Trailing Edge	[0.0 ~ -66/**0**/0.1] **DFU**
008	Translucent – Trailing Edge	
009	Film – Trailing Edge	
011	Thin Plain – Leading Edge	[0.0 ~ -66/ **-25**/0.1] **DFU**
012	Thin Plain - Central Image	[0.0 ~ -66/ **-15**/0.1] **DFU**
013	Thin Translucent – Leading Edge	
014	Thin Translucent - Central Image	
015	Thin Film – Leading Edge	
016	Thin Film – Central Image	
017	Thin Plain – Trailing Edge	[0.0~66/**0**/0.1] **DFU**
018	Thin Translucent – Trailing Edge	
019	Thin Film – Trailing Edge	

2404	Separation DC Timing Adjustment
	Adjusts the separation dc timing for the trailing edge. [0~50/**40**/1 step] **DFU**

2803	Corona Wire Cleaning
	Do this to clean the charge corona wire. This SP also moves the cleaning pad to the home position. Approximately 20 seconds are necessary for cleaning.

2804	Corona Cleaning Interval
	Sets the interval for wire cleaning. The wire is cleaned only when the hot roller temperature is below 50°C. [0~6/**3**/1 step] 0: None (no cleaning) 1: After the main switch is turned on. 2: After 300 m of copies **3: After 600 m of copies** 4: After 900 m of copies 5: After 1200 m of copies 6: After 1500 m of copies

2812	Drum Cleaning Interval **DFU**
	The drum turns in reverse after this number of jobs. This cleans the edge of the cleaning blade. [0~5/**0**/1Job step]

2923		Cleaning Blade Set Mode
	002	Input "1" to do this SP after you replace the OPC or cleaning blade. This SP applies toner to the drum and blade. This decreases friction between the new drum and/or new blade. As a result, scratches on the drum and a bent blade are less possible.

2924	Developer Mixing **DFU**
	Enables/disables measurement of Vsg during warm-up immediately after the machine is switched on. The Vsg sampling is done to make sure of good quality for the first copies done after the machine is switched on. [0~2/**0**/1] 0: Vsg is read immediately after the machine is switched on with the fusing temperature less than 50°C. **1**: Vsg is always read during warm-up immediately after the machine is switched on. The machine ignores the fusing temperature. 2: No Vsg is read during warm-up.

2925		Transfer Corona Timing	
	001	On Timing	Adjusts the on timing. **DFU** [0~16/**6**/0.2 mm]
	002	Leading Edge	Adjusts the timing to switch from the leading edge to the center. **DFU** [0~30/**8**/1 mm]
	003	Trailing Edge	Adjusts the timing to switch from the center to the trailing edge. **DFU** [-30 ~ 0/**0**/-1 mm]

Service
Tables

2926	Used Toner Tank Motor	
	The used toner bottle motor (vibration motor) moves a cam, which hits the side of the used toner collection bottle. This makes the level of used toner in the bottle equal.	
001	After Main SW Turned On	Sets the length of time that the used toner bottle motor operates. The motor starts 10 seconds after the main power switch is switched on and the fusing temperature is less than 50°C. [0~7/**7**/1] 0: Off 1: 1 sec. 2: 2 sec. 3: 3 sec. 4: 5 sec. 5: 10 sec. 6: 15 sec. **7: 30 sec.** **Notes:** • If SP2926 004 is not "0", this setting has no effect. • If the machine detects a toner overflow in the collection bottle 10 seconds after the main power switch is switched on, the motor does not switch on.
002	When Paper Passes Exit	Sets the length of time that the used toner bottle motor operates after the last page of the job goes by the exit sensor. [0~7/**0**/1] **0: Off** 1: 1 sec. 2: 2 sec. 3: 3 sec. 4: 5 sec. 5: 10 sec. 6: 15 sec. 7: 30 sec. **Note:** • If SP2926 004 is not "0", this setting has no effect.
003	Used Toner Overflow Detection	Puts a limit on the length of paper that can be printed after the machine detects that the used toner collection bottle is full. [0~4/**2**/2] 0: 2 m 1: 5 m **2: 10 m** 3: 20 m 4: 50 m
004	Used Toner Tank Motor On	Switches on the used toner bottle motor at the end of the job if this length of paper was fed since the last time that the motor operated. [0~3/**1**/1] 0: 0 m **1: 10 m** 2: 30 m 3: 50 m **Notes:** • If this SP is set to a value other than "0", the settings for SP2926 001, 002 have no effect.

2927		Toner Near End/End Detection			
	001	Near End Level	Sets the level for toner near end detection. (Vsp/Vsg = Vend). **DFU** [0~15/**2**/1]		
			0: 0.150	6: 0.140	12: 0.180
			1: 0.175	7: 0.145	13: 0.185
			2: 0.200	8: 0.155	14: 0.190
			3: 0.225	9: 0.160	15: 0.195
			4: 0.250	10: 0.165	
			5: 0.275	11: 0.170	
	003	Toner End Level	Sets the Vsp/Vsg level for toner end detection. The ID sensor must detect this value three times (one after the other) to detect toner end. The machine stops when toner end is detected. **DFU** [0~18/**2**/1]		
			0: 0.175	7: 0.155	14: 0.195
			1: 0.200	8: 0.160	15: 0.205
			2: 0.225	9: 0.165	16: 0.210
			3: 0.250	10: 0.170	17: 0.215
			4: 0.275	11: 0.180	18: 0.220
			5: 0.300	12: 0.185	
			6: 0.150	13: 0.190	

2928		Toner End Recovery			
		Recovery starts after the user replaces the toner cartridge while there is a toner end condition. • The machine writes an ID sensor pattern on the surface of the drum. • The ID sensor reads the density of the ID sensor pattern and converts it to an electrical signal (Vsp). • The machine compares the Vsp value with Vsg, which is read from the bare surface of the drum (Vsg/Vsg=Vref) • If Vsp/Vsg < Vref (the value of this SP setting), recovery is completed and the machine goes back to normal operation.			
	001	Recovery Level **DFU**	Sets the recovery level: Vsp/Vsg < Vref [0~17/**5**/0.25 step]		
			0: 0.075	6: 0.130	12: 0.165
			1: 0.100	7: 0.135	13: 0.170
			2: 0.125	8: 0.140	14: 0.180
			3: 0.150	9: 0.145	15: 0.185
			4: 0.175	10: 0.155	16: 0.190
			5: 0.200	11: 0.160	17: 0.195

Service Tables

2941	IPU Test Pattern
	Sets the IPU Test Pattern. Print an IPU Test Pattern when you think that there is a problem with image processing. The IPU Test Pattern is also used to check if the LPH components are aligned. For more, see the *Replacement and Adjustment* section. [0~45/**0**/1 step]
	0: None
	1: Gray scale 1 (vertical)
	2: Gray scale 2 (vertical)
	3: Gray scale 3 (horizontal)
	4: Gray scale 4 (horizontal)
	5: Density patch
	6: Vertical stripe
	7: Vertical line 1 dot
	8: Vertical line 2 dots
	9: Horizontal line 1 dot
	10: Horizontal line 2 dots
	11: Cross stripe 1 dot
	12: Cross stripe 2 dots
	13: Slanting cross stripe 1 dot (128-dot interval)
	14: Slanting cross stripe 1 dot even/odd reversal (128-dot interval)
	15: Slanting cross stripe 2 dots (128-dot interval)
	16: Slanting cross stripe 2 dots even/odd reversal (128-dot interval)
	17: Slanting cross stripe 1 dot (64-dot interval)
	18: Slanting cross stripe 1 dot even/odd reversal (64-dot interval)
	19: Rope pattern 1 dot
	20: Rope pattern 1 dot main scan even/odd reversal
	21: Rope pattern 2 dots
	22: Rope pattern 2 dots main scan even/odd reversal
	23: Rope pattern
	24: Frequency characteristic (vertical)
	25: Frequency characteristic (horizontal)
	26: Frequency characteristic (vertical/horizontal)
	27: Gray scale 5 (vertical/horizontal)
	28: Gray scale 6 (vertical/horizontal)
	29: Black
	30: White
	31: ---
	32: Gray scale 7 (vertical)
	33: Independent 1 dot (16-dot interval)
	34: Independent 1 dot (32-dot interval)
	35: Independent 1 dot (64-dot interval)
	36: Independent 1 dot (128-dot interval)
	37: Independent 1 dot (256-dot interval)
	38: Independent 2 dots (16-dot interval)
	39: Independent 2 dots (32-dot interval)
	40: Independent 2 dots (64-dot interval)
	41: Independent 2 dots (128-dot interval)
	42: Independent 2 dots (256-dot interval)
	43: Independent 1 dot (4-dot interval)
	44: Independent 1 dot (8-dot interval)
	45: Independent 2 dots (8-dot interval)

2941	IPU Test Pattern
	Sets the IPU Test Pattern. Print an IPU Test Pattern when you think that there is a problem with image processing. The IPU Test Pattern is also used to check if the LPH components are aligned. For more, see the *Replacement and Adjustment* section. [0~45/**0**/1 step]
	51: Pattern 1: 8-step grayscale
	52: Pattern 2: 1-dot grid
	53: Pattern 3: 2-dot grid
	54: Pattern 4: 1-dot pattern (trellis)
	55: Patten 5: 2-dot pattern (trellis)
	56: Pattern 6: 1-dot independent dot
	57: Pattern 7: 2-dot independent dot
	58: Pattern 8: 16-bit counter

2942		Print Test Pattern
	001	Mode
		Sets the write test-pattern mode. [0~1/**0**/1] **0**: IPU Pattern. Prints a test pattern to check data flow from the CIS to the IPU. If this pattern is not normal, there could be a problem with the CIS. 1: VDB Pattern. Prints a test pattern to check VDB/LPH processing. If this pattern is not normal, there could be a problem with the VDB (Video Drive Board) or LPH (LED Print Head).
	002	FGATE **DFU**
		Sets the FGATE (laser writing signal) for the test pattern. [0~1/**0**/1] 0: FGATE IPU 1: FGATE IOB
	003	Pattern
		Sets the test pattern. [0 ~ 5/**0**/1 step] **0: None** 1: Vertical Lines: 2-dot 5.4 pitch 2: Horizontal Lines: 2-dot 5.4 pitch 3: Vertical Lines: 2-dot 4: A0T (A0 SEF) 5: Grid Pattern
	004	SP Pattern
		"SP Copy" refers to when you make a print while you are in the SP mode. To do this, you push the Interrupt key to see the Copy screen. After the print is finished, the screen goes back immediately to the SP mode.
		Sets the pattern for copy tests in the SP mode. [1~3/**3**/1] 1: Vertical Lines 2: Horizontal Lines **3: Grid Pattern**

Service
Tables

2943		LED Duty Adjustment	
		Adjusts the length of time (also known as "width" or "duty") that the LEDs of the LPH stay on. To make pixels darker, increase the exposure time. Use this SP if it is necessary to make the output of one LPH block brighter or darker. There are different adjustments for odd-numbered pixels and even-numbered pixels. [1.0~15.0/**10.0**/0.1%]	
	001	LPH 1 (Odd)	The correct values for the LPH are printed on the label that is attached to LPH replacement units. Input these settings immediately after you replace the LPH unit.
	002	LPH 1 (Even)	
	003	LPH 2 (Odd)	
	004	LPH 2 (Even)	
	005	LPH 3 (Odd)	
	006	LPH 3 (Even)	

2947		Power Correction	
		Adjusts the four LEDs at each end of LPH 2. This fine adjustment is not usually necessary in the field. **DFU** [0~255/**0**/1]	
	001	1 Dot Left	
	002	2 Dots Left	
	003	3 Dots Left	
	004	4 Dots Left	
	005	1 Dot Right	
	006	2 Dots Right	
	007	3 Dots Right	
	008	4 Dots Right	

2952	Printer Vertical/Horizontal Ratio **DFU**
	This SP controls the ratio between the thickness of horizontal lines and the thickness of vertical lines. [1~8/**3**/1] 1: 1:1 2: 2:1 3: 3:1 4: 4:1 5: 5:1 6: 6:1 7: 7:1 8: 8:1

2965	LPH Joint Adjustment	
	Adjust these settings only after you replace the LPH. For more, refer to Section "3. Replacement and Adjustment".	
001	LPH 1-2 Main Scan	Adjusts the LPH joint for main scan between LPH1 and LPH2. [0 ~ 999/**500**/1]
002	LPH 2-3 Main Scan	Adjusts the LPH joint for main scan between LPH2 and LPH3. [0 ~ 999/**500**/1]
003	LPH 1-2 Sub Scan – Over 420 mm	Adjusts sub scanning at LPH 1-2 for paper more than 420 mm wide. [202 ~ 450/**412**/1]
004	LPH 2-3: Sub Scan – Over 420 mm	Adjusts sub scanning at LPH 2-3 for paper more than 420 mm wide. [3~100/**16**/1]
005	LPH 1 Sub Scan	Calibrates the sub scan direction at LPH1. [2~200/**180**/1] **DFU**
006	LPH 1-2 Sub Scan – Below 420 mm	Adjusts sub scanning at LPH 1-2 for paper less than 420 mm wide. [-50 ~ +50/**2**/1] **DFU** This value is calculated automatically. Do not adjust.
007	LPH 2-3: Sub Scan – Below 420 mm	Adjusts sub scanning at LPH 2-3 for paper less than 420 mm wide. [-50~+50/**0**/1] **DFU** This value is calculated automatically. Do not adjust.

2966	Toner Save Mode **DFU**
	Sets the matrix that is used to decrease the quantity of toner on the printed page. [0~2/**0**/1]

⟹

2970	Left Erase (P) On/Off
	Turns the left erase margin ON or OFF for AutoCAD printing. [0~1/0/1] **0: ON** (margin is applied) 1: OFF (margin is not applied)

Service Tables

SP3-XXX Process Control

3001		ID Sensor Settings	
	002	PWM Setting	Sets the level of the PWM (Pulse Width Modulation) of the ID sensor LED. **DFU** [0~100/**35**/0.1%]
	005	ID Sensor / Developer Initialization	Automatically calibrates the ID sensor output to 4.0 V and also prepares the developer. (During auto adjustment, the voltage applied to the ID Sensor LED is set by the PWM value.) <u>Do this SP at installation or replacing the developer together with either the ID Sensor or Drum.</u> Processing requires 5 to 6 minutes.
	006	ID Sensor Initialization	Automatically adjusts the ID sensor. To do this, the machine reads the bare drum. The initial setting is 4.0V±0.2. **Note:** Approximately 15 seconds is necessary for this SP. Do this SP after you replace these components: • OPC Drum • ID Sensor
	007	Developer Initialization	Do this SP only after you replace the developer (not at installation) to prepare the new developer. Processing requires 5 to 6 minutes.

3103	ID Sensor Output Display (Vsp, Vsg)
	Displays the values for Vsp and Vsg (0.0V~5.0V)

3910		Development Bias Timing
	001	On Timing **Not Used**
	002	Off Timing **Not Used**

3920	ID Sensor Timing **Not Used**

SP4-XXX Scanner

4008	Scanner Sub Scan Magnification
	Adjusts the magnification. To do this, the machine changes the scanning speed. [-0.9 ~ +0.9/**0**/0.1% step]

4010		Scanner Sub Scan Registration	
001	Leading Edge	Adjusts the time between the sensor-on position and the leading edge of the image. [-10 ~ +10/**0**/0.1 mm step]
002	Trailing Edge	Adjusts the time between the sensor-off position and the trailing edge of the image. This sets the timing for the CIS to stop scanning after the original goes by the registration sensor. [-10 ~ +10/**0.0**/0.1 mm step]

4011	Scanner Main Scan Registration
	Adjusts the scan registration. [-4 ~ +4/**0.0**/0.1 mm]

4012		Scanner Erase Margin	
001	Leading Edge	Adjusts the non-scanning area.
002	Trailing Edge	[0.0 ~ +9.0/**0**/0.1 mm]
003	Left	
004	Right	

4013		Scanner Free Run	
002	Page Interval Setting	Adjusts the interval between prints for the **printer** free run (see the description for 5802). [0 ~ 500/**10**/0.1 s]

4101	Scanner Main Scan Magnification
	Adjusts the side-to-side scan magnification. [-0.9 ~ +0.9/**0.0**/0.1 %]

4428		Image Scan Adjustment	
001	Flag Display	Displays a "0" (not adjusted) or a "1" to indicate whether the white level adjustment with SP4428 002 has been successful.
002	Start	Input "1" to adjust the standard white level. Do this after you replace the CIS or the white plate above the CIS. After adjustment, check the result with SP4428-001.

Service Tables

4903		Image Setting – Smoothing Filter Level
		Use this if density is not equal in shaded areas of the copy. The change from high to low density areas in shaded areas must be smooth. Do these SP adjustments if you see "false outlines" in shaded areas of the copy. **Notes:** • To increase the effect, use a higher setting. • To decrease the effect, use a lower setting. • The higher settings can make text look better, but can also decrease the quality of the image.
001	Text	[0~5/**0**/1] **0: Off** 1: Weak 5: Strong
003	Text /Photo	
004	Pale Original	
005	Generation Copy	
006	Background Lines	
007	Sharpen Text	
008	Drawing	
021	Gradation Processing Photo	Sets the matrix that is used for dithering. [0~4/**0**/1] **0: 53 lines with 16 x 16 matrix** 1: 105 lines with 8 x 8 2: 143 lines with 6 x 6 3: 210 lines with 8 x 8 4: 270 lines with 8 x 8

4905		Line Thickness Mode
		Sets the line reproduction correction for each copy mode (Text, Text/Photo, etc.) The mode groups have three SP settings: 1) Initial. Sets the main adjustment for the copy mode (Text, Text/Photo, etc.). This has an effect on line correction in the main and sub scan directions. 2) Main scan. Adjusts the sensitivity of line correction in the main scan direction only. 3) Sub scan. Adjusts the sensitivity of line correction in the sub scan direction only.
001	Text	[0~8/**4**/1]] 0: Low (better thin line reproduction) 5: Off 8: High (better thick line reproduction)
002	Main Scan – Text	[0~3/**2**/1] 0: None 1: Weak **2: Medium** 3: Strong
003	Sub Scan – Text	[0~3/**0**/1] **0: None** 1: Weak 2: Medium 3: Strong
004	Photo	[0~8/**5**/1]] 0: Low (better thin line reproduction) **5: Off** 8: High (better thick line reproduction)
005	Main Scan – Photo	[0~3/**0**/1] **0: None** 1: Weak 2: Medium 3: Strong
006	Sub Scan – Photo	
007	Text/Photo	[0~8/**5**/1]] 0: Low (better thin line reproduction) **5: Off** 8: High (better thick line reproduction)
008	Main Scan – Text/Photo	[0~3/**0**/1] **0: None** 1: Weak 2: Medium 3: Strong
009	Sub Scan – Text/Photo	
010	Pale	[0~8/**5**/1]] 0: Low (better thin line reproduction) **5: Off** 8: High (better thick line reproduction)
011	Main Scan – Pale	[0~3/**0**/1] **0: None** 1: Weak 2: Medium 3: Strong
012	Sub Scan – Pale	
013	Generation	[0~8/**3**/1]] 0: Low (better thin line reproduction) 5: Off 8: High (better thick line reproduction)
014	Main Scan – Generation	[0~3/**2**/1] 0: None 1: Weak **2: Medium** 3: Strong
015	Sub Scan – Generation	[0~3/**0**/1] **0: None** 1: Weak 2: Medium 3: Strong
016	Background Line	[0~8/**4**/1]] 0: Low (better thin line reproduction) 5: Off 8: High (better thick line reproduction)
017	Main Scan – Background Line	[0~3/**2**/1] 0: None 1: Weak 2: Medium 3: Strong
018	Sub Scan – Background Line	[0~3/**0**/1] **0: None** 1: Weak 2: Medium 3: Strong

Service
Tables

SP (SERVICE PROGRAM) MODE TABLES

4905		Line Thickness Mode	
	019	Sharpen Text	[0~8/**5**/1]] 0: Low (better thin line reproduction) **5: Off** 8: High (better thick line reproduction)
	020	Main Scan – Sharpen Text	[0~3/**0**/1] **0: None** 1: Weak 2: Medium 3: Strong
	021	Sub Scan – Sharpen Text	
	022	Line Drawing	[0~8/**4**/1]] 0: Low (better thin line reproduction) 5: Off 8: High (better thick line reproduction)
	023	Main Scan –Drawing	[0~3/**2**/1] 0: None 1: Weak **2: Medium** 3: Strong
	024	Sub Scan –Drawing	[0~3/**0**/1] **0: None** 1: Weak 2: Medium 3: Strong

4906		Filter/Independent Dot Erase Settings	
	005	Full Size Mod	
		Use this to check if magnification operates correctly. Set to 1 to check the main scan magnification. This setting sets the reproduction ratio to 100%, and the machine ignores the magnification setting. If the magnification is not 100%, the image processing circuits could be defective.	
	007	Image Shift in Magnification **DFU**	
		Adjusts the quantity of pixel shift in the main scan direction in the magnification mode. [0~32767/**0**/1]	
	018	Correction Data **DFU**	
		Sets the gamma correction mode. [0~11/**0**/1]	
		Filter Settings	
		These SPs set the MTF (Modulation Transfer Function) filter for each original mode and magnification ratio. Adjust these SPs if you see very small widths between black and white areas. When the image is converted to electrical signals, the properties of the lens can decrease the contrast between adjacent white and black pixels. MTF adjustments correct this problem. **Note:** When you set a number for the adjustment: • Lower numbers make the effect of the MTF filter weaker (soft). • Higher numbers make the effect of the MTF filter stronger (sharp). • The default setting is the usual setting for that copy mode. For more, see section 6 (Detailed Section Descriptions).	
	020	Text 25% - 55.0%	[0~10/**5**/1]
	021	Text 55.1% - 75.0%	
	022	Text 75.1% - 160.0%	
	023	Text 160.1% - 400.0%	
	024	Photo 25.0% - 55.0%	[0~6/**3**/1]
	025	Photo 55.1 – 75.0%	
	026	Photo 75.1% - 160.0%	
	027	Photo 160.1% - 400.0%	
	028	Text/Photo 25.0% - 55.0%	[0~10/**5**/1]
	029	Text/Photo 55.1% - 75.0%	
	030	Text/Photo 75.1% - 160.0%	
	031	Text/Photo 160.1% - 400.0%	

4906		Filter/Independent Dot Erase Settings	
	032	Pale 25.0% - 55.0%	[0~10/**5**/1]
	033	Pale 55.1% - 75.0%	
	034	Pale 75.1% - 160.0%	
	035	Pale 160.1% - 400.0%	
	036	Generation 25.0% - 55.0%	[0~10/**5**/1]
	037	Generation 55.1% - 75.0%	
	038	Generation 75.1% - 160.0%	
	039	Generation 160.1% - 400.0%	
	040	Background Line 25.0% - 55.0%	[0~10/**5**/1]
	041	Background Line 55.1% - 75.0%	
	042	Background Line 75.1% - 160.0%	
	043	Background Line 160.1% - 400.0%	
	044	Sharpen Text 25.0% - 55.0%	[0~6/**3**/1]
	045	Sharpen Text 55.1% - 75.0%	
	046	Sharpen Text 75.1% - 160.0%	
	047	Sharpen Text 160.1% - 400.0%	
	048	Drawing 25.0% - 55.0%	[0~10/**5**/1]
	049	Drawing 55.1% - 75.0%	
	050	Drawing 75.1% - 160.0%	
	051	Drawing 160.1% - 400.0%	
		Noise Reduction	

These SP modes set the independent dot erase level for originals scanned in different modes. While a higher setting erases more dots, a very high setting can cause very small text or other detail to become less clear or to be erased. Each pixel is compared with other pixels around it in a 5 line x 7 pixel matrix. If the sum of the pixels on each edge of the matrix is lower than the threshold value, the target pixel is set to "0" and erased.

Notes:

- The "0" setting switches independent dot erase off.
- A low setting makes the effect weaker, and erases a smaller number of dots.
- A high setting makes the effect stronger and erases more dots. With a high setting, it is more possible to erase details in images, specially in the Photo and Text/Photo modes.
- "L", "M", and "H" refer to the "Soft", "Normal", and "Sharp" settings that can be made for each original mode on the operation panel. Each setting can be adjusted independently.
- Blue Line Erase = Background Lines mode
- Photo 2 mode = Sharpen Text mode

	070	L: Text	[0~14/**4**/1]
	071	M: Text	[0~14/**7**/1]
	072	H: Text	[0~14/**10**/1]
	073	L: Photo	[0~14/**4**/1]
	074	M: Photo	[0~14/**7**/1]
	075	H: Photo	[0~14/**10**/1]
	076	L: Text/Photo	[0~14/**4**/1]
	077	M: Text/Photo	[0~14/**7**/1]
	078	H: Text/Photo	[0~14/**10**/1]
	079	L: Pale	[0~14/**4**/1]
	080	M: Pale	[0~14/**7**/1]
	081	H: Pale	[0~14/**10**/1]
	082	L: Generation	[0~14/**5**/1]
	083	M: Generation	[0~14/**8**/1]
	084	H: Generation	[0~14/**11**/1]
	085	L: Background Line	[0~14/**4**/1]

Service Tables

SP (SERVICE PROGRAM) MODE TABLES

4906		Filter/Independent Dot Erase Settings		SM
	086	M: Background Line	[0~14/**7**/1]	
	087	H: Background Line	[0~14/**10**/1]	
	088	L: Sharpen Text	[0~14/**4**/1]	
	089	M: Sharpen Text	[0~14/**7**/1]	
	090	H: Sharpen Text	[0~14/**10**/1]	
	091	L: Drawing	[0~14/**4**/1]	
	092	M: Drawing	[0~14/**7**/1]	
	093	H: Drawing	[0~14/**10**/1]	

4907	White Level Correction	
001	Threshold	Raises and lowers the threshold value for white level correction. [0~255/**128**/1] **DFU** • If the background reading is higher than this threshold value, the image data is processed as it is. • If the image data is lower that this threshold value, then the data is processed using the value for calibration entered for SP4907 002.
002	Data	Calibrates white level correction for image data less than the threshold value selected for SP4907 001. [0~255/**255**/1] **DFU** 0: All black 255: All white
003	Detection	Selects the control method for white level correction. [0~2/**0**/1] **DFU**
004	Control	Disables and enables control for white level correction. [0~2/**0**/1] **DFU**

4908	IPU Function Selection	
	This SP checks the operations of the Ri-10 image processors on the IPU board.	
001	Pre-Filter	[0~1/**0**/1] **DFU**
002	Line Thickness	0: Start: Sets each bit to "0".
003	Noise Reduction	1: True: Sets each bit to "1".
004	Filter Mode	
005	Density Gamma	
006	Resolution 2	
007	White Level Correction	
010	Through	

4911	Magnification Correction	
	Adjusts the magnification for each paper type. These settings are enabled automatically for the paper type when the customer sets a magnification ratio for the copy job. These corrections are done during image processing after the original is scanned. Adjust the setting for a paper type if you always see distortion of magnified images for that paper type.	
001	Plain – 1-4 Vertical	[-1.0~+1.0/**0**/0.1%]
002	Plain – 1-4 Horizontal	
003	Translucent – Vertical	
004	Translucent – Horizontal	
005	Film – Vertical	
006	Film – Horizontal	
007	Plain 5 - Vertical (Thinnest)	[-2.0~+2.0/ **-0.5**/0.1%]
008	Plain 5 - Horizontal (Thinnest)	[-2.0~+2.0/**0**/0.1%]

Service Tables

SP (SERVICE PROGRAM) MODE TABLES

4960		HDD	
	001	Media Check	Input "1" to detect defective sectors on the hard disk.
		At the factory, the original defective sector data is stored in the non-volatile memory. This data lets the hard disk prevent access to the defective sectors. If other sectors become defective after the machine leaves the factory, this sector data must also be stored in non-volatile memory, to prevent output of defective images. During media checks, new defective sector data is stored in the IPU non-volatile memory. This data allows the IPU to prevent access to the bad sectors. The display shows the progress of the test by numbers that increase from 0 to 100. The time necessary for the test depends on the hardware specifications.	
	003	Formatting	Input "1" to format the hard disk.
		The time necessary for formatting depends on the hardware specifications. If defective sectors are not found, check SP4960-001. If a defective sector is found, more time is necessary for sector substitution.	
	005	Spindle Control	Push Off or On to switch the hard disk off and on.
		The hard disk usually stops when possible, to prevent noise and to protect the hard disk. But, if the hard disk stops, the copy speed may decrease, because the machine stops until the hard disk starts.	
	007	Bad Sector Information Reset	
		Do this SP to erase the bad sector data from the NVRAM.	
		Do this setting after you remove a defective disk and replace it with a new disk.	
	009	Bad Sector Display	
		Shows the number of defective sectors on the hard disk. The number comes from the defective sector data that the IPU made during operation. When the number gets to 51, SC361 is shown. Then you must format the hard disk with SP4960 003. Refer to SC361 in the Troubleshooting section for more.	
	011	Model Name Display	
		Shows the hard disk model name (40 characters) on the display.	
	013	IDE Interface Form Selection **DFU**	
		Sets the data transfer format.	
		Push the key for Ultra DMA or **Multi Word DMA**	
	015	HDD Connection On/Off	
		Push "On" or "Off" to enable or disable hard disk detection. Set to "Off" if the hard disk becomes defective. In this condition, the customer can continue to use the copier functions until a new disk is installed.	

4961		Original Adjustment	
	001	Synchro-cut Adjustment 210 mm	Adjusts the synchro-cut position. [-9.9 ~ +9.9/**0.0**/0.1 mm] Use the 210-mm position in the sample to check the difference. This setting is used to calculate the motor clock count for adjusting the difference.
	002	Synchro-cut Adjustment 1000 mm	Adjusts the synchro-cut position. [-9.9 ~ +9.9/**0.0**/0.1 mm step] Use the 1000-mm position in the sample to check the difference. This setting is used to calculate the motor clock count for adjusting the difference.
	003	Original Length Display	Display the original length.

4965	Orig. Speed – Leading Edge
	The original feed roller tries to adjust for slippage of the feed rollers to let the machine measure the length of the original accurately. The diameter of the feed roller (32 +0/-0.05) differs slightly from the diameter of the exit roller (32 +0.05/-00). Because of this, the slightly higher speed of the exit roller could cause the original to feed more quickly than usual, and this causes image distortion at the joints of the CIS. Adjust this SP to decrease the speed of the original to correct for this problem.
	Adjust this SP if there is image distortion after you replace the original feed roller or exit roller.
	Use this troubleshooting tool after you change the CIS, feed roller, or exit roller, and distortion at the CIS joints continues even after the CIS adjustments (SP 4972).
	It changes the timing for scanning the original with the CIS. This timing must be in synch with the original feed speed, or there will be some distortion.
	Refer to section 3.2.2 for how to use SP 4965.
	[-1.0~0.0/ **-0.2** /0.1]

4966	Orig. Transport Speed Adjustment – Trailing Edge **Not Used**
	[-1.0~0.0/ **-0.5** /0.1]

4972		SIB Register Setting 2	
		These SPs correctly align the image scanned by the CIS. For more, see section 3, Replacement and Adjustment.	
	001	CIS Main Scan Line Offset – No. 1-2	[0~1000/**500**/1]
	002	CIS Main Scan Line Offset – No. 2-3	
	003	CIS Main Scan Line Offset – No. 3-4	
	004	CIS Main Scan Line Offset – No. 4-5	
	005	CIS Sub Scan Line Offset – No. 1-2	[0~2047/**638**/1]
	006	CIS Sub Scan Line Offset – No. 2-3	[0~2047/**650**/1]
	007	CIS Sub Scan Line Offset – No. 3-4	[0~2047/**12**/1]
	008	CIS Sub Scan Line Offset – No. 4-5	[0~2047/**638**/1]

Service Tables

4973	SIB Register Setting 3	
003	Difference in Grade Adj.	Enables the function that lets you correct the alignment of the CIS elements. For more, see "SP Adjustments" in "3. Replacement and Adjustment". [0~1/**0**/1]
004	Test Pattern Selection	Replaces the SIB test pattern with a scanned image. [0~2/**0**/1] 0: Normal 1: Pattern 1 2: Pattern 2
005	AE Exclude Line	Sets the line that is used as the leading edge to initialize ADS when it is used. **DFU** [0~65535/**118**/1]
006	AE Initial	Sets the initial value used for the leading edge of the image when ADS is used. **DFU** [0~255/**50**/1]
007	Average Process Selection	[0~15/**3**/1] **DFU**
008	Ground Adj. Coefficient	[-128/**100**/1] **DFU**
009	AE Follow Lower Limit	[0~255/**50**/1] **DFU**
010	AE Peak Up Coefficient	[0~255/**80**/1] **DFU**
011	AE Peak Down Coefficient	[0~255/**85**/1] **DFU**
013	Halftone Dot Detection Filter Intensity	[0~2/**0**/1] **DFU**
014	Halftone Dot Detection Filter Output Bin	[0~255/**255**/1] **DFU**
015	Halftone Dot Detection Change Point Threshold	[0~31/**31**/1] **DFU**
016	Background Management Coefficient	Sets the coefficient for background adjustment for ADS, Pale mode, notch 1, copy (including interrupt) **DFU** [-128~+127/**127**/1]
017	AE Initial Data	Sets the initial value for the leading edge of the image when ADS is used. **DFU** [0~255/**20**/1]

SP5-XXX Mode

5001	All Indicators On
	Switches on the operation panel and all LEDs on the operation panel to check that LCD and LEDs operate correctly. Push ① to switch on the operation panel. Push ◈ to switch off.

5009	Language Selection
	Changes the language shown on the LCD of the operation panel. The default setting for a USA model is different from that for a Europe model. Also, one primary and one secondary language can be set on the operation panel. **Note**: The language you set for this SP automatically sets the setting for SP5011. For example, if you set "7" ("Spanish"), SP5011 is set automatically for "Spain." 1: Japanese 2: English (UK) 3: English (US) 4: French 5: German 6: Italian 7: Spanish 8: Dutch 13: Portuguese 17: Chinese 20: Russian

5011	Stamp Language Selection			
	Lets you set one primary and one secondary language. The settings are different for each country.			
	Location	**Language 1**	**Language 2**	**Comments**
	Japan	Japanese	English	0: The machine uses the "Language 1" settings.
	China	Chinese	English	
	US, UK, Korea	English	English	1: The machine uses the "Language 2" settings.
	France	French	English	
	Germany	German	English	
	Italy	Italian	English	
	Holland	Dutch	English	
	Spain	Spanish	English	
	Portugal	Portuguese	English	
	Russia	Russian	English	

5016	APS Paper Type **DFU**
	With this setting, you can enable APS (Auto Paper Select) for all types of copy paper, or only for plain and recycled paper. Normally, the copier uses APS for all copy jobs; it ignores the type of paper set for the job. [0~1/**0**/1] **0: Off**. APS operates for all types of paper and film. 1: On. APS operates only for plain paper and recycled paper.

Service Tables

5113	Optional Counter Type **DFU**
	Use this to switch on the keycard/MF accounting device. **Japan Only** [0 ~ 5/**0**/1 step] **0: None** 1: Key Card – RK2, RK3, Rk4 2: Key Card – Count-down type 3: Pre-Paid Card 5: MF Keypad

5118	Disable Copying **DFU**
	Enables/disables printing. Push Yes or No to enable or disable this feature. *For CSS use only:*

5120	Mode Clear Count Removal **DFU**
	For a machine that has a counting device, this SP sets the next action when a copy job stops because the card is removed, the card is expired, or if the paper supply runs out. **Japan Only** [0 ~ 2/**0**/1 step] **0: Yes** 1: Stand-by 2: No

5137	Stamp Function On/Off
	Enables/disables the stamp function. Set this SP to "1" after installation of the optional stamp board. [0~1/**0**/1] **0: Disabled** 1: Enabled

5501	PM Alarm Interval **DFU**
	Selects the PM interval. When the interval is expired, the machine tells the user on the operation panel. USA version: [0 ~ 100/**180**/100 feet step] Europe version: [0 ~ 100/**55**/0.1 km step]

5504	Jam Alarm Level **RDS** (**Concord) Only**	
001	Interval Setting	Sets the jam level for an alarm call. **Japan Only** [0 ~3/**3**/1 step] 0: No alarm 1: Low 2: Middle 3: High
002	Jam Alarm	Push **On** or Off to enable or disable the jam alarm. **Japan Only**

5505	Error Alarm Interval **DFU**
	Sets the error alarm interval. **Japan Only** [0 ~ 255/**800**/1 m step]

5507	Paper Supply Call Level **RDS (Concord) Only**	
	Adjusts the supply management call. The ranges, defaults, and steps are different, depending on your geographical area.	
	EU Roll	[100~1000/**300**/10 m]
	NA Roll	[300~30000/**900**/10 feed]
	Cassette	[250~10000/**1000**/1 sheet]
	Metric	
096	914 mm (A-Size)	
097	841 mm (A-Size)	
098	594 mm (A-Size)	
099	420 mm (A-Size)	
100	297 mm (A-Size)	
101	210 mm (A-Size)	
102	660 mm	
104	880 mm	
105	800 mm	
106	728 mm (B-Size)	
107	515 mm (B-Size)	
108	364 mm (B-Size)	
109	257 mm (B-Size)	
128	Other	
132	A3 SEF	
133	A4 SEF	
141	B4 SEF	
	Inch	
128	Other	
225	36 inch	
226	24 inch	
227	18 inch	
228	12 inch	
229	9 inch	
230	30 inch	
234	34 inch	
235	22 inch	
236	17 inch	
237	11 inch	
238	8½ inch	
160	11 x 17 SEF	
164	8½ x 14 SEF	
165	8½ x 13 SEF	
166	8½ x 11 SEF	
184	12 x 18 SEF	

Service
Tables

5508	CC Call Setting On/Off **RDS (Concord) Only**	
	Enables and disables the CC Call features below.	
001	Jam Stay	Enables/disables the automatic CC call for a paper jam that is not removed for a long time. [0~1/**1**/1] 0: The machine makes a CC Call automatically 1: The machine does not make a CC Call automatically
002	Continuous Jams	Enables/disables the automatic CC call for paper jams that occur frequently during machine operation. [0~1/**1**/1]
003	Cover Open	Enables the automatic CC call when a door is kept open for a long time. [0~1/**1**/1]
004	Screening On/Off	Enables/disables the CC call for low paper. [0~1/0/1] 0: Normal mode 1: Paper low detection
011	Interval Jam Stay	Sets the time to elapse for a jam to trigger a CC call when paper low detection is on. [3~30/**10**/1 s]
012	Frequency Continuous Jam	Sets the number of jammed sheets for a jam to trigger a CC call when paper low detection is on. [2~10/**5**/1 sheet]
013	Interval Cover Open	Sets the time to elapse for a door to remain open before a door open CC call is issued. [3~30/**10**/1 s]
021	Beep On/Off – Jam Stay	Sets the machine to sound a beep alert or a CC call when a jam occurs. [0~1/**1**/1] 0: Automatically issues a CC call. **1**: Beeps an alert without a CC call.
022	Manual Call On/Off – Continuous Jam	Enables/disables CC call alert for continuous jams when low paper detection is on. [0~1/**1**/1] 0: Automatically issues a CC call. **1**: No CC call (operator must call manually).
023	Manual Call On/Off – Cover Open	Enables/disables CC call alert for door open when low paper detection is on. [0~1/**1**/1] 0: Automatically issues a CC call. **1**: No CC call (operator must call manually).

5590	Auto Call Setting **RDS (Concord) Only**	
002	Door Open Alarm	Enables/disables the auto call.
		Push On or **Off** to enable or disable the setting.
003	Paper Supply Alarm	Enables/disables the auto call.
		Push On or **Off** to enable or disable the setting.
004	Toner Supply Alarm	Enables/disables the auto call.
		Push On or **Off** to enable or disable the setting.

5801	Memory All Clear
	Initializes the NVRAM. Erases the settings for all SP codes other than:
	• SP5811 (Machine Serial Number)
	• SP5849 (Installation Date)
	• SP7002 010-065 (Original Counters)
	• 7003 001-0203 (Print Counters)
	Before you use this SP, always print out an SMC report (SP5990-2) for you to refer to. To do this SP, follow the instructions on the LCD:
	Hold down "1" on the 10-keypad.
	• The initialization message is shown.
	• Then the "initialized" message is shown.
	• Switch the main switch off and on.

5802	Print Free Run
	Does a free run in the mode specified on the operation panel.
	Push On or **Off** to switch on or off.

5803	Input Check	Lets you test inputs from different components (☛ 5.5)

5804	Output Check	Lets you test outputs to different components (☛ 5.6)

5811	Machine Serial Number
	The serial number is set with this code before the machine goes out from the factory. This setting must be done after you replace the NVRAM.
	• Use the 10-key pad to input numbers 0~9.
	• Push ⊙ to input a hyphen.
	• To input letters, push ⊙ two times to input "A", three times to input "B", four times to input "C", and so on.

Service Tables

5812		Service Tel. No. Setting	
	001	Service Tel. Number	Set the telephone number (20 digits maximum).
	002	SMC Report Transfer Fax No.	

5816		RDS Function (**RDS Concord) Only**	
	001	Function Setting	Enables/disables the remote maintenance function. Push Yes or **No** to enable or disable.
	002	CE Call	Sets the start/end of maintenance with the CSS function.

5821	CSS PI Device Code	Sets the PI device code. **Japan Only**

5824	Upload NVRAM Data
	Uploads the NVRAM data to a flash IC card. **Note**: This SP must be done with SP5811 (Machine Serial Number) after you replace the NVRAM. For more, see "3. Replacement and Adjustment".

5825	Download NVRAM Data
	Downloads the NVRAM data stored on a flash IC card to the NVRAM in the machine. **Note**: This SP must be done with SP5811 (Machine Serial Number) after you replace the NVRAM. For more, see "3. Replacement and Adjustment".

5849		Installation Date	
	001	Display	Shows the date when the machine was installed.
	002	Switch to Print	Sets the machine to print the count totals when the installation date is shown with SP5849 001. [0~1/**0**/1] 0: No print 1: Print

5907	Plug & Play	Sets the maker name (20 bytes) and model name (50 bytes).	
		Maker Name	**Model Name**
		1: RICOH	imagio Wide 6020
		2: RICOH	Aficio 240W
		3: NRG	A045
		4: SAVIN	2400WE
		5: Gestetner	A045
		6: LANIER	LW310
		7: Wide Controller	A0 Model WG1 (Japan)
		8: RICOH	Aficio 241W (China)

5914	Printer Counter Display On/Off
	Push Yes to show the printer counter output on the screen when the User Tools/Counter key on the operation panel is pushed. This SP has an effect only after the optional printer controller is installed.

5945		Black and White Reversal	
	001	Preset Stamp	Push **No** or Yes to switch off/on the display of the user stamps in reverse.
	002	User Stamp	
	003	Page Numbering	
	004	Date Stamp	
	005	Background Numbering	

5958	Long Length Print Setting
	Set the maximum original and print lengths.
	[0 ~ 2/**0**/1 step]
	0: 3.6 m
	1: 6 m
	2: 15 m

5962	SMC: Disp. Kinds of Machine
	Sets the machine to display the name of the machine and maker that are shown in the SMC report.
	[0~1/**0**/1]
	0: Display on
	1: Display off

5965	Restart Copy Function **DFU**
	Enables/disables the Additional Copy function.
	[0 ~ 1/**0**/1 step]
	0: Disable
	1: Enable

5980	Counting Units: Total Counter **DFU**
	Sets the units for North America. **North America Only**
	[0~2/1/1 step]
	0: Feet
	1: Yards
	2: Meters
	Do not change this setting after installation.

5990		SMC Printout	
		Do this SP to output the SMC print.	
		• The image is output in an A4 SEF size.	
		• The paper roll is automatically used.	
		• If the roll feeder is not installed, feed A4 LEF/LTR SEF at the manual feed table.	
	001	ALL	Prints settings for SP Mode, UP Mode, Logging Data, Key Log.
	002	SP	Prints SP settings only.
	003	UP Program	Prints UP (User Tools) settings only
	004	Logging Data	Prints the log record only.
	005	Key Logging	Prints the log for the use of the operation panel only.

Service Tables

5998	Developer Lot Number
	Use this SP to enter the developer lot number at machine installation and when the developer is replaced.
	Note: The lot number is embossed on the edge of the developer packet.
	To enter the number:
	1 Enter the SP mode and select SP5998.
	2 Press a number key (0-9) to enter a number.
	3 To enter a hyphen press ⊛ once then press #.
	4 To enter a letter, press ⊛ repeatedly until the letter (A-Z) that you want to enter appears, then press #.
	5 If the next entry after a letter is a number, just press the number key. (You do not need to press #.)

SP7-XXX Data Log

7001	Drum Drive Motor Operation Time
	Shows the drum-drive-motor operation time (to check the print count and drum operation time.)

7002		Original Counter	
	001	Total Sheet Count	Shows the count for the features that were used.
	002	Copy Mode Sheet Count	
	003	Scanner Mode Sheet Count	
	006	Total Length	
	007	Copy Mode Length	
	008	Scanner Mode Length	
		Metric	
	010	Original Size: Metric: Std. A: A4 SEF	
	011	Original Size: Metric: Std. A: A3 SEF	
	012	Original Size: Metric: Std. A: A3 LEF	
	013	Original Size: Metric: Std. A: A2 SEF	
	014	Original Size: Metric: Std. A: A2 LEF	
	015	Original Size: Metric: Std. A: A1 SEF	
	016	Original Size: Metric: Std. A: A1 LEF	
	017	Original Size: Metric: Std. A: A0 SEF	
	018	Original Size: Metric: Std. A: 2A2	
	019	Original Size: Metric: Std. A: 3A2	
	020	Original Size: Metric: Std. A: 2A1	
	021	Original Size: Metric: Std. A: 3A1	
	022	Original Size: Metric: Std. A: 4A1	
	023	Original Size: Metric: Std. A: 5A1	
	024	Original Size: Metric: Std. A: 6A1	
	025	Original Size: Metric: Std. A: 7A1	
	026	Original Size: Metric: Std. A: 2A0	
	027	Original Size: Metric: Std. A: 3A0	
	028	Original Size: Metric: Std. A: 4A0	
	029	Original Size: Metric: Std. A: 5A0	
	030	Original Size: Metric: Std. A: Custom 841 mm	
	031	Original Size: Metric: Std. A: Custom 594 mm	
	032	Original Size: Metric: Std. A: Custom 420 mm	
	033	Original Size: Metric: Std. A: Custom 297 mm	
	034	Original Size: Metric: Std. A: Custom 210 mm	
	035	Original Size: Metric: Std. A: Custom Bypass	
	050	Original Size: Metric: Std. B: B4 SEF	
	051	Original Size: Metric: Std. B: B3 SEF	
	052	Original Size: Metric: Std. B: B3 LEF	
	053	Original Size: Metric: Std. B: B2 SEF	
	054	Original Size: Metric: Std. B: B2 LEF	
	055	Original Size: Metric: Std. B: B1 SEF	
	056	Original Size: Metric: Std. B: 2B2	
	057	Original Size: Metric: Std. B: 3B2	
	058	Original Size: Metric: Std. B: 2B1	
	059	Original Size: Metric: Std. B: 3B1	
	060	Original Size: Metric: Std. B: 4B1	
	061	Original Size: Metric: Std. B: Custom 728 mm	

SP (SERVICE PROGRAM) MODE TABLES

7002		Original Counter	SM
	062	Original Size: Metric: Std. B: Custom 515 mm	
	063	Original Size: Metric: Std. B: Custom 364 mm	
	064	Original Size: Metric: Std. B: Custom 257 mm	
	065	Original Size: Metric: Std. B: Custom Bypass	
		Inch	
	100	Original Size: Inch: Eng: 8 ½ x 11 SEF (A)	
	101	Original Size: Inch: Eng: 11 x 17 SEF (B)	
	102	Original Size: Inch: Eng: 11 x 17 LEF (B)	
	103	Original Size: Inch: Eng: 17 x 22 SEF (C)	
	104	Original Size: Inch: Eng: 17 x 22 LEF (C)	
	105	Original Size: Inch: Eng: 22 x 34 SEF (D)	
	106	Original Size: Inch: Eng: 22 x 34 LEF (D)	
	107	Original Size: Inch: Eng: 34 x 44 SEF (E)	
	108	Original Size: Inch: Eng: 30 x 42 SEF (E)	
	109	Original Size: Inch: Eng: 2C	
	110	Original Size: Inch: Eng: 3C	
	111	Original Size: Inch: Eng: 2D	
	112	Original Size: Inch: Eng: 3D	
	113	Original Size: Inch: Eng: 4D	
	114	Original Size: Inch: Eng: 5D	
	115	Original Size: Inch: Eng: 6D	
	116	Original Size: Inch: Eng: 7D	
	117	Original Size: Inch: Eng: 2E	
	118	Original Size: Inch: Eng: 3E	
	119	Original Size: Inch: Eng: 4E	
	120	Original Size: Inch: Eng: 5E	
	121	Original Size: Inch: Eng: A Custom 8H	
	122	Original Size: Inch: Eng: B Custom 11	
	123	Original Size: Inch: Eng: C Custom 17	
	124	Original Size: Inch: Eng: D Custom 22	
	125	Original Size: Inch: Eng: E Custom 30/34	
	126	Original Size: Inch: Eng: Custom: Bypass	
	127	Original Size: Inch: 8½ x 13 SEF	
	128	Original Size: Inch: 8½ x 14 SEF	
	130	Original Size: Inch: Arc: 9 x 12 SEF (A)	
	131	Original Size: Inch: Arc: 12 x 18 SEF (B)	
	132	Original Size: Inch: Arc: 12 x 18 LEF (B)	
	133	Original Size: Inch: Arc: 18 x 24 SEF (C)	
	134	Original Size: Inch: Arc: 18 x 24 LEF (C)	
	135	Original Size: Inch: Arc: 24 x 36 SEF (D)	
	136	Original Size: Inch: Arc: 24 x 36 LEF (D)	
	137	Original Size: Inch: Arc: 36 x 48 SEF (E)	
	138	Original Size: Inch: Arc: 30 x 42 SEF (E)	
	139	Original Size: Inch: Arc: 2C	
	140	Original Size: Inch: Arc: 3C	
	141	Original Size: Inch: Arc: 2D	
	142	Original Size: Inch: Arc: 3D	
	143	Original Size: Inch: Arc: 4D	
	144	Original Size: Inch: Arc: 5D	
	145	Original Size: Inch: Arc: 6D	
	146	Original Size: Inch: Arc: 7D	
	147	Original Size: Inch: Arc: 2E	
	148	Original Size: Inch: Arc: 3E	

7002	Original Counter
149	Original Size: Inch: Arc: 4E
150	Original Size: Inch: Arc: 5E
151	Original Size: Inch: Arc: A Custom: 9
152	Original Size: Inch: Arc: B Custom: 12
153	Original Size: Inch: Arc: C Custom: 18
154	Original Size: Inch: Arc: D Custom 24
155	Original Size: Inch: Arc: E Custom: 30/36
156	Original Size: Inch: Arc: Custom: Bypass

7003	Print Counter
	Shows the total number of prints and total number of prints for each application. Range: 0 000 000 ~ 9 999 999
	Metric
001	Total Key Count
002	Copy Mode Key Count
003	Print Mode Key Count
004	Total Prints Display
005	Copy Prints Display
006	Printer Prints Display
010	Original Size: Metric: Std. A: A4 SEF
011	Original Size: Metric: Std. A: A3 SEF
012	Original Size: Metric: Std. A: A3 LEF
013	Original Size: Metric: Std. A: A2 SEF
014	Original Size: Metric: Std. A: A2 LEF
015	Original Size: Metric: Std. A: A1 SEF
016	Original Size: Metric: Std. A: A1 LEF
017	Original Size: Metric: Std. A: A0 SEF
018	Original Size: Metric: Std. A: 2A2
019	Original Size: Metric: Std. A: 2A2
020	Original Size: Metric: Std. A: 2A1
021	Original Size: Metric: Std. A: 3A1
022	Original Size: Metric: Std. A: 4A1
023	Original Size: Metric: Std. A: 5A1
024	Original Size: Metric: Std. A: 6A1
025	Original Size: Metric: Std. A: 7A1
026	Original Size: Metric: Std. A: 2A0
027	Original Size: Metric: Std. A: 3A0
028	Original Size: Metric: Std. A: 4A0
029	Original Size: Metric: Std. A: 5A0
030	Original Size: Metric: Std. A: Custom 841 mm
031	Original Size: Metric: Std. A: Custom 594 mm
032	Original Size: Metric: Std. A: Custom 420 mm
033	Original Size: Metric: Std. A: Custom 297 mm
034	Original Size: Metric: Std. A: Custom 210 mm
035	Original Size: Metric: Std. A: Custom Bypass
050	Original Size: Metric: Std. B: B4 SEF
051	Original Size: Metric: Std. B: B3 SEF
052	Original Size: Metric: Std. B: B3 LEF
053	Original Size: Metric: Std. B: B2 SEF
054	Original Size: Metric: Std. B: B2 LEF
055	Original Size: Metric: Std. B: B1 SEF
056	Original Size: Metric: Std. B: 2B2

Service Tables

SP (SERVICE PROGRAM) MODE TABLES

7003	Print Counter
057	Original Size: Metric: Std. B: 3B2
058	Original Size: Metric: Std. B: 2B1
059	Original Size: Metric: Std. B: 3B1
060	Original Size: Metric: Std. B: 4B1
061	Original Size: Metric: Std. B: Custom 728 mm
062	Original Size: Metric: Std. B: Custom 515 mm
063	Original Size: Metric: Std. B: Custom 364 mm
064	Original Size: Metric: Std. B: Custom 257 mm
065	Original Size: Metric: Std. B: Custom Bypass
	Inch
100	Transfer Size: Inch: Eng: 8 ½ x 11 SEF (A)
101	Transfer Size: Inch: Eng: 11 x 17 SEF (B)
102	Transfer Size: Inch: Eng: 11 x 17 LEF (B)
103	Transfer Size: Inch: Eng: 17 x 22 SEF (C)
104	Transfer Size: Inch: Eng: 17 x 22 LEF (C)
105	Transfer Size: Inch: Eng: 22 x 34 SEF (D)
106	Transfer Size: Inch: Eng: 22 x 34 LEF (D)
107	Transfer Size: Inch: Eng: 34 x 44 SEF (E)
108	Transfer Size: Inch: Eng: 30 x 42 SEF (E)
109	Transfer Size: Inch: Eng: 2C
110	Transfer Size: Inch: Eng: 3C
111	Transfer Size: Inch: Eng: 2D
112	Transfer Size: Inch: Eng: 3D
113	Transfer Size: Inch: Eng: 4D
114	Transfer Size: Inch: Eng: 5D
115	Transfer Size: Inch: Eng: 6D
116	Transfer Size: Inch: Eng: 7D
117	Transfer Size: Inch: Eng: 2E
118	Transfer Size: Inch: Eng: 3E
119	Transfer Size: Inch: Eng: 4E
120	Transfer Size: Inch: Eng: 5E
121	Transfer Size: Inch: Eng: Custom 8½
122	Transfer Size: Inch: Eng: Custom 11
123	Transfer Size: Inch: Eng: Custom 17
124	Transfer Size: Inch: Eng: Custom 22
125	Transfer Size: Inch: Eng: Custom 30/34
126	Transfer Size: Inch: Eng: 8½ x 13 SEF
127	Transfer Size: Inch: Eng: 8½ x 14 SEF
130	Transfer Size: Inch: Arc: 9 x 12 SEF (A)
131	Transfer Size: Inch: Arc: 12 x 18 SEF (B)
132	Transfer Size: Inch: Arc: 12 x 18 LEF (B)
133	Transfer Size: Inch: Arc: 18 x 24 SEF (C)
134	Transfer Size: Inch: Arc: 18 x 24 LEF (C)
135	Transfer Size: Inch: Arc: 24 x 36 SEF (D)
136	Transfer Size: Inch: Arc: 24 x 36 LEF (D)
137	Transfer Size: Inch: Arc: 36 x 48 SEF (E)
138	Transfer Size: Inch: Arc: 30 x 42 SEF (E)
139	Transfer Size: Inch: Arc: 2C
140	Transfer Size: Inch: Arc: 3C
141	Transfer Size: Inch: Arc: 2D
142	Transfer Size: Inch: Arc: 3D
143	Transfer Size: Inch: Arc: 4D
144	Transfer Size: Inch: Arc: 5D

7003		Print Counter	B125
	145	Transfer Size: Inch: Arc: 6D	
	146	Transfer Size: Inch: Arc: 7D	
	147	Transfer Size: Inch: Arc: 2E	
	148	Transfer Size: Inch: Arc: 3E	
	149	Transfer Size: Inch: Arc: 4E	
	150	Transfer Size: Inch: Arc: 5E	
	151	Transfer Size: Inch: Arc: Custom 9	
	152	Transfer Size: Inch: Arc: Custom 12	
	153	Transfer Size: Inch: Arc: Custom 18	
	154	Transfer Size: Inch: Arc: Custom 24	
	155	Transfer Size: Inch: Arc: Custom 30/36	
	156	Transfer Size: Inch: Arc: Custom Bypass	
		Other	
	180	Transfer Area: Metric A (A3) (EU only)	
	181	Transfer Area: Metric B (B3) (EU only)	
	182	Transfer Area: Inch Eng (Eng B) (NA only)	
	183	Transfer Area: Inch Arc (Arc B) (NA only)	
	184	Transfer Area: Square Feed (NA only)	
	185	Transfer Area: A4 Units (EU only)	
	201	Total Length Display	
	202	Copy Mode Length Display	
	203	Print Mode Length Display	

7004	Total Counter for CSS Setting **RDS (Concord)) Only**
	Sets the total count. [0~9999999/**1**/1]

Service Tables

7101		Length Count by Width
	Metric	
096	914 mm Roll	Shows the print length for each paper roll width.
097	841 mm Roll	
098	594 mm Roll	
099	420 mm Roll	
100	297 mm Roll	
101	210 mm Roll	
102	660 mm Roll	
103	440 mm Roll	
104	880 mm Roll	
105	800 mm Roll	
106	728 mm Roll	
107	515 mm Roll	
108	364 mm Roll	
109	275 mm Roll	
110	182 mm Roll	
128	Other	
132	A3 Cut SEF	
133	A4 Cut SEF	
141	B4 Cut SEF	
	Inch	
128	Other	
160	11 x 17 Cut SEF	
164	8½ x 14 Cut SEF	
165	8½ x 13 Cut SEF	
184	12 x 18 Cut SEF	
225	36 inch Roll	
226	24 inch Roll	
227	18 inch Roll	
228	12 inch Roll	
229	9 inch Roll	
230	30 inch Roll	
234	34 inch Roll	
235	22 inch Roll	
236	17 inch Roll	
237	11 inch Roll	
238	8.5 inch Roll	

7204		Length Count by Tray	
	001	1st Roll	Shows the total copy count for each feed station
	002	2nd Roll	
	003	Cassette	
	005	By-pass feed	

7207		Corona Wire Cleaning	
	001	Display Cleaning Count	Shows the number of times that the charge corona wire was cleaned (Range: 0~9,999,999)
	002	Clear Cleaning Count	Resets the count for SP7201 001.

7301		Total Sheet Count by Reproduction Ratio	
	001	25.0 ~ 35.3%	Shows the total copy count for each reproduction ratio (for set reproduction ratios).
	002	35.4 ~ 49.9%	
	003	50.0 ~ 70.6%	
	004	70.7 ~ 99.9%	
	005	100%	
	006	100.1 ~ 199.9%	
	007	200.0 ~ 400.0%	
	008	Direct Mag.	Shows the total copy count for each feature.
	009	Direct Size Mag.	
	010	Size Mag.	
	011	Fixed Mag.	
	012	User Auto R/E	
	013	Fine Tune	

Service Tables

SP (SERVICE PROGRAM) MODE TABLES

7304		Sheet Count by Copy Mode	
	001	Text	Shows the total copy count for each copy mode.
	002	Text/Photo	Each counter counts up at the time of paper feed.
	003	Photo	
	004	Pale Original	
	005	Generation	
	006	Blue Erase	
	007	Photo 2	
	008	Line Drawing	
	022	Erase	
	023	Shift	
	024	Border Erase	
	025	Delete Inside	
	026	Delete Outside	
	031	Double Copies	
	032	Image Repeat	
	033	Positive/Negative	
	034	Mirror Image	
	035	Image Overlay	
	036	Copy Merge	
	041	Background Numbering	
	042	User Stamp Repeat	
	043	Preset Stamp	
	044	User Stamp	
	045	Date Stamp	
	046	Page Numbering	
	051	Sort	
	052	Rotate Sort	

7305		Multiple Copy Job Counter	
	001	1 to 1	Shows the job count for each multiple copy mode
	002	1 to 2-5	
	003	1 to 6-10	
	004	1 to 11-20	
	005	1 to 21-50	
	006	1 to 51-99	

7306		Number of Jobs per Mode	
	001	Sample Copy	Shows the job count for each mode.
	002	Partial Copy	
	003	Sort/Rotate Sort	

7401	Total SC Counter	Shows the total SC count as a 4-digit number.

7403		SC History
		Shows the 10 most recent SC code numbers.
	001	Latest
	002	Latest 1st
	003	Latest 2nd
	004	Latest 3rd
	005	Latest 4th
	006	Latest 5th
	007	Latest 6th
	008	Latest 7th
	009	Latest 8th
	010	Latest 9th

7405		System SC History
		Shows the following data about the 10 most recent SC codes:
		• **File name** where the system error occurred.
		• **Line number** where the error occurred in the file.
		• **Value** acquired when the error occurred.
		• **Total count** for the error occurrence.
	001	Latest
	002	Latest 1st
	003	Latest 2nd
	004	Latest 3rd
	005	Latest 4th
	006	Latest 5th
	007	Latest 6th
	008	Latest 7th
	009	Latest 8th
	010	Latest 9th

Service Tables

7501	Total Jam Counter
	Shows the total paper jam count (copy paper and original) as a 4-digit number.

7502	Total Paper Jam Counter
	Shows the total paper jam count (copy paper) as a 4-digit number.

7503	Total Original Jam Counter
	Shows the total paper jam count (original) as a 4-digit number.

SP (SERVICE PROGRAM) MODE TABLES

7504		Paper Jam Counter by Location
		Shows the jam count for each location.
	001	Paper Set Sensor
	002	Paper Registration Sensor
	003	Fusing Exit Sensor
	051	Original Removed
	053	Paper Set Sensor (While RF In Use)
	055	Bypass Length Over
	060	Registration Sensor OFF (Leading Edge)
	061	Registration Sensor ON (Leading Edge)
	062	Registration Sensor OFF (Trailing Edge)
	063	Registration Sensor ON (Trailing Edge)
	070	Fusing Exit Sensor OFF (Leading Edge)
	071	Fusing Exit Sensor ON (Leading Edge)
	072	Fusing Exit Sensor OFF (Trailing Edge)
	081	RF Exit Sensor ON (Leading Edge)
	086	Relay Sensor ON (Leading Edge)
	087	Relay Sensor OFF (Trailing Edge)
	088	Paper Cassette Pre-Feed Miss
	090	Cutter Abnormal
	091	RF Drawer Opened During Job
	098	RF Length Short
	099	RF Length Long

7505		Original Jam Counter by Jam Location
		Shows the jam count for each location.
	015	Scanner Unit Open
	016	Upper Unit Open
	017	Original Skewed
	020	Registration Sensor OFF – Leading Edge
	021	Registration Sensor ON – Leading Edge Not Detected
	022	Registration Sensor OFF – Trailing Edge Not Detected
	025	Original Exit Sensor OFF – Original Leading Edge
	026	Original Exit Sensor ON – Original Trailing Edge
	027	Original Exit Sensor OFF – Original Trailing Edge
	030	Second Original Inserted Too Soon
	031	Original Length Exceeded Limit
	032	Original Removed
	040	Original Stop

7506	Copy Jam Counter by Paper Width
	Shows the jam count for each paper width.
	Metric
096	914 mm Roll
097	841 mm Roll
098	594 mm Roll
099	420 mm Roll
100	297 mm Roll
101	210 mm Roll
102	660 mm Roll
103	440 mm Roll
104	880 mm Roll
105	800 mm Roll
106	728 mm Roll
107	565 mm Roll
108	364 mm Roll
109	275 mm Roll
128	Other
132	A3 Cut SEF
133	A4 Cut SEF
141	B4 Cut SEF
	Inch
128	Other
160	11 x 17 Cut SEF
164	8½ x 14 Cut SEF
165	8½ x 13 Cut SEF
184	12 x 18 Cut SEF
225	36 inch Roll
226	24 inch Roll
227	18 inch Roll
228	12 inch Roll
229	9 inch Roll
230	30 inch Roll
234	34 inch Roll
235	22 inch Roll
236	17 inch Roll
237	11 inch Roll
238	8.5 inch Roll

Service
Tables

SP (SERVICE PROGRAM) MODE TABLES

7507		Jam History
		Shows the 10 most recent jams.
	001	Copy Latest
	002	Copy Latest 1st
	003	Copy Latest 2nd
	004	Copy Latest 3rd
	005	Copy Latest 4th
	006	Copy Latest 5th
	007	Copy Latest 6th
	008	Copy Latest 7th
	009	Copy Latest 8th
	010	Copy Latest 9th
	011	Original Latest
	012	Original Latest 1st
	013	Original Latest 2nd
	014	Original Latest 3rd
	015	Original Latest 4th
	016	Original Latest 5th
	017	Original Latest 6th
	018	Original Latest 7th
	019	Original Latest 8th
	020	Original Latest 9th

7801		ROM Version	
	001	SCU	Shows the ROM serial numbers.
	002	ECU	
	003	LCDC	
	004	RDS (Concord)	
	005	HDC	
	006	Scanner	
	007	Printer	

7803	PM Counter Display	Shows the PM counter.

7804	PM Counter Clear	Do this SP to reset SP7803 (PM Counter).

7807	SC/Jam Counter Clear	Do this SP to reset the Jam/SC count to 0.

7808	Counter Clear
	Do this SP to reset non-accounting counters to 0. The following counters are not reset: total counter (electronic counter), copy counter, print counter, P/O counter, C/O counter.

7810	Key Operator Code Clear
	Do this SP to reset the key operator codes.
	Nullifies the key operator code.

7811	Original Counter Clear	Do this SP to reset SP7002 (Original Counter).

7816	Total Sheet by Roll Counter Clear	
001	1st Roll	Resets the copy counter for each roll (SP7204)
002	2nd Roll	
003	Cassette	
005	By-pass feed	

7819	Copy Count: Clear Width
	Do this SP to reset the copy counter for each roll width (SP7101)

7822	Total Sheet Count by Reproduction Ratio Clear
	Do this SP to reset the copy counters for SP7301 (Total Sheet Count by Reproduction Ratio)

7820	Send on Total Count **Japan Only**
	Sends the electronic total count.

7822	Count Clear: Magnification **Japan Only**
	Clears SP7301.

7825	Total Feed Meter Clear **DFU**
	Do this SP to reset the electronic total counter.
	This SP mode does not show that the counter can be reset. Check the initial settings counter, to see if this is possible. When the electronic counter is more than 0, the mechanical total counter starts counting. (The initial value of the mechanical total counter is 0.)

7826	Optional Counter Error **Japan Only**
	Displays the total count for unsuccessful attempts to read the count for an optional counter device.

7827	Optional Counter Error Clear **Japan Only**
	Clears all the count of SP7826.

Service Tables

SP (SERVICE PROGRAM) MODE TABLES

7834	Coverage Data Clear		
	These SPs reset the data coverage SPs shown below.		
001	Clears:	SP8831	Dot Coverage Count: Accumulated Average
		SP8841	Dot Coverage Count: First Page
002	Clears:	SP8781	Number of Total Toner Cartridges Used
003	Clears:	SP8901 001	Toner Cartridge Count: Previous – Pages
		SP8901 010	Toner Cartridge Count: Previous - Meters
		SP8911 001	Toner Cartridge Count: Before Previous - Pages
		SP8911 010	Toner Cartridge Count: Before Previous - Meters
004	Clears:	SP8851	Dot Coverage Count: 0-10%
		SP8861	Dot Coverage Count: 11-20%
		SP8871	Dot Coverage Count: 21-30%
		SP8881	Dot Coverage Count: 31%-
255	Clears:	Clears all Dot Coverage Count SPs (SP8831~SP8881)	

7903	Total Count: Factory Setting **Japan Only**
	Sets the count for the total number of prints at the factory. Limit: 10,000 sheets

7904	Copy Count Clear: Mode
	Do this SP to reset the counters of the total copies by copy mode (SP7304).

7905	Count Clear: Multiple
	Do this SP to reset the counters of the copy job number of each multiple copy mode (SP7305).

7906	Count Clear: Scan
	Do this SP to reset mode scan count (SP7202).

7907	Jobs Per Mode Clear
	Do this SP to reset the number of jobs per mode counters (SP7306).

7908	Copy: Original Count Clear
	To reset the copy mode original count, do SP7002 002, 007.

7909	SC/Jam History Clear
	Do this SP to reset the counts for these SPs:
	• 7403 SC History (Latest Counts)
	• 7405 SC History (Details)
	• 7507 Jam History (Latest – Copy Application)

7917	Original Counter Clear
	To reset the original counter, do SP7002.

SP8xxx Data Log 2

These SPs are for future reference.

8781	Number of Total Toner Cartridges Used
	Shows and prints the sum of the total number of toner cartridges plus the total number of toner bottles installed in the machine.

8831	Dot Coverage Count: Accumulated Average
	Shows the average page coverage as a percent, calculated from the coverage counts of all pages. [0.00~100/**0**/0.01%] This count gives data for copy service vendors to calculate "quick charges", and also lets designers monitor how the machines are used in the field. **Note**: SP7834 resets this counter.

---	Dot Coverage
	These SPs show counts for the first pages and the number of pages for different quantities of coverage. This count gives data for copy service vendors to calculate "quick charges", and also lets designers monitor how the machines are used in the field. **Note**: SP7834 resets these counters.
8841	Dot Coverage Count: First Page
8851	Dot Coverage Count: 0-10%
8861	Dot Coverage Count: 11-20%
8871	Dot Coverage Count: 21-30%
8881	Dot Coverage Count: 31%-

8901	Toner Cartridge Count: Previous
	Shows the number of meters and pages that were made with the previous toner bottle.
001	Pages
010	Meters

8911	Toner Cartridge Count: Before Previous
	Shows the number of meters and pages that were made with the bottle before the previous toner bottle.
001	Pages
010	Meters

Service Tables

DETAILED DESCRIPTIONS

6. DETAILED DESCRIPTIONS

6.1 OVERVIEW

6.1.1 MACHINE GENERAL LAYOUT
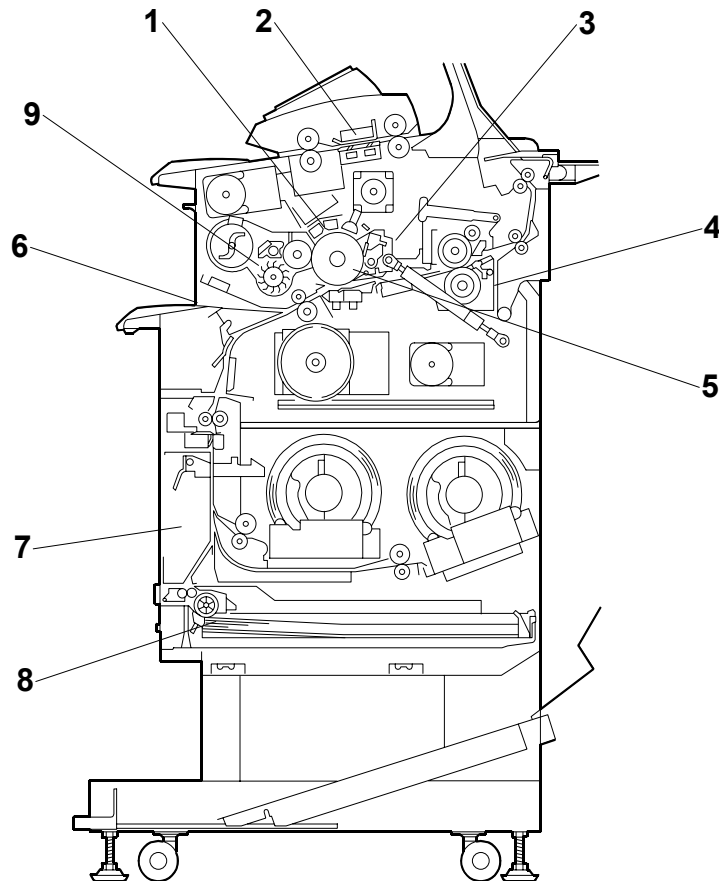
1.	Image Writing Unit	Uses an LPH (LED Print Head)
2.	Scanner Unit	Uses a CIS (Contact Image Sensor) unit for scanning. The CIS is made of 5 sensor arrays connected at four joints. The CIS scans the face-down original from below.
3.	Cleaning Unit	A counter blade cleans the drum.
4.	Fusing Unit	The hot roller contains one halogen lamp. The machine uses the applicable fusing temperature for the paper size and paper type that the user input at the operation panel.
5.	OPC Drum	The components around the OPC drum do the charging, image writing, development, transfer, separation, cleaning, and quenching.
6.	Manual Feed Table	The user can feed paper from the manual feed table (this is also referred to as the bypass tray).
7.	Roll Feeder	Paper also feeds from the optional roll feeder with one or two paper rolls installed.
8.	Paper Cassette	Cut sheets are also supplied from the optional paper cassette.
9.	Development Unit	Toner transfers from a magnetic roller to the OPC drum. An ID sensor controls the toner concentration.

6.1.2 MECHANICAL COMPONENT LAYOUT
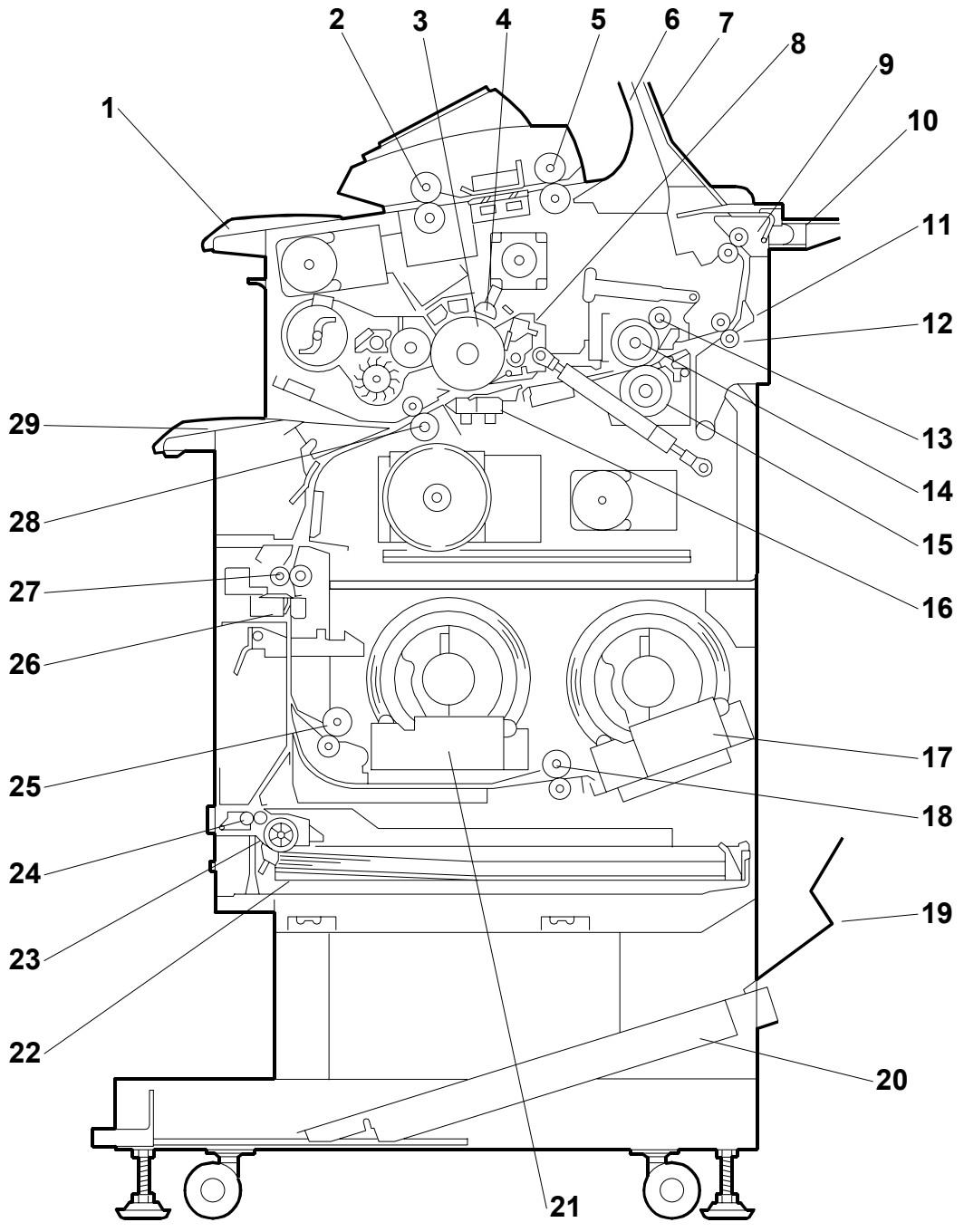
1. Original Table
2. Original Feed Rollers
3. OPC Drum
4. Charge Corona Unit
5. Original Exit Roller
6. Upper Output Stacker
7. Original Upper Exit Guides
8. Cleaning Unit
9. Upper Exit Rollers
10. Original Exit Guides (Straight-Through)
11. Paper Exit Junction Gate
12. Fusing Exit Rollers
13. Fusing Cleaning Roller
14. Hot Roller
15. Pressure Roller

16. T&S Corona Unit
17. Roll 2 Holders
18. Roll 2 Paper Feed Rollers
19. Lower Output Guide
20. Lower Output Stacker
21. Roll 1 Holder
22. Paper Cassette
23. Paper Cassette Feed Roller
24. Paper Cassette Grip Rollers
25. Roll 1 Paper Feed Rollers

26. Cutter
27. Roll/Cassette Exit Rollers
28. Registration Rollers
29. Manual Feed Table (Bypass)
30. Development Unit
31. Toner Cartridge

Detailed Descriptions

6.1.3 DRIVE LAYOUT
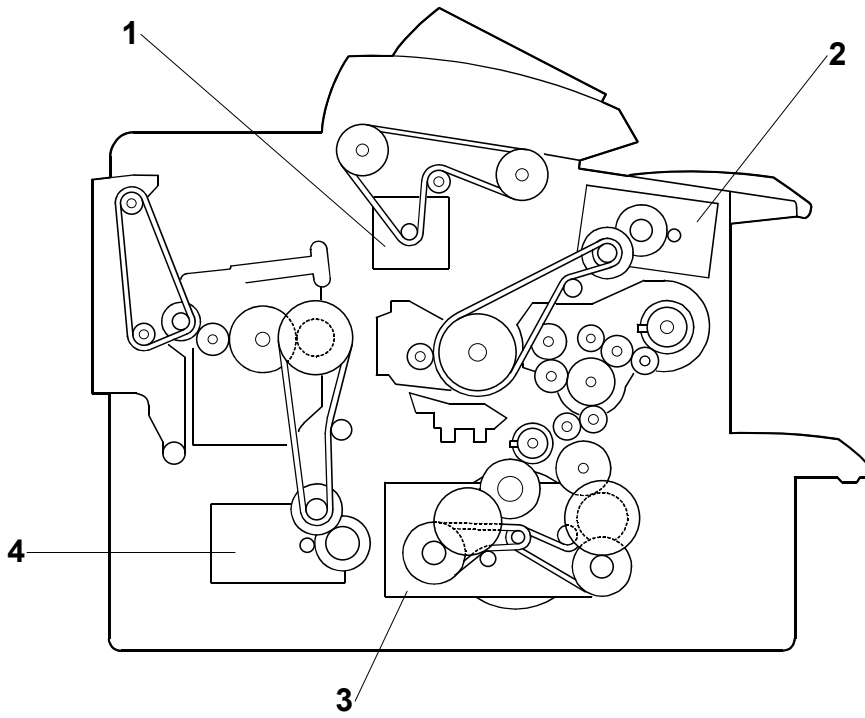
1. Scanner Motor
2. Drum Motor
3. Main Motor
4. Fusing Motor

6.1.4 ORIGINAL/COPY PAPER PATHS

$\Rightarrow$
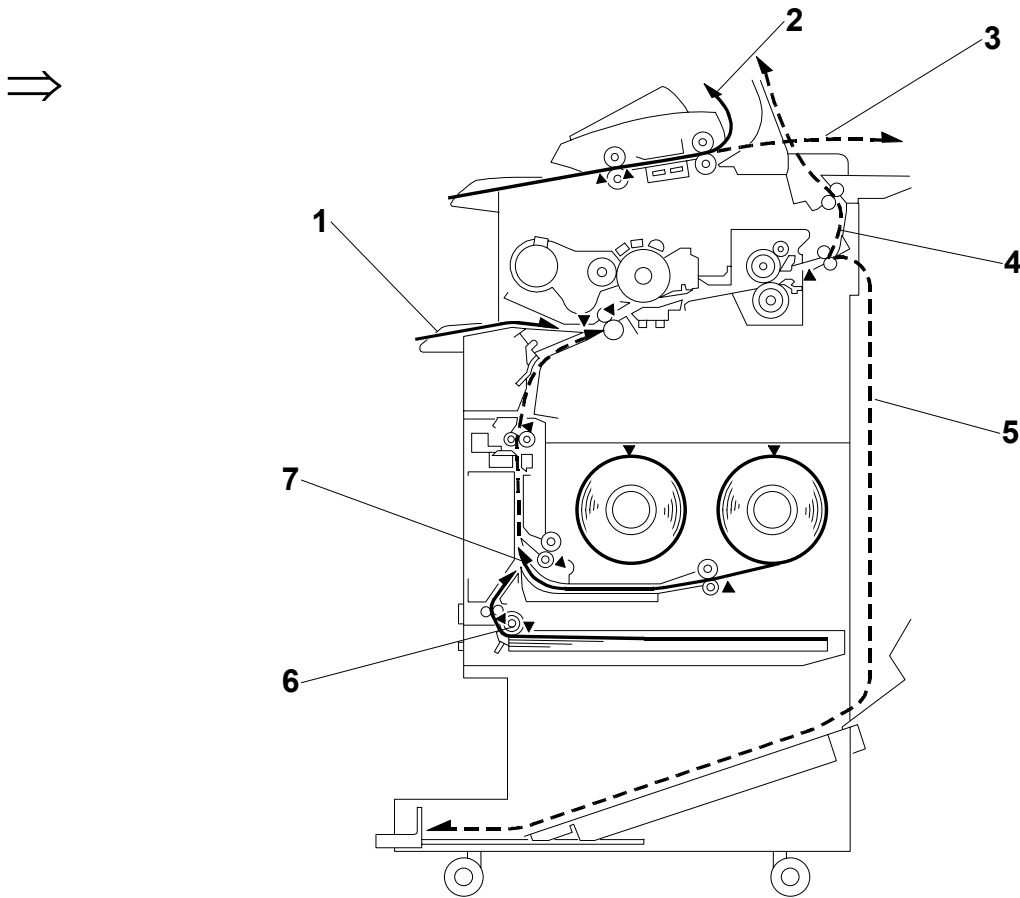
1. Manual Feed (Bypass) Path
2. Original Path (Upper)   Upper output stacker installed.
3. Original Path (Straight-Through)   Upper output stacker removed.
4. Paper Path (Upper)   Normal (Default)
5. Paper Path (Rear)   Selectable*[1]
6. Paper Path (Paper Cassette)
7. Paper Path (Rolls)   B461 (1 Roll), B462 (2 Rolls)

*[1] The position of the copy-exit selection lever on the rear top edge of the machine controls where the copy feeds out.

Lever UP	Lever DOWN
The operator pushes the "Upper Copy Output" key to set the exit: • Key lamp ON: Copy feeds out at **4**. • Key lamp OFF: Copy feeds out at **5**.	The "Upper Copy Output" key is disabled and the copy always feeds out at **4**. For normal operation, the lever must be up; this enables the "Upper Copy Output" key.

$\Rightarrow$

Detailed
Descriptions

6.2 SCANNER

6.2.1 OVERVIEW
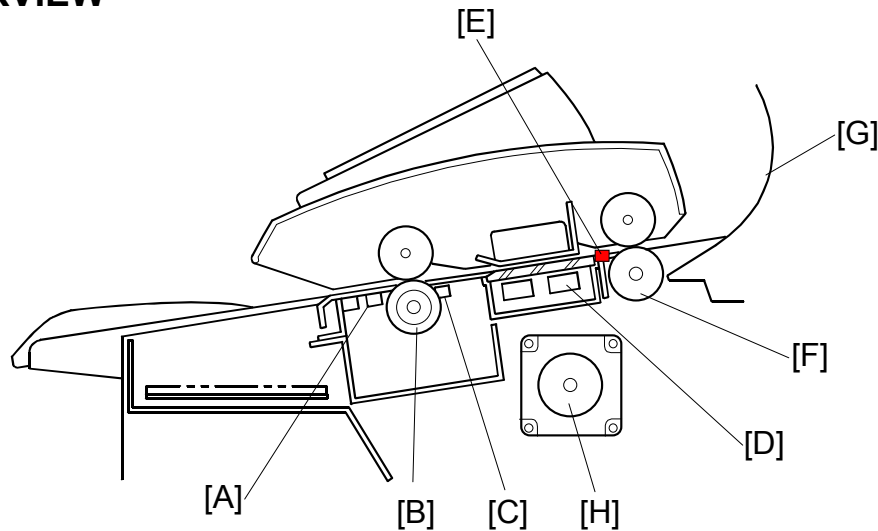
Only one original can be placed face-down on the original table.

Original set sensor [A]: Detects the leading edge of the paper. Then the machine stops original feed for 1 second (Delay 1). This gives the user time to put the paper straight. This sensor also functions as a width sensor, with the original width sensors (not shown) below the original feed table. (☛6.2.3)

> **NOTE:** Delay 1 can be adjusted. User Tools→ 1. System Settings→ 1. General Features→ 08 Original Feed Delay 1.

Original feed roller [B]: Feeds the original to the registration sensor [C].

Registration sensor [C]: When this detects the leading edge of the original, the machine stops original feed for 1 second (Delay 2). This gives the user time to check that the original is straight. If the original is not straight, the user can push the "Scanner Stop" button to stop original feed, remove the original, and try again.

> **NOTE:** Delay 2 can be adjusted. User Tools→ 1. System Settings→ 1. General Features→ 09 Original Feed Delay 2.

CIS (Contact Image Sensor) [D]: Scans the original from below.

Original exit sensor [E]: Detects the leading and trailing edge of the original to make sure that there is no jam.

Original exit rollers [F]: Feed the original out while the scanned image is processed

Upper output tray [G]: Receives the original after scanning. Long originals will curl in the tray.

> **NOTE:** If the original output trays are removed, the original feeds in a straight path, out of the rear of the machine. The original feed path through the machine is the same. The user will remove the original output trays when scanning thick originals.

Scanner motor [H]: Controls the original feed roller and original exit roller. (☛6.2.4)

6.2.2 SCANNER LAYOUT
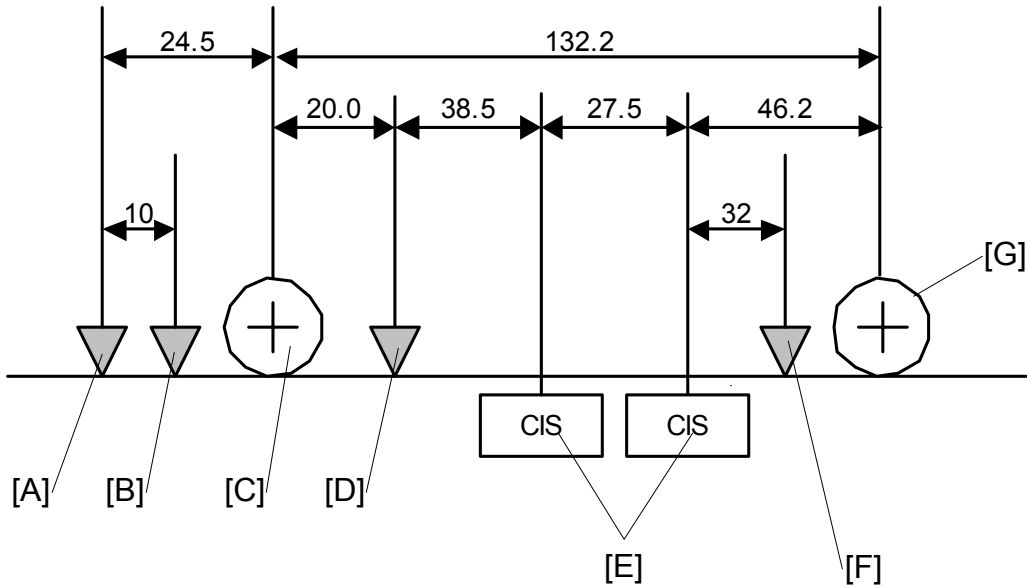
[A]: Original Width Sensors. Detect the width of the original.

[B]: Original Set Sensor. Detects when the original is put on the original feed table.

[C]: Original Feed Roller. Feeds the original to the original registration sensor.

[D]: Original Registration Sensor. Detects the leading edge of the original and stops feed temporarily for the user to align the original manually.

[E]: CIS. Scans the original and sends the image data to the VDB.

[F]: Original Exit Sensor. Detects the leading and trailing edge of the original for job timing.

[G]: Original Exit Roller. Feeds the original out of the machine.

Detailed
Descriptions

6.2.3 ORIGINAL WIDTH DETECTION
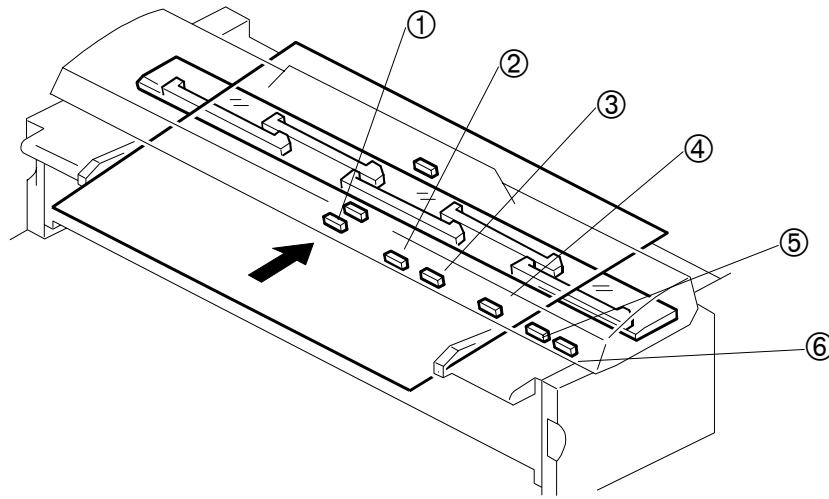
Six sensors below the original feed table detect the original width. These are the five original width sensors and the original set sensor, which is also used as an original width sensor.

- The original set sensor ① detects A4 or B4 SEF and North American A size originals.
- The original width sensors ② to ⑥ detect larger sizes.

The "Original Size Detect" user tool setting controls the types of original sizes that the machine detects: User Tools→ 1. System Settings→ 1. General Settings→ 2. Original Size Detect.

- In the metric model, this is either A series or B series.
- In the inch model, this is either Engineering (ANSI) or Architecture.

Metric

EU		①	②	③	④	⑤	⑥
	A Series	A4 SEF	A3 SEF	A2 SEF	A1 SEF	A0 SEF	914 mm
	B Series	B4 SEF	B3 SEF	B2 SEF	B1 SEF	880 mm	914 mm

Inch

NA		①	②	③	④	⑤	⑥
	Eng. (ANSI)	8 1/2"	11"	17"	22"	30"	34"
	Arch.	9 "	12"	18"	24"	30"	36"

6.2.4 ORIGINAL DRIVE MECHANISM
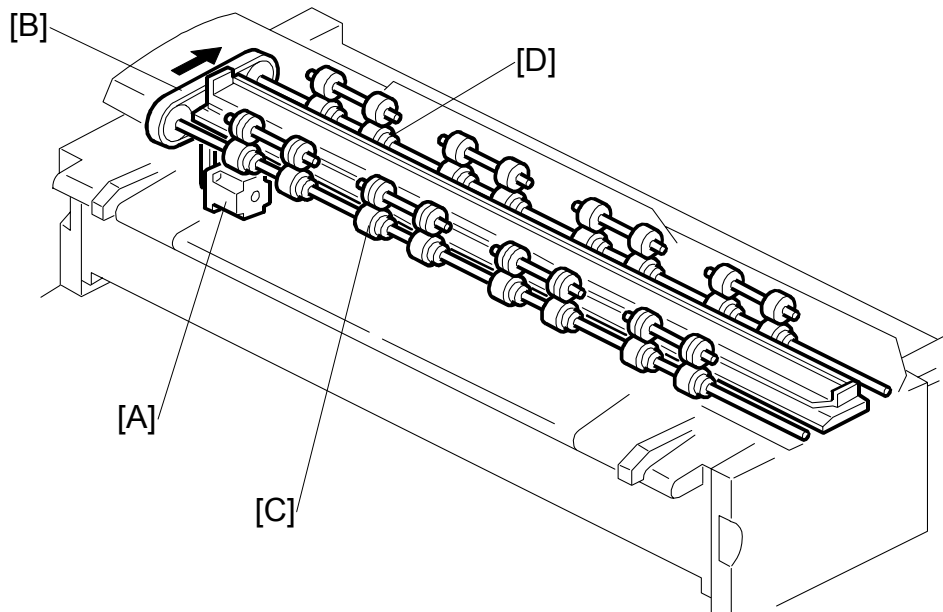
The scanner motor [A] (a stepper motor) and timing belt [B] control the original feed rollers [C] and original exit rollers [C]. The signal from the original set sensor controls the on/off timing.

6.2.5 ORIGINAL FEED SPEED
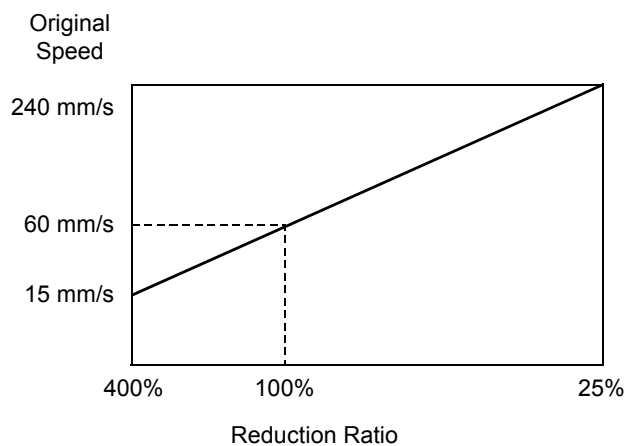
The speed of the original is faster if the magnification ratio is lower.

6.2.6 SCANNING MECHANISM

CIS Structure

[A]
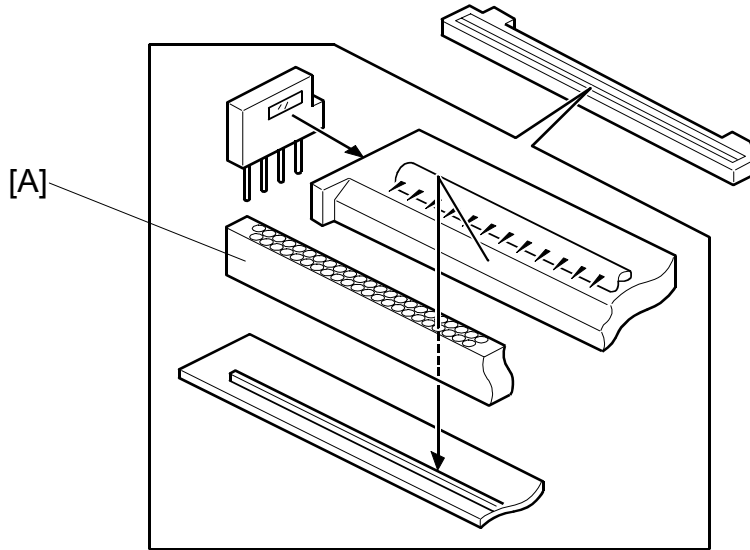
This machine uses a contact image sensor [A] (**CT**: Digital Processes – Image Processing – Black and White CIS Systems).

The scanning unit is below the original feed path. The CIS scans black and white originals a maximum of 926.5 mm (36 1/2 inches) wide at 600 dpi.

[B] [B] [B] [B]

CIS-2   CIS-4

CIS 1   CIS 3   CIS 5

Original Feed
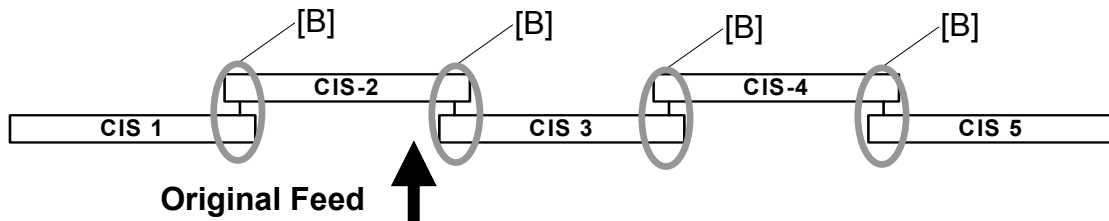
The CIS unit is made of 5 sections connected at four joints [B]. If you look from above, the CIS sections are numbered from left to right as CIS-1 to CIS-5.

Printed Image

Abc CIS-5	CIS-4	CIS-3	CIS-2	CIS-1

When you look at the copy to identify the areas scanned by each section, the numbering is in the opposite sequence, with CIS-5 on the left to CIS-1 on the right.

6.2.7 AUTO IMAGE DENSITY CORRECTION
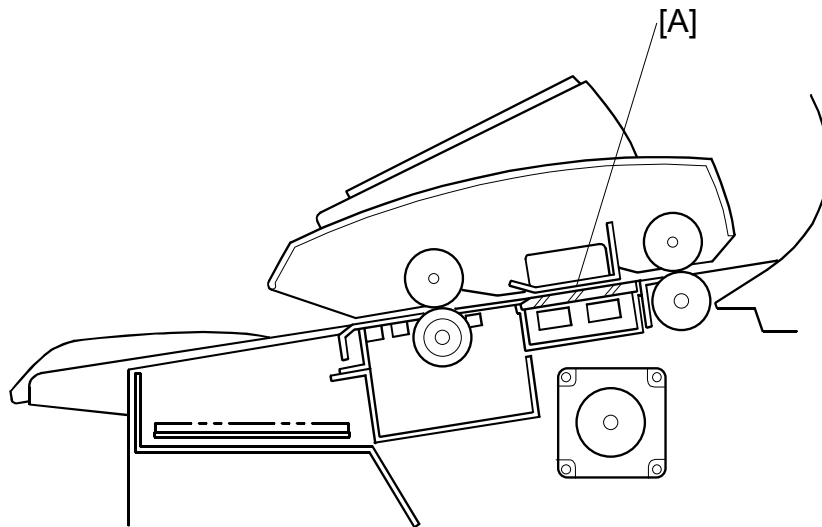
Auto Image Density Correction corrects the background density.

First, the CIS reads the surface of the white guide plate [A]. The machine uses this reading (white point =0) as a reference point for density correction.
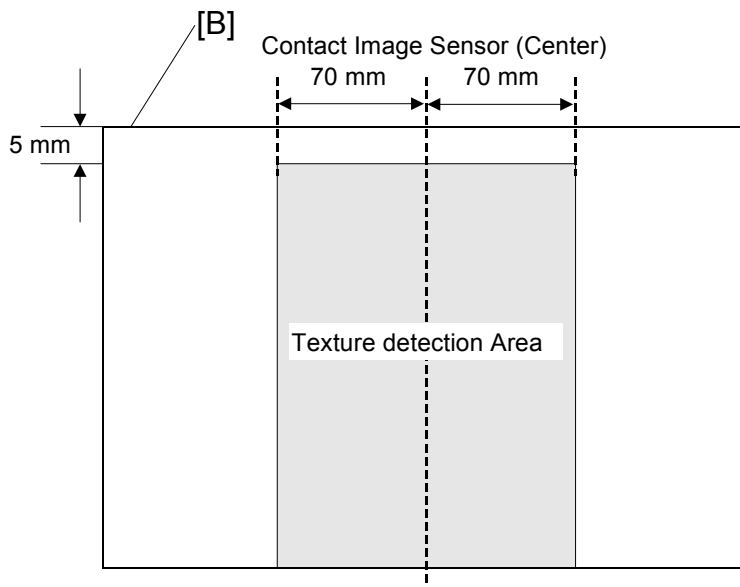
Then, during scanning, the CIS corrects the image density line by line. To do this, it starts 5 mm from the leading edge of the original [B], and reads 70 mm to the left and to the right of the center.

Detailed Descriptions

6.3 IMAGE PROCESSING

6.3.1 OVERVIEW

Overall System
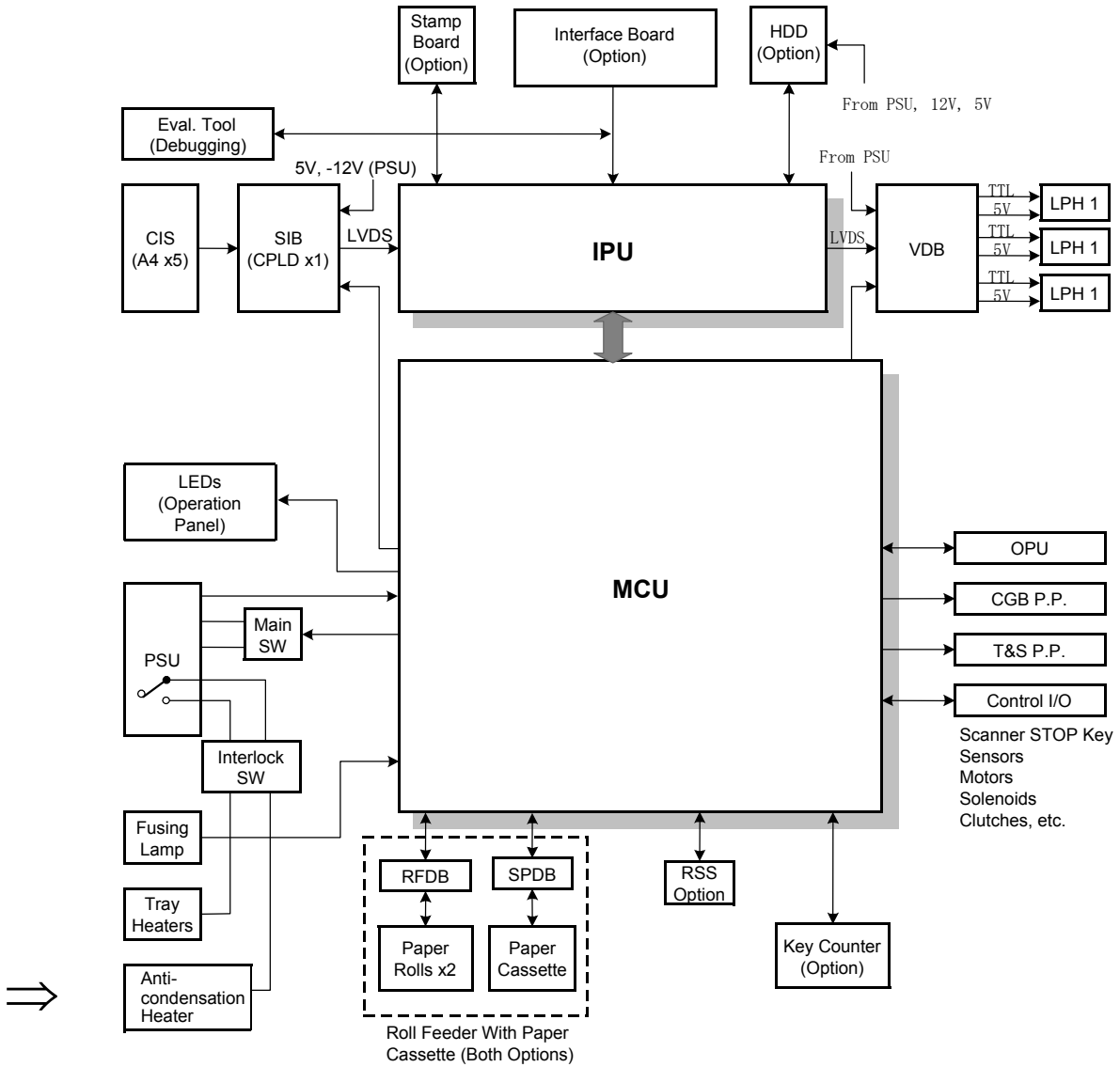
This block diagram shows the components of the image processing circuit.

IPU Board Details

The VDIP is the interface between the OIPU and the RI1001 image processors. This diagram shows a map of the IPU board, and the data flow through the machine.

SM   6-13   B125
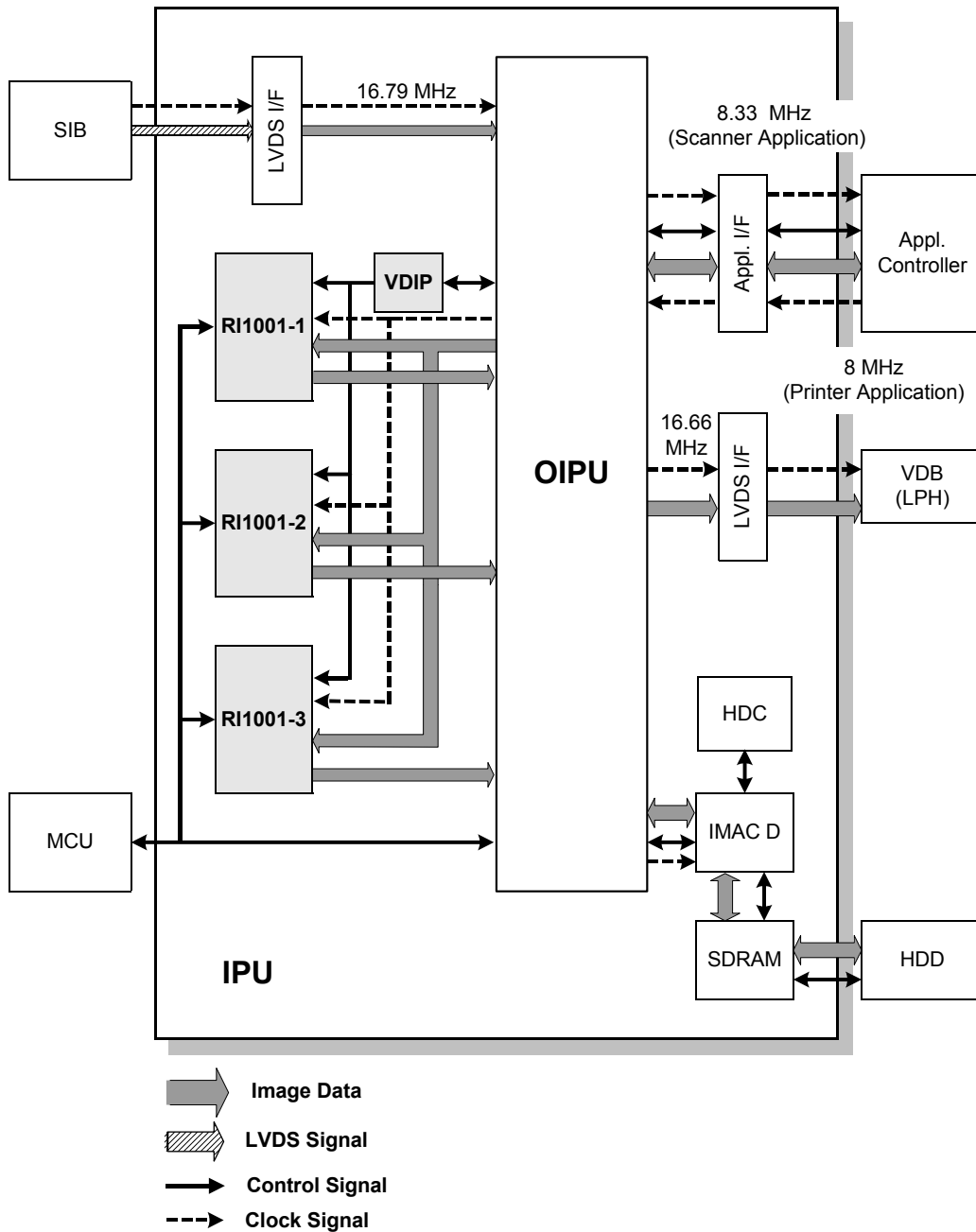
6.3.2 GENERAL IMAGE PROCESSING FLOW CHART

Image processing is done in the IPU and Ri-10 image processors on the IPU board.

```
┌─────────────────────────┐
│     Signal from CIS      │
└─────────────────────────┘
              │
              ▼
┌──────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────┐                                 │
│  │                              │        IPU                       │
│  │  ┌────────────────────────┐  │                                 │
│  │  │  Sub Scan Magnification │  │                                 │
│  │  └────────────────────────┘  │                                 │
│  │             │          IPU    │   - Create standard data for    │
│  │             ▼                 │     white shading correction    │
│  │  ┌────────────────────────┐  │   - White shading correction    │
│  │  │   Shading Correction    │  │     processing                  │
│  │  └────────────────────────┘  │                                 │
│  │             │                 │                                 │
│  │             ▼                 │   - Main scan image shift        │
│  │  ┌────────────────────────┐  │   - Main scan magnification      │
│  │  │       Conversion        │  │                                 │
│  │  └────────────────────────┘  │                                 │
│  └──────────────────────────────┘                                 │
│             │                                                      │
│             ▼                         - MTF filtering               │
│  ┌──────────────────────────────┐   - Smoothing                    │
│  │  ┌────────────────────────┐  │   - Independent dot erasure      │
│  │  │       Filtering         │  │   - Line width correction       │
│  │  └────────────────────────┘  │                                 │
│  │             │          Ri-10   │                                 │
│  │             ▼                 │   - Gamma correction             │
│  │  ┌────────────────────────┐  │   - Binary processing            │
│  │  │    Image Processing     │  │   - Dither processing            │
│  │  └────────────────────────┘  │                          ◄──► ┌───────────┐
│  └──────────────────────────────┘                               │Application│
│             │                                                   └───────────┘
└─────────────┼──────────────────────────────────────────────────────────────┘
              ▼
        ┌───────────┐
        │  VDB/LPH  │
        └───────────┘
```

6.3.3 ORIGINAL MODES

Overview

Here is a summary of the eight original modes that the user can set for this machine at the operation panel.

Mode	Function
Text	Best reproduction of text and sharp lines. Text mode does not detect differences between areas of the page that contain text, graphics, or photographs; all the page is processed as a text original. But, straight lines are sharp in the copies. When Text is set, the auto image density feature (ADS) is automatically switched on.
Photo	The 2-value dither processing used in this mode removes jagged edges on photo originals. Gives the best reproduction for copied photographs. When Photo is set, the auto image density feature (ADS) is automatically switched off.
Text/Photo	The 2-level error diffusion used in this mode gives the best reproduction for originals with text and photos on the same page. Grayscales are more accurate than those got with Text mode. When Text/Photo is set, the auto image density feature (ADS) is automatically switched on.
Pale	Best reproduction of originals which may not be easy to scan. Examples are documents with marks in pencil, thin sheets, copies of copies of forms, and originals of low contrast for which enhancement may be necessary. When Pale is set, the auto density feature (ADS) is automatically switched on.
Generation	Almost the same as the Text mode, but tries to decrease the thickness of thick characters, repair thin or broken lines of originals, ignore the background, and erase independent dots that are frequently in copies of originals which are 2nd, 3rd, etc. generation copies themselves.
Drawing	Best reproduction of detailed diagrams, specially for drawings with many thin lines. When Drawing is set, the auto density feature (ADS) is automatically switched on.
Background Lines	Ignores blue lines in the original. For example, the blue grid squares of graph paper, or the markings with a dropout blue pencil do not show in copies. When Background Lines is set, the auto density feature (ADS) is automatically switched on.
Sharpen Text	Good for copying posters that contain photos with text overlays.

Tables on the pages after this show the SP modes that can be used for each original mode. But, the following SP settings are only effective if the "Copier Features → General Features → Original Mode Quality" user tool is set to "Custom Setting"

SP4903 (Image Setting – Smoothing Filter Level)
SP4906-020 to –051 (Filter/Independent Dot Erase Settings)

Detailed
Descriptions

IMAGE PROCESSING

Text Mode

Image Processing Flow		Related SP/UP Modes
Scanner Image Correction	Shading Correction	
	↓	
Conversion Processing	Main Scan Resolution Conversion	SP4911-01~06 Magnification corrections
	↓	
Filtering	MTF Filtering Independent Dot Erasure Line Width Correction	SP4906-20~23 Independent dot erase settings SP4905-01-03 Line thickness mode settings SP4906 70~72 Independent dot erase settings User Tool*[1] Independent dot erase level User Tool *[2] Filter strength (Normal, or Custom Setting)
	↓	
Density Control	γ Correction	User Tool *[3] Density adjustment
	↓	
Quality Processing	Error Diffusion	SP4903 01 Selects the level of the image smoothing filter.

*[1] User Tools ⬒→ 2. Copier→ 11 Noise Reduction→ Text
*[2] User Tools ⬒→ 2. Copier→ 12 Original Mode Quality→ Text
*[3] User Tools ⬒→ 2. Copier→ 13 Original Mode Density→ Text

Photo Mode

Image Processing Flow	Related SP/UP Modes
Scanner Image Correction Shading Correction	
↓	
Conversion Processing Main Scan Resolution Conversion	SP4911-01~06 Magnification corrections
↓	
Filtering Independent Dot Erase	SP4906 24~27 Filter/Independent Dot Erase Settings (Filter Settings) SP4906 73~75 Filter/Independent Dot Erase Settings (Independent Dot Erase) SP4905 04~06 Line thickness selections (main and sub scan). User Tool [1] Independent dot erase level User Tool [2] Filter strength (Normal, or Custom Setting)
↓	
Density Control γ Correction	User Tool [3] Density adjustment
↓	
Quality Processing Dithering	SP4903 21 Selects the type of dithering

[1] User Tools ◈ → 2. Copier → 11 Noise Reduction → Photo
[2] User Tools ◈ → 2. Copier → 12 Original Mode Quality → Photo
[3] User Tools ◈ → 2. Copier → 13 Original Mode Density → Photo

Detailed Descriptions

Text/Photo Mode

Image Processing Flow	Related SP/UP Modes
Scanner Image Correction — Shading Correction	
↓	
Conversion Processing — Main Scan Resolution Conversion	SP4911-01~06 Magnification corrections
↓	
Filtering — MTF Filtering / Independent Dot Erasure / Line Width Correction	SP4906 28~31 Filter/Independent Dot Erase Settings (Filter Settings) SP4906 76~78 Filter/Independent Dot Erase Settings (Independent Dot Erase Settings) SP4905 07~09 Line width correction settings User Tool*1 Independent dot erase level User Tool*2 Filter strength adjustment (Normal, or Custom Setting)
↓	
Density Control — γ Correction	User Tool*3 Density adjustment
↓	
Quality Processing — Error Diffusion	SP4903 03 Image Setting – Smoothing Filter Level (Text/Photo)

*1 User Tools 🔘 → 2. Copier → 11 Noise Reduction → Text/Photo
*2 User Tools 🔘 → 2. Copier → 12 Original Mode Quality → Text/Photo
*3 User Tools 🔘 → 2. Copier → 13 Original Mode Density → Text/Photo

Pale Mode

Image Processing Flow	Related SP Modes
Scanner Image Correction Shading Correction	
↓	
Conversion Processing Main Scan Resolution Conversion	SP4911-01~06 Magnification corrections
↓	
Filtering MTF Filtering Independent Dot Erasure	SP4905 10~12 Line Thickness Mode – Pale Originals. SP4906 32~35 Filter/Independent Dot Erase Settings (Filter Settings) SP4906 79~81 Filter/Independent Dot Erase Settings (Independent Dot Erase). User Tool [1] Independent dot erase level User Tool [2] Filter strength adjustment (Normal, or Custom Setting)
↓	
Density Control γ Correction	User Tool [3] Density adjustment
↓	
Quality Processing Error Diffusion	SP4903 04 Image Setting – Smoothing Filter Level (Pale)

[1] User Tools [◈] → 2. Copier → 11 Noise Reduction → Pale
[2] User Tools [◈] → 2. Copier → 12 Original Mode Quality → Pale
[3] User Tools [◈] → 2. Copier → 13 Original Mode Density → Pale

Detailed Descriptions

Generation

Image Processing Flow		Related SP Modes
Scanner Image Correction	Shading Correction	
	↓	
Conversion Processing	Main Scan Resolution Conversion	SP4911-01~06 Magnification corrections
	↓	
Filtering	MTF Filtering Independent Dot Erasure Line Width Correction	SP4905 13~15 Line Thickness Mode – Generation (Main and Sub Scan) SP4906 36~39 Filter/Independent Dot Erase Settings (Filter Settings) SP4906 82~84 Filter/Independent Dot Erase Settings (Dot Erase Settings) User Tool *[1] Independent dot erase level User Tool *[2] Filter strength adjustment (Normal, or Custom Setting)
	↓	
Density Control	γ Correction	User Tool *[3] Density adjustment
	↓	
Quality Processing	Error Diffusion	SP4903 05 Image Setting – Smoothing Filter Level (Generation)

*[1] User Tools 🔷 → 2. Copier → 11 Noise Reduction → Generation Copy
*[2] User Tools 🔷 → 2. Copier → 12 Original Mode Quality → Generation Copy
*[3] User Tools 🔷 → 2. Copier → 13 Original Mode Density → Generation Copy

Drawing Mode

Image Processing Flow	Related SP/UP Modes
Scanner Image Correction Shading Correction	---
↓	---
Conversion Processing Main Scan Resolution Conversion	SP4911-01~06 Magnification corrections
Filtering MTF Filtering / Independent Dot Erasure / Line Width Correction	SP4905 22~24 Line Thickness Mode – Line Drawing. SP4906 48~51 Filter/Independent Dot Erase Settings (Filter Settings). SP4906 91~93 Filter/Independent Dot Erase Settings (Independent Dot Erase Settings). User Tool *[1] Independent dot erase level User Tool *[2] Filter strength adjustment (Normal, or Custom Setting)
Density Control γ Correction	User Tool *[3] Density adjustment
Quality Processing Error Diffusion	SP4903 08 Image Setting – Smoothing Filter Level

*[1] User Tools ▣ → 2. Copier → 11 Noise Reduction → Drawing
*[2] User Tools ▣ → 2. Copier → 12 Original Mode Quality → Drawing
*[2] User Tools ▣ → 2. Copier → 13 Original Mode Density → Drawing

Detailed Descriptions

Background Lines Mode

Image Processing Flow	Related SP Modes
Scanner Image Correction	
Shading Correction	
↓	
Conversion Processing	
Main Scan Resolution Conversion	SP4911-01~06 Magnification corrections
↓	
Filtering	
MTF Filtering Independent Dot Erasure Line Width Correction	SP4905 16~18 Line Thickness Mode (Blue Line Erase – Main and Sub Scan). SP4906 40~43 Filter/Independent Dot Erase Settings (Filter Settings – Blue Line Erase) SP4906 85~87 Filter/Independent Dot Erase Settings (Independent Dot Erase – Blue Line Erase) User Tool *[1] Independent dot erase level User Tool *[2] Filter strength adjustment (Normal, or Custom Setting)
↓	
Density Control	
γ Correction	User Tool *[3] Density adjustment
↓	
Quality Processing	
Error Diffusion	SP4903 06 Image Setting – Smoothing Filter Level (Blue Line Erase)

*[1] User Tools ⬙ → 2. Copier → 11 Noise Reduction → Background Lines
*[2] User Tools ⬙ → 2. Copier → 12 Original Mode Quality → Background Lines
*[3] User Tools ⬙ → 2. Copier → 13 Original Mode Density → Background Lines

Sharpen Text Mode

	Image Processing Flow	Related SP/UP Modes
Scanner Image Correction	Shading Correction	
	↓	
Conversion Processing	Main Scan Resolution Conversion	SP4911-01~06 Magnification corrections
	↓	
Filtering	MTF Filtering	SP4905 19~21 Line Thickness Mode (Photo 2 – Main and Sub Scan). SP4906 44~47 Filter/Independent Dot Erase Settings (Filter Settings – Photo ED) SP4906 88~90 Filter/Independent Dot Erase Settings (Independent Dot Erase – Photo 2) User Tool *[1] Independent dot erase level User Tool *[2] Filter strength adjustment (Normal, or Custom Setting)
	↓	
Density Control	γ Correction	User Tool *[3] Density adjustment
	↓	
Quality Processing	Error Diffusion	SP4903-07 Image Setting – Smoothing Filter Level (Photo 2).

*[1] User Tools ⌧ → 2. Copier → 11 Noise Reduction → Sharpen Text
*[2] User Tools ⌧ → 2. Copier → 12 Original Mode Quality → Sharpen Text
*[2] User Tools ⌧ → 2. Copier → 13 Original Mode Density → Sharpen Text

Detailed Descriptions

6.3.4 INDEPENDENT DOT ERASE

The purpose of independent dot erase is to remove unwanted small spots from the copy image. The user sets the strength of independent dot erase with this User Tool:

⬦→ Copier Features→ General Features→ Noise Reduction

- There are four settings: Off, Low (L), Medium (M), and High (H).
- There is a different user tool setting for each of the eight original types.
- The values for each threshold setting (L, M, H) can be adjusted with SP modes 4906 70~93.

For example, Text mode uses these SP modes.

- 4906 070: Low (L)
- 4906 071: Medium (M)
- 4906 072: High (H)

The adjustment is done on a 5 x 7 pixel matrix with the 9 pixels to the left and right of the matrix.

SP4906 070~093	Independent Dot Erase
0	Independent dot erase is not done.
1~14	When all the pixels around the target are each less than the set SP mode value (nn), the target pixel is removed.

As shown in the table below, for SP values near the right, more dots are erased.

SP Value	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Text Mode	8	16	24	32	40	48	56	64	72	80	96	112	128	144
Example	—	OFF	—	L	—	—	**M**	—	—	H	—	—	—	—

L: Low, M: Medium, H: High

Target pixel

This area is tested before application of independent dot erase.

										40	20	40	30	20	40	30								
										30	30	0	70	30	30	50								
55	53	30	20	40	0	10	30	40	50	30	10	50	30	55	55	53	30	20	40	0	10	30	40	50
										40	50	20	0	30	0	40								
										30	20	30	40	30	30	20								
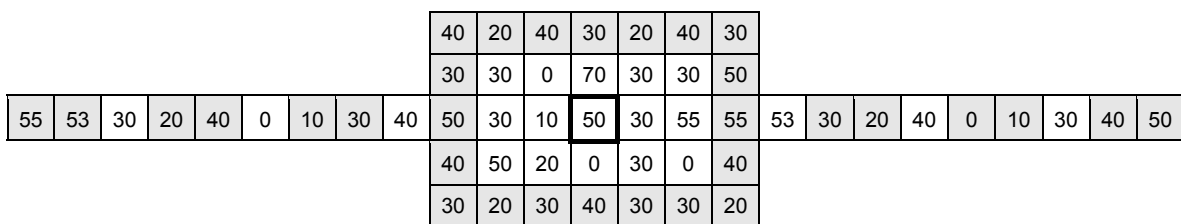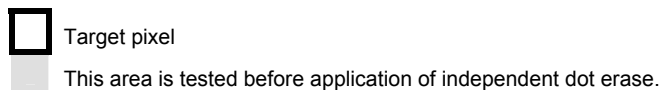
The algorithm operates as follows:

- If a value in the shaded pixels in this diagram is larger than the SP setting, the target pixel is not removed.
- If no value in the shaded pixels in this diagram is larger than the SP setting, then the 9 pixels to each side of the matrix are checked:
  - If a value in the 9 pixels to each side of the matrix is larger than the target pixel, the target pixel is not removed.
  - If no value in the 9 pixels to each side of the matrix is larger than the SP value, the target pixel is removed.

6.3.5 MTF SETTINGS

The MTF (Modulation Transfer Function) filter strength can be adjusted for the following requirements:

- Sharper reproduction of text and lines on the same page.
- Sharper lines in copies reduced in size.
- Removal of rough-textured background.
- Better reproduction of low-contrast originals.

If the strength values are higher, the performance of the filter is stronger. If the strength of the filter is higher, the reproduction of low contrast documents is better but moiré can occur more frequently.

For more on the range of SP adjustments available, see Section 6.3.3."Original Modes".

Detailed
Descriptions

6.4 AROUND THE DRUM

6.4.1 OVERVIEW

Front

Rear
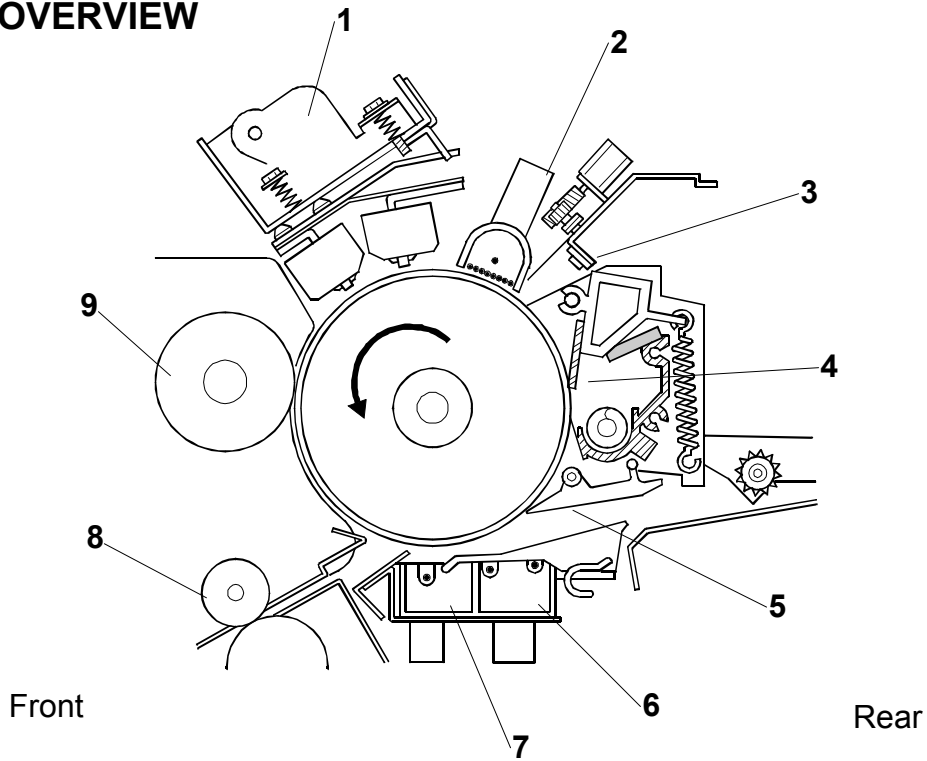
1. LPH (LED Print Head)	6. T&S Unit (Separation Corona)
2. Charge Corona Unit	7. T&S Unit (Transfer Corona)
3. Quenching Lamp (LED Array)	8. Registration Rollers
4. Cleaning Blade	9. Development Roller
5. Pick-off Pawl	

Drum diameter: 80 mm (3.2")

Drum speed: 60 mm/s

LPH: 3 arrays, each array the same width as one A3 sheet

6.4.2 DRUM DRIVE
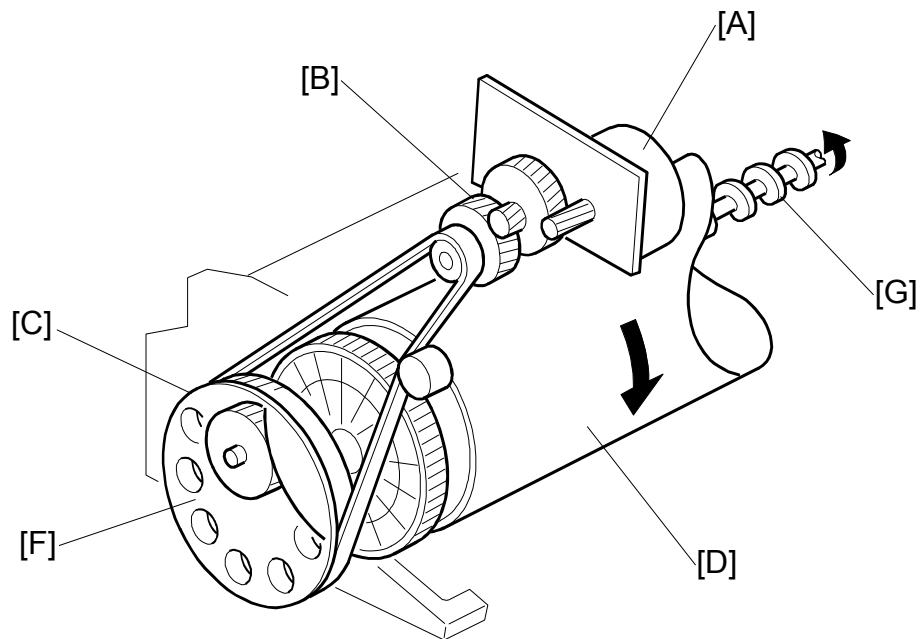
The drum motor [A] controls:

- Timing gears [B]
- Timing belt and wheel [C]

This turns the OPC drum [D].

Gear [F] (meshed with the OPC drum) turns the cleaning unit auger [G].

When paper feed starts:

- The drum motor switches on and turns the drum forward.
- While the drum turns forward, the LPH writes the ID sensor pattern on the drum, then the drum turns forward 250 mm more.
- The ID sensor reads the pattern (Vsp) and the surface of the drum (Vsg) to find Vsp/Vsg for toner density control.

At the end of each job the drum motor turns the drum in the opposite direction for 0.1 s. This removes paper dust (caused when the paper roll is cut) from the cleaning blade. The cleaning interval (number of jobs) can be adjusted with SP2812 (Drum Cleaning Interval).

6.4.3 CHARGE CORONA UNIT
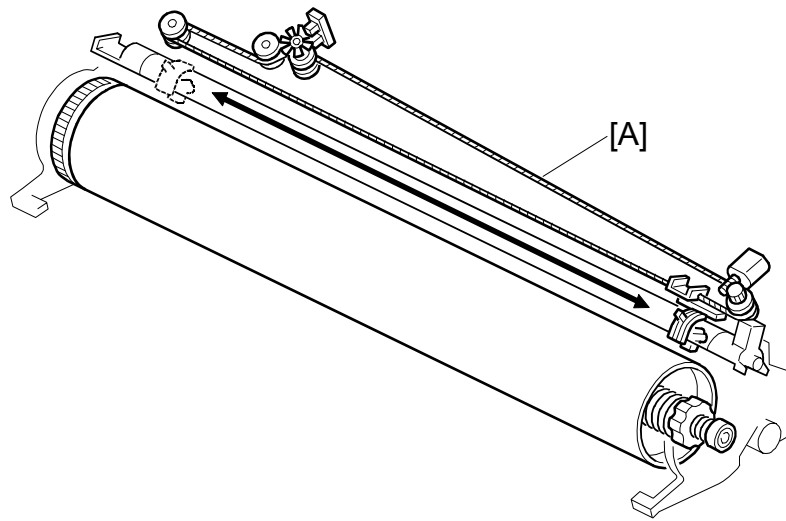
B125D405.WMF

The charge corona unit [A], above the OPC drum, uses the Scorotron (Negative) Charge Method (🕮 Photocopying Processes – Charge – Corona Charge)

There is one gold-plated charge wire behind four pair of grid wires. The grid wires make sure that the charge on the OPC drum is constant.

Charges used for this machine:

- Grid: -800 V
- Drum surface: -850 V
- Corona wire: About 1200 μA

6.4.4 CORONA WIRE CLEANING
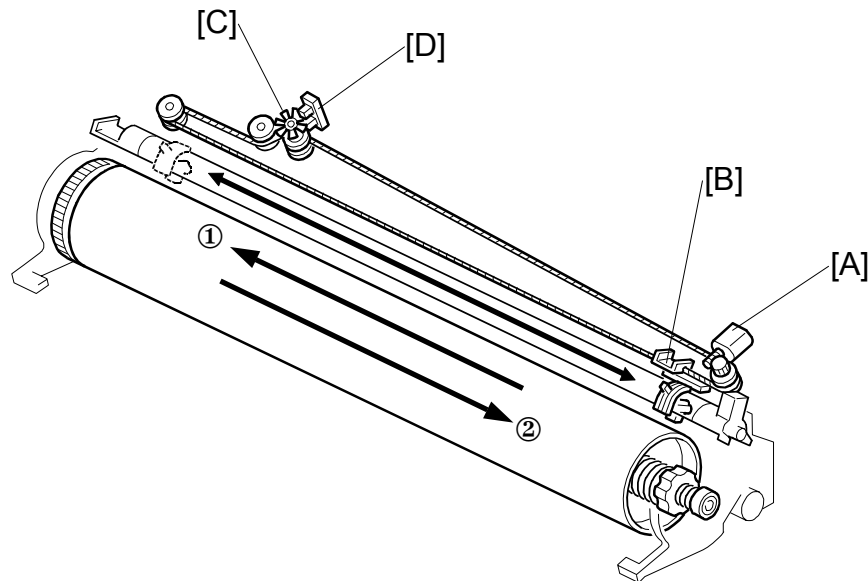
The corona wire is cleaned immediately after the main power switch or operation power switch is turned on, if the following two conditions occur at the same time:

- 600 m of paper has been fed through the machine since the last wire cleaning
- The temperature of the hot roller is less than 50°C (122°F).

The interval between automatic wire cleaning (Default: 600 m) can be adjusted with SP2804. This SP can also be set to clean the corona wire immediately after the machine is switched on.

The wire cleaner motor [A] controls the cleaning pad [B].

When the cleaning pad gets to the left side (as shown above), the motor changes direction and pulls the cleaning pad back to the home position on the right.

If the cleaning pad is not at the home position immediately after the main power is switched on, the cleaning pad goes back to home position.

The actuator [C] for the wire cleaner sensor [D] turns while the cleaner moves. The signals from this sensor tell the machine when the cleaning pad moves. If the wire cleaner stops before it gets to the end, or if stops too long at the far left position, the wire cleaner sensor detects an error.

6.4.5 DRUM CLEANING
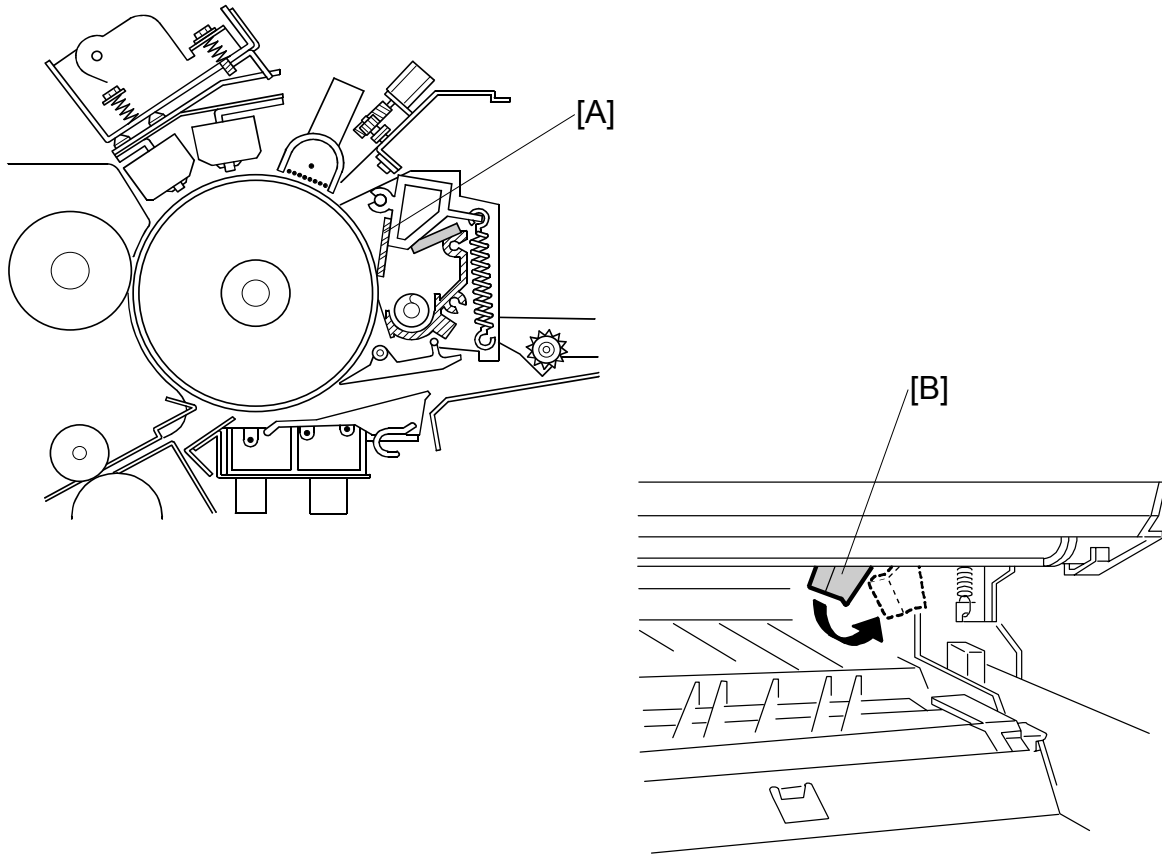
This machine uses a counter blade system to clean toner from the surface of the drum. (**CIT** Photocopying Processes – Cleaning – Counter Blade)

The cleaning blade [A] is opposite to the direction that the drum turns.

The counter blade has a lever [B] on the bottom side of the upper unit.

- Set [B] to the right: The blade touches the drum for normal operation.
- Set [B] to the left: The blade is away from the drum.

This lever must be set to the left at the following times:

- Before you remove the OPC drum
- Before you move the machine a long distance
  NOTE: If you will move the machine to a different location on the same floor, then it is not necessary to move the lever to the left.

6.4.6 COLLECTING USED TONER
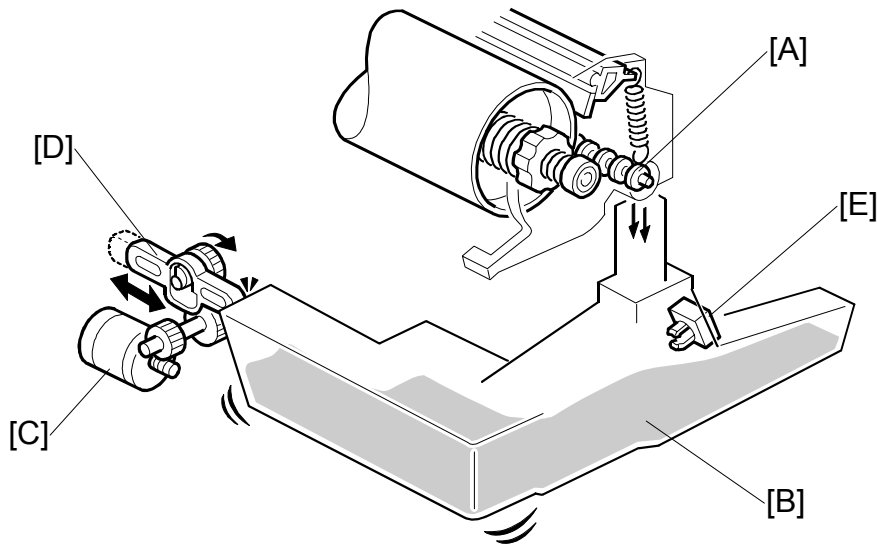
The cleaning unit auger [A] pushes toner into the used toner collection bottle [B].

The used toner bottle motor [C] moves a cam [D] from side to side, to hit the side of the used toner collection bottle. This causes a vibration, and this keeps the level of used toner in the bottle flat.

The motor operation timing is controlled by SP 2926, as follows:

- 2926 004 at 1 (default setting): The motor switches on at the end of the job if 10 m of paper was fed since the last time that the motor operated. SP 2926 001 and 002 are not used.
- 2926 004 at 0: The motor switches on at these times:
  a) 10 seconds after the main power switch is switched on, if the fusing temperature is less than 50 °C. The motor switches on for the length of time stored in SP 2926 001 (default setting: 30 seconds).
  b) At the end of each job, after the last page of the job goes by the exit sensor. The motor switches on for the length of time that is set with SP 2926 002 (default setting: 0).

The motor stops if the user starts a job. The motor does not switch on during copying.

When the used toner overflow sensor [E] detects that the used toner tank is full, the overflow indicator on the operation panel starts to flash. Then:

- Printing can continue until the end of the job. But, if 10 more meters are printed before the end of the job, printing stops at the 10-meter point.
- After 10 meters of copying, or at the end of the job, the overflow indicator stops flashing and stays on. The machine cannot be used until you remove the used toner from the collection bottle.
  NOTE: The length of paper that can be printed after the toner-bottle-full indication can be made shorter or longer with SP2926 03 (Used Toner Control – Used Toner Overflow Detection).

Detailed
Descriptions
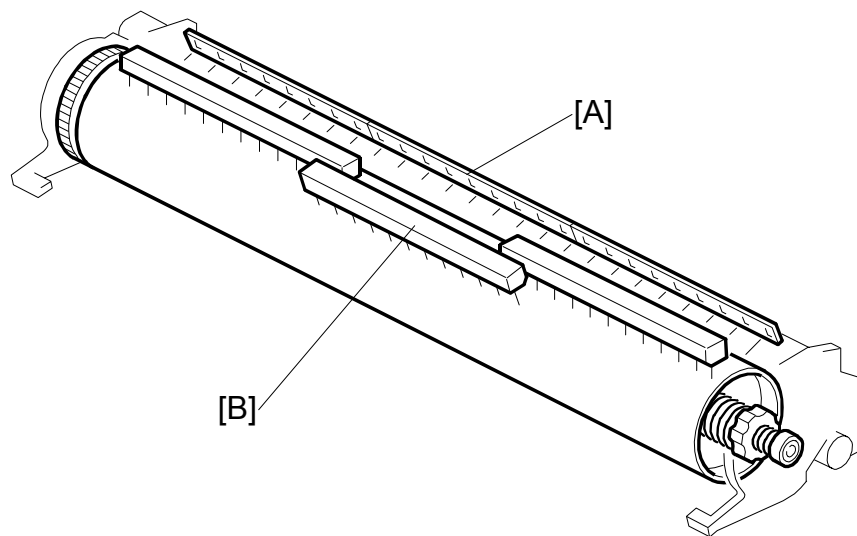
6.4.7 QUENCHING

The quenching lamp [A], an array of LEDs, is behind the LPH [B].

After the drum [A] is cleaned by the cleaning blade, light from the quenching lamp removes unwanted charge on the drum. This prepares the drum for the subsequent copy cycle.

The quenching lamp switches on and off with the drum motor (the lamp stays on while the OPC drum turns).

6.4.8 DRUM ANTI-CONDENSATION HEATERS
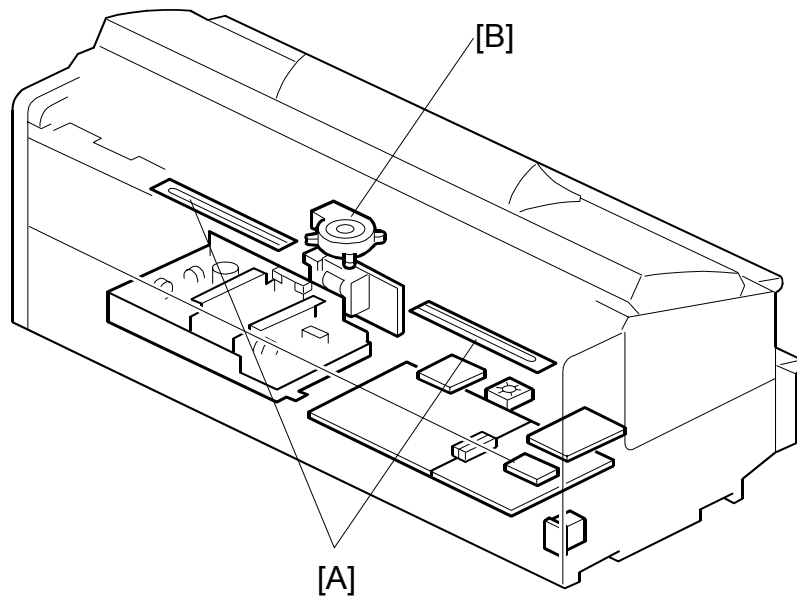
The two heaters [A] below the drum prevent condensation around the drum and T&S unit.

A cooling fan [B] moves the air.

The on/off timing of these heaters is:

- When the main power switch or operation switch is switched on, the heaters switch off.
- When the main power switch or operation switch is switched off, the heaters switch on.

6.5   IMAGE WRITING MECHANISM

[A]

[B]

[C]

[D]

[E]

LPH 1-2

LPH 2-3

[F]

[G]

LPH 2

LPH 1

LPH 3

Front
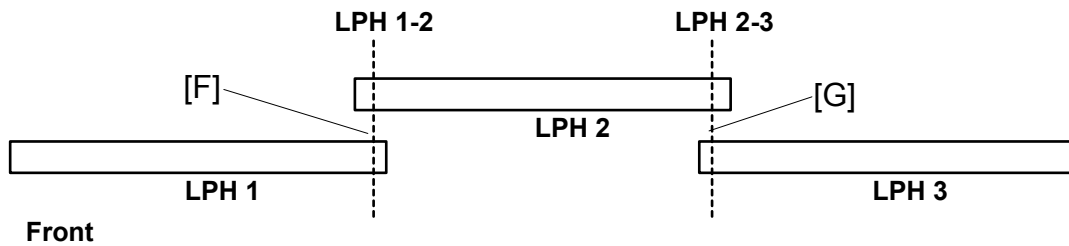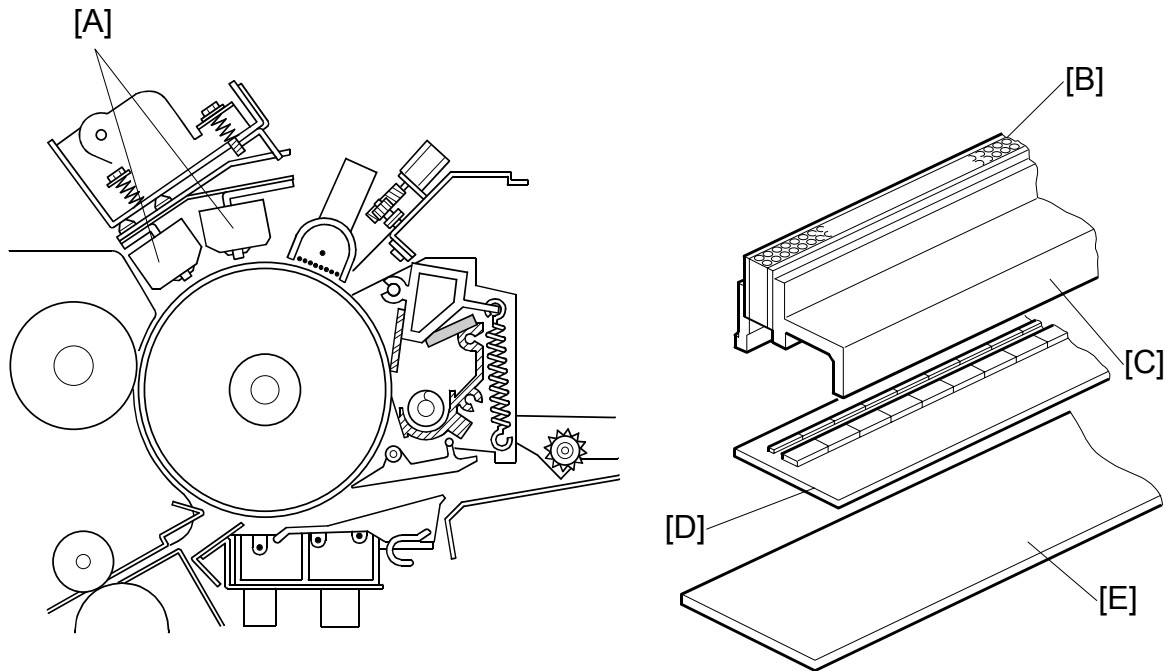
This machine uses an LPH (LED Print Head) [A] that sends light directly to the OPC drum to make a latent image.

The A0-size 600-dpi print head is an array of connected self-focusing lenses [B] above an LED array [C] and drive board [D], and attached to a heat sink [E].

NOTE: The maximum printing width of the print head is 914 mm (36").

The LPH has three sections: LPH 1, LPH 2, and LPH 3. The two joints between the sections are identified as LPH 1-2 [F] and LPH-2-3 [G].

6.6 DEVELOPMENT

6.6.1 OVERVIEW
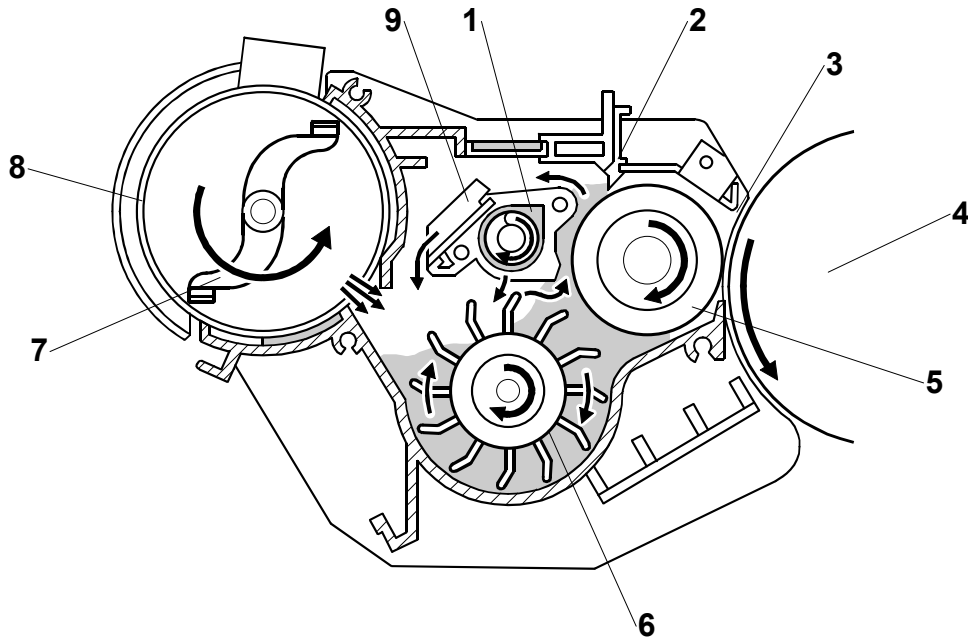
1. Auger
2. Doctor Blade
3. Development Entrance Seal
4. OPC Drum
5. Development Roller
6. Paddle Roller
7. Toner Agitator
8. Toner Cartridge
9. Separator

NOTE: The development unit does not have a TD sensor. The machine uses only the ID sensor for toner supply control.

Detailed
Descriptions

6.6.2 DEVELOPMENT DRIVE MECHANISM
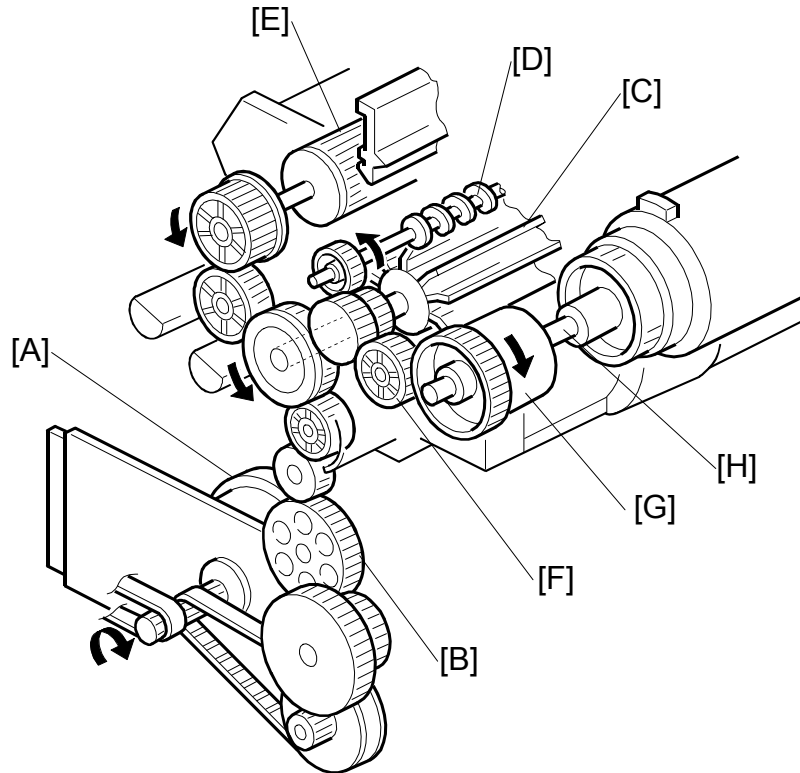
[A]: Timing belt (from the main motor)
[B]: Gear train
[C]: Paddle roller
[D]: Mixing auger
[E]: Development roller
[F]: Gear
[G]: Toner supply clutch
[H]: Toner agitator shaft (controlled by the toner supply clutch)

The toner supply clutch engages only when the toner density control circuit turns on. The toner supply clutch then supplies toner from the toner cartridge to the developer unit.

The main motor:

- Switches on 1.25 sec. after the drum motor switches on.
- Turns the development roller at 60 mm/s, the same speed as the drum.
- Stops 83 ms (approx. 5 mm turned) after the ID sensor pattern is written during the initial rotation of the drum motor.

6.6.3 TONER SUPPLY MECHANISM
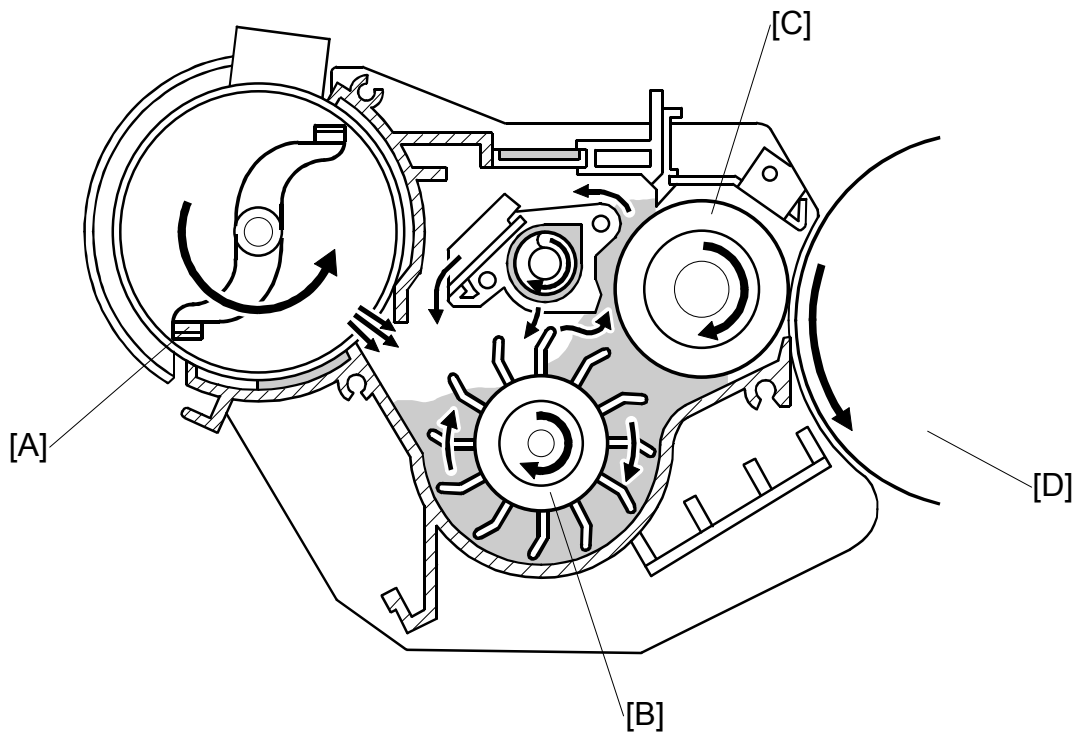
This machine uses dual-component development with toner concentration control (**CT**.Photocopying Processes – Development – Dual-component Development).

The toner agitator [A] turns in the center of the toner cartridge to move toner to the paddle roller [B] in the development unit. Toner then goes to the development roller [C] and the drum [D].To control the quantity of toner that is supplied to the development unit, the machine switches the toner supply clutch on and off. The output from the ID sensor controls the clutch on/off timing. This development unit does not have a TD sensor.

Detailed
Descriptions

6.6.4 DEVELOPER CROSS-MIXING
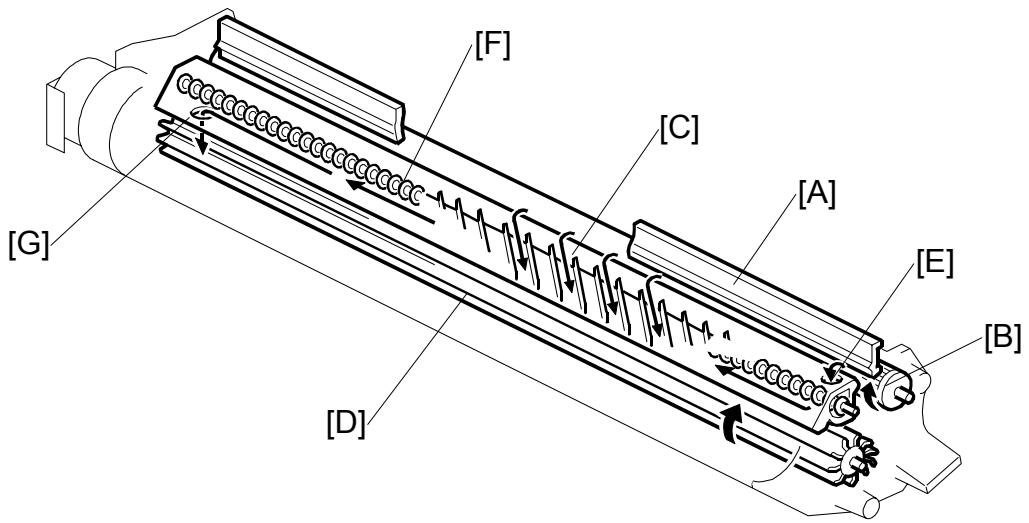
(**CT**.Photocopying Processes – Development – Crossmixing)

[A]: Doctor blade

[B]: Development roller

[C]: Backspill plate

[D]: Paddle roller

[E]: Auger inlet

[F]: Mixing auger

[G] Paddle roller inlet

6.6.5 DEVELOPMENT BIAS
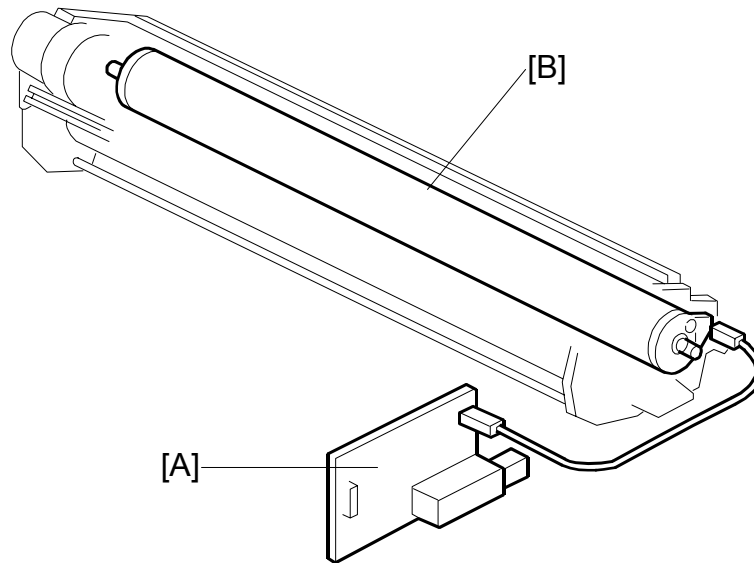
The CGB power pack [A] applies a negative bias (-650V) to the development roller [B], slightly higher than the remaining charge on the drum.

The development bias during copying is set by SP 2201 001 (Development Bias Adjustment – Image Area).

Detailed Descriptions
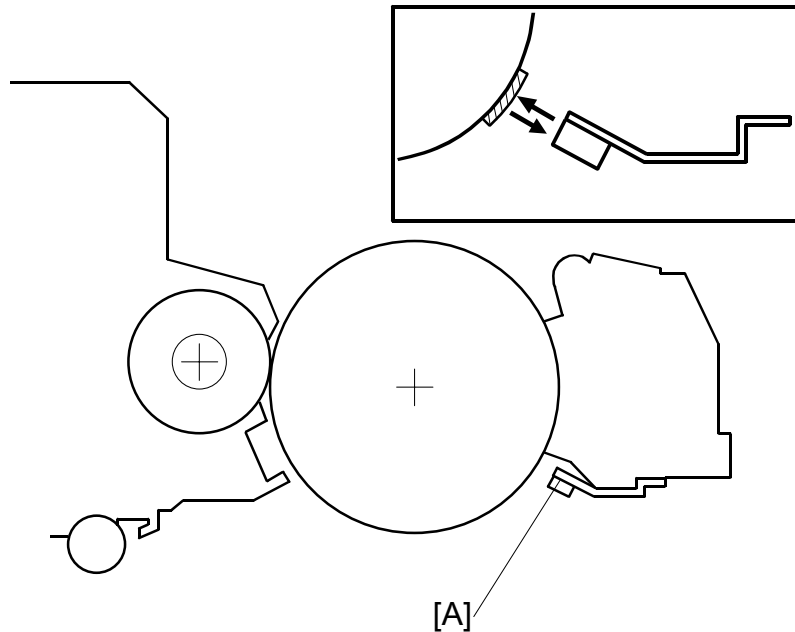
6.6.6 ID SENSOR

The ID sensor [A] regularly reads two areas of the drum:

- **Bare surface of the drum**. The ID sensor measures the reflectivity of the bare drum, converts this reading to a voltage, and stores this value (Vsg) in NVRAM.
- **ID sensor pattern**. The LPH writes an ID sensor pattern on the drum. The ID sensor reads the density of this pattern, converts it to a voltage, and stores this value (Vsp) in NVRAM.

The machine makes an ID sensor pattern to read Vsp after each copy.

But, the machine reads Vsg only one time. This is done during machine warm-up. (☛6.6.7)

6.6.7 ID SENSOR OPERATION DURING MACHINE WARM-UP

```
────────────────────────────►  SW OFF  ────────────────────────────►
  Vsp/Vsg = 0.4/4.0 = 0.1 (Normal)            Vsp/Vsg = 0.4/3.0 = 0.13 (Add Toner)
```

Vsg is checked one time only, when these two conditions occur at the same time:

- The machine is switched on with the main power switch or the operation switch
- The upper unit is closed.

At power on, the drum turns freely for 35 s to clean the surface of the drum against the cleaning blade. When the machine makes the <u>first copy</u> after the power is switched on, to calculate Vsp/Vsg it uses:

- The Vsg value measured immediately after power on.
- The last Vsp value measured before the machine was switched off.

After this, the machine uses the Vsg value measured immediately after the power is switched on. But Vsp is measured after each copy.

The machine releases toner to the development unit when the value calculated for Vsp/Vsg is more than 0.1. During standard operation, if Vsp/Vsg = 0.1 or less no toner is supplied.

The timing chart on the next page shows the warm-up sequence. 'This sequence occurs immediately after the machine is switched on. The machine measures Vsp/Vsg during warm-up. This prevents dirty background on the first copies after warm-up when hot roller temperature is less than 50°C.

NOTES:

- If SP2804 (Corona Wire Cleaning Interval) is set to clean the charge corona wire during warm-up, Vsp/Vsg is measured after the wire is cleaned.
- SP2924 controls whether Vsg is measured during the warm-up sequence. For more, refer to "4. Service Tables".
- If the machine is switched off and on after the warm-up sequence when Vsg is less than 2.5V, the warm-up sequence is done; the setting of SP2924 (Warm-up Control) is ignored.

Detailed
Descriptions

Vsg Sampling During Warm-up

Drum Motor

Drum Charging

ID Sensor Grid

Quenching

ID Sensor Bias

Main Motor (Development Drive)

Separation

ID Sensor Pulse Trigger and PWM

ID Senor Reading (for Vsg)

6.5mm (108 msec)

70 mm (1.167 sec)

10 mm (167 msec)

70 mm (1.167 sec)

2100 mm (35 sec)

80 mm (1.333 sec)

10 mm (167 msec)

70 mm (1.167 sec)

100 msec

663 mm (11.050 sec)

10 mm (167 msec)
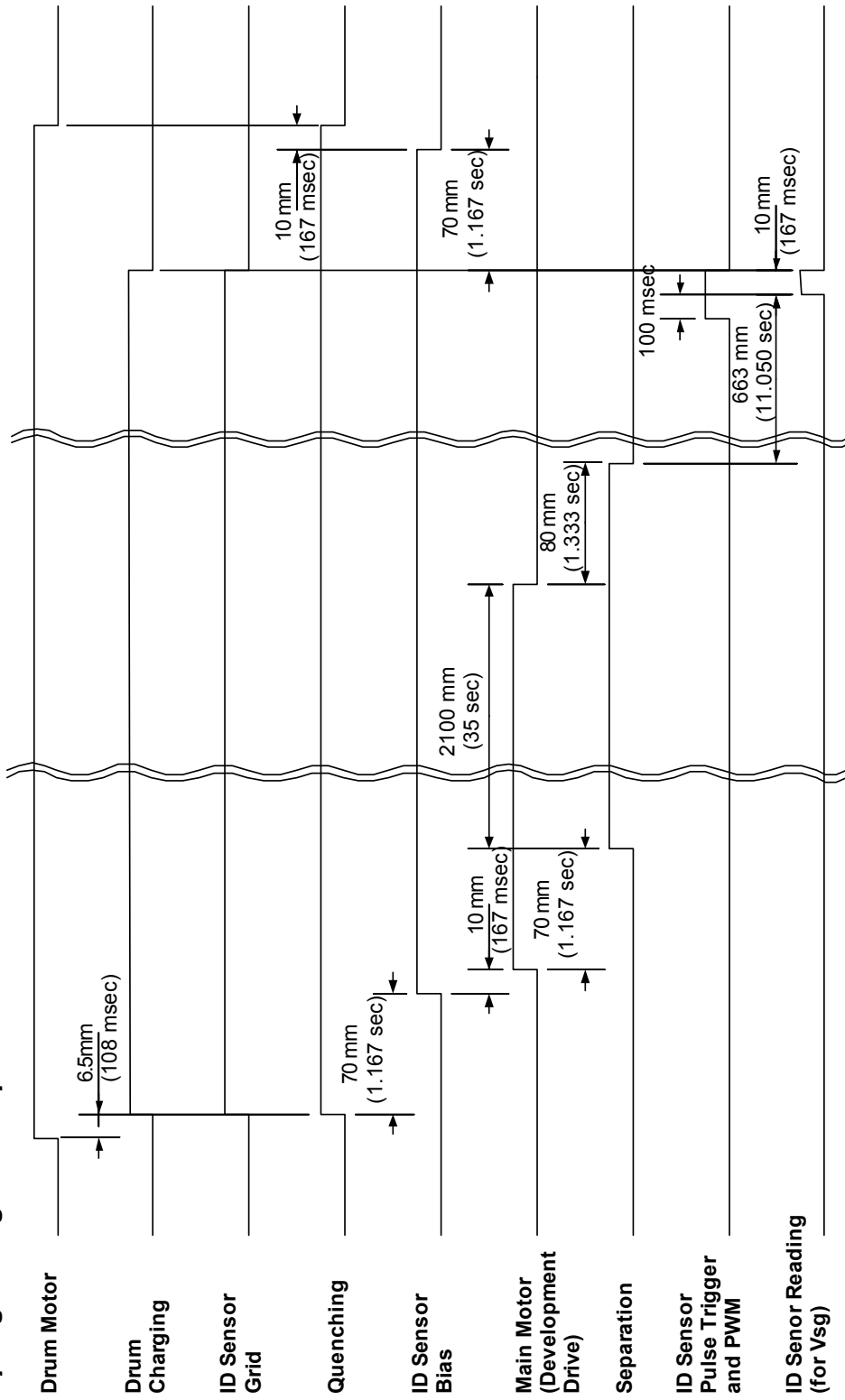
6.6.8 TONER DENSITY CONTROL

Overview

This machine uses an ID sensor to control:

- Toner density
- Toner near end detection
- Toner end detection

The machine uses the ratio of Vsg/Vsp to find the quantity of toner that must be supplied to the drum.

To supply toner, the machine switches on the toner supply clutch to feed toner from the toner cartridge to the development unit.

SP3103 (ID Sensor Output Display) shows the most recent values of Vsg and Vsp that were stored in the NVRAM (Range: 0.00 ~ 5.00 V).

Supply Modes

There are two supply modes

- Detect Supply Mode
- Fixed Supply Mode

During normal operation, the machine uses detect supply mode.

Detect supply mode has two sub-modes (referred to as "tables").

- Main table: Used during copying
- Length table: The machine switches to this table during copying if the length of the copy becomes more than 1189 mm (46.8").

If an ID sensor problem occurs during the job, the machine stops at the end of the job. The machine does not go into fixed supply mode automatically. The technician must repair the machine. If the machine cannot be repaired, the technician must put the machine into fixed supply mode with SP 2208 003.

In fixed supply mode, the machine supplies a set quantity of toner per page.

After the technician repairs the machine, the machine must be put back in detect supply mode with SP 2208 003.

Detailed
Descriptions

Detect Supply Mode

Main Table

The machine uses this table from the start of the page until the length of the printed page gets to 1189 mm (46.8").

The machine uses these two parameters to control the rate of toner supply:

- Vsg/Vsp
- The toner supply level set with SP2208 001

Vsp/Vsg	Toner Supply Level (SP 2208 001)			
	L	M	H	HH
Less than 10%	None	None	None	None
10% to 12%	10%	15%	20%	30%
More than 12%	30%	40%	50%	60%
Toner Near-End	100%	100%	100%	100%

Normally, Vsg/Vsp is less than 10%. So no toner is supplied during printing.

Length Table

If the page becomes longer than 1189 mm (46.8"), the machine changes to the Length Table for the remaining part of the page.

But, if no toner was supplied before the start of the copy job, the quantity of toner was sufficient at that time. Because of this, the machine does not change to the Length Table.

The Length Table ignores the Vsp/Vsg ratio. Toner is supplied at a set rate. This rate is controlled by the toner supply level set with SP 2208 001.

Length Table

Toner supply rate	Toner Supply Level (SP 2208 001)			
	L	M	H	HH
	2%	4%	8%	15%

Under normal conditions (Vsp/Vsg less than 10%), no toner was supplied during the first 1189 mm of the print. As a result, the developer does not contain much toner. Because of this, the Length Table increases the toner supply rate from 0% to 2%, 4%, 8%, or 15%.

Fixed Supply Mode

When the technician switches the machine to fixed supply mode, toner is supplied as shown in this table.

Toner supply rate	Toner Supply Level (SP 2208 001)			
	L	M	H	HH
	2%	4%	6%	8%

Toner Supply Clutch Operation

The toner supply clutch turns the toner agitator shaft to supply toner from the toner cartridge to the development unit.

The toner supply rates in these three tables control the on/off timing of the toner supply clutch.

When the toner supply clutch switches on, it stays on for 0.4 sec. The length of the intervals when the clutch is off is set by the percentage values shown in the diagram on the next page.

Detailed
Descriptions

DEVELOPMENT

Image Area

Supply Rates
100%

0.4 sec

60%

0.3 sec

50%

0.4 sec

40%

0.6 sec

30%

0.9 sec

20%

1.6 sec

15%

2.7 sec

10%

3.6sec

0.4 sec

8 %

8.8 sec

6 %

11.7sec

4 %

16.8sec

0.4sec

2%

34.3sec
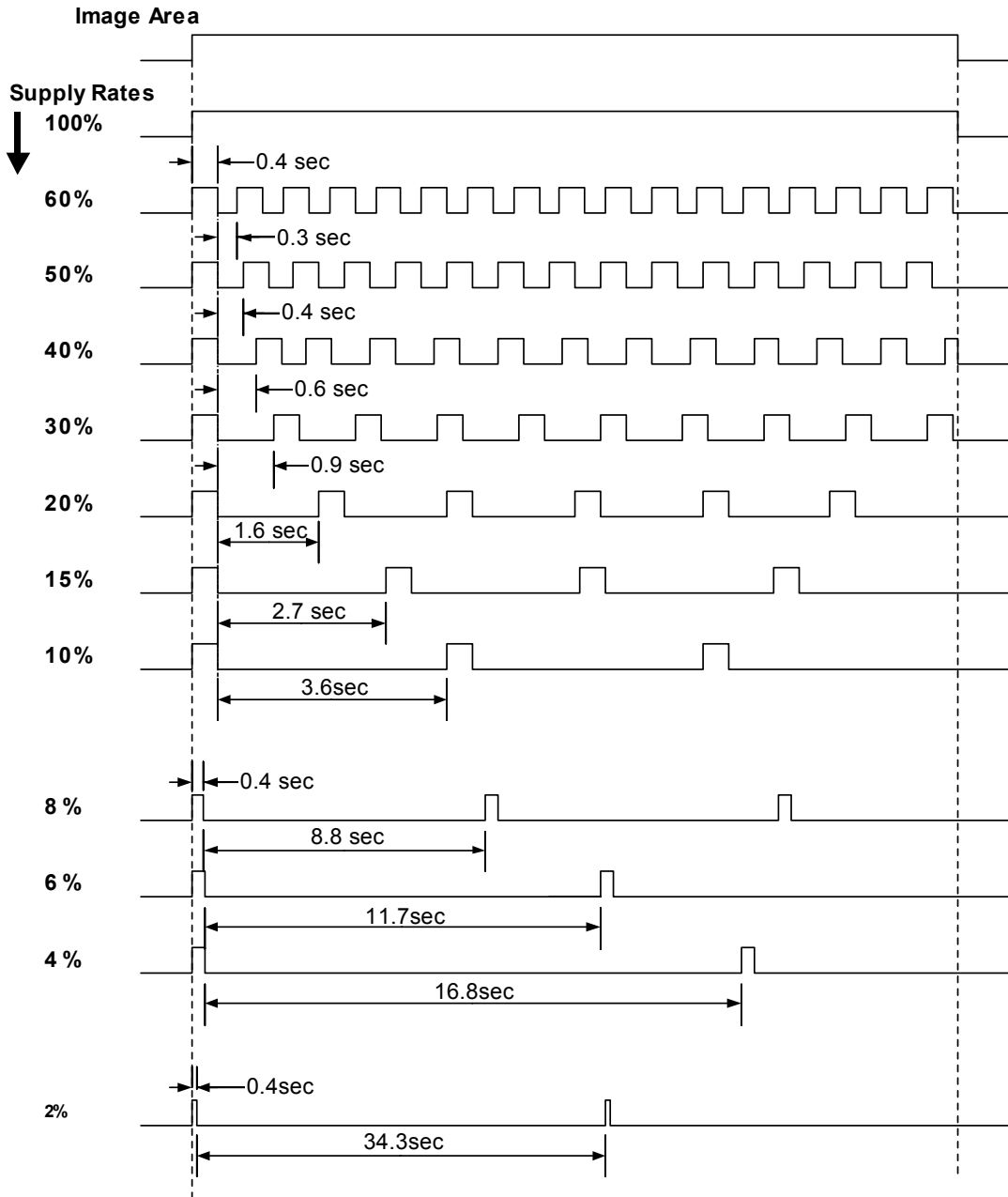
The percentage values in this chart correspond to the percentages listed in the Main, Length, and Abnormal ID Sensor Tables. For example, if the value is 10%, the toner supply clutch is on for 10% of the time; it switches on for 0.4 sec. at 3.6 sec. intervals

6.6.9 TONER END/NEAR-END DETECTION

The machine compares Vsp/Vsg with two SP settings to find when the toner cartridge is almost empty (Toner Near End) or fully empty (Toner End).

- SP2927 001: Toner near-end
- SP2927 003: Toner end

Toner Near End

When Vsp/Vsg is larger than SP2927 001 three times in sequence, the machine shows a toner near-end indication. The default is 0.200 (the lowest setting). If the setting is higher, the quantity of toner in the cartridge becomes less before toner near-end occurs. This can cause paler images at the end of the toner cartridge's life. When toner near-end occurs, the toner near-end indicator lights on the operation panel.

Toner End

When Vsp/Vsg is larger than the setting for SP2927 003 (0.225: default) three pages in a row, the machine prints one more page and then stops immediately.

When toner end occurs, the toner end indicator lights on the operation panel and copying stops. The machine cannot be used until:

- A new toner cartridge is installed.
- The machine recovers from toner end.

Toner End Recovery

The flow chart on the next page shows the recovery sequence when a new toner cartridge is installed after toner end occurs. After toner end occurs, toner end recovery starts if you open and close the toner hopper cover.

The machine makes an ID sensor pattern to detect if a supply of toner is available. If Vsp/Vsg is less than Vref, then the machine detects recovery from toner end, and goes out from the toner end condition. If Vsp/Vsg is more than Vref 5 times, then the machine stays in the toner end condition, and it cannot be used. In some conditions, the machine recovers from toner end if you switch the machine off and on.

Detailed Descriptions

DEVELOPMENT

Toner End Recovery Flow Chart

```
┌─────────────────────────────┐
│     Toner End Recovery      │
└─────────────────────────────┘
              │
      ┌───────────────┐
      │ Recovery Start │
      └───────────────┘
              │
              ▼
        ╱──────────╲         No
       ╱ Toner Cover ╲──────────┐
       ╲ Opened/Closed?╱         │
        ╲──────────╱            │
              │ Yes              │
              ▼                  │
      ┌───────────────┐          │
      │ Toner End Reset│         │
      └───────────────┘          │
              │                  │
              ▼                  │
      ┌──────────────────┐       │
      │ Recovery Times → 0│       │
      └──────────────────┘       │
              │                  │
              ▼                  │
  ┌──────────────────────┐       │
  │ (1) Drum Motor ON     │       │
  │     6.5 mm            │       │
  │ (2) Drum Charge, ID   │       │
  │     Sensor Grid, QL   │       │
  │     ON 70 mm          │       │
  │ (3) D Sensor Bias ON  │       │
  └──────────────────────┘       │
              │                  │
              ▼                  │
  ┌──────────────────────┐       │
  │ 10 mm after (3) above:│       │
  │ (4) Main Motor ON     │       │
  │     70 mm             │       │
  │ (5) Separation ON     │       │
  └──────────────────────┘       │
              │                  │
              ▼                  │
  ┌──────────────────────┐       │
  │ After 1 s, Recovery   │       │
  │ Operation +1          │       │
  └──────────────────────┘       │
              │                  │
              ▼                  │
  ┌──────────────────────┐       │
  │ Toner Supply CL ON    │       │
  │ 1.5 s, OFF 3.5 s,     │       │
  │ repeated 10 times     │       │
  └──────────────────────┘       │
              │                  │
              ▼                  │
  ┌──────────────────────┐       │
  │ Wait 30 s for Auger   │       │
  │ Rotation              │       │
  └──────────────────────┘       │
              │                  │
              ▼                  │
  ┌──────────────────────┐       │
  │ Create ID Sensor      │       │
  │ Pattern (A)           │       │
  └──────────────────────┘       │
              │                  │
              ▼                  │
  ┌──────────────────────┐       │
  │ Separation OFF        │       │
  │ 114.7 mm from (A)     │       │
  └──────────────────────┘       │
              │                  │
              ▼                  │
  ┌──────────────────────┐       │
  │ Read ID Sensor Pattern│       │
  └──────────────────────┘       │
```

Vsp / Vsg < Vref — No / Yes

Recoveries more than 5? — No / Yes

Charge Corona Unit, ID Sensor Grid OFF

Charge Corona, ID Sensor Grid OFF

After 70 mm, ID Sensor Bias, Main Motor OFF

After 70 mm, ID Sensor Bias, Main Motor OFF

After 10 mm, Drum Motor, QL OFF

After 10 mm, Drum Motor, QL OFF

Toner End Reset

No Reset

END

END

⟹ 6.7   PAPER FEED AND REGISTRATION

6.7.1 OVERVIEW

Layout Diagrams
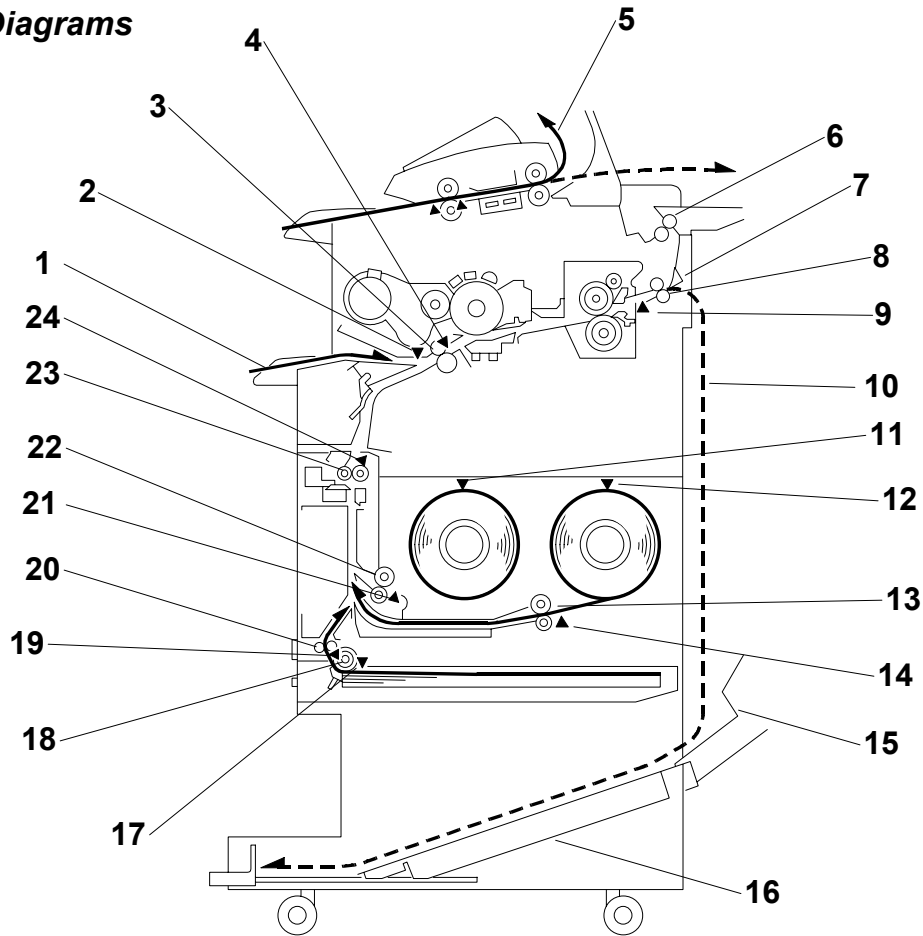
1. Manual Feed Table (Bypass)
2. Paper Set Sensor (Manual Feed Table)
3. Registration Rollers
4. Registration Sensor
5. Upper Exit
6. Upper Exit Rollers
7. Paper Junction Gate
8. Fusing Exit Rollers Rear Exit
9. Exit Sensor
10. Rear Exit
11. Roll 1 End Sensor
12. Roll 2 End Sensor
13. Feed Rollers (Roll 2)
14. Roll 2 End Sensor (EXP)
15. Lower Output Tray
16. Lower Output Stacker
17. Paper Cassette Paper End Sensor
18. Paper Cassette Feed Roller
19. Relay Sensor (Cut Sheet)
20. Grip Rollers
21. Roll 1 End Sensor (EXP)
22. Feed Rollers (Roll 1)
23. RF Exit Rollers
24. RF Exit Sensor

Detailed Descriptions

PAPER FEED AND REGISTRATION
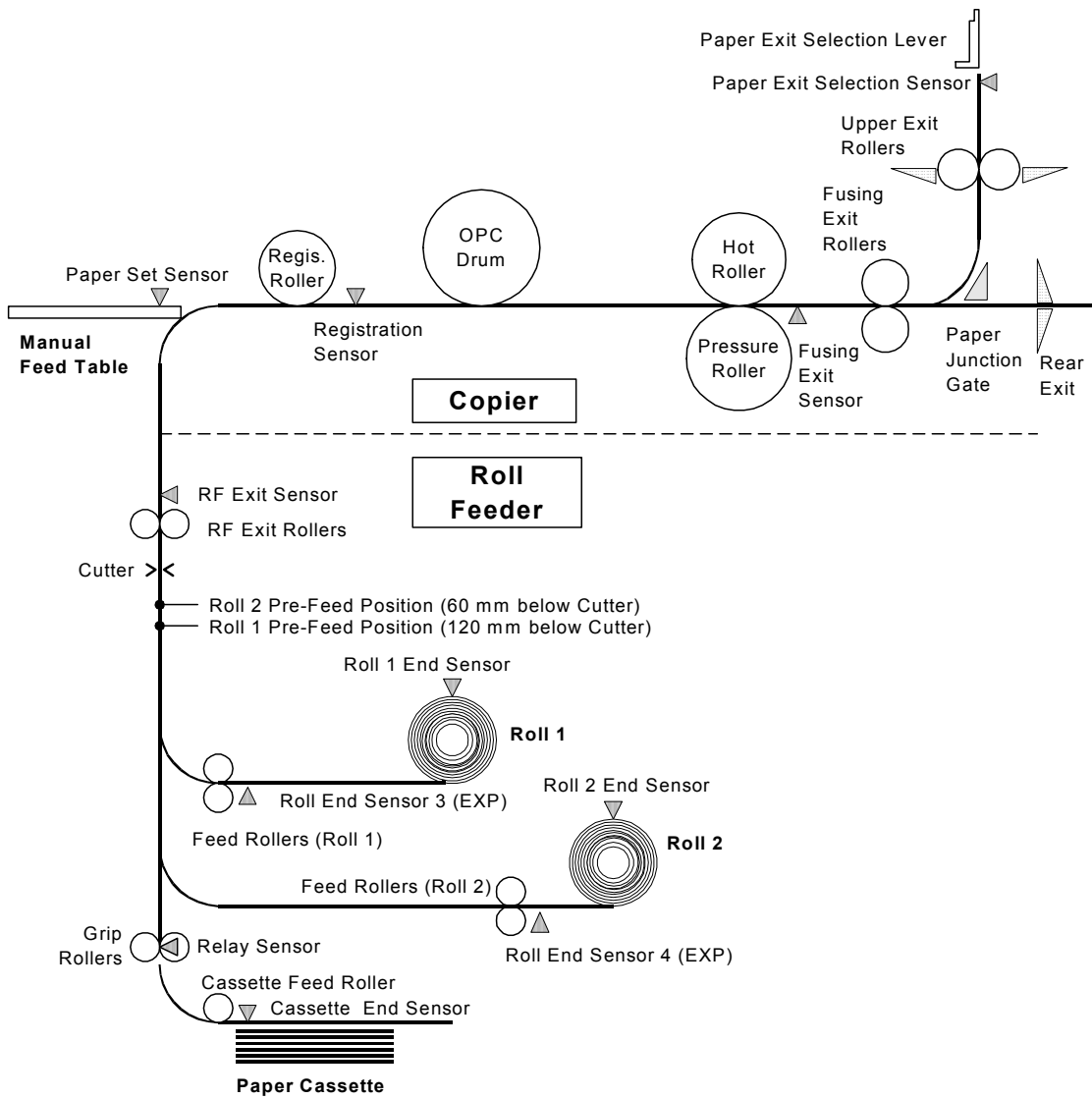
This diagram shows all the rollers and sensors used during paper transport. The diagram is not in scale.

Feed Station Overview

The machine can feed paper from the manual feed table or the optional roll feeder. With all options installed, there are four paper feed sources:

- Manual Feed Table (bypass tray)
- Roll 1: Front roll in the Roll Feeder (Roll Feeder B641 has the front roll only)
- Roll 2: Rear roll in the Roll Feeder (Roll Feeder B642 has the front and rear rolls.
- Paper Cassette (installed in the bottom of the Roll Feeder)

The user sets one of these paper feed sources at the operation panel.

When the machine detects the original, the feed motor and the registration motor start, and paper feed starts. The paper goes into the machine from the paper supply source, goes through the RF exit rollers, and then to the registration rollers.

The registration rollers stop temporarily for paper skew correction, and then start again to feed the paper to the drum.

Manual Feed Table

The manual feed table (bypass tray) is the main station for paper supply for this machine. (The roll feeder and paper cassette are options.) Because of this, the manual feed table is not a "bypass" tray, although the name for the manual feed table is "bypass tray" in the User Tools menus.

The manual feed table feeds one pre-cut sheet.

Roll Feeder

The cutter cuts the paper after the machine feeds the specified paper length. The RF exit sensor monitors paper feed.

The start time of the cutter is controlled by the cutting mode set by the user at the operation panel:

- Preset 1. Cuts a preset SEF length. The size of the original is ignored.
- Preset 2. Cuts a preset LEF length. The size of the original is ignored.
- Synchro. Cuts the copy paper to the same length as the original.
- Variable. Cuts the copy to the length that was input at the operation panel.

After the last cut of a job, the feed roller changes direction and feeds the leading edge of the paper to its home position. This makes sure that the paper path is not blocked when paper feed starts for the next job.

Paper Cassette

The optional universal-type paper cassette, installed in the bottom of the roll feeder, feeds cut sheets.

Paper Width and Media Type Settings

After a roll is installed, the width of the paper and the type of paper must be set with User Tools. These settings control machine parameters (for example, toner supply, and temperature in the fusing unit).

For more, see section 1 (Installation).

Detailed
Descriptions

6.7.2 MANUAL FEED MECHANISM
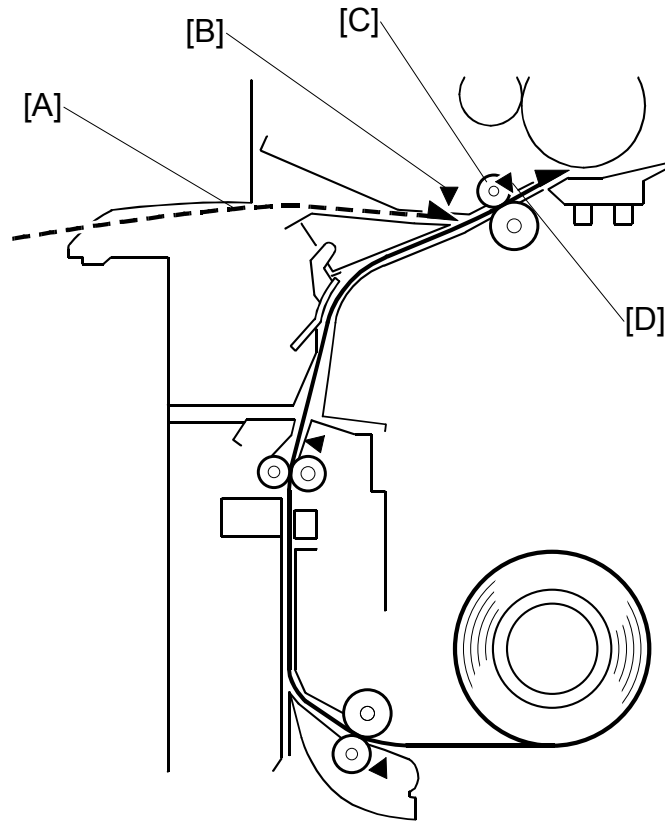
The user puts a cut sheet [A] on the manual feed table (also known as the bypass tray).

The paper set sensor [B] detects the leading edge of the sheet. This switches on the drum motor, main motor, and registration clutch.

The registration clutch engages the registration roller [C] which feeds the sheet.

The registration sensor [D] detects the edge of the sheet and the registration clutch switches off for 2 seconds. This gives the user time to adjust the position of the paper to make it straight.

The 2-second interval can be adjusted with SP1911 (By-Pass Feed Start Timing Adj.).

6.7.3 ROLL FEED MECHANISM

Drive
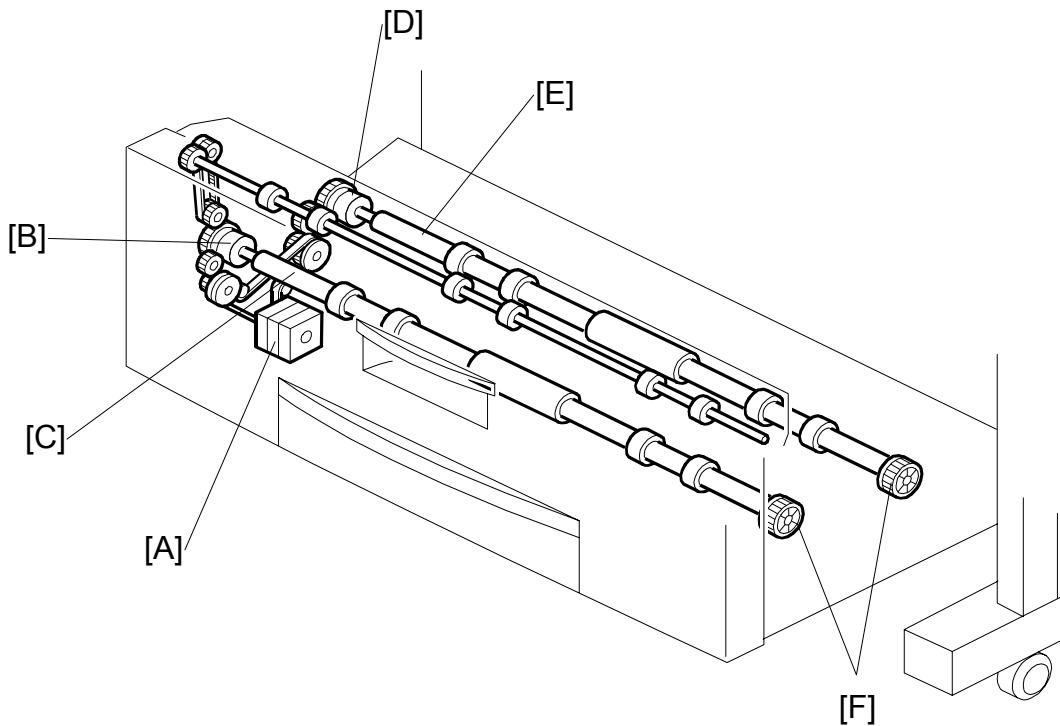
One roll feed motor [A] controls the two feed rollers:

The clutch [B] engages to transfer power from the motor to the feed roller [C] for Roll 1.

-or-

The clutch [D] engages to transfer power from the motor to the feed roller [E] for Roll 2.

There is a plastic knob [F] at the end of each feed roller. After a new roll is installed, or after a paper jam is removed, the user turns these knobs to feed the paper manually to the cutting position.

Detailed
Descriptions
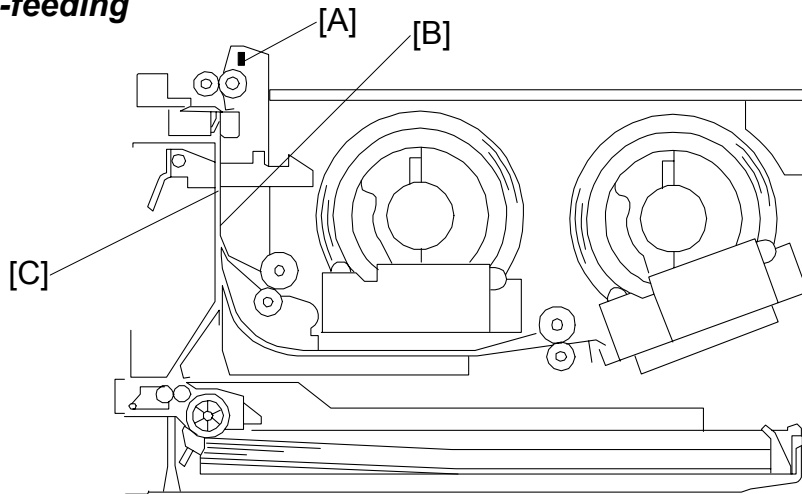
Roll Pre-feeding

Check Before Pre-Feeding

The machine does a pre-feed control check:

- Immediately after the main power switch or operation switch is switched on.
- Immediately after the roll feeder drawer is closed.
- At the end of a copy job.

During the pre-feed check, the cutter moves to home position:

- The machine checks if the left or right cutter HP switch is ON.
- If the two cutter sensors are OFF, the machine moves the cutter to the left home position. This makes sure that the spring-loaded paper holder opens to let paper feed. (☛6.7.5)

The machine pre-feeds paper from each roll after the pre-feed check completes without error. Pre-feeding is done for Roll 1 first.

Roll 1 Pre-Feeding

- Roll feed clutch 1 engages and turns the Roll 1 feed roller.
- The leading edge of the sheet feeds past the RF exit sensor [A].
- Feed stops.
- The roll feed motor pulls back the leading edge of the sheet until it is **120 mm** below the cutter. Then it stops. This is the pre-feed position [B] for Roll 1.

Roll 2 Pre-Feeding

- The machine pre-feeds the sheet from Roll 2.
- The roll feed motor pulls back the leading edge of the sheet until it is **60 mm** below the cutter and then stops. This is the pre-feed position [C] for Roll 2.

The two sheets stay at their pre-feed positions for the start of the next copy job. There are no rollers in this part of the paper path. As a result, when the two rolls are at the pre-feed positions, one can easily feed, and the other does not move.

Procedure
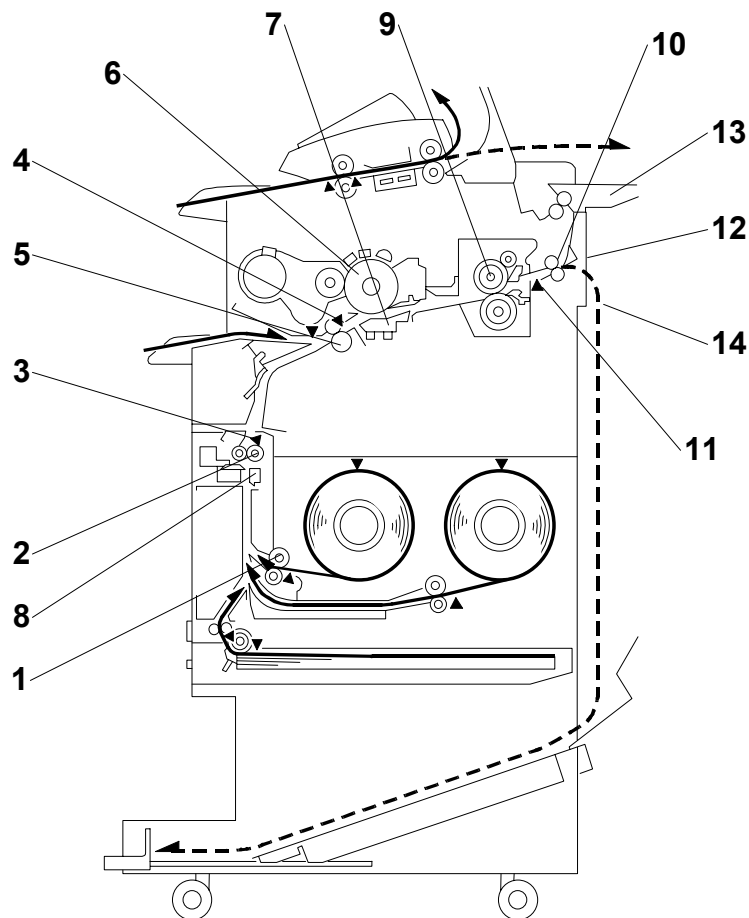
Roll paper feed starts from the pre-feed position.

- The roll feed motor engages roll feed clutch 1 and turns the feed rollers [1].
- The RF exit rollers [2] feed the paper past the roll exit sensor [3] to the registration roller. The RF exit sensor checks that the leading and trailing edges of the sheet go by at the correct time.
- The registration sensor [4] stops the registration roller [5] to correct skew. Then, the registration roller feeds the paper to the drum [6] and through the T&S unit [7].
- The cutter [8] cuts the paper at the length specified for the job. (☞6.7.5)
- The rollers in the fusing unit [9] feed the sheet to the exit rollers [10].
- The exit sensor [11] checks that the leading and trailing edges of the sheet go by at the correct time.
- The exit rollers feed the sheet to the paper junction gate [12].
- The paper junction gate sends the paper to the upper exit rollers [13] or sends it out the rear [14] of the machine. (☞6.10.2)

Detailed
Descriptions

6.7.4 ROLL FEEDER PAPER HOLDERS
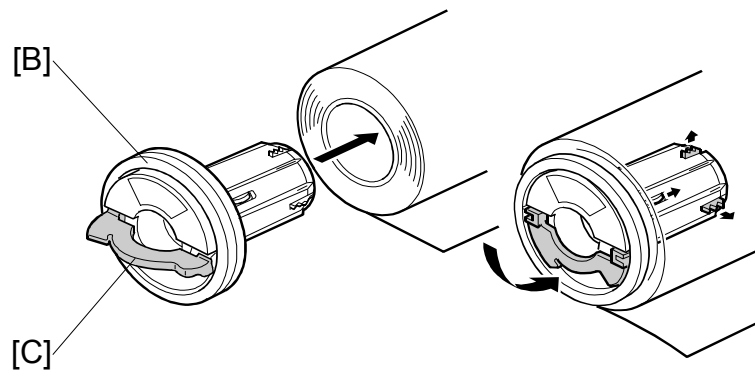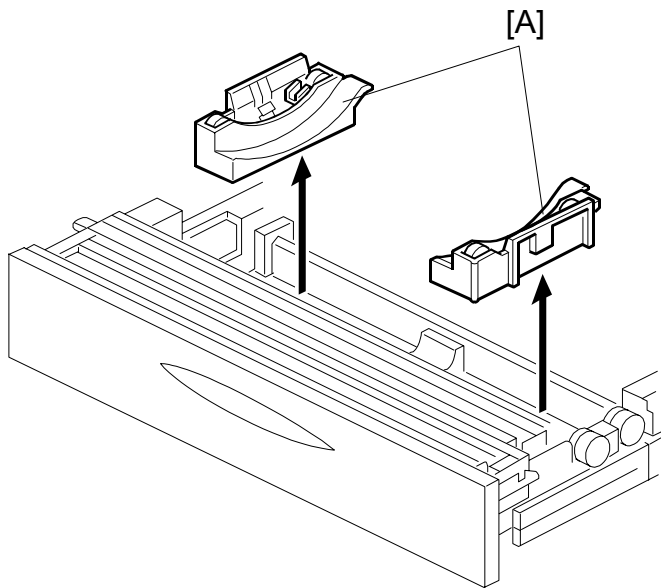
The racks [A] that hold the rolls are adjustable. This lets the user install paper rolls of different widths.

A roll stopper [B] is put in each end of a roll. The roll lever [C] locks the stoppers in their position after they are put in the ends of a roll. The roll is put on the rack with each stopper locked in its position.

6.7.5 ROLL PAPER CUTTING MECHANISM
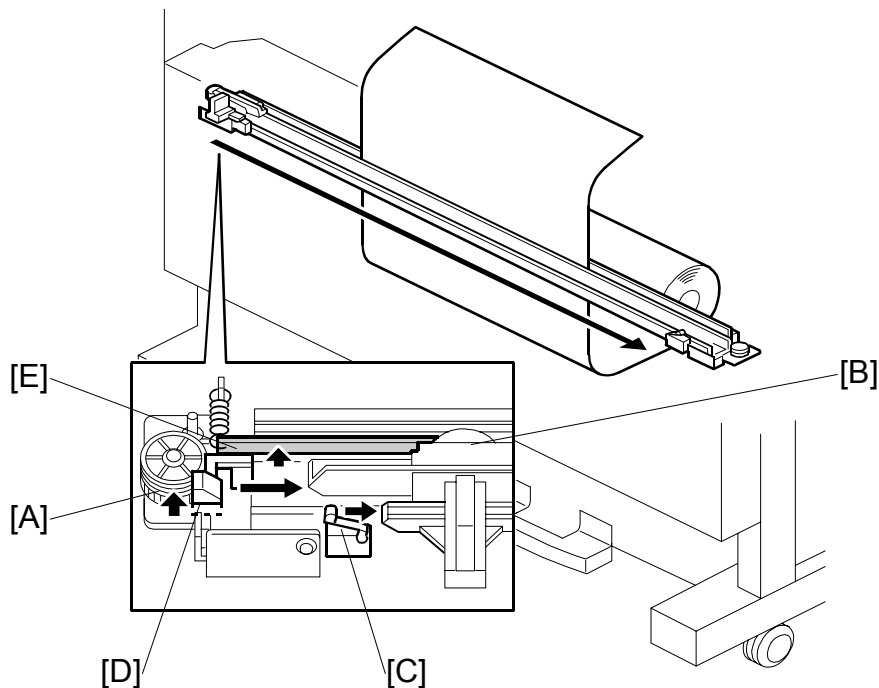
Immediately before cutting, the registration roller continues to turn at normal speed, but the roll feed motor speed increases by a small quantity. This causes the paper to buckle slightly between the registration roller and the top of the cutter, and this gives the machine time to cut the paper.

The cutter motor below the drive gear [A] switches on and moves the rotary cutter [B] and its handle across the width of the paper. The switch [C] on the left or right end detects when to stop the cutter motor. The cutter cuts from left to right, or from right to left. It does not come back after cutting the paper, until it is time to cut the next page. In the illustration, the cutter starts a cut from left to right.

The tab [D] on the bottom of the handle releases the spring-loaded paper holder [E]. This holder holds the paper for cutting when the cutter moves across the paper.

The tab opens and locks the paper holder when the cutter gets to the home position on the other side after cutting. This keeps the paper path open for the next sheet.

The registration roller continues to turn during cutting.

- This removes the tension between the registration roller and the cutter.
- It also lets paper feed past the drum at the same speed during cutting.

After you install a roll of paper, push the cutter with your hand fully to the left or right side.

6.7.6 ROLL END DETECTION
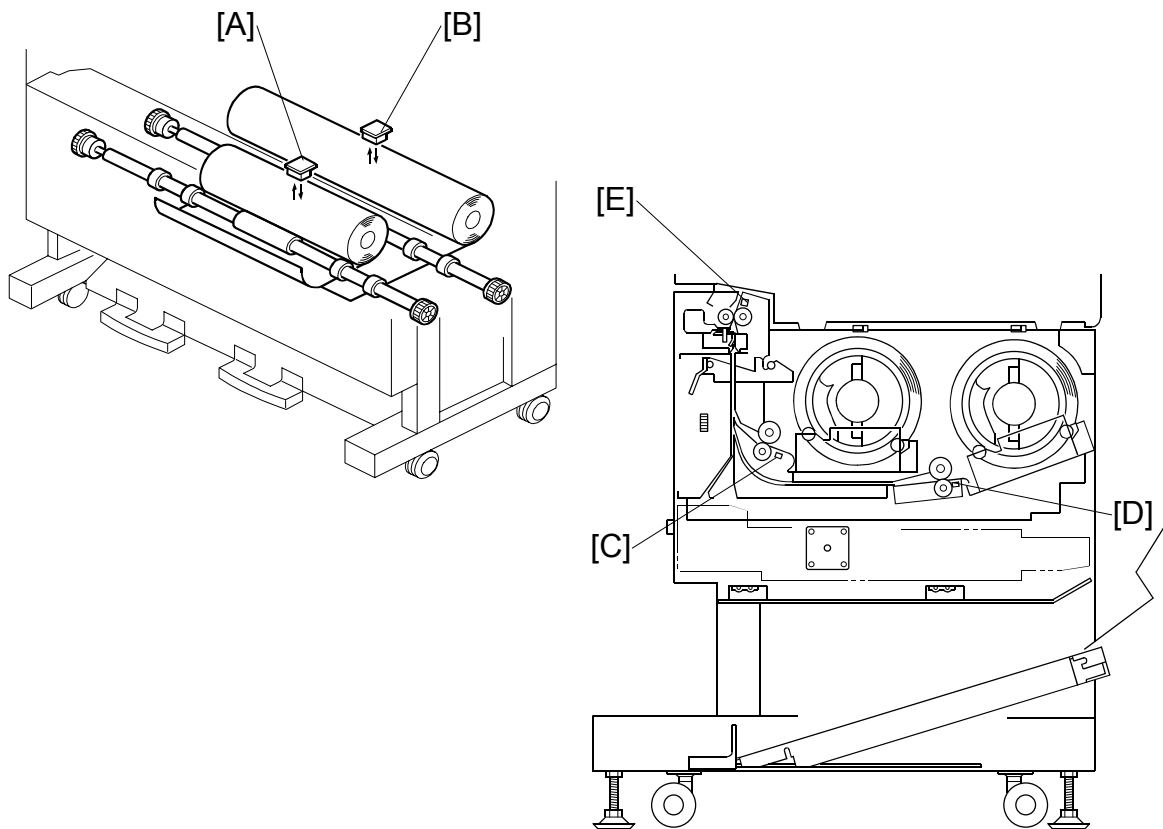
To detect roll end, these two reflective photo-sensors detect the black core of an empty roll:

- Roll end sensor 1 [A], above Roll 1
- Roll end sensor 2 [B], above Roll 2

Also, two other sensors detect roll end if the core of the paper roll is a color other than black:

- Roll end sensor 3 (EXP) [C] detects the trailing edge of the roll when roll 1 has no more paper.
- Roll end sensor 4 (EXP) [D] detects the trailing edge of the roll when roll 2 has no more paper.

The machine also detects roll end if the RF exit sensor [E] does not detect a leading edge after paper feed starts.

- If the leading edge of the sheet does not get to the paper exit sensor from Roll 1 in 4.5 seconds or less, the machine detects paper end (or roll not installed).
- If the leading edge of the sheet does not get to the paper exit sensor from Roll 2 in 8.8 seconds or less, the machine detects paper end (or roll not installed).

6.7.7 PAPER CASSETTE MECHANISM
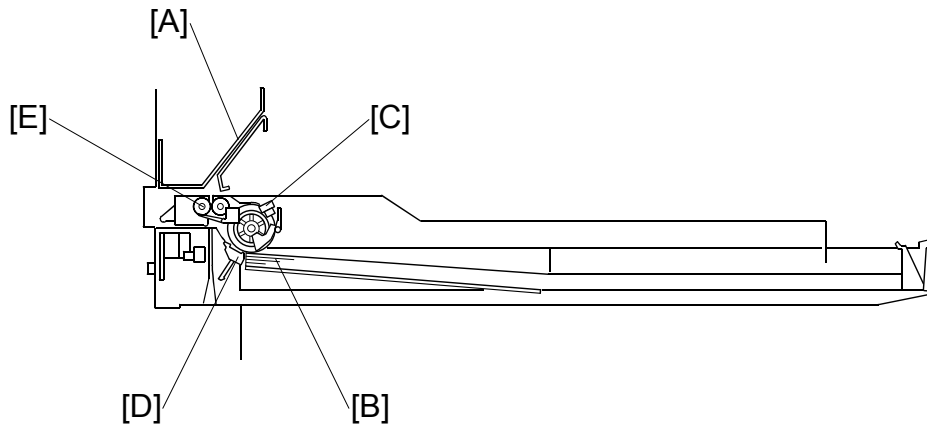
Support arms [A] on each side of the paper cassette go in grooves on each side when the paper cassette is set in the roll feeder.

The grooves lift the supports and pull the springs attached to the bottom plate [B] of the paper cassette. This gives sufficient tension to keep the stack of paper on the bottom plate at the correct height for paper feed.

The cassette feed motor turns the cassette feed roller [C] to feed paper from the top of the stack.

A friction pad [D] below the feed roller gives sufficient friction to stop sheets from double feeding.

The grip rollers [E] (also driven by the cassette feed motor), pull the paper into the paper feed path and feed it up to the RF exit rollers.

Detailed Descriptions

6.7.8 PAPER CASSETTE FEED
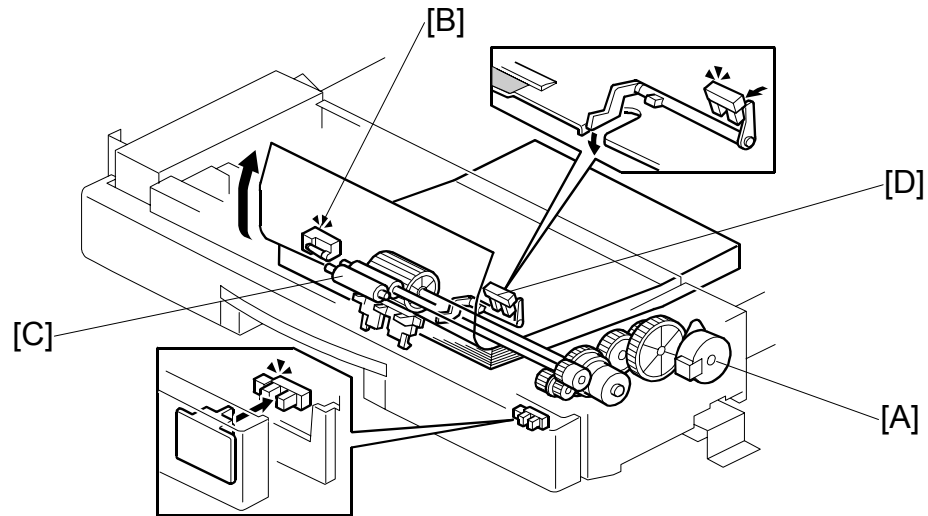
Cassette Paper Path

Paper feeds from the paper cassette when the copy job starts.

The cassette feed motor switches on, and the cassette feed clutch engages to turn the cassette feed roller [A] and the grip rollers [C].

The cassette relay sensor [B]:

- Detects the leading edge of the sheet.
- Switches off the cassette feed clutch.
- The grip rollers [C] continue to turn, and they feed the paper into the same paper path used by roll feed.
- The cassette relay sensor also detects paper jams.

NOTE: After the cassette feed clutch switches off, the cassette feed roller continues to touch the paper. But, the pressure is very weak. Because of this, the grip rollers can pull the paper out easily.

After the grip rollers pull the paper out of the paper cassette, the transport sequence is the same as the roll paper path (the paper is not cut). Refer to the previous page.

The cassette set sensor [D] detects paper after the paper cassette is pulled out or is not correctly locked in its position.

Paper Cassette Pre-Feeding

Paper does not pre-feed from the cassette before the copy job starts. The machine pre-feeds paper from the cassette only between pages of multi-page copy jobs.
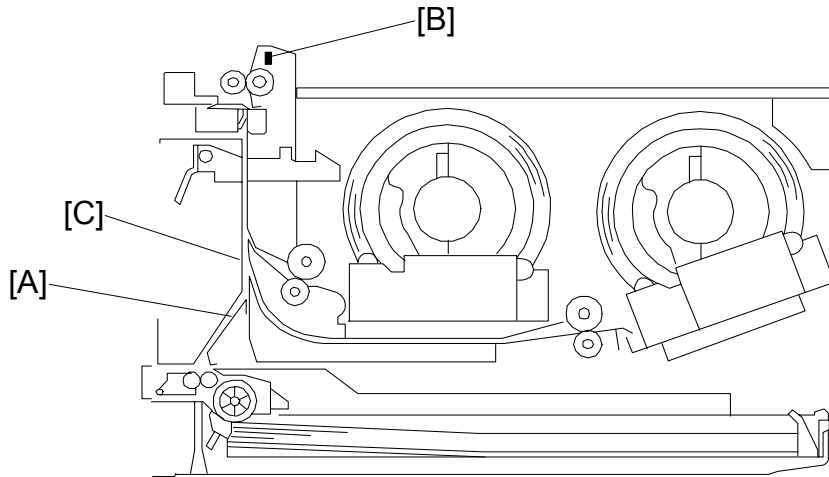
There are two pre-feed positions for the leading edge of cut sheets after the first sheet of a multi-page copy job. The length of the paper in the cassette controls the pre-feed position.

- Pre-feed position 1 [A] is 234 mm below the RF exit sensor [B]. This is for cut sheets 18.7 inches (457.2 mm) long. (This is the maximum length for the paper cassette.)
- Pre-feed position 2 [C] is 184.4 mm below the RF exit sensor. This is for cut sheets less than 18.7 inches long.

Position 1 (lower than Position 2) is used for longer paper. This prevents overlap between the leading edge of a sheet and the trailing edge of the sheet before it.

Detailed
Descriptions

6.7.9 PAPER CASSETTE PAPER END DETECTION
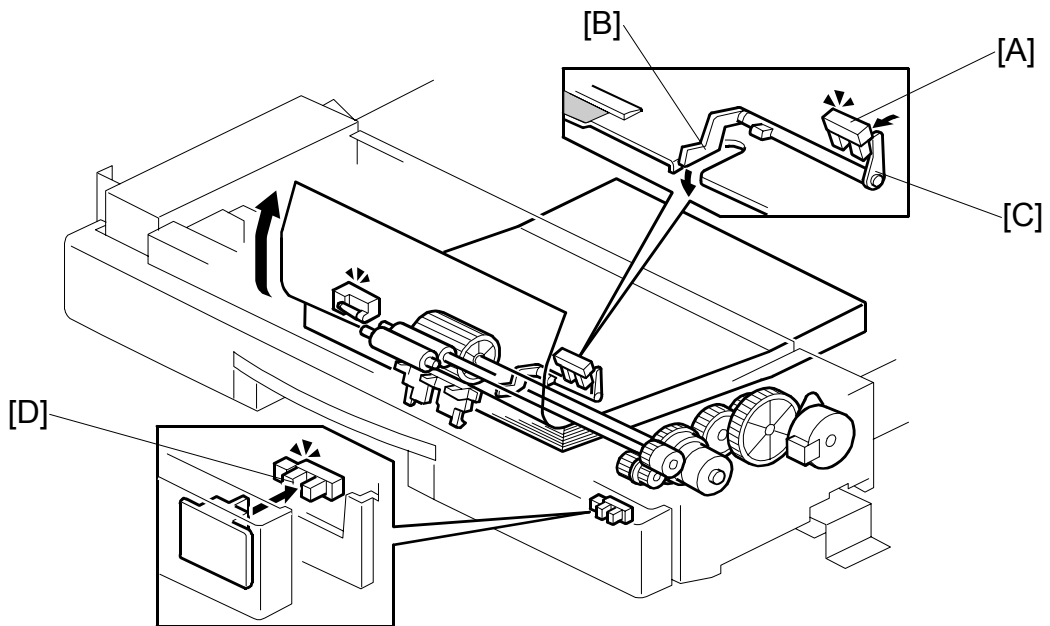
The paper end sensor [A] is above the paper cassette.

The feeler [B] falls through a hole in the cassette plate after the last sheet feeds from the cassette. The actuator [C] moves forward away from the sensor and the machine detects paper end.

The cassette sensor [D] detects when the paper cassette is set and locked in its position.

6.7.10 REGISTRATION
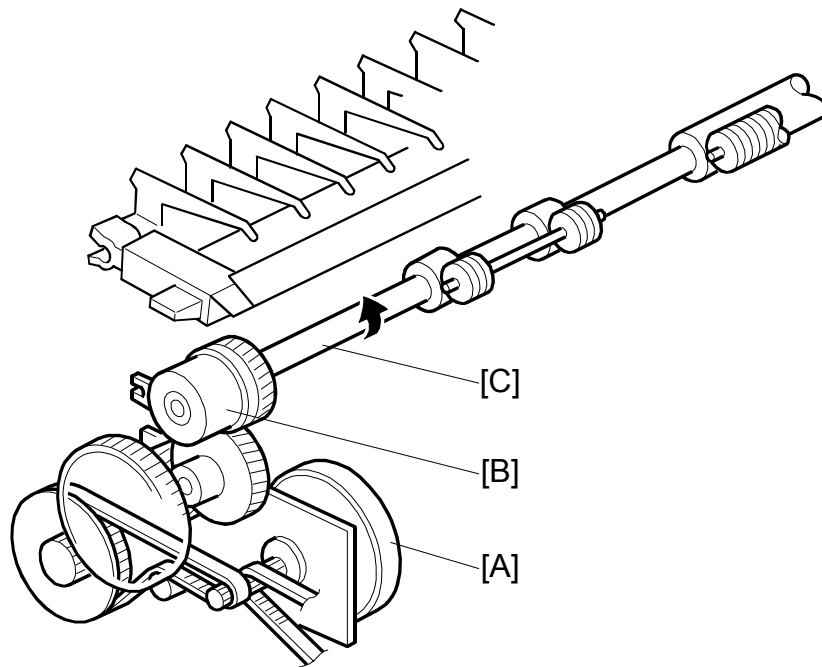
The main motor [A] and registration clutch [B] control the registration roller [C].

The registration clutch switches off temporarily for roll paper or cut sheets from the paper cassette.

- When paper is fed from the roll feeder or paper cassette, the paper buckles paper against the roller to remove skew.
- When paper is fed from the manual feed table, feed stops for 2 seconds to let the user correct the paper position, to prevent skew (☞6.7.2). The 2-second interval can be adjusted with SP1911 (By-Pass Feed Start Timing Adj.).

Then the registration clutch switches on again to feed the paper to the drum.

Detailed
Descriptions

6.7.11 CONDENSATION PREVENTION
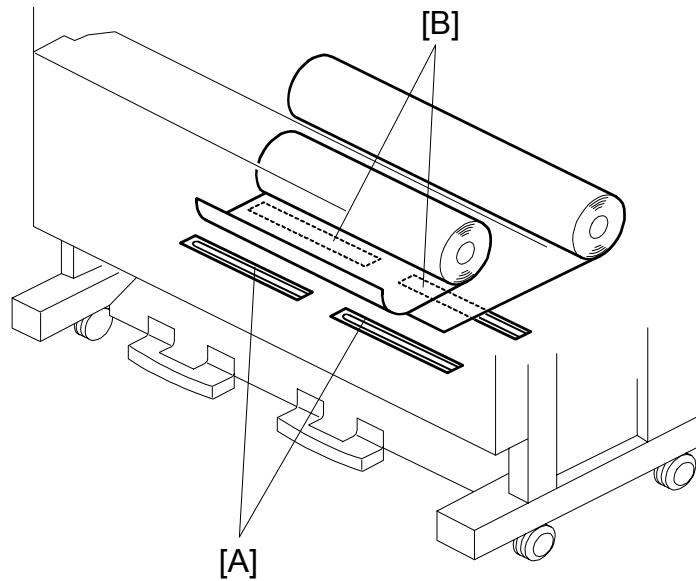
There are four dehumidifiers, two at the front [A] and two at the rear [B], for the roll feeder.

The dehumidifier switch on the right side of the roll feeder controls the operation of these dehumidifiers.

Dehumidifier Switch	Operation
ON	The dehumidifiers stay on unless the fusing lamp is on. When the fusing lamp switches on, the dehumidifiers switch off. When the fusing lamp switches off, the dehumidifiers switch on again.
OFF	The dehumidifiers always stay off.

6.7.12 PAPER FEED TIMING CHART

A1 LEF 1-to-2 Copy Job
Units: Sec.

Paper Set Sensor

Registration Sensor

Fusing Exit Sensor

Main Motor

Fusing Motor

Exposure

Registration CL

RF Exit Sensor

Cutter HP (Right)

Cutter HP (Left)

Cutter Motor

RF Feed CL 1

RF Feed CL 2

RF Feed Motor

Cutter Jam Detection

Cassette CL

Cassette Feed Motor
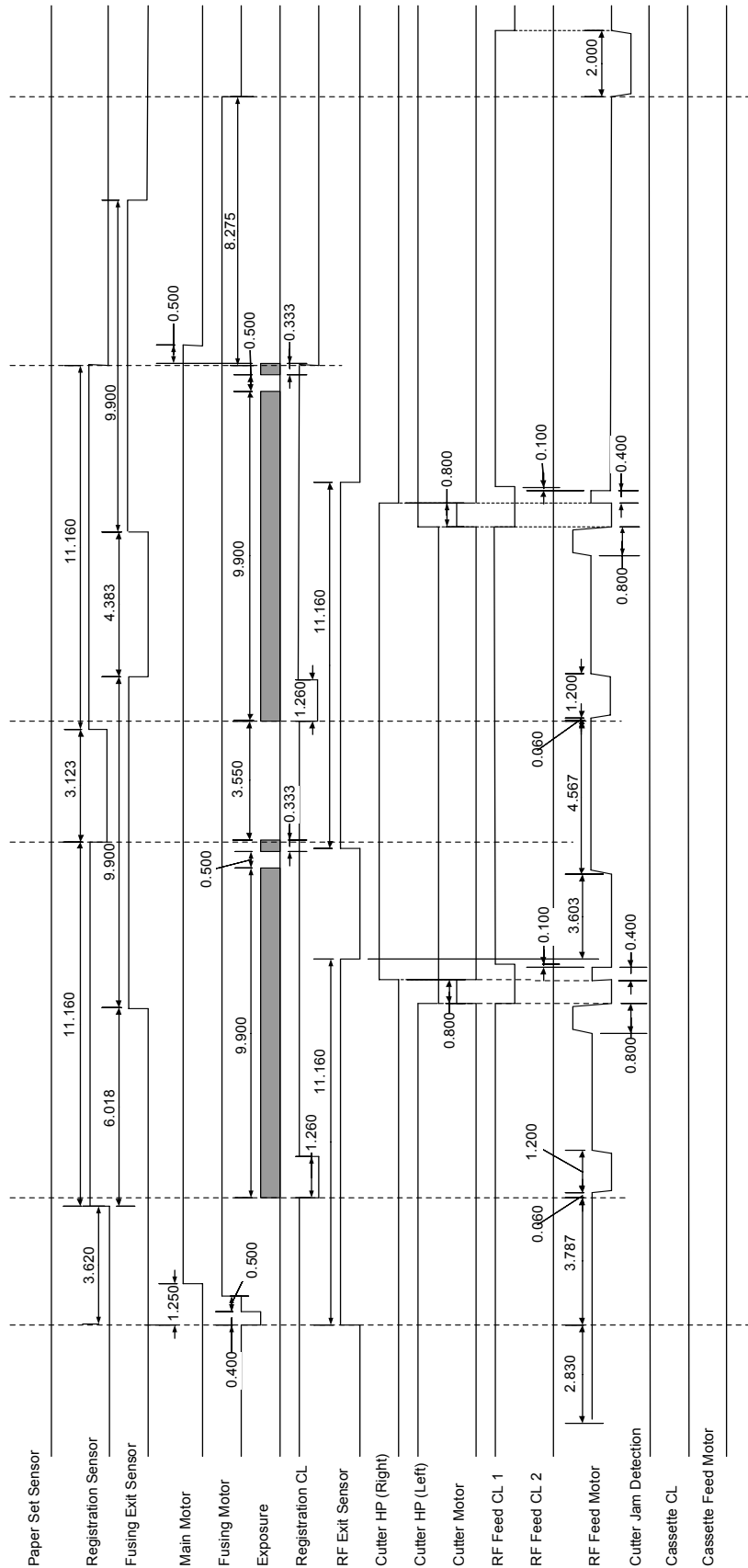
Detailed Descriptions

6.8 IMAGE TRANSFER AND SEPARATION

6.8.1 OVERVIEW
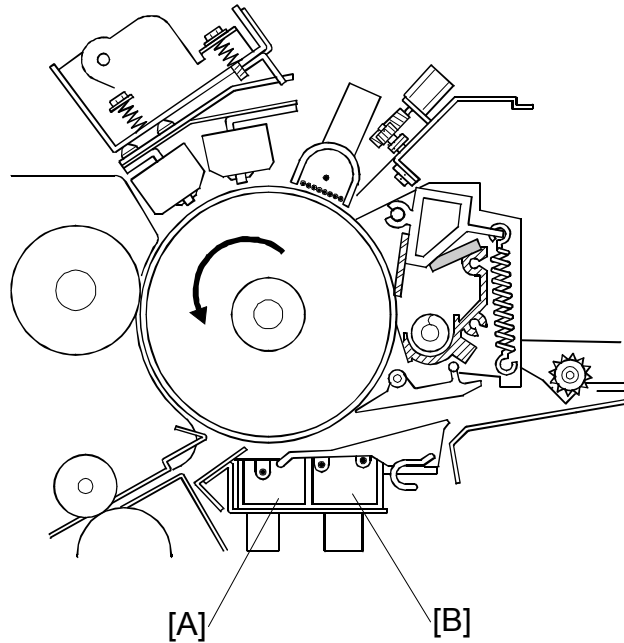
The T&S unit contains two parts:

[A] Transfer corona unit

[B] Separation corona unit

Transfer Corona Unit

Uses a tungsten wire (diameter 80 μm) 9.6 mm above the drum. This wire applies approx. 60 μA to transfer toner from the drum to the paper.

Transfer method	Scorotron charger
Entrance guides:	2 Guide plates: The first is a conductive mylar and guide plate, and the second is a conductive mylar and leaf spring. They are 0.85 mm below the drum.

Separation Corona Unit

Applies approx. ac 280 μA and dc –25 μA to pull the paper off the drum.

Separation method	Wide angle AC Scorotron charger
Backup separation	Pick-off pawl, pick-off pawl solenoid

6.8.2 PICK-OFF PAWL OPERATION
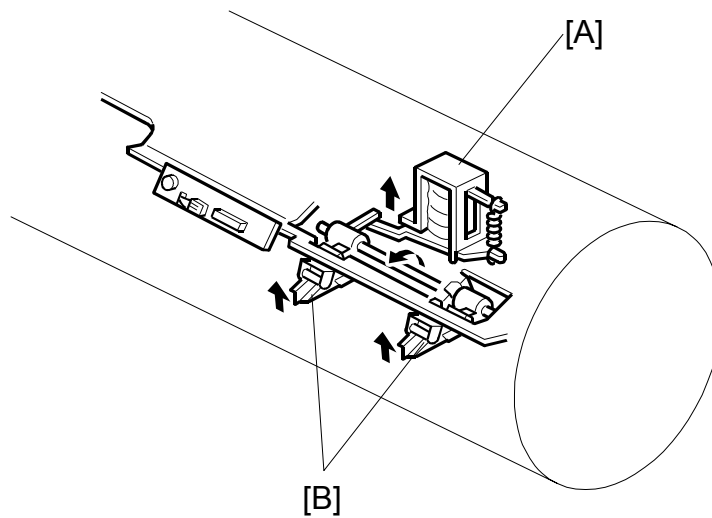
The pick-off pawls separate paper from the drum if the separation corona does not separate the paper fully.

The pick-off pawl solenoid [A] moves the pick-off pawls [B] until they touch the drum.

When the leading edge of the paper on the drum goes into the separation corona unit, the solenoid switches on. About 198 mm (7.8") of the paper touches the drum. The pick-off pawl shaft starts to turn, and the pawls on the shaft are held against the drum by a spring.

6.9 FUSING UNIT

6.9.1 OVERVIEW
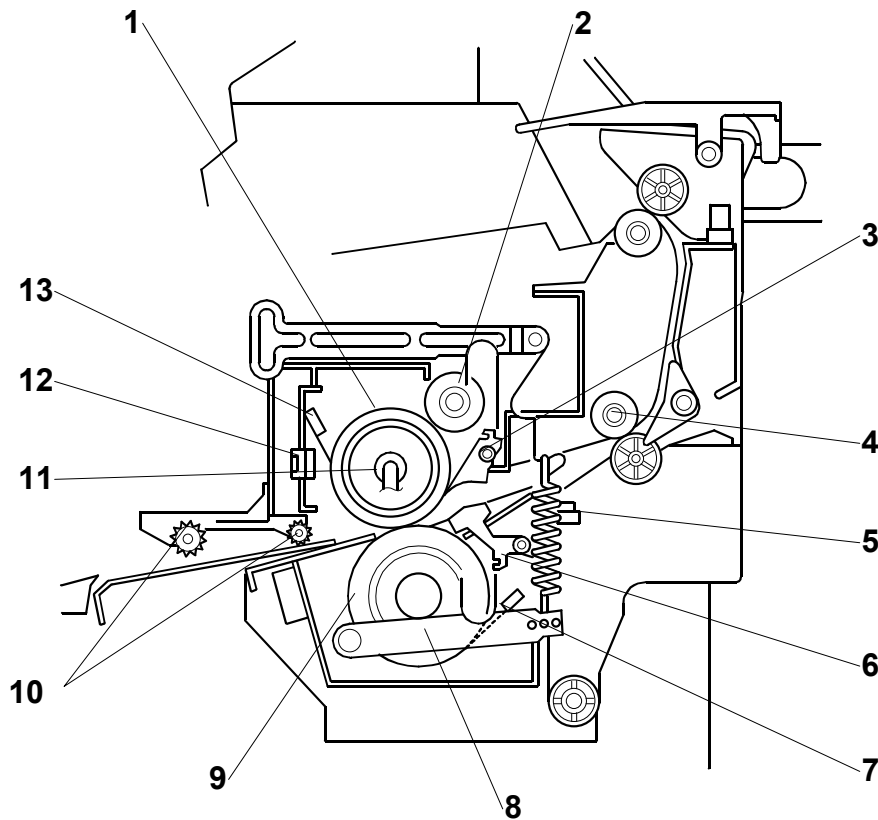
1. Hot Roller	8. Pressure Release Lever
2. Fusing Cleaning Roller	9. Pressure Roller
3. Hot Roller Strippers	10. Entrance Spurs
4. Fusing Exit Rollers	11. Fusing Lamps
5. Fusing Exit Sensor	12. Thermostats
6. Pressure Roller Strippers	13. Hot Roller Thermistor
7. Pressure Roller Thermistor	

The hot roller wall thickness is 1.3 mm. As a result, warm-up time is short (less than 120 s from 23°C).

6.9.2 PAPER FEED THROUGH THE FUSING UNIT
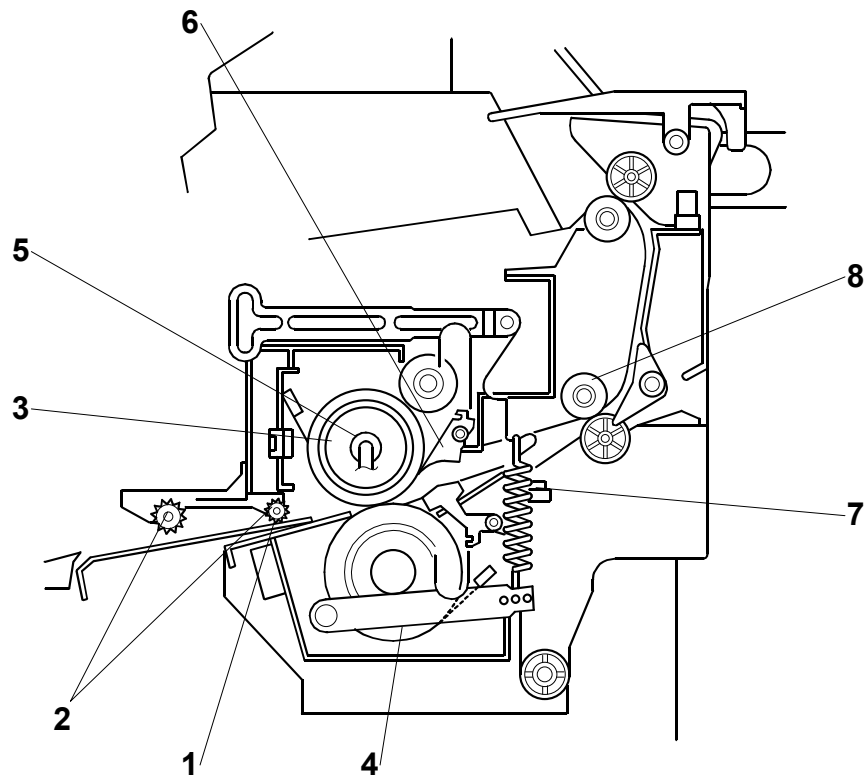
After separation from the drum:

- The paper feeds to the transport plate [1].
- The 5 sets of spurs [2] at the entrance hold the paper against the transport plate
- The heat and pressure of the hot roller [3] against the pressure roller [4] fuse the image to the paper.
- The fusing lamp [5] in the center of the hot roller is pre-heated to the correct temperature. (It switches on and off to keep the rollers at the correct operating temperature.)
- The hot roller strippers [6] pull the copy off the hot roller.
- The fusing exit sensor [7] detects the leading edge and trailing edge of the sheet, and checks the timing to detect paper jams.
- The fusing exit rollers [8] feed the paper out of the fusing unit.

Detailed
Descriptions

6.9.3 FUSING PRESSURE CONTROL MECHANISM

Front   [B]   [A]   Rear
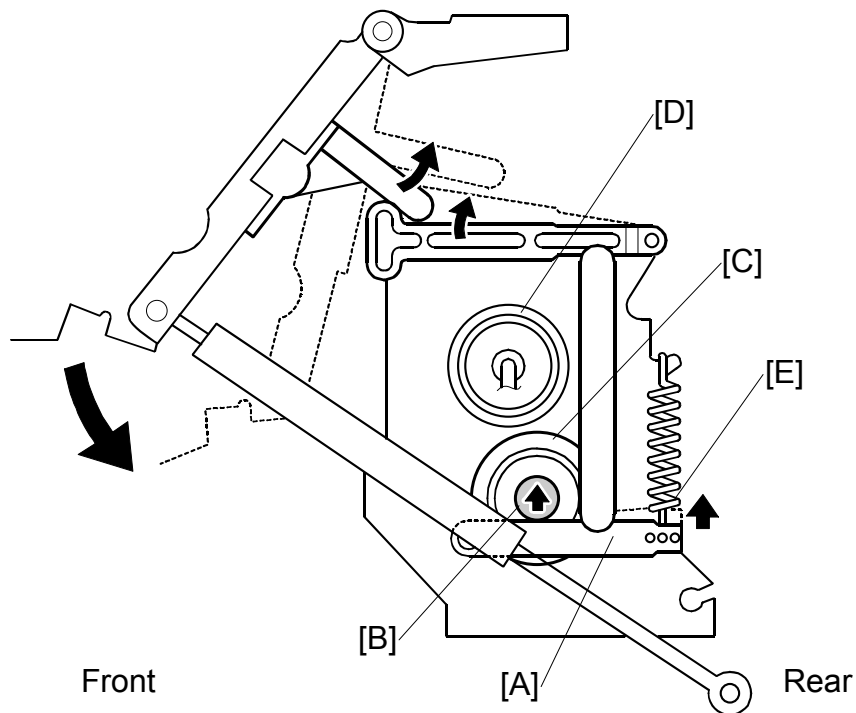
The spring-loaded pressure levers [A] are attached to the pressure roller shaft [B].

The pressure of the springs pushes the pressure roller [C] (a silicone-rubber roller) against the hot roller [D].

To adjust the position of the pressure spring [E], change the position of the lower attachment point:

Center:	Standard tension, (60 N on each spring), standard pressure.
Front (toward the pressure roller):	Less tension, less pressure. Set to this position to decrease wrinkling
Rear (away from the pressure roller):	More tension, more pressure. Can give better fusing with thick paper.

NOTE: Wrinkling occurs more frequently for some types of media (plain, translucent, film, thick paper).

6.9.4 TEMPERATURE CONTROL

Zero-Cross Control Test

Before the machine switches on the fusing lamp, the zero-cross control test checks if the power supply is 50 Hz or 60 Hz.

If the frequency does not fall in the necessary range after 10 attempts, then:

- If the frequency is too low, SC547-3 occurs.
- If the frequency is too high, SC547-4 occurs.
- After power is switched on, if there are no zero-cross interrupt signals for more than 3 seconds with the power relay on (other than when the upper unit is open), then SC547-2 occurs.

If the upper unit or exit unit is open at power on, the test is not done until after the upper unit or exit unit is closed.

Switching on the Fusing Lamp Power

When the fusing lamp is switched on, the applied voltage is added in steps. This "soft start" prevents problems that can be caused by voltages that change quickly.

Fusing Warm-up Time

On the operation panel LCD, the machine shows the time necessary for warm-up. This display shows the time before the machine gets to the target temperature and becomes prepared for operation:

- If the hot roller is below 90°C, approximately 2 minutes are necessary for warm-up.
- If the hot roller is above 90°C at power on, approximately 1 minute is necessary for warm-up.

Detailed
Descriptions

Fusing Temperature Control

Important:

The target hot roller and pressure roller temperatures have different settings for each paper type. The correct target temperatures must be used during fusing. To make sure of this, the user must set this user tool to the paper that they will use for the job: User Tools→ 1. System Settings→ 1. General Features→ 02 Fusing Adjustment→ Plain, Translucent, or Film, types 1, 2, 3, 4, or 5.

Warmup Sequence: Normal

When the main power switch is switched on:

- The fusing lamp switches on and starts to apply heat to the hot roller.
- The temperature of the hot roller is measured constantly by a thermistor.
- **Copy ready temperature**. Copying can start when the temperature of the hot roller gets to the copy ready temperature. This is $5°C$ less than the target temperature of the hot roller. The copy ready temperature is set with SP1105 001 (Fusing Temperature Adj. – Copy Ready Temperature).
- **Target temperature**. When the hot roller gets to the target temperature, it switches on and off in sequence. This keeps the temperature of the hot roller at the target temperature. The target temperature of the hot roller is different for each type of paper. These target temperatures are controlled by SP1107 (Target Temperature of the Hot Roller).
- If the machine stays idle for 7 minutes, it goes into the energy saver mode (the hot roller temperature lowers to $105°C$).
- If the machine stays idle for 14 minutes in the energy saver mode, it goes into the auto off mode and the fusing lamp switches off.
  NOTE: The energy saver and auto off timers can be adjusted with the User Tool "Timer Setting". For more, see page 5-7.
- The machine stays in the energy saver or auto off mode until:
  a) The user pushes the operation power switch, or
  b) The machine receives a print job from the printer controller.

Fusing Temperature Control with Pressure Roller Temperature Feedback

In a cool environment (15°C [59°F] or lower), the machine can be set to switch on the fusing motor and turn the hot roller and pressure roller until the pressure roller gets to its target temperature. This idling of the rollers makes sure that heat is applied to the pressure roller equally, before the first copy job after power on.

This idling phase of the warmup sequence is known as "inching control".

- Inching control is switched on and off with SP1109 (Start Temperature: Pressure Roller). The default setting is "0" (off).
- Inching control does not operate until SP1109 (Start Temperature: Pressure Roller) is set to 5°C or higher.

When inching control is on:

- When the temperature of the hot roller gets to 30°C less than its target temperature, the fusing motor switches on and starts to turn the hot roller and pressure roller.
- When the pressure roller reaches its target temperature, the fusing motor switches off and idling stops.
  NOTE: The target temperature of the pressure roller is controlled by the settings of SP1108 (Target Temperature: Pressure Roller) for each paper type.
- Until the first job starts, or until the machine goes into energy save mode, the temperature feedback from the pressure roller thermistor is used to switch the fusing motor off and on. This keeps the temperature of the pressure roller between its target temperature and 5°C higher than this temperature. For example, for plain paper (target: 60°C) the fusing motor switches off at 65°C (target +5°C) and switches on again when the temperature of the pressure roller falls to 60°C (target).
  NOTE: If the paper type is changed for the next copy job, inching control will switch on to apply heat to the pressure roller until it gets to its new target temperature. The Start key will come on in red (copying disabled) and then light green after the hot roller and pressure roller get to their new target temperatures.

Detailed Descriptions

Summary of Warmup Sequence with Inching On
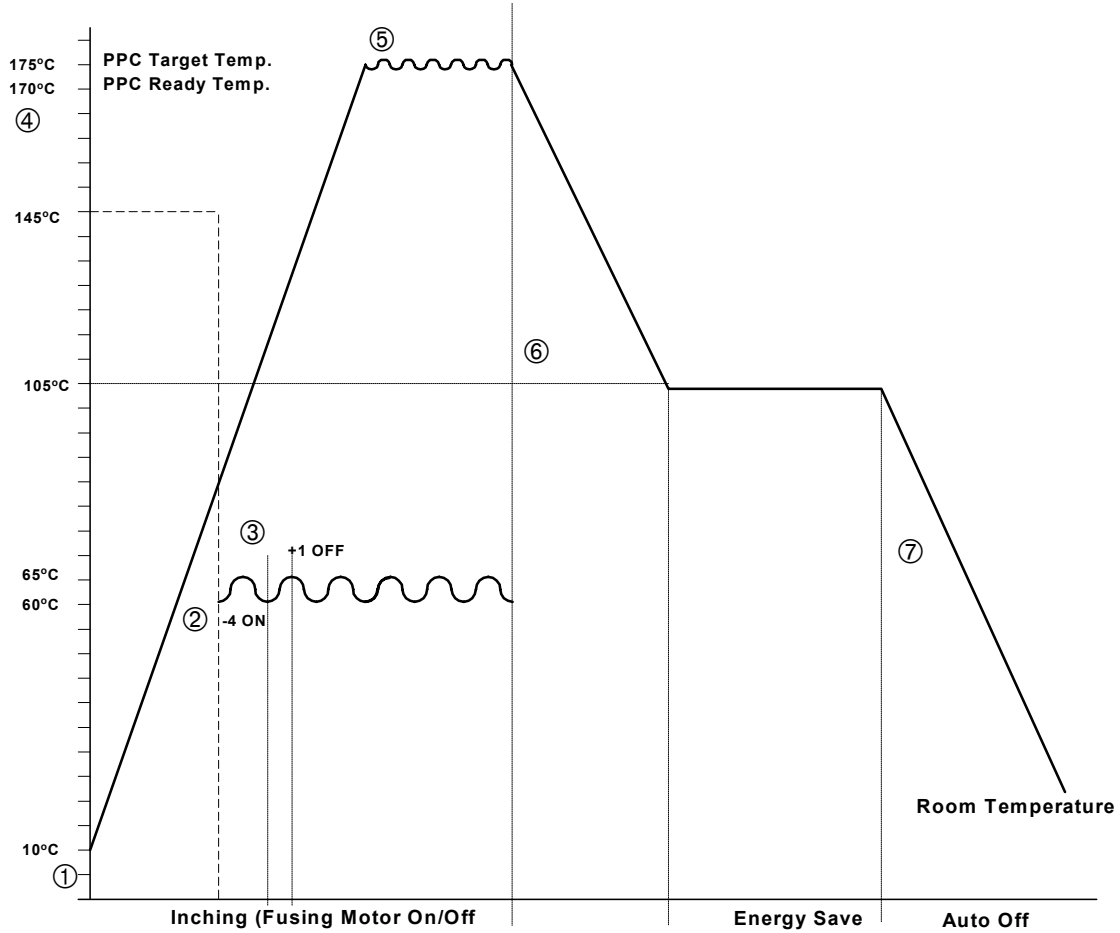
Example: Plain Paper

Step	What Happens	Comment
①	Power on.	Room temp. < 15°C (59°F)
②	Inching switches on at 145°C: Hot Roller Target Temp. – 30°C	Set by firmware.
③	Fusing motor starts switching on/off to keep pressure roller at target temp.	SP1109 set to "5°C" or higher. (Inching control on.) SP1108 (Pressure Roller Target Temp.)
④	Copy Ready Temp. Copying enabled: Target Hot Roller Temp. - 5°C	SP1107 001 (Copy Ready Temp.)
⑤	Hot roller target temp. Fusing lamp starts switching off/on to keep target temp.	SP1107 003 (Hot Roller Target Temp.)
⑥	After 7 min. with no job, machine enters Energy Save mode. Hot roller stays at 105°C and inching switches off.	User Tool "2. Timer Setting" Energy Save Mode. Default: 7 min.
⑦	After 14 min. with no job, machine enters Auto Off mode and fusing lamp switches off.	User Tool "2 Timer Setting", Auto Off mode. Default: 14 min.

Details About Pressure Roller Feedback

Pressure roller thermistor outputs are used to adjust the temperature as shown in the table below where:

- X is the target hot-roller temperature set with SP1107
- Y is the target pressure-roller temperature set with SP1108

Press. Roller	~	Y+1	Y+2	Y+3	Y+4	Y+5	---	Y+12
Hot Roller	X	X	X-1	X-2	X-3	X-4	---	X-11

Example: If the pressure roller temperature is Y+3°C, then the hot roller temperature is adjusted to X-2°C.

If the pressure roller suddenly gets very hot (Y+12, for example), inching stops, and the fusing lamp switches off to try to decrease the temperature.

If SP1104 is not set to "0", then the machine ignores the pressure roller temperature and keeps the target hot roller temperature at "X".

Fusing Temperature Settings Table

This table summarizes how the machine sets the target temperature of the hot roller based on SP selections.

PAPER/FUSING SETTING		1 (THICK)	2	3	4	5 (THIN)
Plain	Default Temp. (°C)	195	185	175	165	175
	SP No.	1107 1	1107 2	1107 3	1107 4	1107 5
Trace	Default Temp. (°C)	195	195	195	175	170
	SP No.	1107 6	1107 7	1107 8	1107 9	1107 10
Film	Default Temp. (°C)	195	190	185	185	170
	SP No.	1107 11	1107 12	1107 13	1107 14	1107 15

Detailed
Descriptions

6.9.5 HOT ROLLER CLEANING
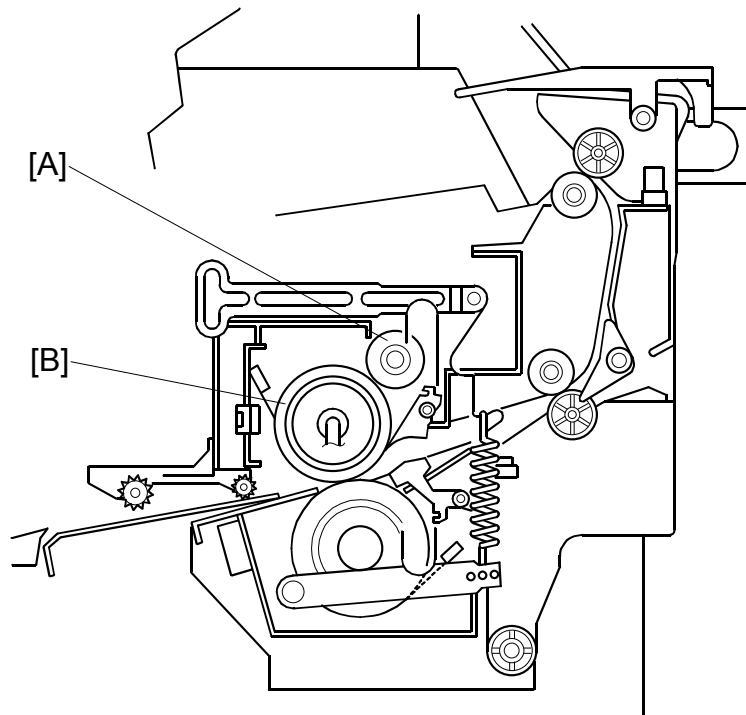
The cleaning roller [A] (parallel to the hot roller) always touches the hot roller [B] with a low pressure. The cleaning roller has a layer of material that is soaked with silicone oil.

Each time the fusing motor switches on, it reverses for 2 s to clean the hot roller.

6.9.6 HOT ROLLER THERMISTORS AND THERMOSTATS
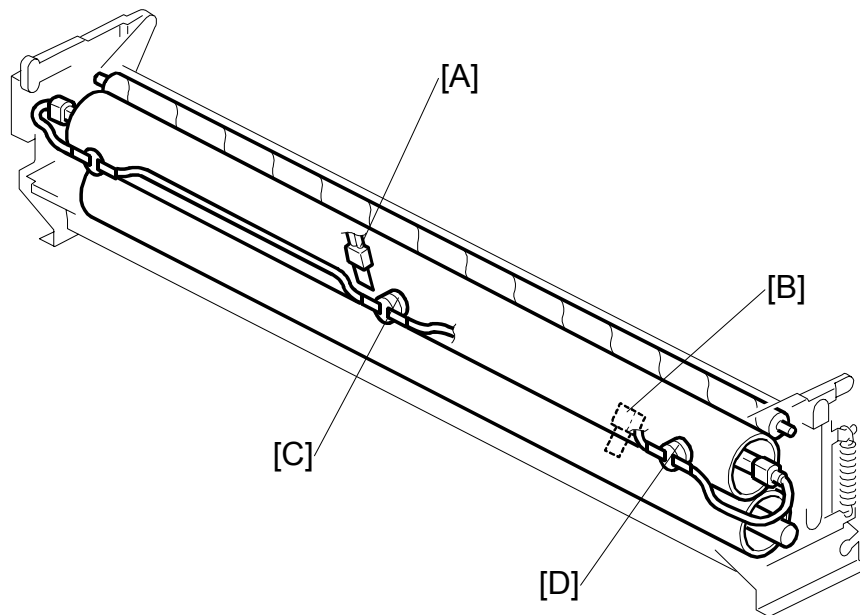
A thermistor [A] monitors the temperature of the hot roller.

One more thermistor [B] monitors the temperature of the pressure roller.

Thermostat [C] (199°C) and thermostat [D] (200°C) give emergency heat protection. If one of the thermistors breaks, one of the thermostats will cut power to the fusing lamp.

Also, interlock switches cut power to the fusing circuit when a cover is opened.

Detailed
Descriptions

6.9.7 FUSING UNIT DRIVE MECHANISM
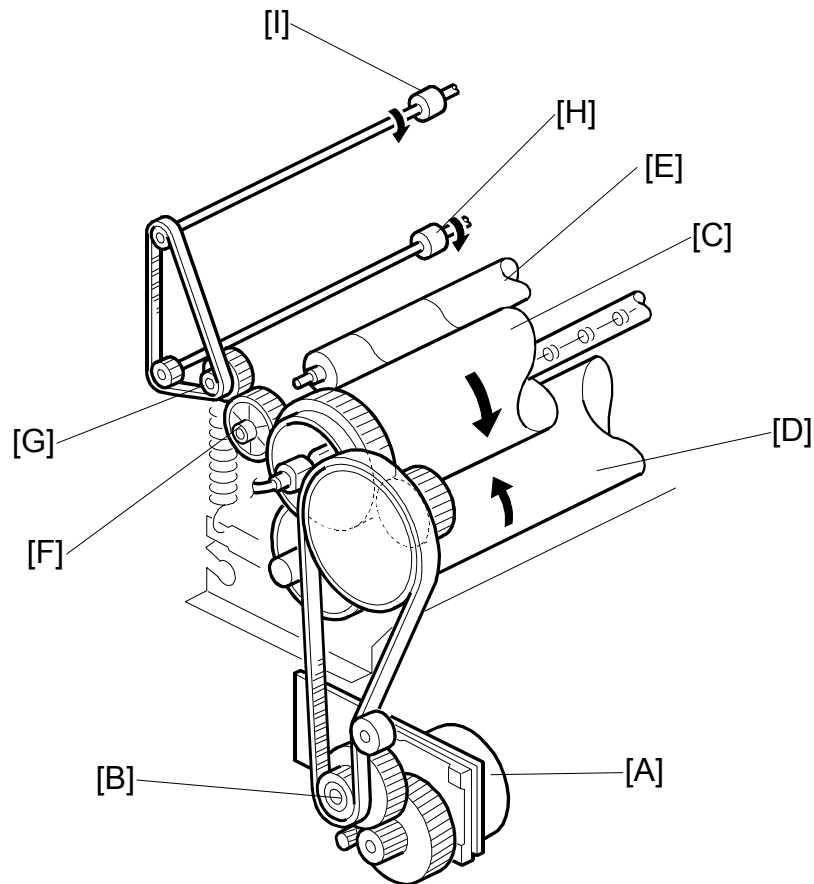
The fusing motor [A] (a stepper motor) controls the gears and timing belts [B] that turn the hot roller [C]

The pressure of the hot roller against the pressure roller [D] and cleaning roller [E] turns these rollers in the opposite direction.

An idle gear [F] turns the gears and timing belts [G]. These gears and belts turn the fusing exit roller [H] and upper exit rollers [I] in the same direction as the hot roller.

The speed of the fusing motor is controlled by:

- The paper feed source set by the user (manual feed table, roll feeder paper cassette).
- The type of paper (plain, recycled, translucent, film) set for the paper feed source. (This is done with the User Tool→ 1 System Setting→ 1 General Features→ 04 Tray Paper Type).
- The width of the paper in the feed source that is used. (The width in each feed source is set with the User Tool→ 1 System Setting→ 1 General Features→ Tray Paper Size. The feed source for the job is set at the operation panel.)

6.9.8 WRINKLE PREVENTION

[B]　　　[A]
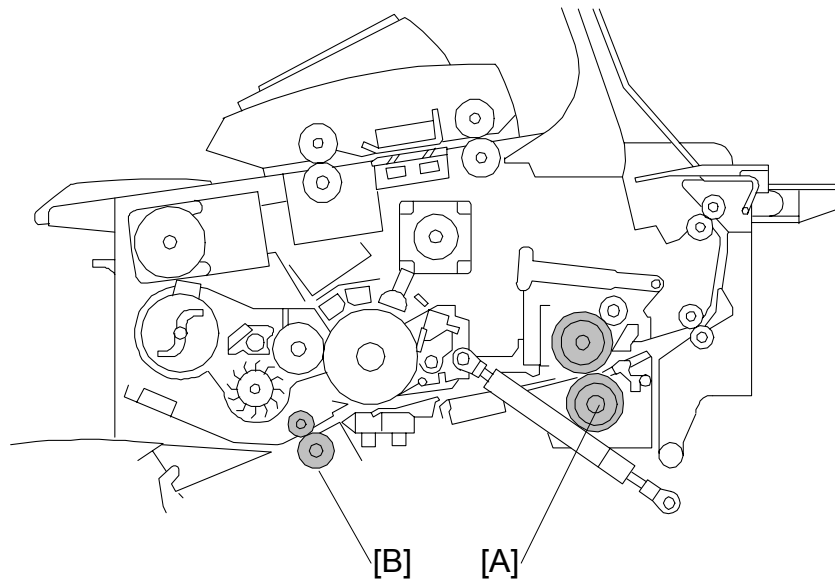
Motor Speed Control

During normal operation, the fusing rollers [A] (controlled by the fusing motor) is slightly faster than the registration rollers [B] (controlled by the main motor).

This stretches the paper between the registration rollers and the fusing unit to keep the paper from wrinkling inside the fusing unit.

Inching Control

This machine also has an inching control feature that controls the temperature of the pressure roller to prevent wrinkling. (☛6.9.4)

Detailed Descriptions

6.10 PAPER EXIT

6.10.1 OVERVIEW
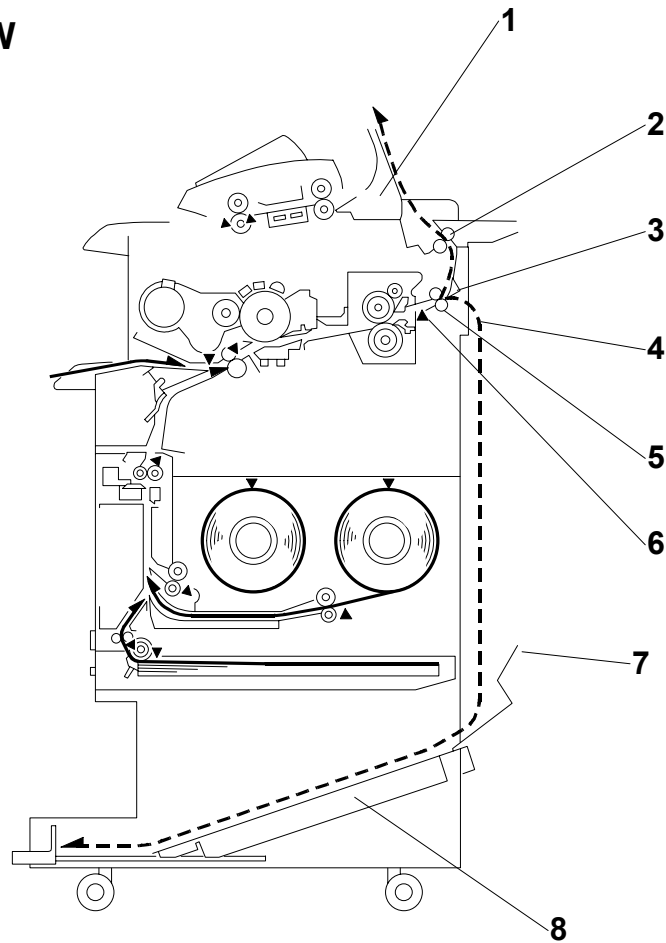
The fusing exit rollers [5] send the paper to the paper junction gate [3].

Upper Exit

When the paper junction gate [3] is closed:

- The gate sends the paper to the upper exit rollers [2].
- The upper exit rollers feed the paper out of the upper paper exit [1] to a wire guide on top of the machine. The user can remove this wire guide.
- The wire guide holds the paper against the rear side of the original output tray.

Rear Exit

When the paper junction gate is open:

- The gate sends the paper to the rear paper exit [4].
- The paper moves past mylars attached on the rear of the machine.
- The paper falls into the lower output tray [7] and then stops in the lower output stacker [8].

Jam Detection

The exit sensor [6] detects paper jams.

6.10.2 SWITCHING THE PAPER EXIT
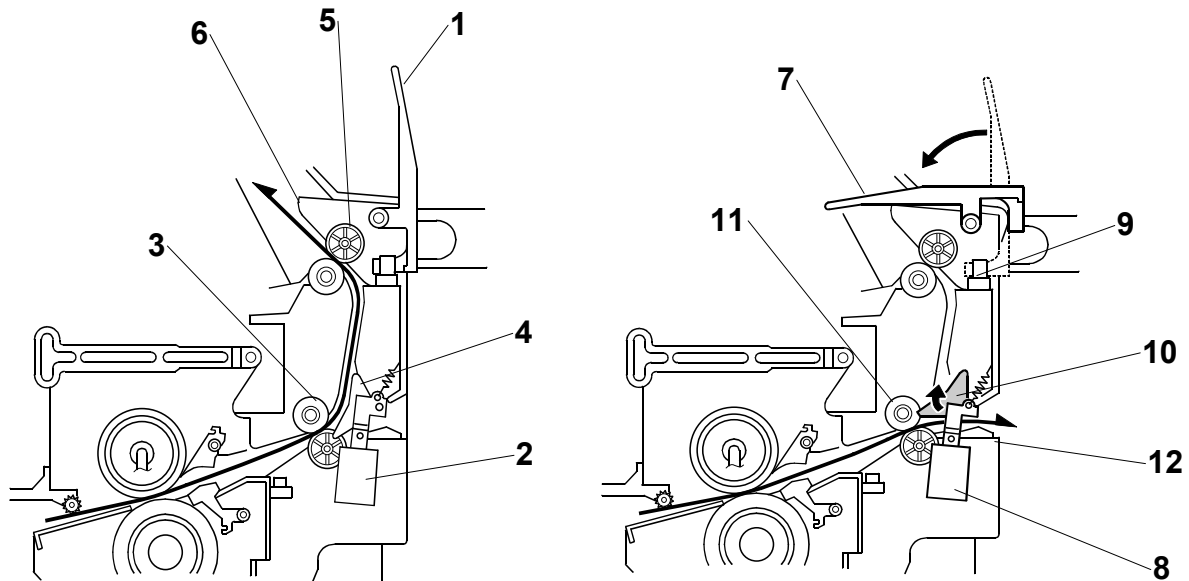
Upper Exit

When the "Upper Copy Output" indicator on the operation panel is ON and the paper feed exit lever [1] is UP:

- The paper junction gate solenoid [2] stays off.
- The fusing exit rollers [3] send the paper to the paper junction gate [4].
- The closed junction gate sends the paper to the upper exit rollers [5].
- The upper exit rollers feed the paper out of the upper exit [6].

Rear Exit

After the user pushes the "Upper Copy Output" key to switch the indicator OFF or lowers the paper feed exit lever [7]:

- The machine energizes the paper junction gate solenoid [8]. If the user lowers the lever, the paper exit selection sensor [9] detects this and switches on the solenoid.
- The paper junction gate solenoid opens the paper junction gate [10].
- The fusing exit rollers [11] send the paper past the paper junction gate to the rear paper exit [12].

Detailed
Descriptions

When the paper exit selection lever is down:

- The "Upper Copy Output" key indicator on the operation panel goes off and this key is disabled. Paper will feed out at the rear if this lever is down.
- Because of this, paper does not feed out at the upper exit if the user removes the upper output trays. The user removes these trays to feed a thick original out to the original output guides on the rear of the machine.
- When the original feeds straight through, copy paper cannot always feed out at the upper paper exit.

Keep the paper exit selection lever in the vertical position for normal operation. In this condition, the user can set the copy exit path (upper or rear) with the "Upper Copy Output" key on the operation panel.

6.10.3 PAPER EXIT DRIVE

☛ 6.9.7

6.11 ELECTRICAL COMPONENTS

6.11.1 OVERVIEW
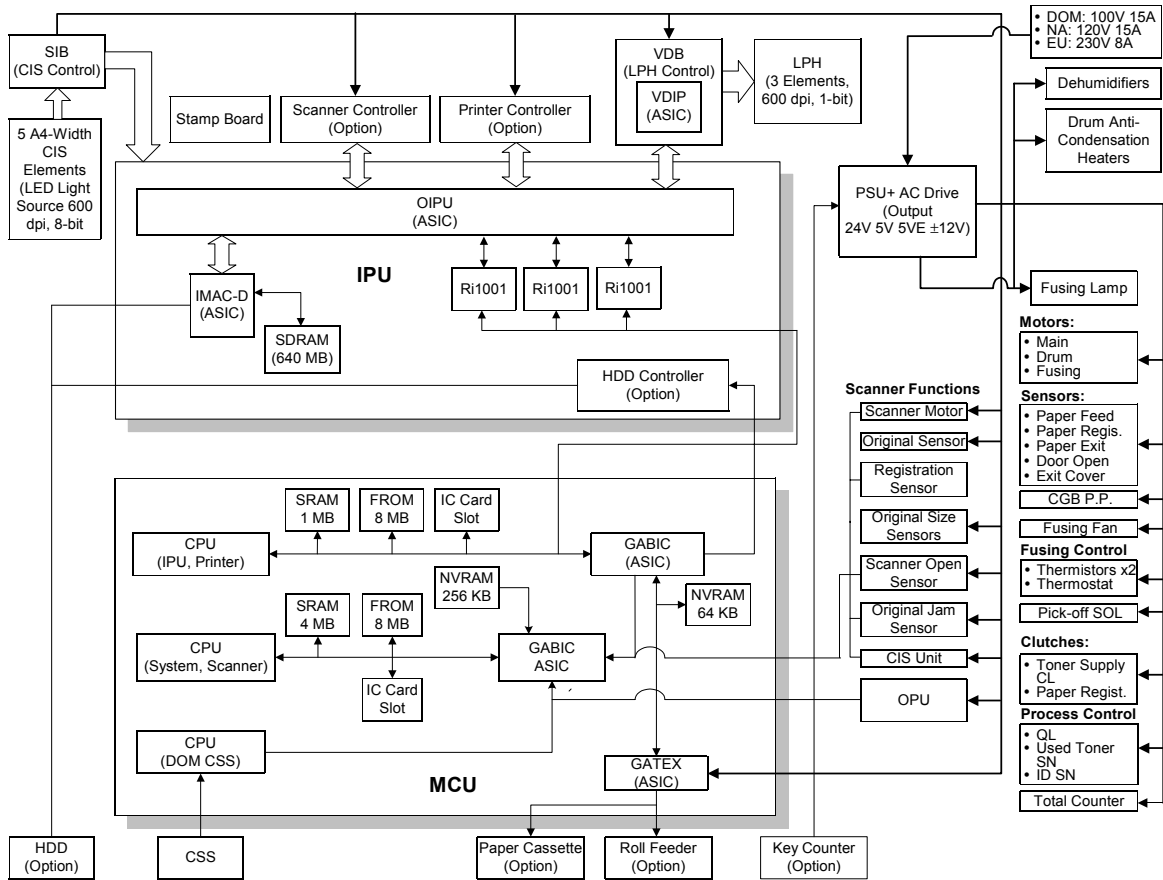
This is a schematic diagram of the electrical components. For more, refer to the tables on the next page and the point-to-point diagram for the machine.

Detailed Descriptions

6.11.2 DESCRIPTIONS OF ELECTRICAL COMPONENTS

Number	Name	Description
CIS		
CIS1	CIS 1 (Contact Image Sensor)	These transfer the image signals from the CIS LEDs to the SIB.
CIS2	CIS 2 (Contact Image Sensor)	
CIS3	CIS 3 (Contact Image Sensor)	
CIS4	CIS 4 (Contact Image Sensor)	
CIS5	CIS 5 (Contact Image Sensor)	
Lamp		
L1	Fusing Lamp	One fusing lamp (1100 W) in the hot roller.
LPH		
LPH1	LPH1 (LED Print Head 1)	Each section writes a part of the image on the PCB drum. The VDB controls the LPHs.
LPH2	LPH2 (LED Print Head 2)	
LPH3	LPH3 (LED Print Head 3)	
Magnetic Clutches		
MC1	Cassette Feed Clutch	This transfers power from the cassette feed motor to the feed and grip rollers in the cassette.
MC2	Paper Registration Clutch	This controls the registration roller. It switches off for a short time to stop the registration roller to correct skew in the paper feed path.
MC3	Roll Feed Clutch 1	This transfers power from the roll feed motor to roll 1 in the roll feeder.
MC4	Roll Feed Clutch 2	This transfers power from the roll feed motor to roll 2 in the roll feeder.
MC5	Toner Supply Clutch	This controls the toner supply mechanism.
Motors		
M1	Cassette Feed Motor	This stepper motor controls the paper feed roller in the paper cassette.
M2	Cooling Fan Motor	This is an exhaust fan for the circuit boards.
M3	Cutter Motor	This controls the cutter in the roll feeder.
M4	Drum Motor	This controls the OPC drum.
M5	Fusing Motor	This controls the hot roller, fusing exit rollers, and upper exit rollers.
M6	Main Motor	This controls the registration roller, development unit, and the agitator in the toner cartridge.
M7	PCB Cooling Fan Motor	This fan cools the IPU and MCU.
M8	Roll Feed Motor	This controls the feed rollers for roll 1 and roll 2 in the roll feeder.
M9	Scanner Motor	This controls the original feed rollers and original exit rollers.
M10	Used Toner Bottle Motor	This controls the mechanism that keeps the level of used toner in the bottle flat.
M11	Wire Cleaner Motor	This moves the corona wire cleaner to the left and right to clean the charge corona wire.

Number	Name	Description
PCB		
PCB1	IPU (Image Processing Unit)	This processes image data from the CIS (Contact Image Sensor), and sends it to the VDB (Video Drive Board) and LPH (LED Print Heads). The IPU also controls the HDD unit and the PC interfaces.
PCB2	MCU (Main Control Unit)	This is the machine's main board. It contains the SCU (Scanner Control Unit) and ECU (Engine Control Unit). These units control all parts of the machine, and this includes the print engine, scanner, and image processing.
PCB3	Operation Panel	This contains the operation keys, touch-panel LCD, and the LEDs. It is controlled by the MCU.
PCB4	PSU (Power Supply Unit)	This supplies dc power for the machine, heaters, and dehumidifiers in the roll feeder.
PCB5	RFDB (Roll Feed Drive Board)	This is attached to the optional roll feeder. It controls the components of the roll feeder (motor, clutches, sensors, and switches).
PCB6	SFDB (Sheet Feed Drive Board)	This is attached to the optional paper cassette. It controls the components of the paper cassette (motor, clutches, sensors, and switches).
PCB7	SIB (Scanner Interface Board)	This controls the scanner, and is an interface board for the IPU and MCU.
PCB8	SMDB (Scanner Motor Drive Board)	This controls the scanner motor.
PCB9	VDB (Video Drive Board)	This controls the image signals that are sent to the LPH (LED Print Head).
PCB10	Stamp Board	Option. The stamp board is necessary for date stamping, page numbering, background numbering, using preset stamps, user stamps, and watermarks. The use of preset stamps, user stamps and watermarks also requires installation of the HDD.
PCB11	Interface Board	Option. This relay board must be installed with the printer controller option for interface between the computer and the copier.
Power Packs		
PP1	CGB Power Pack	High voltage power supply for the charge corona wire (C), development bias (B), and charge corona grid (G).
PP2	T&S Power Pack	High voltage power supply for the transfer corona wire (T) and the separation corona wire (S) in the T&S (Transfer and Separation) unit.
QL		
QL1	Quenching Lamp (Left)	This removes remaining electrical charge on the left part of the drum immediately after cleaning.
QL2	Quenching Lamp (Center)	This removes remaining electrical charge on the center part of the drum immediately after cleaning.
QL3	Quenching Lamp (Right)	This removes remaining electrical charge on the right part of the drum immediately after cleaning

Detailed
Descriptions

ELECTRICAL COMPONENTS

Sensors		
S1	Cassette End Sensor	This sensor is above the paper cassette. It detects paper end after the last sheet feeds.
S2	Cassette Set Sensor	This detects when the cassette is set and locked in its place.
S3	Exit Cover Sensor	This detects if the exit cover on the rear of the machine is open or closed.
S4	Fusing Exit Sensor	This sensor is in front of the fusing exit rollers. It switches on when the leading edge of the copy leaves the fusing unit.
S5	ID Sensor	The machine uses this sensor to control toner supply, toner near-end, and toner end. There is no toner density sensor in this machine.
S6	Original Exit Sensor	This detects the original when it feeds out of the scanner.
S7	Original Registration Sensor	(1) Detects the leading edge of the original and stops the original feed roller. The user can then manually make the original straight. (2) Detects the trailing edge of the original, or detects a jam if it does not detect the trailing edge.
S8	Original Set Sensor (A4/A)	Detects the leading edge of the original. This starts the scanner motor. This sensor also detects A4 or LTR width paper.
S9	Original Width Sensor (A0/E)	Detects A0-width paper.
S10	Original Width Sensor (A1/D)	Detects A1-width paper.
S11	Original Width Sensor (A2/C)	Detects A2-width paper.
S12	Original Width Sensor (A3/B)	Detects A3-width paper.
S13	Original Width Sensor: NA: 30"/EU: 914 mm	Detects 30-inch-width paper (North America) or 914 mm wide paper (Europe). This sensor is included in export models only. It is the second sensor from the right side of the manual feed table.
S14	Paper Exit Selection Sensor	This detects the position of the paper exit selection lever on the top rear edge of the machine. (☛ 6.10.2). This sensor is a part of the SIB board.
S15	Paper Registration Sensor	This detects paper at the registration rollers.
S16	Paper Set Sensor	This detects when a cut sheet is placed on the manual feed table (by-pass).
S17	Relay Sensor	This sensor is near the grip rollers. It: (1) Detects the leading edge of every cut sheet, switches off the cassette paper feed clutch, and switches on the grip rollers (☛ 6.7.8), (2) Detects paper jams where the paper feeds out of the paper cassette.
S18	RF Exit Sensor	(1) Detects the leading edge of the paper from the rolls. (2) Detects the trailing edge of cut sheets from the paper cassette and trailing edges of sheets cut from the paper rolls for paper feed timing and jam detection. (3) If this sensor does not detect a leading edge after feeding from Roll 1 or Roll 2, it also signals paper end for the roll.
S19	RF Set Sensor	This detects if the spring-loaded lock lever of the roll feeder drawer is locked.
S20	Roll End Sensor 1	This reflective photosensor above Roll 1 detects the core of the roll (which is black), after there is no more paper on Roll 1.
S21	Roll End Sensor 2	This reflective photosensor above Roll 2 detects the core of the roll (which is black), after there is no more paper on Roll 2.

| S22	Roll End Sensor 3 (EXP)	This detects the trailing edge of the roll after there is no more paper on Roll 1. This sensor is included because if the color of the roll core is not black, Roll End Sensor 1 cannot always detect roll end. It is only included in export models.
S23	Roll End Sensor 4 (EXP)	This detects the trailing edge of the roll after there is no more paper on Roll 2. This sensor is included because if the color of the roll core is not black, Roll End Sensor 2 cannot always detect roll end. It is only included in export models.
S24	Toner Overflow Sensor	Detects toner overflow in the used toner collection bottle.
S25	Upper Unit Sensor	Detects when the upper unit is open.
S26	Wire Cleaner Sensor	The actuator of this sensor is attached to the wire that moves the transfer cleaner from left to right. This tells the machine when the wire cleaner moves. This sensor is a part of the SIB board.
Solenoids		
SOL1	Paper Junction Gate Solenoid	This controls the paper junction gate in front of the rear paper exit and below the upper exit. When closed, paper feeds out at the top. When open, paper feeds out at the back.
SOL2	Pick-Off Pawl Solenoid	This moves the pick-off pawls until they touch the drum.
Switches		
SW1	Dehumidifier Switch	Switches the dehumidifiers (x4) in the roll feeder on/off.
SW2	Exit Cover Switch	This detects if the exit cover on the rear of the machine is closed.
SW3	Main Power Switch	This switches the copier on and off.
SW4	Scanner Stop Switch	This is on the operation panel. The user pushes this to stop original feed if there is a problem during scanning.
SW5	Scanner Switch	This interlock switch stops power to the original feed unit when the original feed unit cover is lifted.
SW6	Toner Hopper Cover Switch	This detects if the toner supply cover is open or closed.
SW7	Upper Unit Switch 1	This detects if the upper unit is open on the left side.
SW8	Upper Unit Switch 2	This detects if the upper unit is open on the right side.
SW9	Left Cutter HP Switch	This detects if the cutter in the roller feeder is at the home position at the left side. In this condition, the paper holder of the cutter is locked open (the paper feed path is open).
SW10	Right Cutter HP Switch	This detects if the cutter in the roller feeder is at the home position at the right side. In this condition, the paper holder of the cutter is locked open (the paper feed path is open).

Detailed
Descriptions

ELECTRICAL COMPONENTS

Number	Name	Description
Others		
CO1	Recycle Counter	A mechanical counter that measures the total length in meters of paper that the machine feeds. It starts from the first copy.
H1	Dehumidifier 1 (Front/Right)	One of four dehumidifiers that keeps the roll feeder drawer free of moisture.
H2	Dehumidifier 2 (Front/Left)	One of four dehumidifiers that keeps the roll feeder drawer free of moisture.
H3	Dehumidifier 3 (Rear Left))	One of four dehumidifiers that keeps the roll feeder drawer free of moisture.
H4	Dehumidifier 4 (Rear/Right)	One of four dehumidifiers that keeps the roll feeder drawer free of moisture.
H4	Dehumidifier 4 (Rear/Right)	One of four dehumidifiers that keeps the roll feeder drawer free of moisture.
H5	Anti-Condensation Heater (Drum)	These are below the OPC drum. They keep the copier free of moisture, which could cause problems with paper feed and fusing.
HDD1	HDD	The optional HDD (Hard Disk Unit Type 240)
TH1	Hot Roller Thermistor	The CPU uses this thermistor to monitor the temperature of the hot roller.
TH2	Pressure Roller Thermistor	The CPU uses this thermistor to monitor the temperature of the pressure roller.
TS1	Thermostat 1	200°C This safety device prevents overheating if the temperature control circuit fails.
TS2	Thermostat 2	199°C. This safety device prevents overheating if the temperature control circuit fails.

6.11.3 MCU, IPU
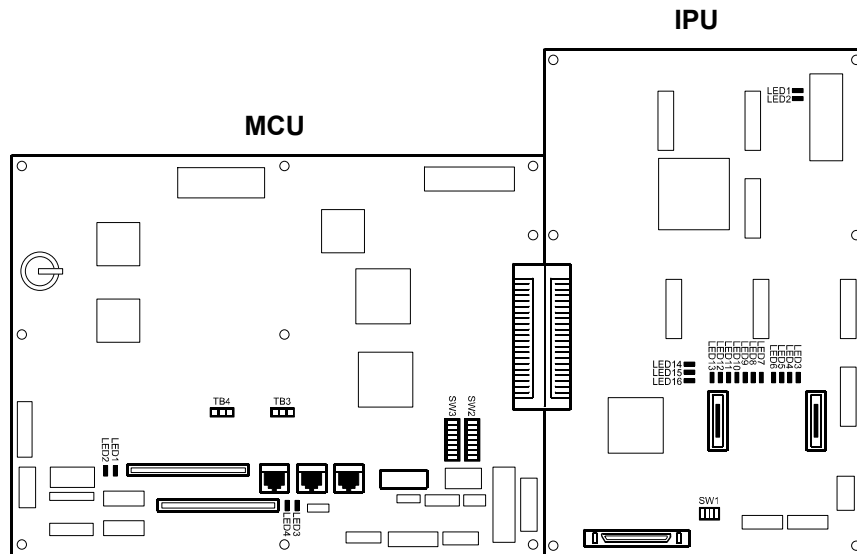
MCU (Main Control Unit)

This is the main control board of the machine. It does the following:

- System control
- Base engine control
- Scanner control
- Image processing

The MCU also sends load signals and supplies power to:

- Base engine (high voltage power pack, motors, sensors, solenoid, clutches, fusing unit, RSS, etc.)
- Scanner (sensors, motors, etc.)

The MCU contains two large blocks, connected by a UART: SCU and ECU.

- **SCU**. (System & Scanner Control Unit). Does overall system and scanner control.
- **ECU**. (Engine Control Unit). Does print engine and image processing control.

NOTE: The MCU DIP switches must always be OFF (default) and they must not be changed in the field.

IPU (Image Processing Unit)

The IPU (Image Processing Unit) holds the ASIC and memory for image processing. It processes image data from the CIS (Contact Image Sensors), sends it to the VDB (Video Drive Board), and then sends it to the LPH (LED Print Heads). The IPU also controls the HDD unit and the printer board, and the printer/scanner interface functions.

NOTE: The IPU DIP switches must always be OFF (default) and they must not be changed in the field.

6.11.4 PSU

FU101

FU001

CB101

FU303
FU302
FU301

Vaa
+24V

Vca2
-12V

Vca1
+12V

Vcc2
+5.1V

Vcc1
+5.1V
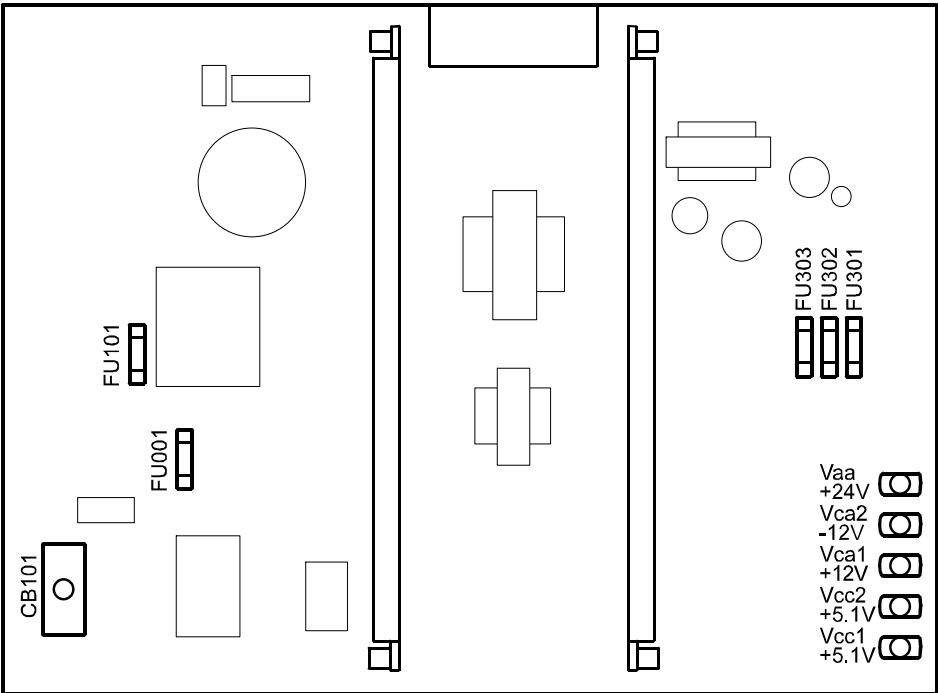
The PSU (Power Supply Unit) supplies dc for all electrical components in the machine, and controls ac input to the fusing lamps and anti-condensation lamps.

6.11.5 SMDB, VDB, SIB

Cooling Fan

Scanner Stop SW

Operation Panel

Scanner Motor

CIS 1   CIS 1

CIS 1   CIS 3   CIS 5

LPH 2

Regis. Clutch

LPH 1   LPH 3

Drum Motor   SMDB   VDB   SIB   CGB PP

Main SW
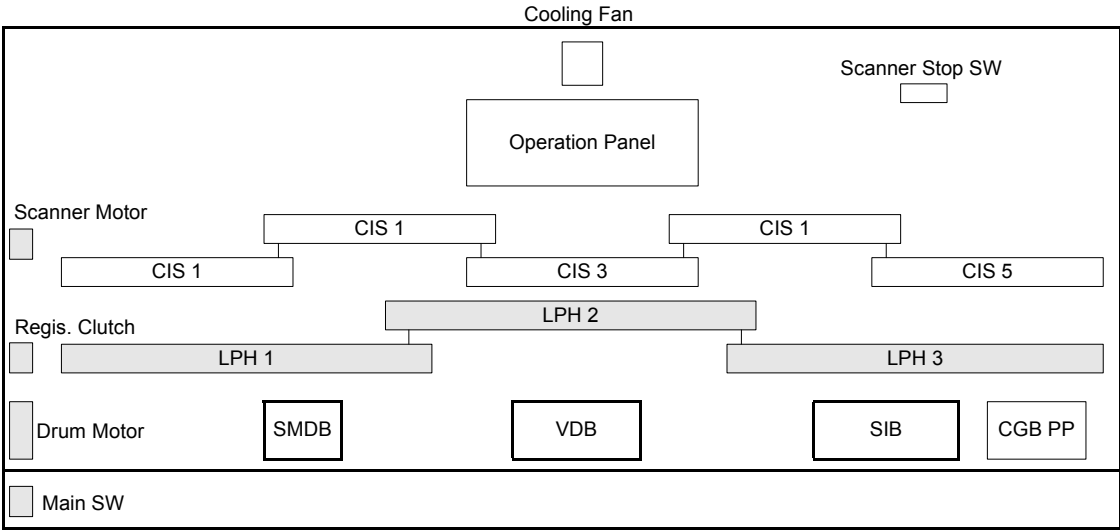
SMDB (Scanner Motor Drive Board)

Controls the scanner motor.

VDB (Video Drive Board)

The VDB controls the LPH and the algorithms to convert video data.

SIB (Scanner Interface Board)

The SIB controls the CIS (Contact Image Sensor) and changes analog data to digital data (A/D) for scanned images.

Detailed Descriptions

6.11.6 RFDB, SFDB

```
┌─────────────────────────────────────────────────┐
│                                                   │
│   ┌──────────┐      ┌──────────────────┐          │
│   │          │      │                  │          │
│   │  RFDB    │      │                  │          │
│   │          │      ├──────┬───────────┤          │
│   └──────────┘      │ SFDB │           │          │
│                     │      │           │          │
│                     │      │           │          │
│                     └──────┴───────────┘          │
│                                                   │
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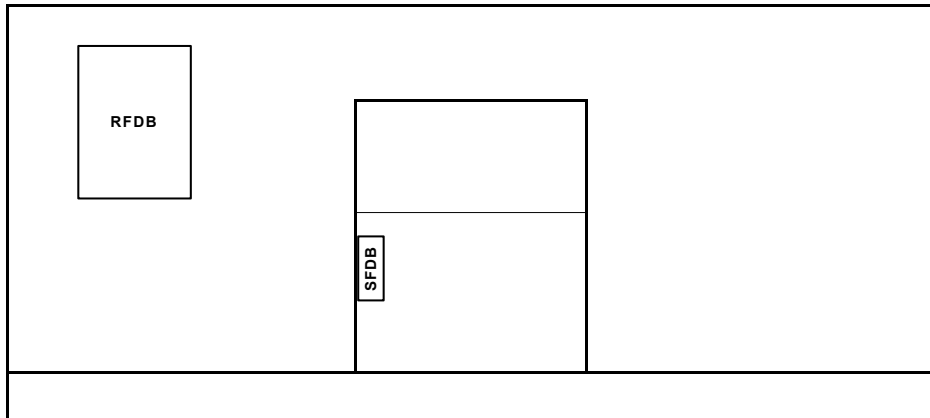
The RFDB and SFDB are on the bottom plate of the drawer in the optional roll sheet feeder.

RFDB (Roll Feed Drive Board)

The RFDB, on the floor panel of the roll feeder, controls the motors, solenoids, and clutches for the two paper rolls in the roll sheet feeder.

SFDB (Sheet Feed Drive Board)

The SFDB, on the left side of the paper cassette unit, controls the paper feed mechanisms for the optional paper cassette.

SPECIFICATIONS

SPECIFICATIONS

1. COPIER ENGINE

Configuration:	Desktop
Copy Process:	Dry electrostatic transfer system
Originals:	Sheet
Original Image Size: (W x L)	Maximum: 914 x 3,600 mm (36" x 142") Minimum: 182 x 140 mm (7" x 5")
Max Original Width:	960 mm (37.7")
Original Weight	18 ~ 135 g/m² 35 μm ~ 1.0 mm

Copy Paper Size: (W x L)	Maximum:
	  Manual feed: 914 x 2,000 mm (36" x 78")
	  Roll Feed: 914 x 3,600 mm (36" x 142")
	  Paper Cassette: 297 x 420mm (12" x 18")
	
	Minimum:
	  Manual Feed: 210 x 257 mm (8 1/2" x 10")
	  Roll Feed: 210 x 280 mm (8 1/2" x 11")
	  Paper Cassette: 210 x 297 mm (8 1/2" x 11")

Copy Paper Weight	52.3 ~ 110 g/m² (13.9 ~ 29.3 lb.) 68 ~ 148 μm (Plain paper, Translucent) 3 ~ 4 MIL (Film)
Copying Speed: (cpm: copies / minute)	2 cpm (A0/E SEF) 4 cpm (A1/D LEF)
Photoconductor:	Organic photoconductor drum

Reduction/Enlargement:

	Inch Version		Metric Version
	Engineering	**Arch.**	
Reduction	25.0, 32.4, 50.0, 64.7%	25.0, 33.3, 50.0, 66.7%	25.0, 35.4, 50.0, 70.7%
100%	100%	100%	100%
Enlargement	129.4, 200.0, 258.8, 400.0%	133.3, 200.0, 266.7, 400.0%	141.4, 200.0, 282.8, 400.0%

Zoom:	25 ~ 200% (0.1%/step) 200.2 ~ 400% (0.2%/step)
Resolution:	Scanning 600 dpi, Printing 600 dpi
Gradation:	Scanning: 256 levels

Specifications

Warm-up Time: Less than 2 minutes
                     (Room temperature 23°C, 120 V: US, 220-240 V: EU)

First Copy Time: 1st Roll Feed: 22 sec. (A1/LEF/D LEF)

                     Manual Feed: 32 sec. (A1/LEF/D LEF)

Copy Number Input: Ten-key pad, 1 to 20 (standard sizes only)

Copy Paper   Bypass Feed: 1 sheet
Capacity: Roll Feed: Max. Diameter: 175 mm (6.9")
$\Rightarrow$ Max. Length: 150 m (164 yds)
                                 Roll Core Diameter: 76.4 ± 0.25 mm
                                 (about 3")
                     Paper Cassette: 250 sheets

Output Tray   Upper Output Stacker
Capacity: Plain paper: 25 sheets
                         Translucent: 10 sheets

                     Roll Feeder or Table
                         Plain paper: 20 sheets (A1/D or A0/E)
                         Translucent: 1 sheet

Memory Capacity: RAM: 80 MB
                     HDD: More than 10 GB (option)

Toner   Cartridge exchange (800 g/cartridge)
Replenishment:

Toner Yield: 2,200 copies
                     (A1 LEF, 6% full black, 1 to 20 copying, Text mode)

Power Source: North America: 120 V, 60 Hz, 15 A or more
                     Europe/Asia: 220-240 V, 50/60 Hz, 10 A or more

Power Consumption   120V version:

	Full system *1
Warm-up	1.4 kW
Ready *2	0.03 kW
During Copying	1.44 kWh
Maximum	1.44 kW

220 - 240V version:

	Full system *1
Warm-up	1.4 kW
Ready *2	0.03 kW
During Copying	1.5 kWh
Maximum	1.5 kW

*1 Full System:
 Mainframe with Roll Feeder (2 roll), Paper Cassette,
HDD, Stamp Board and Interface PCB
*2 Ready:
 The dehumidifiers are switched off.

Noise Emission: The measurements were made in accordance
with ISO 7779 at the operator position

Sound Power Level

	Full System
Stand-by	43.0 dB (A)
Copying	68.0 dB (A)
Copying (from memory)	68.0 dB (A)

Max. Power   North America: Less than 1.44 kW
Consumption: Europe/Asia: Less than 1.5 kW

Dimensions (w x d x h): 1,080 x 637 x 580 mm (43" x 25" x 23")

Weight: Less than 105 kg (231 lb)

Specifications

SPECIFICATIONS

Optional Equipment:
- Roll Feeder Type 240A/B (B641/B642)
- Paper Cassette Type 240 (B643)
- Table Type 240 (B662)
- HDD Type240 (B663)
- Interface PCB Type 240 (B690)
- Stamp Board (B321)
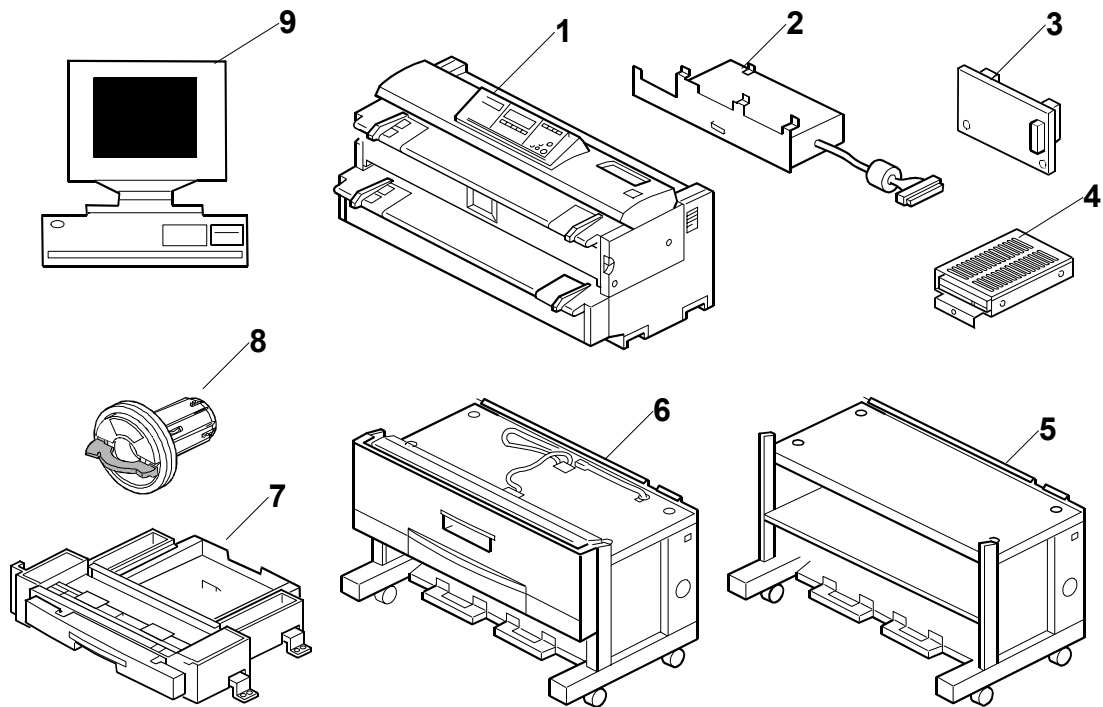- Printer Controller RW 240 (B697)
- Roll Holder (B394)

2. ROLL FEEDER B641/B642

Copy Paper Size: (W x L)	Maximum: 914 x 3,600 mm (36" x 142")
	Minimum: 210 x 250 mm (8 1/2" x 10")
Copy Paper Weight	52.3 ~ 104.7g/m² (13.9 ~ 27 lb.)

Copy Paper Capacity: Roll Feed:
Max. Diameter: 175 mm (6.9")
Max. Length: 150 m (137.6")
Roll Core Diameter: 76.4 ± 0.25 mm (about 3")

Power Source: From main frame

Dimensions (w x d x h) 1,080 720 x 700 mm (43" x 28" x 27")

Weight: B641 70 kg (154 lb.)

B642 72 kg (158.4 lb)

3. PAPER CASSETTE B643

Type Universal Cassette (installed in Roll Feeder B641/B642)

Paper Separation Friction Pad

Paper Capacity: 250 sheets

Copy Paper Size A3 SEF, A4 SEF, B4 SEF

LT SEF, LG SEF, DLT SEF, 8 1/2 x 13 SEF, 12 x 18 SEF

Copy Paper Weight 64~105 g/m^2

Power Source From Roll Feeder

Weight 6 kg (13.2 lb.)

4. MACHINE CONFIGURATION

No.	Item	Machine Code
1	Main Frame	B125
2	Interface PCB Type 240	B690
3	Stamp Board	B321
4	Hard Disk Type 240	B663
5	Table Type 240	B662
6	Roll Feeder Type 240A/B[1]	B641/B642
7	Paper Cassette Type 240[2]	B643
8	Roll Holder	B394
9	Printer/Scanner Controller in Server PC	B697

[1] B641: 1 Roll, B642: 2 Rolls

[2] Installed inside the B641/B642

Specifications

Rev. 01/2007
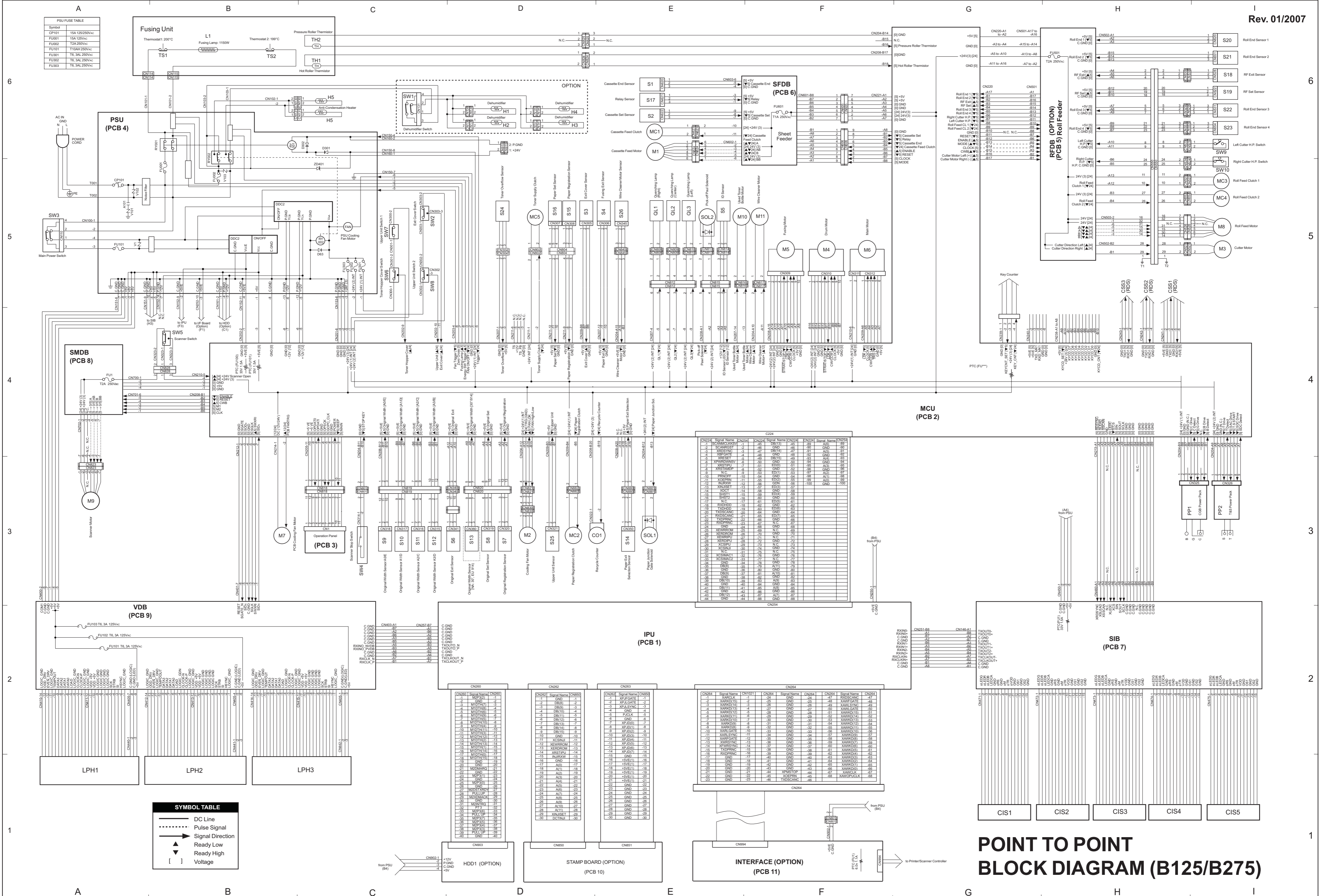
POINT TO POINT BLOCK DIAGRAM (B125/B275)

ELECTRICAL COMPONENT LAYOUT (B125/B275)
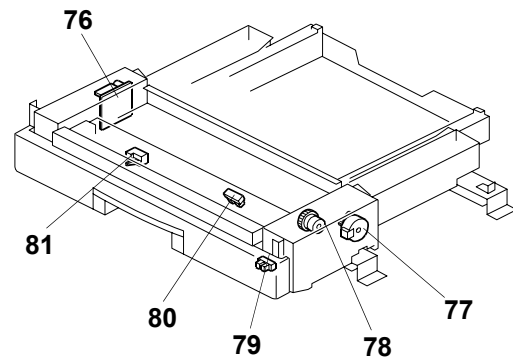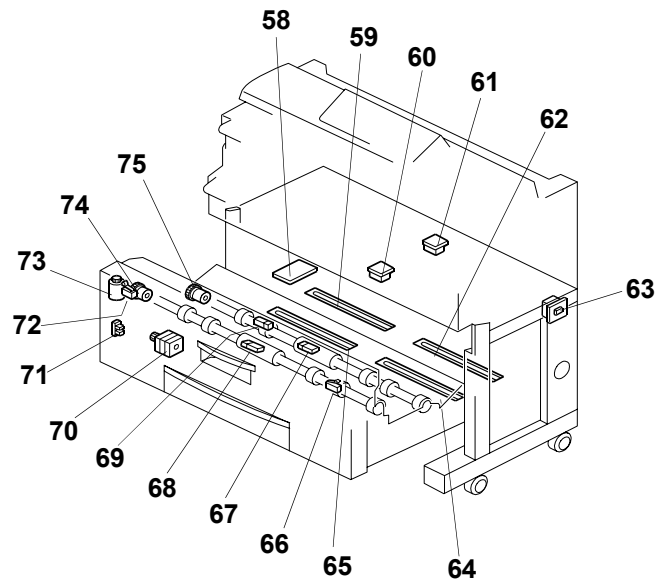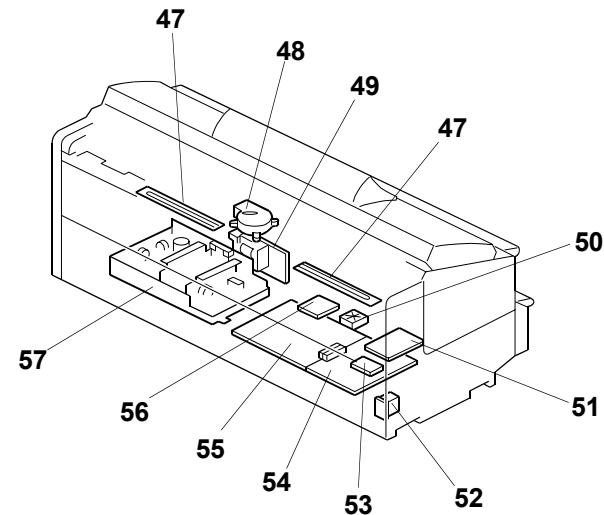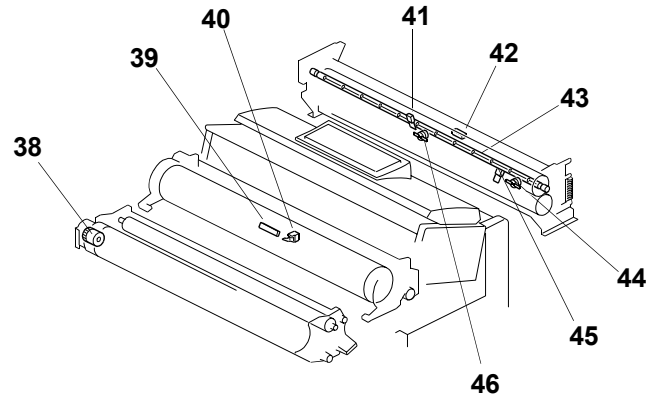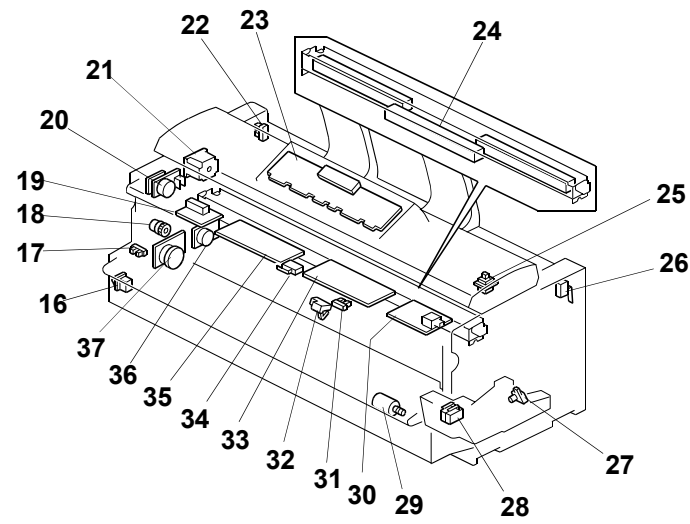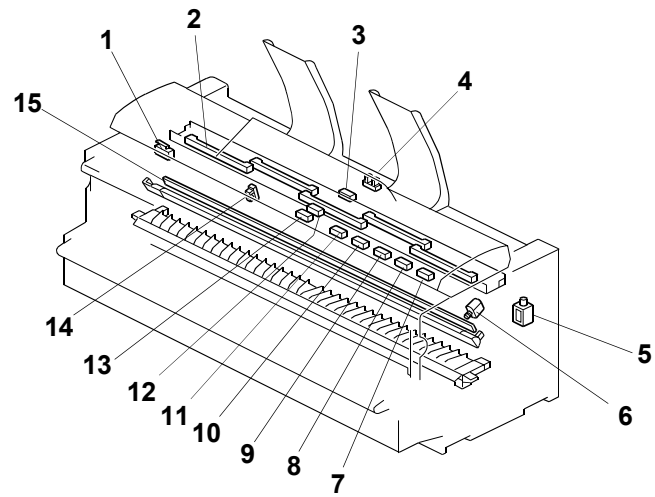
Symbol	Index No.	Description	P to P
CIS			
CIS1	2	CIS 1 (Contact Image Sensor)	G1
CIS2	2	CIS 2 (Contact Image Sensor)	H1
CIS3	2	CIS 3 (Contact Image Sensor)	H1
CIS4	2	CIS 4 (Contact Image Sensor)	H1
CIS5	2	CIS 5 (Contact Image Sensor)	I1
Lamp			
L1	43	Fusing Lamp	B6
LPH			
LPH1	24	LPH1 (LED Print Head 1)	A1
LPH2	24	LPH2 (LED Print Head 2)	B2
LPH3	24	LPH3 (LED Print Head 3)	B2
Magnetic Clutches			
MC1	78	Cassette Feed Clutch	E6
MC2	18	Paper Registration Clutch	D3
MC3	74	Roll Feed Clutch 1	I5
MC4	75	Roll Feed Clutch 2	I5
MC5	38	Toner Supply Clutch	D5
Motors			
M1	77	Cassette Feed Motor	E6
M2	48	Cooling Fan Motor	D3
M3	73	Cutter Motor	I5
M4	20	Drum Motor	F5
M5	36	Fusing Motor	F5
M6	37	Main Motor	F5
M7	50	PCB Cooling Fan Motor	B3
M8	70	Roll Feed Motor	I5
M9	21	Scanner Motor	A3
M10	29	Used Toner Bottle Motor	F5
M11	6	Wire Cleaner Motor	F5
PCBs			
PCB1	54	IPU (Image Processing Unit)	E2
PCB2	55	MCU (Main Control Unit)	G4
PCB3	23	Operation Panel	C3
PCB4	57	PSU (Power Supply Unit)	A6
PCB5	58	RFDB (Roll Feed Drive Board)	H6
PCB6	76	SFDB (Sheet Feed Drive Board)	F6
PCB7	33	SIB (Scanner Interface Board)	H2
PCB8	19	SMDB (Scanner Motor Drive Board)	A4
PCB9	35	VDB (Video Drive Board)	A2
PCB10	53	Stamp Board	D1
PCB11	56	Interface Board	F1
Power Packs			
PP1	30	CGB Power Pack	I3
PP2	49	T&S Power Pack	I3
QL			
QL1	15	Quenching Lamp (Left)	E6
QL2	15	Quenching Lamp (Center)	E6
QL3	15	Quenching Lamp (Right)	E6

Symbol	Index No.	Description	P to P
Sensors			
S1	81	Cassette End Sensor	E6
S2	79	Cassette Set Sensor	E6
S3	22	Exit Cover Sensor	D5
S4	42	Fusing Exit Sensor	E5
S5	39	ID Sensor	E5
S6	3	Original Exit Sensor	D3
S7	12	Original Registration Sensor	D3
S8	13	Original Set Sensor (A4/A)	D3
S9	7(NA)/8(EU)	Original Width Sensor (A0/E)	C3
S10	9	Original Width Sensor (A1/D)	C3
S11	10	Original Width Sensor (A2/C)	C3
S12	11	Original Width Sensor (A3/B)	C3
S13	8(NA)/7(EU)	Original Width Sensor (NA:30"/EU:914mm)	D3
S14	4	Paper Exit Selection Sensor	E3
S15	31	Paper Registration Sensor	D5
S16	32	Paper Set Sensor	D5
S17	80	Relay Sensor	E6
S18	69	RF Exit Sensor	I6
S19	71	RF Set Sensor	I6
S20	60	Roll End Sensor 1	I6
S21	61	Roll End Sensor 2	I6
S22	68	Roll End Sensor 3 (EXP)	I6
S23	67	Roll End Sensor 4 (EXP)	I6
S24	27	Toner Overflow Sensor	D5
S25	17	Upper Unit Sensor	D3
S26	14	Wire Cleaner Motor Sensor	E5
Solenoids			
SOL1	5	Paper Junction Gate Solenoid	E3
SOL2	40	Pick-Off Pawl Solenoid	E5
Switches			
SW1	63	Dehumidifier Switch	C6
SW2	26	Exit Cover Switch	C5
SW3	16	Main Power Switch	A5
SW4	25	Scanner Stop Switch	C3
SW5	1	Scanner Switch	B4
SW6	34	Toner Hopper Cover Switch	C5
SW7	28	Upper Unit Switch 1	C5
SW8	28	Upper Unit Switch 2	C5
SW9	72	Left Cutter HP Switch	I6
SW10	66	Right Cutter HP Switch	I6

Symbol	Index No.	Description	P to P
Others			
CO1	52	Recycle Counter	D3
H1	64	Dehumidifier 1 (Front/Right)	D6
H2	65	Dehumidifier 2 (Front/Left)	D6
H3	59	Dehumidifier 3 (Rear Left))	D6
H4	62	Dehumidifier 4 (Rear/Right)	D6
H5	47	Anti-condensation Heater	C6
HDD1	51	HDD	D1
TH1	41	Hot Roller Thermistor	C6
TH2	45	Pressure Roller Thermistor	C6
TS1	44	Thermostat 1	B6
TS2	46	Thermostat 2	B6