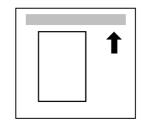
# **Model N-C1**

(Machine Code: B125)

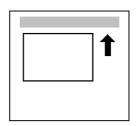
#### Conventions Used in this Manual

This manual uses several symbols.

| Symbol | What it means                    |
|--------|----------------------------------|
|        | Refer to section number          |
| CT     | See Core Tech Manual for details |
| F      | Screw                            |
|        | Connector                        |
| C      | E-ring                           |
| ⑺      | Clip ring                        |
| Ú.     | Clamp                            |



Lengthwise, SEF (Short Edge Feed)



Sideways, LEF (Long Edge Feed)

#### Cautions, Notes, etc.

The following headings provide special information:

**MARNING** 

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

### **ACAUTION**

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.

### **MIMPORTANT SAFETY NOTICES**

#### PREVENTION OF PHYSICAL INJURY

- 1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
- 2. The wall outlet should be near the copier and easily accessible.
- 3. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
- If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
- 5. If the Start key is pressed before the copier completes the warm-up period (the Start key starts blinking red and green alternatively), keep hands away from the mechanical and the electrical components as the copier starts making copies as soon as the warm-up period is completed.
- 6. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.

#### **HEALTH SAFETY CONDITIONS**

- 1. Never operate the copier without the ozone filters installed.
- 2. Always replace the ozone filters with the specified ones at the specified intervals.
- 3. Toner and developer are non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

#### **OBSERVANCE OF ELECTRICAL SAFETY STANDARDS**

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

#### 1. SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.

- 2. Dispose of used toner, developer, and organic photoconductors in accordance with local regulations. (These are non-toxic supplies.)
- 3. Dispose of replaced parts in accordance with local regulations.
- 4. When keeping used lithium batteries in order to dispose of them later, do not put more than 100 batteries per sealed box. Storing larger numbers or not sealing them apart may lead to chemical reactions and heat build-up.

### **Lithium Batteries (Memory Back-up)**

### **⚠**CAUTION

The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

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| 1. COPIER ENGINE                             |        |
| 2. ROLL FEEDER B641/B642                     |        |
| 3. PAPER CASSETTE B643                       |        |
| 4 MACHINE CONFIGURATION                      |        |

### 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<sup>3</sup>/hr/person in the work area

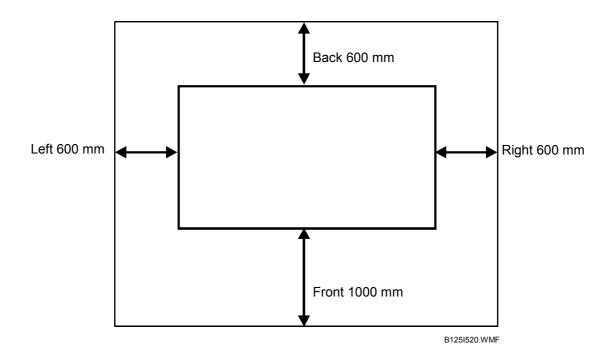
5. Ambient Dust: Less than 0.10 mg/m<sup>3</sup>

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.

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### 1.1.2 MINIMUM SPACE REQUIREMENTS



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:  $\pm$  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.

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#### 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)<br>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                      | <ol> <li>Paper Cassette</li> <li>HDD</li> <li>Interface PCB (Unit)</li> <li>Stamp Board</li> </ol>   |
| 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 II          | nstallation                                   |  |  |
|--------------------------|---|--|--|
| 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<br>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<br>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<br>"Architecture" (whichever is used most frequently)<br>for automatic original width detection.   |  |
| Roll Feeder Inst         |   |  |  |
| SP1920                   | Cut Length Adjustment                         | Sets the cut length settings for the rolls installed in<br>the roll feeder. These settings are different for each<br>machine. The settings are on a label attached to the<br>right side of the roll feeder drawer. |  |
| SP1001 001               | Leading Edge Registration – Roll Feed         | Adjust if necessary for 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<br>Paper Tray | Adjust if necessary for Paper Cassette B643.   |  |
| SP1002 003               | Side-to-Side Registration – Cut<br>Paper Tray |  |  |
| HDD Installation         | n   |  |  |
| 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

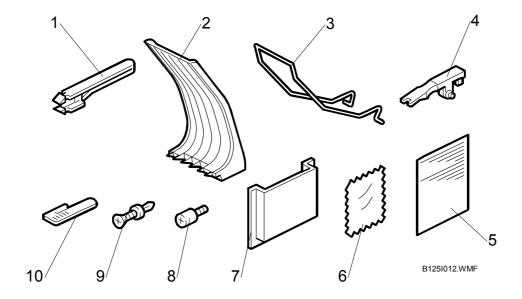
**NOTE:** Always have the Service Manual with you. The installation procedures are not shipped with the machine.



### 1.2.1 ACCESSORY CHECK

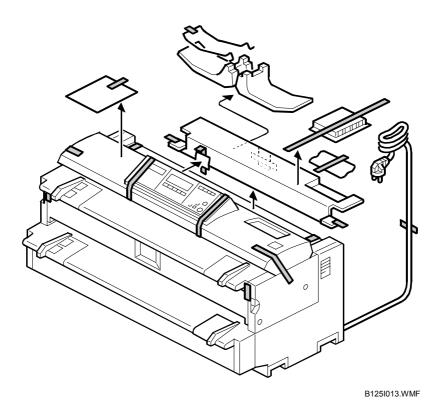
Check the accessories and their quantities against this list:

| 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

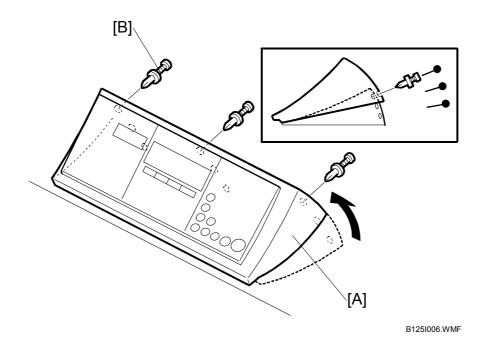


**ACAUTION** 

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 bright reflections from lighting.

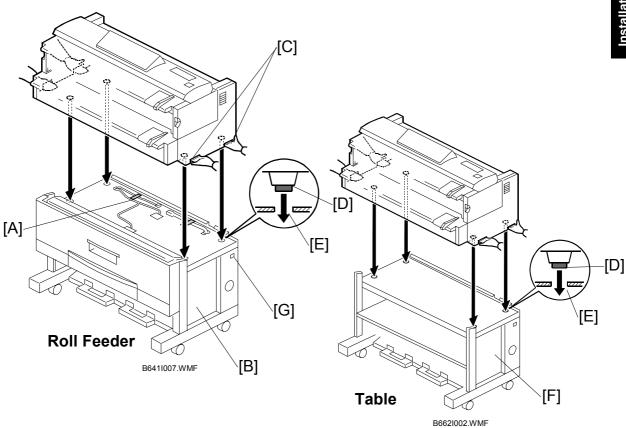
- 1. Lift or lower the operation panel [A] to one set of the three sets of holes to set the panel at the necessary height.
- 2. Push each anchor screw [B] into its hole ( F x 3).

**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



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.

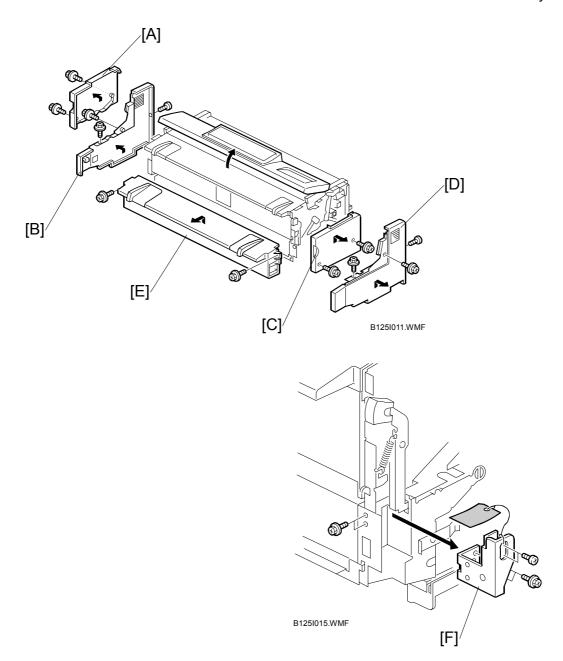
#### **ACAUTION**

The copy machine weighs 105 kg (231 lb.). 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.

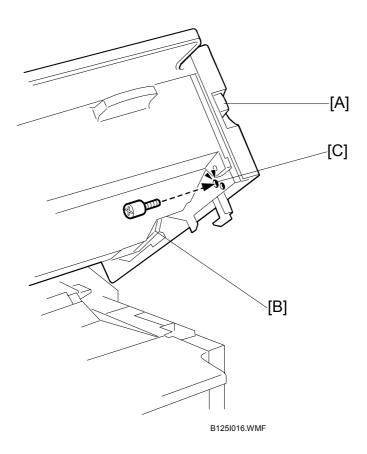
2. Lift the machine, and set its rubber feet [D] into the holes [E] on the top of the roll feeder [B] or table [F].

**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. Make sure that it is OFF. If it is ON, set it to OFF.



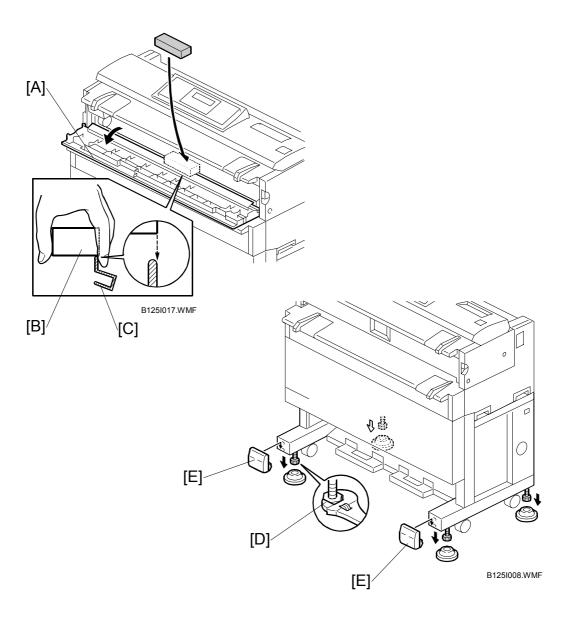
- 5. Remove the covers and manual feed table in this order:
  - 1) Upper left cover [A] ( F x 2)
  - 2) Left cover [B] ( x 3)
  - 3) Upper right cover [C] (F x 2)
  - 4) Right cover [D] ( x 3)
  - 5) Manual feed table [E] ( F x 2). (If the roll feeder is installed, open the drawer of the roll feeder before you remove this part.)
- 6. Remove the right transport lock plate [F] ( F x 6).
- 7. Remove the left transport lock plate ( F x 6).



- 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.

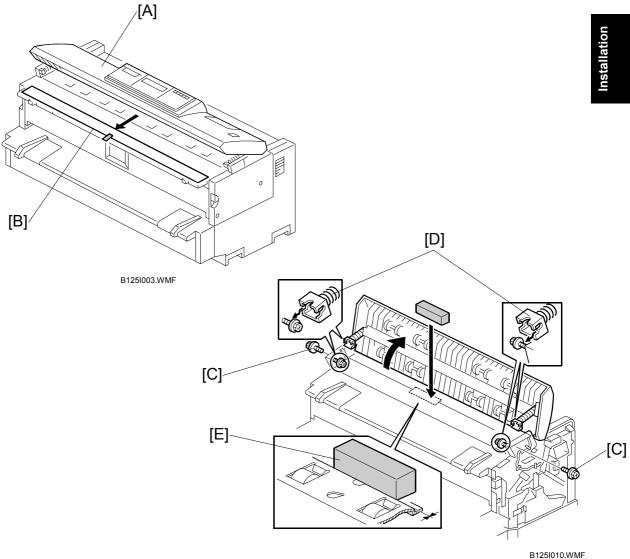
### Leveling the Copier and Attaching Leg Covers



- 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 0.15/1000 mm from level (from right to left).

5. Attach the leg covers [E] to the left and right leg.

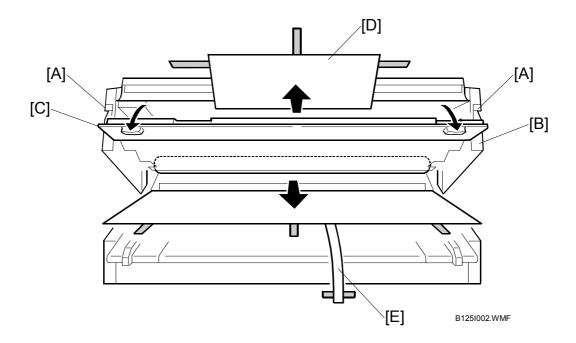


- 6. Raise the original feed unit [A].
- 7. Remove the protective sheet and tape [B].
- 8. Remove the lock screws [C] ( x 2)
- 9. On the left and right sides, lift the hinges [D] off the support screws and lift the unit to the vertical position. (Do not remove the support screws.)
- 10. Put the level [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.

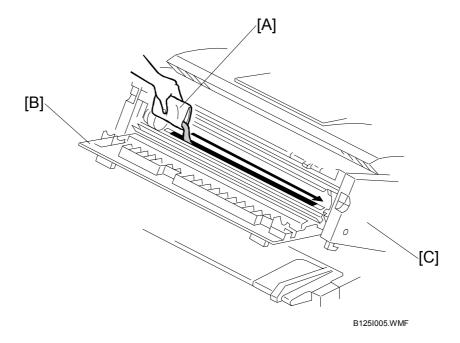
NOTE: The machine must not be more than 0.15/1000 mm from level (from right to left).

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

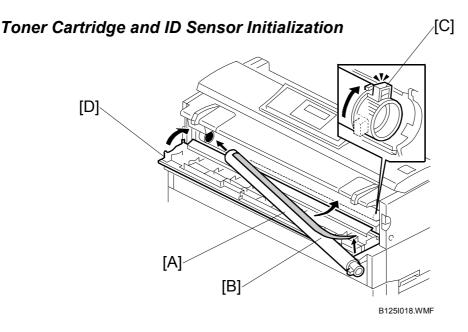
### Developer



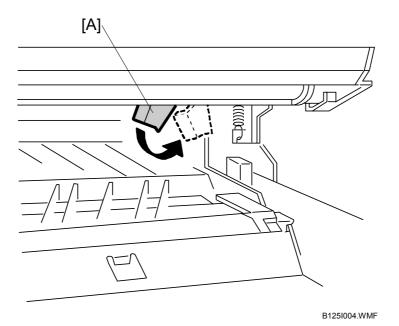
- 1. Push up the buttons [A] to release the upper unit. Then lift the upper unit [B].
- 2. Open the toner hopper cover [C].
- 3. Remove all tape and packing materials [D] in the upper unit.
- 4. Pull out the drum protection sheet [E].



- 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].
  - 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.



- 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 the left and right sides.
- 7. Switch the main power switch on.
- 8. 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 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 (a), then (1)(a)(7), then push (b) and hold it for 3 seconds.
  - Push (1).
  - Push (2)(9)(2)(3)(0)(2) then push (#).



- 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 (a), then (10)(7), then push (a) and hold it for 3 seconds.
  - Push (1).
  - Push (3)(0)(1)(0)(5) then (#).
  - Push (1) to start.
- 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 (1)(1)(7).
- 3. Push and hold (a) 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 ①①① or ①①②.
  - 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 <sup>™</sup> 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 (1)3.
  - 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.
- 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  |            |
| Roll 1 | 1920 115 | Cut Length Adjustment: 1st Roll, 1189 mm, Plain Paper | See label. |
| Roll 2 | 1920 211 | Cut Length Adjustment: 2nd Roll, 297 mm, Plain Paper  | See label. |
| 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 the Paper Size and Type with User Tools

- 1. Push the "User Tools" key then select "System Settings"> "General Features.
- 2. Push <sup>(1)</sup> 4 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 <sup>(0)</sup> 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.

#### 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 "System Settings"> "General Features.
- 2. Push <sup>(1)</sup> to select "03 Orig. Paper Size".
- 3. Select "Engineering" or "Architecture" (whichever is used most frequently by the operator).

#### SP4960 015, 003 Enable and Format 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.
- 3. Do 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%.

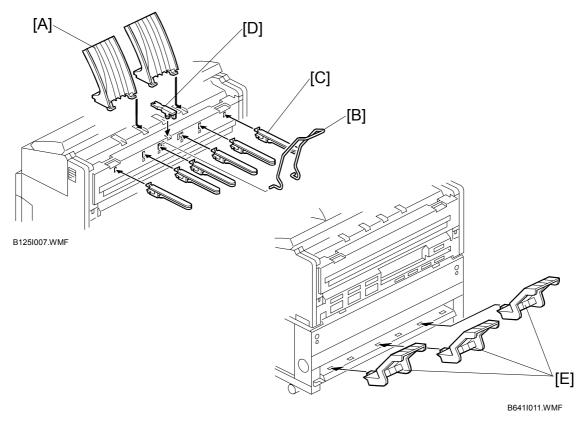
**Important:** Never switch the power off while the machine is formatting the hard disk.

#### 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].
- Attach the original output guides [C].
   NOTE: The original feeds out to these guides or

**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 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 will 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 will 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.

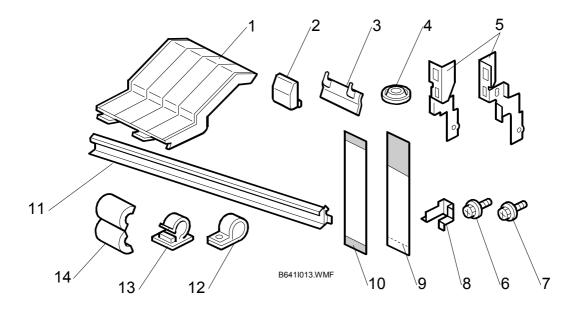
- To prepare the machine for transport to a different building, disconnect the copier and the roller feeder (or table). Attach the drawer to the frame with tape, or the roll feeder drawer will fall out of the table frame.
- Lift the copier with one person on each end of the copier. Be sure to use the 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

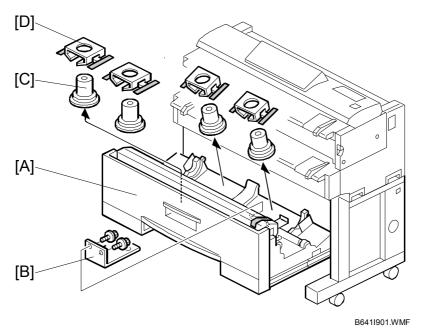
#### Setting the Copier on the Roll Feeder

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.

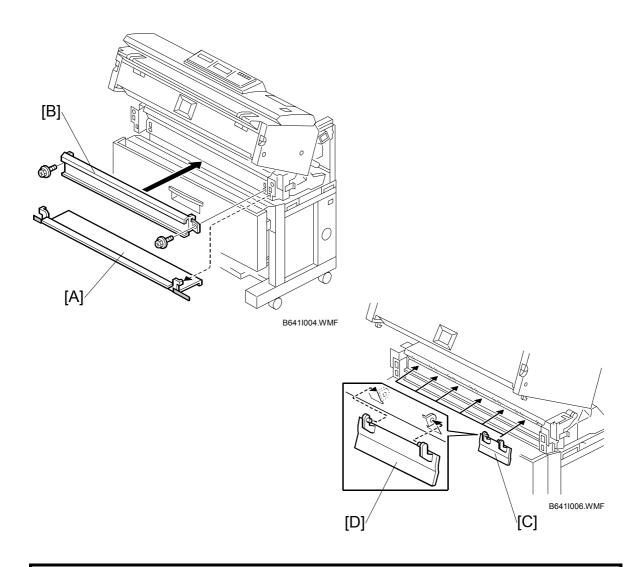
#### Opening the Roll Feeder and Removing Shipping Material



#### 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] ( x 2).
- 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

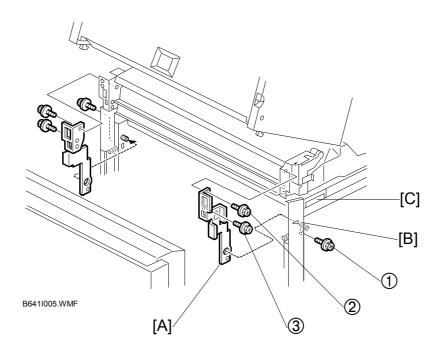


#### **ACAUTION**

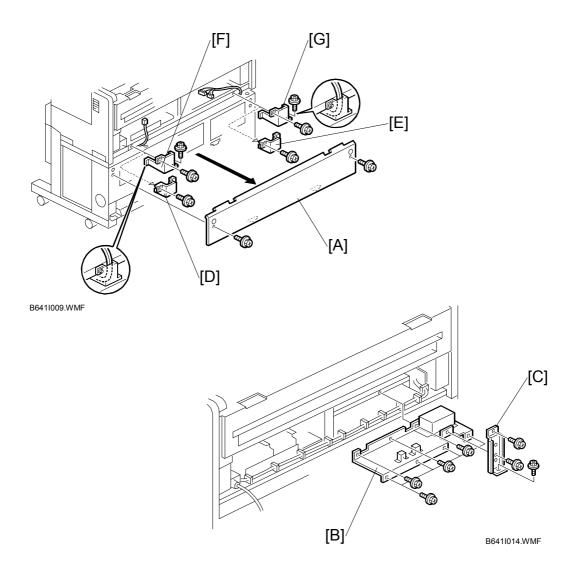
#### Keep the power cord disconnected when you do these procedures.

- 1. Remove the protector plate [A] (no screws).
- 2. Install the guide plate [B] ( F 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.

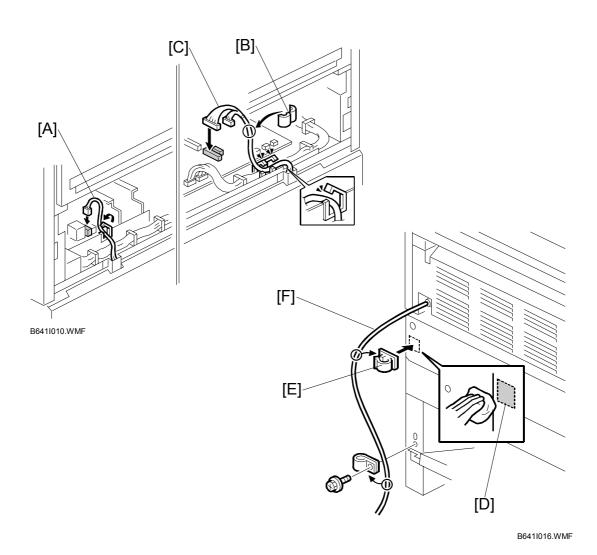
#### Connecting the Copier and Roll Feeder



- 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 ( F x 2).
- 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.

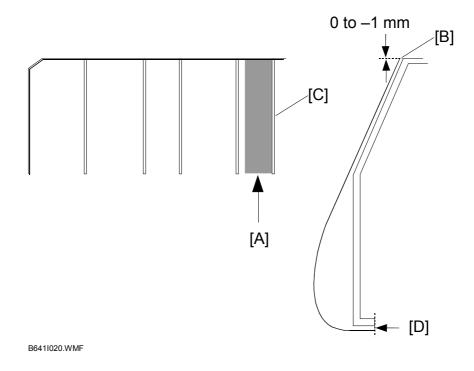


- 9. Remove the rear cover of the copier ( $\mathscr{F}$  x 2).
- 10. Remove the rear plate [A] of the roll feeder ( F x 2).
- 11. Remove the shield cover [B] ( x 7).
- 12. Remove the ground plate [C] ( F x 3).
- 13. Remove the left and right metal brackets [D, E] ( x 1 each). (Discard these brackets 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 (♠ 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 (୬ x 2) (use 1 of the screws from the accessories).



- 17. Connect the left harness [A] ( x 1, x 1, x 1).
- 18. Attach the ferrite core [B] to the right harness [C] between the harness clamps.
- 20. Reattach the shield cover ( $\mathscr{F}$  x 10).
- 21. Reattach the rear cover of the copier.
- 22. Reattach the rear plate of the roll feeder ( F 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 (  $\slash\hspace{-0.6em} \not\hspace{-0.6em} \slash\hspace{-0.6em} x$  1).

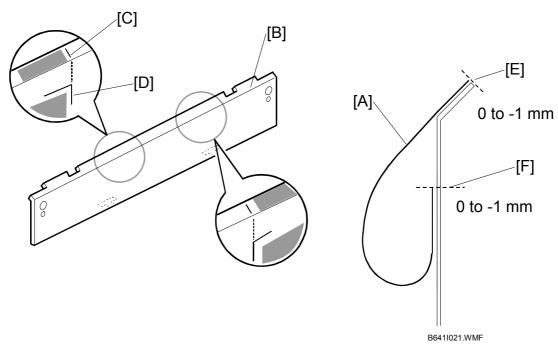
#### Attach the Mylars to the Copier



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.
- 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 ( F 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 " $_{7}$ ","  $_{\Gamma}$ " 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.

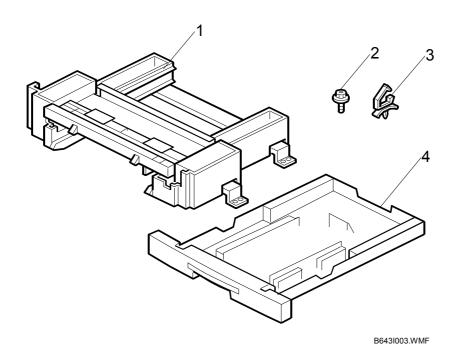
**NOTE:** The SP settings necessary for the roll feeder are in section 1.2.3.

## 1.4 PAPER CASSETTE INSTALLATION

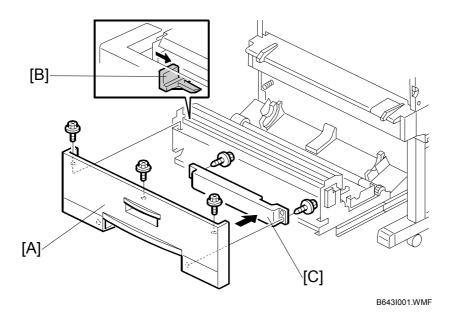
#### 1.4.1 ACCESSORY CHECK

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  |



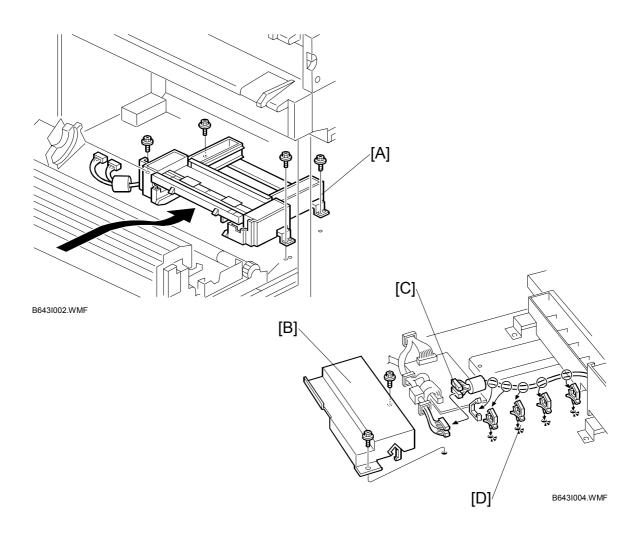
#### 1.4.2 PAPER CASSETTE INSTALLATION PROCEDURE



#### **A**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] (\$\hat{F}\$ 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 ( $\hat{\mathscr{F}}$  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 ( $\mathscr{F}$  x 4).
- 9. From the front, remove the board cover [B] ( $\mathscr{F}$  x 2,  $\overset{\triangle}{\hookrightarrow}$  x 1).
- 10. From the rear of the roll feeder, connect the paper-cassette-unit connectors [C] ( $\mathbb{Z}$  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.

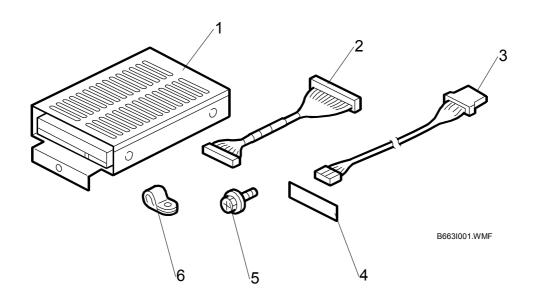
# Installation

## 1.5 HDD INSTALLATION

## 1.5.1 ACCESSORY CHECK

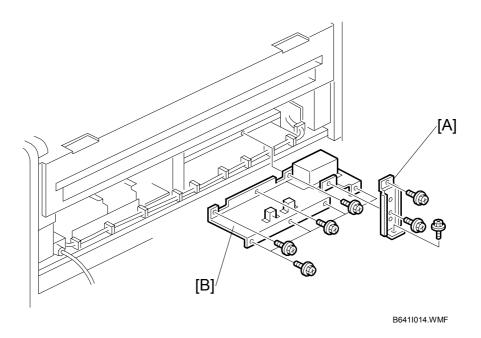
Check the accessories and their quantities against this list:

| 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    |



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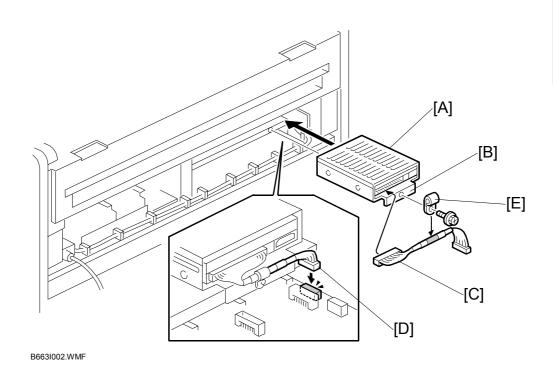
#### 1.5.2 HDD INSTALLATION PROCEDURE



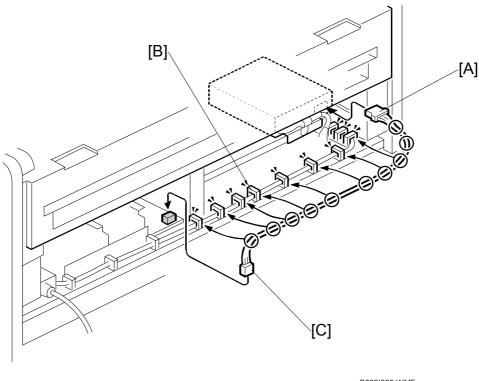
### **⚠**CAUTION

Keep the power cord unplugged when doing the following procedure.

- 1. Remove the rear cover ( F x 2).
- 2. Remove the ground plate [A] ( F x 3).
- 3. Remove the PCB shield cover [B] ( $\mathscr{F}$  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 ( x 1).



- B663I003.WMF
- 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.

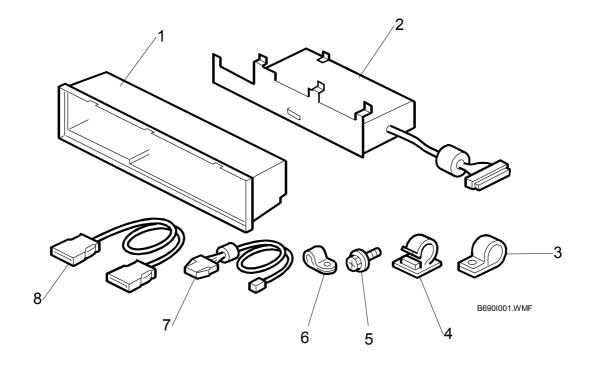
## Installation

## 1.6 INTERFACE BOARD INSTALLATION

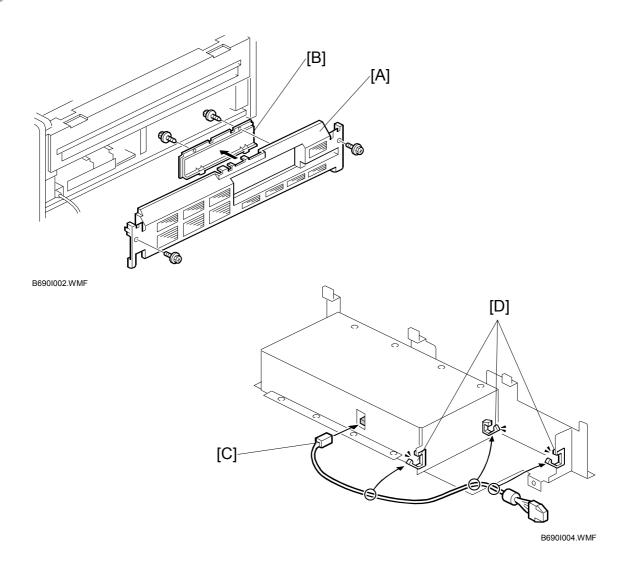
## 1.6.1 ACCESSORY CHECK

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                      |      |
| 6. Nylon Clamps (Small)               | 1    |
| 7. Connector Cable (Bayonet Type) x 1 | 1    |
| 8 Interface Cable                     | 1    |



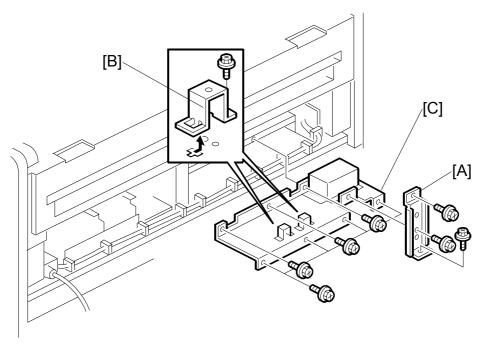
## 1.6.2 INTERFACE UNIT INSTALLATION PROCEDURE



#### **ACAUTION**

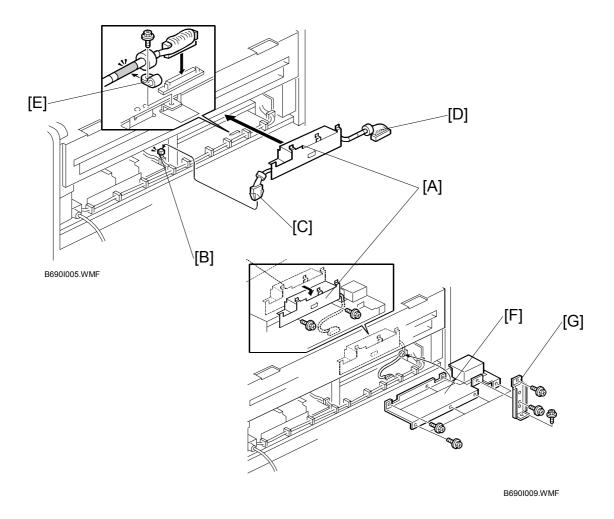
Keep the power cord disconnected when you do this procedure.

- 1. Remove the rear cover [A] ( F x 2).
- 2. Remove the knockout [B] from the rear cover ( $\mathscr{F}$  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.

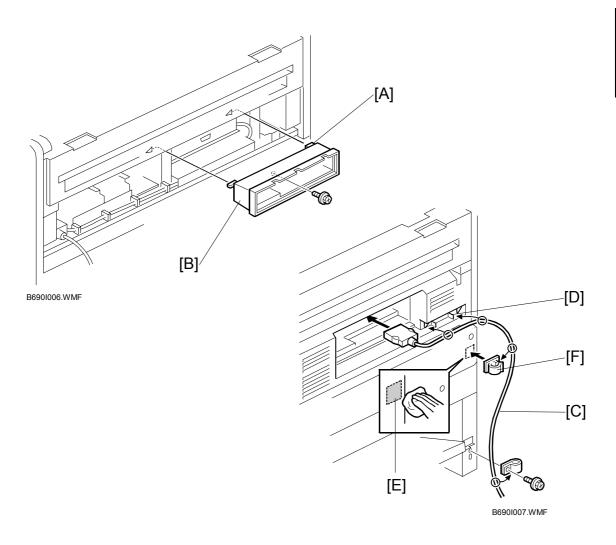


B690I003.WMF

- 6. Remove the ground plate [A] ( F x 3).
- 7. Remove the brackets [B] ( F x 1 each)
- 8. Remove the PCB shield cover [C] ( F x 7).



- 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, 8 x 1).
- 14. Reattach the PCB shield cover [F] ( F x 7).
- 15. Reattach the ground plate [G] ( x 3).
- 16. Put the interface unit on the shelf and attach it ( F x 2).



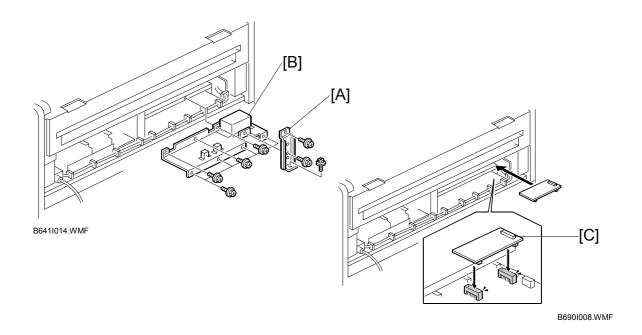
- 17. Attach the hooks [A] on the top edge of the cover bracket to the top of the interface unit.
- 18. Attach the cover [B] to the interface unit ( F x 1).
- 19. Reattach the rear cover of the copier ( F x 2).
- 20. At the rear of the copier, attach the interface cable [C] to the interface unit.
- 21. Attach the cable to the hooks [D] on the cover.
- 22. Clean then rear plate [E] of the roll feeder with alcohol.
- 23. Attach the harness clamp [F].
- 24. Clamp the cable to the roll feeder ( $\hat{\mathscr{F}}$  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



### **ACAUTION**

Keep the power cord disconnected when you do this procedure.

- 1. Remove the back cover ( x 2).
- 2. Remove the ground plate [A] ( \$\beta\$ 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.

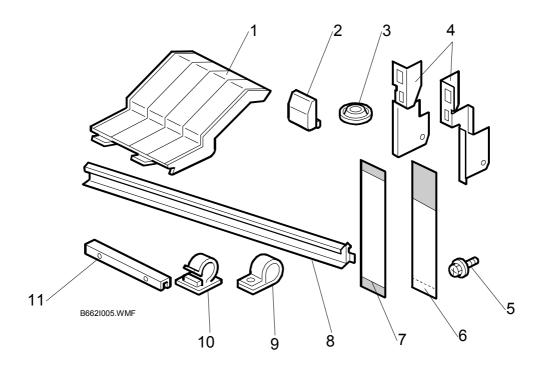
## Installation

## 1.8 TABLE INSTALLATION

#### 1.8.1 TABLE ACCESSORY CHECK

Check the accessories and their quantities against this list:

| Description Q'1   | ty |
|---|----|
| 1. Lower Output Trays 3                                       |    |
| 2. Leg Covers   |    |
| 3. Shoes 4  |    |
| 4. Joint Brackets (Left, Right)                               |    |
| 5. Screws (Blue)  |    |
| 6. Mylars – Wide  |    |
| 7. Mylars – Narrow  |    |
| 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

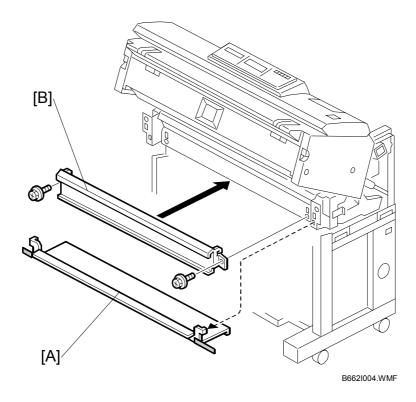
#### Setting the Copier on the Table

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

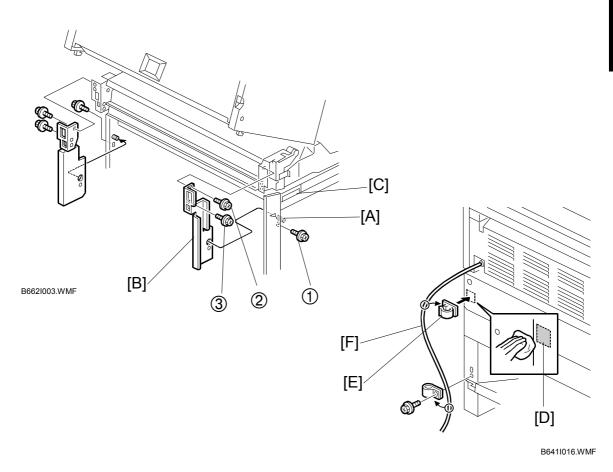


#### **△**CAUTION

Keep the power cord disconnected when you do this procedure.

- 1. Remove the protector plate [A] (no screws).
- 2. Install the guide plate [B] ( $\mathscr{F}$  x 2 Blue). Hang the hooks on each ends; this puts the plate in the correct position to be installed.

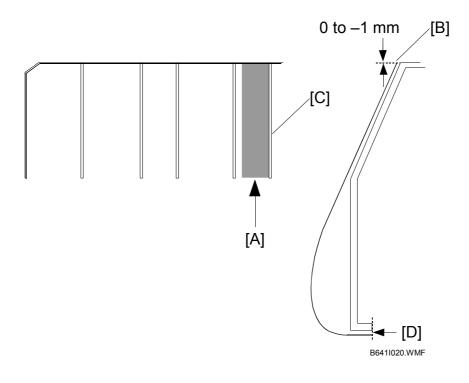
#### Connecting the Copier and Table



- 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 ( $\mathcal{F}$  x 1).

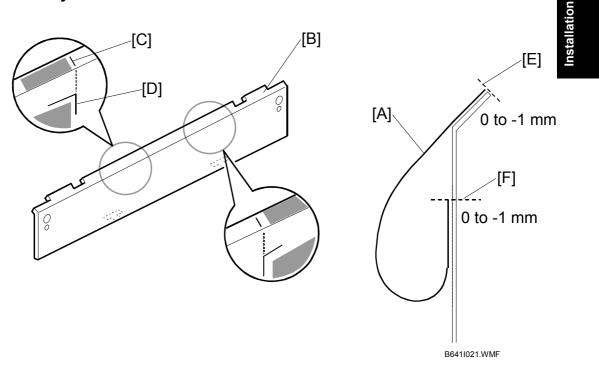
#### Attach the Mylars to the Copier



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 ( $\hat{x}$  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.
- 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 ( x 2).

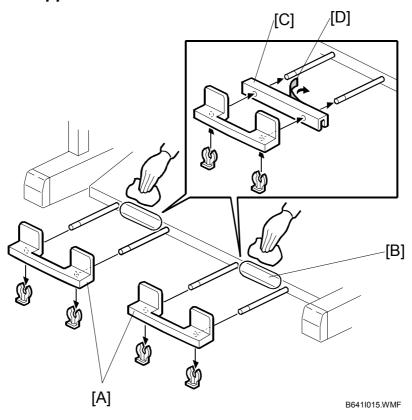
#### Attach the Mylars to the Back of the Table



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 " $_{7}$ ","  $_{\Gamma}$ " 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).

## 2. PREVENTIVE MAINTENANCE

## 2.1 PM TABLE

#### **Key for the PM Table**

| Letter | Action    |
|--------|-----------|
| Α      | Adjust    |
| С      | 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  | scription Q'ty PM Interval |        | РМ    | Comments |       |                             |  |
|--|----------------------------|--------|-------|----------|-------|-----------------------------|--|
| Description  | Q ty                       | Metric | Feet  | Prints   | 1 141 |                             |  |
| Original Feed Rollers                              |                            | 5.5    | 18.0  | 9.3      | С     | Alcohol or damp cloth       |  |
| Original Exit Rollers                              |                            | 5.5    | 18.0  | 9.3      | С     |                             |  |
| Platen Plate                                       |                            | 5.5    | 18.0  | 9.3      | С     |                             |  |
| Original Width, Set,<br>Registration, Exit Sensors |                            | 33.0   | 108.0 | 55.8     | С     | Blower brush                |  |
| Original Table                                     |                            | 5.5    | 18.0  | 9.3      | С     | Dry cloth                   |  |
| Exposure Glass                                     |                            | 5.5    | 18.0  | 9.3      | С     | Damp cloth or glass cleaner |  |
| CIS Surfaces                                       |                            | 5.5    | 18.0  | 9.3      | С     | 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      | С     | Dry cloth or vacuum         |  |
| Development Roller Gear                            |                            | 5.5    | 18.0  | 9.3      | I     | cleaner                     |  |
| Development Lower Casing                           |                            | 5.5    | 18.0  | 9.3      | С     | 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     | С     | Lens paper or dry           |  |
| Side Seals   |                            | 11.0   | 36.0  | 18.6     | С     | cloth.                      |  |
| Inside Cleaning Unit                               |                            | 11.0   | 36.0  | 18.6     | I     | Dry cloth or vacuum cleaner |  |
| Used Toner Bottle                                  |                            | 5.5    | 18.0  | 9.3      | С     | Empty used toner            |  |
| Registration                                       |                            |        | ·     | ·        |       |                             |  |
| Registration Rollers                               |                            | 5.5    | 18.0  | 9.3      | С     | Alcohol with cloth          |  |
| Paper Registration Sensor                          |                            | 5.5    | 18.0  | 9.3      | С     | Blower brush                |  |

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| Description                    | Description Q'ty PM Interval |        | - PM  | Comments |      |  |
|--------------------------------|------------------------------|--------|-------|----------|------|--|
| _                              | Qιy                          | Metric | Feet  | Prints   | FIVI | Comments   |
| 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      | С    | Damp cloth   |
| Grid Wires                     |                              | 5.5    | 18.0  | 9.3      | С    | 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      | С    | Lens paper or dry cloth.   |
| Quenching Lamp                 |                              | 5.5    | 18.0  | 9.3      | С    | Lens paper or dry cloth  |
| ID Sensor                      |                              | 5.5    | 18.0  | 9.3      | С    | Dry cloth  |
| Pick-off Pawl                  |                              | 5.5    | 18.0  | 9.3      | С    |  |
| LPH (LED Print Heads)          |                              | 5.5    | 18.0  | 9.3      | С    | Lens paper or alcohol. After cleaning, touch to discharge static. Important: Use no other chemical cleaners! |
| Fusing Unit                    |                              |        |       |          |      | <u> </u>   |
| 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      | С    | Dry cloth.   |
| Pressure Roller Strippers      |                              | 5.5    | 18.0  | 9.3      | С    |  |
| Hot Roller Thermistor          |                              | 11.0   | 36.0  | 18.6     | С    |  |
| Pressure Roller Thermistor     |                              | 11.0   | 36.0  | 18.6     | С    |  |
| Fusing Exit Guide Plate        |                              | 5.5    | 18.0  | 9.3      | С    |  |
| Paper Junction Gate            |                              | 5.5    | 18.0  | 9.3      | С    |  |
| Fusing Entrance Guide<br>Spurs |                              | 5.5    | 18.0  | 9.3      | С    | Cleaner brush<br>Alcohol, dry cloth at<br>every visit. (►2.2)  |
| Fusing Exit Rollers            |                              | 11.0   | 36.0  | 18.6     | С    | Alcohol, dry cloth   |
| Fusing Exit Sensor             |                              | 5.5    | 18.0  | 9.3      | С    | 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 Inte | erval |        | PM    | Comments  |
|--|------|---------|-------|--------|-------|---|
| Description                            | Q ty | Metric  | Feet  | Prints | I IVI | Comments  |
| Others                                 |      |         |       | •      | •     |   |
| Ozone Filter                           | 1    | 5.5     | 18.0  | 9.3    | R     |   |
| Line Speed & Magnification Adjustments |      |         |       |        | А     | Adjust after replacing rollers. For details, see "SP Adjustments" in Section 3. |

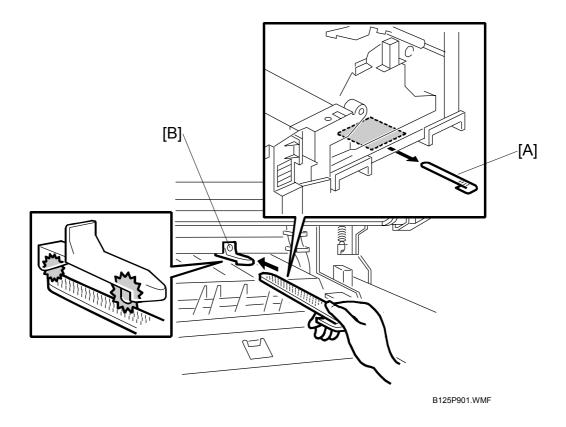
## 2.1.2 ROLL FEEDER (B641/B642)

| Description                 | Q'ty PM Interval Metric Feet Prints | PM Interval |          |      | РМ | Comments   |
|-----------------------------|-------------------------------------|-------------|----------|------|----|--|
| Description                 |                                     | 1 141       | Comments |      |    |  |
| Cutter unit                 |                                     | 5.5         | 18.0     | 9.3  | С  | Blower brush, dry<br>cloth. (Estimated<br>service life: 127 K<br>cuts) |
| Feed Rollers                |                                     | 5.5         | 18.0     | 9.3  | С  | Alcohol with cloth   |
| Exit Rollers                |                                     | 5.5         | 18.0     | 9.3  | С  |  |
| Exit Sensor                 |                                     | 11.0        | 36.0     | 18.6 | С  | Blower brush or dry  |
| Roll End Sensors 3, 4 (EXP) |                                     | 11.0        | 36.0     | 18.6 | С  | cloth  |

## 2.1.3 PAPER CASSETTE (B643)

| Description  | Q'ty | PM Interval |      |        | PM   | Comments              |
|--------------|------|-------------|------|--------|------|-----------------------|
| Description  | Q ty | Metric      | Feet | Prints | FIVI | Comments              |
| 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  | Replace II flecessary |
| Grip Rollers |      | 5.5         | 18.0 | 9.3    | С    | Blower brush or dry   |
| Relay Sensor |      | 11.0        | 36.0 | 18.6   | С    | cloth                 |

## 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].

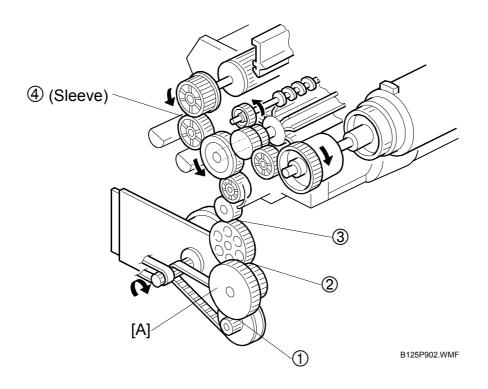
#### Important:

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

## Preventive Maintenance

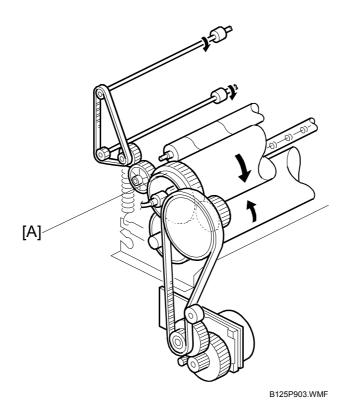
## 2.3 LUBRICATION POINTS

## 2.3.1 DEVELOPMENT SECTION



| Development Unit Gears | (Silicone Grease G501).                                  |
|------------------------|--|
| Development onit Gears | Apply at the points shown by the numbers in the drawing. |

## 2.3.2 FUSING GEARS

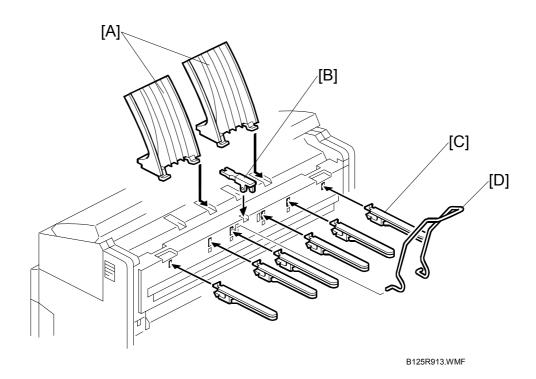


[A]: Fusing Gears (Barrieta S552R). Apply to the surface of the rim.

#### 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)

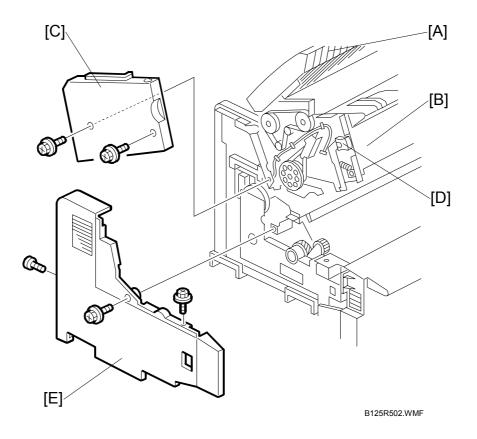
Lower output trays (x 3) (not shown)

#### 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.

Replacement Adjustment

#### 3.1.2 SIDE COVERS



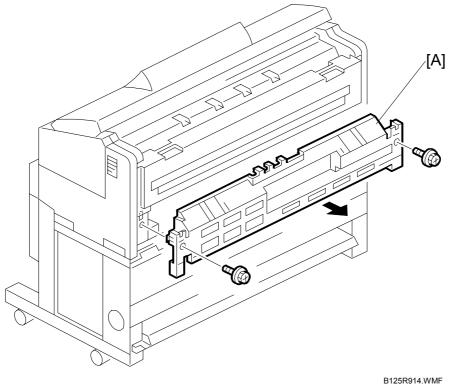
- 1. Open the original feed unit [A].
- 2. Open the upper unit [B].
- 3. Remove the left upper cover [C] ( x 2).

  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

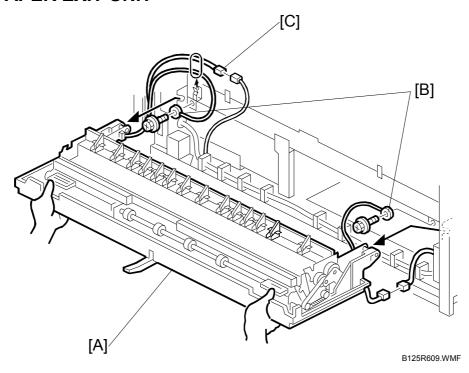
- Make sure the original feed unit and upper unit are open.
- Always install the lower covers before the upper covers.
- If necessary, push in the upper unit release buttons [D] when you attach the upper covers.

## 3.1.3 REAR COVER



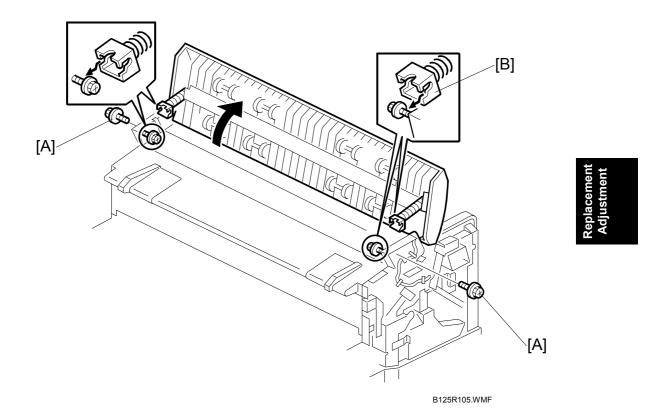
[A]: Rear cover ( F x 2)

#### 3.1.4 PAPER EXIT UNIT



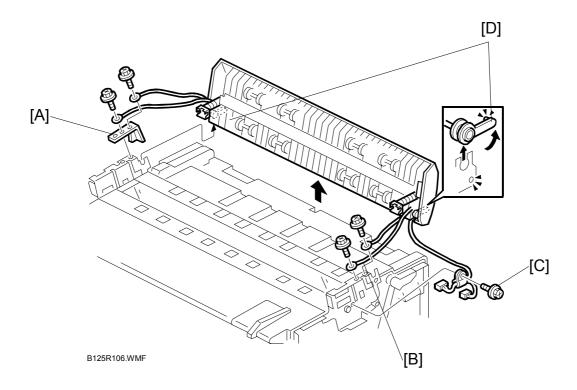
- 1. Remove the rear cover (ℰ x 2). (►3.1.3)
- 2. Open the paper exit unit and exit cover [A].
- 3. Disconnect the ground wires [B] and connectors [C] (♠ x 3, ♠ x 2, ♠ x 2).
- 4. Lift the paper exit unit approximately 30° from horizontal. Pull the ends of the shaft out of the left and right hinges.

### 3.1.5 UNLOCKING, RAISING THE ORIGINAL UNIT



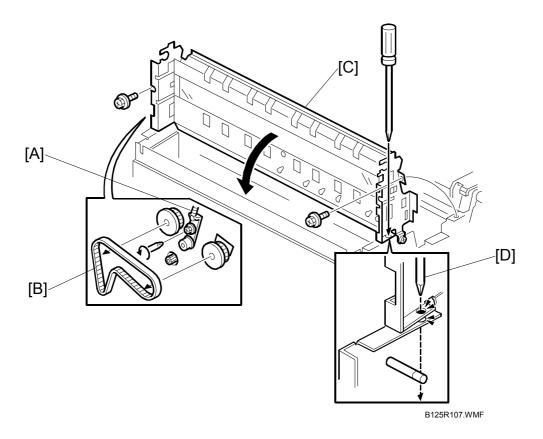
- 1. Open the upper unit
- 2. Remove the lock screws [A] ( F x 2)
- 3. On the left and right sides, lift the hinges [B] off the support screws and lift the unit to the vertical position. (Do not remove the support screws.)

#### 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 ( F x 2).
- 3. On the right side, disconnect the ground wires [B] (x2) ( x 2).
- 4. Disconnect the connectors [C] (♠ 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

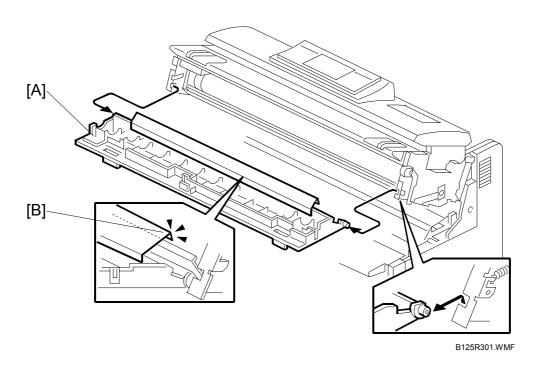




- 1. Remove the original feed unit. ( 3.1.6)
- 2. Loosen the spring [A] and remove the scanner motor belt [B].
- 3. Tighten the screw again to make sure that the screw and spring do not fall off.
- 4. Lift the scanner unit [C]
- 5. Put a long screwdriver [D] through the holes to lock the scanner unit 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



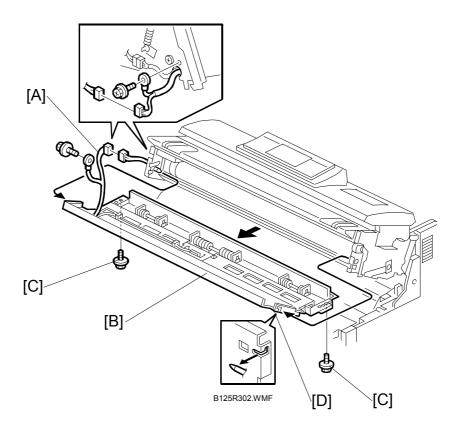
- 1. Side covers. (•3.1.2)
- 2. Toner hopper cover [A].

### Reinstallation

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

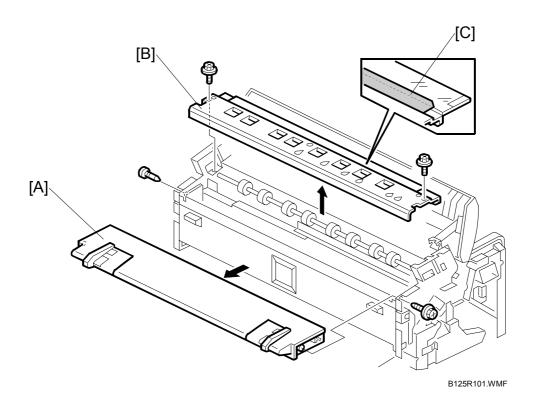
# Replacement Adjustment

#### 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] ( F 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 MANUAL 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)

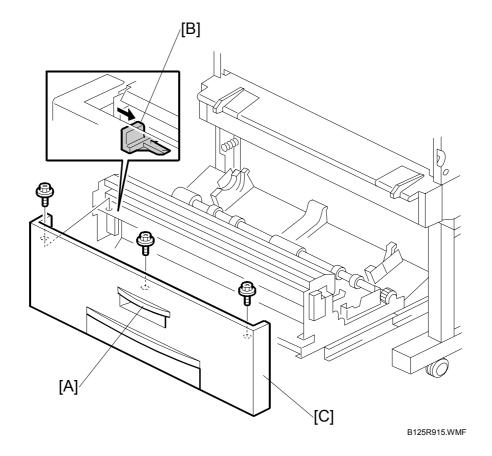
[A]: Manual feed table ( F x 2)

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

#### Reinstallation

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

### 3.1.11 DRAWER FRONT COVER

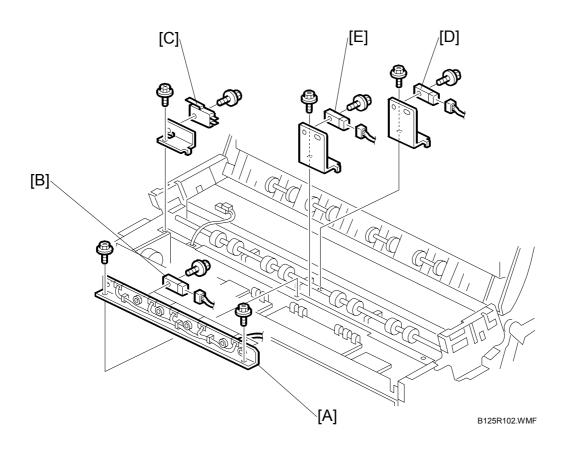


[A]: Open the front drawer of the roll feeder.[B]: Push the cutter to the right.[C]: Front cover (§ x 3)

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### 3.2 SCANNER

### 3.2.1 ORIGINAL WIDTH SENSORS, ORIGINAL SET SENSOR, **SCANNER SWITCH**

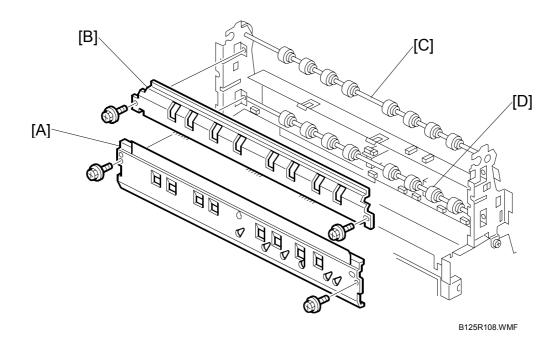


Manual feed table, original feed sensor cover ( 3.1.10)

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

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### 3.2.2 ORIGINAL FEED UNIT ROLLERS



Lift and lock the scanner unit. ( 3.1.7)

[A]: Original width sensor cover

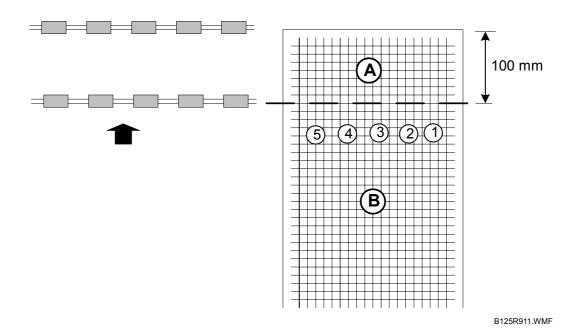
[B]: Original exit roller cover ( x 2)

[C]: Original exit rollers ( $\mathbb{C}$  x 2, bushings x 2) [D]: Original feed rollers ( $\mathbb{C}$  x 2, bushings x 2)

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#### Reinstallation

After you replace the original feed roller or the original exit roller, do the CIS sub scan test and adjustment, as shown below.

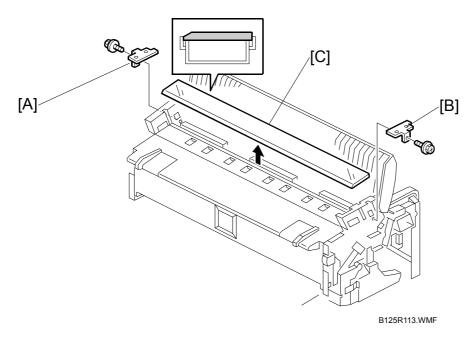


- 1. Do SP2941 (IPU Test Pattern) and print Pattern 11.
- 2. Make a copy of the Pattern 11 output that you made in step 1.
- 3. On the copy, first, check Area "B".
  - If the lines at all the joints are correct (not broken), go to the next step. The joints are labeled 1 to 5 in the diagram; these joints 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



Replacement Adjustment

Unlock and lift the original feed unit. ( 3.1.6)

Side covers ( 3.1.2)

[A]: Left exposure glass plate ( x 1)

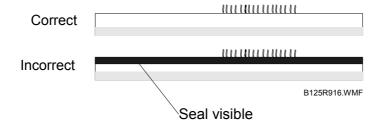
[B]: Right exposure glass plate ( F x 1)

[C]: Exposure glass.

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

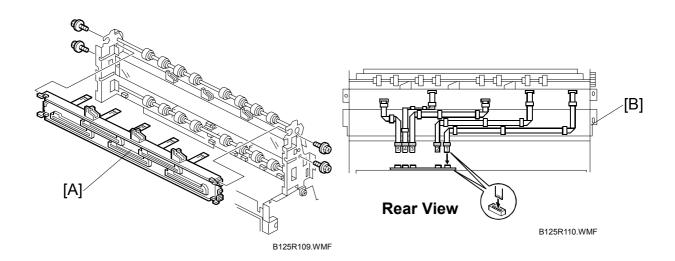
#### Reinstallation

- 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.



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#### 3.2.4 CIS



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:

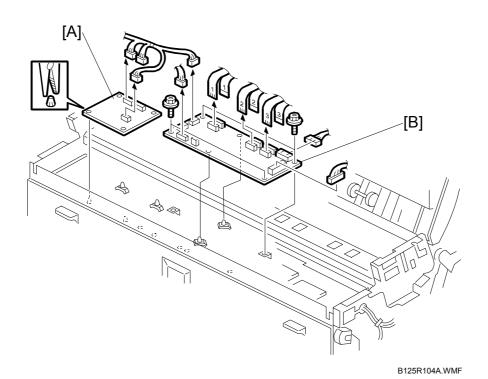
1. Read the values for SP4972 that are printed on the label attached to the CIS replacement unit.

**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 )

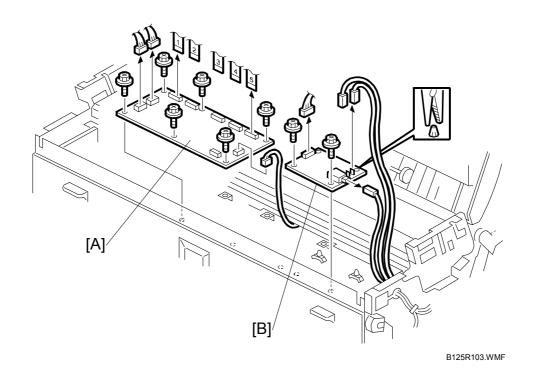
[A]: SMDB ( x 3, standoffs x 4)

[B]: VDB (ribbon connectors x 6, 🗐 x 4, 🖗 x 4)

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## 3.2.6 SIB, CGB POWER PACK

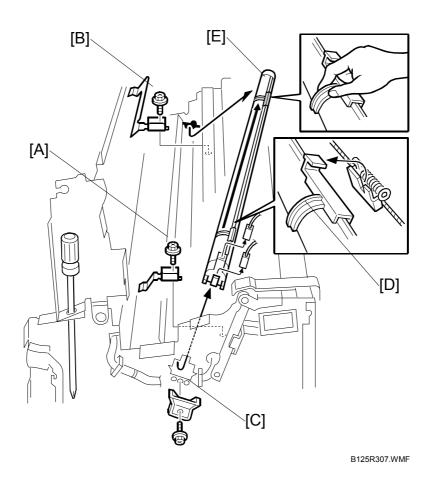


Side covers ( 3.1.2)

[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



Replacement Adjustment

Lift and lock the scanner unit ( 3.1.7)

Scanner motor ( 3.8.1)

[A]: Leaf spring (Fx 1)

[B]: Leaf spring ( x 1)

[C]: End plate ( $\Re x$  1)

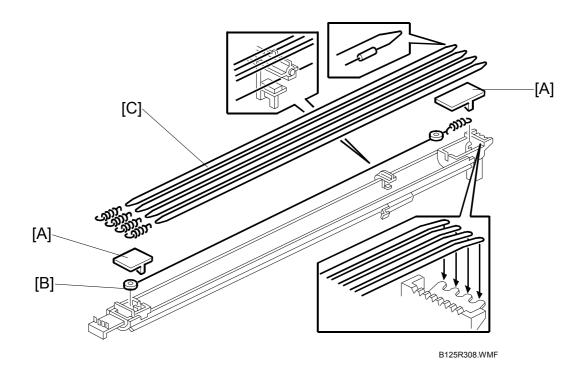
[D]: Disconnect the cleaning pad and then move it to the left.

[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.

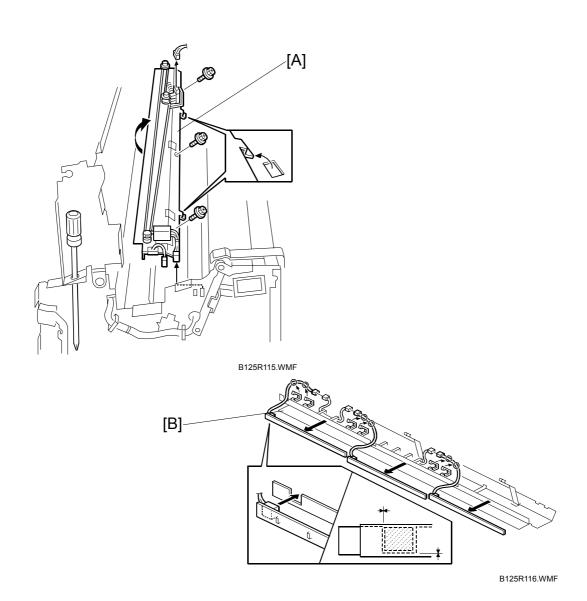
AROUND THE DRUM 13 February 2004



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



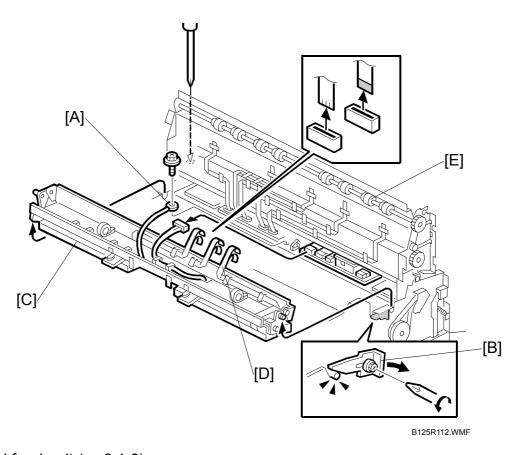
OPC drum unit (•3.5.1)

[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.

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### 3.3.3 LPH (LED PRINT HEAD)



Original feed unit ( 3.1.6)

Lift and lock the scanner unit ( 3.1.7)

- [B]: On each side of the machine, loosen the screws and move the plates to the rear as shown.
- [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.

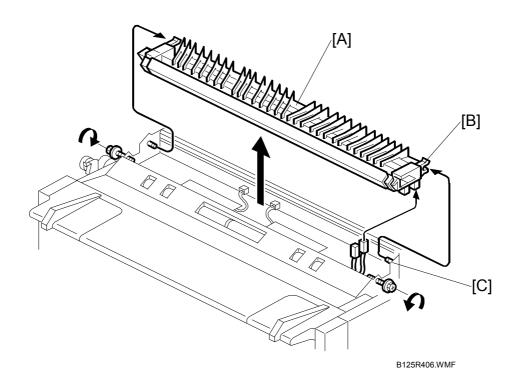
#### Important:

- 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)



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### 3.3.4 TRANSFER CORONA, SEPARATION CORONA WIRES



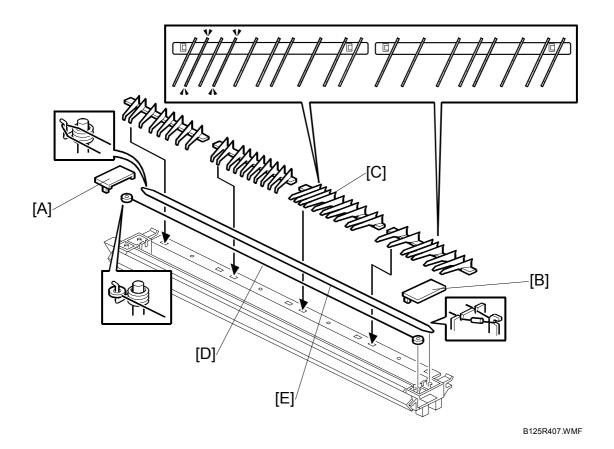
Open the upper unit.

Side covers ( 3.1.2)

[A]: Transfer unit (□ x 2, F 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

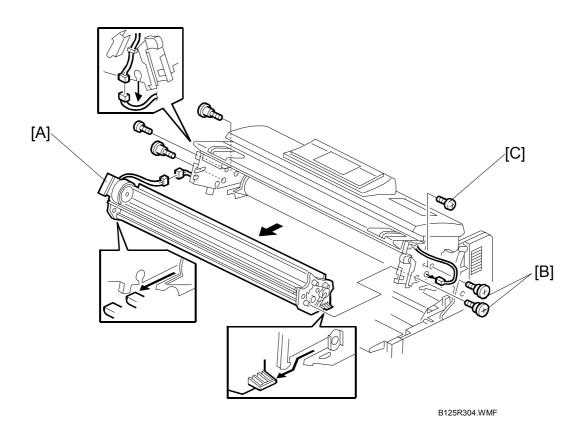
#### Reinstallation

- 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.

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### 3.4 DEVELOPMENT

#### 3.4.1 DEVELOPMENT UNIT



Lift the upper unit.
Side covers (\$\infty\$3.1.2 )
Manual feed table (\$\infty\$3.1.10)
Toner hopper cover (\$\infty\$3.1.8)
Idle registration roller panel (\$\infty\$3.1.9)
Toner cartridge

[A]: Development unit (□ x 2, ୬ x 6)

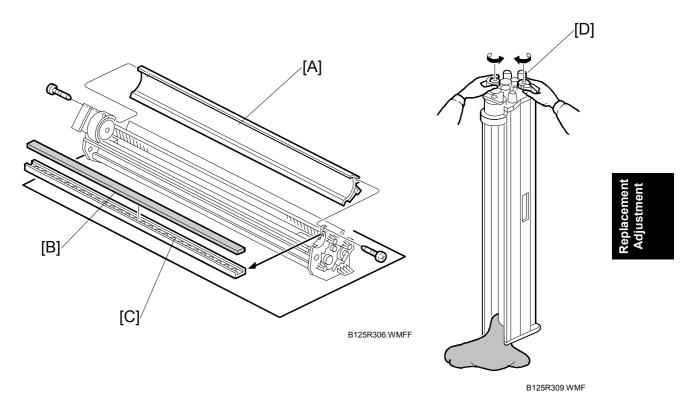
### **⚠**CAUTION

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

#### Reinstallation

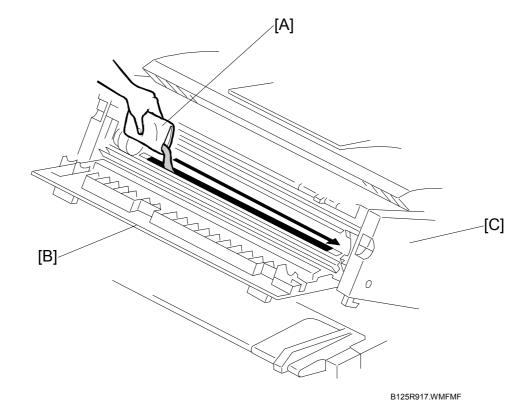
• Attach the large shoulder screws [B] on each side first, then attach the flat-head screws [C].

#### 3.4.2 DEVELOPER



- 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 ( $\hat{x}$  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 knob [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.

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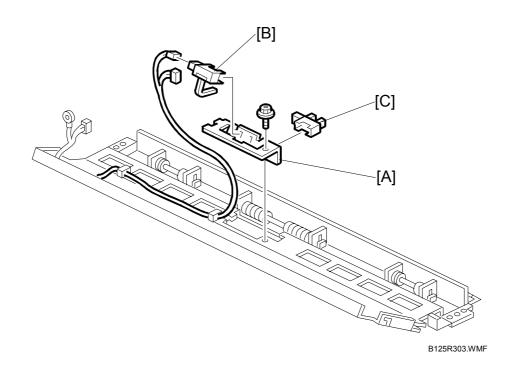
- 8. Add one (1 kg) pack of developer. Do not add the second pack at this time.
  - Open the first developer pack [A].
  - Slowly add the first pack of developer to the development unit. Move the pack from left to right until it is empty.
  - Make sure that the developer is applied equally across the slot of the development unit.
- 9. Close the toner hopper cover [B].
- 10. Close the upper unit [C].
- 11. Connect the power supply cord. Switch the main power switch on.
- 12. Do SP5804 015 (Output Check Main Motor) to start the main motor. This supplies developer to the development unit.
- 13. Push "1" to start the motor and let it operate for 30 seconds.
- 14. Push "0" to stop the motor.
- 15. Switch the main power switch off.
- 16. Open the upper unit.

- 17. Open the toner hopper cover.
- 18. 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.
- 19. Use a clean cloth to clean the edges around the slot of the development unit.
- 20. Install the development unit in the machine and close the toner hopper cover.
- 21. Close the upper unit. Make sure that the upper unit locks on each side.
- 22. Switch the main power switch on.
- 23. 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 <sup>™</sup> once, then push <sup>™</sup>.
  - 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 (#).)
- 24. Do SP3001 005 (ID Sensor Initialization) to prepare the new developer.



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## 3.4.3 PAPER SET SENSOR, REGISTRATION SENSOR



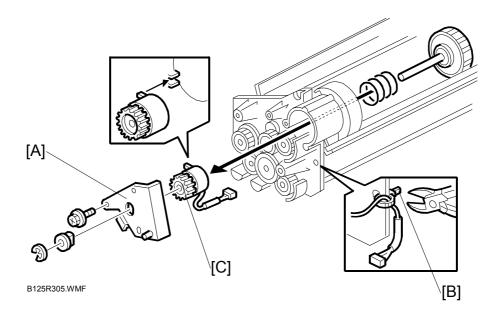
Idle registration roller panel ( 3.1.9)

[A]: Sensor bracket (இ x 1)
[B]: Paper set sensor (□ x 1)

[C]: Registration sensor ( x 1)

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### 3.4.4 TONER SUPPLY CLUTCH





Development unit ( 3.4)

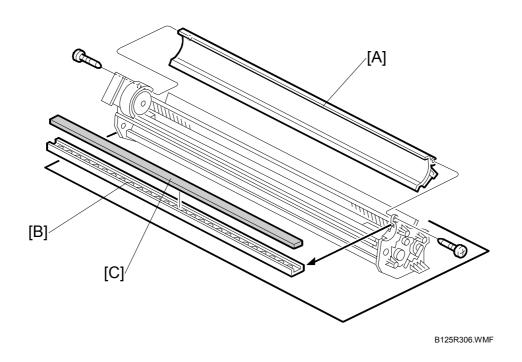
[A]: Plate ( $\hat{\mathscr{F}}$  x 1) [B]: Cut the harness clamp.

[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.

13 February 2004 **DEVELOPMENT** 

## 3.4.5 DEVELOPMENT FILTER

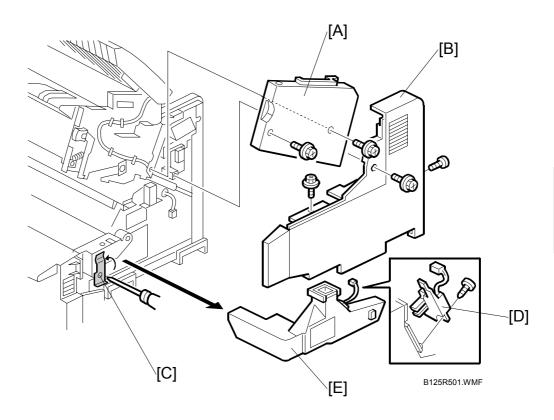


Development unit ( 3.4)

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

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# 3.4.6 USED TONER COLLECTION BOTTLE, TONER OVERFLOW SENSOR



Replacement Adjustment

Lift the original feed unit.

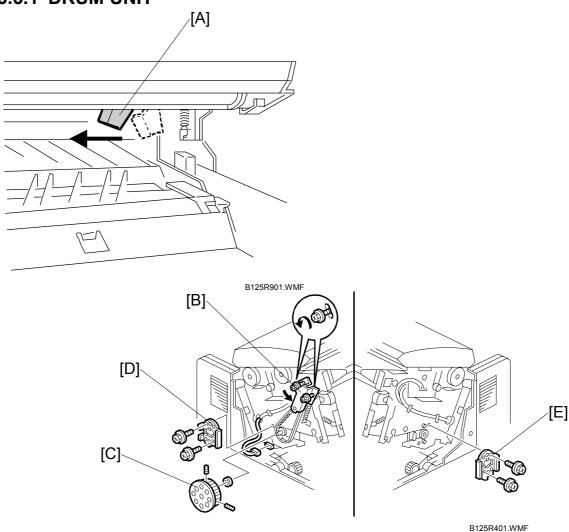
Lift the upper unit.

- [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, F x 1)
- [E]: Toner collection bottle

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### **3.5 DRUM**

#### **3.5.1 DRUM UNIT**

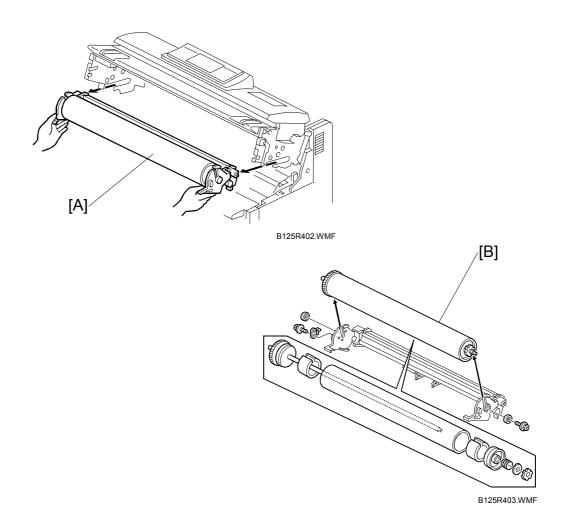


[A]: Open the upper unit and set the cleaning blade release lever to the left. Development unit ( 3.4)

- [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 ( F 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] ( $\mathscr{F}$  x 2. bushings x 2, plate x 1)

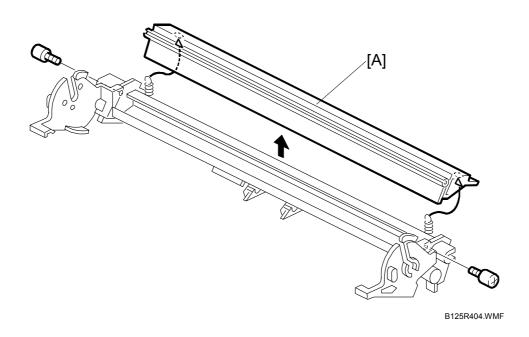
#### Reinstallation

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.

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### 3.5.2 ECLEANING BLADE



1. Cleaning blade [A] ( Fx 2, springs x 2)

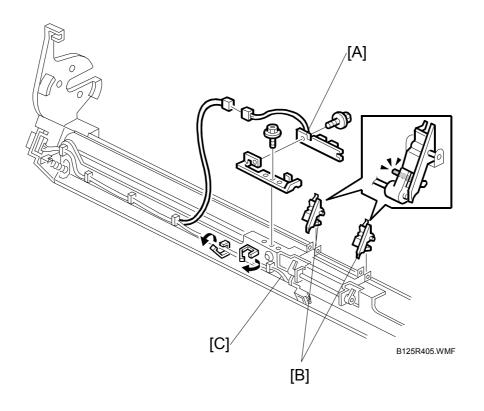
#### Reinstallation

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.

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### 3.5.3 ID SENSOR, PICK-OFF PAWLS, PICK-OFF PAWL SOLENOID



Replacement Adjustment

Drum ( 3.5.1)

Cleaning blade ( 3.5.2)

[A]: ID sensor ( x 3, x 1, x 1, x 1)

[B]: Pick-off pawls (x2) (pressure release).

[C]: Pick-off pawl solenoid ( x 2, F x 1)

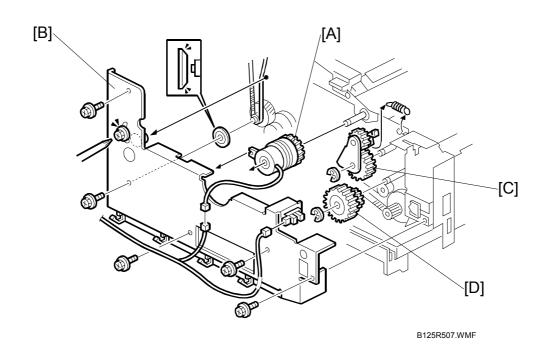
#### Reinstallation

- 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.

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### 3.6 PAPER FEED

## 3.6.1 REGISTRATION CLUTCH, REGISTRATION ROLLER

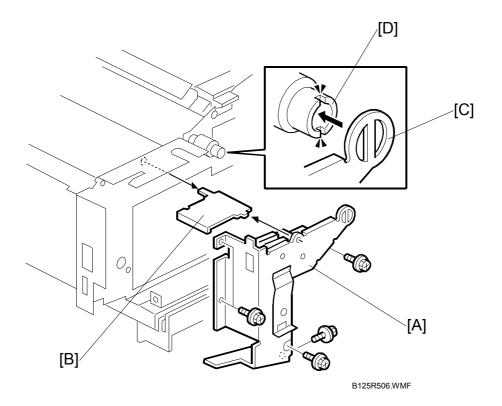


Side covers ( 3.1.2)

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

[B]: Gear cover plate ( x 5, cap x 1, drive belt x 1)

[C]: Gear ( $\mathbb{C}$  x 1, spring x 1) [D]: Gear ( $\mathbb{C}$  x 1)

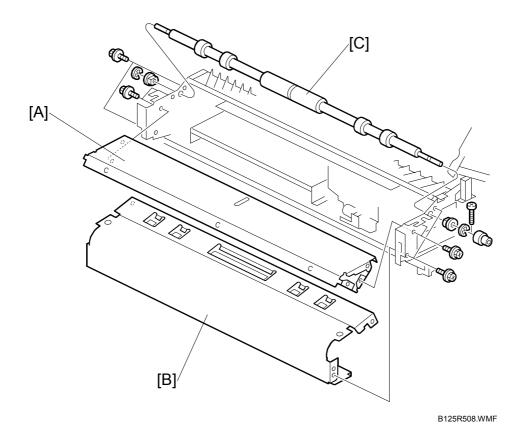


[A]: Cover plate ( F x 5)
[B]: Switch pressure plate

### Reinstallation

Make sure that the vertical brace [C] is locked in the cutouts in the ceramic clutch [D].

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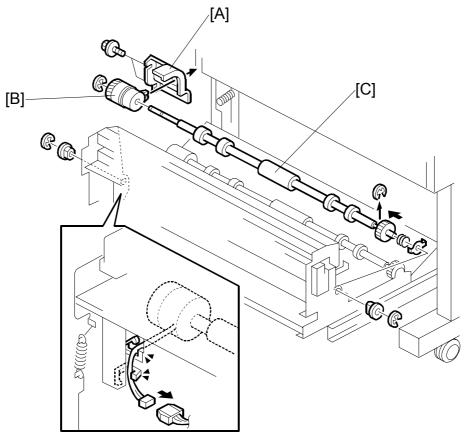


Used toner collection bottle (€3.4.6)

[A]: Front plate  $(\mathscr{F} \times 4)$ [B]: Transport roller dust cover  $(\mathscr{F} \times 4)$ [C]: Registration roller  $(\mathscr{C} \times 2$ , bushings x 2, torque limiter x 1,  $\mathscr{F} \times 1$ )

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# 3.6.2 ROLL 1 PAPER FEED CLUTCH, FEED ROLLER



B125R918.WMF

Open the roll feeder drawer.

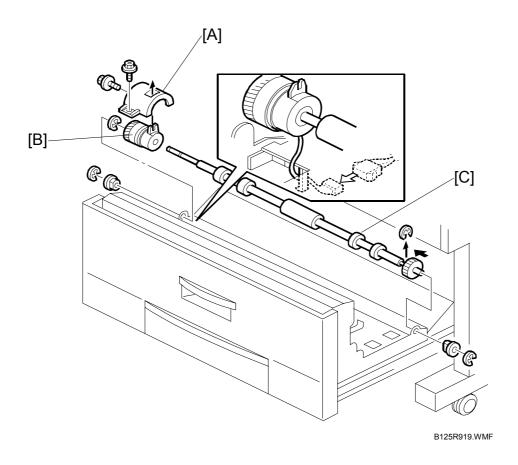
Remove the paper rolls.

[A]: Roll 1 feed clutch cover ( x 2)
[B]: Roll 1 feed clutch ( x 1, x 1)
[C]: Roll 1 feed rollers ( 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)

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# 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 ( F x 2)

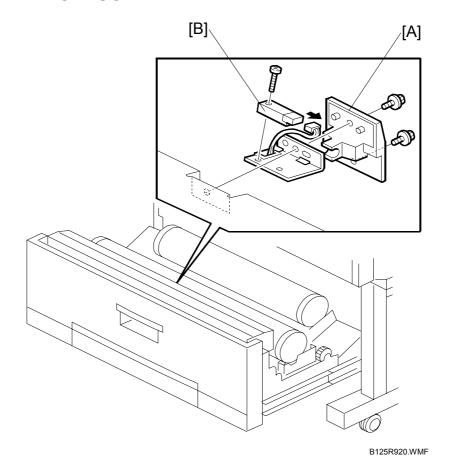
[B]: Roll 2 feed clutch ( x 1, C x 1)

[C]: Roll 2 feed rollers (© 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. (\$\infty\$3.11.1)

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# 3.6.4 RF EXIT SENSOR

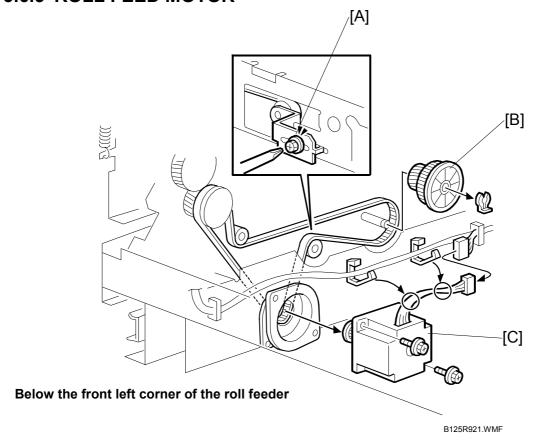


Open the drawer of the roll feeder.

. [A]: Plate (ℱ x 2) [B]: RF exit sensor (℡ x 1, ℱ x 1)

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#### 3.6.5 ROLL FEED MOTOR



Open the roll feeder drawer.

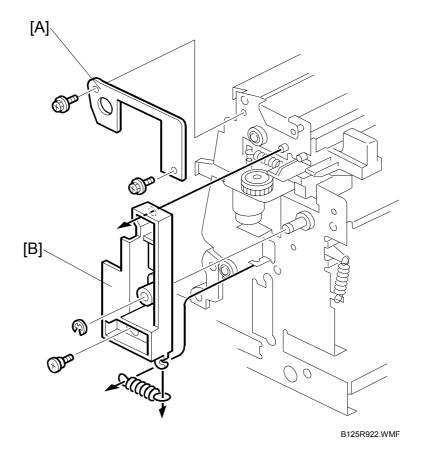
Drawer front cover ( 3.1.11)

[A]: Loosen belt tension bracket.

[B]: Gear (∅ x1) [C]: Roll feeder motor (ଢ଼ x 2, ๗ x 1, ⋪ x 2)

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# 3.6.6 CUTTER: MOTOR, HP SENSORS

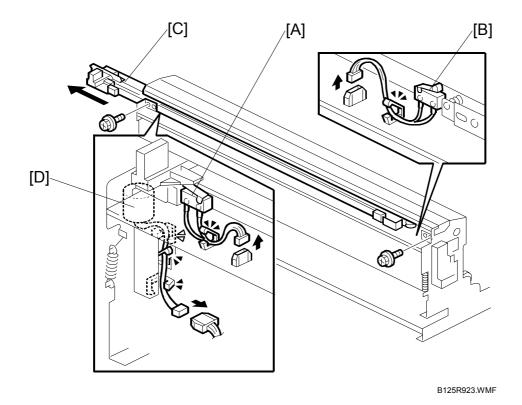


Drawer front cover (**☞** 3.1.11)

[A]: Upper bracket ( \$\hat{F} \times 2 )

[B]: Lower bracket (spring x 1, \$\hat{F} \times 1, \$\hat{C} \times 1 )

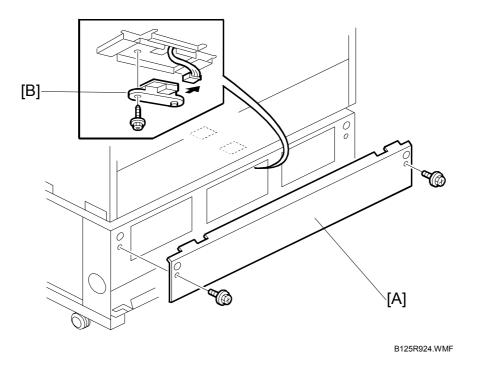
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- [A]: Right cutter HP switch (♠ x 1, ♠ x 1)
  [B]: Left cutter HP switch (♠ x 1, ♠ x 1)
  [C]: Cutter, race, and motor assembly (♠ x 3, ♠ x 2)
  [D]: Cutter motor (♠ x 2)

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# 3.6.7 ROLL PAPER END SENSORS



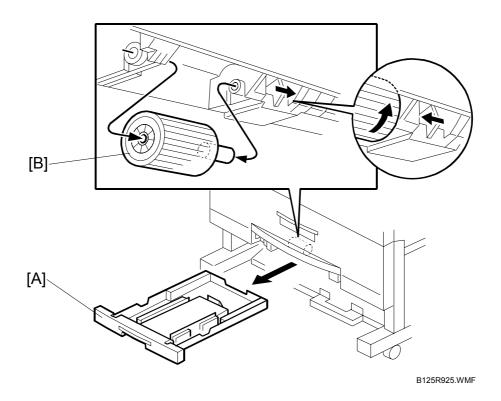
Open the roll feeder drawer.

[A]: Roll feeder back plate (□ x 2)
[B]: Roll end sensors (□ x 1, F x 1 each)

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

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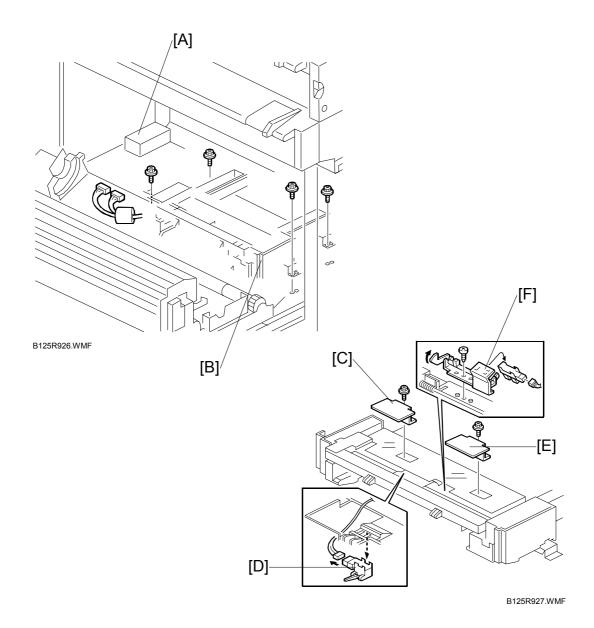
# 3.6.8 CASSETTE FEED ROLLER



[A]: Paper cassette[B]: Cassette feed roller

# Replacement Adjustment

### 3.6.9 CASSETTE RELAY SENSOR, CASSETTE END SENSOR



Open the roll feeder drawer and remove the paper cassette.

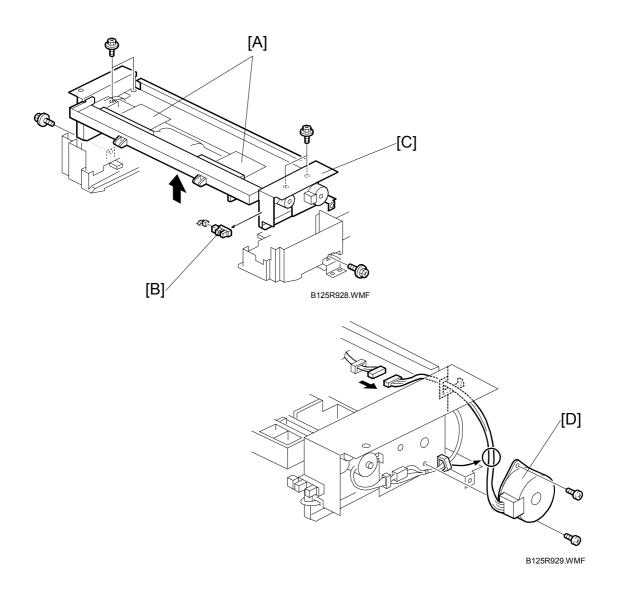
Roll feeder rear plate ( F x 2 Blue)

- [A]: RFDB shield plate ( $\mathcal{F} \times 2$ ).
- [B]: Paper cassette unit (♠ x 4, ♠ x 2, ≯ x 4)

  NOTE: Pull the unit to the rear, then remove it from the front.
- [C]: Relay sensor plate ( \$\hat{x} x 1)
- [D]: Relay sensor ( x 1, pinch release x 2)
- [E]: Cassette end sensor plate ( x 1)
- [F]: Cassette end sensor ( x 1, x x 1, pinch release x 3)

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# 3.6.10 CASSETTE FEED MOTOR, CASSETTE OPEN SENSOR

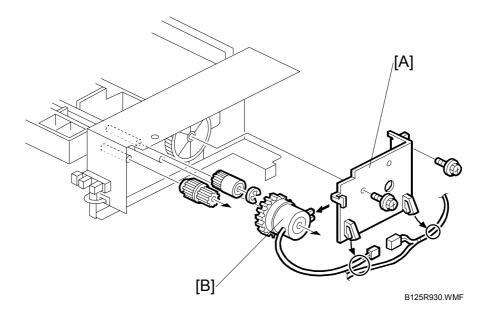


Open the roll feeder drawer and remove the paper cassette unit.

- [A]: Relay sensor plate, cassette end sensor plate ( $\hat{\beta}$  x 1 each)
- [B]: Cassette open sensor (□ x 1, pinch release x 2)
- [C]: Paper cassette feed assembly (F x 6)
- [D]: Paper cassette motor ( x 2, x 1, x 2)

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# 3.6.11 CASSETTE FEED CLUTCH



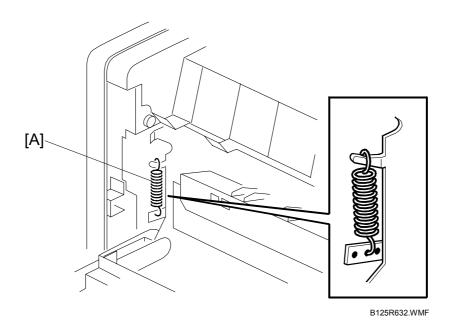
Cassette feed motor ( 3.6.10)

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

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#### 3.7 FUSING SECTION

#### 3.7.1 PRESSURE SPRING ADJUSTMENT



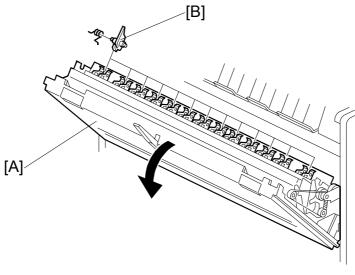
- 1. Open the exit cover and exit unit together.
- 2. To adjust the pressure, disconnect the spring [A] and connect it to a different hole.

Center; Standard tension, standard pressure.

**Left;** Less tension, less pressure. Set to this position to decrease wrinkling **Right;** 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

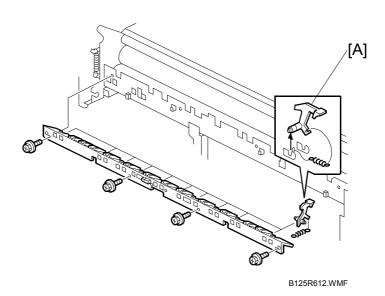


B125R610.WMF

[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 ( 3 x 2) ( 3.1.3)

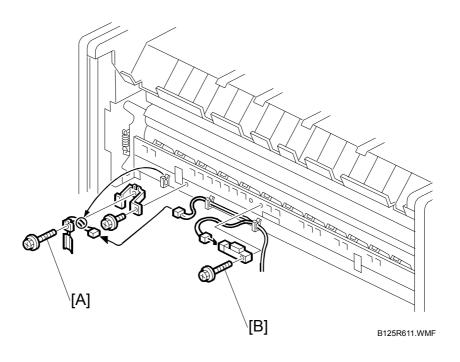
Paper exit unit and exit cover ( 3.1.4)

[A]: Pressure roller strippers (spring x 1)

**NOTE:** There are 11 pressure roller strippers. To remove them, push back and pull out.

**FUSING SECTION** 13 February 2004

# 3.7.4 PRESSURE ROLLER THERMISTOR, FUSING EXIT SENSOR



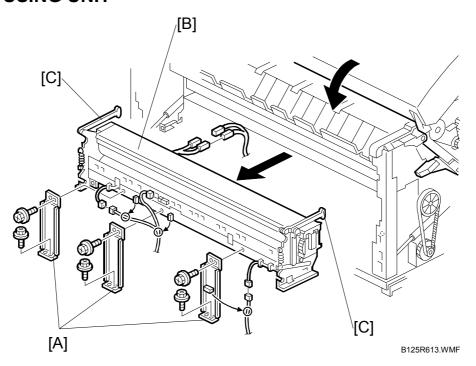
Rear cover ( \$\beta\$ x 2) ( \$\ldots\$ 3.1.3)

Paper exit unit ( 3.1.4)

[A]: Pressure roller thermistor ( $\mathbb{Z} \times 1$ ,  $\mathbb{Z} \times 2$ ) [B]: Fusing exit sensor ( $\mathbb{Z} \times 1$ ,  $\mathbb{Z} \times 1$ )

# Replacement Adjustment

#### 3.7.5 FUSING UNIT



#### **ACAUTION**

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.

#### **A**CAUTION

The fusing unit is heavy. Pull it out slowly.

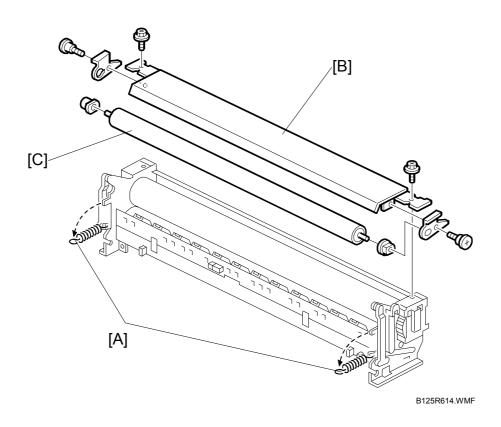
#### Reinstallation

- 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  $\rightarrow$  Blue, White  $\rightarrow$  White North America: Red  $\rightarrow$  Red, White  $\rightarrow$  White

FUSING SECTION 13 February 2004

### 3.7.6 FUSING CLEANING ROLLER



Fusing unit (**•** 3.7.5)

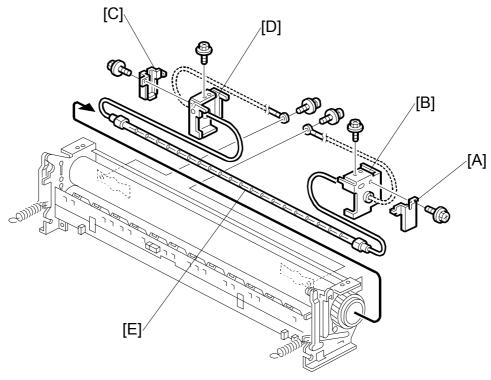
[A]: Springs (x2)

[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



Replacement Adjustment

B125R615.WMF

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.

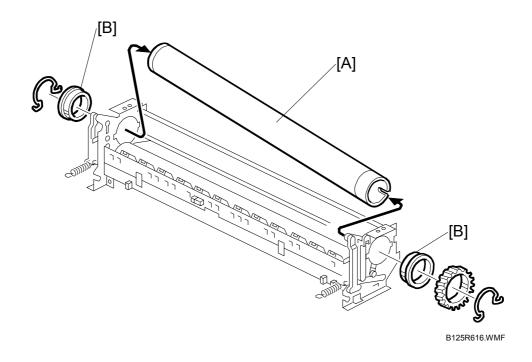
[E]: Fusing lamp ( x 1, metal harness clamps x 2)

#### 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].

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# 3.7.8 HOT ROLLER



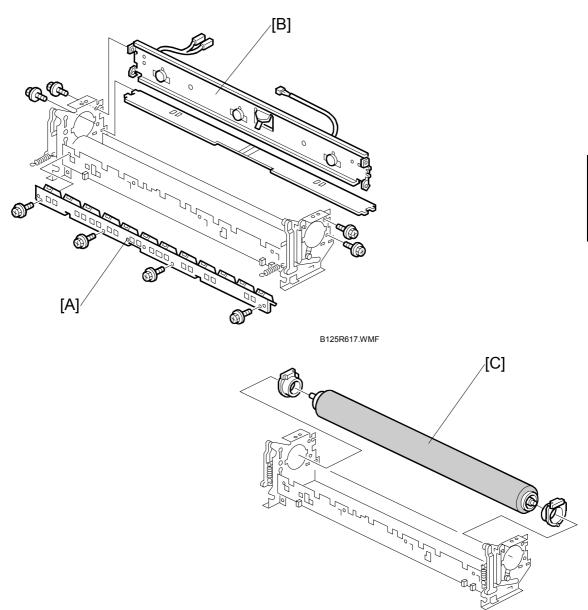
Fusing lamp ( **3**.7.7)

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

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

B125R618.WMF

#### 3.7.9 PRESSURE ROLLER

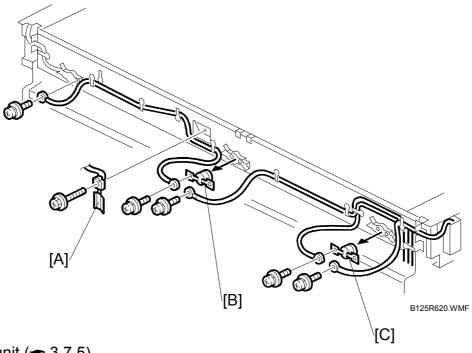


Hot roller ( 3.7.8)

[A]: Pressure roller plate ( x 4)
[B]: Thermistor/Thermostat plate ( x 4)
[C]: Pressure roller (sleeve bearings x 2)

FUSING SECTION 13 February 2004

# 3.7.10 HOT ROLLER THERMISTOR, THERMOSTATS



Fusing unit ( **3**.7.5)

[A]: Hot roller thermistor (x1) ( $\hat{\mathscr{F}}$  x 1)

[B]: Thermostat 2 – 199°C ( M3x6 x 2)

[C]: Thermostat 1 – 200°C ( M3x6 x 2)

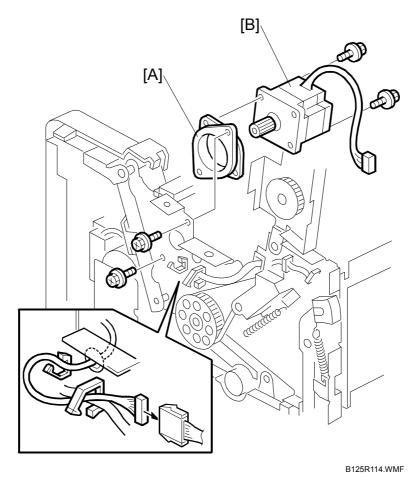
#### Reinstallation

• 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.

13 February 2004 **MOTORS** 

# 3.8 MOTORS

# 3.8.1 SCANNER MOTOR



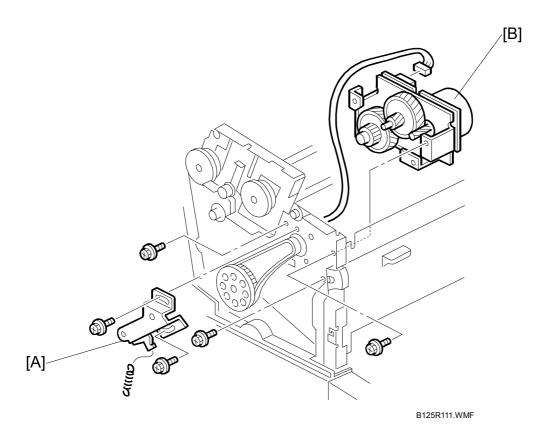
Original feed unit ( 3.1.6)

Lift and lock the scanning unit ( 3.1.7)

[A]: Scanner motor assembly (□ x 2, □ x 1, ୬ x 2)
[B]: Scanner motor (□ x 2)

**MOTORS** 13 February 2004

### 3.8.2 DRUM MOTOR



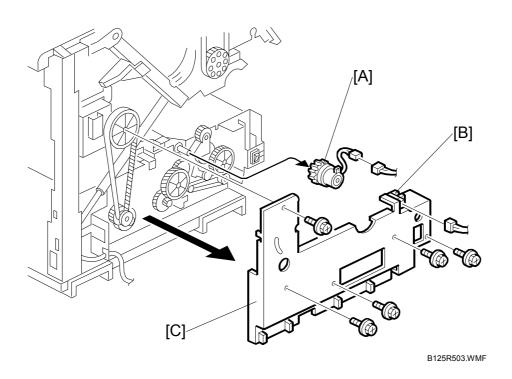
Original feed unit ( 3.1.6)

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)

13 February 2004 **MOTORS** 

# 3.8.3 FUSING MOTOR, MAIN MOTOR

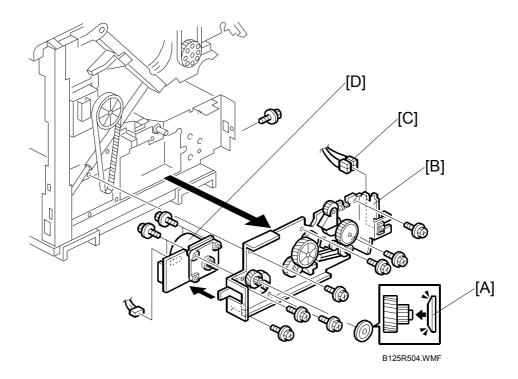


Open the upper unit.

Side covers (•3.1.2)

[A]: Registration clutch (吳 x 1, 眞 x 1) [B]: Upper unit sensor (眞 x 1, 吳 x 4) [C]: Gear cover plate (吳 x 4, 永 x 5)

MOTORS 13 February 2004

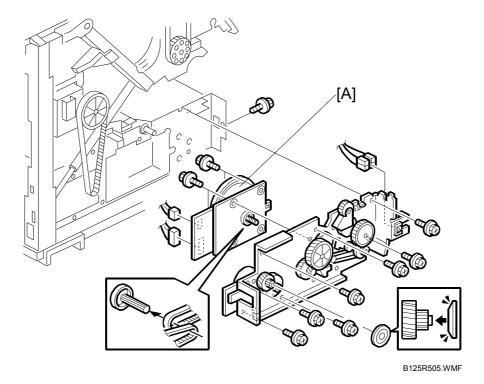


- [A]: Timing belt and cap
- [B]: Motor mount plate (₱ x 8)
- [C]: Main power switch connector ( x 1, w x 1).
- [D]: Fusing motor ( x 1, 8 x 4)

#### 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, F x 4)

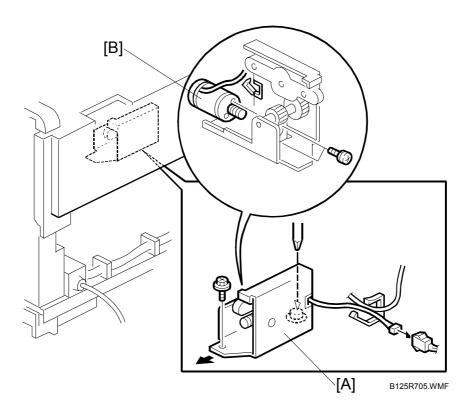
#### Reinstallation

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.

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# 3.8.4 USED TONER BOTTLE MOTOR



PSU ( 3.9.2)

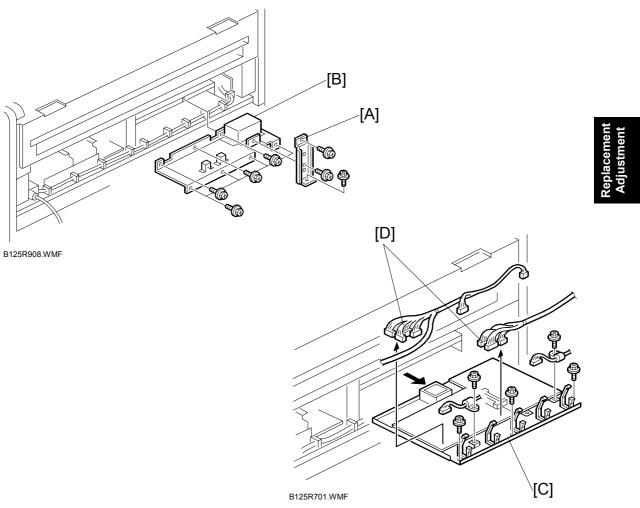
Toner collection bottle ( 3.4.6)

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



**BOARDS** 

Rear cover (**-**3.1.3)

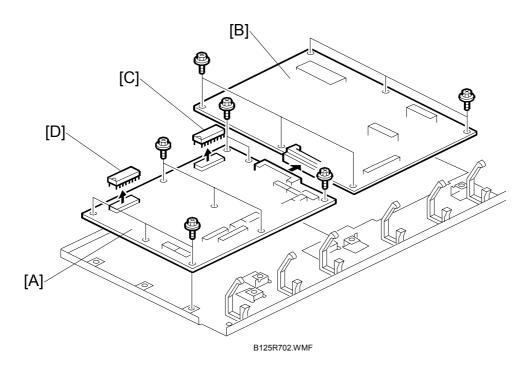
Paper exit unit (•3.1.4)

[A]: Brace ( x 3)

[B]: Board shield plate (ℰ x 7)
[C]: MCU/IPU board tray (ℰ x 3, ৯ x all, 🖆 x 15 (MCU), 🖆 x 5 (IPU))
[D]: Lift the harnesses to remove the MCU/IPU tray.

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**BOARDS** 13 February 2004



[A]: MCU Board ( \$\hat{\neta} \text{ x 9}) [B]: IPU Board ( \$\hat{\neta} \text{ x 6})

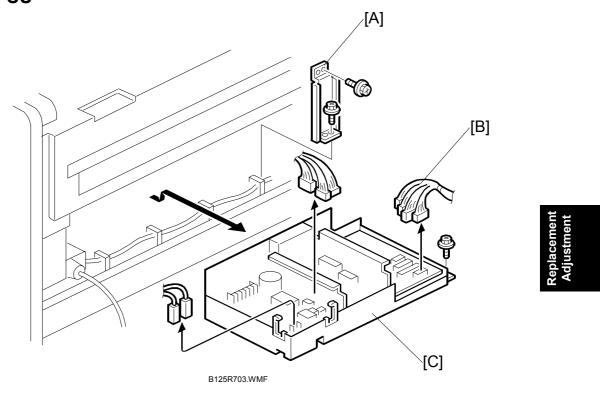
[C]: NVRAM(Data)

[D]: NVRAM (Counter)

(•3.9.3): Install the NVRAMs from the old MCU board on the new MCU board.

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### 3.9.2 PSU



Rear cover ( **3.1.3**)

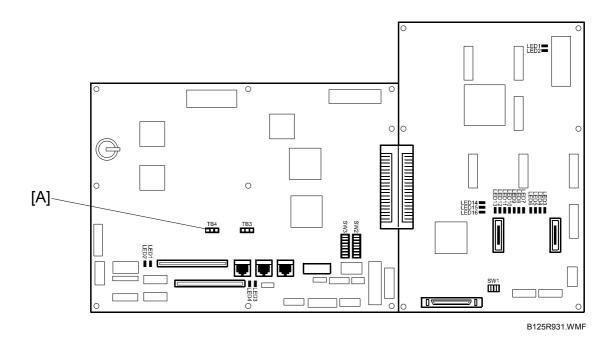
Paper exit unit ( 3.1.4)

[A]: Braces (x2) (多 x 2 each) [B]: PSU connectors ((分 all, 即 x 9) [C]: PSU tray (多 x 1)

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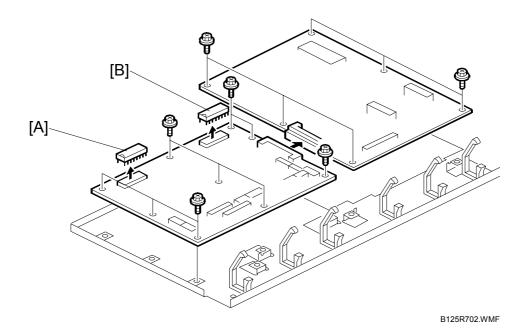
#### **3.9.3 NVRAM**

#### **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. ( 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.

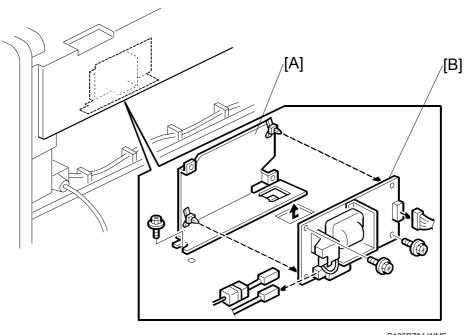
#### **NVRAM** Download

**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. Make sure that the IC card with the downloaded NVRAM data is in the SCU socket.
- 3. Switch the main power switch on.
- 4. Go into SP mode and do SP5825 (Download NVRAM Data).
- 5. Push the key on the LCD to start the download.
- 6. When the download is completed, follow the instructions on the LCD to complete the procedure.
- 7. Switch the main power switch off.
- 8. Remove the jumper from TB4 2-3 and move it back to TB4 1-2.
- 9. Switch the main power switch on.
- 10. Do SP 5811 (Machine Serial Number) to set the serial number.

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# 3.9.4 T&S POWER PACK



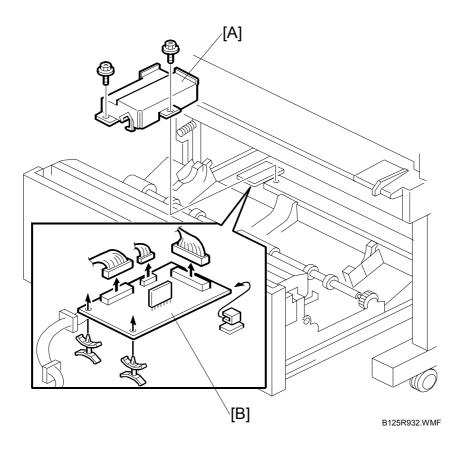
B125R704.WMF

PSU tray ( 3.9.2)

[A]: T&S power pack mounting plate ( $\mbox{$\stackrel{\frown}{\cong}$}$  x 2,  $\mbox{$\stackrel{\frown}{\cong}$}$  x 3,  $\mbox{$\stackrel{\frown}{\mathscr{E}}$}$  x 1) [B]: T&S power pack ( $\mbox{$\stackrel{\frown}{\mathscr{E}}$}$  x 2)

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# 3.9.5 RFDB (ROLL FEEDER DRIVE BOARD)



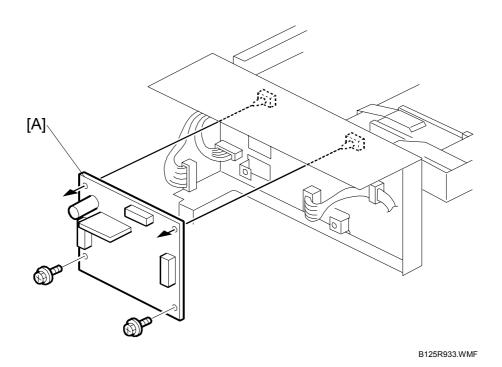
Open the roll feeder drawer.

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

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

BOARDS 13 February 2004

# 3.9.6 SFDB (SHEET FEED DRIVE BOARD)

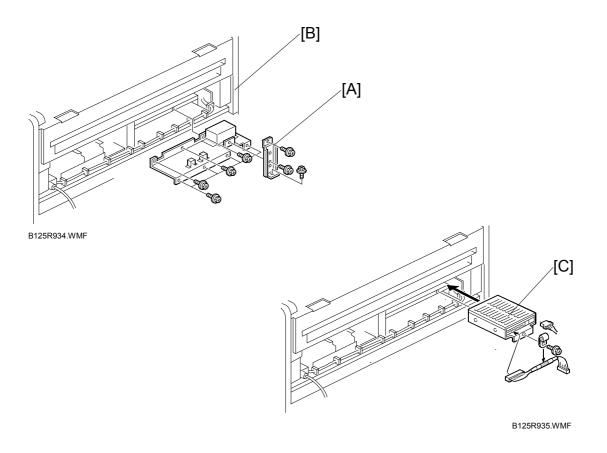


Paper cassette unit ( 3.6.9)

[A]: SFDB ( x 2, F x 2, standoffs x 2)

# **3.10 OTHER**

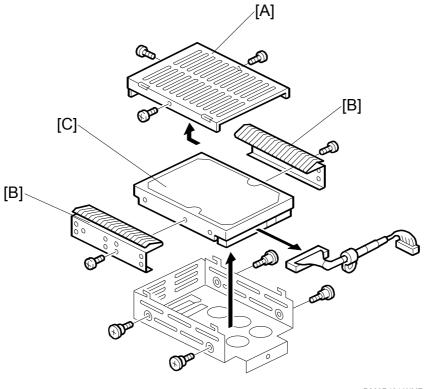
#### 3.10.1 HDD REPLACEMENT



Rear cover ( $\mathscr{F}$  x 2) Interface cover plate (if installed) ( $\mathscr{F}$  x 1) Right vertical brace ( $\mathscr{F}$  x 2)

[A]: Ground plate [A] ( $\mathscr{F}$  x 3) [B]: PCB shield cover [B] ( $\mathscr{F}$  x 7) [C]: HDD unit ( $\mathscr{F}$  x 2,  $\mathscr{F}$  x 1)

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B663R101.WMF

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

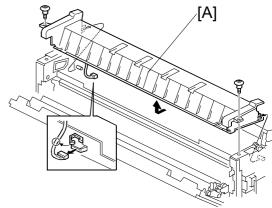
#### Reinstallation

- 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.

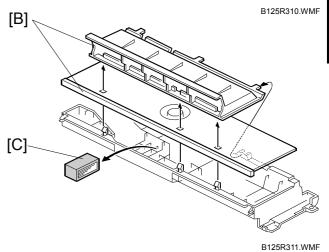
13 February 2004 OTHER

# 3.10.2 COOLING FAN, OZONE FILTER

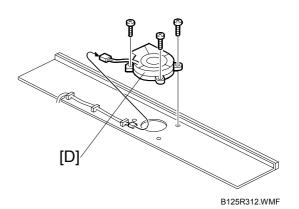
[A]: Rear top cover (♀ x 1, ♀ x1, ♠ x2)



[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 28th 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 184. 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

- 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

- 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 |

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         |

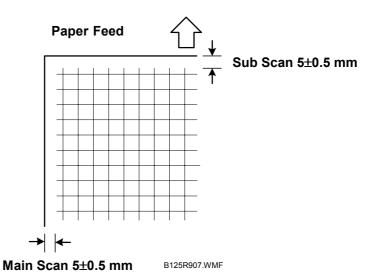
# Step 7: Erase Margins

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



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 | 0       | Scanner Erase Margin – Leading Edge  |
| SP4012 002 |         | 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 |

#### 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            |
| Α    | Sideways (Eng. 11")   |
| В    | Sideways (Eng. 17")   |
| D    | Lengthways (Eng. 34") |
| Е    | 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.

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              |

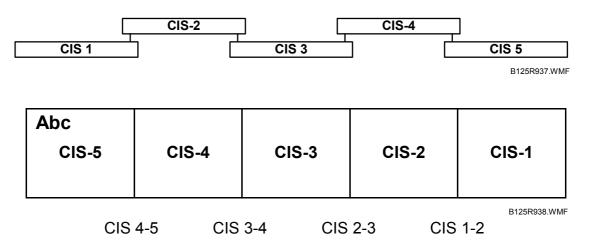


#### 3.11.2 CIS

#### To Print the CIS Adjustment Pattern

 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. Set the roll as the paper feed source.
- 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  $(\mathbf{Z}')$  key to go back to the SP mode.
- 9. Use SP 4973 003 and push #.
- 10. Push (1), then push the key below "Set".
- 11. Push the key below "Exit" three times to go out from the SP mode. The pattern prints.
- 12. In copy mode, copy the pattern you made at Step 7.



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.

13. After you complete the CIS adjustment, set SP4973 003 to "0".

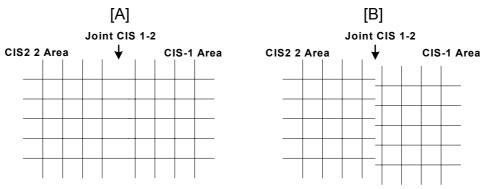
#### To Adjust the Image at the CIS Joints

- 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.



D125D005 WME

- 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.
- 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  $(\mathbf{Z}')$  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.

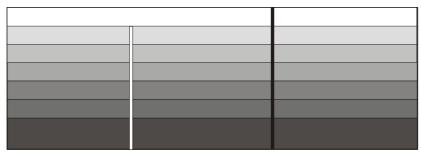


**Normal Pattern** 

B125R561.WMF

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** 

B125R562.WMF

3. If the left line is  $\underline{\text{white}},$  adjust SP2965 001 to a smaller value.

-or-

If the left line is black, adjust SP2965 001 to a larger value.

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

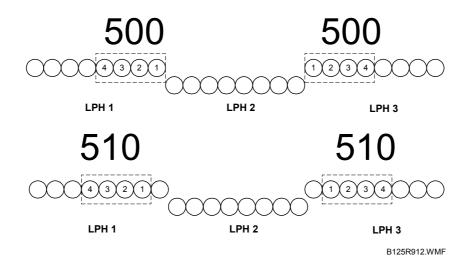
-or-

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.





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

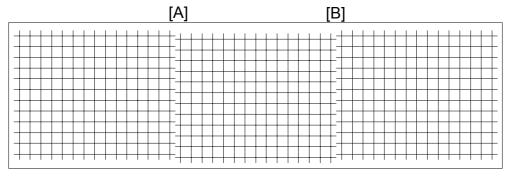
If you change the 2nd digit of the value for LPH 1-2 (500 to  $5\underline{1}0$ ) with SP2965 001, this moves the four LEDs by one position to the left.

If you change the 2nd digit of the value for LPH 2-3 (500 to  $5\underline{1}0$ ) 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 512, 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



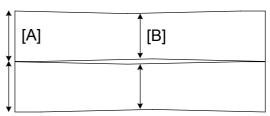
B125R986.WMF

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



B125R939.WMF

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.

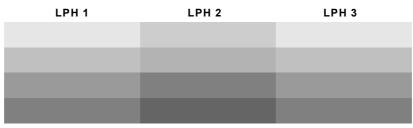
For users who use paper that is less than 420 mm wide, do the sub scan adjustments for the LPH joints with SP2965 006, 007 after you input the values of SP 2965 003 and 004 from the decal.

#### 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 (5)(1). Then push the key below "Set".
- 5. Push the Interrupt  $(\mathbf{Z}')$  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.



B125R906.WMF

#### 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  |
|-------|--|--|
| А     | 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".    |
| В     | 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".                         |
| С     | 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.

# 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. | <ul> <li>Replace the charge corona unit.</li> <li>Replace the high voltage cable.</li> <li>Clean or replace the corona wire.</li> <li>Check the CGB power pack fuse, connection.</li> <li>Replace the CGB power pack.</li> </ul> |

| 305   | D   | Charge Corona Wire Cleaner Er   | ror   |
|-------|---|---|---|
| 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. | <ul> <li>Switch the main power switch off/on.</li> <li>Check the wire cleaner unit for a blockage or broken parts.</li> </ul> |
|       | Temporary Solution:                                       |   |   |
|       | Use SP2804 to disable the charge-corona cleaner function. |   |   |



| ıſ | 330 | В   | Writing ASIC Signal Error                        |   |
|----|-----|-----|--|---|
|    |     |     | At power on, the stamp function could not start. | <ul> <li>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.</li> <li>Check the stamp board connections.</li> <li>Replace the defective stamp board.</li> </ul> |
|    |     | Ten | nporary 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. | <ul> <li>Check the connections between the HDD and hard disk controller.</li> <li>Check the HDD power connector.</li> <li>Replace the HDD.</li> <li>Replace the MCU.</li> </ul> |
|       |   |  | DD access. In this condition, the customer eplacement HDD becomes available.  |

| 361   | D | Hard Disk Read Errors   |  |
|-------|---|---|--|
| 361-1 |   | Bad Sectors Max.: HDD1  | Do SP4960-1 (HDD Media   |
| 361-3 |   | Verify Error: HDD1  | Check).  |
| 361-5 |   | Formatting Error: HDD1  | Do SP4906 003 to format the  |
| 361-7 |   | Device Error: HDD1  | HDD.   |
| 361-9 |   | Device Error: HDD1  | <ul> <li>If formatting the HDD fails,<br/>replace the HDD.</li> </ul>  |
|       |   | <ul><li>MSU (Memory Super-charger Un format the hard disk.</li><li>Bad sectors were made on the hard sectors were made on the hard sectors.</li></ul> | /RAM during operation. These bad om or write to the hard disk. ard disk during the hard disk check too many bad sector errors for the it) to control. Do SP4906 003 to |

| 362    | D | IMAC (Image Memory Acces   | ss 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                   |
| 362-4  |   | Operation Mode Match Error   | the problem, replace the IPU board.                    |
| 362-16 |   | Function Failure   |  |
| 362-51 |   | DMA Send Error   | Update all software modules if this problem continues. |
|        |   | <b>Note</b> : 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. |  |

| 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). | <ul> <li>Check the MCU connectors.</li> <li>Check the harness on the MCU for damage.</li> <li>Replace the high voltage cable.</li> <li>Replace the CGB power pack.</li> </ul> |

# 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<br>V when the ID sensor<br>was adjusted<br>automatically in the SP<br>mode. | <ul> <li>Clean the ID sensor.</li> <li>Check the ID sensor harness and connector.</li> <li>Replace the ID sensor.</li> <li>Replace the MCU.</li> <li>Replace the development unit.</li> <li>Replace the CGB power pack.</li> </ul> |

| 401 | D | ID Sensor Vsg Error                                    |  |
|-----|---|--|--|
|     |   | The Vsg level was detected lower than 2.5 V two times. | <ul> <li>Clean the ID sensor.</li> <li>Check the ID sensor harness and connector.</li> <li>Replace the ID sensor.</li> <li>Replace the MCU.</li> <li>Replace the development unit.</li> <li>Replace the CGB power pack.</li> </ul> |

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

| 440 | D | Transfer Output Error   |  |  |
|-----|---|---|--|--|
|     |   | A high voltage feedback voltage of less than 1.0 V was detected for 200 ms. | <ul><li>Check and replace the high voltage cable if necessary.</li><li>Replace the CGB power pack.</li></ul> |  |

| 460- | -1   | D | DC Separation Corona Output Error   |   |
|------|------|---|---|---|
| 4    | 60-1 |   | 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%. | <ul> <li>Check and replace the high voltage cable if necessary.</li> <li>Replace the CGB power pack.</li> </ul> |

# 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. | <ul> <li>Check the connections of the HP sensors on the left and right side.</li> <li>Replace the HP sensors.</li> </ul> |  |
| =   |   | feed tray as the default paper-fee   | aired, the customer can use the manual ed source:  1 General Features> 17 Feed Start                                     |  |

| 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. | <ul> <li>Check that the motor drive path is not overloaded.</li> <li>Replace the motor harness.</li> <li>Replace the motor.</li> </ul> |  |

| 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. | <ul> <li>Check that the motor drive path is not overloaded.</li> <li>Replace the motor.</li> </ul> |  |

| 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. | <ul> <li>Check that the motor drive path is not overloaded.</li> <li>Replace the motor.</li> </ul> |

| 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. | <ul> <li>Check that the motor is not overloaded.</li> <li>Replace the motor.</li> </ul> |  |

| 541   | Α | Fusing Thermistor Errors   |   |
|-------|---|--|---|
| 541-1 |   | Fusing Thermistor Error 1  |   |
|       |   | The measured temperature of the hot roller stayed below 7°C (44.6°F) for 60 seconds after the machine was switched on.  -or-           | <ul> <li>Make sure that the thermistor is set correctly.</li> <li>Make sure that the thermistor cable is connected.</li> <li>Replace the thermistor.</li> </ul> |
|       |   | During machine operation<br>the hot roller temperature<br>fell to and stayed at 7°C<br>(44.6°F) for 40 seconds.                        |   |
| 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.   |

#### 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 does not touch 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.)

# 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.

| 544   | Α | 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. | <ul> <li>Correct the position of the thermistor on the hot roller.</li> <li>Replace the fusing lamp harness.</li> <li>Replace the MCU.</li> </ul> |  |

| 546    | Α | 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.                          | <ul> <li>Check the thermistor connection.</li> <li>Check the fusing lamp connections.</li> <li>Replace the MCU.</li> </ul> |
| 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 puls   |  |  |
|       |   | control the supply of power. It auto  | omatically 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. | <ul> <li>Check that the frequency of the power supply to the machine is correct.</li> <li>Replace the PSU.</li> <li>Replace the MCU</li> </ul> |  |
| 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 | Α | Fusing Lamps Disconnected  |  |  |
|-----|---|--|--|--|
|     |   | The fusing temperature did not get to 100°C within 2 min. after the machine was switched on. | <ul> <li>Check the fusing lamp harness connections.</li> <li>Replace the fusing lamps.</li> <li>Replace the AC drive board.</li> </ul> |  |

| 549   | Α | 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.  | <ul> <li>Check the thermistor connection.</li> <li>Replace the thermistor.</li> <li>Replace the MCU.</li> </ul> |
| 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. | <ul><li>Update the software.</li><li>Replace the MCU.</li></ul> |  |

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

| 630 | С | 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                               | connectors at the counter device, the           |  |
|     |   | ms after one frame was sent,                             | relay board, and the controller.                |  |
|     |   | even after the same data was                             | <ul> <li>Replace the counter device.</li> </ul> |  |
|     |   | sent 3 times.  | <ul> <li>Replace the MCU.</li> </ul>            |  |

| 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. | <ul> <li>Check the serial line harnesses and connectors at the counter device, the relay board, and the controller.</li> <li>Replace the counter device.</li> <li>Replace the MCU.</li> </ul> |

| 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. | <ul> <li>Check the serial line harnesses and connectors at the counter device, the relay board, and the controller.</li> <li>Replace the counter device.</li> <li>Replace the MCU.</li> </ul> |  |

| 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. | <ul> <li>Check the serial line harnesses and connectors at the counter device, the relay board, and the controller.</li> <li>Replace the counter device.</li> <li>Replace the MCU.</li> </ul> |  |

# 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. | <ul> <li>Check the mechanical<br/>counter connection.</li> <li>Replace the mechanical<br/>counter.</li> </ul> |  |

| 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 <u>5</u> <u>sec</u> . after the ECU (Engine Control Unit) chip on the main board sent read/write commands to the HDC (Hard Disk Controller).  | <ul> <li>Check the HDD Connectors.</li> <li>Check the HDD and make<br/>sure that it is not loose.</li> <li>Update the MCU firmware.</li> <li>Replace the HDD.</li> </ul> |
| 981-3 |   | DMA Transfer Answer Wait (HDD1)   |  |
|       |   | No signal from the hard disk in the <u>15</u> 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 <u>60</u> <u>sec</u> . after the ECU (Engine Control Unit) chip on the main board sent read/write commands to the HDC (Hard Disk Controller). |  |



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

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

# Troubleshooting

#### 4.3 JAM CODE TABLES

When a copier jam occurs:

- The jam indicator lights (¾).
- 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
- A: Fusing unit
- B: Copy paper registration
- C: Roll feed (from optional roll feeder)
- D: 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<br>Code | Meaning                            | Location | Comment   |
|------------|------------------------------------|----------|---|
| 1          | Roll End Sensor (EXP)              | В        | A sheet of paper is in the manual feed table at power on.   |
| 2          | Registration Sensor                | В        | A sheet of paper is at the registration sensor in the manual paper feed path at power on.                       |
| 3          | Fusing Exit Sensor                 | Α        | A sheet of paper is at the fusing exit sensor (after the fusing unit) at power on.                              |
| 40         | Key Counter Jam                    | В        | The key counter was disconnected during a copy job.   |
| 51         | Paper Removal: Manual Feed         | В        | The paper was pulled out of the manual feed tray during a copy job.   |
| 53         | Manual Paper Feed with RF Selected | В        | 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                 | В        | The paper length is 650 mm longer than the maximum permitted for the manual feed tray or roll feeder.           |
| 60         | Registration Sensor<br>OFF         | В        | The leading edge fed 0.5 sec. before the time permitted for 30 mm of feed.                                      |
| 61         | Registration Sensor ON             | В        | The leading edge fed 0.5 sec. after the time permitted for 30 mm of feed.                                       |

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| PJ<br>Code | Meaning                               | Location | Comment  |
|------------|---------------------------------------|----------|--|
| 62         | Registration Sensor<br>OFF            | В        | The trailing edge fed 0.5 sec. after the time permitted for 30 mm of feed.   |
| 70         | Fusing Exit Sensor OFF                | Α        | The leading edge fed 0.83 sec. before the time permitted for 50 mm of feed.  |
| 71         | Fusing Exit Sensor ON                 | Α        | The leading edge fed 0.83 sec. after the time permitted for 50 mm of feed.   |
| 72         | Fusing Exit Sensor OFF                | Α        | The trailing edge fed 1 sec. after the time permitted for 60 mm of feed.   |
| 81         | RF Exit Sensor ON                     | С        | The leading edge fed 0.5 sec. before the time permitted for 30 mm of feed.   |
| 86         | Relay Sensor ON                       | D        | The leading edge fed 0.5 sec. after the time permitted for 30 mm of feed.  |
| 87         | Relay Sensor OFF                      | D        | The trailing edge fed 0.5 sec. after the time permitted for 30 mm of feed.   |
| 88         | Cassette Jam Sensor<br>OFF            | D        | 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         | С        | After the roll paper RF exit sensor came ON, the roll feeder drawer was opened.  |
| 92         | Cassette Pulled Out<br>During Copying | С        | The paper cassette was pulled out of the roll feeder while the paper cassette motor was operating.                             |
| 98         | Roll Paper Too Short                  | С        | 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                   | С        | 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") | Р        | The original set sensor (A4: 81/2, 9") is ON.   |
| DJ02 | Original Registration<br>Sensor    | Р        | The original registration sensor is ON.   |
| DJ03 | A0 (34", 36") Sensor               | Р        | The A0 (34", 36") original size sensor is ON.   |
| DJ04 | A1 (22", 24") Sensor               | Р        | The A1 (22", 24") original size sensor is ON.   |
| DJ05 | A2 (17", 18") Sensor               | Р        | The A2 (17", 18") original size sensor is ON.   |
| DJ06 | A3 (11", 12") Sensor               | Р        | The A3 (11", 12") original size sensor is ON.   |
| DJ07 | Original Exit Sensor               | Р        | The original exit sensor is ON.   |
| DJ08 | 30"/36" Sensor                     | Р        | The 30"/36" sensor is ON.   |
| DJ15 | Original Scan Unit Open            | Р        | The original scanner unit on top of the machine is open.  |
| DJ16 | Upper Unit Exit Cover<br>Open      | Р        | The upper unit is not closed, or the release is not locked.   |
| DJ17 | Original Skewed                    | Р        | 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              | Р        | The original registration sensor came on before the original started to feed.   |
| DJ21 | Registration Sensor 2              | Р        | 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              | Р        | 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             | Р        | The original exit sensor was ON when the machine started to scan the leading edge.  |

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| Code | Meaning                  | Location | Comments   |
|------|--------------------------|----------|--|
| DJ26 | Original Exit Sensor 2   | Р        | 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   | Р        | The registration sensor detected the trailing edge and went OFF. But the original exit sensor stayed ON.   |
| DJ30 | Next Original Time Limit | Р        | 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  | Р        | The length of the original was more than the maximum length.   |
| DJ32 | Original Removed         | Р        | 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            | Р        | 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).  |

# Froubleshooting

# 4.4 COVER OPEN

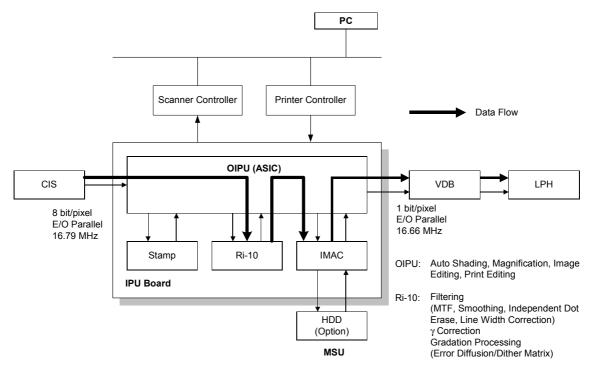
| Location                     | Shut Off Lines  | Display    |
|------------------------------|---|------------|
| Scanner Switch               | Scanner motor (24 dc line)  |            |
| Upper Unit Switch            | Toner supply clutch, paper registration clutch, drum motor, main motor, CGB power 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<br>Switch | Toner supply clutch, paper registration clutch, drum motor, main motor, CGB power pack (24 V dc line)   | Cover Open |
| 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)  |            |

# 4.5 BLOWN FUSE TABLE

| РСВ  | Fuse No.  | Specific         | ation        | Symptom   |
|------|-----------|------------------|--------------|---|
| PCB  | i use No. | 120V 220 – 240 V |              | Symptom   |
|      | FU001     | 15 A/125 V ac    | T6.3 A/250 V | No power to fusing lamp                                   |
|      | FU002     | T2 A/2           | 50 V         | No power to dehumidifiers                                 |
| PSU  | FU101     | T10 A/250 V ac   | T6.3 A/250 V | No power to dc lines                                      |
| F30  | 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    |

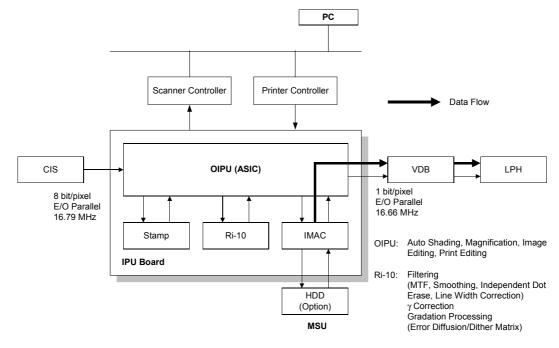
# 4.6 IMAGE DATA PROCESSING FLOW CHART

#### 4.6.1 DATA FLOW IN 1-TO-1 COPY MODE



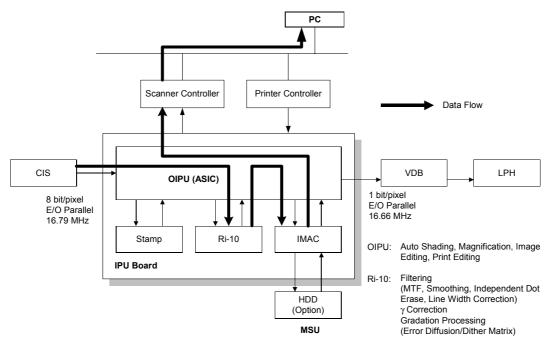
B125T530.WMF

#### 4.6.2 DATA FLOW IN REPEAT COPY MODE



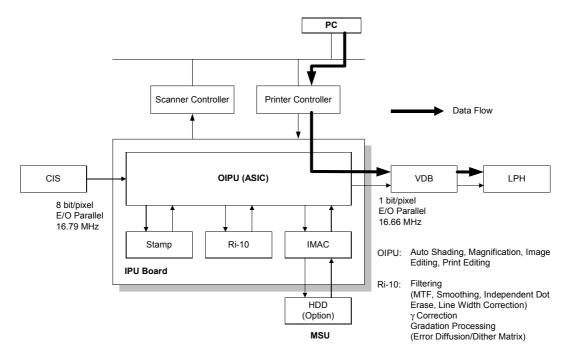
B125T531.WMF

#### 4.6.3 DATA FLOW IN SCANNING MODE



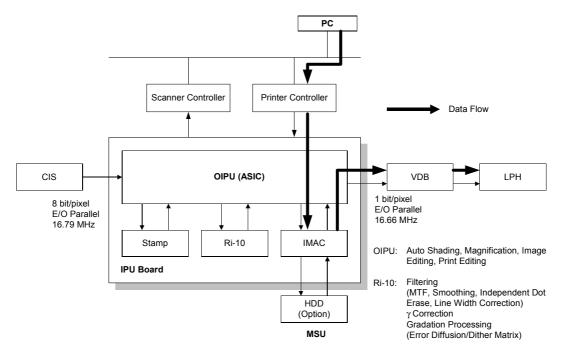
B125T532.WMF

# 4.6.4 DATA FLOW IN PRINTING MODE (STANDARD SIZES)



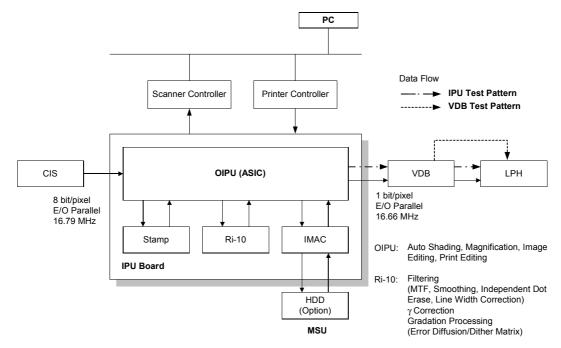
B125T533.WMF

# 4.6.5 DATA FLOW IN PRINTING MODE (LONG)



B125T534.WMF

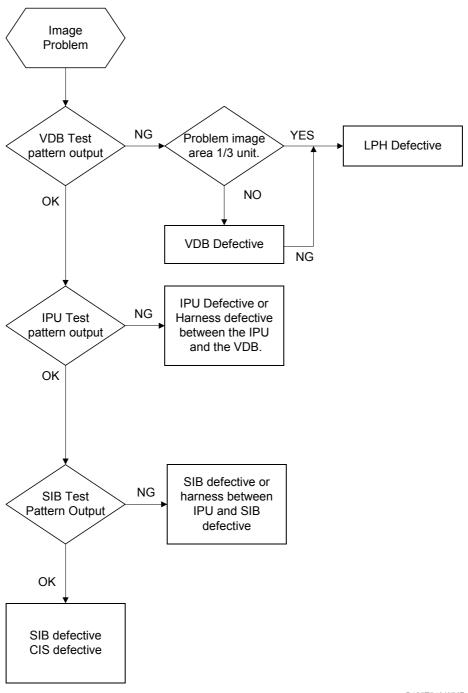
# 4.6.6 DATA FLOW IN TEST PATTERN PRINTING



B125T535.WMF

# 4.6.7 IMAGE PROBLEM TROUBLESHOOTING

## 4.6.8 FLOW CHART



B125T540.WMF

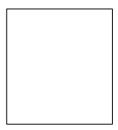
NOTE: For the VDB/IPU test patterns, use SP2942.

#### 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



B125T541.WMF

# 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



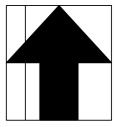
B125T542.WMF

B125T543.WMF

#### 4. Vertical black lines

Possible causes:

- 1) Dirty exposure glass
- 2) CIS defective



B125T544.WMF

#### 5. Vertical white lines

Possible causes:

- 1) Dirty exposure glass
- 2) Dirt or scratches on the white plate above the CIS
- 3) CIS defective



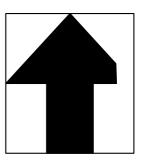
B125T545.WMF

# Troubleshooting

# 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



B125T546.WMF

# 7. White lines every 1mm pitch in halftone areas

Possible causes:

CIS defective



B125T547.WMF

# 8. Bands/lines every 8mm pitch in halftone areas

Possible causes:

LPH defective



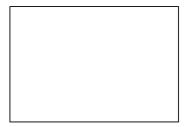
B125T548.WMF

## **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

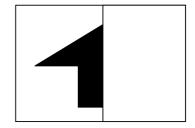


B125T549.WMF

# 2. Band with no image-width 1/3 of image

Possible causes:

- 1) Connection problem between VDB and LPH
- 2) LPH head defective

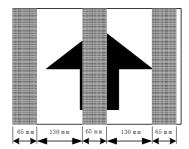


B125T550.WMF

#### 3. Alternating black bands of 65 mm/130 mm

Possible causes:

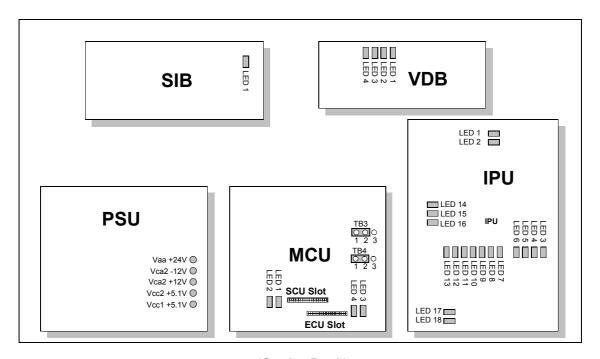
Ri-10 module on the IPU defective



B125T551.WMF

#### **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)

B125T552.WMF

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 SP5823 and SP5824.

# **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           | 0       | Circuit connection, machine independent or terminated. |
| 2-3 Pin | Terminal (120 $\Omega$ ) Disabled | Х       | Circuit connection, main machine relay.                |

# **TB4: IC Card Setting**

| Pin No. | Definition   | Initial | Comment   |
|---------|--------------|---------|---|
| 1-2 Pin | SWP Enabled  | 0       | This is the normal operation setting.   |
| 2-3 Pin | SWP Disabled | Х       | 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. |

#### **PSU LEDs**

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

# 5. SERVICE TABLES

## 5.1 USING THE SP MODE

#### 5.1.1 DIRECT ENTRY

#### Normal Direct Entry

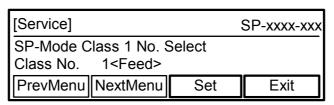
- 1. Go into the SP mode.
  - Push <sup>(⊗)</sup>
  - Push (1)(1)(7).
  - Push and hold for 3 seconds.

The initial SP mode screen is shown.



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2. Push 1 to select the Copy SP group.



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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 ① ① ① or ① ① ②.
- 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 <sup>③</sup>
  - Push (1)(0)(7).
  - 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) (2) (0) (1) (0) (2)

Shows the setting screen for SP2001 002.

① (Copy) ② ① ① ①

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.

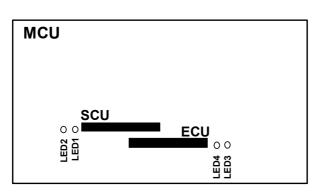
To copy the software into the flash memory on the MCU board, put the cards in the slots as shown in the procedure.

#### 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.
- 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".





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- 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.

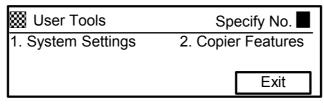
# Service Tables

# 5.3 INITIAL SETTINGS

#### 5.3.1 USER TOOLS

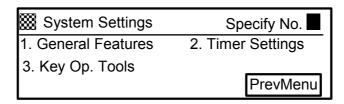
## System Settings

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



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• Push 1 for "System Settings"



B125S905.WMF

- Push the applicable number on the 10-key pad to open the menus for
   General Features,
   Timer Settings, or
   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 © 1 or © 2.
- 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.)

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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 | Fusin              | g Adjustment                | Plain: 3 (center notch)                |
|    |                    | •                           | Translucent: 2                         |
|    |                    |                             | Film: 3 (center notch)                 |
|    |                    |                             | Note: Please refer to the "Fusing Mode |
|    |                    |                             | Selection Tables" below.               |
| 03 |                    | Size Detect                 | A Series/Architecture                  |
| 04 | Tray               | Paper Size                  |  |
|    |                    | Metric                      | Inch                                   |
|    |                    | ss Tray: Under 420 mm Width | Bypass Tray: Under 17" Width           |
|    |                    | r Roll 1: A Series 841 mm   | Paper Roll 1: Engineering 34"          |
|    |                    | r Roll 2: A Series 420 mm   | Paper Roll 2: Engineering 18"          |
|    | Cut P              | 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 |                    | Edge Hold                   | Off                                    |
| 07 |                    | ut Tray                     | Lower                                  |
| 80 |                    | 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                             |

# service Tables

#### **Fusing Mode Selection Tables**

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

User Tools  $\textcircled{\$} \rightarrow$  1. System Settings $\rightarrow$  1. General Features $\rightarrow$  02 Fusing Adjustment

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

## Fusing Mode Selection Table: Europe/Asia

| Paper Type  | Mode                   |                        |                        |                        |                        |
|-------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Тарсттурс   | 1                      | 2                      | 3                      | 4                      | 5                      |
| Plain       | 110 g/m <sup>2</sup>   | 90 g/m <sup>2</sup>    | 70 g/m <sup>2</sup>    | 60 g/m <sup>2</sup>    | 50 g/m <sup>2</sup>    |
| Translucent | 70~90 g/m <sup>2</sup> | 70~80 g/m <sup>2</sup> | 70~80 g/m <sup>2</sup> | 50~70 g/m <sup>2</sup> | 50~60 g/m <sup>2</sup> |
| Film        | 0.07 ~0.095 mm         |                        |                        |                        |                        |

#### **Fusing Mode Selection Table: NA**

| Paper Type  | Mode          |               |               |               |               |
|-------------|---------------|---------------|---------------|---------------|---------------|
| raper Type  | 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

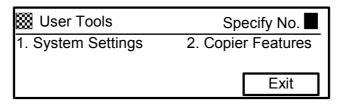
|      | Item              | Default Setting   |
|------|-------------------|-------------------|
| 3 Ke | y Operator Tools  |                   |
| 01   | User Code Manage. | All Off           |
| 02   | Key Operator Code | Off               |
| 03   | AOF (Always On)   | On                |
| 04  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

<sup>\*1</sup> Adjusts auto off for Energy Star and must not be changed unless the customer agrees.

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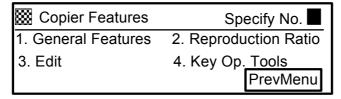
# **Copier Features**

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



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• Push 2 for "Copier Features"



B125S907.WMF

• 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 |        |
| 4-   | 0 18: 1                    | Copy Size: 280 mm    |        |
| 17   | Count Display              | Original             |        |
| 18   | Rotate Copy in APS         | On                   |        |

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# 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 | Form | at Priority | MM/DD/YYYY      |
| 02 | Stam | p Settings  |                 |
|    | 01   | Orientation | Normal          |
|    | 02   | Position    | (upper left)    |
|    | 03   | Size        | 1X              |

<sup>•</sup> 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 |                 |

# Service Tables

# 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. Go into the SP mode. (•5.1)
- 2. Input 2941 001 (IPU Test Pattern Pattern), then push #.
- 3. Input a number from the menu in the table below, then push #.

| 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   |  |
| 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)                                |  |

| Item | Pattern                               |
|------|---------------------------------------|
| 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. Set the original.

**NOTE:** The original must be 914 mm (W) x 297 mm (L) (36" x 11"). A blank sheet cut from a roll is sufficient.

- Set the feed source and other settings, then go into the SP mode. (☞5.1)
   NOTE: If it is necessary to adjust print settings, use the Copy Mode and SP Mode keys to move between the initial screen and the SP mode screen.
- 3. Input 2942 001 (Print Test Pattern Mode) and push (#). Then input either IPU or VDB.
- 4. Input 2942 003 (Print Test Pattern Pattern) and push #.
- 5. Input a number from the menu in the table below, and then push #.

| 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.

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# 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: Not end, 1: End            |
| bit-6   | Roll end sensor 2   | 0: Not end, 1: End            |
| bit-5   | Roll end sensor 1   | 0: Not end, 1: End            |
| bit-4   | Relay sensor        | 0: Paper present, 1: No paper |
| bit-3   | Roll sensor 4       | 0: Paper present, 1: No paper |
| bit-2   | Roll sensor 3       | 0: Paper present, 1: No paper |
| bit-1   | Cassette set sensor | 0: Closed, 1: 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.  |       |        |

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| [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   |  |

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| 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: $[-9 \sim +9/+3.0/0.1 \text{ mm step}]$ . Setting can be adjusted in the range $\pm 9$ , 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/ <b>0.0</b> /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/ <b>0.0</b> /0.1 mm step]  |
| 003  | Cut Paper Tray            | <ul> <li>To move the start position to the right, increase the value (+).</li> <li>To move the start position to the left, decrease the value (-).</li> </ul> |
| 005  | By-pass feed              | <b>Note</b> : 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 <b>DFU</b>   |  |
|------|---|--|
|      | Sets the type of fusing temperature control. Be sure to switch the main power switch off and on after adjustment.  [0~1/0./1] |  |
|      | O: Pressure Roller Temp. Feedback  1: No Pressure Roller Temp. Feedback   |  |

| 1105 | Fusing Temp. Adj.  |   |
|------|--|---|
|      | Be sure to switch the main power switch off and on after adjustment. |   |
| 001  | Copy Ready<br>Temperature  | Sets the copy ready fusing temperature. The setting is the difference from the target fusing temperature that is set with SP 1107. <b>DFU</b> |
|      |  | [-20 ~ +20/-5/1°C] Copying can start at this temperature, before the hot roller reaches its target temperature (SP1107).                      |
| 002  | Constant Temperature<br>Control                                      | Sets the fusing temperature for the machine ready condition. <b>DFU</b> [120 ~ 210/ <b>165</b> /1°C step]                                     |
| 003  | Low Power Mode   | Sets the fusing temperature for low power mode. [80 ~ 165/ <b>105</b> /1°C step]  |
| 005  | Fusing Temperature Calibration                                       | Calibrates the scale for the fusing temperature settings. <b>DFU</b> $[-10 \sim +10/0/1^{\circ}C \text{ step}]$                               |
| 006  | Pressure Temp. Calibration   | Calibrates the scale for the pressure temperature control. <b>DFU</b> [-10 ~ +10/ <b>0</b> /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 Ro  | ller  |  |  |
|------|---|---|--|--|
|      | Sets the target fusing temperature of the hot roller.   |   |  |  |
|      | After you adjust these SPs,   | 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<br>Tools. For more, see page 5-7. |   |  |  |
| 001  | Plain Paper: Mode 1   | [120~220/ <b>195</b> /5°C] <b>DFU</b>   |  |  |
| 002  | Plain Paper: Mode 2   | [120~220/ <b>185</b> /5°C] <b>DFU</b>   |  |  |
| 003  | Plain Paper: Mode 3   | [120~220/ <b>175</b> /5°C] <b>DFU</b>   |  |  |
| 004  | Plain Paper: Mode 4   | [120~220/ <b>165</b> /5°C] <b>DFU</b>   |  |  |
| 005  | Plain Paper: Mode 5   | [120~220/ <b>175</b> /5°C] <b>DFU</b>   |  |  |
| 006  | Translucent Paper: Mode 1   | [120~220/ <b>195</b> /5°C] <b>DFU</b>   |  |  |
| 007  | Translucent Paper: Mode 2   | [120~220/ <b>195</b> /5°C] <b>DFU</b>   |  |  |
| 008  | Translucent Paper: Mode 3   | [120~220/ <b>195</b> /5°C] <b>DFU</b>   |  |  |
| 009  | Translucent Paper: Mode 4   | [120~220/ <b>175</b> /5°C] <b>DFU</b>   |  |  |
| 010  | Translucent Paper: Mode 5   | [120~220/ <b>170</b> /5°C] <b>DFU</b>   |  |  |
| 011  | Film: Mode 1  | [120~220/ <b>195</b> /5°C] <b>DFU</b>   |  |  |
| 012  | Film: Mode 2  | [120~220/ <b>190</b> /5°C] <b>DFU</b>   |  |  |
| 013  | Film: Mode 3  | [120~220/ <b>185</b> /5°C] <b>DFU</b>   |  |  |
| 014  | Film: Mode 4  | [120~220/ <b>185</b> /5°C] <b>DFU</b>   |  |  |
| 015  | Film: Mode 5  | [120~220/ <b>170</b> /5°C] <b>DFU</b>   |  |  |

| 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<br>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/ <b>100</b> /5°C] <b>DFU</b>              |  |
| 002  | Plain Paper: Mode 2   | [60~180/ <b>65</b> /5°C] <b>DFU</b>               |  |
| 003  | Plain Paper: Mode 3   | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 004  | Plain Paper: Mode 4   | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 005  | Plain Paper: Mode 5   | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 006  | Translucent Paper: Mode 1   | [60~180/ <b>100</b> /5°C] <b>DFU</b>              |  |
| 007  | Translucent Paper: Mode 2   | [60~180/ <b>65</b> /5°C] <b>DFU</b>               |  |
| 008  | Translucent Paper: Mode 3   | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 009  | Translucent Paper: Mode 4   | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 010  | Translucent Paper: Mode 5   | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 011  | Film: Mode 1  | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 012  | Film: Mode 2  | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 013  | Film: Mode 3  | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 014  | Film: Mode 4  | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |
| 015  | Film: Mode 5  | [60~180/ <b>60</b> /5°C] <b>DFU</b>               |  |

| 1109 | Start Temperature: F   | 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/ <b>0</b> /5°C] |
| 002  | Translucent  |                       |
| 003  | Film   |                       |

| 1801 | Feed Motor Speed Adjustment   |   |
|------|---|---|
|      | roll feeder motor). Us scratchy images, in t  Copying originals or Copying originals or Using the Positive. | with large quantities of black.<br>with a large quantity of black near the trailing edge.<br>/Negative (image reverse) feature with repeat copying. |
|      | For more, refer to the "Setting Scale" table below.   |   |
| 001  | Plain Paper [-50~+50/ <b>4</b> /1] <b>DFU</b>   |   |
| 002  | Translucent Paper   | [-50~+50/ <b>0</b> /1] <b>DFU</b>   |
| 003  | Film  | [-50~+50/ <b>4</b> /1] <b>DFU</b>   |

# **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 <b>Not Used</b> |  |  |
|------|--|--|--|
|      |  |  |  |
| 1901 | Fusing/Drum Buckle Adjustment Not Used     |  |  |
|      |  |  |  |
| 1902 | Slip Rate Adjustment <b>Not Used</b>       |  |  |
|      |  |  |  |
| 1911 | By-pass Feed<br>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. <b>DFU</b> |                           |
| 002  | 2nd Roll  | [-15 ~ +15/ <b>0</b> /1%] |
| 003  | Cut Paper   |                           |

| 1914 | Drum Motor Speed Adjustment                   |                                   |
|------|---|-----------------------------------|
|      | Adjusts the drum motor speed.                 |                                   |
| 001  | Over 420 mm [-20~+20/ <b>5</b> /1] <b>DFU</b> |                                   |
| 002  | Below 420 mm                                  | [-20~+20/ <b>0</b> /1] <b>DFU</b> |

| 1915 | Magnification Adjustment                        |
|------|---|
| 001  | Fusing Motor Speed: Plain <b>Not Used</b>       |
| 002  | Fusing Motor Speed: Translucent <b>Not Used</b> |
| 003  | Fusing Motor Speed: Film Not Used               |

| 1010       | F : 14 : 0 ::::   | , ,  |  |
|------------|---|--|--|
| 1916       | Fusing Motor Speed Adjust   |  |  |
|            |   | e 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),  |  |  |
|            |   | 6 010 to 013), and the paper type adjustment (1916 021 to  |  |
| 004        | 045).   | [-100~+100/ <b>8</b> /2] <b>DFU</b>                        |  |
| 001<br>010 | Base Speed Width > 611 mm   | [-100~+100/ <b>6</b> /2] <b>DFU</b>                        |  |
|            |   |  |  |
| 011        | Width 461~610 mm  | [-100~+100/ <b>4</b> /2] <b>DFU</b>                        |  |
| 012        | Width 298~460 mm  | [-100~+100/ <b>8</b> /2] <b>DFU</b>                        |  |
| 013        | Width < 297 mm  | [-100~+100/ <b>16</b> /2] <b>DFU</b>                       |  |
|            | Notes:  |  |  |
|            | -   | 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/ <b>0</b> /2] <b>DFU</b>                        |  |
| 022        | Plain Paper Mode 2  |  |  |
| 023        | Plain Paper Mode 3  |  |  |
| 024        | Plain Paper Mode 4  |  |  |
| 025        | Plain Paper Mode 5  | [-100~+100/ <b>22</b> /2] <b>DFU</b>                       |  |
| 031        | Translucent Mode 1  | [-100~+100/ <b>18</b> /2] <b>DFU</b>                       |  |
| 032        | Translucent Mode 2  |  |  |
| 033        | Translucent Mode 3  |  |  |
| 034        | Translucent Mode 4  |  |  |
| 035        | Translucent Mode 5  | [-100~+100/ <b>28</b> /2] <b>DFU</b>                       |  |
| 041        | Film Mode 1   | [-100~+100/ <b>20</b> /2] <b>DFU</b>                       |  |
| 042        | Film Mode 2   |  |  |
| 043        | Film Mode 3   |  |  |
| 044        | Film Mode 4   | [-100~+100/ <b>36</b> /2] <b>DFU</b>                       |  |
| 045        | Film Mode 5   | [-100~+100/ <b>16</b> /2] <b>DFU</b>                       |  |

|      | I   |   |
|------|---|---|
| 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. <b>DFU</b> [0.000~9.999/ <b>0.300</b> /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. <b>DFU</b> [0~5000/ <b>150</b> /1 mm] |

| 1919 | Main Motor Speed Adjustment <b>DFU</b>   |
|------|--|
|      | 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/ <b>-10</b> /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  | Adjusts the 297-mm cut length.      |
|      | Paper                               | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 112  | 1st Roll, 420 mm/17" or 18", Plain  | Adjusts the 420-mm cut length.      |
|      | Paper                               | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 113  | 1st Roll, 594 mm/22" or 24", Plain  | Adjusts the 594-mm cut length.      |
|      | Paper                               | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 114  | 1st Roll, 841 mm/32" or 34", Plain  | Adjusts the 841-mm cut length.      |
|      | Paper                               | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]   |
| 115  | 1st Roll, 1189 mm/44" or 48", Plain | Adjusts the 1189-mm cut length.     |
|      | Paper                               | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]   |
| 116  | 1st Roll, 2000 mm/78", Plain Paper  | Adjusts the 2000-mm cut length.     |
|      | ,                                   | [-30.0 ~ +30.0/ <b>0</b> /1 mm]     |
| 117  | 1st Roll, 3600 mm/141", Plain Paper | Adjusts the 3600-mm cut length.     |
|      | •                                   | [-30.0 ~ +30.0/ <b>0.0</b> /0.1 mm] |
| 118  | 1st Roll, 6000 mm/236", Plain Paper | Adjusts the 6000-mm cut length.     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]     |
| 121  | 1st Roll, 297 mm/11" or 12",        | Adjusts the 297-mm cut length.      |
|      | Translucent                         | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 122  | 1st Roll, 420 mm/17" or 18",        | Adjusts the 420-mm cut length.      |
|      | Translucent                         | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 123  | 1st Roll, 594 mm/22" or 24",        | Adjusts the 594-mm cut length.      |
|      | Translucent                         | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 124  | 1st Roll, 841 mm/32" or 34",        | Adjusts the 841-mm cut length.      |
|      | Translucent                         | [-20.0 ~ +20.0/ <b>0.0</b> /0.1 mm] |
| 125  | 1st Roll, 1189 mm/44" or 48",       | Adjusts the 1189-mm cut length.     |
|      | Translucent                         | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]   |
| 126  | 1st Roll, 2000 mm/78", Translucent  | Adjusts the 2000-mm cut length.     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]     |
| 127  | 1st Roll, 3600 mm/141", Translucent | Adjusts the 3600-mm cut length.     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]     |
| 128  | 1st Roll, 6000 mm/236", Translucent | Adjusts the 6000-mm cut length.     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]     |
| 131  | 1st Roll, 297 mm/11" or 12", Film   | Adjusts the 297-mm cut length.      |
|      |                                     | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 132  | 1st Roll, 420 mm/17" or 18", Film   | Adjusts the 420-mm cut length.      |
|      |                                     | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 133  | 1st Roll, 594 mm/22" or 24", Film   | Adjusts the 594-mm cut length.      |
|      |                                     | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 134  | 1st Roll, 841 mm/32" or 34", Film   | Adjusts the 841-mm cut length.      |
|      |                                     | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]   |
| 135  | 1st Roll, 1189 mm/44" or 48", Film  | Adjusts the 1189-mm cut length.     |
|      |                                     | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]   |
| 136  | 1st Roll, 2000 mm/78", Film         | Adjusts the 2000-mm cut length.     |
|      |                                     | [-30.0 ~ +30.0/ <b>0.0</b> /0.1 mm] |
| 137  | 1st Roll, 3600 mm/141", Film        | Adjusts the 3600-mm cut length.     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]     |
| 138  | 1st Roll, 6000 mm/236", Film        | Adjusts the 6000-mm cut length.     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]     |
| 211  | 2nd Roll, 297 mm/11" or 12", Plain  | Adjusts the 297-mm cut length.      |
|      | Paper                               | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |
| 212  | 2nd Roll, 420 mm/17" or 18", Plain  | Adjusts the 420-mm cut length.      |
|      | Paper                               | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]   |

| 1920 | Cut Length Adjustment               |   |
|------|-------------------------------------|---|
| 213  | 2nd Roll, 594 mm/22" or 24", Plain  | Adjusts the 504 mm cut length                                       |
| 213  | Paper                               | Adjusts the 594-mm cut length.<br>[-10.0 ~ +10.0/ <b>0</b> /0.1 mm] |
| 214  | 2nd Roll, 841 mm/32" or 34", Plain  | -   |
| 214  | Paper                               | Adjusts the 841-mm cut length.<br>[-20.0 ~ +20.0/ <b>0</b> /0.1 mm] |
| 245  | <del>-</del>                        | -   |
| 215  | 2nd Roll, 1189 mm/44" or 48", Plain | Adjusts the 1189-mm cut length.                                     |
| 040  | Paper (701) PL : P                  | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]                                   |
| 216  | 2nd Roll, 2000 mm/78", Plain Paper  | Adjusts the 2000-mm cut length.                                     |
| 047  | O. J. D. II. 0000                   | [-30.0 ~ +30.0/ <b>0</b> /1 mm]                                     |
| 217  | 2nd Roll, 3600 mm/141", Plain Paper | Adjusts the 3600-mm cut length.                                     |
| 040  | 0 15 11 0000 (00011 51 : 5          | [-30.0 ~ +30.0/ <b>0</b> /1 mm]                                     |
| 218  | 2nd Roll, 6000 mm/236", Plain Paper | Adjusts the 6000-mm cut length.                                     |
| 204  | 0 10 11 007 (1411 4011              | [-30.0 ~ +30.0/ <b>0</b> /1 mm]                                     |
| 221  | 2nd Roll, 297 mm/11" or 12",        | Adjusts the 297-mm cut length.                                      |
| 225  | Translucent                         | [-10.0 ~ +10.0/ <b>0.0</b> /0.1 mm]                                 |
| 222  | 2nd Roll, 420 mm/17" or 18",        | Adjusts the 420-mm cut length.                                      |
|      | Translucent                         | [-10.0 ~ +10.0/ <b>0.0</b> /0.1 mm]                                 |
| 223  | 2nd Roll, 594 mm/22" or 24",        | Adjusts the 594-mm cut length.                                      |
|      | Translucent                         | [-10.0 ~ +10.0/ <b>0.0</b> /0.1 mm]                                 |
| 224  | 2nd Roll, 841 mm/32" or 34",        | Adjusts the 841-mm cut length.                                      |
|      | Translucent                         | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]                                   |
| 225  | 2nd Roll, 1189 mm/44" or 48",       | Adjusts the 1189-mm cut length.                                     |
|      | Translucent                         | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]                                   |
| 226  | 2nd Roll, 2000 mm/78", Translucent  | Adjusts the 2000-mm cut length.                                     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /0.1 mm]                                   |
| 227  | 2nd Roll, 3600 mm/141", Translucent | Adjusts the 3600-mm cut length.                                     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]                                     |
| 228  | 2nd Roll, 6000 mm/236", Translucent | Adjusts the 6000-mm cut length.                                     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]                                     |
| 231  | 2nd Roll, 297 mm/11" or 12", Film   | Adjusts the 297-mm cut length.                                      |
|      |                                     | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]                                   |
| 232  | 2nd Roll, 420 mm/17" or 18", Film   | Adjusts the 420-mm cut length.                                      |
|      |                                     | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]                                   |
| 233  | 2nd Roll, 594 mm/22" or 24", Film   | Adjusts the 594-mm cut length.                                      |
|      |                                     | [-10.0 ~ +10.0/ <b>0</b> /0.1 mm]                                   |
| 234  | 2nd Roll, 841 mm/32" or 34", Film   | Adjusts the 841-mm cut length.                                      |
|      |                                     | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]                                   |
| 235  | 2nd Roll, 1189 mm/44" or 48", Film  | Adjusts the 1189-mm cut length.                                     |
|      |                                     | [-20.0 ~ +20.0/ <b>0</b> /0.1 mm]                                   |
| 236  | 2nd Roll, 2000 mm/78", Film         | Adjusts the 2000-mm cut length.                                     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /1 mm]                                     |
| 237  | 2nd Roll, 3600 mm/141", Film        | Adjusts the 3600-mm cut length.                                     |
|      |                                     | [-30.0 ~ +30.0/ <b>0</b> /0.1 mm]                                   |
| 238  | 2nd Roll, 6000 mm/236", Film        | Adjusts the 6000-mm cut length.                                     |
|      |                                     | [-30.0 ~ +30.0/ <b>0.0</b> /0.1 mm]                                 |

| 1925 | Cut Length Offset Correction Not Used |
|------|---------------------------------------|

| 1955 | Transport Fan Rotation <b>Not Used</b> |
|------|--|

| 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/ <b>0</b> /1]  |
|      | <b>0</b> : 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.

### SP2-XXX Drum

| 2001 | Charge Corona Adjustment |   |
|------|--------------------------|---|
| 001  | Image Area               | Adjusts the charge corona output. <b>DFU</b>              |
|      |                          | [505~1530/ <b>1220</b> /1 V step]                         |
| 002  | Grid for Image Area      | Adjusts the charge grid output. <b>DFU</b>                |
|      |                          | [162~1080/ <b>770</b> /1 V step]                          |
| 003  | Grid for ID Sensor       | Adjusts the charge grid output for the ID sensor pattern. |
|      | Pattern                  | DFU   |
|      |                          | [162~1080/ <b>635</b> /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/ <b>0</b> /0.5 mm step] |
| 002  | Trailing Edge  |                                   |
| 003  | Left Edge  |                                   |
| 004  | Right Edge   |                                   |

| 2102 | Printing Erase Margin - Printer |   |
|------|---------------------------------|---|
|      | Adjusts the quantity of eras    | e for print mode (quantity of white space). |
| 001  | Leading Edge                    | [0.0 ~ 10/ <b>0</b> /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/ <b>-650</b> /1 V step]               |
| 002  | ID Sensor Pattern – Low<br>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<br>Duty Copy Jobs | Sets the development bias to adjust the toner quantity for the ID sensor pattern. <b>DFU</b> [56 ~ 952/ <b>445</b> /1 V step] |
| 004  | Copy Jobs                                  | Sets the mode used to make the ID sensor pattern. <b>DFU</b> [0~1/ <b>0</b> /1] <b>0: Low Duty Mode</b> 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. <b>DFU</b>  |
| 002  | Plain Paper - Central Image | [0~230/ <b>60</b> /1 mm]   |
| 003  | Plain Paper - Trailing Edge |  |
| 004  | Plain Paper - Coefficient   | Adjusts the transfer output coefficient for the leading edge, central image, and trailing edge. <b>DFU</b> [1.0~2.0/ <b>1.0</b> /0.2 step]   |
| 005  | Translucent - Leading Edge  | Adjusts the transfer output power. <b>DFU</b>  |
| 006  | Translucent - Central Image | [0~230/ <b>60</b> /1 mm] <b>DFU</b>  |
| 007  | Translucent - Trailing Edge |  |
| 008  | Translucent - Coefficient   | Adjusts the transfer output coefficient for the leading edge, central image, and trailing edge. <b>DFU</b> [1.0~2.0/ <b>1.0</b> /0.2 step]   |
| 009  | Film - Leading Edge         | Adjusts the transfer output power. <b>DFU</b>  |
| 010  | Film - Central Image        | [0~230/ <b>80</b> /1 mm]   |
| 011  | Film - Trailing Edge        |  |
| 012  | Film - Coefficient          | Adjusts the transfer output coefficient for the leading edge, central image, and trailing edge. <b>DFU</b> [1.0 ~ 2.0/ <b>1.0</b> /0.2 step] |

| 2401 | Separation DC Timing Adj.                    |
|------|--|
|      | Adjusts the separation dc timing. <b>DFU</b> |
|      | [0 ~ 300/ <b>100</b> /4 mm step]             |

| 2402 | Separation AC Voltage Setting:                |  |
|------|---|--|
|      | Adjusts the separation ac voltage. <b>DFU</b> |  |
|      | [18~466/ <b>280</b> /1 V step]                |  |

| 2403 | Separation DC Voltage Setting         |  |
|------|---------------------------------------|--|
|      |                                       | s setting is too high, toner will go back from the |
|      |                                       | paration dc voltage can be set for plain paper,    |
|      | translucent paper, and film for:      |  |
|      | The leading edge                      |  |
|      | Areas of the sheet other than the lea |  |
| 001  | Plain – Leading Edge                  | [0.0 ~ -66/ <b>-25</b> /0.1] <b>DFU</b>            |
| 002  | Plain – Central Image                 | [0.0 ~ -66/ - <b>15</b> /0.1] <b>DFU</b>           |
| 003  | Translucent – Leading Edge            | [0.0 ~ -66/ <b>-25</b> /0.1] <b>DFU</b>            |
| 004  | Translucent – Central Image           | [0.0 ~ -66/ - <b>15</b> /0.1] <b>DFU</b>           |
| 005  | Film – Leading Edge                   | [0.0 ~ -66/ - <b>25</b> /0.1] <b>DFU</b>           |
| 006  | Film – Central Image                  | [0.0 ~ -66/ - <b>15</b> /0.1] <b>DFU</b>           |
| 007  | Plain – Trailing Edge                 | [0.0 ~ -66/ <b>0</b> /0.1] <b>DFU</b>              |
| 800  | Translucent – Trailing Edge           |  |
| 009  | Film – Trailing Edge                  |  |
| 011  | Thin Plain – Leading Edge             | [0.0 ~ -66/ <b>-25</b> /0.1] <b>DFU</b>            |
| 012  | Thin Plain - Central Image            | [0.0 ~ -66/ - <b>15</b> /0.1] <b>DFU</b>           |
| 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/ <b>0</b> /0.1] <b>DFU</b>                 |
| 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/ <b>40</b> /1 step] <b>DFU</b>                    |

| 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. |
|      | 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/ <b>3</b> /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 <b>DFU</b>  |  |
|------|--|--|
|      | The drum turns in reverse after this number of jobs. This cleans the edge of the cleaning blade.  [0~5/ <b>0</b> /1Job step] |  |

| 2923 | 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 <b>DFU</b>  |
|------|--|
|      | 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/ <b>0</b> /1]  |
|      | <ul> <li>0: Vsg is read immediately after the machine is switched on with the fusing temperature less than 50°C.</li> <li>1: Vsg is always read during warm-up immediately after the machine is switched on. The machine ignores the fusing temperature.</li> <li>2: No Vsg is read during warm-up.</li> </ul> |

| 2925 | Transfer Corona Timing |   |
|------|------------------------|---|
| 001  | On Timing              | Adjusts the on timing. <b>DFU</b>   |
|      |                        | [0~16/ <b>6</b> /0.2 mm]  |
| 002  | Leading Edge           | Adjusts the timing to switch from the leading edge to the center. <b>DFU</b>  |
|      |                        | [0~30/ <b>8</b> /1 mm]  |
| 003  | Trailing Edge          | Adjusts the timing to switch from the center to the trailing edge. <b>DFU</b> |
|      |                        | [-30 ~ 0/ <b>0</b> /-1 mm]  |

| 2926 | Used Toner Tank Motor   |  |  |
|------|---|--|--|
|      | The used toner bottle motor (vibration motor) moves a cam, which hits the side of the |  |  |
|      |   | bottle. This makes the level of used toner in the bottle equal.  |  |
| 001  | After Main SW   | Sets the length of time that the used toner bottle motor operates.   |  |
|      | Turned On   | The motor starts 10 seconds after the main power switch is   |  |
|      |   | switched on and the fusing temperature is less than 50°C.  |  |
|      |   | [0~7/ <b>7</b> /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  | Sets the length of time that the used toner bottle motor operates  |  |
|      | Passes Exit   | 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.<br>7: 30 sec.   |  |
|      |   | 7. 30 sec. Note:   |  |
|      |   |  |  |
| 003  | Used Toner  | <ul> <li>If SP2926 004 is not "0", this setting has no effect.</li> <li>Puts a limit on the length of paper that can be printed after the</li> </ul> |  |
| 003  | Overflow Detection  | machine detects that the used toner collection bottle is full.   |  |
|      | O VCI IIOW Detection  | [0~4/2/2]  |  |
|      |   | 0: 2 m   |  |
|      |   | 1: 5 m   |  |
|      |   | 2: 10 m  |  |
|      |   | 3: 20 m  |  |
|      |   | 4: 50 m  |  |
| 004  | Used Toner Tank   | Switches on the used toner bottle motor at the end of the job if   |  |
|      | Motor On  | 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). <b>DFU</b> [0~15/ <b>2</b> /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. <b>DFU</b> [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.  |                             |                        |                  |
|      | <ul> <li>The machine writes a</li> </ul>  | 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).     |                             |                        | onverts it to an |
|      | The machine compares the Vsp value with Vsg, which is read from the bare surface of the drum (Vsg/Vsg=Vref) |                             |                        |                  |
|      | <ul> <li>If Vsp/Vsg &lt; Vref (the</li> </ul>   | e value of this SP set      | ting), recovery is com | pleted and the   |
|      | machine goes back t   | o normal operation.         |                        |                  |
| 001  | Recovery Level <b>DFU</b>   | Sets the recovery le        | evel: Vsp/Vsg < Vref   |                  |
|      |   | [0~17/ <b>5</b> /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        |

| 00.14 | IDUT (D.)   |
|-------|---|
| 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 <i>Replacement and Adjustment</i> section. |
|       | [0~45/ <b>0</b> /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 <i>Replacement and Adjustment</i> section. [0~45/ <b>0</b> /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/ <b>0</b> /1]   |
|      |     | <b>0</b> : 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.  |
|      |     | <ol> <li>VDB Pattern. Prints a test pattern to check VDB/LPH processing. If this pattern is<br/>not normal, there could be a problem with the VDB (Video Drive Board) or LPH<br/>(LED Print Head).</li> </ol>        |
|      | 002 | FGATE <b>DFU</b>   |
|      |     | Sets the FGATE (laser writing signal) for the test pattern.  |
|      |     | [0~1/ <b>0</b> /1]   |
|      |     | 0: FGATE IPU   |
|      |     | 1: FGATE IOB   |
|      | 003 | Pattern  |
|      |     | Sets the test pattern.   |
|      |     | [0 ~ 5/ <b>0</b> /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)  |
|      | 201 | 5: Grid Pattern  |
| 1    | 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/ <b>3</b> /1]   |
|      |     | 1: Vertical Lines  |
|      |     | 2: Horizontal Lines  |
|      |     | 3: Grid Pattern  |

| 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 |  |
| 002  | LPH 1 (Even)  | attached to LPH replacement units. Input these settings         |  |
| 003  | LPH 2 (Odd)   | immediately after you replace the LPH unit.                     |  |
| 004  | LPH 2 (Even)  |   |  |
| 005  | LPH 3 (Odd)   |   |  |
| 006  | LPH 3 (Even)  |   |  |

| 2947 | Power Correction   | Power Correction |  |
|------|--|------------------|--|
|      | Adjusts the four LEDs at each end of LPH 2. This fine adjustment is not usually necessary in the field. <b>DFU</b> |                  |  |
|      | [0~255/ <b>0</b> /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   |                  |  |
| 800  | 4 Dots Right   |                  |  |

| 2952 | Printer Vertical/Horizontal Ratio <b>DFU</b>   |
|------|--|
|      | 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/ <b>500</b> /1]   |  |
| 002  | LPH 2-3 Main Scan   | Adjusts the LPH joint for main scan between LPH2 and LPH3. [0 ~ 999/ <b>500</b> /1]   |  |
| 003  | LPH 1-2 Sub Scan – Over 420<br>mm   | Adjusts sub scanning at LPH 1-2 for paper more than 420 mm wide.  [202 ~ 450/ <b>412</b> /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/ <b>16</b> /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<br>mm  | Adjusts sub scanning at LPH 1-2 for paper less than 420 mm wide.  [-50 ~ +50/2/1] <b>DFU</b> 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] <b>DFU</b> This value is calculated automatically. Do not adjust.   |  |

| 2966 | Toner Save Mode <b>DFU</b>  |  |
|------|---|--|
|      | Sets the matrix that is used to decrease the quantity of toner on the printed page. |  |
|      | [0~2/ <b>0</b> /1]  |  |



## 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. <b>DFU</b> [0~100/35/0.1%]  |
| 005  | ID Sensor / Developer<br>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.) Do this SP at installation only. 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/ <b>0</b> /0.1% step]   |  |

| 4010 | Scanner Sub Scan Registration |  |
|------|-------------------------------|--|
| 001  |                               | Adjusts the time between the sensor-on position and the leading edge of the image. [-10 $\sim$ +10/ <b>0</b> /0.1 mm step]   |
| 002  |                               | 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 $\sim$ +10/ <b>0.0</b> /0.1 mm step] |

| 4011 | Scanner Main Scan Registration |  |
|------|--------------------------------|--|
|      | Adjusts the scan registration. |  |
|      | [-4 ~ +4/ <b>0.0</b> /0.1 mm]  |  |

| 4012 | Scanner Erase Margin |                                |
|------|----------------------|--------------------------------|
| 001  | Leading Edge         | Adjusts the non-scanning area. |
| 002  | Trailing Edge        | [0.0 ~ +9.0/ <b>0</b> /0.1 mm] |
| 003  | Left                 |                                |
| 004  | Right                |                                |



| 4013 | Scanner Free Run      |   |
|------|-----------------------|---|
| 002  | Page Interval Setting | Adjusts the interval between prints for the <b>printer</b> free run (see the description for 5802). $[0 \sim 500/10/0.1 \text{ s}]$ |

| 4101 | Scanner Main Scan Magnification              |  |
|------|--|--|
|      | Adjusts the side-to-side scan magnification. |  |
|      | [-0.9 ~ +0.9/ <b>0.0</b> /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. |

| 4903 | Image Setting – Smoothing Filt   | ter 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:   |   |
|      | <ul> <li>To increase the effect, use a</li> </ul>  | higher setting.   |
|      | To decrease the effect, use a  | a lower setting.  |
|      | <ul> <li>The higher settings can mak<br/>the image.</li> </ul>   | e text look better, but can also decrease the quality of        |
| 001  | Text   | [0~5/ <b>0</b> /1]  |
|      |  | 0: Off 1: Weak 5: Strong  |
| 003  | Text /Photo  |   |
| 004  | Pale Original  |   |
| 005  | Generation Copy  |   |
| 006  | Background Lines   |   |
| 007  | Sharpen Text   |   |
| 800  | Drawing  |   |
| 021  | Gradation Processing Photo   | Sets the matrix that is used for dithering.  [0~4/ <b>0</b> /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 S     |   |  |  |
|      | 1) Initial. Sets the main ac | fjustment for the copy mode (Text, Text/Photo, etc.). This      |  |  |
|      | has an effect on line co     | 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 s   | 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/ <b>2</b> /1]  |  |  |
| 002  | Main Soan Toxe               | 0: None 1: Weak <b>2: Medium</b> 3: Strong                      |  |  |
| 003  | Sub Scan – Text              | [0~3/ <b>0</b> /1]  |  |  |
| 003  | Oub Gean - Text              | 0: None 1: Weak 2: Medium 3: Strong                             |  |  |
| 004  | Photo                        | [0~8/ <b>5</b> /1]]   |  |  |
| 004  | FIIOLO                       | 0: Low (better thin line reproduction)                          |  |  |
|      |                              | 5: Off  |  |  |
|      |                              |   |  |  |
| 005  | Main Scan – Photo            | 8: High (better thick line reproduction)                        |  |  |
| 005  | Main Scan – Photo            | [0~3/ <b>0</b> /1]  |  |  |
| 000  | 0.1.0                        | 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/ <b>0</b> /1]  |  |  |
|      |                              | 0: None 1: Weak 2: Medium 3: Strong                             |  |  |
| 009  | Sub Scan – Text/Photo        |   |  |  |
| 010  | Pale                         | [0~8/ <b>5</b> /1]]   |  |  |
|      |                              | 0: Low (better thin line reproduction)                          |  |  |
|      |                              | 5: Off  |  |  |
|      |                              | 8: High (better thick line reproduction)                        |  |  |
| 011  | Main Scan – Pale             | [0~3/ <b>0</b> /1]  |  |  |
|      |                              | 0: None 1: Weak 2: Medium 3: Strong                             |  |  |
| 012  | Sub Scan – Pale              |   |  |  |
| 013  | Generation                   | [0~8/ <b>3</b> /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/ <b>0</b> /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 –                  | [0~3/ <b>2</b> /1]  |  |  |
| 017  | Background Line              | 0: None 1: Weak 2: Medium 3: Strong                             |  |  |
| 018  | Sub Scan – Background        | [0~3/ <b>0</b> /1]  |  |  |
|      | Line                         | 0: None 1: Weak 2: Medium 3: Strong                             |  |  |
|      | 0                            | V. HOTE 1. WOOK 2. WEGIGIT 3. Offolig                           |  |  |

| 4905 | Line Thickness Mode |  |  |
|------|---------------------|--|--|
| 019  | Sharpen Text        | [0~8/ <b>5</b> /1]]                      |  |
|      |                     | 0: Low (better thin line reproduction)   |  |
|      |                     | 5: Off                                   |  |
|      |                     | 8: High (better thick line reproduction) |  |
| 020  | Main Scan – Sharpen | [0~3/ <b>0</b> /1]                       |  |
|      | Text                | 0: None 1: Weak 2: Medium 3: Strong      |  |
| 021  | Sub Scan – Sharpen  |  |  |
|      | Text                |  |  |
| 022  | Line Drawing        | [0~8/ <b>4</b> /1]]                      |  |
|      |                     | 0: Low (better thin line reproduction)   |  |
|      |                     | 5: Off                                   |  |
|      |                     | 8: High (better thick line reproduction) |  |
| 023  | Main Scan –Drawing  | [0~3/ <b>2</b> /1]                       |  |
|      |                     | 0: None 1: Weak 2: Medium 3: Strong      |  |
| 024  | Sub Scan –Drawing   | [0~3/ <b>0</b> /1]                       |  |
|      |                     | 0: None 1: Weak 2: Medium 3: Strong      |  |

| h    |     |  |  |  |
|------|-----|--|--|--|
| 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 <b>DFU</b>  |  |  |
|      |     | Adjusts the quantity of pixel shift in the [0~32767/ <b>0</b> /1]  | main scan direction in the magnification mode. |  |
|      | 018 | Correction Data <b>DFU</b>   |  |  |
|      |     | Sets the gamma correction mode. [0~11/ <b>0</b> /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 settin  | g for that copy mode.                          |  |
|      |     | For more, see section 6 (Detailed Section Descriptions).   |  |  |
|      | 020 | Text 25% - 55.0%   | [0~10/ <b>5</b> /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/ <b>3</b> /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/ <b>5</b> /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/ <b>5</b> /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/ <b>5</b> /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/ <b>3</b> /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/ <b>5</b> /1]                                    |  |
| 049  | Drawing 55.1% - 75.0%  |  |  |
| 050  | Drawing 75.1% - 160.0%   |  |  |
| 051  | Drawing 160.1% - 400.0%  |  |  |
|      | Noise Reduction  | ent 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 indepe  |  |  |
|      | _  | weaker, and erases a smaller number of dots.           |  |
|      | <ul> <li>A high setting makes the effect stronger and erases more dots. With a high setting,<br/>it is more possible to erase details in images, specially in the Photo and Text/Photo<br/>modes.</li> </ul>   |  |  |
|      | • "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   |  |  |
|      | Photo 2 mode = Sharpen Text r  |  |  |
| 070  | L: Text  | [0~14/ <b>4</b> /1]                                    |  |
| 071  | M: Text  | [0~14/ <b>7</b> /1]                                    |  |
| 072  | H: Text  | [0~14/ <b>10</b> /1]                                   |  |
| 073  | L: Photo   | [0~14/ <b>4</b> /1]                                    |  |
| 074  | M: Photo   | [0~14/ <b>7</b> /1]                                    |  |
| 075  | H: Photo   | [0~14/ <b>10</b> /1]                                   |  |
| 076  | L: Text/Photo  | [0~14/ <b>4</b> /1]                                    |  |
| 077  | M: Text/Photo  | [0~14/ <b>7</b> /1]                                    |  |
| 0.70 | 1 U. T. (15)   | FO 4 4 / 4 O / 4 T                                     |  |

[0~14/**10**/1]

[0~14/**4**/1] [0~14/**7**/1]

[0~14/10/1]

[0~14/**5**/1]

[0~14/8/1]

[0~14/**11**/1]

[0~14/**4**/1]

078 H: Text/Photo

M: Pale

H: Pale

L: Generation

M: Generation

H: Generation

L: Background Line

079 L: Pale

080 081

082

083

084

085

| 4906 | Filter/Independent Dot Erase Settings |                      |
|------|---------------------------------------|----------------------|
| 086  | M: Background Line                    | [0~14/ <b>7</b> /1]  |
| 087  | H: Background Line                    | [0~14/ <b>10</b> /1] |
| 088  | L: Sharpen Text                       | [0~14/ <b>4</b> /1]  |
| 089  | M: Sharpen Text                       | [0~14/ <b>7</b> /1]  |
| 090  | H: Sharpen Text                       | [0~14/ <b>10</b> /1] |
| 091  | L: Drawing                            | [0~14/ <b>4</b> /1]  |
| 092  | M: Drawing                            | [0~14/ <b>7</b> /1]  |
| 093  | H: Drawing                            | [0~14/ <b>10</b> /1] |

| 4907 | White Level Correction |  |  |
|------|------------------------|--|--|
| 001  | Threshold              | <ul> <li>Raises and lowers the threshold value for white level correction.</li> <li>[0~255/128/1] DFU</li> <li>If the background reading is higher than this threshold value, the image data is processed as it is.</li> <li>If the image data is lower that this threshold value, then the data is processed using the value for calibration entered for SP4907 002.</li> </ul> |  |
| 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/ <b>0</b> /1] <b>DFU</b>   |  |
| 004  | Control                | Disables and enables control for white level correction. [0~2/ <b>0</b> /1] <b>DFU</b>   |  |

| 4908 | IPU Function Selection           |   |  |
|------|----------------------------------|---|--|
|      | This SP checks the operations of | This SP checks the operations of the Ri-10 image processors on the IPU board. |  |
| 001  | Pre-Filter                       | [0~1/ <b>0</b> /1] <b>DFU</b>   |  |
| 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/ <b>0</b> /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/ <b>-0.5</b> /0.1%] |  |
| 008  | Plain 5 - Horizontal (Thinnest)   | [-2.0~+2.0/ <b>0</b> /0.1%]    |  |

| 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.   |  |
|      |   | depends on the hardware specifications. If defective 260-001. If a defective sector is found, more time is   |  |
| 005  | Spindle Control Push Off of   | 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  |  |  |
|      | defective sector data that the IPU  | ctors on the hard disk. The number comes from the made during operation. When the number gets to ust format the hard disk with SP4960 003. Refer to tion for more. |  |
| 011  | Model Name Display  |  |  |
|      | Shows the hard disk model name  |  |  |
| 013  | IDE Interface Form Selection <b>DFU</b>   |  |  |
|      | Sets the data transfer format. Push the key for Ultra DMA or <b>Multi Word DMA</b>  |  |  |
| 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     |   |
|------|----|-------------------------|---|
| 00   | 01 | Synchro-cut Adjustment  | Adjusts the synchro-cut position.   |
|      |    | 210 mm                  | [-9.9 ~ +9.9/ <b>0.0</b> /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.  |
| 00   | 02 | Synchro-cut Adjustment  | Adjusts the synchro-cut position.   |
|      |    | 1000 mm                 | [-9.9 ~ +9.9/ <b>0.0</b> /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. |
| 00   | 03 | 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/ <b>-0.2</b> /0.1]  |

| 4966 | Orig. Transport Speed Adjustment – Trailing Edge Not Used |
|------|---|
|      | [-1.0~0.0/ <b>-0.5</b> /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/ <b>500</b> /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/ <b>638</b> /1] |  |
| 006  | CIS Sub Scan Line Offset - No. 2-3   | [0~2047/ <b>650</b> /1] |  |
| 007  | CIS Sub Scan Line Offset - No. 3-4   | [0~2047/ <b>12</b> /1]  |  |
| 800  | CIS Sub Scan Line Offset - No. 4-5   | [0~2047/ <b>638</b> /1] |  |

| 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/ <b>0</b> /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. <b>DFU</b> [0~65535/ <b>118</b> /1]                                      |  |
| 006  | AE Initial                                       | Sets the initial value used for the leading edge of the image when ADS is used. <b>DFU</b> [0~255/ <b>50</b> /1]   |  |
| 007  | Average Process Selection                        | [0~15/ <b>3</b> /1] <b>DFU</b>   |  |
| 008  | Ground Adj. Coefficient                          | [-128/ <b>100</b> /1] <b>DFU</b>   |  |
| 009  | AE Follow Lower Limit                            | [0~255/ <b>50</b> /1] <b>DFU</b>   |  |
| 010  | AE Peak Up Coefficient                           | [0~255/ <b>80</b> /1] <b>DFU</b>   |  |
| 011  | AE Peak Down Coefficient                         | [0~255/ <b>85</b> /1] <b>DFU</b>   |  |
| 013  | Halftone Dot Detection Filter Intensity          | [0~2/ <b>0</b> /1] <b>DFU</b>  |  |
| 014  | Halftone Dot Detection<br>Filter Output Bin      | [0~255/ <b>255</b> /1] <b>DFU</b>  |  |
| 015  | Halftone Dot Detection<br>Change Point Threshold | [0~31/ <b>31</b> /1] <b>DFU</b>  |  |
| 016  | Background Management<br>Coefficient             | Sets the coefficient for background adjustment for ADS, Pale mode, notch 1, copy (including interrupt) <b>DFU</b> [-128~+127/127/1]                        |  |
| 017  | AE Initial Data                                  | Sets the initial value for the leading edge of the image when ADS is used. <b>DFU</b> [0~255/ <b>20</b> /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 o           | ne primary and | one secondary l | anguage. The settings are different for        |
|      | each country.            |                |                 |  |
|      | Location                 | Language 1     | Language 2      | Comments                                       |
|      | Japan                    | Japanese       | English         | 0: The machine uses the "Language 1"           |
|      | China                    | Chinese        | English         | settings.                                      |
|      | US, UK,<br>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 <b>DFU</b>   |
|------|---|
|      | 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/ <b>0</b> /1]  |
|      | <b>0: Off</b> . APS operates for all types of paper and film.                             |
|      | 1: On. APS operates only for plain paper and recycled paper.                              |

| 5113 | Optional Counter Type <b>DFU</b>                                   |  |
|------|--|--|
|      | Use this to switch on the keycard/MF accounting device. Japan Only |  |
|      | [0 ~ 5/ <b>0</b> /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 <b>DFU</b>                        |
|------|---|
|      | Enables/disables printing.                        |
|      | Push Yes or No to enable or disable this feature. |
|      | For CSS use only:                                 |

| 5120 | Mode Clear Count Removal <b>DFU</b>   |
|------|---|
|      | 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. <b>Japan Only</b> |
|      | [0 ~ 2/ <b>0</b> /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/ <b>0</b> /1] |
|      | 0: Disabled  |
|      | 1: Enabled   |

| 5501 | PM Alarm Interval <b>DFU</b>   |
|------|--|
|      | Selects the PM interval. When the interval is expired, the machine tells the user on the |
|      | operation panel.   |
|      | USA version: [0 ~ 100/ <b>180</b> /100 feet step]  |
|      | Europe version: [0 ~ 100/ <b>55</b> /0.1 km step]  |

| 5504 |     | Jam Alarm Level RD | S (Concord) Only  |
|------|-----|--------------------|---|
|      | 001 | Interval Setting   | Sets the jam level for an alarm call. <b>Japan Only</b> [0 ~3/ <b>3</b> /1 step] 0: No alarm 1: Low 2: Middle 3: High |
|      | 002 | Jam Alarm          | Push <b>On</b> or Off to enable or disable the jam alarm. <b>Japan Only</b>   |

| 5505 | Error Alarm Interval <b>DFU</b>           |
|------|---|
|      | Sets the error alarm interval. Japan Only |
|      | [0 ~ 255/ <b>800</b> /1 m step]           |

| 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/ <b>300</b> /10 m]   |  |  |
| NA Roll [300~30000/ <b>900</b> /10 feed]   |  |  |
| Cassette [250~10000/ <b>1000</b> /1 sheet]   |  |  |
| Metric   |  |  |
| 914 mm (A-Size)  |  |  |
| 841 mm (A-Size)  |  |  |
| 594 mm (A-Size)  |  |  |
| 420 mm (A-Size)  |  |  |
| 297 mm (A-Size)  |  |  |
| 210 mm (A-Size)  |  |  |
| 660 mm   |  |  |
| 880 mm   |  |  |
| 800 mm   |  |  |
| 728 mm (B-Size)  |  |  |
| 515 mm (B-Size)  |  |  |
| 364 mm (B-Size)  |  |  |
| 257 mm (B-Size)  |  |  |
| Other  |  |  |
| A3 SEF   |  |  |
| A4 SEF   |  |  |
| B4 SEF   |  |  |
| Inch   |  |  |
| Other  |  |  |
| 36 inch  |  |  |
| 24 inch  |  |  |
| 18 inch  |  |  |
| 12 inch  |  |  |
| 9 inch   |  |  |
| 30 inch  |  |  |
| 34 inch  |  |  |
| 22 inch  |  |  |
| 17 inch  |  |  |
| 11 inch  |  |  |
| 8½ inch  |  |  |
| 11 x 17 SEF  |  |  |
| 8½ x 14 SEF  |  |  |
| 8½ x 13 SEF  |  |  |
| 8½ x 11 SEF  |  |  |
| 12 x 18 SEF  |  |  |
|  |  |  |

| 5508 | CC Call Setting On/Off RD          | S (Concord) Only   |
|------|------------------------------------|--|
|      | Enables and disables the 0         | 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/ <b>10</b> /1 s]  |
| 012  | Prequency 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  |                                    | 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  | 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 –<br>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 R | DS (Concord) Only                                       |
|------|---------------------|---|
| 002  | Door Open           | Enables/disables the auto call.                         |
|      | Alarm               | Push On or <b>Off</b> to enable or disable the setting. |
| 003  | Paper Supply        | Enables/disables the auto call.                         |
|      | Alarm               | Push On or <b>Off</b> to enable or disable the setting. |
| 004  | Toner Supply        | Enables/disables the auto call.                         |
|      | Alarm               | Push On or <b>Off</b> 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 <b>Off</b> to switch on or off.                    |

| input check Lets you test inputs from different components (\$\sigma\$ 0.0) | Ī | 5803 | Input Check | Lets you test inputs from different components ( 5.5) |
|---|---|------|-------------|---|
|---|---|------|-------------|---|

| 5804 | Output Check   | Lets you test outputs to different components |  |
|------|----------------|---|--|
| JOUT | Output Officer | Lets you test outputs to different components |  |
|      |                | (- F G)                                       |  |
|      |                | ( 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.                                     |
|      | <ul> <li>Use the 10-key pad to input numbers 0~9.</li> </ul>                               |
|      | 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.   |

| 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 <b>No</b> to enable or disable.              |
| 002  | CE Call                         | Sets the start/end of maintenance with the CSS function. |

| 5821 | CSS PI Device | Sets the PI device code. Japan Only |
|------|---------------|-------------------------------------|
|      | 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/ <b>0</b> /1]  0: No print  1: Print |

| = | 5907 Plug & Play Sets the maker name (2 |  | (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            |

| 5914 | Printer Counter Display On/Off  Push Yes to show the printer counter output on the screen when the User  |  |
|------|--|--|
|      | 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 <b>No</b> or Yes to switch off/on the |
| 002  | User Stamp               | display of the user stamps in reverse.     |
| 003  | Page Numbering           |  |
| 004  | Date Stamp               |  |
| 005  | Background Numbering     |  |



| 5958 | 6 m Setting   |
|------|---|
|      | Enables or disables the optional special-order firmware that is used to increase the maximum original and copy lengths to 6 meters. |
|      | [0 ~ 1/ <b>0</b> /1 step] <b>0: Enable</b>  |
|      | 1: Disable  |

| 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/ <b>0</b> /1]  |
|      | 0: Display on   |
|      | 1: Display off  |

| 5965 | Restart Copy Function <b>DFU</b>               |
|------|--|
|      | Enables/disables the Additional Copy function. |
|      | [0 ~ 1/ <b>0</b> /1 step]                      |
|      | 0: Disable                                     |
|      | 1: Enable                                      |

| 5980 | Counting Units: Total Counter <b>DFU</b>             |
|------|--|
|      | 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.       |

| 5000 | 040 0 1 1  |  |  |  |
|------|--|--|--|--|
| 5990 | SMC Printout   |  |  |  |
|      | Do this SP to output the SMC print.  |  |  |  |
|      | The image is output in an A4 LEF size.   |  |  |  |
|      | <ul> <li>The paper roll</li> </ul>   | The paper roll is automatically used.                        |  |  |
|      | • If the roll feeder is not installed, feed A4 LEF/LTR LEF 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.      |  |  |



| 5997 | Optional Counter Unit                                       |
|------|---|
|      | Sets the units for the key counter (or keycard). Japan only |
|      | Push "x1/10" or "x1".                                       |
|      | For North America, the key counter units are set by SP5980. |

| 5998 | Developer Lot Number   |
|------|--|
|      | Use this SP to enter the developer lot number at machine installation and when the developer is replaced.  |
|      | <b>Note</b> : 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 <sup>™</sup> once then press <sup>™</sup> .                                      |
|      | 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.) |
|      | 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 S  | EF   |
| 011  | Original Size: Metric: Std. A: A3 S  | EF   |
| 012  | Original Size: Metric: Std. A: A3 LI | EF .   |
| 013  | Original Size: Metric: Std. A: A2 S  | EF   |
| 014  | Original Size: Metric: Std. A: A2 LI | EF .   |
| 015  | Original Size: Metric: Std. A: A1 S  | EF   |
| 016  | Original Size: Metric: Std. A: A1 LI | EF .   |
| 017  | Original Size: Metric: Std. A: A0 S  |  |
| 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: Custo | om 841 mm  |
| 031  | Original Size: Metric: Std. A: Custo | om 594 mm  |
| 032  | Original Size: Metric: Std. A: Custo | om 420 mm  |
| 033  | Original Size: Metric: Std. A: Custo | om 297 mm  |
| 034  | Original Size: Metric: Std. A: Custo | om 210 mm  |
| 035  | Original Size: Metric: Std. A: Custo |  |
| 050  | Original Size: Metric: Std. B: B4 S  |  |
| 051  | Original Size: Metric: Std. B: B3 S  |  |
| 052  | Original Size: Metric: Std. B: B3 LI |  |
| 053  | Original Size: Metric: Std. B: B2 S  | EF   |
| 054  | Original Size: Metric: Std. B: B2 LI |  |
| 055  | Original Size: Metric: Std. B: B1 S  | EF   |
| 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: Custo | om 728 mm  |

| 7002 | Original Counter   |
|------|--|
| 062  | Original Size: Metric: Std. B: Custom 515 mm   |
| 062  | Original Size: Metric: Std. B. Custom 313 min  |
| 063  | Original Size: Metric: Std. B. Custom 364 mm   |
| 065  | Original Size: Metric: Std. B. Custom 257 mm   |
| 065  | Inch   |
| 100  | Original Size: Inch: Eng: 8 ½ x 11 SEF (A)   |
| 100  | Original Size: Inch: Eng. 6 /2 x 11 SEF (A)  Original Size: Inch: Eng: 11 x 17 SEF (B) |
| 101  | Original Size: Inch: Eng. 11 x 17 SEF (B)  Original Size: Inch: Eng: 11 x 17 LEF (B)   |
| 102  | Original Size: Inch: Eng. 17 x 17 EEF (B)  Original Size: Inch: Eng: 17 x 22 SEF (C)   |
| 103  | Original Size: Inch: Eng. 17 x 22 SEF (C)  Original Size: Inch: Eng: 17 x 22 LEF (C)   |
| 104  | Original Size: Inch: Eng. 17 x 22 LEF (C)  Original Size: Inch: Eng: 22 x 34 SEF (D)   |
| 106  | Original Size: Inch: Eng. 22 x 34 SEF (D)  Original Size: Inch: Eng. 22 x 34 LEF (D)   |
| 107  | Original Size: Inch: Eng. 22 x 34 EEF (E)  |
| 107  | Original Size: Inch: Eng. 34 x 44 SEF (E)  |
| 109  | Original Size: Inch: Eng. 30 X 42 SEI (E)  |
| 110  | Original Size: Inch: Eng. 20 Original Size: Inch: Eng. 3C                              |
| 111  | Original Size: Inch: Eng. 30 Original Size: Inch: Eng. 2D                              |
| 112  | Original Size: Inch: Eng. 2D  Original Size: Inch: Eng. 3D                             |
| 113  | Original Size: Inch: Eng. 3D  Original Size: Inch: Eng: 4D                             |
| 114  | Original Size: Inch: Eng. 4D   |
| 115  | Original Size: Inch: Eng. 6D   |
| 116  | Original Size: Inch: Eng. 7D   |
| 117  | Original Size: Inch: Eng. 75  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: 81/2 x 13 SEF   |
| 128  | Original Size: Inch: 81/2 x 14 SEF   |
| 130  |  |
| 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  |   |
| 026  | Original Size: Metric: Std. A: 2A0  |
| 027  | Original Size: Metric: Std. A: 3A0  |
| 028  | Original Size: Metric: Std. A: 4A0  |
| 029  |   |
| 030  | Original Size: Metric: Std. A: Custom 841 mm                                      |
| 031  | Original Size: Metric: Std. A: Custom 594 mm                                      |
| 032  |   |
| 033  |   |
| 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  |

| 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 725 mm   |
| 063  | Original Size: Metric: Std. B: Custom 364 mm   |
| 064  | Original Size: Metric: Std. B: Custom 304 mm   |
| 065  | Original Size: Metric: Std. B: Custom Bypass   |
| 005  | Inch   |
| 100  | Transfer Size: Inch: Eng: 8 ½ x 11 SEF (A)   |
| 101  | Transfer Size: Inch: Eng: 11 x 17 SEF (B)  |
| 101  | Transfer Size: Inch: Eng: 11 x 17 LEF (B)  |
| 102  | Transfer Size: Inch: Eng: 17 x 77 EET (B)  |
| 103  | Transfer Size: Inch: Eng: 17 x 22 SEF (C)  |
|      | Transfer Size: Inch: Eng: 17 x 22 LEF (C)  Transfer Size: Inch: Eng: 22 x 34 SEF (D) |
| 105  |  |
| 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   |
|      | 1  |

| 7003 | Print Counter                             |
|------|---|
| 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.                             |  |  |
|      | [0~999999/1/1]                                    |  |  |

| 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  | 81/2 x 14 Cut SEF     |   |  |
| 165  | 81/2 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 |  |
| 002  | 35.4 ~ 49.9%                            | reproduction ratios).   |  |
| 003  | 50.0 ~ 70.6%                            |   |  |
| 004  | 70.7 ~ 99.9%                            |   |  |
| 005  | 100%                                    |   |  |
| 006  | 100.1 ~ 199.9%                          |   |  |
| 007  | 200.0 ~ 400.0%                          |   |  |
| 800  | 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                               |   |  |

| 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                  |   |
| 800  | 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                                |  |
| 800  | 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  |  |
| 800  | Latest 7th  |  |
| 009  | Latest 8th  |  |
| 010  | Latest 9th  |  |

| 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. |

| 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           |  |
|-------|---|--|
| 7 300 | Shows the jam count for each paper width. |  |
|       | Metric                                    |  |
| 006   |   |  |
| 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                             |  |
| 200   | O.O III CHI TXOII                         |  |

| 7507 |            | Jam History   |   |  |
|------|------------|---|---|--|
|      |            | Shows the 10 most recer   | at iome   |  |
|      | 001        | Copy Latest   | it janis.   |  |
|      |            | Copy Latest 1st   |   |  |
|      | 002        | Copy Latest 1st   |   |  |
|      | 003        | Copy Latest 3rd   |   |  |
|      | 004        | Copy Latest 4th   |   |  |
|      | 006        | Copy Latest 5th   |   |  |
|      | 007        | Copy Latest 6th   |   |  |
|      | 008        |   |   |  |
|      | 009        | Copy Latest 7th Copy Latest 8th Copy Latest 9th   |   |  |
|      | 010        |   |   |  |
|      | 010        | Original Latest   |   |  |
|      | 011        | Original Latest 1st   |   |  |
|      | 012        |   |   |  |
|      | 013        | Original Latest 2nd   |   |  |
|      | 014        | Original Latest 3rd Original Latest 4th   |   |  |
|      |            | Original Latest 5th   |   |  |
|      | 016        | Original Latest 6th   |   |  |
|      | 017<br>018 | Original Latest 7th   |   |  |
|      | 018        | Original Latest 8th   |   |  |
|      | 020        | Original Latest 9th   |   |  |
|      | 020        | Original Latest 9th   |   |  |
|      |            |   |   |  |
| 7801 |            | ROM Version   | T =   |  |
|      | 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.   |  |
| 1000 |            |   |   |  |
| 7000 |            |   |   |  |
| 7804 |            | PM Counter Clear  | Do this SP to reset SP7803 (PM Counter).  |  |
|      |            | PM Counter Clear  | Do this SP to reset SP7803 (PM Counter).  |  |
|      |            | PM Counter Clear SC/Jam Counter Clear   | Do this SP to reset SP7803 (PM Counter).  Do this SP to reset the Jam/SC count to 0.  |  |
| 7804 |            |   |   |  |
| 7804 |            | SC/Jam Counter Clear Counter Clear  | Do this SP to reset the Jam/SC count to 0.  |  |
| 7804 |            | SC/Jam Counter Clear  Counter Clear  Do this SP to reset non-a                                    |   |  |
| 7804 |            | SC/Jam Counter Clear  Counter Clear  Do this SP to reset non-a                                    | Do this SP to reset the Jam/SC count to 0.  ccounting counters to 0. The following counters are not reset:  |  |
| 7804 |            | SC/Jam Counter Clear  Counter Clear  Do this SP to reset non-a total counter (electronic counter) | Do this SP to reset the Jam/SC count to 0.  ccounting counters to 0. The following counters are not reset:  |  |
| 7804 |            | SC/Jam Counter Clear  Counter Clear  Do this SP to reset non-a total counter (electronic counter) | Do this SP to reset the Jam/SC count to 0.  ccounting counters to 0. The following counters are not reset: ounter), copy counter, print counter, P/O counter, C/O |  |

Nullifies the key operator code.

| 7811          |     | Original Counter Clea                                   | r Do this SP to reset SP7002 (Original Counter).  |  |
|---------------|-----|---|---|--|
|               |     | <u> </u>  | (* 5 * * * * * * * * * * * * * * * * * *  |  |
| 7816          |     | Total Sheet by Roll Counter Clear                       |   |  |
| 7010          | 001 | 1st Roll Resets the copy counter for each roll (SP7204) |   |  |
|               | 002 | 2nd Roll  | resets the copy counter for each foil (St 7204)   |  |
|               | 003 | Cassette  |   |  |
|               | 005 | By-pass feed  |   |  |
|               |     |   |   |  |
| 7819          |     | Conv Count: Clear M                                     | lidth   |  |
| 7019          |     | Copy Count: Clear W                                     | ne copy counter for each roll width (SP7101)  |  |
|               |     | Do tills or to leset ti                                 | le copy counter for each foil width (GF7 for)   |  |
|               |     | I =   |   |  |
| 7822          |     |   | Reproduction Ratio Clear  |  |
|               |     |   | ne copy counters for SP7301 (Total Sheet Count by Reproduction  |  |
|               |     | Ratio)  |   |  |
| I <del></del> |     |   |   |  |
| 7820          |     | Send on Total Count                                     |   |  |
|               |     | Sends the electronic                                    | total count.  |  |
|               |     |   |   |  |
| 7822          |     | Count Clear: Magnifi                                    | cation Japan Only   |  |
|               |     | Clears SP7301.  |   |  |
|               |     |   |   |  |
| h             |     |   |   |  |
| 7825          |     | Total Feed Meter Cle                                    |   |  |
|               |     |   | ne electronic total counter.  |  |
|               |     |   | not show that the counter can be reset. Check the initial settings  |  |
|               |     |   | is possible. When the electronic counter is more than 0, the nter starts counting. (The initial value of the mechanical total |  |
|               |     | counter is 0.)  | inter starts counting. (The initial value of the mechanical total   |  |
| <u> </u>      |     | 1   |   |  |
| 7826          |     | Optional Counter Err                                    | or Janan Only   |  |
| 1020          |     |   | unt for unsuccessful attempts to read the count for an optional   |  |
|               |     | counter device.   | and the description of rough the countries an optional  |  |
| <u> </u>      |     |   |   |  |
| <u> </u>      |     | T = = =   |   |  |
| 7827          |     | Optional Counter Err                                    |   |  |
|               |     | Clears all the count of                                 | of SP7826.  |  |

| Coverage Data Clear |   |   |
|---------------------|---|---|
| These SP            | s reset the data                          | coverage SPs shown below.   |
| Clears:             | SP8831                                    | Dot Coverage Count: Accumulated Average   |
|                     | SP8841                                    | Dot Coverage Count: First Page  |
| Clears:             | SP8781                                    | Number of Total Toner Cartridges Used   |
| 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   |
| Clears:             | SP8851                                    | Dot Coverage Count: 0-10%   |
|                     | SP8861                                    | Dot Coverage Count: 11-20%  |
|                     | SP8871                                    | Dot Coverage Count: 21-30%  |
|                     | SP8881                                    | Dot Coverage Count: 31%-  |
| Clears:             | Clears all Dot (                          | Coverage Count SPs (SP8831~SP8881)  |
|                     | These SP<br>Clears:<br>Clears:<br>Clears: | These SPs reset the data of Clears:    SP8831     SP8841     Clears:   SP8781     Clears:   SP8901 001     SP8901 010     SP8911 001     SP8911 010     Clears:   SP8851     SP8861     SP8871     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). |  |

| 7 | 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 of toner bottles installed in the machine. |   |  |
|  | of torici 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/ <b>0</b> /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  |  |

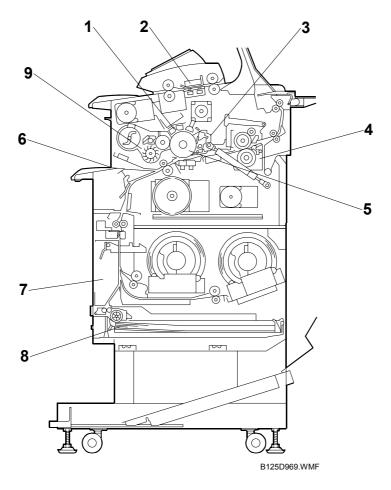
| 8911 | Toner Cartridge Count: Before Previous  |
|------|---|
|      | Shows the number of meters and pages that were made with the bottle before the previous toner bottle. |
| 001  | Pages   |
| 010  | Meters  |

# Detailed Descriptions

# 6. DETAILED DESCRIPTIONS

### 6.1 OVERVIEW

# **6.1.1 MACHINE GENERAL LAYOUT**



- 1. Image Writing Unit
- 2. Scanner Unit
- 3. Cleaning Unit
- **4.** Fusing Unit
- 5. OPC Drum
- 6. Manual Feed Table
- 7. Roll Feeder
- 8. Paper Cassette
- 9. Development Unit

Uses an LPH (LED Print Head)

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.

A counter blade cleans the drum.

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.

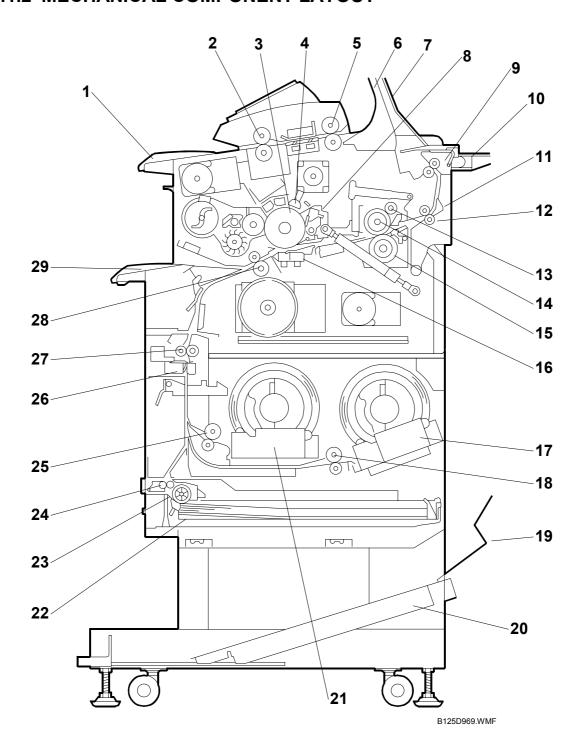
The components around the OPC drum do the charging, image writing, development, transfer, separation, cleaning, and quenching. The user can feed paper from the manual feed table (this is also referred to as the bypass tray).

Paper also feeds from the optional roll feeder with one or two paper rolls installed.

Cut sheets are also supplied from the optional paper cassette. Toner transfers from a magnetic roller to the OPC drum. An ID sensor controls the toner concentration.

OVERVIEW 13 February 2004

# **6.1.2 MECHANICAL COMPONENT LAYOUT**



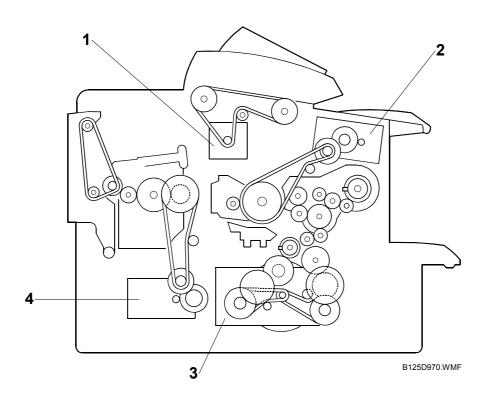
13 February 2004 OVERVIEW

- 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

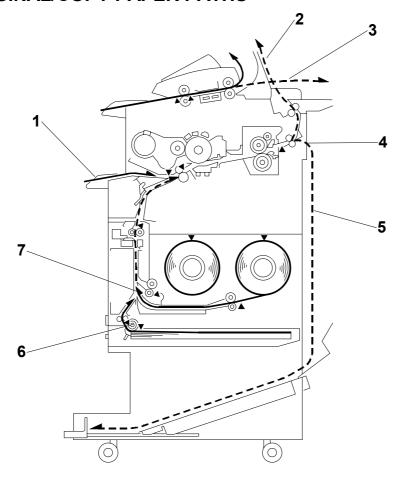
Detailed Descriptions OVERVIEW 13 February 2004

# **6.1.3 DRIVE LAYOUT**



- 1. Scanner Motor
- 2. Drum Motor
- 3. Main Motor
- 4. Fusing Motor

# **6.1.4 ORIGINAL/COPY PAPER PATHS**



B125D971.WMF

- 1. Manual Feed (Bypass) Path
- 2. Original Path (Upper)
- 3. Original Path (Straight-Through)
- 4. Paper Path (Upper)
- 5. Paper Path (Rear)
- 6. Paper Path (Paper Cassette)
- 7. Paper Path (Rolls)

Upper output stacker installed. Upper output stacker removed.

Normal (Default)

Selectable\*1

B461 (1 Roll), B462 (2 Rolls)

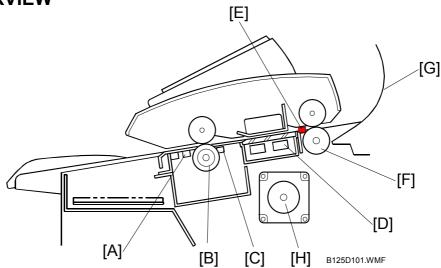
<sup>\*1</sup> The position of the copy-exit selection lever on the rear top edge of the machine controls where the copy feeds out.

| Lever UP  | Lever DOWN   |
|---|--|
| The operator pushes the "Upper Copy Output" key to set the exit:  Key lamp ON: Copy feeds out at 2. | The "Upper Copy Output" key is disabled and the copy always feeds out at <b>4</b> . For normal operation, the lever must be up; this |
| Key lamp OFF: Copy feeds out at 4   | enables the "Upper Copy Output" key.   |

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### 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

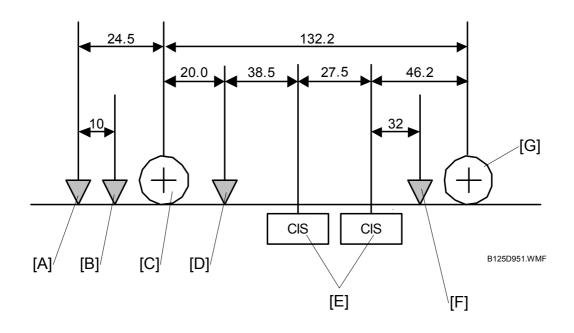
Upper output tray [G]: Receives the original after scanning. Long originals will curl in the tray.

**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. (\$\infty\$6.2.4)

# Detailed Descriptions

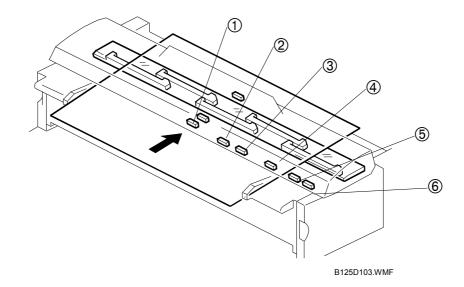
#### **6.2.2 SCANNER LAYOUT**



- [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.

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#### **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 [A] detects A4 or B4 SEF and North American A size originals.
- The original width sensors [B] to [F] detect larger sizes.

The "Original Size Detect" user tool setting controls the types of original sizes that the machine detects: User Tools $\rightarrow$  1. System Settings $\rightarrow$  1. General Settings $\rightarrow$  2. Original Size Detect.

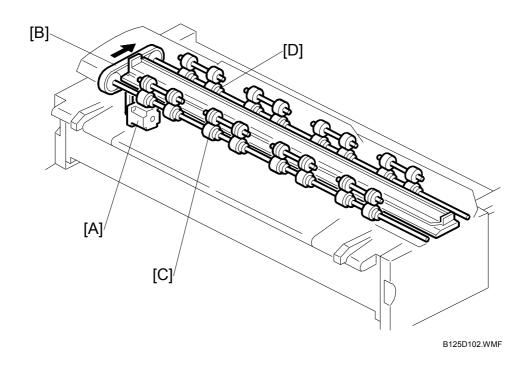
• In the metric model, this is either A series or B series.

N/1-4-:-

• In the inch model, this is either Engineering (ANSI) or Architecture.

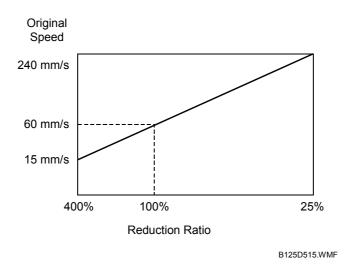
| Metric | ;           |        |        |        |        |        |        |
|--------|-------------|--------|--------|--------|--------|--------|--------|
| EU     |             | 1      | 2      | 3      | 4      | (5)    | 6      |
|        | A Series    | A4 SEF | A3 SEF | A2 SEF | A1 SEF | A0 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) | 81/2"  | 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

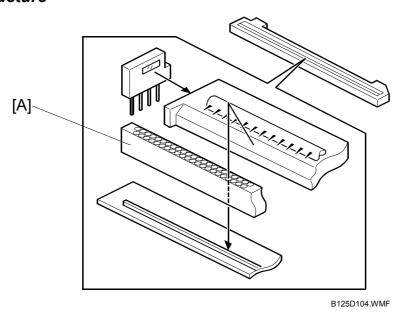


The speed of the original is faster if the magnification ratio is lower.

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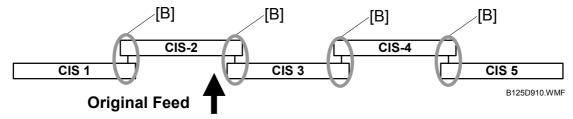
#### 6.2.6 SCANNING MECHANISM

#### **CIS Structure**



This machine uses a contact image sensor [A] ( 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 (361/2 inches) wide at 600 dpi.



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.

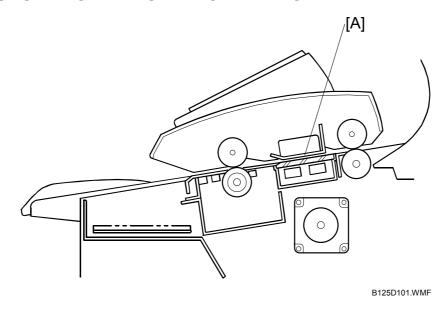
### **Printed Image**

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

B125D911.WMF

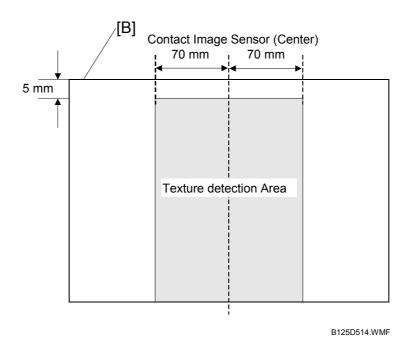
When you look at the copy to identify the areas scanned by each section, the numbering is in the opposite sequence, with CIS-5 on the left to CIS-1 on the right.

# **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.



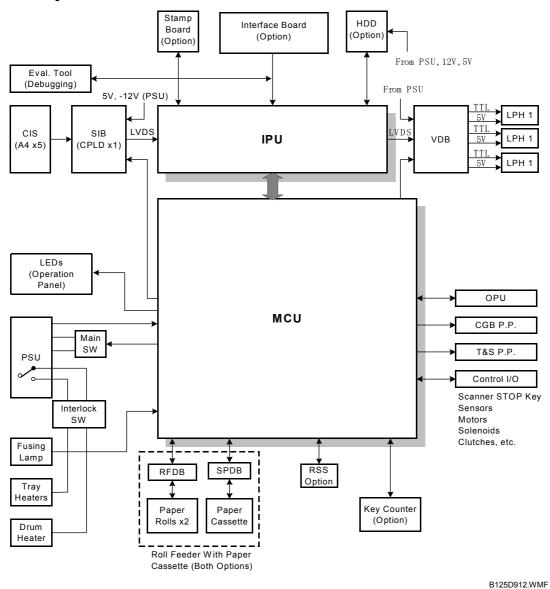
Desc

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.

# 6.3 IMAGE PROCESSING

### 6.3.1 OVERVIEW

### Overall System

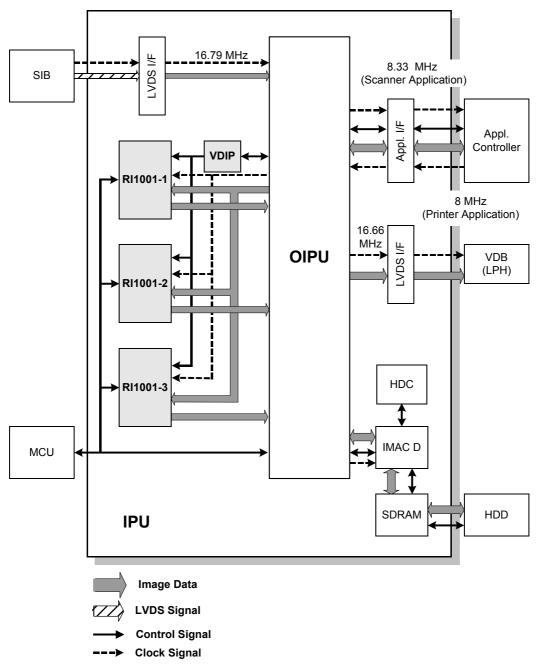


This block diagram shows the components of the image processing circuit.

# Detailed Jescriptions

#### **IPU Board Details**

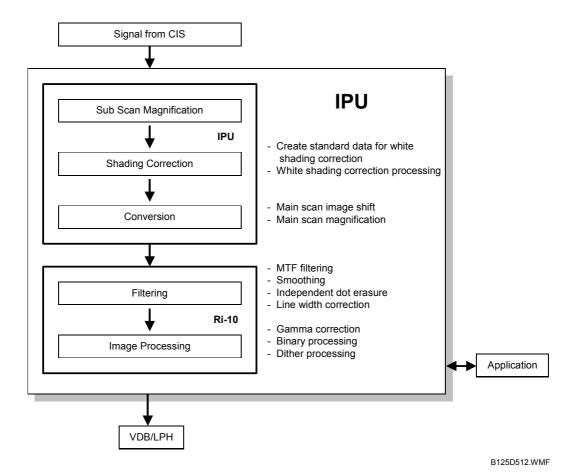
The VDIP is the interface between the OIPU and the RI1001 image processors. This diagram shows a map of the IPU board, and the data flow through the machine.



B125D913.WMF

# 6.3.2 GENERAL IMAGE PROCESSING FLOW CHART

Image processing is done in the IPU and Ri-10 image processors on the IPU board.



# Detailed escriptions

#### 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.  |
| 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.  |
| 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.  |

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  $\rightarrow$  General Features  $\rightarrow$  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)

# Text Mode

|                          | Image Processing Flow   | Related SP/UP Modes   |
|--------------------------|---|---|
|                          |   |   |
| Scanner Image Correction | Shading Correction  |   |
|                          | <b>\</b>  |   |
| Conversion<br>Processing | Main Scan Resolution<br>Conversion                                | SP4911-01~06 Magnification corrections  |
|                          | <u> </u>  | _   |
| Filtering                | MTF Filtering<br>Independent Dot Erasure<br>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 * <sup>2</sup> Filter strength (Normal, or Custom Setting)                  |
|                          |   |   |
| Density Control          | γ Correction  | User Tool * <sup>3</sup><br>Density adjustment  |
|                          |   | _   |
| Quality<br>Processing    | Error Diffusion   | SP4903 01 Selects the level of the image smoothing filter.                            |
|                          |   | •   |

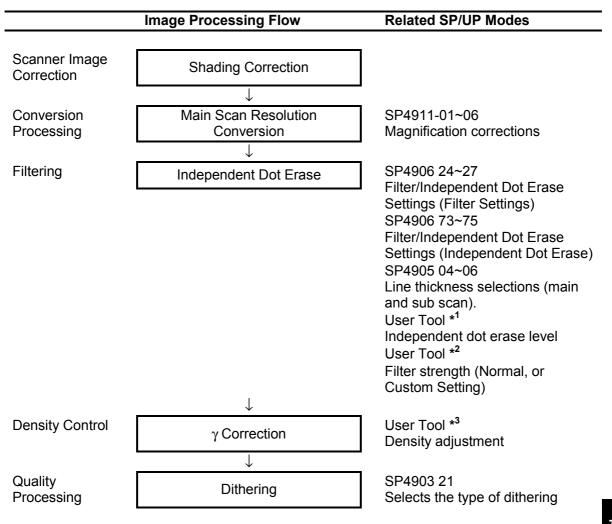
<sup>\*1</sup> User Tools (♣) → 2. Copier→ 11 Noise Reduction→ Text

\*2 User Tools (♣) → 2. Copier→ 12 Original Mode Quality→ Text

\*3 User Tools (♣) → 2. Copier→ 13 Original Mode Density→ Text

# Detalled Secriptions

#### **Photo Mode**

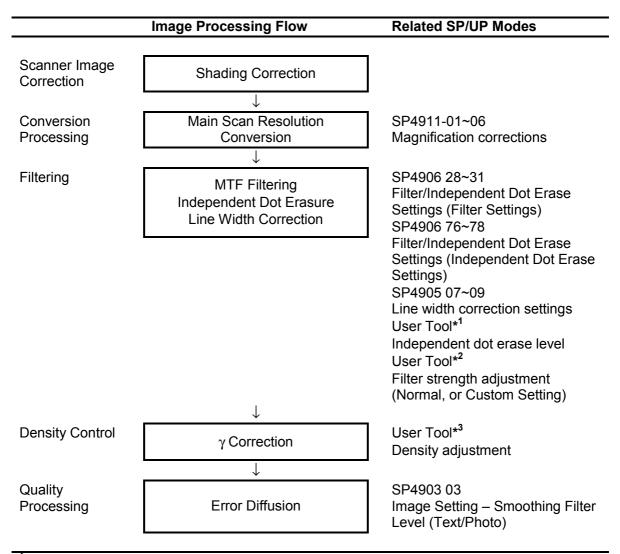


<sup>\*&</sup>lt;sup>1</sup> User Tools  $\textcircled{\$} \rightarrow 2$ . Copier  $\rightarrow$  11 Noise Reduction  $\rightarrow$  Photo

<sup>\*2</sup> User Tools  $\ \textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  12 Original Mode Quality  $\rightarrow$  Photo

 $<sup>*^3</sup>$  User Tools  $\textcircled{\$} \rightarrow 2$ . Copier  $\rightarrow$  13 Original Mode Density  $\rightarrow$  Photo

#### Text/Photo Mode



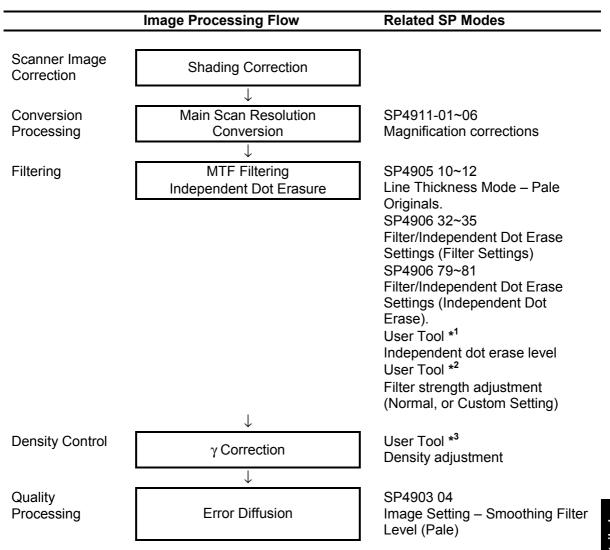
<sup>\*1</sup> User Tools  $\textcircled{\$} \rightarrow 2$ . Copier  $\rightarrow$  11 Noise Reduction  $\rightarrow$  Text/Photo

<sup>\*2</sup> User Tools  $\textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  12 Original Mode Quality  $\rightarrow$  Text/Photo

<sup>\*3</sup> User Tools  $\textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  13 Original Mode Density  $\rightarrow$  Text/Photo

# Detailed Descriptions

#### Pale Mode

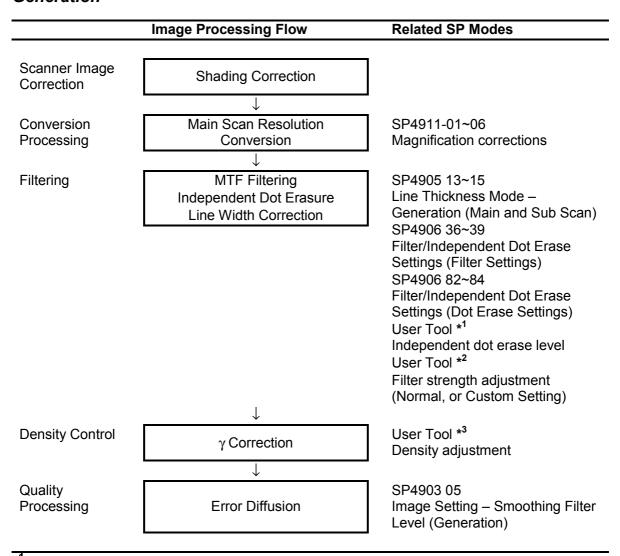


<sup>\*1</sup> User Tools  $\textcircled{\$} \rightarrow 2$ . Copier  $\rightarrow$  11 Noise Reduction  $\rightarrow$  Pale

<sup>\*2</sup> User Tools  $\ \ \overset{\cdot}{\textcircled{1}} \rightarrow$  2. Copier  $\rightarrow$  12 Original Mode Quality  $\rightarrow$  Pale

<sup>\*3</sup> User Tools  $\textcircled{\$} \rightarrow 2$ . Copier  $\rightarrow$  13 Original Mode Density  $\rightarrow$  Pale

#### Generation



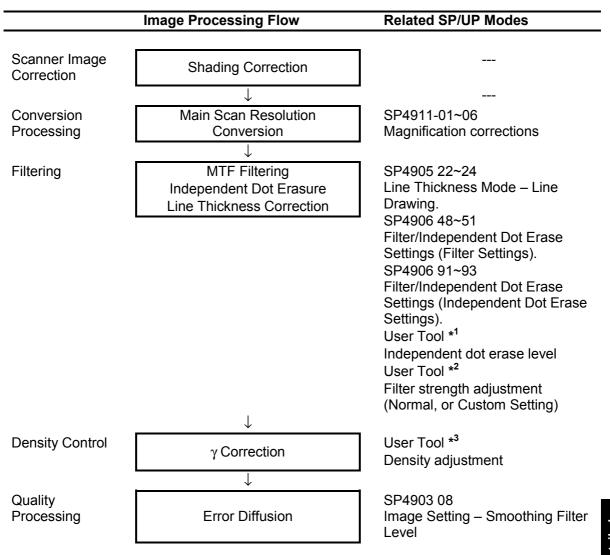
<sup>\*1</sup> User Tools  $\bigcirc$   $\rightarrow$  2. Copier  $\rightarrow$  11 Noise Reduction  $\rightarrow$  Generation Copy

<sup>\*2</sup> User Tools  $\ \textcircled{\$} \to 2$ . Copier  $\to$  12 Original Mode Quality  $\to$  Generation Copy

<sup>\*3</sup> User Tools  $\textcircled{\$} \rightarrow 2$ . Copier  $\rightarrow$  13 Original Mode Density  $\rightarrow$  Generation Copy

# Detailed Jescriptions

#### **Drawing Mode**



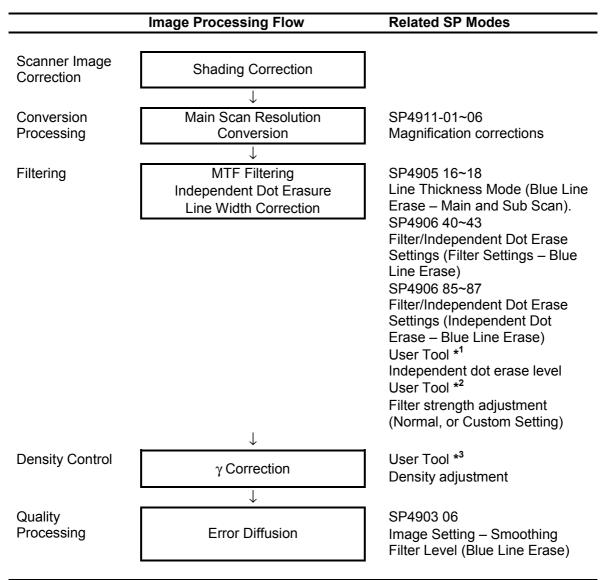
<sup>\*1</sup> User Tools  $\textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  11 Noise Reduction  $\rightarrow$  Drawing

 $<sup>^{*2}</sup>$  User Tools  $\textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  12 Original Mode Quality  $\rightarrow$  Drawing

<sup>\*2</sup> User Tools  $\textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  13 Original Mode Density  $\rightarrow$  Drawing

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#### **Background Lines Mode**



<sup>\*1</sup> User Tools  $\textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  11 Noise Reduction  $\rightarrow$  Background Lines

 $<sup>^{*2}</sup>$  User Tools  $\textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  12 Original Mode Quality  $\rightarrow$  Background Lines

<sup>\*3</sup> User Tools  $\textcircled{\$} \rightarrow$  2. Copier  $\rightarrow$  13 Original Mode Density  $\rightarrow$  Background Lines

# Sharpen Text Mode

|                             | Image Processing Flow           | Related SP/UP Modes   |
|-----------------------------|---------------------------------|---|
| Scanner Image<br>Correction | Shading Correction              |   |
| Conversion<br>Processing    | Main Scan Resolution Conversion | SP4911-01~06<br>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 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 * <sup>3</sup><br>Density adjustment  |
| Quality<br>Processing       | ↓<br>Error Diffusion            | SP4903-07<br>Image Setting – Smoothing<br>Filter Level (Photo 2).   |

<sup>\*1</sup> User Tools ③ → 2. Copier → 11 Noise Reduction → Sharpen Text

\*2 User Tools ③ → 2. Copier → 12 Original Mode Quality → Sharpen Text

\*3 User Tools ③ → 2. Copier → 13 Original Mode Density → Sharpen Text

#### **6.3.4 INDEPENDENT DOT ERASE**

The user sets the strength of independent dot erase with this User Tool:

- **③**→ 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  | _  | _  | Н  | _  | _   | _   | _   |

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.

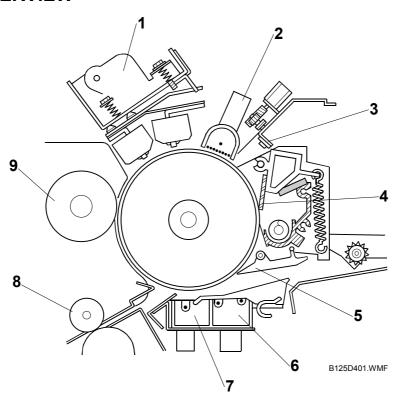
If the strength values are higher, the performance of the filter is stronger. If the strength of the filter is higher, the reproduction of low contrast documents is better but moiré can occur more frequently.

For more on the range of SP adjustments available, see Section 6.3.3. "Original Modes".

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# 6.4 AROUND THE DRUM

# 6.4.1 OVERVIEW



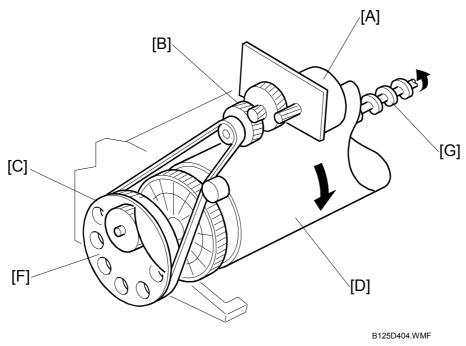
- 1. LPH (LED Print Head)
- 2. Charge Corona Unit
- 3. Quenching Lamp (LED Array)
- 4. Cleaning Blade
- 5. Pick-off Pawl

- 6. T&S Unit (Separation Corona)
- 7. T&S Unit (Transfer Corona)
- 8. Registration Rollers
- 9. Development Roller

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].

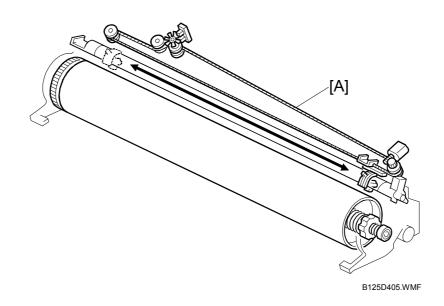
When paper feed starts:

- 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.

The drum motor turns the drum in the opposite direction at the end of each job 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).

Detailed Jescriptions AROUND THE DRUM 13 February 2004

# **6.4.3 CHARGE CORONA UNIT**



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 some grid wires. The grid wires make sure that the charge on the OPC drum is constant.

Charges used for this machine:

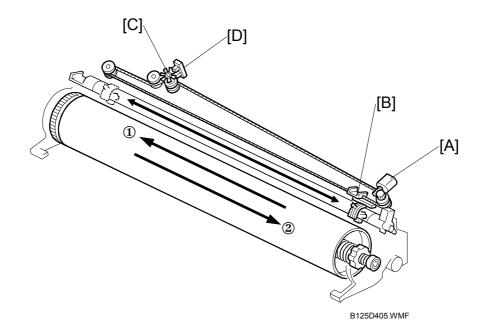
• Grid: -800 V

• Drum surface: -850 V

• Corona wire: About 1200 μA

# Descriptions

## **6.4.4 CORONA WIRE CLEANING**



The corona wire is cleaned immediately after the main power switch or operation power switch is switched on, if these two conditions occur at the same time:

- 600 m of paper 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].

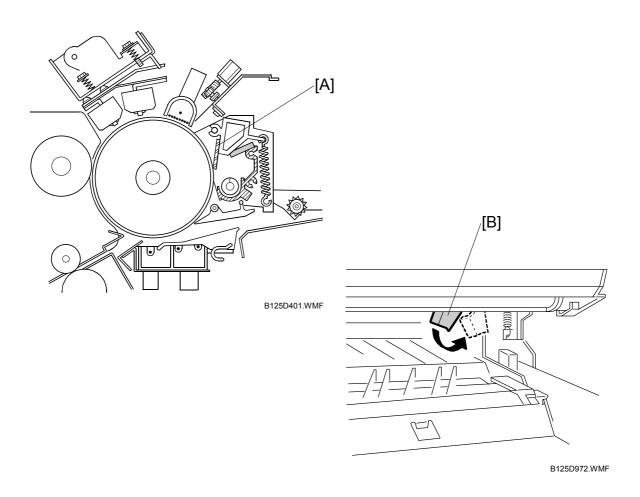
When the cleaning pad gets to the left side (as shown above), the motor changes direction and pulls the cleaning pad back to the home position on the right.

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.

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## 6.4.5 DRUM CLEANING



This machine uses a counter blade system to clean toner from the surface of the drum. ( 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.

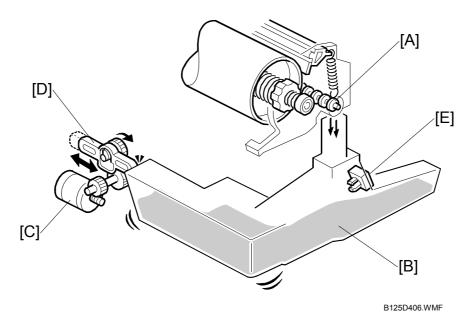
- Set [B] to the right: The blade touches the drum for normal operation.
- Set [B] to the left: The blade is away from the drum.

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  $^{\circ}$ 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.

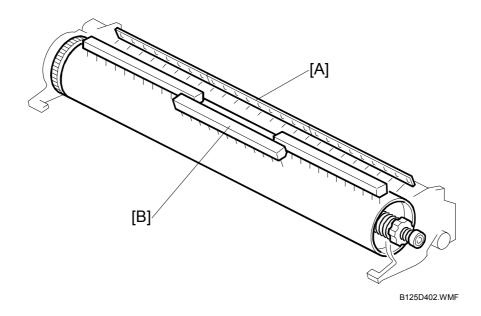
When the used toner overflow sensor [E] detects that the used toner tank is full, the overflow indicator on the operation panel starts to flash. Then:

- 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).

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## 6.4.7 QUENCHING

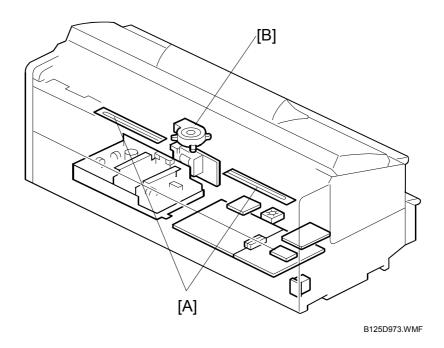


The quenching lamp [A], an array of LEDs, is behind the LPH [B].

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.

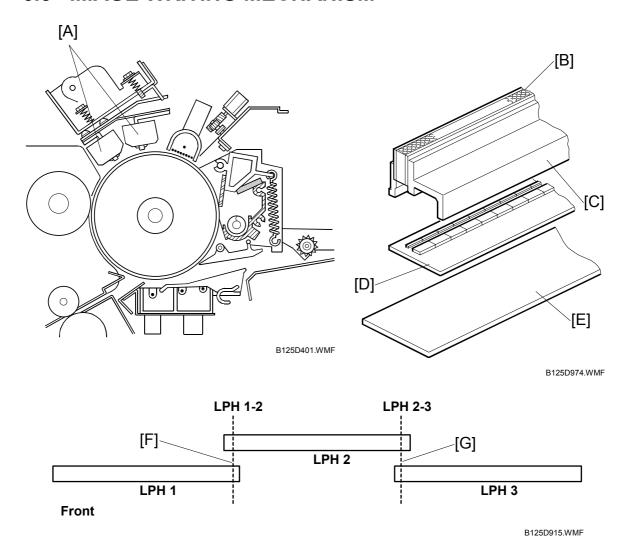
A cooling fan [B] moves the air.

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.

Detailed escriptions

## 6.5 IMAGE WRITING MECHANISM



This machine uses an LPH (LED Print Head) [A] that sends light directly to the OPC drum to make a latent image.

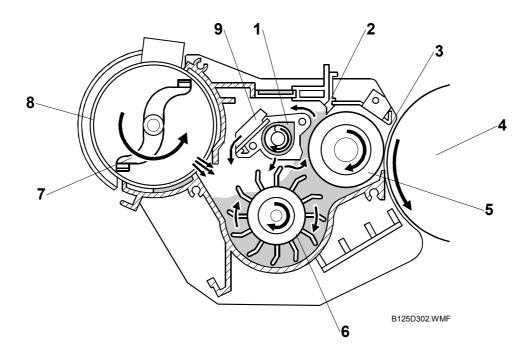
The A0-size 600-dpi print head is an array of connected self-focusing lenses [B] above an LED array [C] and drive board [D], and attached to a heat sink [E].

**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

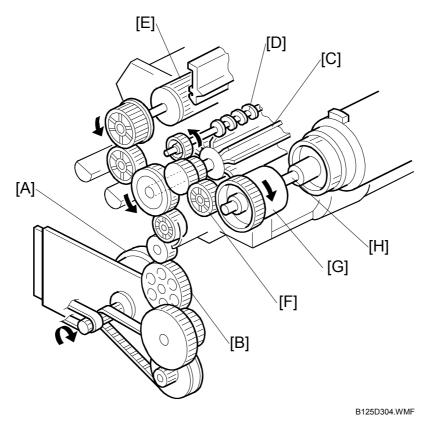
- 6. Paddle Roller
- 7. Toner Agitator
- 8. Toner Cartridge
- 9. Separator

Detailed Descriptions

**NOTE:** The development unit does not have a TD sensor. The machine uses only the ID sensor for toner supply control.

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## 6.6.2 DEVELOPMENT DRIVE MECHANISM



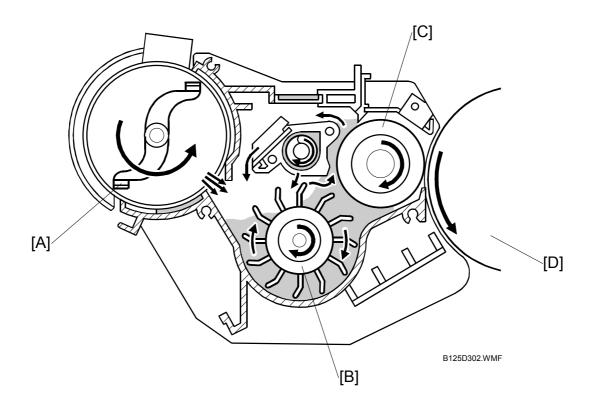
- [A]: Timing belt (from the main motor)
- [B]: Gear train
- [C]: Paddle roller
- [D]: Mixing auger
- [E]: Development roller
- [F]: Gear
- [G]: Toner supply clutch
- [H]: Toner agitator shaft (controlled by the toner supply clutch)

The toner supply clutch engages only when toner density control switches on the clutch to supply toner from the toner cartridge.

#### The main motor:

- Switches on 1.25 sec. after the drum motor switches on.
- Turns the development roller at 60 mm/s, to be 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

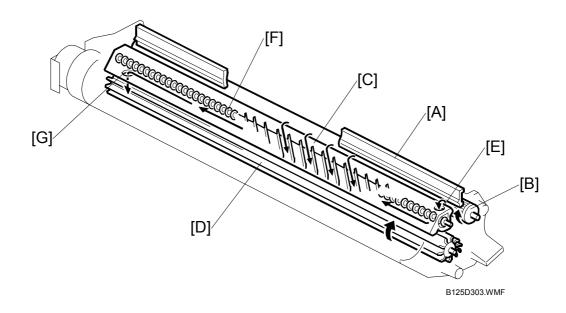


This machine uses dual-component development with toner concentration control (CI). Photocopying Processes – Development – Dual-component Development).

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.

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## 6.6.4 DEVELOPER CROSS-MIXING



(CII. Photocopying Processes – Development – Crossmixing)

[A]: Doctor blade

[B]: Development roller

[C]: Backspill plate

[D]: Paddle roller

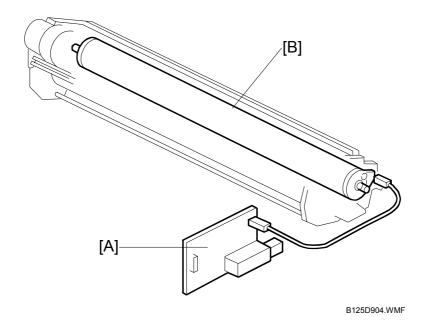
[E]: Auger inlet

[F]: Mixing auger

[G] Paddle roller inlet

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## **6.6.5 DEVELOPMENT BIAS**

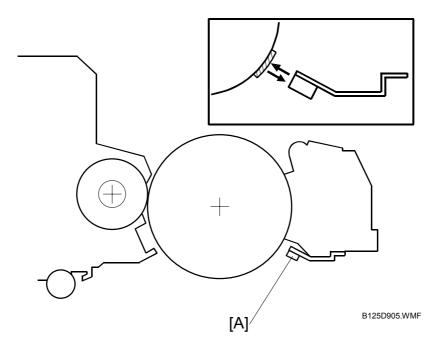


The CGB power pack [A] applies a negative bias (-650V) to the development roller [B], slightly higher than the remaining charge on the drum.

The development bias during copying is set by SP 2201 001 (Development Bias Adjustment – Image Area).

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## **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



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 swirched 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.

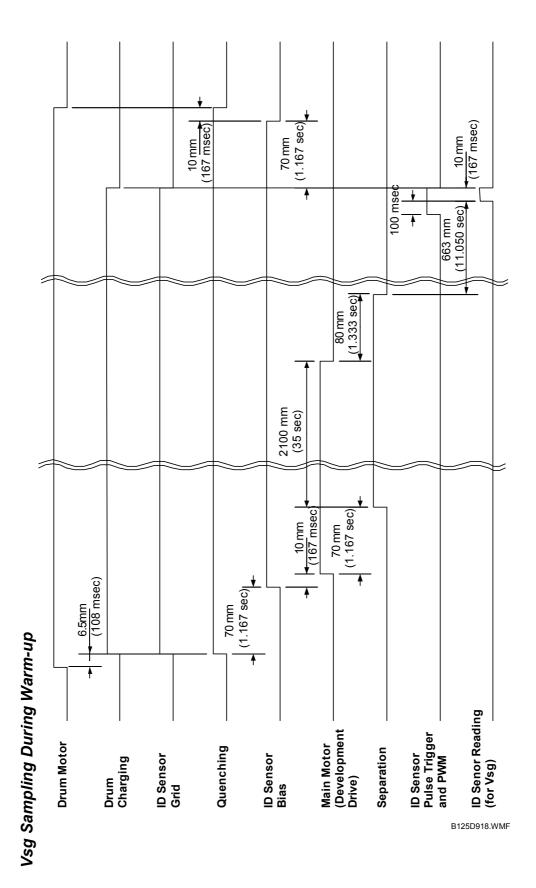
The machine releases toner to the development unit when the value calculated for Vsp/Vsg is more than 0.1. During standard operation, if Vsp/Vsg = 0.1 no toner is supplied.

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.

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#### 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:  $0.00 \sim 5.00 \text{ V}$ ).

## **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 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.

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## **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                                | М    | Н    | НН   |
| 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  | Н  | НН  |
|                   | 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%.

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## 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  | Н  | НН |
|                   | 2%                               | 4% | 6% | 8% |

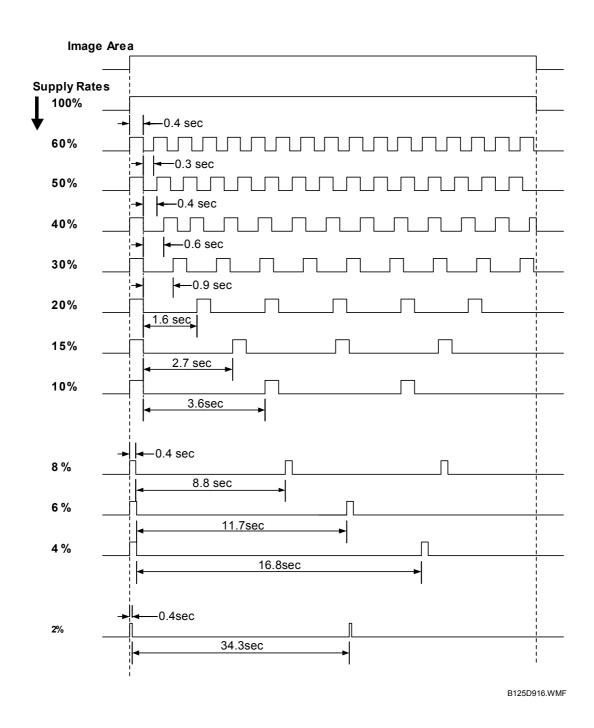
## **Toner Supply Clutch Operation**

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.

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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

The machine compares Vsp/Vsq with two SP settings to find when the toner cartridge is almost empty (Toner Near End) or fully empty (Toner End).

6.6.9 TONER END/NEAR-END DETECTION

 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.

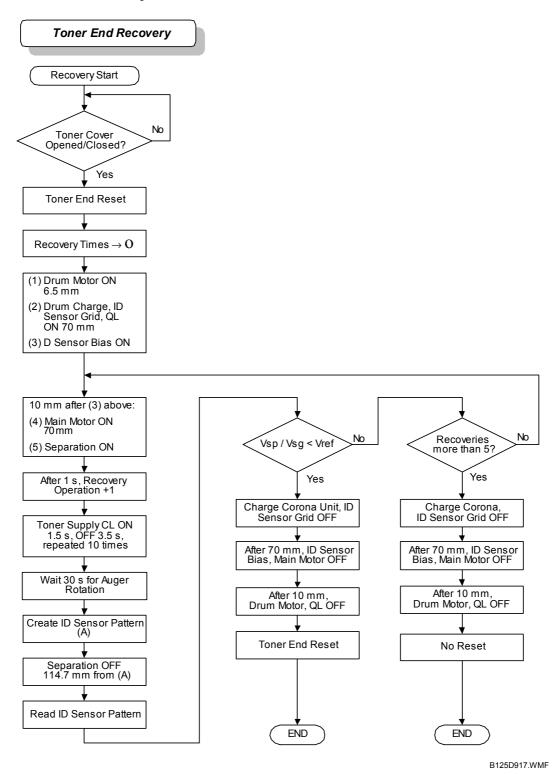
## Toner End Recovery

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.

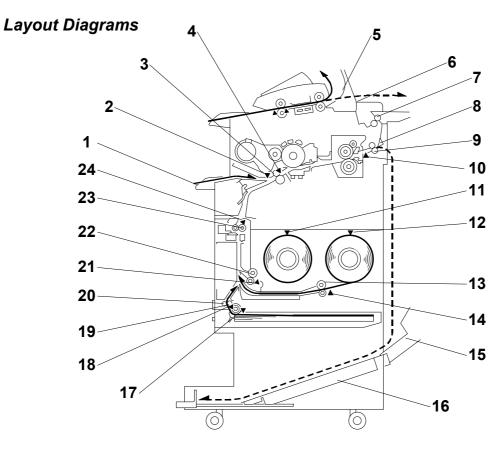
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## Toner End Recovery Flow Chart



## 6.7 PAPER FEED AND REGISTRATION

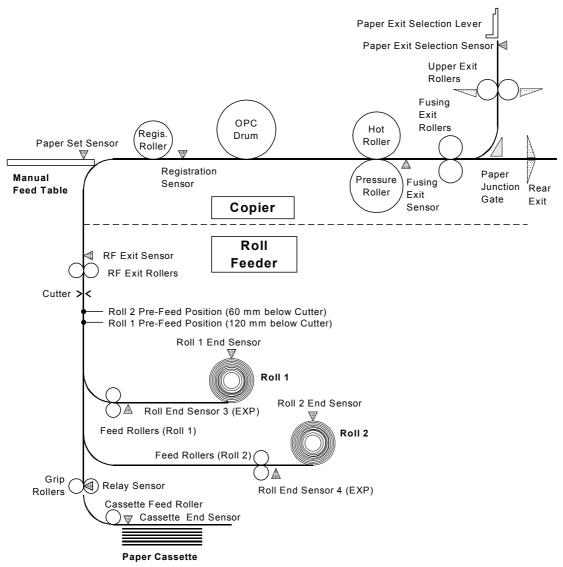
## 6.7.1 OVERVIEW



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- 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. Rear Exit
- 9. Fusing Exit Rollers
- 10. Exit Sensor
- 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



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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

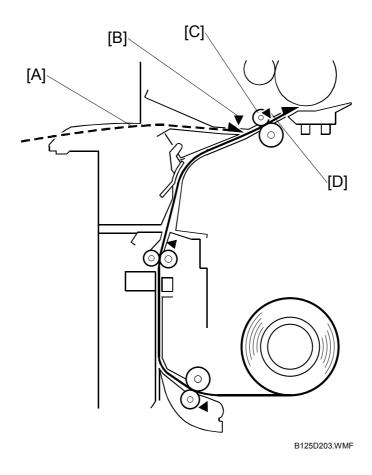
The optional universal-type paper cassette, installed in the bottom of the roll feeder, feeds cut sheets.

### 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).

## 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.

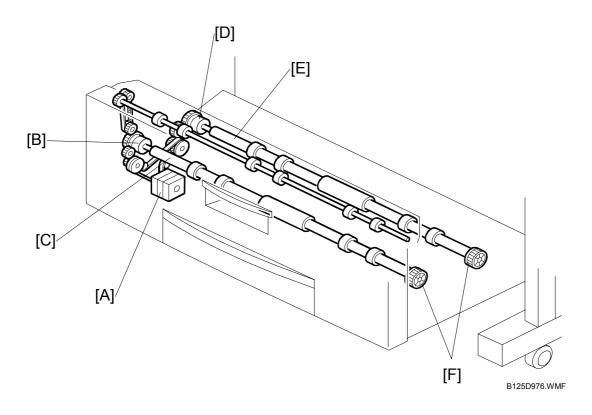
The registration clutch engages the registration roller [C] which feeds the sheet.

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**



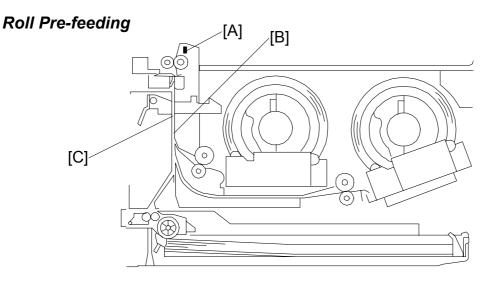
One roll feed motor [A] controls the two feed rollers:

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.



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### 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

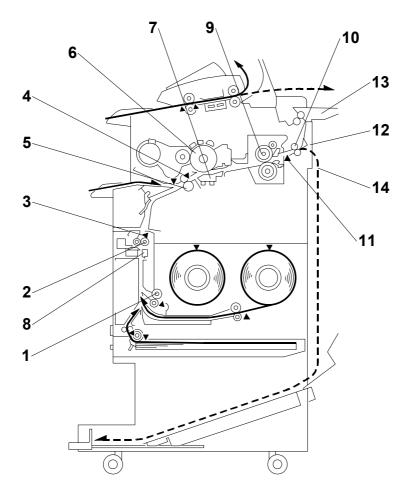
- Roll feed clutch 1 engages and turns the Roll 1 feed roller.
- The leading edge of the sheet feeds past the RF exit sensor [A].
- Feed stops.
- The roll feed motor pulls back the leading edge of the sheet until it is **120 mm** below the cutter. Then it stops. This is the pre-feed position [B] for 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**

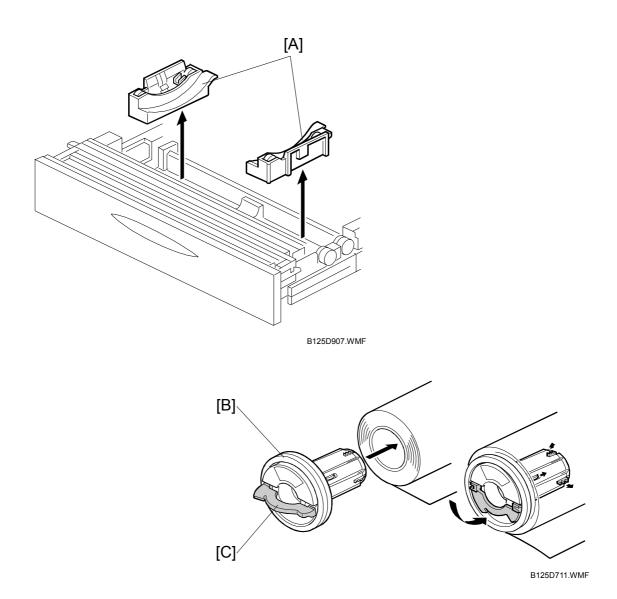


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Roll paper feed starts from the pre-feed position.

- 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)

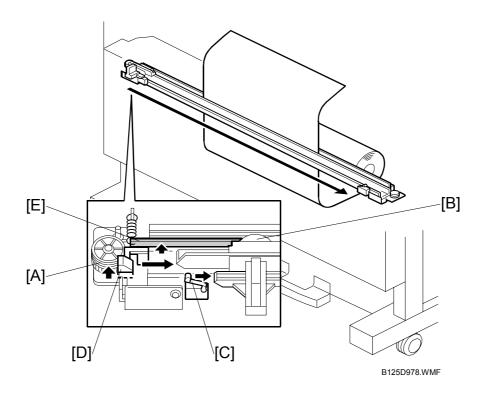
## 6.7.4 ROLL FEEDER PAPER HOLDERS



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.

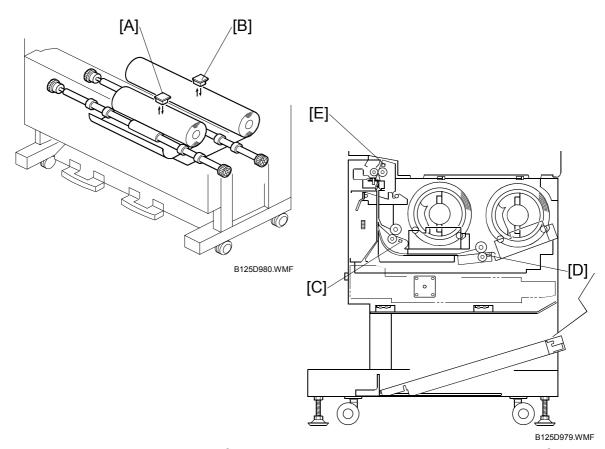
The tab opens and locks the paper holder when the cutter gets to the home position on the other side after cutting. This keeps the paper path open for the next sheet.

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

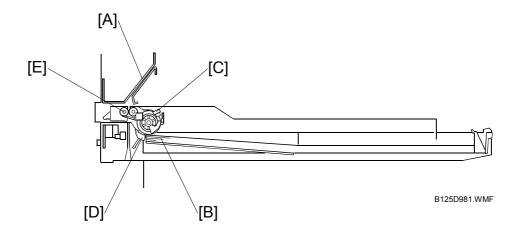
Also, two other sensors detect roll end if the core of the paper roll is a color other than black:

- 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.

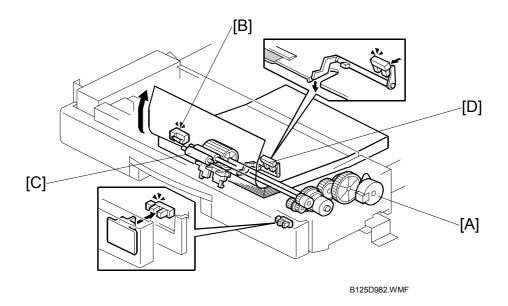
The grooves lift the supports and pull the springs attached to the bottom plate [B] of the paper cassette. This gives sufficient tension to keep the stack of paper on the bottom plate at the correct height for paper feed.

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.

### 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.

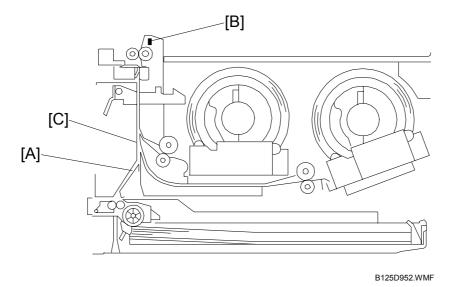
**NOTE:** After the cassette feed clutch switches off, the cassette feed roller continues to touch the paper. But, the pressure is very weak. Because of this, the grip rollers can pull the paper out easily.

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.

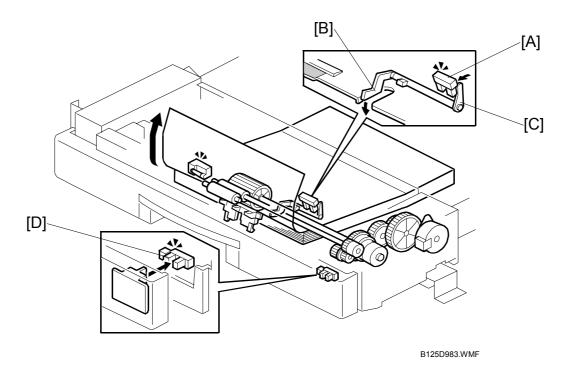


There are two pre-feed positions for the leading edge of cut sheets after the first sheet of a multi-page copy job. The length of the paper in the cassette controls the pre-feed position.

- 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.

## 6.7.9 PAPER CASSETTE PAPER END DETECTION

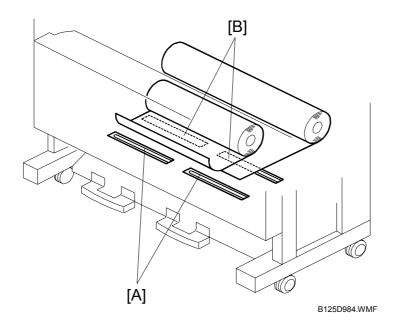


The paper end sensor [A] is above the paper cassette.

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 CONDENSATION PREVENTION**

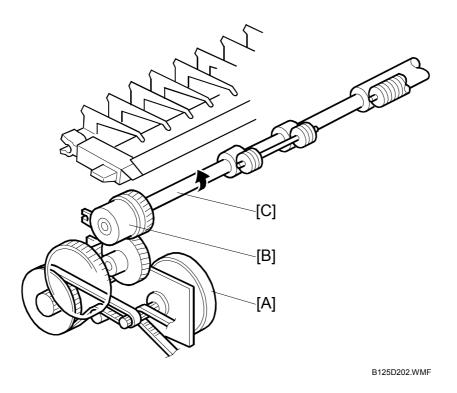


There are four dehumidifiers, two at the front [A] and two at the rear [B], for the roll feeder.

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.  |

## 6.7.11 REGISTRATION



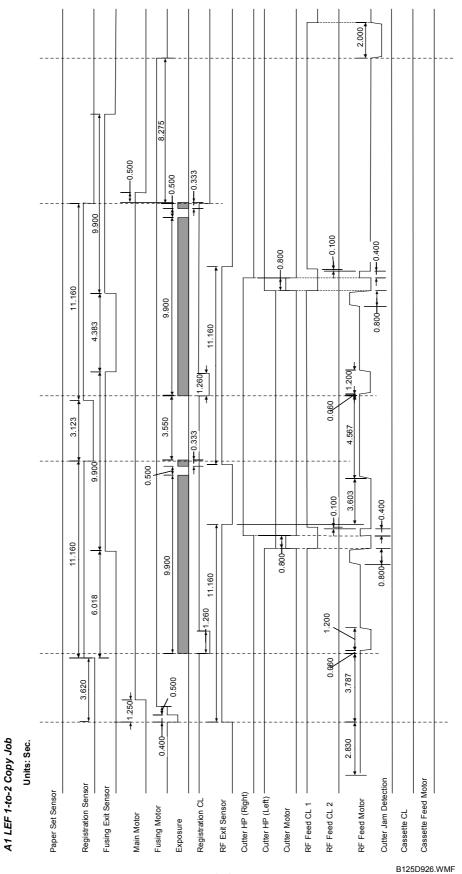
The main motor [A] and registration clutch [B] control the registration roller [C].

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.).

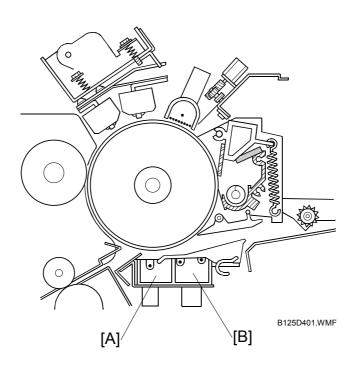
Then the registration clutch switches on again to feed the paper to the drum.

## 6.7.12 PAPER FEED TIMING CHART



## 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  $\mu$ m) 9.6 mm above the drum. This wire applies approx. 60  $\mu$ A 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

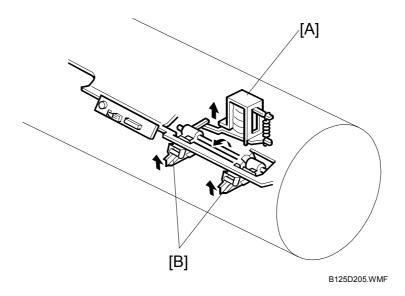
0.85 mm above the drum.

#### Separation Corona Unit

Applies approx. ac 280  $\mu$ A and dc –25  $\mu$ A 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.

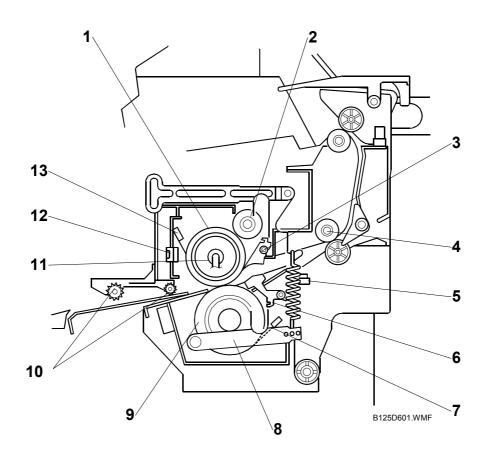
The pick-off pawl solenoid [A] moves the pick-off pawls [B] until they touch the drum.

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.

Detailed Descriptions

## 6.9 FUSING UNIT

#### 6.9.1 OVERVIEW

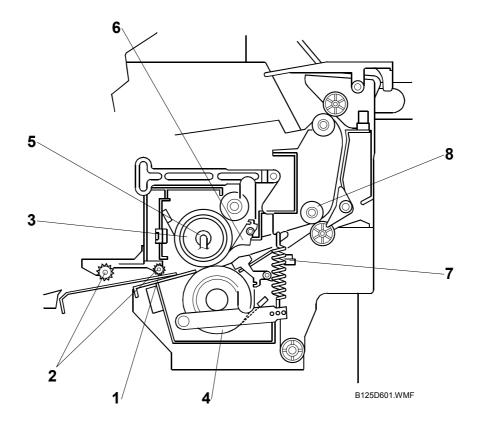


- 1. Hot Roller
- 2. Fusing Cleaning Roller
- 3. Hot Roller Strippers
- 4. Fusing Exit Rollers
- 5. Fusing Exit Sensor
- 6. Pressure Roller Strippers
- 7. Pressure Roller Thermistor

- 8. Pressure Release Lever
- 9. Pressure Roller
- 10. Entrance Spurs
- 11. Fusing Lamps
- 12. Thermostats
- 13. Hot Roller Thermistor

The hot roller wall thickness is 1.3 mm. As a result, warm-up time is short (less than 120 s + 15 s from  $23^{\circ}$ C).

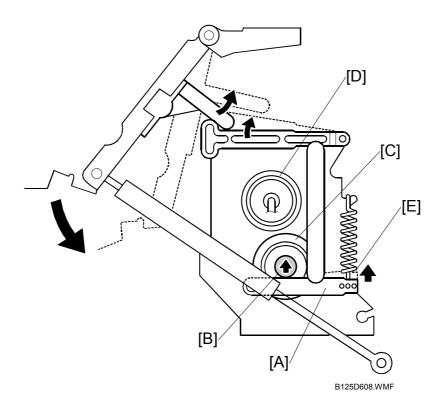
#### 6.9.2 PAPER FEED THROUGH THE FUSING UNIT



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.

#### 6.9.3 FUSING PRESSURE CONTROL MECHANISM



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.

Left; Less tension, less pressure. Set to this position to decrease wrinkling

Right; More tension, more pressure. Can make 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.

#### **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".

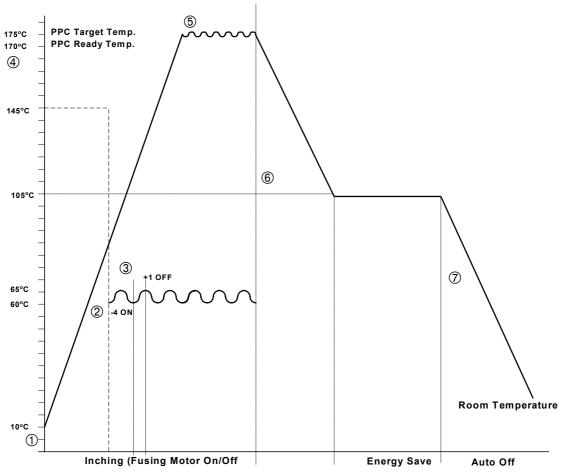
- Inching control is switched on and off with SP1109 (Start Temperature: Pressure Roller). The default setting is "0" (off).
- Inching control does not operate until SP1109 (Start Temperature: Pressure Roller) is set to 5°C or higher.

#### 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.

## Summary of Warmup Sequence with Inching On



B125D963.WMF

## **Example: Plain Paper**

| Step | What Happens   | Comment  |
|------|--|--|
| 1    | Power on.  | Room temp. < 15°C (59°F)   |
| 2    | Inching switches on at 145°C:<br>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:<br>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<br>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",<br>Auto Off mode. Default: 14<br>min.                         |

**FUSING UNIT** 

#### **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 | <br>Y+12 |
|---------------|---|-----|-----|-----|-----|-----|----------|
| Hot Roller    | Х | Х   | X-1 | X-2 | X-3 | X-4 | <br>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.

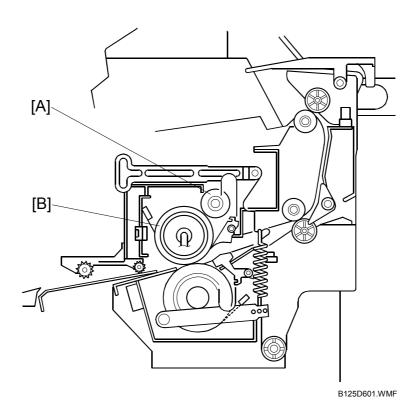
If SP1104 is not set to "0", then the machine ignores the pressure roller temperature and keeps the target hot roller temperature at "X".

#### Fusing Temperature Settings Table

This table summarizes how the machine sets the target temperature of the hot roller based on SP selections.

| PAPE  | R/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  |

## 6.9.5 HOT ROLLER CLEANING

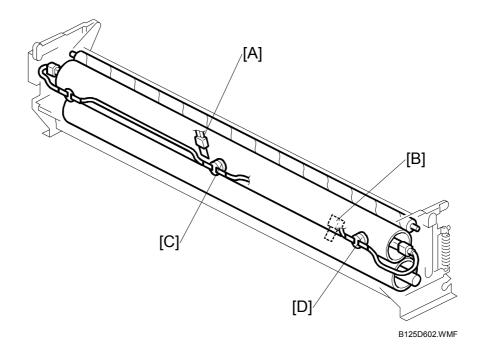


The cleaning roller [A] (parallel to the hot roller) always touches the hot roller [B] with a low pressure. The cleaning roller has a layer of material that is soaked with silicone oil.

Each time the fusing motor switches on, it reverses for 2 s to clean the hot roller.

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## 6.9.6 HOT ROLLER THERMISTORS AND THERMOSTATS



A thermistor [A] monitors the temperature of the hot roller.

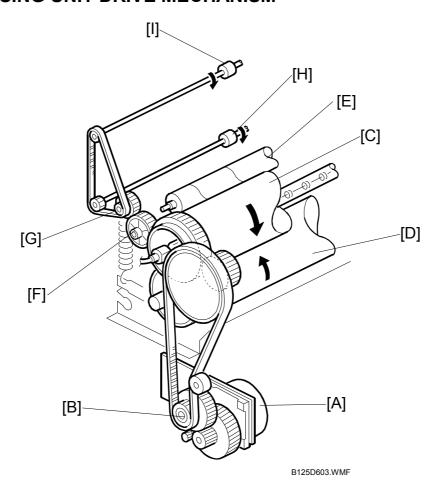
One more thermistor [B] monitors the temperature of the pressure roller.

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.

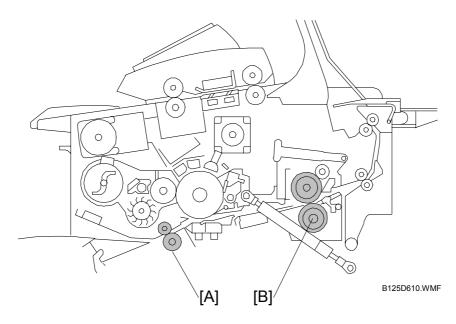
An idle gear [F] turns the gears and timing belts [G]. These gears and belts turn the fusing exit roller [H] and upper exit rollers [I] in the same direction as the hot roller.

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.)

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#### **6.9.8 WRINKLE PREVENTION**



### **Motor Speed Control**

During normal operation, the hot roller [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.

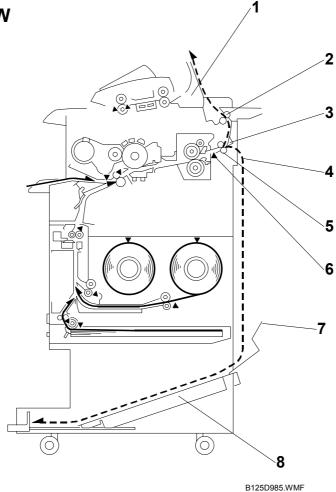
#### **Inching Control**

This machine also has an inching control feature that controls the temperature of the pressure roller to prevent wrinkling. (\$\infty\$6.9.4)

Detailed escriptions PAPER EXIT 13 February 2004

#### **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

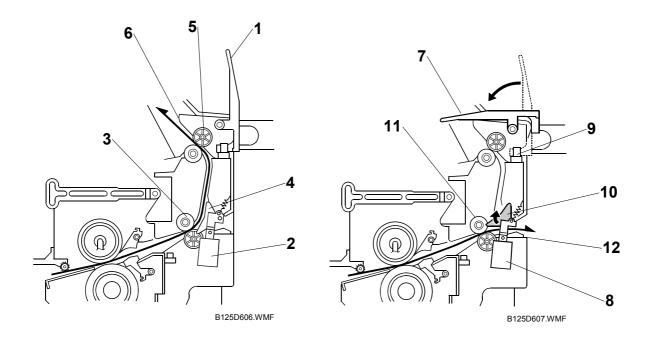
When the paper junction gate is open:

- 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].

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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.

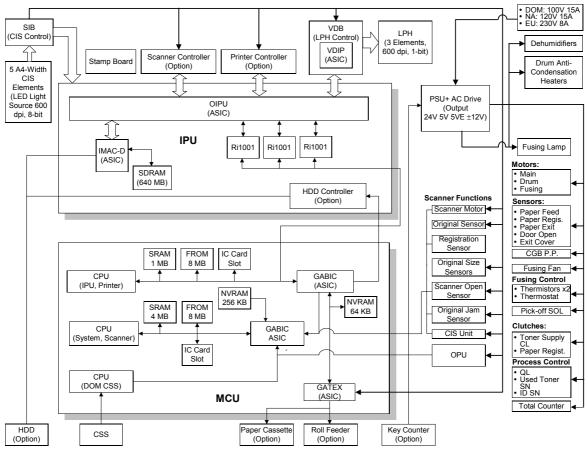
Keep the paper exit selection lever in the vertical position for normal operation. In this condition, the user can set the copy exit path (upper or rear) with the "Upper Copy Output" key on the operation panel.

#### 6.10.3 PAPER EXIT DRIVE

**6.9.7** 

## **6.11 ELECTRICAL COMPONENTS**

#### **6.11.1 OVERVIEW**



B125D921.WMF

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.

## **6.11.2 DESCRIPTIONS OF ELECTRICAL COMPONENTS**

| Number     | Name                         | Description   |
|------------|------------------------------|---|
| CIS        | 1                            | ·   |
| CIS1       | CIS 1 (Contact Image Sensor) | These transfer the image signals from the CIS LEDs to   |
| CIS2       | CIS 2 (Contact Image Sensor) | the SIB.  |
| 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  |
| LPH2       | LPH2 (LED Print Head 2)      | drum. The VDB controls the LPHs.  |
| LPH3       | LPH3 (LED Print Head 3)      |   |
| Magnetic C | lutches                      |   |
| 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.   |

| Sensor), and sends it to the VDB (Video Drive Board LPH (LED Print Heads). The IPU also contro HDD unit and the PC interfaces.  PCB2 MCU (Main Control Unit)  This is the machine's main board. It contains the (Scanner Control Unit) and ECU (Engine Control These units control all parts of the machine, and includes the print engine, scanner, and image processing.  PCB3 Operation Panel  This contains the operation keys, touch-panel LC the LEDs. It is controlled by the MCU.  PCB4 PSU (Power Supply Unit)  This supplies dc power for the machine, heaters, dehumidifiers in the roll feeder.  PCB5 RFDB (Roll Feed Drive Board)  PCB6 SFDB (Sheet Feed Drive Board)  This is attached to the optional roll feeder. It controls the components of the roll feeder (motor, clutches, se and switches).  PCB7 SIB (Scanner Interface Board)  PCB8 SMDB (Scanner Motor Drive Board)  PCB9 VDB (Video Drive Board)  This controls the scanner, and is an interface boat the IPU and MCU.  This controls the image signals that are sent to the (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 watermar use of preset stamps, user stamps, and watermar requires installation of the HDD.  PCB11 Interface Board  DQL Option. The stamp force the transfer corona (C), development bias (B), and charge corona (C), development bias (B), a |                   | Description  | Name                          | Number     |
|--|-------------------|--|-------------------------------|------------|
| Sensor), and sends it to the VDB (Video Drive Board LPH (LED Print Heads). The IPU also contro HDD unit and the PC interfaces.  PCB2 MCU (Main Control Unit)  This is the machine's main board. It contains the (Scanner Control Unit) and ECU (Engine Control These units control all parts of the machine, and includes the print engine, scanner, and image processing.  PCB3 Operation Panel  This contains the operation keys, touch-panel LC the LEDs. It is controlled by the MCU.  PCB4 PSU (Power Supply Unit)  This supplies dc power for the machine, heaters, dehumidifiers in the roll feeder. It contromponents of the roll feeder (motor, clutches, se and switches).  PCB6 SFDB (Sheet Feed Drive Board)  PCB7 SIB (Scanner Interface Board)  PCB8 SMDB (Scanner Motor Drive Board)  PCB9 VDB (Video Drive Board)  PCB9 VDB (Video Drive Board)  This controls the scanner, and is an interface boar the IPU and MCU.  PCB9 VDB (Video Drive Board)  This controls the scanner motor.  Board)  PCB10 Interface Board  PCB11 Interface Board  PCB11 Interface Board  PCB11 Interface Board  PCB12 CGB Power Pack  P13 CGB Power Pack  P14 CGB Power Pack  P15 CGB Power Pack  P16 CGB Power Pack  P17 Tiles removes remaining electrical charge on the IRV and the separation corona wire (S) in the T&S (Transfer and Separation) unit.  |                   |  | 1                             | PCB        |
| Cacanner Control Unit) and ECU (Engine Control These units control all parts of the machine, and includes the print engine, scanner, and image processing.    PCB3   | soard)<br>ols the |  | , ,                           | PCB1       |
| the LEDs. It is controlled by the MCU.  PCB4 PSU (Power Supply Unit) This supplies do power for the machine, heaters, dehumidifiers in the roll feeder.  PCB5 RFDB (Roll Feed Drive Board) This is attached to the optional roll feeder. It controus to the roll feeder (motor, clutches, seand switches).  PCB6 SFDB (Sheet Feed Drive Board) This is attached to the optional paper cassette. It controls the components of the paper cassette (mount of the paper cassette) This controls the scanner, and is an interface board the IPU and MCU.  PCB7 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 (LED Print Head).  Option. The stamp board is necessary for date stamping, page numbering, background numbering using preset stamps, user stamps, and watermar 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 (C), development bias (B), and charge corona gride the separation corona wire (S) in the T&S (Transfer and Separation) unit.  QL  QL  QL1 Quenching Lamp (Left) This removes remaining electrical charge on the lamb of the paper  | ol Unit).         |  | MCU (Main Control Unit)       | PCB2       |
| December 2015   Recomposed      | CD, and           | This contains the operation keys, touch-panel LCD, a the LEDs. It is controlled by the MCU.  | Operation Panel               | PCB3       |
| components of the roll feeder (motor, clutches, se and switches).  PCB6 SFDB (Sheet Feed Drive Board) This is attached to the optional paper cassette. It controls the components of the paper cassette (in clutches, sensors, and switches).  PCB7 SIB (Scanner Interface Board) This controls the scanner, and is an interface boat 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 (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 watermar 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 (C), development bias (B), and charge corona grilling the voltage power supply for the transfer corona (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 land.  | , and             | This supplies dc power for the machine, heaters, and dehumidifiers in the roll feeder.   | PSU (Power Supply Unit)       | PCB4       |
| controls the components of the paper cassette (noutches, sensors, and switches).  PCB7 SIB (Scanner Interface Board) This controls the scanner, and is an interface boat 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 (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 watermar 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 (C), development bias (B), and charge corona grill 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 latest and separation corona wire (S) in the Issuer separation corona on the latest and separation corona on the latest and separation corona on the latest and separation corona wire (S) in the T&S (Transfer and Separation) unit.   |                   | This is attached to the optional roll feeder. It controls components of the roll feeder (motor, clutches, senso and switches).                       | RFDB (Roll Feed Drive Board)  | PCB5       |
| the IPU and MCU.  PCB8 SMDB (Scanner Motor Drive Board)  PCB9 VDB (Video Drive Board)  PCB10 Stamp Board Option. The stamp board is necessary for date stamping, page numbering, background numbering using preset stamps, user stamps, and watermar use of preset stamps, user stamps and watermar 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 (C), development bias (B), and charge corona grill 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 latest and the core of the second content of the latest and the separation corona wire (S) in the T&S (Transfer and Separation) unit.   |                   | This is attached to the optional paper cassette. It controls the components of the paper cassette (moto clutches, sensors, and switches).            | SFDB (Sheet Feed Drive Board) | PCB6       |
| PCB9 VDB (Video Drive Board)  PCB10 Stamp Board Option. The stamp board is necessary for date stamping, page numbering, background numbering using preset stamps, user stamps, and watermar use of preset stamps, user stamps and watermar 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 (C), development bias (B), and charge corona grill provided | ard for           | This controls the scanner, and is an interface board for the IPU and MCU.  | SIB (Scanner Interface Board) | PCB7       |
| CED Print Head).    PCB10   Stamp Board   Option. The stamp board is necessary for date stamping, page numbering, background numbering using preset stamps, user stamps, and watermar use of preset stamps, user stamps and watermar 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   High voltage power supply for the charge corona (C), development bias (B), and charge corona gries (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 land the separation coronal control of the land to stamp the separation of the    |                   | This controls the scanner motor.   |                               | PCB8       |
| stamping, page numbering, background numbering using preset stamps, user stamps, and watermar use of preset stamps, user stamps and watermar 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 (C), development bias (B), and charge corona grid printer power supply for the transfer corona (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 latest stamps, user stamps, and watermar use of preset stamps, user stamps, and watermar requires installation of the HDD.  Decrease of preset stamps, user stamps, user stamps, and watermar requires installation of the HDD.  Decrease of preset stamps, user stamps, u | he LPH            | This controls the image signals that are sent to the LF (LED Print Head).  | VDB (Video Drive Board)       | PCB9       |
| Power Packs  PP1 CGB Power Pack  PP2 T&S Power Pack  High voltage power supply for the charge corona (C), development bias (B), and charge corona gri  High voltage power supply for the charge corona gri  High voltage power supply for the transfer corona (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 lambda of the computer and the co | rks. The          | stamping, page numbering, background numbering, using preset stamps, user stamps, and watermarks. use of preset stamps, user stamps and watermarks a | Stamp Board                   | PCB10      |
| PP1 CGB Power Pack High voltage power supply for the charge corona (C), development bias (B), and charge corona gri PP2 T&S Power Pack High voltage power supply for the transfer corona (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 lambda (C), development bias (B), and charge corona gri High voltage power supply for the charge corona (C), development bias (B), and charge corona gri High voltage power supply for the charge corona (C), development bias (B), and charge corona gri High voltage power supply for the charge corona gri High voltage power supply for the charge corona gri High voltage power supply for the charge corona gri This removes remaining electrical charge corona gri   |                   | Option. This relay board must be installed with the printer controller option for interface between the computer and the copier.                     | Interface Board               | PCB11      |
| (C), development bias (B), and charge corona gri PP2 T&S Power Pack High voltage power supply for the transfer corona (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 I   |                   |  | ks                            | Power Pack |
| (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 lamp (Left)   |                   | High voltage power supply for the charge corona wire (C), development bias (B), and charge corona grid (G  | CGB Power Pack                | PP1        |
| QL1 Quenching Lamp (Left) This removes remaining electrical charge on the  |                   | High voltage power supply for the transfer corona wir (T) and the separation corona wire (S) in the T&S (Transfer and Separation) unit.              | T&S Power Pack                | PP2        |
|  |                   |  |                               | QL         |
| or are aran minoral area or area.  | left part         | This removes remaining electrical charge on the left proof the drum immediately after cleaning.  | Quenching Lamp (Left)         | QL1        |
| part of the drum immediately after cleaning.   | center            | This removes remaining electrical charge on the cent part of the drum immediately after cleaning.  |                               | QL2        |
| QL3 Quenching Lamp (Right) This removes remaining electrical charge on the part of the drum immediately after cleaning   | right             | This removes remaining electrical charge on the right part of the drum immediately after cleaning  | Quenching Lamp (Right)        | QL3        |

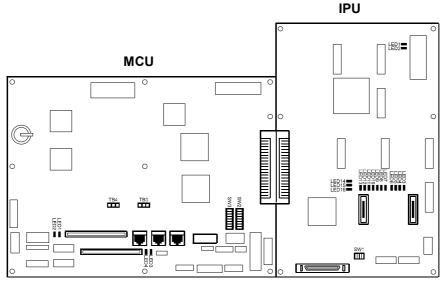
| Sensors |  |   |
|---------|--|---|
| S1      | Cassette End Sensor                          | This sensor is above the paper cassette. It detects   |
| 00      |  | paper end after the last sheet feeds.   |
| S2      | Cassette Set Sensor                          | This detects when the cassette is 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:<br>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                               | <ul> <li>(1) Detects the leading edge of the paper from the rolls.</li> <li>(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.</li> <li>(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.</li> </ul> |
| 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.   |

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| 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).  |

| 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



B125D801.WMF

#### **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.

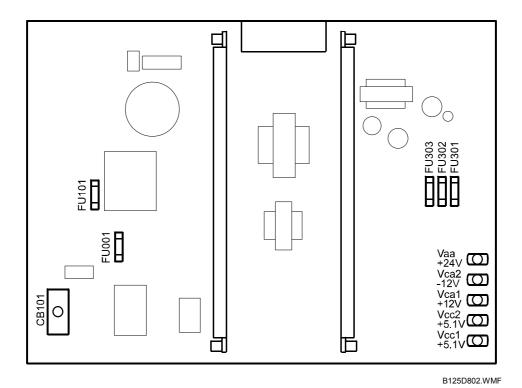
**NOTE:** The MCU DIP switches must always be OFF (default) and they must not be changed in the field.

#### 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.

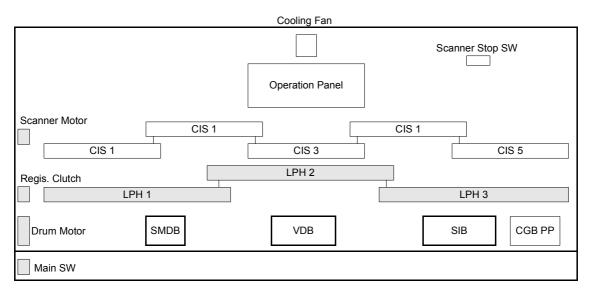
**NOTE:** The IPU DIP switches must always be OFF (default) and they must not be changed in the field.

## 6.11.4 PSU



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



B125D923.WMF

## SMDB (Scanner Motor Drive Board)

Controls the scanner motor.

## VDB (Video Drive Board)

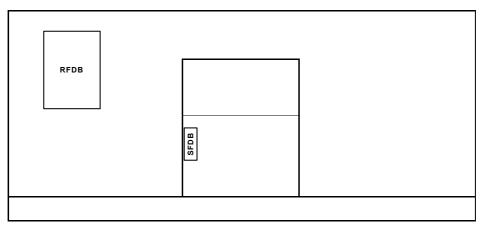
The VDB controls the LPH and the algorithms to convert video data.

### 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



B125D924.WMF

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**

#### 1. COPIER ENGINE

Configuration: Desktop

Copy Process: Dry electrostatic transfer system

Originals: Sheet

Original Image Size: Maximum: 914 x 3,600 mm (36" x 142")

(W x L) Minimum: 182 x 140 mm (7" x 5")

Max Original Width: 960 mm (37.7")

Original Weight  $18 \sim 135 \text{ g/m}^2$ 

 $35 \mu m \sim 1.0 mm$ 

Copy Paper Size: Maximum:

(W x L) 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 (81/2" x 10") Roll Feed: 210 x 280 mm (81/2" x 11") Paper Cassette: 210 x 297 mm (81/2" x 11")

Copy Paper Weight  $52.3 \sim 110 \text{ g/m}^2 (13.9 \sim 29.3 \text{ lb.})$ 

68 ~ 148 μm (Plain paper, Translucent)

 $3 \sim 4 \text{ MIL (Film)}$ 

Copying Speed: 2 cpm (A0/E SEF) (cpm: copies / 4 cpm (A1/D LEF)

minute)

Photoconductor: Organic photoconductor drum

Reduction/Enlargement:

|             | Inch V                         | ersion                         | Metric Versior                 |  |  |
|-------------|--------------------------------|--------------------------------|--------------------------------|--|--|
|             | Engineering                    | Arch.                          | Wethe Version                  |  |  |
| Reduction   | 25.0, 32.4,<br>50.0, 64.7%     | 25.0, 33.3,<br>50.0, 66.7%     | 25.0, 35.4,<br>50.0, 70.7%     |  |  |
| 100%        | 100%                           | 100%                           | 100%                           |  |  |
| Enlargement | 129.4, 200.0,<br>258.8, 400.0% | 133.3, 200.0,<br>266.7, 400.0% | 141.4, 200.0,<br>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 13 February 2004

Printing: 2 levels

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")

Max. Length: 150 m (16.4 yds) Roll Core Diameter: 76.4 ± 0.25 mm

(about 3")

Paper Cassette: 250 sheets

Output Tray Upper Output Stocker 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** 

## .....

|                | 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:

120V version:

|                | Full system *1 |
|----------------|----------------|
| Warm-up        | 1.4 kW         |
| Ready *2       | 0.03 kW        |
| During Copying | 1.5 kWh        |
| Maximum        | 1.5 kW         |

<sup>\*1</sup> 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 13 February 2004

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: Maximum: 914 x 3,600 mm (36" x 142")

 $(W \times L)$ 

Minimum: 210 x 250 mm (81/2" x 10")

Copy Paper Weight  $52.3 \sim 104.7 \text{g/m}^2 (13.9 \sim 27 \text{ lb.})$ 

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, 81/2 x 13 SEF, 12 x 18 SEF

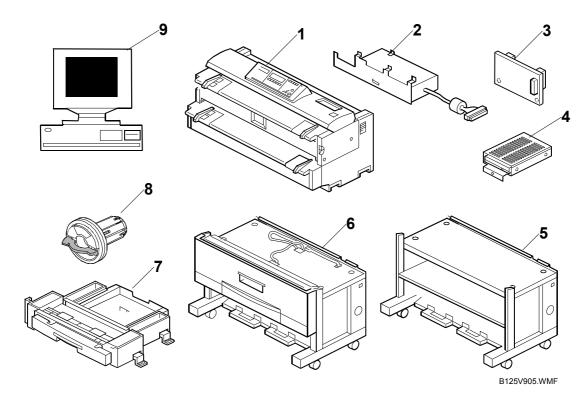
Copy Paper Weight 64~105 g/m<sup>2</sup>

Power Source From Roll Feeder

Weight 6 kg (13.2 lb.)

## Spec

## 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