# CF EXPANDER

## (Machine Code: G367)

# 1. REPLACEMENT AND ADJUSTMENT

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

**NOTE:** This manual uses the following symbols.
☛ : See or Refer to  : Screws  : Connectors

## 1.1 SPECIAL TOOLS

| Part Number | Description | Q'ty |
|---|---|---|
| A0069104 | Scanner Positioning Pin (4 pcs/set) | 1 |
| N8036701 | Flash Memory Card - 4MB | 1 |
| A0929503 | C4 Color Test Chart (3 pcs/set) | 1 |
| C4019503 | 20X Magnification Scope | 1 |

## 1.2 LUBRICANTS

| Part Number | Description | Q'ty |
|---|---|---|
| 52039501 | Silicone Grease G501 | 1 |

**NOTE:** This is only used for the optional ARDF.

# 1.3 IMAGE ADJUSTEMNT

## 1.3.1 PRINTING

### *Leading edge registration*

See the service manual for the printer mainframe.

### *Side-to-side registration*

See the service manual for the printer mainframe.

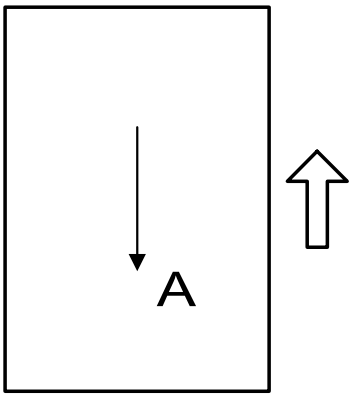
## 1.3.2 SCANNING

Before doing the following scanner adjustments, perform or check the printing registration/side-to-side adjustment and the blank margin adjustment.

**NOTE:** Use a C4 test chart to perform the following adjustments.

### *Scanner sub-scan magnification*

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. Use SP4-008 to adjust if necessary.
   Standard: ±1.0%.




A: Sub-scan magnification

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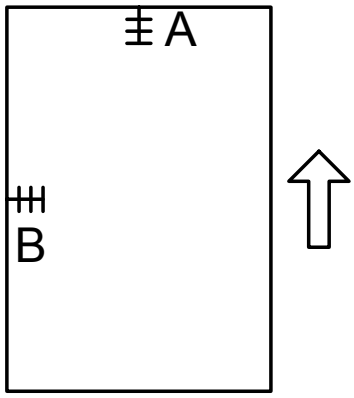
### *Scanner leading edge and side-to-side registration*

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the leading edge and side-to-side registration, and adjust them with the following SP modes if necessary. Standard: 0 ± 2mm.

| | SP mode |
|---|---|
| Sub-scan | SP4-010 |
| Main-scan | SP4-011 |

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A: Leading Edge Registration
B: Side-to-side Registration

### *Main scan dot position correction*

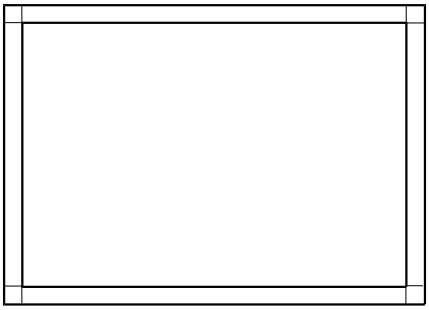
**NOTE:** Before adjusting the scanner, adjust the printer registration.

1. Enter the SP mode and open SP4-010 and SP4-011.
2. Check that each value corresponds to the factory-set value.
3. Press the Interrupt key and copy the C-4 chart in the full-color photo mode.
   **NOTE:** Be sure to copy in the photo mode. This is because color displacement cannot be checked properly in text mode.
4. Check the yellow and cyan vertical lines. (Use a Magnification Scope to do this.) If they exactly overwrite the black line at the edges of the copy, exit the SP mode to end the adjustment. If the yellow and cyan lines significantly extend beyond the black line, proceed to the next step.
5. Press the Interrupt key to return to the SP mode and open SP4-932. Compare the current values against the table.

| | |
|---|---|
| SP4-932-1 | Dot correction R left edge |
| SP4-932-2 | Dot correction R right edge |
| SP4-932-3 | Dot correction B left edge |
| SP4-932-4 | Dot correction B right edge |

## 1.3.3 ARDF

### *ARDF side-to-side and leading edge registration*



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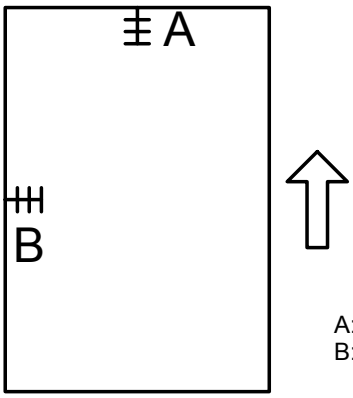


A: Leading edge registration
B: Side-to-side registration

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Make a temporary test chart as shown above using A3/DLT paper.

1. Place the temporary test chart on the ARDF and make a copy from one of the feed stations.
2. Check the registration, and adjust using the following SP modes if necessary.

| SP Code | What It Does | Adjustment Range |
|---|---|---|
| SP6-006-1 | Side-to-Side Registration | ± 1.0 mm |
| SP6-006-2 | Leading Edge Registration (Simplex) | ± 2.0 mm |
| SP6-006-3 | Leading Edge Registration (Duplex: Front) | ± 4.2 mm |
| SP6-006-4 | Leading Edge Registration (Duplex: Back) | ± 4.2 mm |

## 1.3.4 PRINTER GAMMA CORRECTION

**NOTE:** Normally, the ACC is enough to adjust the color balance to achieve the optimum print output. The printer gamma correction is only required for fine-tuning to meet user requirements.

The printer gamma curve created during ACC can be modified using SP modes. The gamma data for highlight, middle, shadow areas, and IDmax can be adjusted. The adjustable range is from 0 to 30 (31 steps).

### *Printer Mode*

There are six adjustable modes:

- 1200 x 1200 photo mode (select this mode with printer SP1-102-1)
- 600 x 600 text mode (select this mode with printer SP1-102-2)
- 1200 x 600 text mode (select this mode with printer SP1-102-3)
- 600 x 600 photo mode (select this mode with printer SP1-102-4)
- 1200 x 600 photo mode (select this mode with printer SP1-102-5)
- 1200 x 1200 text mode (select this mode with printer SP1-102-6)

| | K | C | M | Y |
|---|---|---|---|---|
| **Highlight** | SP1-104-1 | SP1-104-21 | SP1-104-41 | SP1-104-61 |
| **Middle** | SP1-104-2 | SP1-104-22 | SP1-104-42 | SP1-104-62 |
| **Shadow** | SP1-104-3 | SP1-104-23 | SP1-104-43 | SP1-104-63 |
| **IDmax** | SP1-104-4 | SP1-104-24 | SP1-104-44 | SP1-104-64 |

### *Adjustment Procedure*

1. Do ACC for the printer mode.
2. Turn the main power off and on.
3. Enter SP mode.
4. Select “Printer SP”.
5. Select SP1-102 and select the print mode that you are going to adjust.
6. To review the image quality for these settings, choose SP1-103-1 to print out a tone control test sheet.
7. Adjust the color density with SP1-104 as shown below comparing the tone control test sheet with the C4 test chart.
   **NOTE:** Adjust the density in order from “ID Max”, “Shadow”, “Middle”, and then “Highlight”.
8. Save the adjusted settings with SP1-105.

### *Adjustment Reference For Gamma Correction*

The following tables show the adjustment reference for gamma correction in the photo mode. The tables show the level of the color scale on the C4 test chart and on the tone control test sheet printed in the printer SP mode.

For example, for K at 1200 x 1200 dpi, grade 12 on the tone control test sheet should be the same as grade 8 on the C4 chart.

Normally, it is not necessary to adjust the gamma data as shown in the table since ACC adjusts the gamma curve automatically. The fine-tuning of color balance by gamma data adjustment will be required only when the result from ACC and Color Calibration does not meet the customer's requirements.

| K | C4 test chart | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Test sheet | 600 x 600 | – | 1 | 3 | 5 | 6 | 9 | 10 | 11 | 16 | – |
| | | 1200 x 600 | – | 1 | 3 | 5 | 6 | 8 | 10 | 11 | 16 | – |
| | | 1200 x 1200 | – | 1 | 3 | 4 | 6 | 8 | 10 | 12 | 15 | 16 |

| C | C4 test chart | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Test sheet | 600 x 600 | – | 1 | 3 | 5 | 6 | 9 | 10 | 12 | 13 | 14 |
| | | 1200 x 600 | – | 1 | 3 | 5 | 6 | 8 | 10 | 11 | 12 | 13 |
| | | 1200 x 1200 | – | 1 | 3 | 4 | 5 | 8 | 10 | 11 | 12 | 13 |

| M | C4 test chart | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Test sheet | 600 x 600 | – | 1 | 4 | 6 | 8 | 11 | 12 | 14 | 16 | – |
| | | 1200 x 600 | – | 1 | 4 | 6 | 8 | 11 | 12 | 15 | 16 | – |
| | | 1200 x 1200 | – | 1 | 4 | 6 | 7 | 10 | 12 | 14 | 16 | – |

| Y | C4 test chart | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Test sheet | 600 x 600 | 1 | 3 | 4 | 9 | 11 | 12 | 14 | 15 | 16 | – |
| | | 1200 x 600 | 1 | 3 | 5 | 8 | 10 | 11 | 14 | 15 | 16 | – |
| | | 1200 x 1200 | 1 | 3 | 5 | 8 | 10 | 11 | 14 | 15 | 16 | – |

## *Copy Mode*

### *KCMY Color Balance Adjustment*

The adjustment uses only “Offset” values.

**NOTE:** Never change “Option” values (default value is 0).

| | |
|---|---|
| Highlight (Low ID) | Levels 2 through 5 in the C4 chart 10-level scale |
| Middle (Middle ID) | Levels 3 through 7 in the C4 chart 10-level scale |
| Shadow (High ID) | Levels 6 through 9 in the C4 chart 10-level scale |
| ID max | Level 10 in the C4 chart 10-level scale (affects the entire image density.) |
| Offset | The higher the number in the range associated with the low ID, middle ID, high ID, and ID max, the greater the density. |

There are four adjustable modes:

- Color text mode
- Color photo mode
- B/W text mode
- B/W photo mode

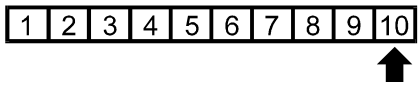
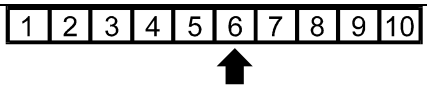
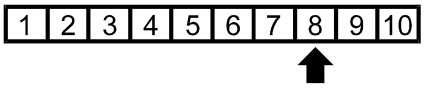
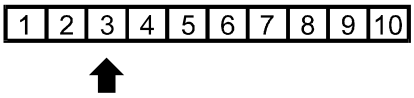
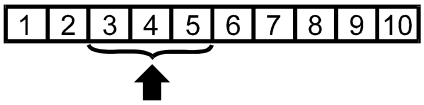
| | | K | C | M | Y |
|---|---|---|---|---|---|
| **Text mode** | Highlight<br>Middle<br>Shadow<br>ID max | SP4-910-1<br>SP4-910-2<br>SP4-910-3<br>SP4-910-4 | SP4-911-1<br>SP4-911-2<br>SP4-911-3<br>SP4-911-4 | SP4-912-1<br>SP4-912-2<br>SP4-912-3<br>SP4-912-4 | SP4-913-1<br>SP4-913-2<br>SP4-913-3<br>SP4-913-4 |
| **Photo mode** | Highlight<br>Middle<br>Shadow<br>ID max | SP4-915-1<br>SP4-915-2<br>SP4-915-3<br>SP4-915-4 | SP4-916-1<br>SP4-916-2<br>SP4-916-3<br>SP4-916-4 | SP4-917-1<br>SP4-917-2<br>SP4-917-3<br>SP4-917-4 | SP4-918-1<br>SP4-918-2<br>SP4-918-3<br>SP4-918-4 |
| **B/W text mode** | Highlight<br>Middle<br>Shadow<br>ID max | SP4-914-1<br>SP4-914-2<br>SP4-914-3<br>SP4-914-4 | – | – | – |
| **B/W photo mode** | Highlight<br>Middle<br>Shadow<br>ID max | SP4-909-1<br>SP4-909-2<br>SP4-909-3<br>SP4-909-4 | – | – | – |

### *Adjustment Procedure*

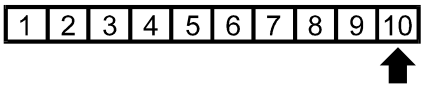
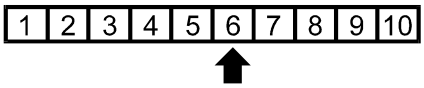
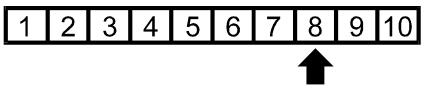
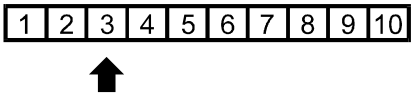
1. Copy the C-4 chart in mode that you are going to adjust.
2. Enter the SP mode.
3. Select “Copy SP”.
4. Select SP4-9xx that you are going to adjust.
5. Adjust the offset values until the copy quality conforms to the standard (☛ the table below).

**NOTE:** 1) Never change “Option” value (default value is 0).
2) Adjust the density in order from “ID Max”, “Middle”, “Shadow”, and then “Highlight”.

### - Standard Copy Quality in Color Text/Photo Mode -

| Standard Copy Quality in Color Text/Photo Mode | | | |
|---|---|---|---|
| **Step** | **Item to Adjust** | **Level on the C-4 chart** | **Adjustment Standard** |
| 1 | ID max:<br>(K, C, M, and Y) |  | Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart. |
| 2 | Middle (Middle ID)<br>(K, C, M, and Y) |  | Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart. |
| 3 | Shadow (High ID)<br>(K, C, M, and Y) |  | Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart. |
| 4 | Highlight (Low ID)<br>(K, C, M, and Y) |  | Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter that of level 3 on the C-4 chart. |
| 5 | K Highlight (Low ID)<br>(C, M, and Y)<br><on he full color copy> only for Photo |  | Adjust the offset value so that the color balance of black scale levels 3 through 5 in the copy is seen as gray. |

### <Standard Copy Quality in B/W Text/Photo Mode>

| Standard Copy Quality in B/W Text/Photo Mode | | | |
|---|---|---|---|
| **Step** | **Item to Adjust** | **Level on the C-4 chart (K)** | **Adjustment Standard** |
| 1 | ID max: (K) |   | Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart. |
| 2 | Middle (Middle ID) (K) |   | Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart. |
| 3 | Shadow (High ID) (K) |   | Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart. |
| 4 | Highlight (Low ID) (K) |   | Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter that of level 3 on the C-4 chart. |

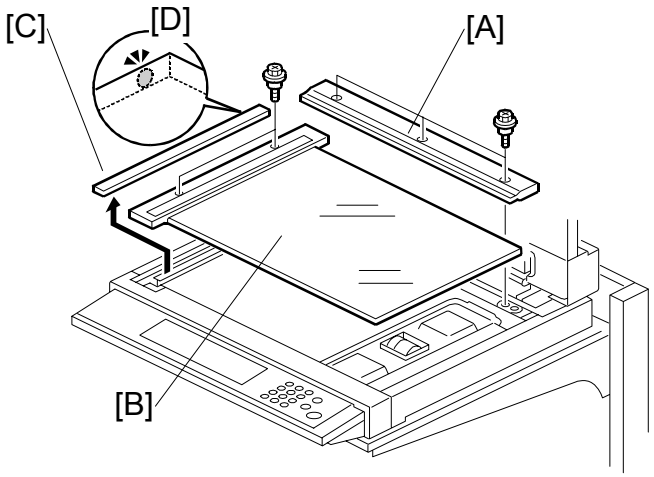
**NOTE:** After adjusting 'shadow' as explained above, text parts of the test pattern may not be printed clearly. If this happens, check whether the 5 line/mm pattern at each corner is printed clearly. If it is not, adjust the offset value of "shadow" again until it is.

# 1.4 REPLACEMENT

## 1.4.1 EXPOSURE GLASS

1. Rear scale [A] (x 3)
2. Exposure glass with left scale [B] (x 2)
3. ARDF exposure glass [C]

**NOTE:** When reattaching the exposure glass and ARDF exposure glass, position the glass marker [D] at the rear-left corner.

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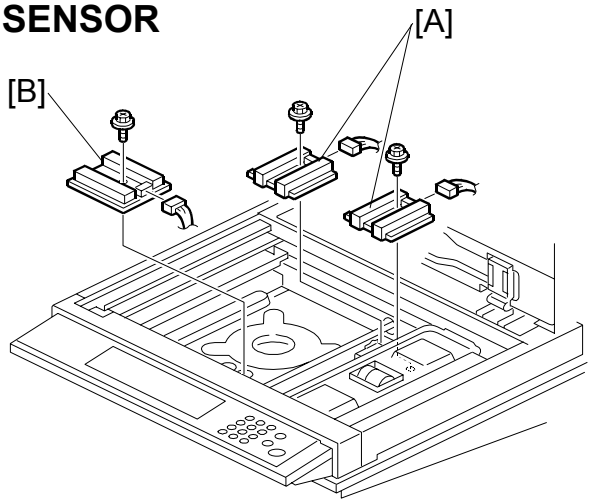
## 1.4.2 ORIGINAL LENGTH/WIDTH SENSOR

1. Exposure glass with left scale (☛ 1.4.1)
2. Original length sensors [A] (x 2, x 2)
3. Original width sensor 1 [B] (x 1, x 1)

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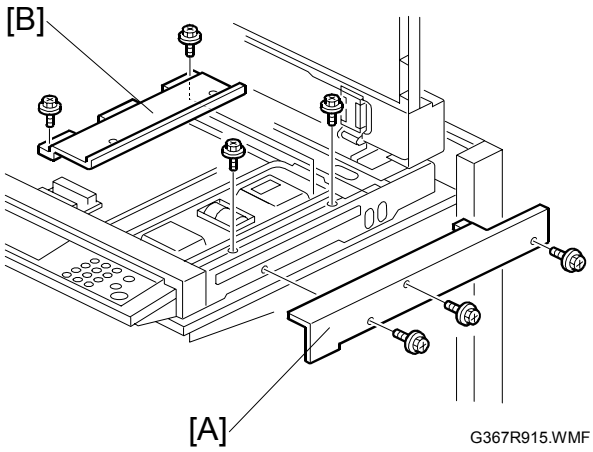
## 1.4.3 SENSOR BOARD UNIT (SBU)

1. Open the ARDF/platen cover
2. Rear cover (☛ 1.4.6)
3. Right cover [A] (🔩 x 3)
4. Inner cover [B] (🔩 x 4)



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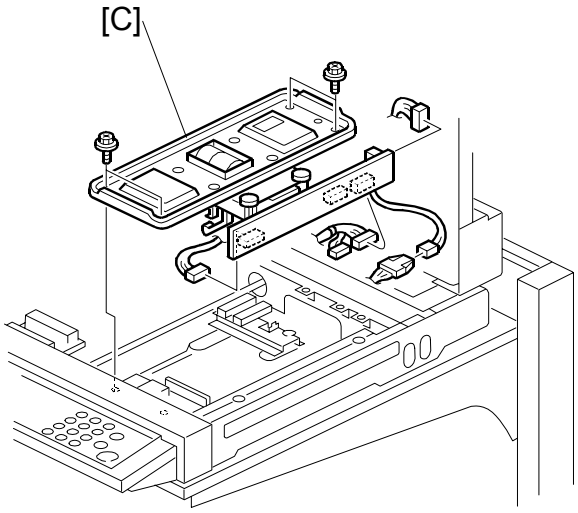
5. Sensor board unit [C] (🔩 x 4, 🖐 x 4)



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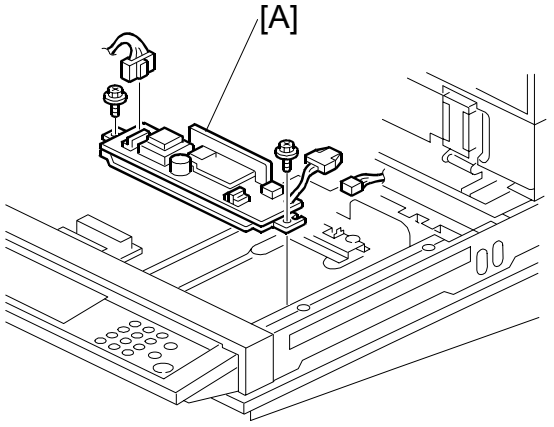
6. After replacing the sensor board unit, adjust the following SP modes (☛ 1.3.2):
   - SP4–008 (Scanner leading edge magnification)
   - SP4–010 (Scanner leading edge registration)
   - SP4–011 (Scanner side-to-side registration)

**NOTE:** The settings above are stored in the NVRAM on the SBU.

## 1.4.4 EXPOSURE LAMP STABILIZER

1. Exposure glass with left scale (☛ 1.4.1)
2. Sensor board unit (☛ 1.4.3)
3. Exposure lamp stabilizer [A] (x 2, x 2)

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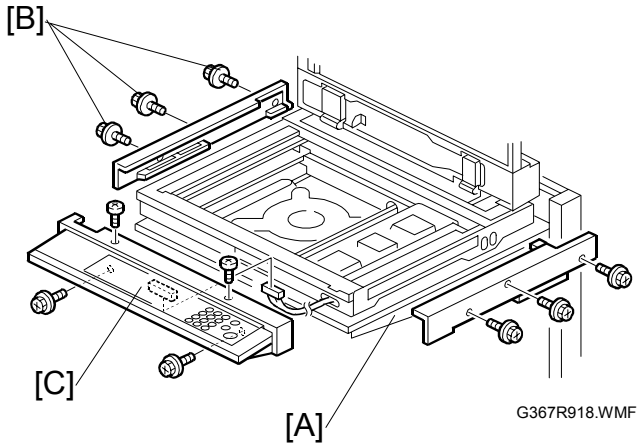
## 1.4.5 XENON LAMP

1. Exposure glass with left scale (☛ 1.4.1)
2. Rear cover (☛ 1.4.6)
3. Right cover [A] (x 3)
4. Left cover [B] (x 3)
5. Operation panel [C] (x 4, x 1)

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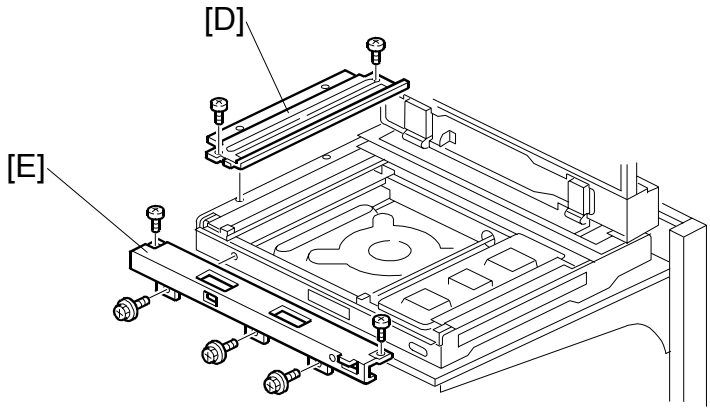
6. Left frame [D] (x 4)
7. Front frame [E] (x 5)

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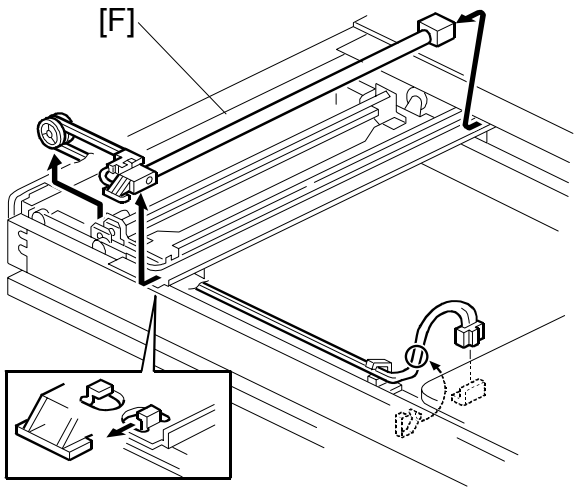
8. Xenon lamp (2 clamps)

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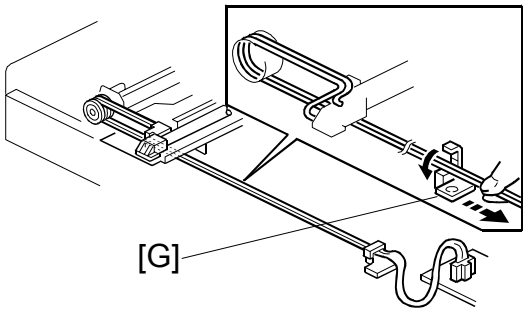
### *Reassembling*

1. Take up the cable slack.
2. Adjust the cable clamp position [G] if necessary.

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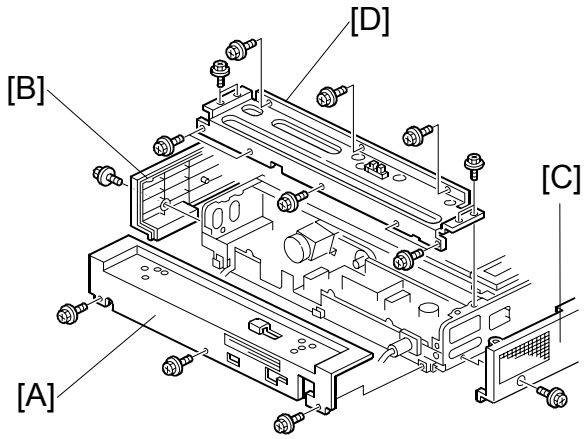
## 1.4.6 SCANNER POWER SUPPLY UNIT (PSU)

1. Rear cover [A] (x 3)
2. Right cover [B] (x 3)
3. Left cover [C] (x 3)
4. Rear frame [D] (x12, x 2)

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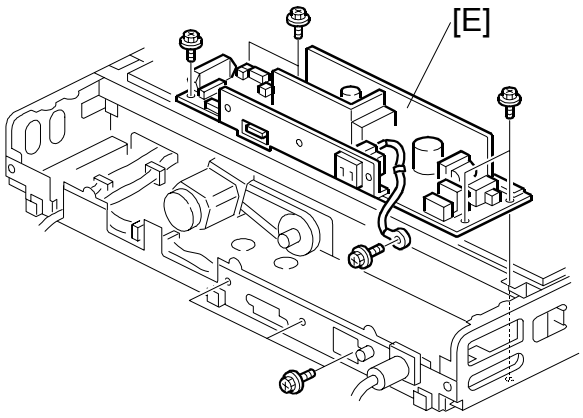
5. Scanner power supply unit [E] (x 10, x 7, Ground wire screw x 2)

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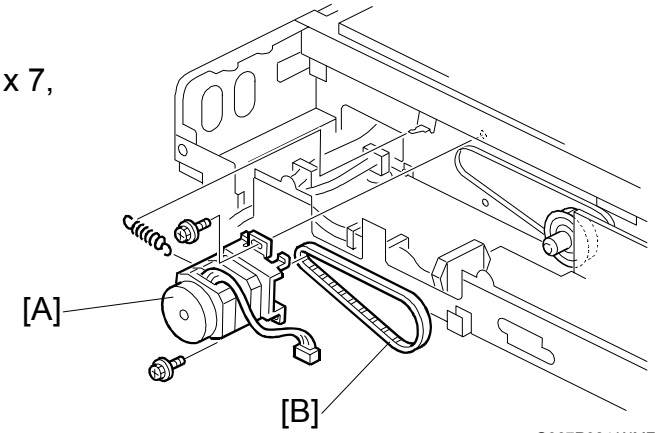
## 1.4.7 SCANNER MOTOR

1. Scanner PSU (☛ 1.4.6)
2. Scanner motor [A] (Spring x 1, x 7, x 1)
3. Timing belt [B]

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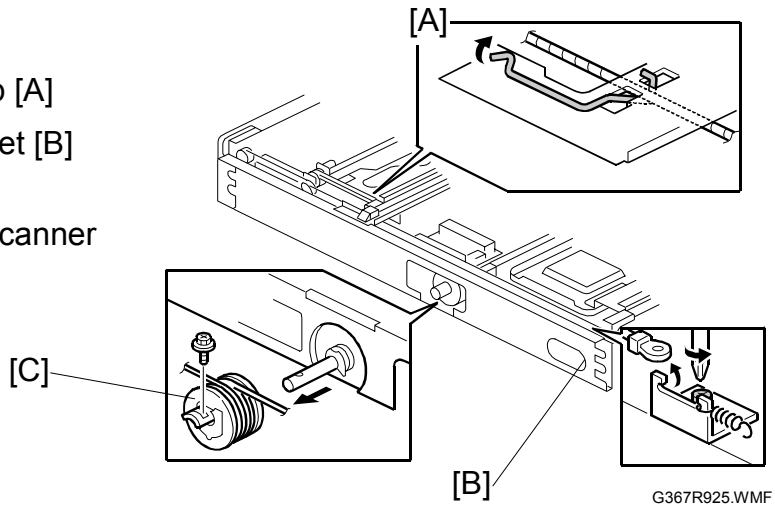
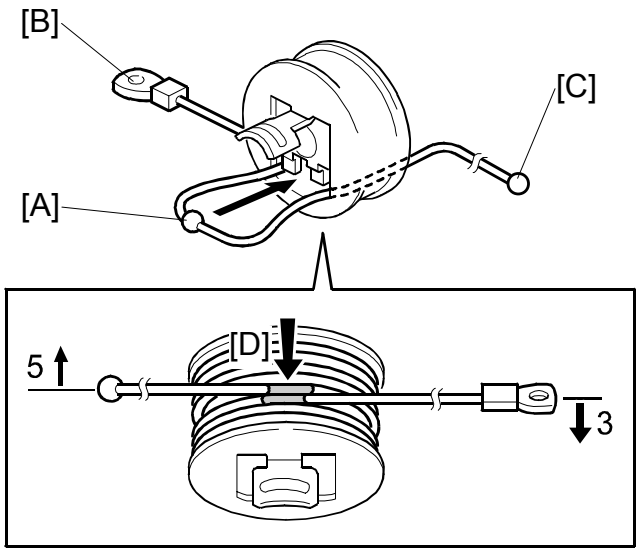
## 1.4.8 FRONT SCANNER WIRE

1. Front frame (☛ 1.4.5)
2. Front scanner wire clamp [A]
3. Front scanner wire bracket [B] (🔩 x 1)
4. Front scanner wire and scanner drive pulley [C] (🔩 x 1)



### *Reassembling the Front Scanner Wire*

1. Position the center ball [A] in the middle of the forked holder.
2. Pass the right end (with the ring) [B] through the square hole, and the left end (with the ball) [C] through the notch.
3. Wind the right end clockwise (viewed from the machine's front) three times; wind the left end counterclockwise five times.




G367R926.WMF

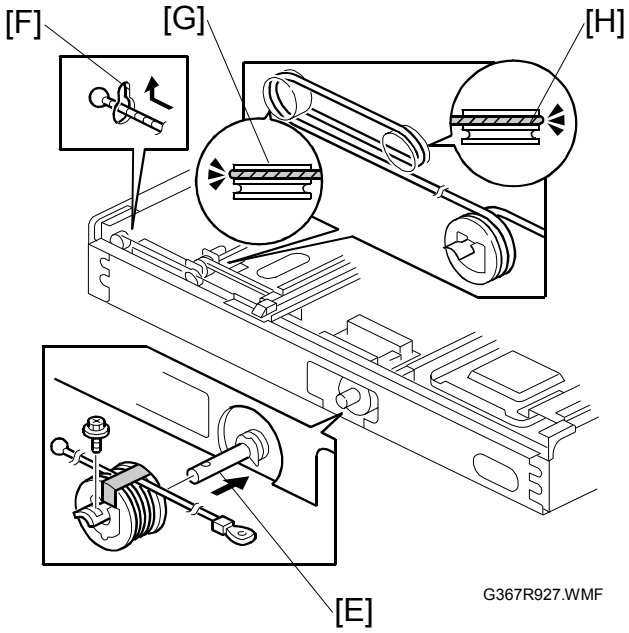
**NOTE:** The two red marks [D] meet when you have done this.

4. Stick the wire to the pulley with tape, so you can handle the assembly easily during installation.

5. Install the drive pulley on the shaft [E].

   **NOTE:** Do not secure the pulley to the shaft with the screw yet.

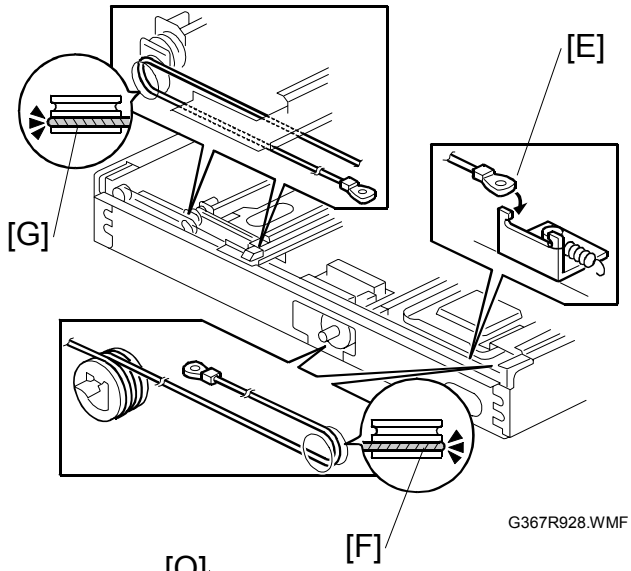
6. Insert the left end into the slit [F], with the end going via the rear track of the left pulley [G] and the rear track of the movable pulley [H].



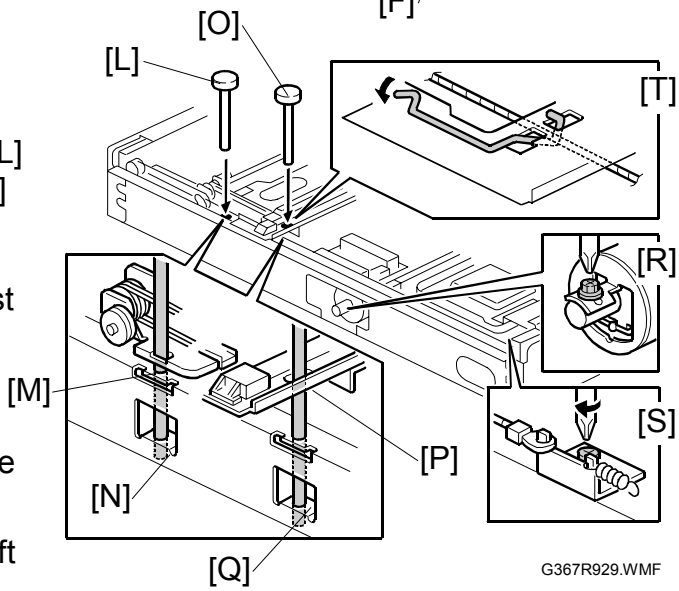

G367R927.WMF

7. Hook the right end onto the front scanner wire bracket [E], with the end going via the front track of the right pulley [F] and the front track of the movable pulley [G].

**NOTE:** Do not secure the scanner wire bracket with the screw yet.




8. Remove the tape from the drive pulley.
9. Insert a scanner positioning pin [L] through the 2nd carriage hole [M] and the left holes [N] in the front rail. Insert another scanner positioning pin [O] through the 1st carriage hole [P] and the right holes in the front rail [Q].
10. Insert two more scanner positioning pins in the holes in the rear rail.
11. Screw the drive pulley to the shaft [R].

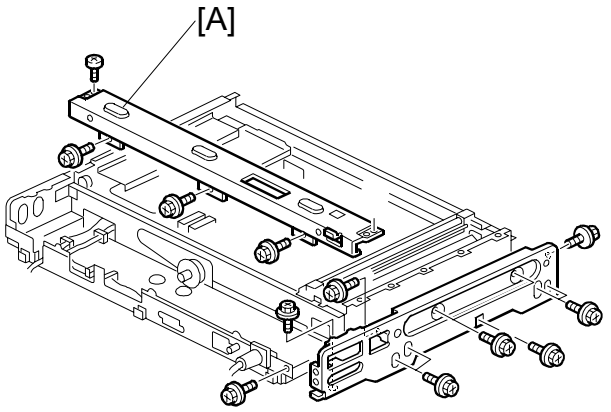



12. Screw the scanner wire bracket to the front rail [S].
13. Install the scanner wire clamp [T].
14. Pull out the positioning pins.

**NOTE:** After removing the positioning pins, make sure the 1st and 2nd carriages move smoothly. If they do not, repeat steps 9 through 14.

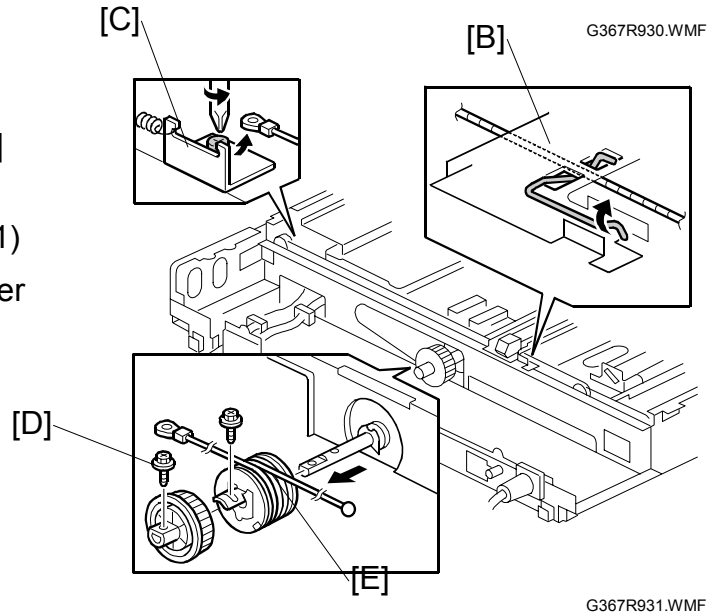
## 1.4.9 REAR SCANNER WIRE

1. Rear frame (☛ 1.4.6)
2. Rear rail frame [A] (☞ x 5)




G367R930.WMF

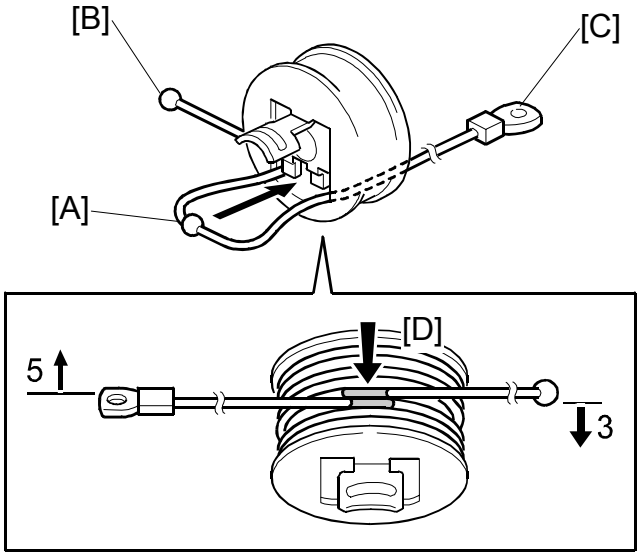
3. Rear scanner wire clamp [B]
4. Rear scanner wire bracket [C] (☞ x 1)
5. Scanner motor gear [D] (☞ x 1)
6. Rear scanner wire and scanner drive pulley [E] (☞ x 1)




G367R931.WMF

### *Reassembling the Rear Scanner Wire*

1. Position the center ball [A] in the middle of the forked holder.
2. Pass the left end (with the ball) [B] through the drive pulley notch, and the right end (with the ring) [C] through the drive pulley hole.
3. Wind the left end counterclockwise (viewed from the machine's front) five times; wind the right end clockwise three times.




G367R932.WMF

**NOTE:** The two red marks [D] meet when you have done this.

4. Stick the wire to the pulley with tape, so you can handle the assembly easily during installation.
5. Install the drive pulley on the shaft.

   **NOTE:** Do not secure the pulley on the shaft with the screw yet.
6. Install the wire.

   **NOTE:** The winding of the wire on the three pulleys at the rear of the scanner must be the same as the winding on the three pulleys at the front, except that it appears as a mirror image.
   Example: At the front of the machine, the side of the drive pulley with the three windings must face the front of the machine. At the rear of the machine, it must face the rear.
7. Perform steps 8 through 14 in the " Reassembling the Front Scanner Wire " Section.

## 1.4.10 NVRAM REPLACEMENT PROCEDURE

Make sure you have the SMC report (factory settings) that comes with the printer before beginning the following procedure.

### *NVRAM on the Controller (IC9)*

1. Enter SP mode and print out the SMC reports ("SP Mode Data", "Logging Data" and “UP data”) with SP5-990 if possible.
2. Upload the NVRAM data if possible.
3. Turn off the main switch and unplug the power cord.
4. Replace the NVRAM on the controller and reassemble the machine.
5. Turn on the main switch.
6. Download the NVRAM data if possible. If it can be done, the rest of this procedure not required.
7. Contact your supervisor for details on how to enter the paper size type selection.
8. Execute a RAM clear for the system settings with SP5-801-3.
9. Execute a RAM clear for the copier application settings with SP5-801-6.
10. Reset the meter charge settings with SP5-045-1, SP5-104-1, and SP5-812-2 if the meter charge mode (SP5-930-1) is enabled.
11. Reset the total counter to 0 (SP 7-825-1) if meter charge mode (SP 5-930-1) is enabled.
12. Enter the SP and UP mode changes that were made at the factory and in the field.
13. Perform ACC for the copier application.
14. Perform ACC for the printer application.

### *NVRAM Expansion Board on the Controller (CN13)*

1. Enter SP mode and print out the SMC reports ("SP Mode Data", "Logging Data" and “UP data”) with SP5-990 if possible.
2. Export the User Codes from the NVRAM board by using SmartNetMonitor for Admin if the customer has stored them.
3. Upload the NVRAM data if possible.
4. Turn off the main switch and unplug the power cord.
5. Replace the NVRAM board on the controller and reassemble the machine.
6. Turn on the main switch.
7. Download the NVRAM data if possible. If it can be done, the rest of this procedure not required.

8. Contact your supervisor for details on how to enter the paper size type selection.
9. Execute a RAM clear for the system settings with SP5-801-3.
10. Execute a RAM clear for the copier application settings with SP5-801-6.
11. Execute a RAM clear for the scanner application settings with SP5-801-9.
12. Execute a RAM clear for the IPU settings with SP5-801-12.
13. Reset the system settings.
14. Enter the SP and UP mode changes that were made at the factory and in the field.
15. Import the User Codes to the NVRAM board by using SmartNetMonitor for Admin if the customer has stored them.
16. Perform ACC for the copier application.
17. Perform ACC for the printer application.

### *NVRAM on the BCU (IC20)*

1. Enter SP mode and print out the SMC reports ("SP Mode Data" and "Logging Data") with SP5-990 if possible.
2. Upload the NVRAM data if possible.
3. Turn off the main switch and unplug the power cord.
4. Replace the NVRAM on the BCU and reassemble the machine.
5. Download the NVRAM data if possible.
6. Contact your supervisor for details on how to enter the machine's device number and destination code.
   **NOTE:** SC999 or "Fusing Unit Setting Error" may be displayed until the machine's device number and destination code is programmed properly.
7. Turn the main switch off/on.
8. If downloading the NVRAM data can be done, the rest of this procedure is not required.
9. Reset the settings for meter charge with SP5-930-1 to -5.
10. Enter the SP and UP mode changes that were made at the factory and in the field.
11. Execute the process control self-check.
12. Perform ACC for the copier application.
13. Perform ACC for the printer application.
14. Replace all maintenance kits with new ones.

## 1.4.11 REQUIRED ACTIONS WHEN REPLACING ITEMS

| ITEMS | BEFORE REPLACING | AFTER REPLACING |
|---|---|---|
| Scanner unit | Print out the SMC report with SP5-990. | 1. Adjust the registration for the scanner and ARDF.<br>2. Do ACC for the copier application.<br>3. Do ACC for the printer application. |
| Printer mainframe | Print out the SMC report with SP5-990. | 1. Do ACC for the copier application.<br>2. Do ACC for the printer application. |
| NVRAM expansion board on the controller | See 1.4.10 NVRAM replacement procedure. | See 1.4.10 NVRAM replacement procedure. |
| NVRAM on the controller | See 1.4.10 NVRAM replacement procedure. | See 1.4.10 NVRAM replacement procedure. |
| Controller without NVRAM | None | None |
| NVRAM on the BCU | See 1.4.10 NVRAM replacement procedure. | See 1.4.10 NVRAM replacement procedure. |
| BCU without NVRAM | None | None |

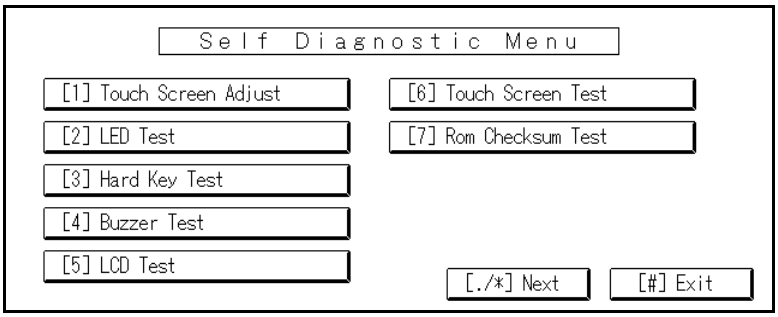
# 1.5 OTHERS

## 1.5.1 TOUCH PANEL POSITION ADJUSTMENT

**NOTE:** It is necessary to calibrate touch panel in the following cases:
- When the operation panel is replaced.
- When the NVRAM expansion board is replaced.
- When the touch panel detection function is not working correctly

**NOTE:** Do not attempt to use items [2] to [9] on the Self-Diagnostic Menu. These items are for design use only.

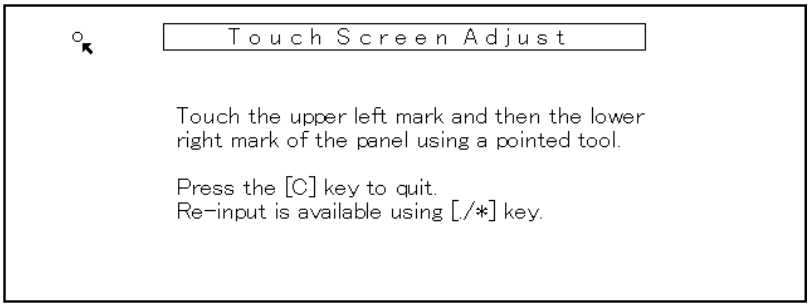
1. Press [◈], press ①⑨⑨③, and then press [C/⊘] 5 times to open the Self-Diagnostics menu.




G367R946.WMF

2. On the touch screen press “Touch Screen Adjust” (or press ①).
3. Use a pointed (not sharp!) tool to press the upper left mark ↖.
4. Press the lower right mark ↘ after it appears.
5. Touch a few spots on the touch panel to confirm that the marker (**+**) appears exactly where the screen is touched.

   If the **+** mark does not appear where the screen is touched, press Cancel and repeat from Step 2.




G367R947.WMF

6. When you are finished, press [#] OK on the screen (or press [#]).
7. Touch [#] Exit on the screen to close the Self-Diagnostic menu and save the calibration settings.

# 2. TROUBLESHOOTING

## 2.1 SCANNER TEST MODE

### 2.1.1 VPU TEST MODE

To make sure the scanner VPU control is functioning, output the VPU test pattern with SP4-907. After you have set the SP mode settings and pressed the start key, the VPU test pattern is printed out.

***SP4-907-1 VPU Test Pattern: R***

***SP4-907-2 VPU Test Pattern: G***

***SP4-907-3 VPU Test Pattern: B***

- If the copy is abnormal and the VPU test pattern is normal, the CCD on the SBU board may be defective.
- If the copy is normal and the VPU test pattern is abnormal, the harness may not connected properly between SBU and IPU, or the IPU or SBU board may be defective.

## 2.1.2 IPU TEST MODE

You can check the IPU board with the SP mode menu, SP4-904-1 or 2.

If no error is detected, the test ends, and the completion code appears in the operation panel display. If an error is detected, the test is interrupted and an error code is displayed. The table below lists the completion and error codes.

### *SP4-904-1 Register Write/Read Check Result*

| | Code | Defective ASIC |
|---|---|---|
| **Normal end** | 00 | — |
| **Abnormal end** | 11 | ASIC 1 |
| | 12 | |
| | 13 | |
| | 14 | ASIC 3 |
| | 15 | ASIC 2 |

### *SP4-904-2 Image Path Check Result*

| | Code | Error detected in the image data path |
|---|---|---|
| **Normal end** | 00 | — |
| **Abnormal end** | 21 | ASIC 1 → Field memory |
| | 22 | ASIC 1 → ASIC 2 → ASIC 1 → Field memory |
| | 23 | ASIC 1 → ASIC 3 |
| | 24 | ASIC 3 → ASIC 1 → ASIC 2 → ASIC 1 → Field memory |

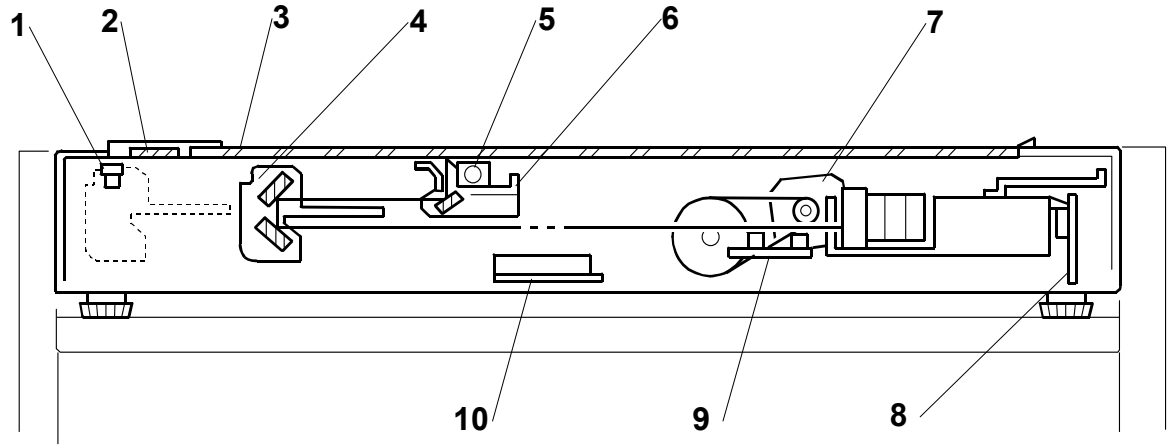
Errors may be caused by the following problems:

1) Short circuit on the signal lines
   - When the IPU board is installed, a pin or two on the ASIC is damaged.
   - Some conductive matter or object is trapped among the pins.
   - Condensation
2) Destruction of circuit elements
   - Overcurrent or a defective element has broken the circuit.
3) Abnormal power supply
   - The required voltage is not supplied to the devices.
4) Overheat/overcooling
   - The board (the scanner unit) is in an inappropriate environment.
5) Static electricity
   - Static electricity of a high voltage occurred during the test.
6) Others
   - Error code 13 may be detected if the write/read check is performed after the image path check. Turn the main switch off and on after the image path check.
   - For codes 21 to 24
     The connector between the scanner unit and the IPU board is not connected, or the LSYNC signals are not input to the IPU board.

# 3. DETALED DESCRIPTIONS

## 3.1 SCANNING

### 3.1.1 OVERVIEW




G367D101.WMF

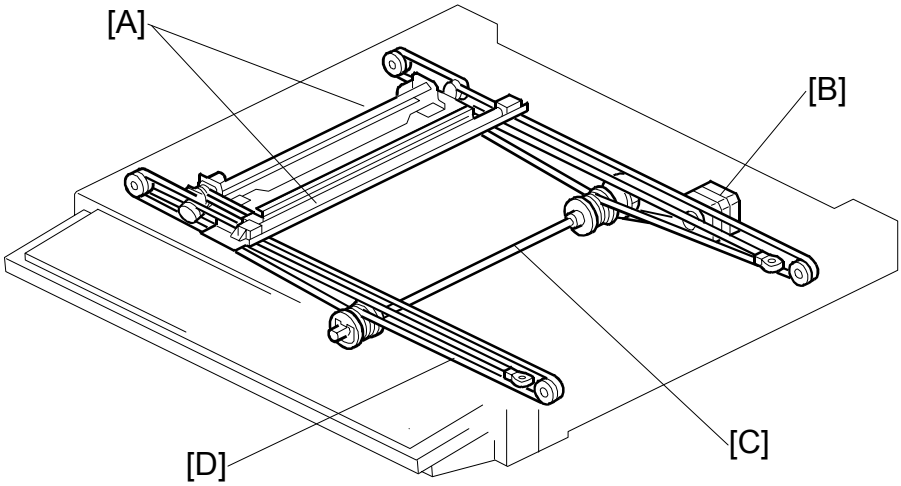
1. Scanner HP sensor
2. ARDF exposure glass
3. Exposure glass
4. 2nd scanner (2nd carriage)
5. Scanner lamp
6. 1st scanner (1st carriage)
7. Scanner motor
8. Sensor board unit (SBU)
9. Original length sensor
10. Original width sensor

The original on the exposure glass or ARDF exposure glass reflects the light emitted from the scanner lamp. The reflected light goes to the CCD on the sensor board by way of the 1st and 2nd scanners. The sensor board converts the CCD analog signals into digital signals.

When the original is manually placed on the exposure glass, the scanner motor pulls the 1st and 2nd scanners via mechanical linkage. The original is scanned from left to right as shown above.

When the original is fed from the optional ARDF, it is automatically transported onto the ARDF exposure glass, and to the original exit. The original does not stay on the glass, but keeps going to the exit. The 1st and 2nd scanners stay at their home positions.

## 3.1.2 SCANNER DRIVE




G367D103.WMF

The 1st and 2nd scanners [A] are driven by the scanner motor [B] through the scanner drive pulley, scanner drive shaft [C], and two scanner wires [D].

**- Book mode -**

The SBU board controls the scanner drive motor. The 2nd scanner speed is half that of the 1st scanner.

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

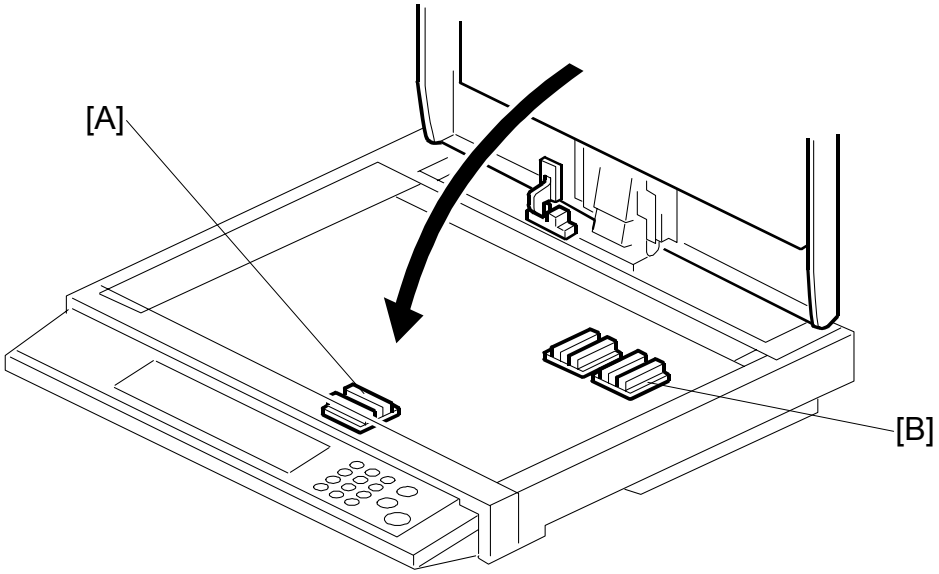
Magnification in the sub-scan direction can be adjusted by changing the scanner motor speed using SP4-008.

**- ARDF mode -**

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

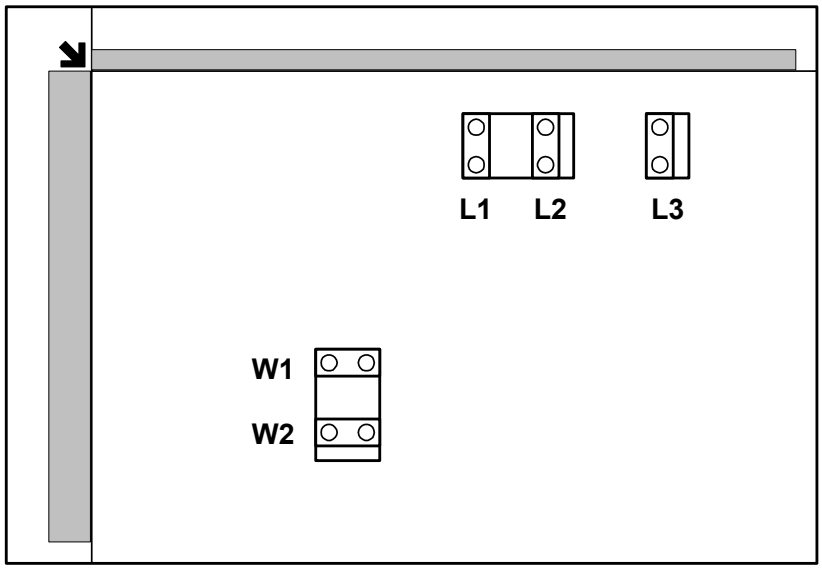
Magnification in the sub-scan direction can be adjusted by changing the ARDF motor speed using SP6-017

## 3.1.3 ORIGINAL SIZE DETECTION




G367D501.WMF

- The original width sensors [A] detect the original width, and the original length sensors [B] detect the original length.
- The SBU controller on the SBU board checks each sensor status when the platen cover sensor is activated as it is closed. It detects the original size by the on/off signals received from each sensor.
- If the copy is made with the platen cover fully open, the SBU controller on the SBU determines the original size from the sensor outputs after the Start key is pressed.




G367D540.WMF

| Original Size | | Length Sensor | | | Width Sensor | | SP4-301 display |
|---|---|---|---|---|---|---|---|
| Metric version | Inch version | L3 | L2 | L1 | W2 | W1 | |
| A3 | 11" x 17" | O | O | O | O | O | 132 |
| B4 | 10" x 14" | O | O | O | X | O | 141 |
| F4 | 8.5" x 14" (8" x 13") | O | O | O | X | X | 165 |
| A4-L | 8.5" x 11" | X | O | O | X | X | 133 |
| B5-L | | X | X | O | X | X | 142 |
| A4-S | 11" x 8.5" | X | X | X | O | O | 5 |
| B5-S | | X | X | X | X | O | 14 |
| A5-L, A5-S | 5.5" x 8.5", 8.5" x 5.5" | X | X | X | X | X | 128 |

**NOTE:** L: Lengthwise, S: Sideways, O: Paper present, X: Paper not present

For other combinations, "Cannot detect original size." will be indicated on the operation panel display.

The above table shows the outputs of the sensors for each original size. This original size detection method eliminates the necessity for a pre-scan and increases the machine's productivity.

However, if the by-pass tray is used, note that the machine assumes that the copy paper is lengthwise (L). For example, if A4 sideways paper is placed on the by-pass tray, the machine assumes it is A3 paper and scans a full A3 area, disregarding the original size sensors.

Original size detection using the ARDF is described in the manual for the ARDF (G564)

## 3.1.4 OTHERS

### *DC Power Supply*

The scanner power supply unit (scanner PSU) supplies power to the scanner unit.

#### *Overcurrent Control*

The scanner PSU has an overcurrent control function. The SBU cuts electricity when the current of a specific circuit exceeds its limit. When an overcurrent condition is detected, nothing is displayed on the operation panel because the power to the operation panel is cut off.

The table below shows the controlled circuits and their recovery procedures.

| Circuit | Recovery |
|---|---|
| 5V | If the problem is solved, the machine goes to standby after turning the main switch off and on. |
| 24V | |
| 3.3 V | If the problem is solved, the machine immediately goes to standby; there is no need to turn the main switch off/on. |
| 12V | |
| 15V | |

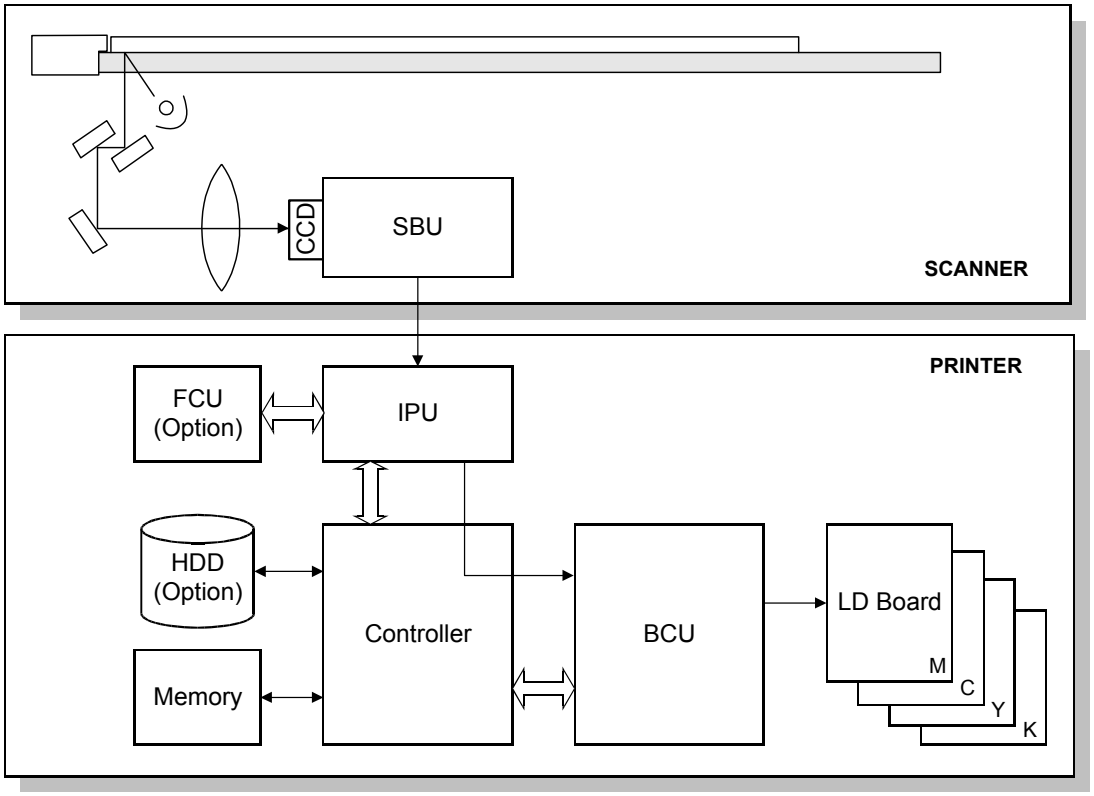
### *Anti-Condensation Heater*

The anti-condensation heater is available as an optional unit. The anti-condensation heater prevents condensation on the mirrors, which may occur when the scanner unit is, for example, carried from a cold room to a warm room. Such condensation can cause abnormal images.

☛ Section 1.6.9 of the printer manual, "Anti-Condensation Heater," for installation

# 3.2 IMAGE PROCESSING

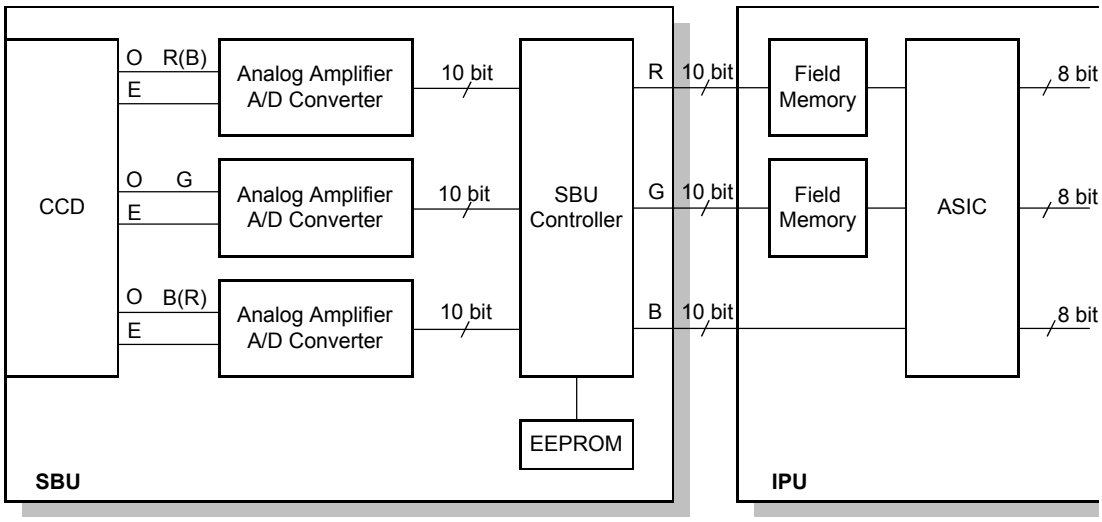
## 3.2.1 OVERVIEW




G367D900.WMF

- The CCD (Charged Coupled Device) generates three analog video signals.
- The SBU (Sensor Board Unit) converts the three analog signals to 10-bit digital signals. It sends these signals to the IPU (Image Processing Unit).
- The IPU processes the image, then the image data is sent to the controller.

## 3.2.2 SBU BLOCK DIAGRAM




G367D901.WMF

### *Signal Processing*

1. Signal Amplification
   - Odd-pixel and even-pixel RGB analog signals from the CCD are amplified by operational amplifiers.
2. Signal Composition
   - The amplified signals (even-pixel and odd-pixel for each RGB color) are combined by the MPX circuit after A/D conversion.

### *A/D Conversion*

- The analog signals (CCD output) are converted to 10-bit (1024 gradations) digital signals.

### *White Level Correction:*

- White reference plate scanned before the original.
- Data is updated before each scan.
- Corrects for variations in the white level across the page, including irregularities in the CCD and the optics across the main scan.

### *Others*

The SBU controller exchanges the R and B signals if the original is scanned by using ARDF.

### *Black Level Correction*

- Improves image reproduction for high-density areas.
- Reads the black video level at black elements on the CCD. These pixels are masked off, and should produce a pure black signal.
- This is subtracted from the value of each pixel.
- Calculated for each scan line.
- Corrects the image data for any changes in black level with time, as the machine scans down the page.

### *Adjustments*

The properties of the scanner unit, which are necessary for controlling the scanner VPU (video processing unit), are not stored in the memory of the printer mainframe. These properties are stored in the EEPROM on the SBU.

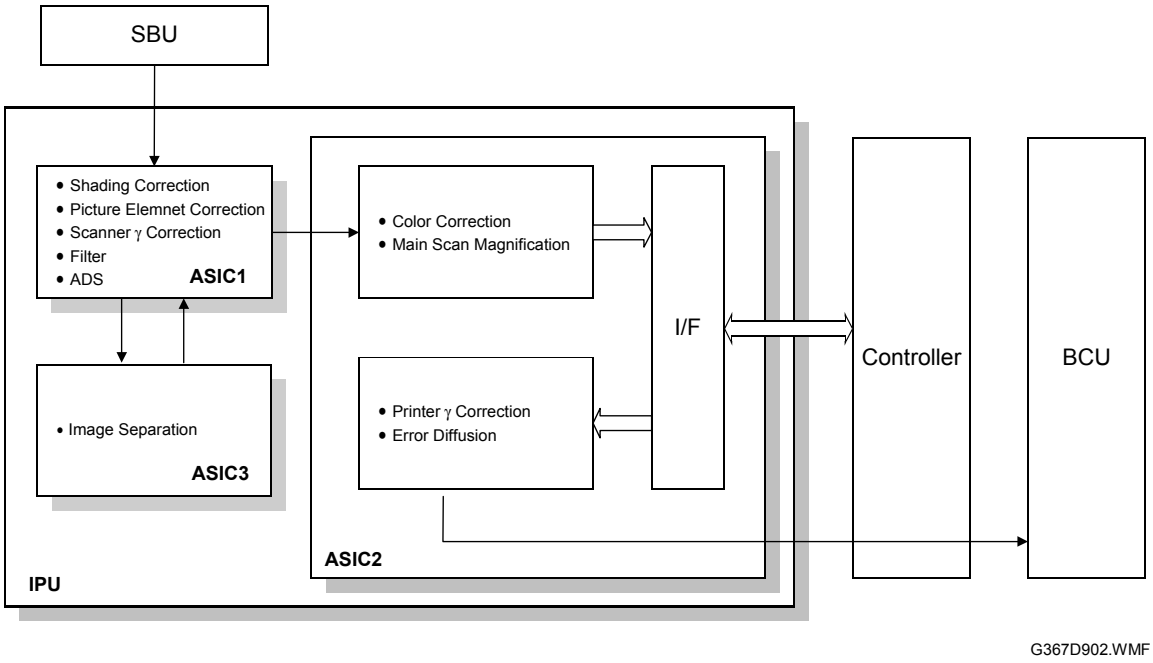
After replacing the SBU, adjust the following:

| | |
|---|---|
| SP4–008 | Scanner sub-scan magnification |
| SP4–010 | Scanner leading edge registration |
| SP4–011 | Scanner side-to-side registration |

### *VPU Test Mode*

To make sure the scanner VPU control is functioning, output the VPU test pattern with SP4-907 (☛ 2.1.1).

## 3.2.3 IPU BLOCK DIAGRAM




G367D902.WMF

### *Shading Correction*

Auto shading compensates for the possible differences in the amount of light at the edge and center of a scanned image caused by the scanner lens, or variations among pixels of the CCD.

### *Picture Element (Dot Position) Correction*

Picture element correction does two things.

1. Completion of the scan line correction process.
2. Correction if the CCD is not perpendicular to the light.

- The green CCD line is taken as a standard.
- Both ends of the red and blue lines are adjusted to match.
- Use SP 4-932-1 to 4-932-4 to change the vertical line correction level (☛ 1.3).

### *Scan Line Correction*

R, G, and B CCD lines are spaced 4 lines apart (8 lines total) when full size magnification is used.

- Scan line correction synchronizes these signals by storing each line in memory.
- The difference between the R, G and B signals depends on the magnification ratio.
- If this calculation does not result in an integer, the corrected data is set to the closest integer, but further correction is needed (☛ Picture Element Correction).

### *Image Separation*

The machine separates the original image into text and photo (dot screen) areas.

#### *Edge Separation*

- Used to locate text and line diagrams
- Locates areas of strong contrast.
- Looks for continuity of black or colored pixels.
- Looks for continuity of white pixels around black or colored pixels.
- Only uses data from the green CCD.

#### *Dot Screen Separation*

- If white pixels are not detected around non-white pixels, it is a dot screen area.

#### *Colored Text Separation*

- Identifies whether the text area's pixels are black or color.
- Based on:
  1) Differences among the RGB maximum signal levels.
  2) Output levels of the RGB video signals.

### *Scanner Gamma Correction (RGB Gamma Correction)*

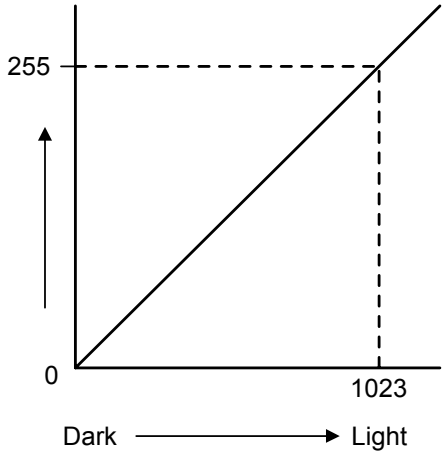



**Fig. 1**

G367D972.WMF

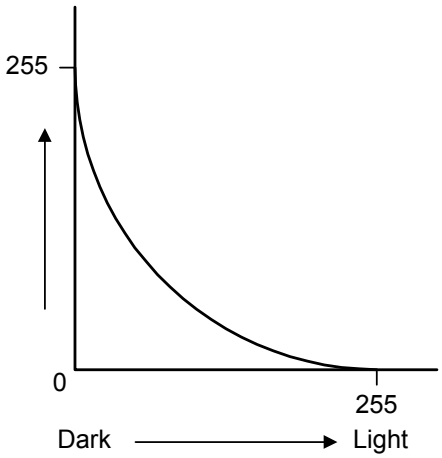



**Fig. 2**

G367D973.WMF

The RGB video signals from the CCD are sent to the IPU section. This signal is proportional to the intensity of light reflected from the original image (Fig. 1). Scanner gamma correction inverts the video signals. The shading circuit converts the signal from 10-bit to 8-bit.

- The IPU section converts the signal levels as shown in Fig. 2.
- This improves the accuracy of RGB to CMY color conversion (conversion is done later in the image process).
- The same table is used for R, G, and B signals.

### *Filtering*

Appropriate software filters are applied to the RGB video signals.

- Varies depending on the results of auto text/photo separation (or on the selected original mode).
- RGB smoothing is applied to photo areas
- Edge emphasis applied to text areas.

#### *Background Density Control*

- Removes low ID image signals (background) that are less than a certain threshold.
- The threshold depends on the color mode (single color or full color).

Users can select a different threshold for each mode.

### *ADS (Auto Image Density Selection)*

- Full color mode
  1) Refers to the RGB data taken from the entire original.
  2) Calculates a threshold for removing the background based on this data.
- Black and white mode
  1) Determines the peak white level.
  2) Peak level data is taken for each scan line.
  3) Removes the peak white level from the image. This produces a white background.
  4) Also uses the peak white level to determine the white reference value for A/D conversion.
  5) Background density is adjusted before data is input to the A/D converter.

## *Color Conversion*

Transparency for each color toner is not ideal. Color conversion compensates for the differences between the ideal and actual characteristics. A matrix converts the RGB video signals into CMYK video signals while the original is scanned once.

### *Conversion Matrix*

The following color conversion table is an example of the results from the matrix operation.

- Simple color copying.
- No special modes applied.
- To represent green, the yellow and cyan toners are used in a 1:1 ratio.

**Color Conversion Table**

| Original Color / Toner | K | R | Y | G | C | B | M | W |
|---|---|---|---|---|---|---|---|---|
| Y | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| M | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| C | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| K | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

### *User Program Mode*

When the user selects one of the following special modes, the values in this table may fall between 0 and 1.

**Photo mode**

- Glossy Photo
- Printed Photo
- Copied Photo

**Others**

- Generation Mode
- Pale Mode
- Map Mode

**Two-color mode**

- Separates black areas and colored areas.
- Converts black areas to a color selected by the user.
- All other areas are converted to a second color selected by the user.
  (☛ Operator's manual)

### *Main Scan Magnification*

While the machine changes the scanner speed to reduce or enlarge the original in the sub-scan direction, the ASIC2 chip on the IPU board handles reduction and enlargement in the main scan direction.

- Scanning and laser writing are done at a fixed pitch (CCD elements cannot be squeezed or expanded).
- Imaginary points are calculated, corresponding to a physical enlargement or reduction.
- Image density is then calculated for each of the imaginary points based on the image data for the nearest two true points.
- The calculated data then becomes the new (reduced or enlarged) image data.

**NOTE:** The actual calculations for main scan magnification use the polynomial convolution method. This mathematical process is beyond the scope of a service manual and will not be covered here.

### *Printer Gamma Correction*

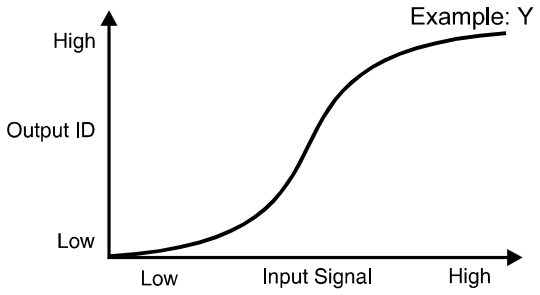



**Fig. 1**

G367D989.WMF

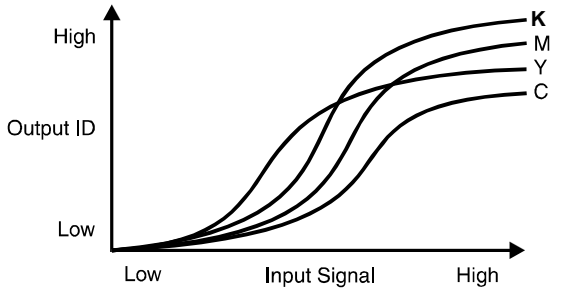



**Fig. 2**

G367D990.WMF

Ideally, the gamma curves for Yellow, Magenta, Cyan, and Black should be identical, as shown in figure 1. However, slight variations in the electrical components can result in varying gamma curves, as shown in figure 2.

- Printer characteristics are much more variable than the scanner. Printer gamma needs recalibration and adjustment from time to time.
- The Auto Color Calibration (ACC) procedure compensates for any discrepancies in color reproduction.
- ACC makes new gamma curves for each color in each mode (text, photo, and black text).
- After ACC, the gamma curve for each color can be adjusted with service programs (SP4-909 to SP4-918).
- 4 different modes:
  1) ID max.
  2) Shadow (High ID)
  3) Middle (Middle ID)
  4) Highlight (Low ID)
- If the previous gamma curve was better, it can be recalled.
- Factory settings can be loaded using SP 5-610-4.
  **NOTE:** If the factory settings have been overwritten, this will return the new values, not the actual settings made in the factory. This is deliberate, since some drift is expected. After a time, the original factory settings may no longer be suitable.
- Factory settings can be overwritten by the current gamma settings using SP5-610-5.

**ID Max.**
This mode adjusts the total image density as shown in figure 3.

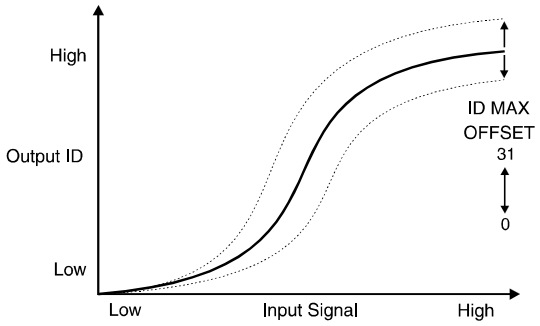



**Fig. 3**
G367D991.WMF

**Shadow (High ID)**
The High ID mode adjusts the image density between Level 6 and Level 9 of the color gradation scale on the C-4 test chart (figure 4).

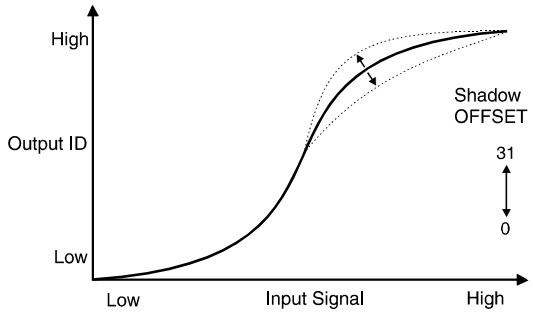



**Fig. 4**
G367D992.WMF

**Middle (Middle ID)**
The Middle ID mode adjusts the image density between Level 3 and Level 7 of the color gradation scale on the C-4 test chart (figure 5).

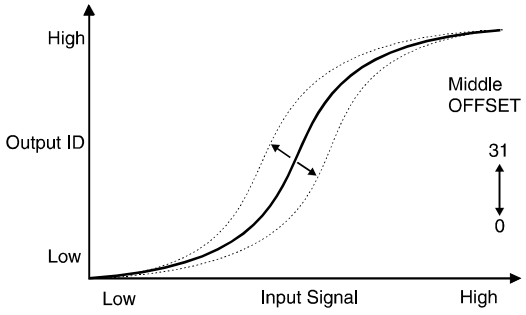



**Fig. 5**
G367D993.WMF

**Highlight (Low ID)**
The Low ID mode adjusts the image density between Level 2 and Level 5 of the color gradation scale on the C-4 test chart (figure 6).

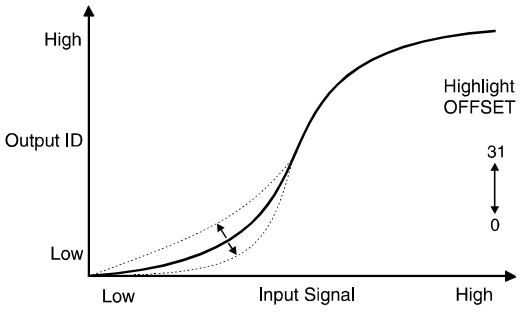
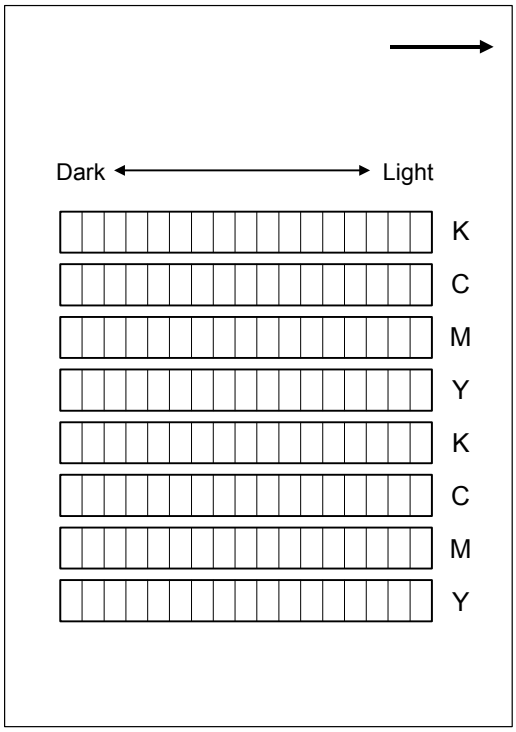



**Fig. 6**
G367D994.WMF

### *Auto Color Calibration Test Pattern*

The test pattern has eight 17-step gradation scales for each color (CMYK), including background white, for Text and Photo modes.




G367D995.WMF

ACC automatically calibrates the printer gamma curve. The user starts the ACC process.

1. The user prints an ACC Test Pattern.
2. The user places the test pattern on the exposure glass.
3. The copier makes 8 scans to read each color scale.
4. The copier corrects the printer gamma by comparing the ideal settings with the current image density.
5. The copier combines the corrected gamma curve with the Shadow, Middle, and Highlight values currently in memory.
6. The copier then calculates the ID max (amplitude of the gamma curve) based on data from the ACC scan.
7. The corrected printer gamma curves can be adjusted further using SP modes (SP4-909 to SP4-918).

### *Error Diffusion*

Error diffusion reduces the difference in contrast between light and dark areas of a halftone image. Each pixel is corrected using the difference between it and the surrounding pixels. The corrected pixels are then compared with an error diffusion matrix.



### *IPU Board Test*

You can check the IPU board with the SP mode menu, SP4-904-1 or 2 (☛ 2.1.2).

# 3.3 PRINTER ENGINE

## 3.3.1 DIFFERENCES IN THE PRINTER MAINFRAME

To improve reproduction in copy mode, the machine generates the print image with 2 bits per pixel.

If the CF expander is installed on the printer mainframe, different parameters are used for copy and print modes as shown in the table below.

| Function | Copy Mode | Printer Mode |
|---|---|---|
| Gradation for printing | 2 bits / pixel | 1 bit / pixel |
| LD control | SP2-103-101 to -110 | SP2-103-1 to -59 |
| Pointer table display | SP3-902-5 to -8 | SP3-902-1 to -4 |
| M/A target | SP3-903-5 to -8 | SP3-903-1 to -4 |
| M/A target for LD correction | SP3-904-5 to -8 | SP3-904-1 to -4 |

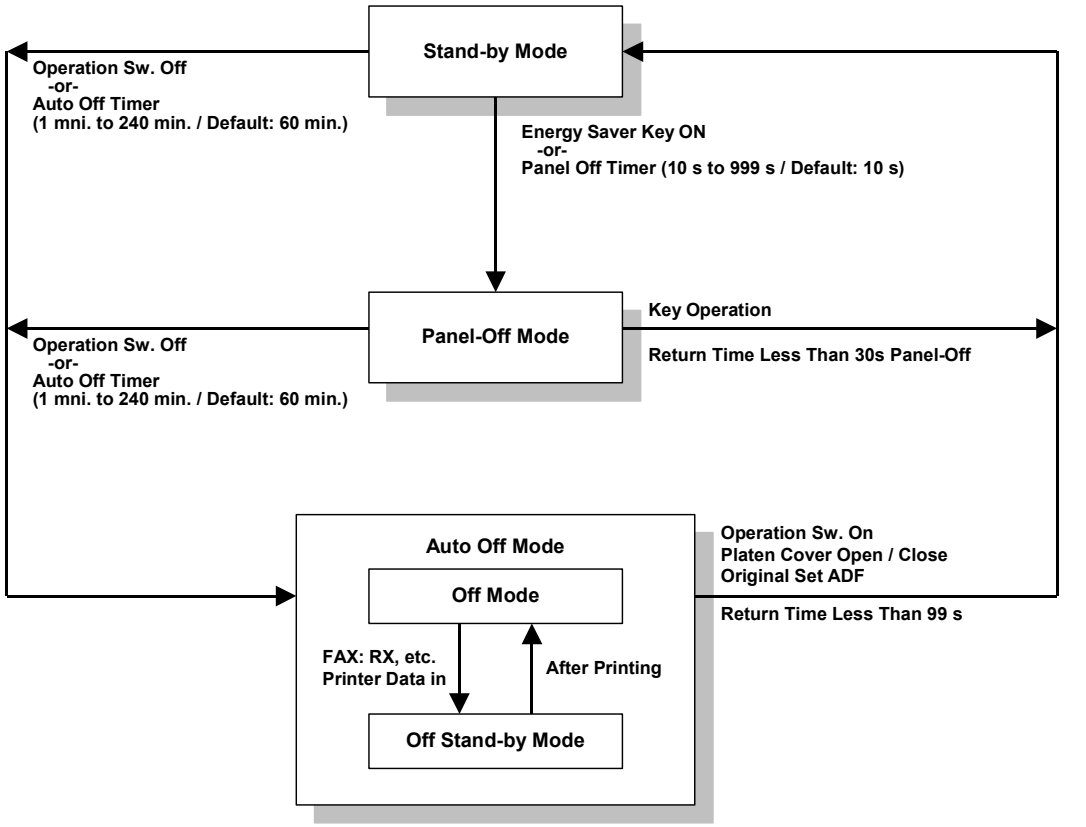
## 3.3.2 PAPER FEED LINE SPEED

This machine has three process line speeds (for feed from the registration roller to the fusing unit) depending on the mode.

| Mode | Resolution (dpi) | Line speed (mm/s) | Print speed (ppm) |
|---|---|---|---|
| B/W | 600 | 185 | 38 |
| Color | 600 | 125 | 28 |
| OHP/Thick | 600 | 62.5 | 10 |

## 3.3.3 ENERGY SAVER MODES

### *Overview*




G367D996.WMF

When the machine is not being used, the energy saver function reduces power consumption by decreasing the fusing temperature.

This machine has two types of energy saver mode as follows.

1) Panel-off mode
2) Auto Off mode

These modes are controlled by the following UP and SP modes.

- Panel off timer: User Tools – System Settings – Timer Setting – Panel Off Timer
- Auto off timer: User Tools – System Settings – Timer Setting – Auto Off Timer
- Auto off disabling: User Tools – System Settings – Key Operator Tools – AOF (Always ON). This disables the auto off mode.

## *Panel Off Mode*

### *Entering the panel off mode*

The machine enters the panel off mode when one of the following is done.

- The panel off timer runs out.
- The Clear Mode/Energy Saver Key is held down for one second.

If the value specified in the panel off timer is larger than the value specified in the energy saver timer, the machine goes into the low power mode without going into the panel off mode. A similar thing happens when the value in the panel off timer is larger than that in the auto off timer. To make the panel off mode effective, specify a value smaller than the values in the energy saver timer and auto off timer.

### *What happens in panel off mode*

When the machine is in the panel off mode, each of the fusing lamps are kept at the temperatures indicated in the table at the bottom of the page, and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the controller receives an image print out command from an application program (e.g. to print incoming fax data or to print data from a PC), the temperature of each fusing lamp rises to print the data.

### *Return to stand-by mode*

If one of the following is done, the machine returns to stand-by mode:

- The Clear Mode/Energy Saver Mode key is pressed
- Any key on the operation panel or touch panel screen is pressed
- An original is placed in the ARDF
- The ARDF is lifted
- A sheet of paper is placed in the by-pass feed table

The return time from the panel off mode is less than 30 seconds.

| Mode | Operation Switch | Energy Saver LED | Fusing Temperature | +24V | System +5V |
|---|---|---|---|---|---|
| Panel off | On | On | Heating roller: 100°C<br>Pressure roller: 130°C | On | On |

## *Auto Off Mode*

There are two Auto Off modes: Off Stand-by mode and Off mode. The difference between Off Stand-by mode and Off mode is the machine's condition when it enters the Auto Off mode.

### *Entering off stand-by and off modes*

The machine enters the Off Stand-by mode or Off Mode when one of the following is done.

- The auto off timer runs out.
- The operation switch is pressed to turn the power off.

If one or more of the following conditions exists, the machine enters Off Stand-by mode. If none of these conditions exist, the machine enters the Off Mode.

- Error or SC condition
- An optional G4 unit is installed
- Image data is stored in the memory
- During memory TX or polling RX
- The handset is off hook
- An original is in the ARDF
- The ARDF is open

### *Off Stand-by mode*

The system +5V is still supplied to all components. When the machine detects a ringing signal or receives a stream of data for a print job, the +24V supply is activated and the machine automatically prints the incoming message or executes the print job.

### *Off Mode*

The system +5V supply also turns off. However, +5VE (+5V for energy saver mode) is still activated. When the machine detects a ringing signal, off-hook signal, or receives a print job, the machine returns to the Off Stand-by mode and the system +5V and +24V supplies are activated.

### *Returning to stand-by mode*

The machine returns to stand-by mode when the operation switch is pressed. The return time is less than 99 seconds.

| Mode | Operation Switch | Energy Saver LED | Fusing Lamp | +24V | System +5V | Note |
|---|---|---|---|---|---|---|
| Off Stand-by | Off | Off | Off (On when printing) | On | On | |
| Off | Off | Off | Off | Off | Off | +5VE is supplied |

# 3.4 SCANNER FUNCTIONS

## 3.4.1 IMAGE PROCESSING FOR SCANNER MODE

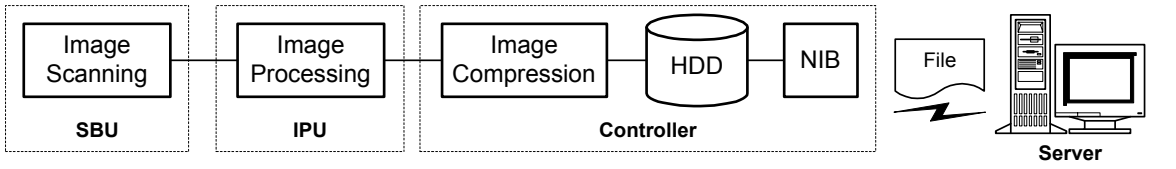
The image processing for scanner mode is done in the IPU board. The IPU chooses the most suitable image processing methods (gamma tables, dither patterns, etc) depending on the settings made in the driver.

The image compression method for binary picture processing can be selected with scanner SP1-004 (either MR, MH, or MMR). For grayscale processing, JPEG is used.

Whether the user selects the image mode using the driver (TWAIN mode) or from the operation panel (Delivery mode), the IPU does the image processing using the appropriate image processing methods mentioned above.

***Image Data Path***

**1. Image Store/Image Delivery Mode**




G367D905.WMF

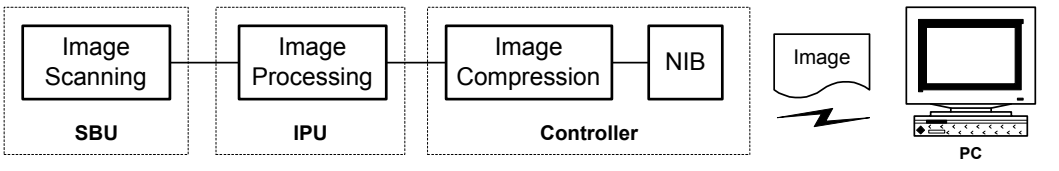
The user can select the following modes from the LCD.

1) Delivery only
2) Store only
3) Store and delivery

After image processing and image compression, all image data for the job are stored in the printer controller HDD using TIFF file format (binary picture processing) or JPEG file format (grayscale processing). The type of TIFF format used depends on the user's scanner settings.

When delivery mode is selected, the controller creates a file which contains the destination and page information, then the controller sends the file to a server.

**2. Twain Mode**




G367D906.WMF

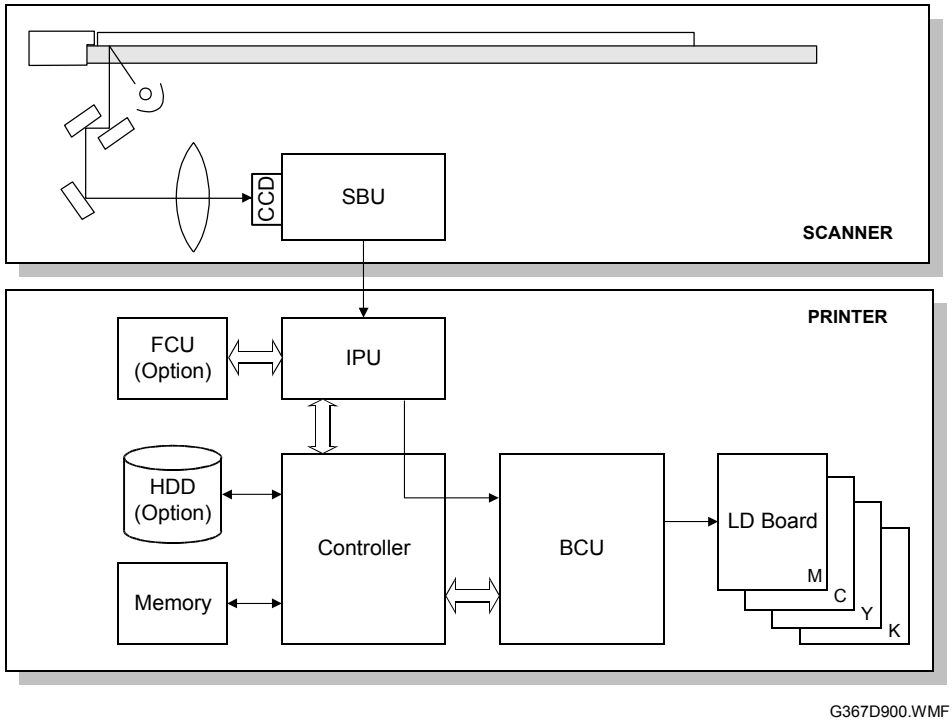
After image processing and image compression, the data (RAW or JPEG) is sent to the scanner Twain driver directory on the computer.

# 3.5 HARD DISK DRIVES

A 40GB hard disk is provided as an option for the copier feature expander. A 20GB hard disk is only used for printer functions. The hard disks are partitioned as listed in the table.

| Partition | 40GB HDD | 20GB HDD | Function | Comment |
|---|---|---|---|---|
| Image Local Storage | 17,700 MB | --- | Document server | Remains stored even after cycling power off/on. |
| File System 1 | 500 MB | 500 MB | Downloaded fonts, forms. | Remains stored even after cycling power off/on. |
| File System 2 | 1,000 MB | 1,000 MB | Job spooling area | Erased after power off. |
| File System 3 | 2,000 MB | 2,000 MB | Work data area | Remains stored even after cycling power off/on. |
| Image TMP | 7,486 MB | 7,486 MB | Commonly used area for applications | Erased after power off. |
| | 7,200 MB | --- | Copier application | Erased after power off. |
| | 3,440 MB | 3,440 MB | Printer application | Erased after power off. |
| | 1,000 MB | --- | Scanner application | Erased after power off. |
| Job Log | 10 MB | 10 MB | Job log | Remains stored even after cycling power off/on. |

# 3.6 IMAGE DATA PATH




### *Copier Application*

SBU → IPU → Controller (HDD/Memory) → IPU → Controller (straight through) → BCU

### *Printer Application*

Controller → IPU (through) → Controller → BCU

### *Scanner Application (1 bit/8 bits)*

SBU → IPU → Controller (HDD/Memory)

### *Fax Application (Transmission/Reception)*

Transmission: SBU → IPU → FCU

Reception: FCU → IPU → Controller (straight through) → BCU