

DR-2580C

SERVICE MANUAL

FIRST EDITION

Canon

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Use of this manual should be strictly supervised to avoid disclosure of confidential information.

This Service Manual describes necessary basic information for field service and maintenance for maintaining the product quality and functions of the DR-2580C.

Contents

Chapter 1: General description

Features, specifications, name of parts, operation method

Chapter 2: Functions and operation

Description of operation of machine system and electrical system by function

Chapter 3: Disassembly and reassembly

Disassembly method, reassembly method

Chapter 4: Installation and maintenance

Installation method, maintenance method

Chapter 5: Troubleshooting

Service modes and troubleshooting

Appendix: General circuit diagrams, etc.

Information in this manual is subject to change. Notification of such changes will be given in Service Information Bulletins.

Thoroughly read the information contained in this Service Manual and the Service Information Bulletins to gain a correct and deeper understanding of the machine. This is one way of fostering response for ensuring prolonged quality and function, and for investigating the cause of trouble during troubleshooting.

Quality Assurance Center
Canon Electronics Inc.

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CHAPTER 1

GENERAL DESCRIPTION

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I. FEATURES

1. Compact design (small, light)

Dimensions (Tray closed): 304 (W) × 169 (D) × 81.5 (H) mm

Wight: 1.9 Kg

2. High-speed scanning

Black & White, Grayscale: Simplex 25 ppm, Duplex 50 ipm (200 dpi, A4 size)

Color: Simplex 13 ppm, Duplex 26 ipm (200 dpi, A4 size)

3. Dual-path mechanism (U-turn/Straight path)

Straight path is provided for thicker documents and cards.

4. Flatbed scanner for option

It can be attached and detached by users.

5. Installation and replacing of consumable parts by users

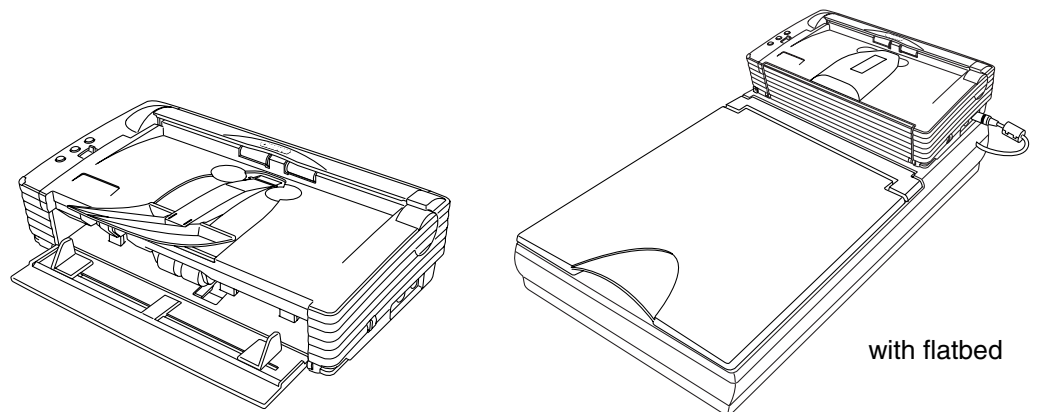


Figure 1-101

“Windows” is a trademark of Microsoft Corporation in the U.S. and other countries.

Other company names and product names mentioned in this document are registered trademarks or trademarks of the respective companies.

II. SPECIFICATIONS

1. Appearance / Installation

No.	Item	Specifications
1	Type	Desktop type sheet-fed scanner
2	Product models	1) 100 V model: 100 VAC, 50/60 Hz 2) 120 V model: 120 VAC, 60 Hz 3) 220-240 V model: 220-240 VAC, 50/60 Hz
3	Rating power	1) Main body All mode: 16VDC, 1.4A *Packaged AC adapter must be used *Energy Star conformity 2) Packaged AC adapter Input: 100-240 VAC, 50/60 Hz, 0.65-0.34 A (65-82 VA) Output: 16 VDC, 1.8 A
4	Operating environment	10 to 32.5°C (50 to 90.5°F) 20 to 80%RH *No condensation allowed.
5	Noise	1) Sound power level In standby mode: 40 dB or less In operating mode: 66 dB or less 2) Sound pressure level: Bystanders (reference) In operating mode: 57 dB or less
6	Dimensions	Tray closed: 302 (W) × 171 (D) × 81 (H) mm
7	Weight	Approx. 1.9 kg
8	Output interface	1) USB2.0 (Hi-speed) 2) Flatbed's interface
9	Expected product life (in-house information)	One of the following two items, whichever comes first. 1) 5 years 2) Sheets fed: 500,000 sheets (A4 size) *There are parts needed to replace.
10	Estimated duty cycle	750 sheets/day
11	Installation	By users
12	Bundle software	ISIS/TWAIN driver, CapturePerfect 3.0, Acrobat 7.0
13	Option	1) Flatbed unit 2) Barcode module
14	Consumable parts (commercial goods)	Exchange roller kit (roller unit, retard roller)

Table 1-201

2. Documents Feed

No.	Item	Specifications			
			U-turn path	Straight path	
1	Document size				
		1) Width	53 to 216 mm		
		2) Length	70 to 297 mm *Up to 355.5 mm for single sheet feed only include LGL size.		
2	Document weight (converted thickness)	1) Separation-feed	52 to 128 g/m ² (0.06 to 0.15 mm)	42 to 157 g/m ² (0.05 to 0.20 mm)	
		2) Non-Separation	42 to 157 g/m ² (0.05 to 0.20 mm) *No guarantee for 0.20 mm if feeding can be done at straight path.		
3	International standard card	Available at straight path with non-separation feed only. Width: 53.9 mm, Length: 85.5 mm, Thickness: 0.76 mm *No embossment is permitted.			
4	Document requirements	1) Pressure-sensitive paper: Can be fed with limitation of direction. 2) Carbon-backed paper: Cannot be fed. 3) Perforated paper for binder: Can be fed with limitation of holes. 4) Curled paper: Can be fed only if curl is 5 mm or less. 5) Creased paper: Can be fed, but crease must be straightened before being fed.			
5	Document storage		U-turn path	Straight path	
		1) Pickup	5 mm or less including curls, or 50 sheets with 80 g/m ² at max. *Special sheets whose pickup performance is poor are 10 sheets or less		
		2) Ejection	Same as pickup	1 sheet	
		3) Ejection face direction	Face down	Face up	
6	Feeding speed	Resolution	Binary	Grayscale	Color
		100 dpi	156 mm/sec		
		200 dpi	156 mm/sec		
		300 dpi	78 mm/sec		
		400 dpi	52 mm/sec		
		400 dpi	58 mm/sec	19 mm/sec	
		600 dpi	39 mm/sec	13 mm/sec	
*For big size of image data like A4/600dpi/color mode, document is fed with intermittence.					

Table 1-202

3. Document Reading *using bundle software CapturePerfect 3.0

No.	Item	Specifications																								
1	Type of sensor	Contact Image Sensor (CIS)																								
2	Picture element	Density of element: 600 dpi, Effective elements: 5104 (216 mm)																								
3	Light source	3-color (RGB) LEDs R: 620 nm, G: 530 nm, B: 467 nm																								
4	Color dropout	Available: R/G/B, front/back each side *Color emphasize modes are available also.																								
5	Reading side	Simplex/Duplex/Blank skip/Folio/Auto/Flatbed **"Auto, flatbed" are good for connected flatbed unit only.																								
6	Reading size	1) Typical: A4/A5/A5-R/A6/A6-R, B5/B6/B6-R, LGL/LTR 2) Auto size detection 3) Maximum size (216 × 355 mm) 4) User setting																								
7	Output mode	1) Binary (Black & White/Error diffusion/Advanced text enhancement) 2) Grayscale (8 bit) 3) Color (24 bit)																								
8	Output resolution	100 × 100 dpi, 150 × 150 dpi, 200 × 200 dpi, 240 × 240 dpi, 300 × 300 dpi, 400 × 400 dpi, 600 × 600 dpi,																								
9	Reading speed	A4 size documents																								
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Mode</th> <th style="width: 25%;">Resolution</th> <th style="width: 25%;">Single</th> <th style="width: 25%;">Double</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: center;">Black & White /Grayscale</td> <td style="text-align: center;">200 dpi</td> <td style="text-align: center;">25 ppm</td> <td style="text-align: center;">50 ipm</td> </tr> <tr> <td style="text-align: center;">300 dpi</td> <td style="text-align: center;">25 ppm</td> <td style="text-align: center;">50 ipm</td> </tr> <tr> <td style="text-align: center;">600 dpi</td> <td style="text-align: center;">6 ppm</td> <td style="text-align: center;">12 ipm</td> </tr> <tr> <td rowspan="3" style="text-align: center;">Color</td> <td style="text-align: center;">200 dpi</td> <td style="text-align: center;">13 ppm</td> <td style="text-align: center;">26 ipm</td> </tr> <tr> <td style="text-align: center;">300 dpi</td> <td style="text-align: center;">8 ppm</td> <td style="text-align: center;">16 ipm</td> </tr> <tr> <td style="text-align: center;">600 dpi</td> <td style="text-align: center;">2 ppm</td> <td style="text-align: center;">4 ipm</td> </tr> </tbody> </table>	Mode	Resolution	Single	Double	Black & White /Grayscale	200 dpi	25 ppm	50 ipm	300 dpi	25 ppm	50 ipm	600 dpi	6 ppm	12 ipm	Color	200 dpi	13 ppm	26 ipm	300 dpi	8 ppm	16 ipm	600 dpi	2 ppm	4 ipm
		Mode	Resolution	Single	Double																					
		Black & White /Grayscale	200 dpi	25 ppm	50 ipm																					
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			600 dpi	6 ppm	12 ipm																					
		Color	200 dpi	13 ppm	26 ipm																					
			300 dpi	8 ppm	16 ipm																					
			600 dpi	2 ppm	4 ipm																					
*Settings of reading are default. The numbers above may differ depending on the computer, the function settings and other conditions. For big size of image data, document is fed with intermittence.																										

Table 1-203

4. Image Processing/Other Functions *using bundle software CapturePerfect 3.0

No.	Item	Specifications
1	Brightness adjustment	255 steps, back side individual setting
2	Contrast adjustment	7 steps, back side individual setting
3	Gamma correction	Grayscale/R/B/G individual color, each side setting
4	Edge emphasize	5 steps
5	Shading correction	Automatic operation at each batch
6	Skew correction (deskew)	Performed by image processing
7	Double feed detection	Length detection sensor
8	Other image processing	Black border removal, Binder hole removal, Image rotation, Text orientation
9	Counter	Total fed counts (memorize in scanner)
10	Operation buttons (job buttons)	3 buttons (available registering the functions)

Table 1-204

5 Flatbed Unit (option)

No.	Item	Specifications
1	Type	Desktop type flatbed scanner *No operation without main body DR-2580C
2	Dimensions (tray closed)	Flatbed itself: 315 (W) × 545 (D) × 82.5 (H) mm With DR-2580C: 315 (W) × 557 (D) × 155 (H) mm
3	Weight	Approx. 3.8 kg (with DR-2580C: Approx. 5.7 kg)
4	Type of sensor	CCD: 600 dpi, 5104 pixels (216 mm), Grayscale/RGB output
5	Light source	Xenon lamp (white)
6	Reading size	216 × 297 mm maximum
7	Expected product life (in-house information)	One of the following two items, whichever comes first. 1) 5 years 2) Sheets scanned: 20,000 sheets (A4 size)
8	Installation	By users *Include detach/attachment with main body DR-2580C

Table 1-205

The specifications above are subject to change for improvement of the product.

III. PRECAUTIONS

This section describes items that require particular care, for example, regarding human safety. These precautions must be observed. Explain to the user items that relate to user safety, and instruct the user to take appropriate actions.

1. Power OFF in Emergency

When such abnormalities as abnormal noise, smoke, heat and odor occur, turn the power switch OFF and unplug the power cord immediately.

As it may cause injury, be careful not to get clothing (ties, long hair, etc.) caught in the machine. If this happens, unplug the power cord immediately. Also, do not insert your fingers in the feed section while feeding documents.

2. Prohibition of Modify

Do not change nor modify this machine. If this has been carried out, its use may be forcibly discontinued on site.

If this machine's specifications shall be changed, or the machine shall be disassembled and reassembled, follow the instructions described in this manual or in service information.

3. Electromagnetic Wave Interference Countermeasures

This machine complies with the electromagnetic wave interference standards (VCCI, FCC, etc.). However, the user might have to carry out countermeasures if the machine causes electromagnetic wave interference.

4. User Manual

Read the user manual thoroughly before using this machine.

5. Disposal

Following local regulations when disposing of the product and parts.

IV. NAME OF PARTS

1. Front

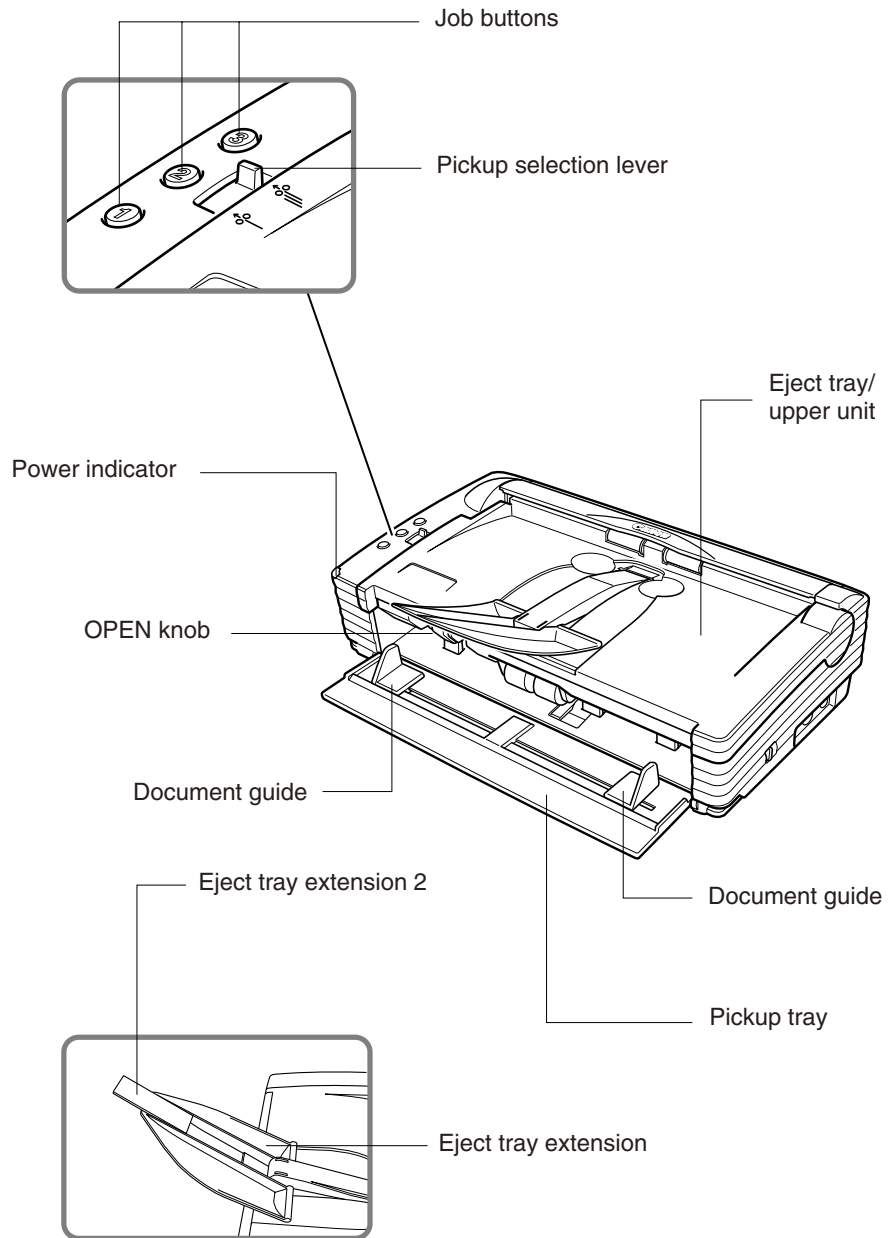


Figure 1-401

2. Rear

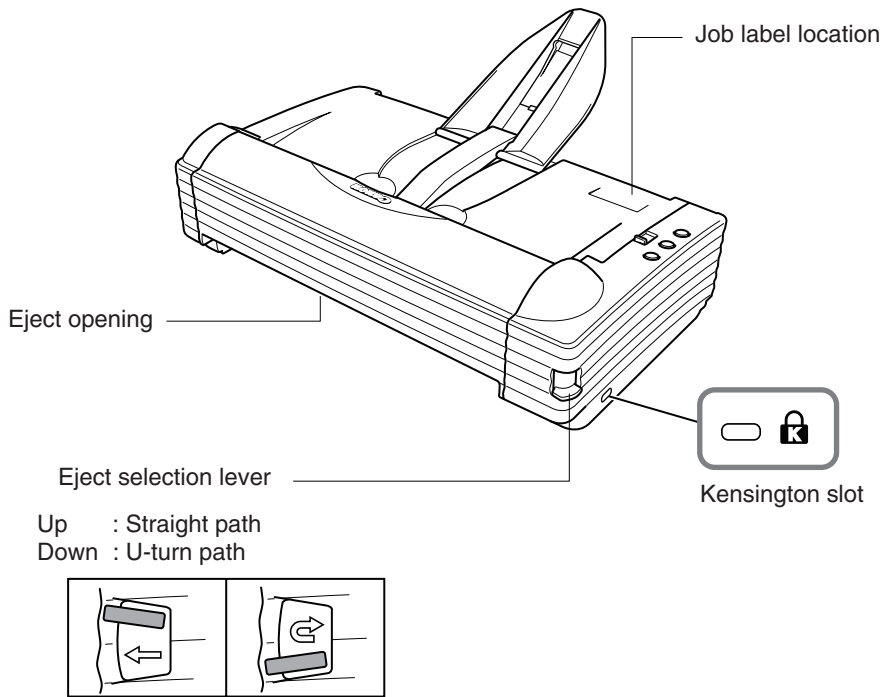


Figure 1-402

3. Side (interface)

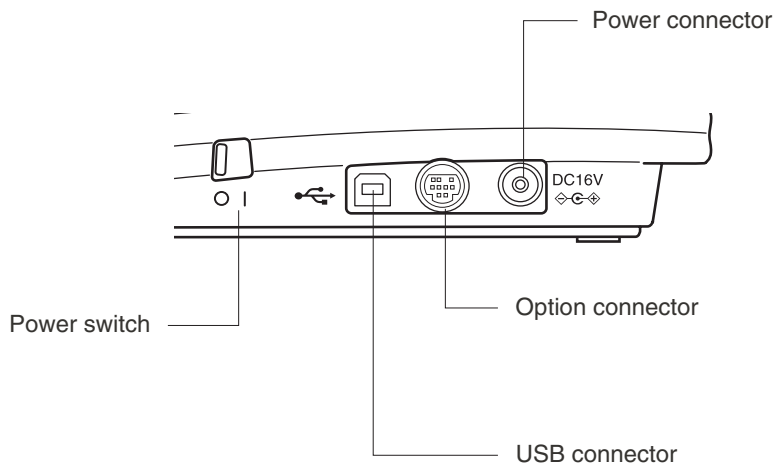


Figure 1-403

4. Flatbed unit (option)

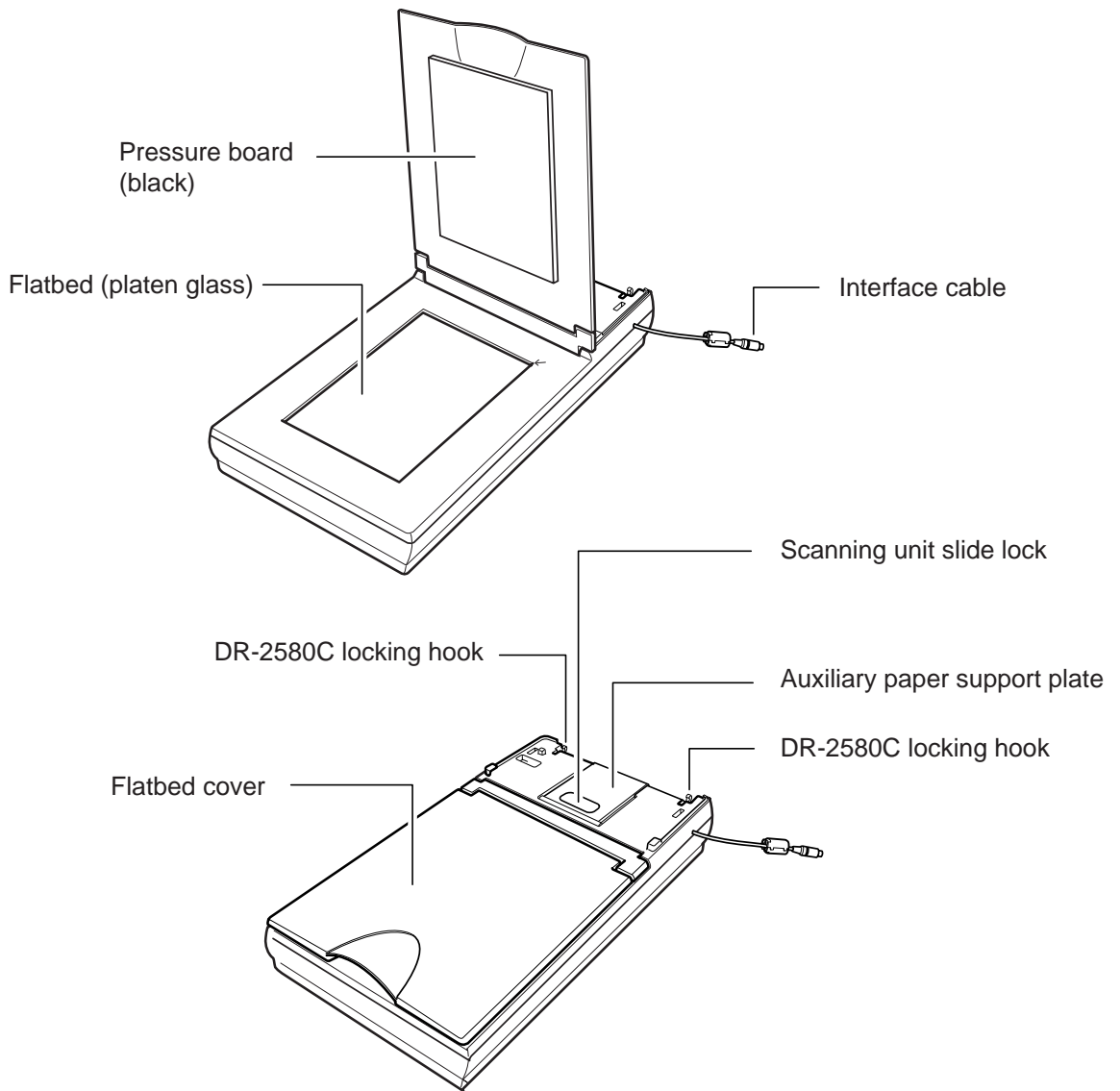


Figure 1-404

V. USER OPERATION

Refer to the user manuals for this machine and software to be used for details.

1. Installation

This machine is installed by the user. Unpacking and installation are performed by the user. If they are performed by a service technician, refer to the user manual. "CHAPTER 4 INSTALLATION & MAINTENANCE," in this manual provides an overview. However, the next section "USER MAINTENANCE" shows how to install the roller unit and retard roller.

2. Operation Screen

Basic operation screens if CapturePerfect 3.0 is used are shown for reference. CapturePerfect 3.0 uses an ISIS driver.

1) Main screen

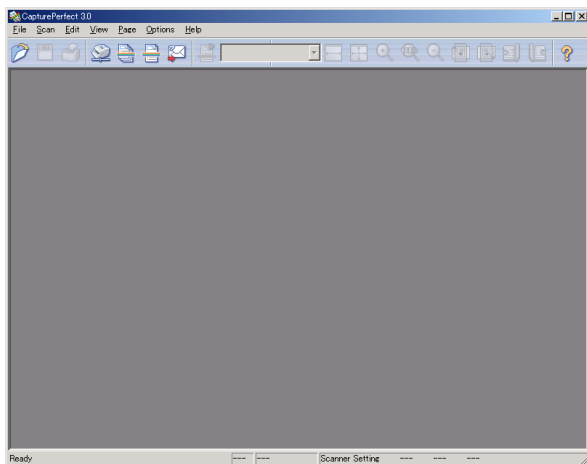


Figure 1-501

2) Basic settings

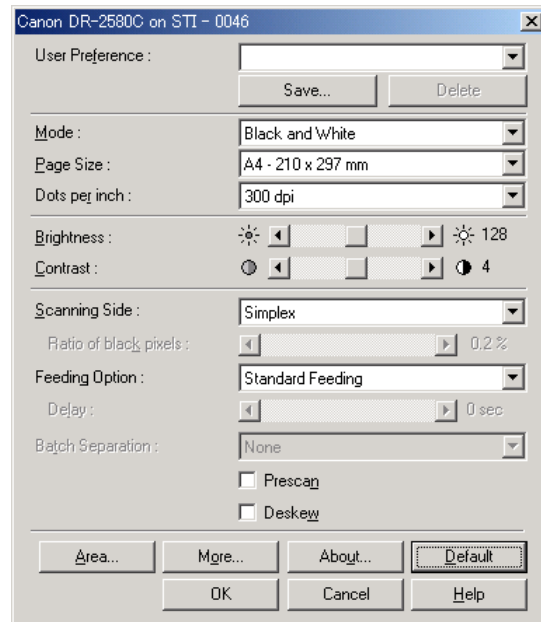


Figure 1-502

3) Detailed settings

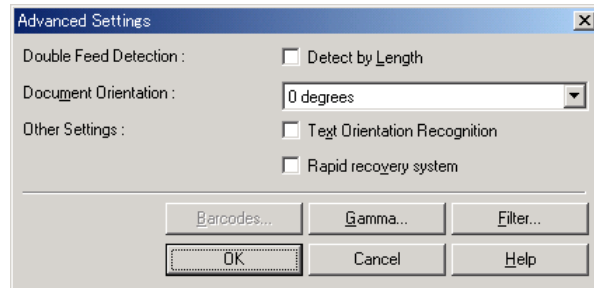


Figure 1-503

4) Filter

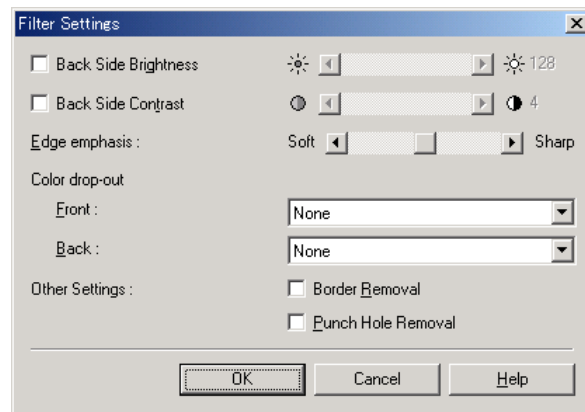


Figure 1-504

3. Clearing Jams

- 1) Remove documents left on the eject tray and then close the eject tray extension.

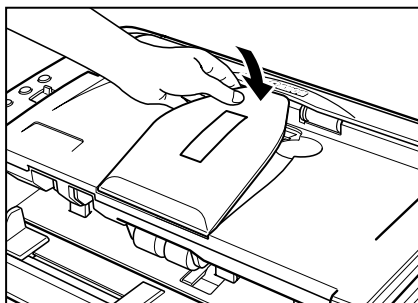


Figure 1-505

- 2) Open the rear cover by pressing the both sides.

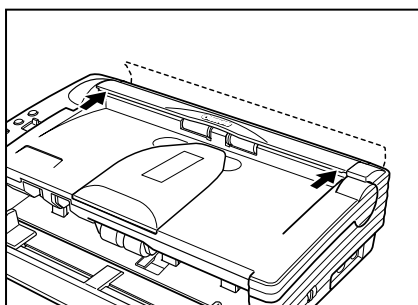


Figure 1-506

- 3) Push the OPEN knob from both sides and open the upper unit slowly.

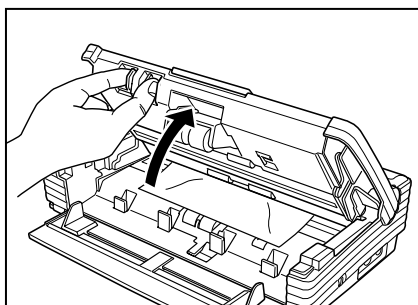


Figure 1-507

- 4) Remove the jammed document carefully.

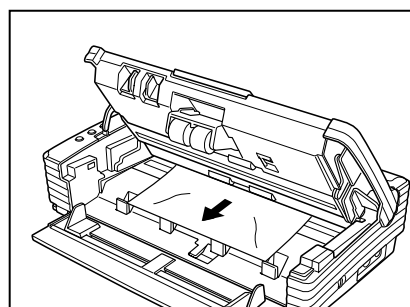


Figure 1-508

- 5) Close the upper unit slowly.

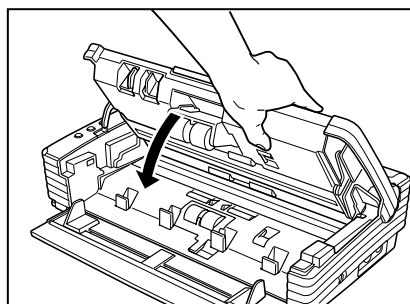


Figure 1-509

- 6) Close the rear cover by pressing the both sides.

VI. USER MAINTENANCE

Refer to the user manual for this machine for details.

1. Cleaning

Daily cleaning items are shown below.

- 1) Main unit exterior
- 2) Main unit interior (feed path)
- 3) Rollers
- 4) Reading glass
- 5) Shading plates

2. Roller Replacement

The roller unit and retard rollers are consumables. They should be replaced when 100,000 sheets are fed as a guide. They are replaced by the user.

The roller unit has the pickup roller and retard roller.

a. Replacement message

When the number of sheets fed exceeds 100,000, a "roller replacement message" is displayed on the display when the computer is started.

Note: The message is not displayed when the operating system is Windows NT.

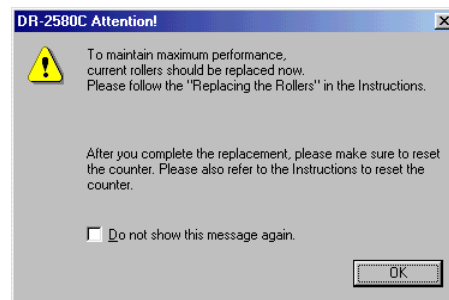


Figure 1-601

When the rollers are replaced, the counter must be reset.

To reset the counter, select “Start → Settings → Control Panel → Scanner and Camera” to display the “Properties” screen for this machine, and click the “Reset” button for the counter.

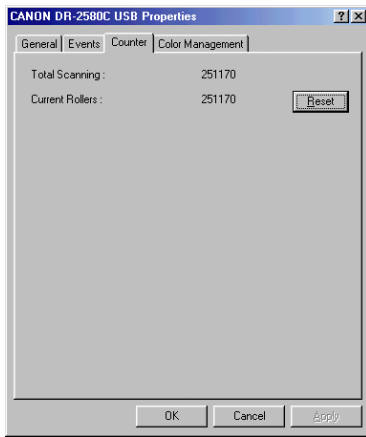


Figure 1-602

b. Roller unit

- Removal

- 1) Push the OPEN knob from both sides and open the upper unit slowly.

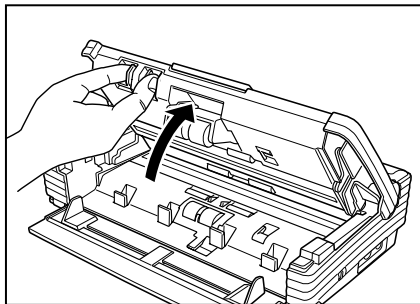


Figure 1-603

- 2) Raise the roller locking lever.

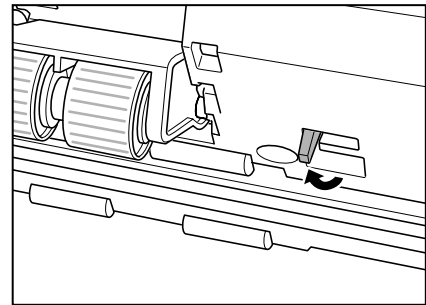


Figure 1-604

- 3) Hold the roller unit with your fingers and slide the locking lever to the right.

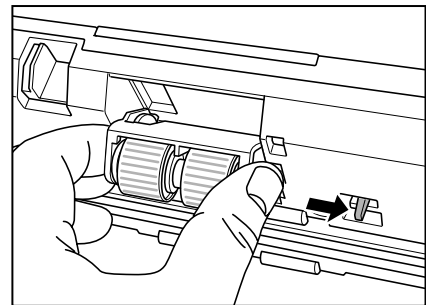


Figure 1-605

- 4) Detach the right side of the roller unit first and remove the roller unit.

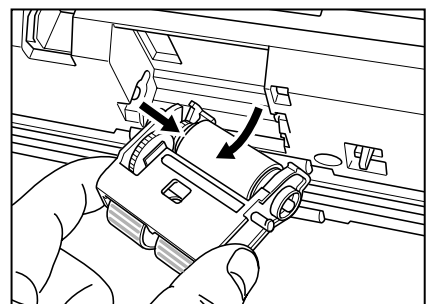


Figure 1-606

• Reinstallation

- 1) Push the OPEN knob from both sides and open the upper unit slowly.
- 2) Raise the roller locking lever and slide it to the right.
- 3) Set the roller unit on the shaft of the main body.

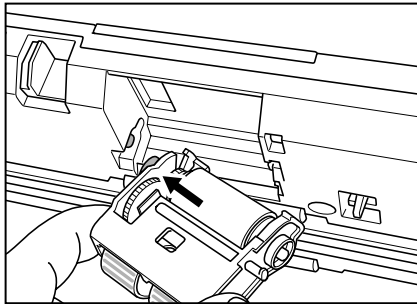


Figure 1-607

- 4) Insert the projection on the roller unit into the groove in the main body and lift the roller unit.

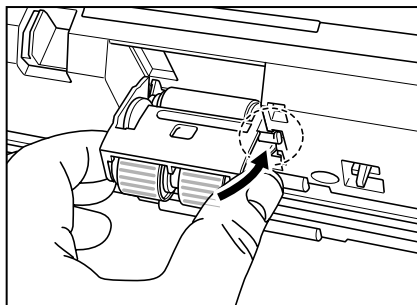


Figure 1-608

- 5) Slide the roller locking lever to the left and then push it backward to secure the roller unit.

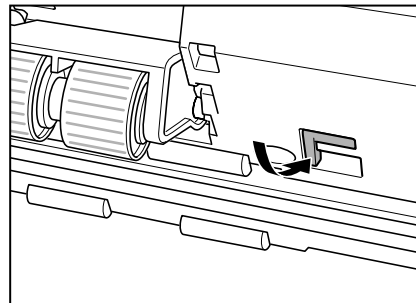
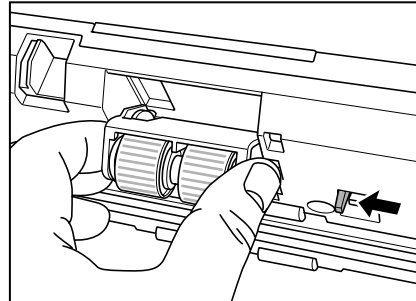


Figure 1-609

c. Retard roller

• Removal

- 1) Push the OPEN knob from both sides and open the upper unit slowly.

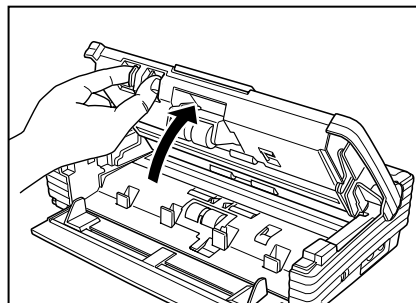


Figure 1-610

- 2) Remove the roller cover.

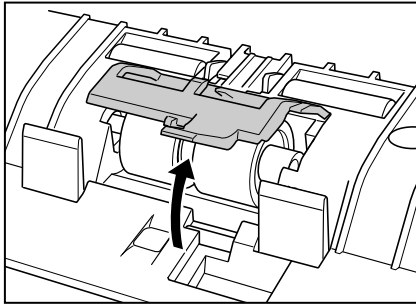


Figure 1-611

- 3) Raise the roller locking lever and slide it to the right.

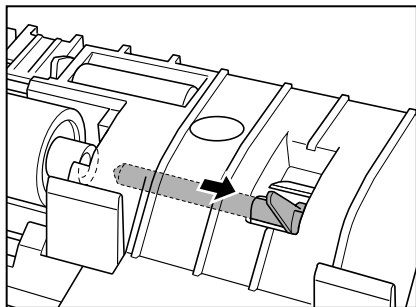


Figure 1-612

- 4) Move the retard roller to the right and remove it.

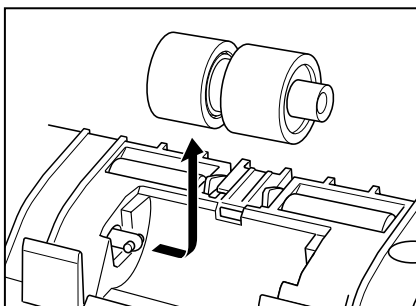


Figure 1-613

• Reinstallation

- 1) Push the OPEN knob from both sides and open the upper unit.
- 2) Remove the roller cover.
- 3) Raise the roller locking lever and slide it to the right.
- 4) Align the notch in the retard roller with the shaft of the main body and set it.

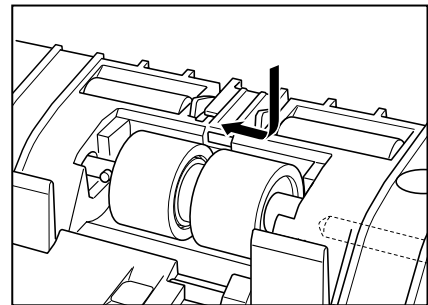


Figure 1-614

- 5) Slide the roller locking lever to the left, fit it into the hole in the retard roller and push the lever backward to secure the retard roller.

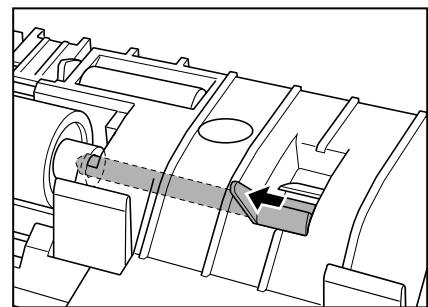


Figure 1-615

6) Install the roller cover.

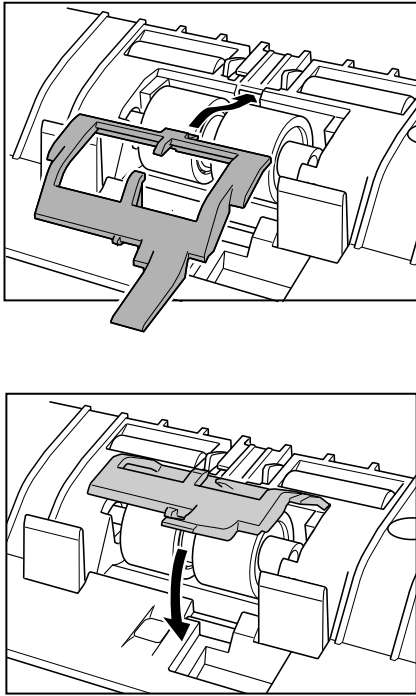


Figure 1-616

CHAPTER 2

FUNCTIONS & OPERATION

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I. OUTLINE

1. Basic Configuration

Figure 2-101 shows the configuration of this machine.

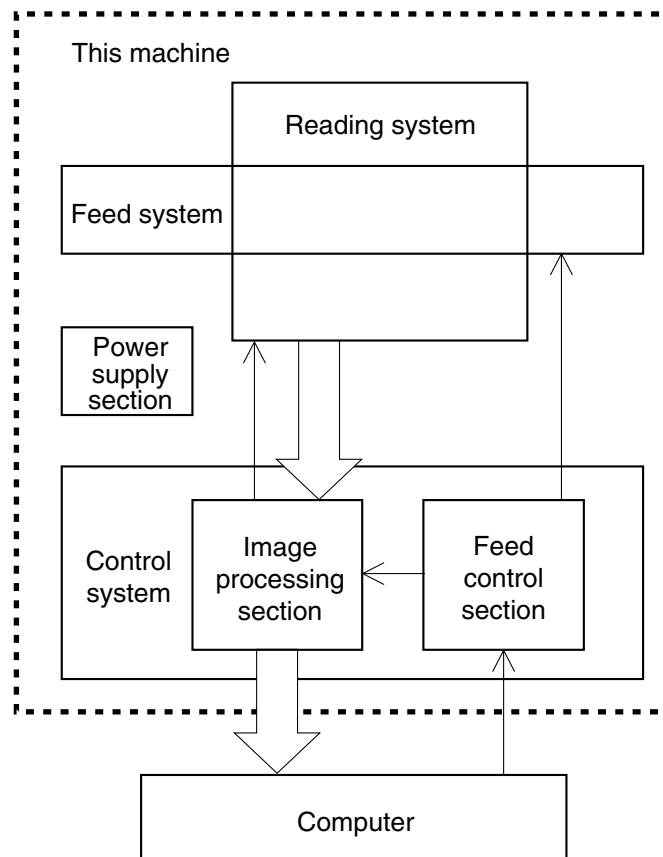


Figure 2-101

- | | |
|---|---|
| <p>1) Reading System
This system reads image data from image sensors.</p> | <p>The image processing section controls the reading system, processes the read image data, and outputs it to the computer. However, the image data processing is also performed by the computer.</p> |
| <p>2) Feed System
This system performs from document pickup to document ejection.</p> | <p>The feed control section controls the feed system.</p> |
| <p>3) Control System
This system is comprised of an image processing section and a feed control section.</p> | <p>4) Power Supply Section
This section converts the AC power into the DC power by a supplied AC adapter and supplies it to the control PCB in the main body.</p> |

2. Motor Drive

This machine has a pickup motor (M1) and a carry motor (M2) for feeding the document.

These motors drive the stopper and the reading unit.

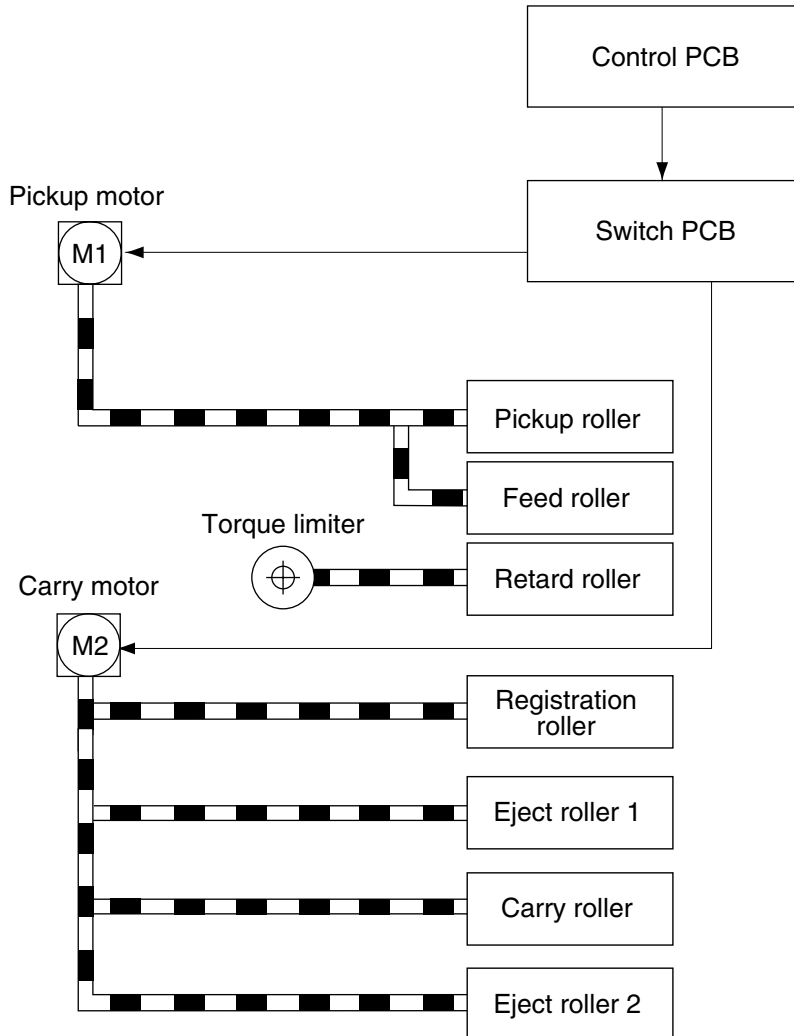


Figure 2-102

3. Electrical Circuits

Figure 2-103 shows an overview of the electrical circuits block diagram of this machine.

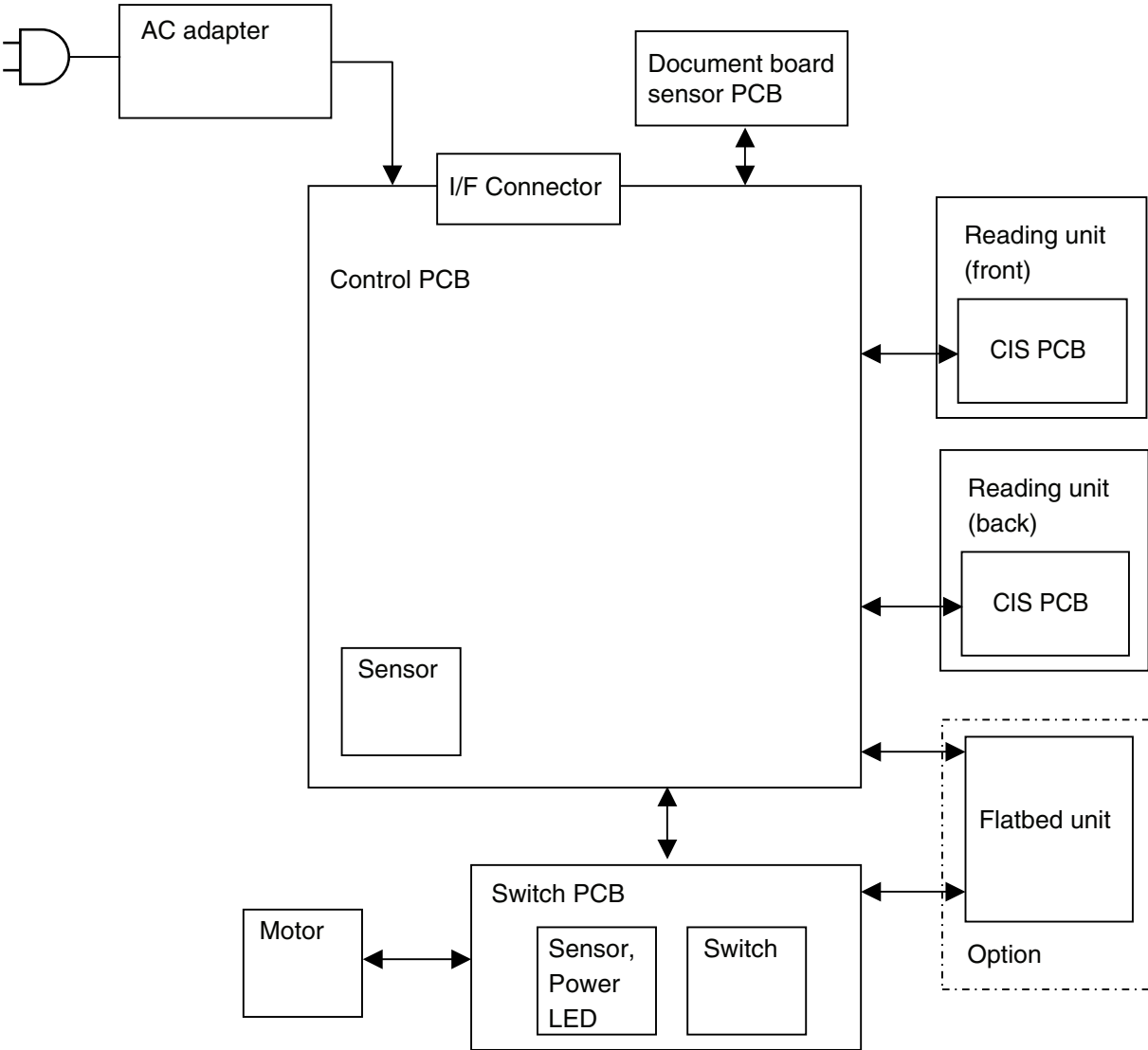
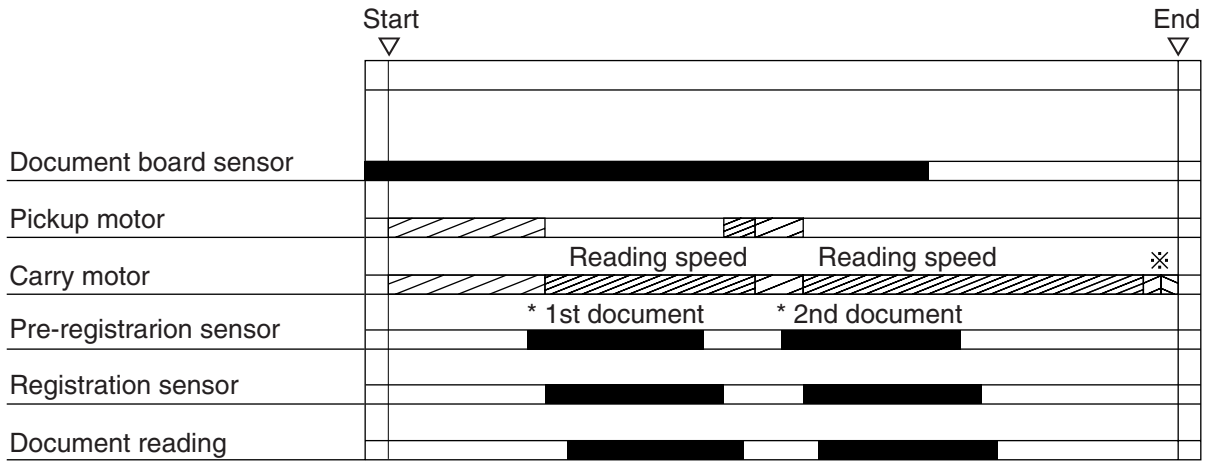


Figure 2-103

4. Timing Chart

Figure 2-104 describes the timing chart when you separately feed two sheets of document without temporarily suspending the machine.



※ Reversal→stopper; Closed, reading unit (lower); to fornt

Figure 2-104

II. READING SYSTEM

1. Outline

Figure 2-201 shows the configuration of the reading system.

The reading unit (upper) reads the front side of the documents and the reading unit (lower) reads the back side of the documents. This configuration enables the unit to read both the front and back sides of a document using a single scan.

The image data read are sent to the image processing section of the control PCB.

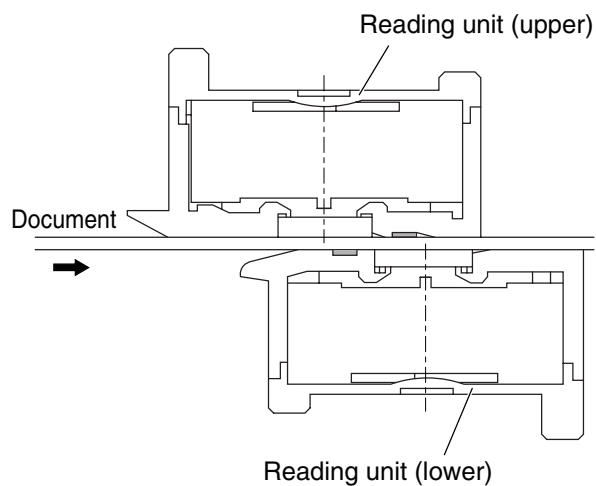


Figure 2-201

2. Reading Unit

Figure 2-202 shows the sectional diagram of the reading unit.

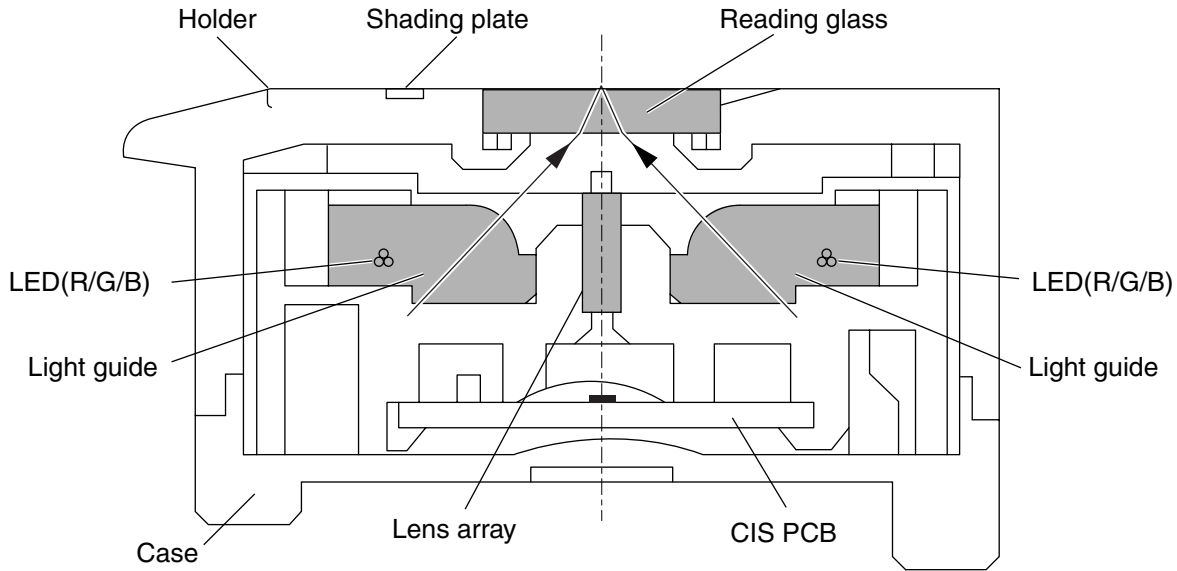


Figure 2-202

The reading unit consists of CIS unit, holder, and lid. The CIS unit consists of CIS PCB, lens array, LED (R/G/B), light guide, and case. The reading glass and 2-mm width shading plate are mounted on the holder.

Photosensitive pixels are mounted on the CIS PCB with a density of 600 dpi. Effective reading width is 216 mm, and the number of effective picture elements is 5104.

Two sets of three basic color LEDs, red, green, and blue (RGB), are mounted in the CIS unit. In the binary or grayscale modes, image data are read with composite light generated by lighting the RGB LEDs simultaneously. In the color mode, the LED is successively lit, and reads image data with each color. As documents are being fed at regular speed while image data are read, the reading positions of RGB are shifted slightly.

In the color dropout mode, only the LED of

a designated color lights. In the color emphasis mode, the LED of a color other than a designated color lights.

The LED light illuminates the document through the light guide.

The reflected light from the document enters photosensitive pixels through the lens array, and converted into analog signals corresponding to the density of each picture element.

3. Shading

This section describes how the reading unit (lower) mechanically works when a shading correction value is determined.

The reading unit is usually set up so that the background color becomes black. When a shading correction value is determined, the data on a shading plate need to be read. Thus, the reading unit (lower) is moved about 2 mm to the document pickup side.

Figure 2-204 describes the structural drawing of that part. If the carry motor is rotated opposite to the feed direction, the mechanical clutch which is installed on the shaft of the eject roller 1 rotates. At this point in time, the coupling plate starts rotating by the head of the coil spring and the reading unit moves horizontally.

When such motor normally rotates, the reading unit returns again to its original position.

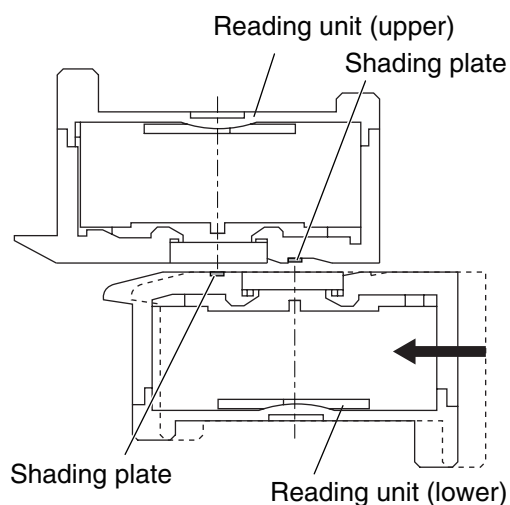


Figure 2-203

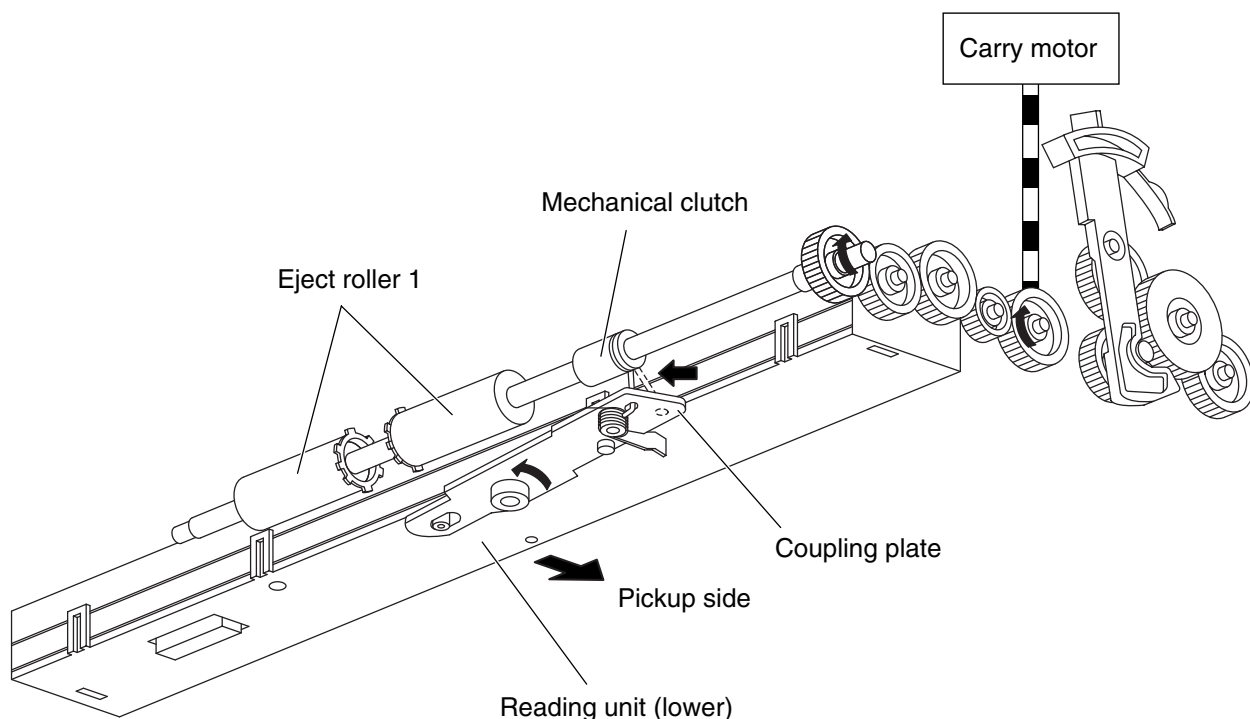
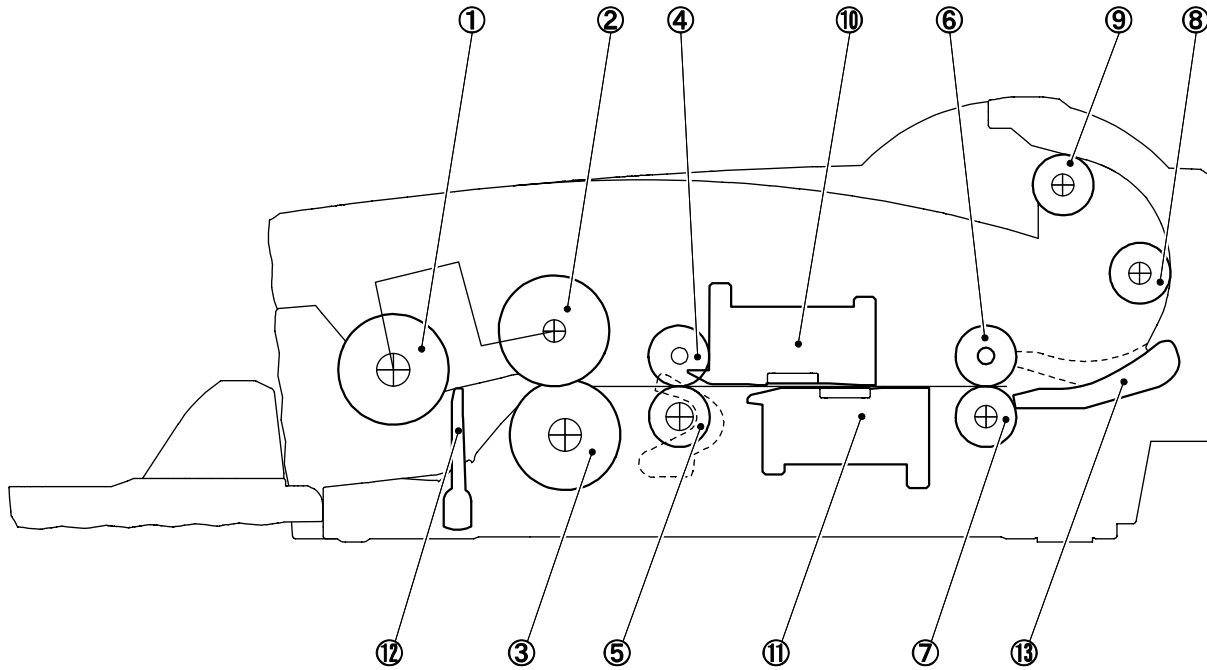


Figure 2-204

III. FEED SYSTEM

1. Outline

Figure 2-301 is a sectional diagram of the feed system.



- | | |
|-----------------------|------------------------|
| ① Pickup roller* | ⑧ Carry roller |
| ② Feed roller* | ⑨ Eject roller 2 |
| ③ Retard roller | ⑩ Reading unit (upper) |
| ④ Follower roller | ⑪ Reading unit (lower) |
| ⑤ Registration roller | ⑫ Stopper |
| ⑥ Follower roller | ⑬ Flapper |
| ⑦ Eject roller 1 | |

Figure 2-301

Note:The pickup roller and the feed roller make up a single unit called a roller unit.

2. Feed Mechanism

1) Document pickup

The pickup section has a document stopper. (Figure 2-301)

The stopper opens and starts picking up a document when a scan start instruction is given. The carry motor opens and closes the stopper.

This machine picks up a document by lowering the pickup roller not by lifting and lowering the document board.

The lifting and lowering of the pickup roller synchronizes with the opening and closing of the stopper.

2) Document separation

Separation of this machine is performed by the retard roller.

The torque limiter is built in the retard roller. When the outside pressure on the roller exceeds the specified value into the feed direction, the roller begins to rotate in the same direction.

As shown in Figure 2-302-a, when overlapped documents enter into the clearance between the feed roller and the retard roller, the document in contact with the feed roller is fed in the feed direction, and the retard roller does not rotate so that the document in contact with the retard roller is not pushed in.

As shown in Figure 2-302-b, once a single document remains, the retard roller rotates in conjunction with the feed roller and the document to feed the document. If non-separation is selected, the retard roller rotation becomes free and the separation function becomes invalid.

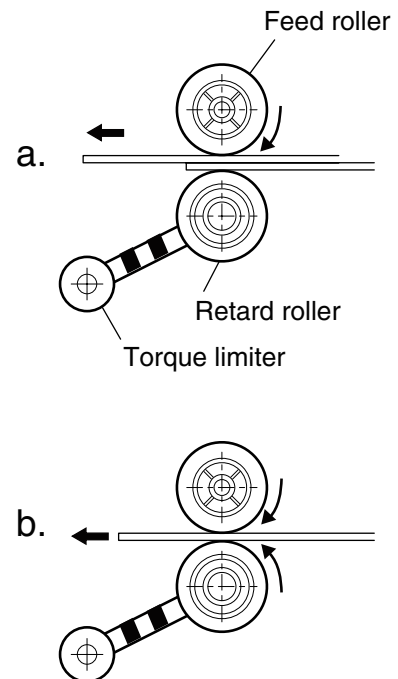


Figure 2-302

3) Document ejection

The U-turn path or the straight path can be selected for the document ejection. The lever makes the flapper change the feed path. The flapper is behind the eject roller 1. (Figure 2-301)

The straight path is very useful when the thicker documents or cards are scanned.

3. Feed Error Detection

There are three types of document sensors in this machine: a document board sensor and two registration sensors.

The document board sensor detects whether or not a document is present in the document pickup opening, and the pre-registration and registration sensors detect it in the registration roller section.

The pre-registration and registration sensors detect a document feed error.

- 1) Delay jam (document pickup error)
When the registration sensors do not detect the leading edge of the document, even after the motor drives the specified length.
- 2) Residual jam
When the registration sensors do not detect the trailing edge of the document after the leading edge of the document is detected, although the motor drives the specified length (about 365 mm).
- 3) Early start jam
When the registration sensors detect the trailing edge of the document after the leading edge of the document is detected before the motor drives the specified length (about 40 mm).
- 4) Non-removable jam
When the registration sensors detect the presence of the document when the power is ON or after the upper unit opens and closes.
- 5) Double feed detection
This machine checks the double feed by detecting the document length by the registration sensors. The detection process is the same as the above the residual jam. The specified length is determined by the user set document size.

4. Mechanical Feed Mode

Feed status can be checked without the computer in this mode. This mode should not be open to users.

The mechanical feed mode can be activated by pressing the job buttons on the operation panel, as follows:

- i) Turn ON the power switch with the job button No.1 pressed.
- ii) Keep pressing the job button No.1. For about one second later, the power indicator blinks. Then, press the job button No.2 immediately.
- iii) Press off the both buttons. When it is in the mechanical feed mode, the power indicator keeps blinking.

Set the document and push the job button No.1. The document will begin feeding. The feeding speed is the same as for the black and white setting of 200 dpi. To cancel, turn the power switch OFF.

IV. CONTROL SYSTEM

1. Control PCB

Control of this machine is performed by the control PCB.

Figure 2-401 shows the block diagram of the control PCB.

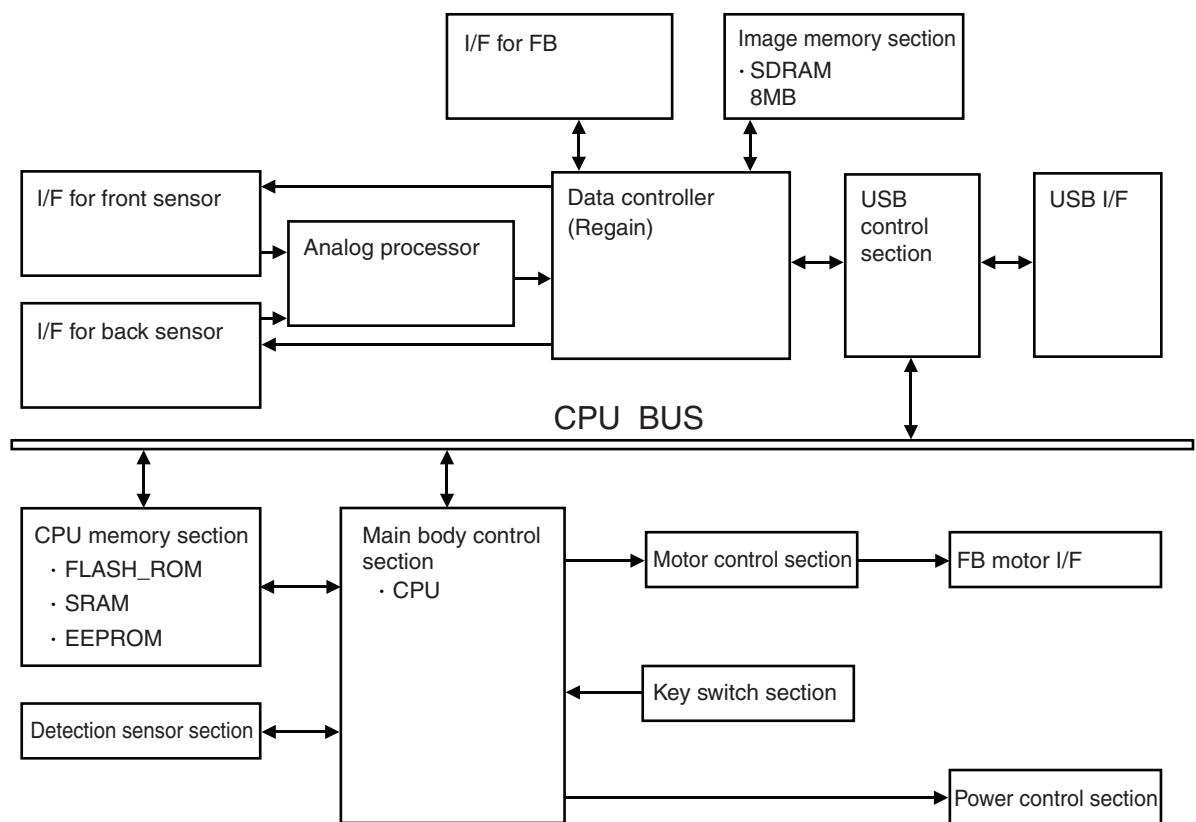


Figure 2-401

2. Image Processing Control

Figure 2-402 shows the block diagram of the image processing in the main body.

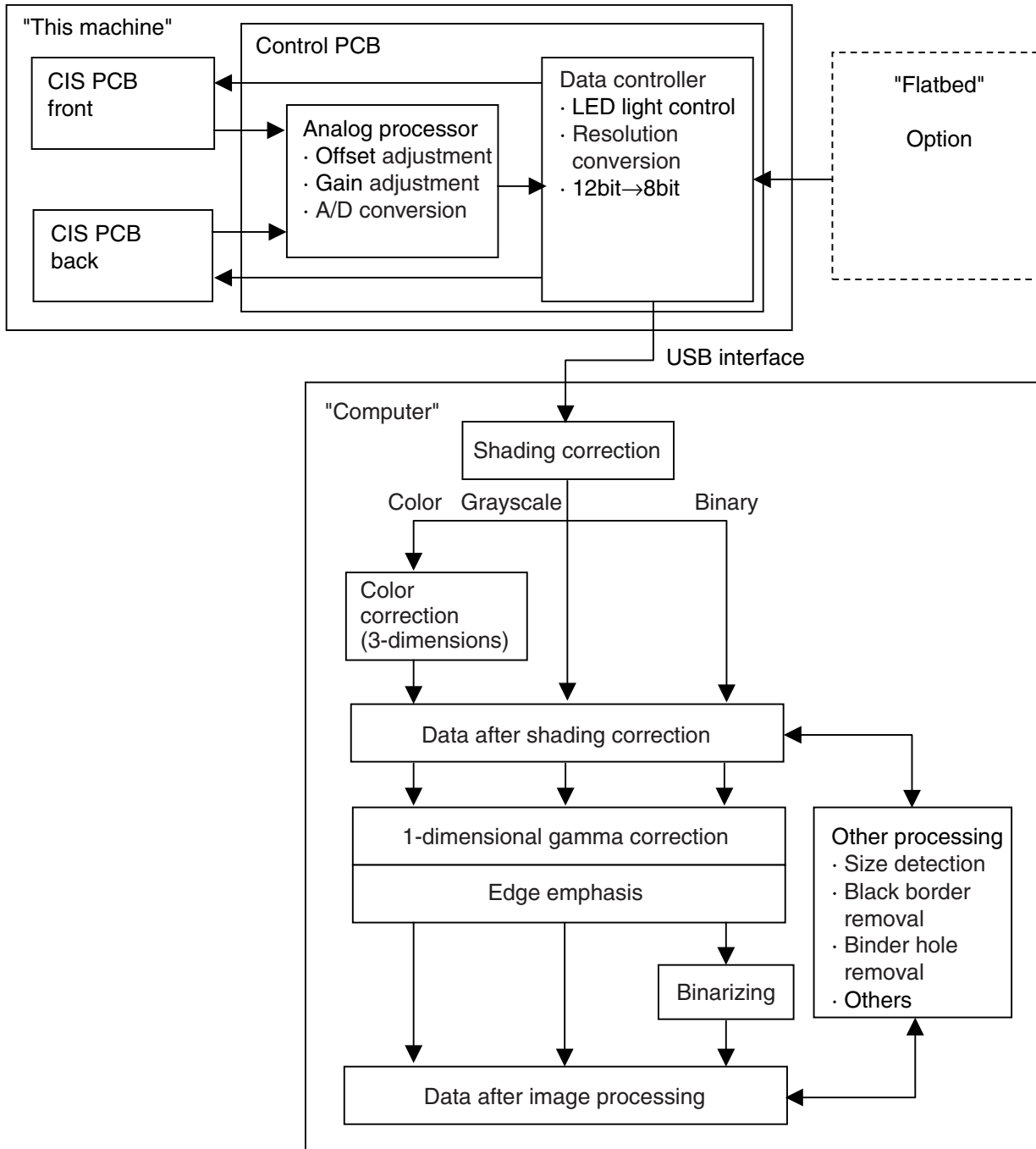


Figure 2-402

Analog signals proportionate to the density of each picture element are output to the analog processor on the control PCB from the CIS PCB.

The analog processor carries out offset adjustment, gain adjustment, and A/D conversion. Analog signals are converted into 12bit digital signals in the analog processor. Then the image data is transferred to the data controller and the resolution is converted from 12 bits to 8 bits.

After that, the image data is output to the computer through an USB interface.

All the image processing carried out in this machine are described above. Other image processing are carried out inside the computer.

The computer performs the image processing according to the user settings after the shading correction.

V. IMAGE PROCESSING

Note: The principle of the image processing is described simply in this section so that you can easily understand it. In actual cases, the procedure may be somewhat complicated.

1. Image Processing in Main Body

1) Offset adjustment

Offset adjustment is carried out on analog signals for the whole image sensor. Black correction is adjusted so that the minimum output value of the overall black level matches the specified value.

2) Gain adjustment

Gain adjustment is carried out on analog signals for the whole image sensor. White correction is adjusted so that the maximum output value of the overall white level matches the specified value.

Note: Offset and gain adjustment are used to perform A/D conversion properly.

3) A/D conversion

This processing converts analog signals into digital signals. The analog processor unique to this machine converts analog signals into 12bit digital signals. However, 12bit data is converted to 8bit data during the resolution conversion described later.

Note: Shading correction for digital signals is carried out in a computer, however, correction values are stored in the flash memory of the control PCB. The correction values are output to the computer.

4) Image Resolution Conversion

a) Main-Scanning Direction

This machine enables outputs from the CIS PCB to be converted into 600dpi or 300dpi data. In case that the resolution selected is the 600/400dpi mode, it produces 600dpi outputs. On the other hand, in case that the resolution is set at 300dpi or less, 300dpi outputs are produced.

When 600 or 300dpi data are produced, this machine can convert the resolutions of those data by averaging them. The image resolution conversion by averaging is sometimes called "smoothing."

Averaging method conversion enables the data to be smoothly transformed much better than that by thinning-out method, resulting in reducing the occurrence of Moire patterns.

Averaging is especially useful for low-resolution photographs.

The data are averaged according to the resolution applied when the basic data of each picture element are converted.

Figure 2-501 shows the aspects of 300dpi image data and the image data averaged to 150dpi data.

• 300 dpi

1st line	A	B	C	D	E	F	G	H
2nd line	A	B	C	D	E	F	G	H
3rd line	A	B	C	D	E	F	G	H
4th line	A	B	C	D	E	F	G	H
5th line	A	B	C	D	E	F	G	H
6th line	A	B	C	D	E	F	G	H



• 150 dpi

1st line	$(A+B)/2$	$(C+D)/2$	$(E+F)/2$	$(G+H)/2$
2nd line	$(A+B)/2$	$(C+D)/2$	$(E+F)/2$	$(G+H)/2$
3rd line	$(A+B)/2$	$(C+D)/2$	$(E+F)/2$	$(G+H)/2$

Figure 2-501

b) Sub-Scanning Direction

The document is scanned in the sub-scanning direction basically by changing the feeding speed.

In the case of 200 dpi, feeding speed is 1.5 times as fast as 300 dpi. In the case of 150 dpi, it is twice the speed, and in the case of 100 dpi, three times the speed used for 300 dpi.

If the timing for reading the data from the image sensor is the same, the resolution in the sub-scanning direction can be converted by changing the feeding speed. (Figure 2-502)

However, the feeding speed is limited depending on the specifications of carry motor. If the feeding speed cannot be increased, the read timing interval is widened. (Figure 2-503)

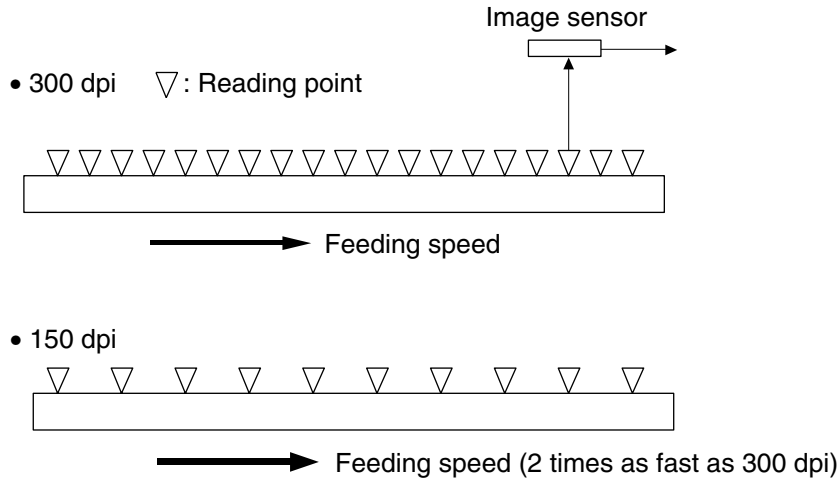


Figure 2-502

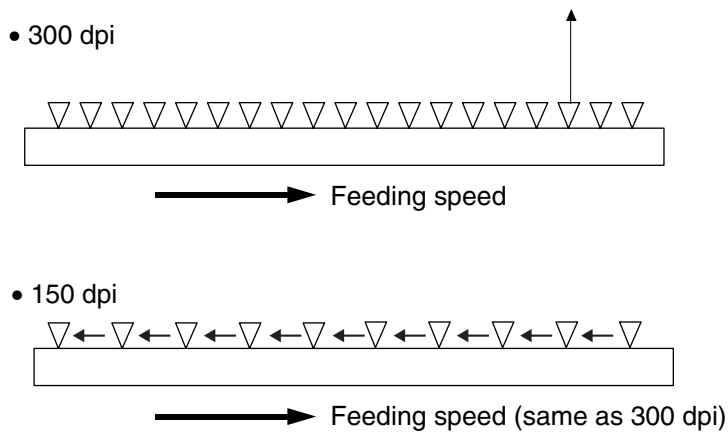


Figure 2-503

2. Image Processing in the Computer

1) Shading Correction

Even if the image brightness is consistent, the values output from the image sensor are not necessarily consistent because the sensitivities of each element of the image sensor and the performance of each reading system would vary. In the shading correction, the variations of each element are compensated. This processing is done for the digital signals after A/D conversion.

The correction values of each element are calculated in advance and stored in a memory.

There are two types of correction values: black and white correction values. For black correction value, readout indicated when an LED does not illuminate, in other words, when a black image is read (intense black) is set as a target value. For white correction value, readout of standard shading plate is set as a target value (pure white).

The data of each element which have been converted into digital signals are compensated in accordance with the corresponding values.

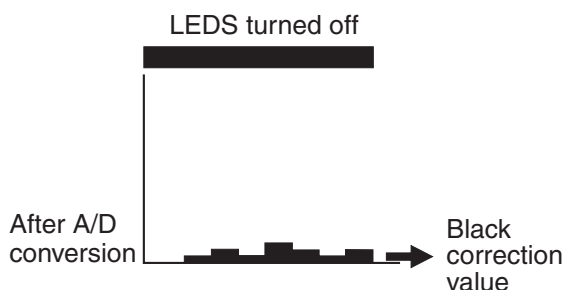


Figure 2-504

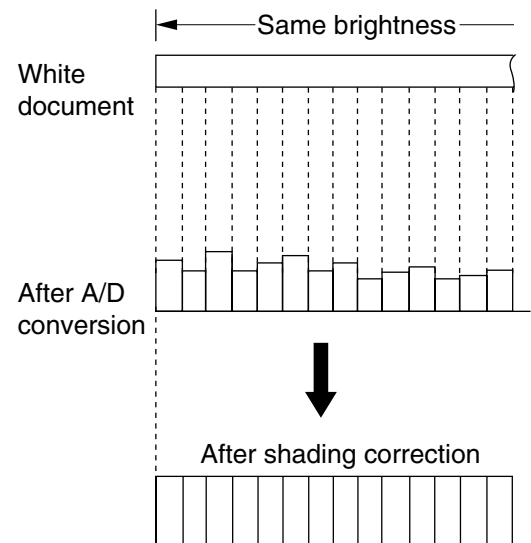


Figure 2-505

This machine prepares a thin long shading plate near the reading glass instead of a standard shading plate in order to calculate correction values. Thus, correction values can be automatically calculated during normal operation.

2) Color Correction

To improve the reproducibility of color images, the 3-dimensional gamma conversion is performed on the color data after the shading correction. A 3-dimensional conversion table that suits the characteristics of this machine is provided to convert RGB values.

3) Gamma Correction (1-dimension)

To improve the reproducibility of documents or modify the acquired image as required by the user, it is possible to convert the document image data using conversion tables.

This machine provides various conversion tables adjusted for image mode and setting value.

However, there are several adjustment items not available for image mode and other conditions. For details, refer to the driver software "Help" function.

The conversion tables below are for fundamental items and may be different from actual items.

a) Brightness Adjustment

This adjusts the overall brightness of the scanned image. The image brightness increases as the setting value becomes larger, and decreases as the value becomes smaller.

For brightness adjustment in black and white mode, refer to the "Binarizing" section.

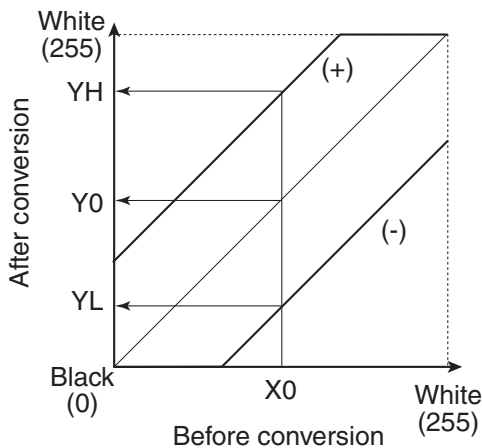


Figure 2-506

b) Contrast Adjustment

This adjusts the contrast of the scanned image. The image contrast increases as the setting value becomes larger, and decreases as the value becomes smaller.

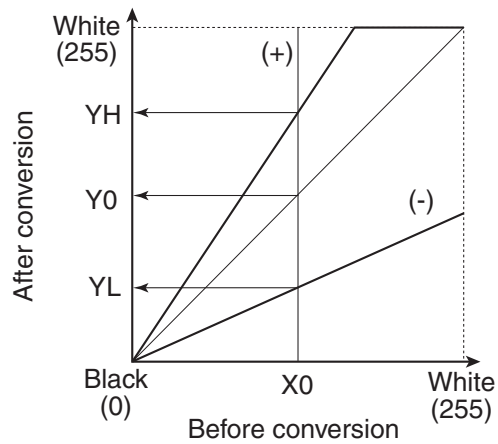


Figure 2-507

c) Custom Adjustment

This is used when data conversion other than brightness and contrast adjustments is required.

It is possible for the user to use a custom conversion table for converting the gamma curve to the document image data. In this case, the brightness and contrast adjustments become invalid, and the unique gamma curve is given priority.

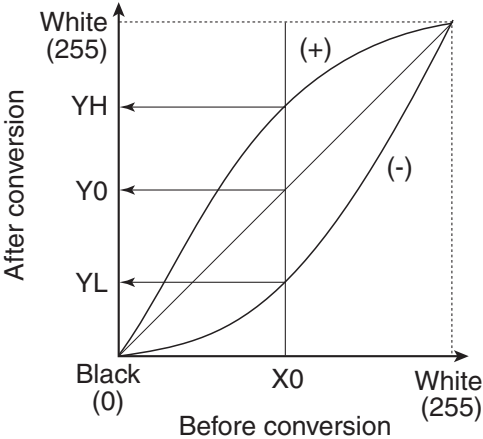


Figure 2-508

4) Edge Emphasis

Edge emphasis is a kind of processing which emphasizes the brightness change in order to make the image appear sharp. (Figure 2-509)

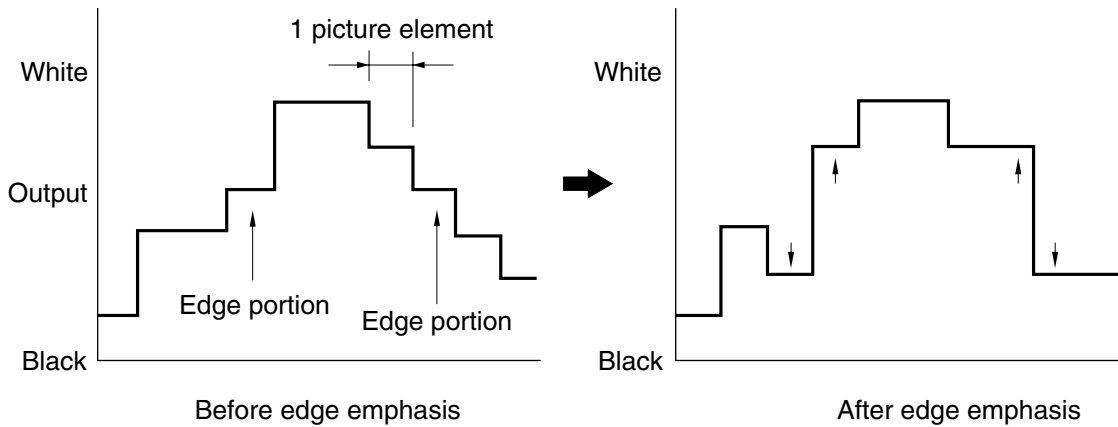


Figure 2-509

The processing is performed by comparing the data in the conversion table provided for performing edge emphasis, with the target picture element data (a). (Figure 2-510)

The stages in edge emphasis can be changed by changing the conversion table and reproduction ratio (B) of the conversion table.

For example, if the target picture element data is increased fourfold and the other four points multiplied by -1, the overall brightness will remain unchanged.

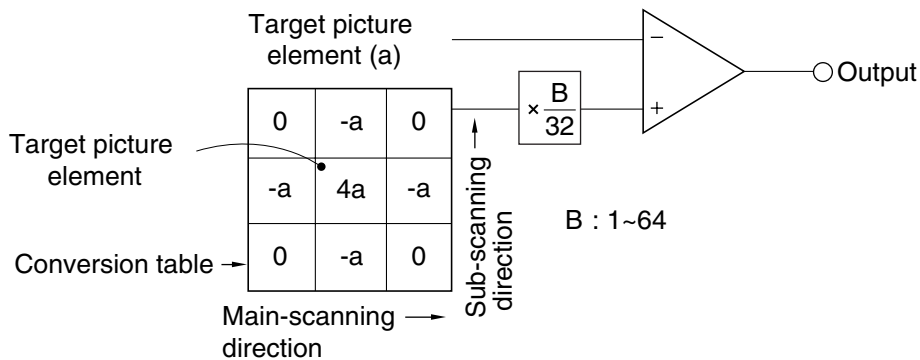


Figure 2-510

5) Binarizing

a) Simple Binarizing

Binary image data can only express picture elements as either “black” or “white.”

In order to separate the picture elements into black and white, signals corresponding to the image brightness must be cut off at a certain level, so that anything above that level is judged as “white” and anything below as “black.” This is called simple binarizing. This is useful for text documents. Simple binarizing for this machine is called “Black and White” mode.

The level at which picture elements are to be divided into white or black is called the “slice level.” The image brightness is adjusted by changing this slice level.

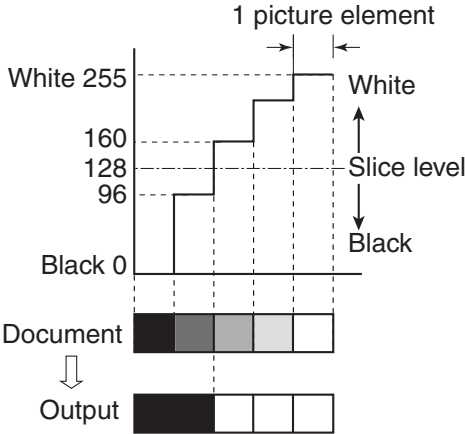


Figure 2-511

b) Error Diffusion

Error diffusion processing is used to binarize documents containing gray levels, such as pictures and photos.

A sample case is shown below, where the output is set to four bits and the slice level is set to "8."

The value of 1 picture element of input image data is compared with the slice level. When it is smaller than the slice level, it is output as "0" and when it is

bigger than the slice level, it is output as "15." The difference between the values of the input and output picture elements is then added to the next picture element to be processed.

First, when processing the first low of Line 1, since the data "12" is larger than the slice level "8," the output data becomes "15," and the resultant error becomes -3 (=12-15). (Figure 2-512)

First row of line 1

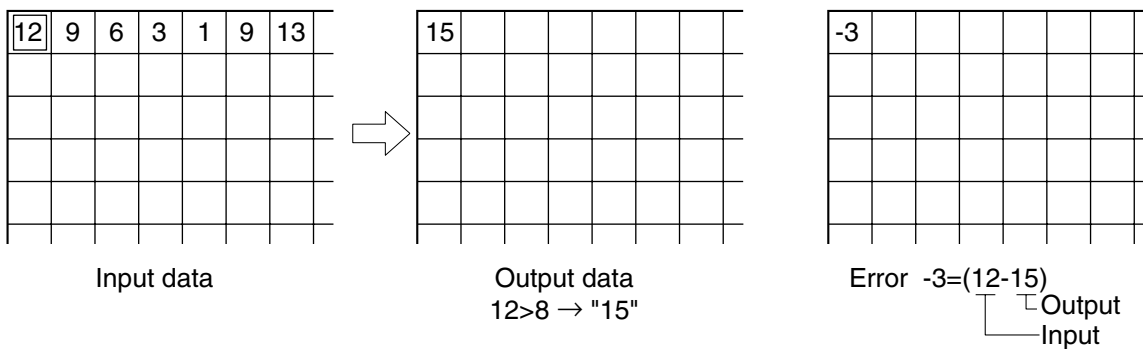


Figure 2-512

Next, when processing the second row of Line 1, since the error is diffused to the right, the data of the picture element of the second row of Line 1 becomes "6" (=9-3).

As this value is smaller than the slice

level, the output data is "0" and the error becomes "+6" [(9-3)-0]. (Figure 2-513)

The third row of Line 1 and later are processed similarly.

Second row of line 1

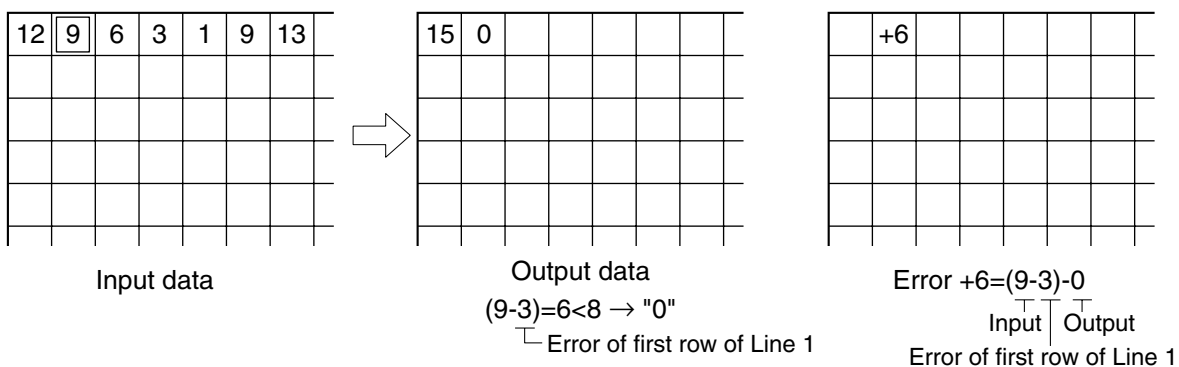


Figure 2-513

Line 2 is processed using the first row of Line 2 as a reference. If the rest is processed similarly, the data becomes as shown in Figure 2-514.

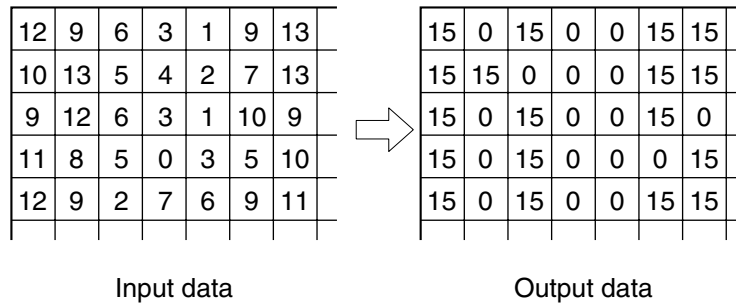


Figure 2-514

Figure 2-515 shows a comparison of binarizing with error diffusion processing, and binarizing without error diffusion processing (simple binarizing).

The brightness adjustment for error diffusion is done by using the data conversion table. The slice level is always set at median.

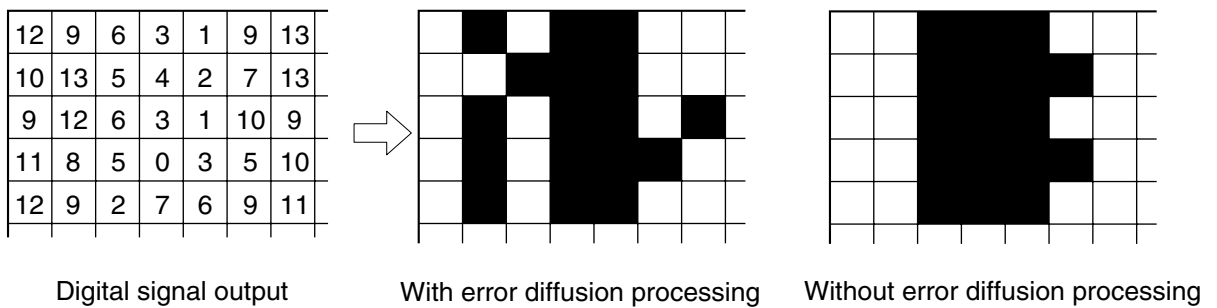


Figure 2-515

c) Advanced Text Enhancement

In this mode, a histogram of brightness level for each block within the scanned data is calculated, and an optimum slice level is determined to binarize the picture elements.

Binarizing in this way removes the background, for example, from behind text printed on a background.

For example, as shown in the image in Figure 2-516, a histogram for each block is calculated, and the optimum slice level is determined to binarize the picture elements.

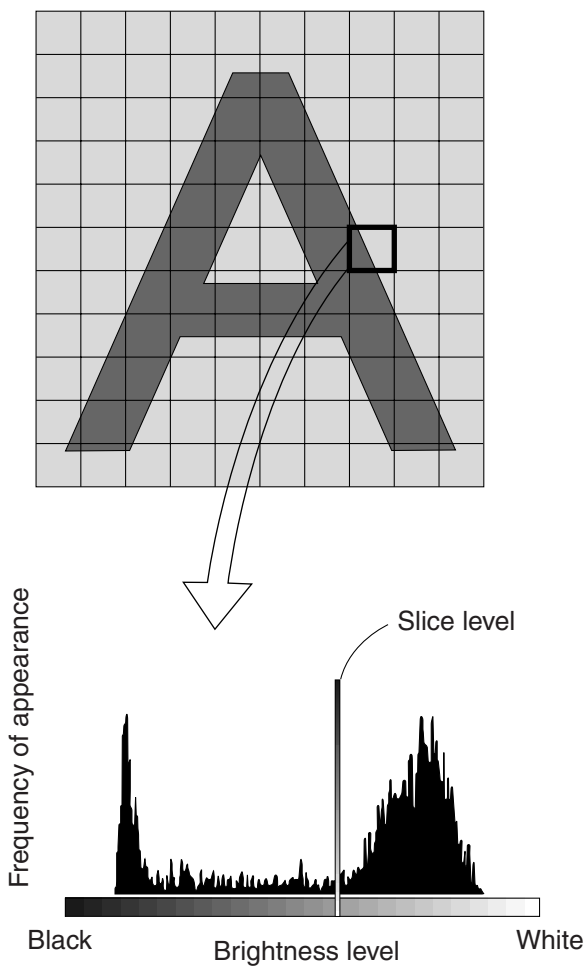


Figure 2-516

6) Automatic Size Detection

In case that the automatic size detection mode is selected, an image data with the maximum width and the length detected by the registration sensors in the feed direction is read.

The maximum outside frame is detected from the image data which has been read. The inside of the data is defined as the document size and the margins are removed.

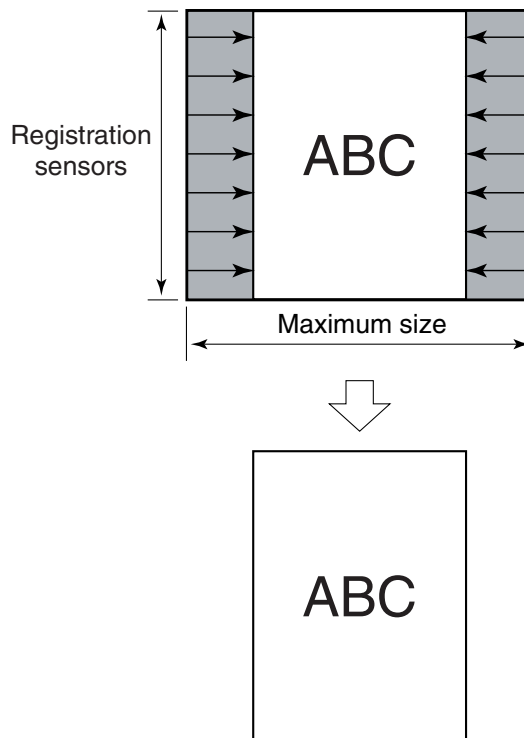


Figure 2-517

If a document skews when you select automatic size detection, but do not select skew correction, parts of leading and trailing edges of the image will be missing.

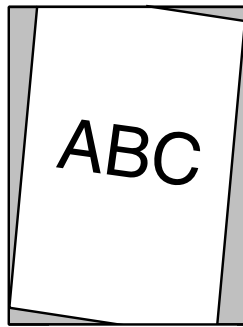


Figure 2-518

Note: In case that part of circumference of document is dark or brightness level is not appropriately set, this function may not successfully work. This may also happen when the skew correction or black frame removal described later is performed.

7) Skew Correction (Deskew)

If the skew correction is selected, the size of document read is broadened by 10 mm compared with the user-specified size. The skew is detected based on the data read to compensate the skew.

The image data is then restored to the user-specified image size.

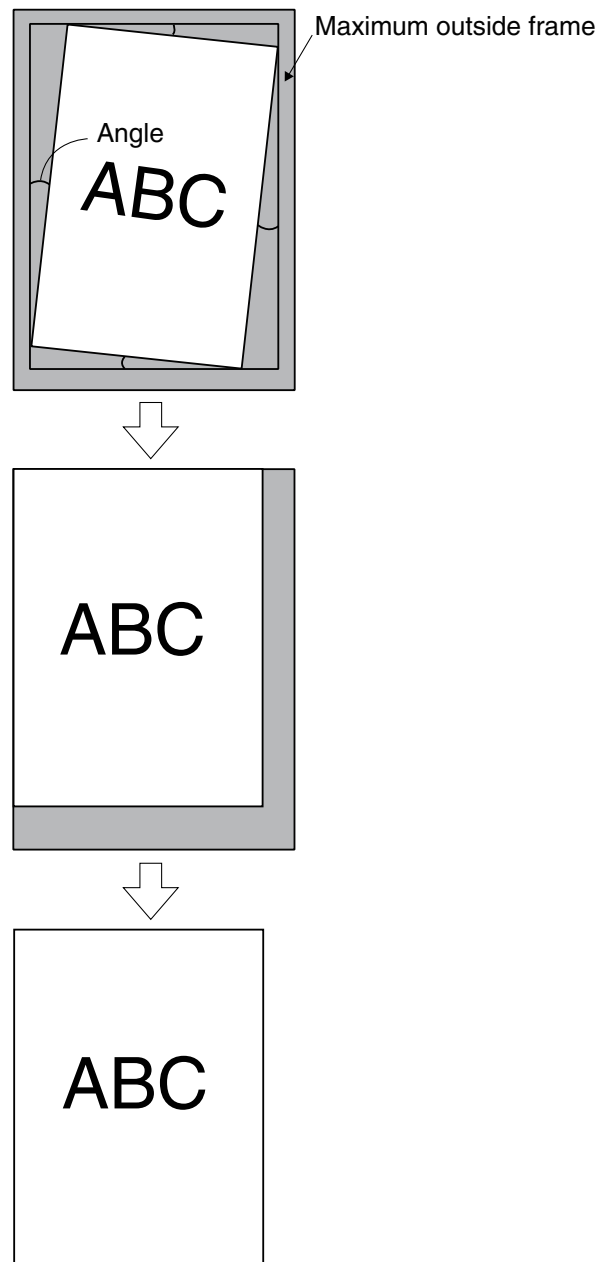


Figure 2-519

8) Black Border Removal

When the black border removal is selected, the image data is read with the specified read size.

The frame of document is detected based on this image data and the outside of the frame is converted into the white data. (Figure 2-520)

The conventional black border removal may vanish the letters if there are some letters on the edge of document and the document is skewed to much. This machine extracts the outer shape of document without dent after extracting the frame. Thus, no letters vanish. (Figure 2-521)

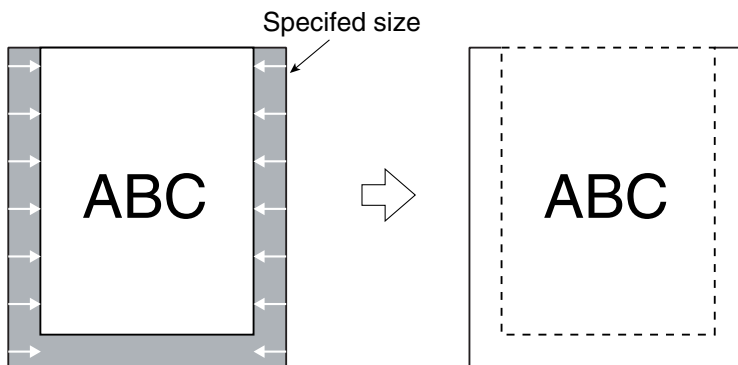


Figure 2-520

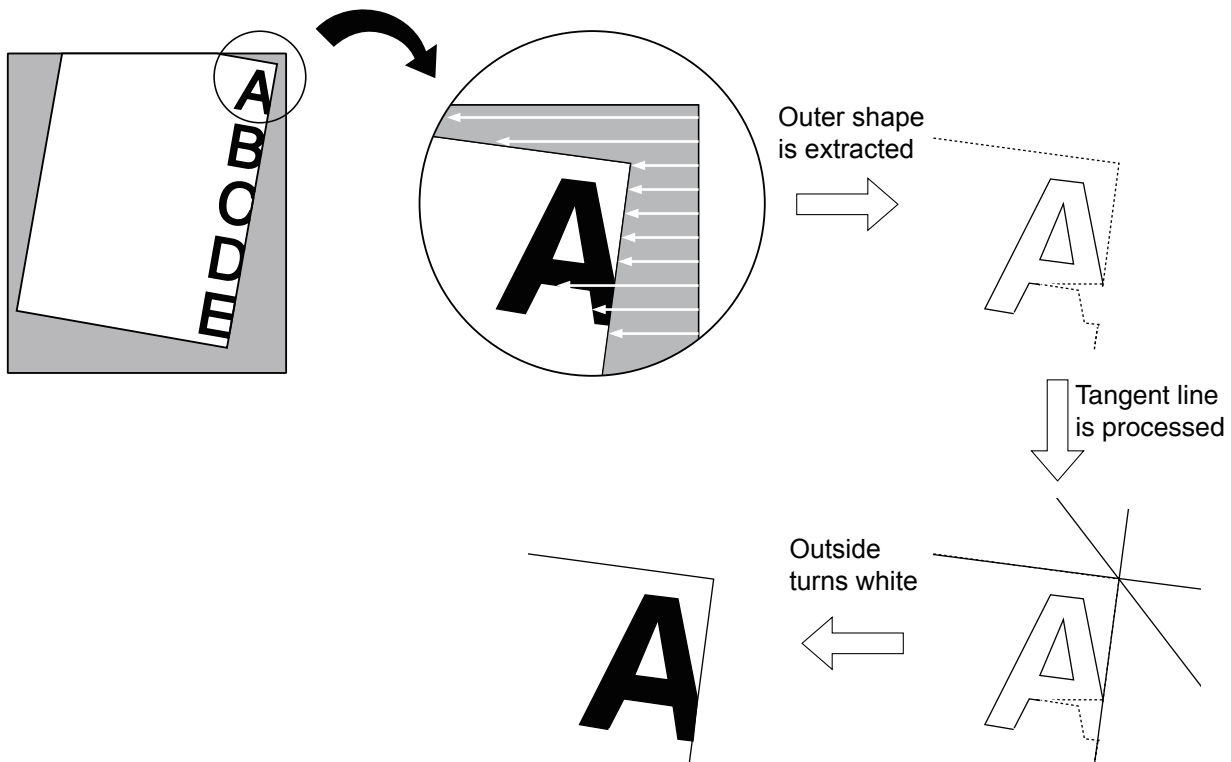
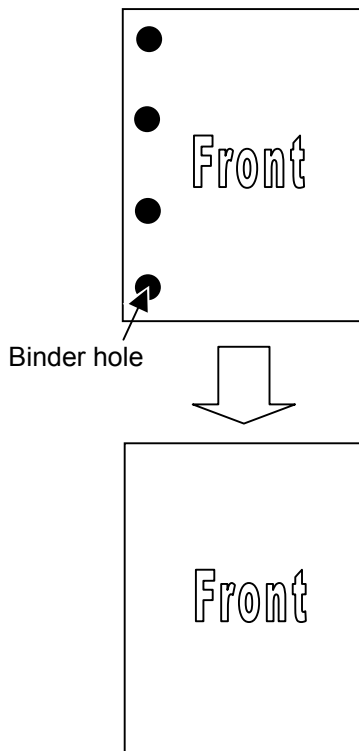


Figure 2-521

9) Binder Hole Removal

When a document in which holes are punched is scanned, this function removes those holes by using the front and back sides of an image.



The procedures and principle are described below.

Note: If the scan area is specified and the optional flatbed unit is attached to this machine, the processing is different from this processing to perform the only simplex scanning.

- i) The front and back sides of document are read.

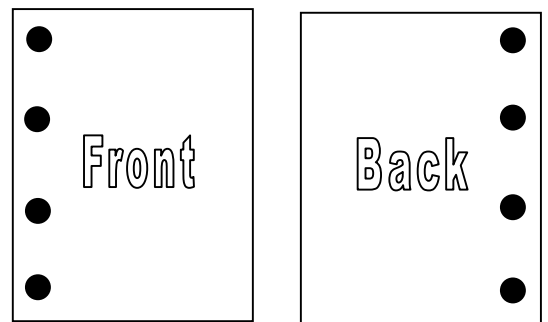


Figure 2-523

- ii) The image of the back side is reversed.

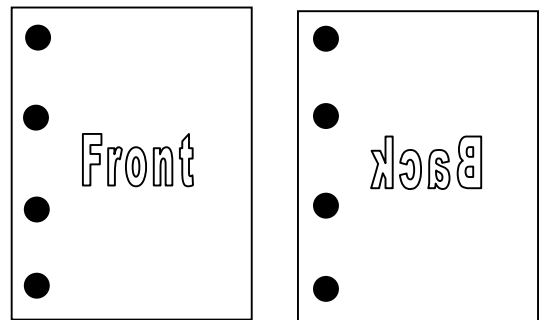


Figure 2-524

- iii) The front side of a document is overlaid on the back. And the part of the overlapping images, in which the black points of the front and back sides overlap one another, is extracted from the target image area (margins with the width of 20 mm). And then, an image data is created. This image is called hole pattern image. If there are some binder holes, a hole pattern image is created.

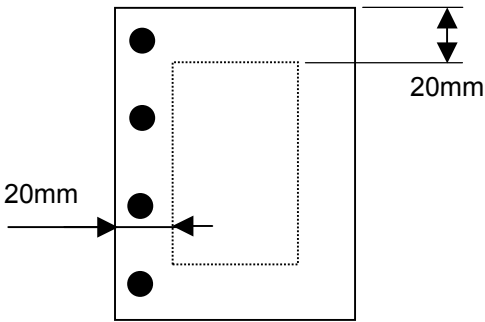


Figure 2-525

- iv) In case that both the front and back side images have some black objects (which are not binder holes) on the same spots in the previous step, those should be determined as holes and a hole pattern image should be created. Thus, some black objects other than those binder holes will be deleted as well. In this case, the low-pass filter processing should be done to handle and delete small objects.
- v) The shapes (such as area, circumference, and center of balance) of the binder holes of the hole pattern, front and back side images are compared. If they are the same, those black objects are determined as binder holes. And then, they are removed from the front image.

- vi) In case that both sides of document are scanned, after the binder holes on the front image are removed, those on the back side image are removed as well.

The binder hole removal function does not successfully work under the following conditions.

- In case that a binder hole and figure or character overlap one another, the binder hole is not removed because the shape of the hole on the front should be different from that on the back. However, if the object which overlaps a binder hole is a thin line which can be deleted by the low-pass filter processing, the hole is successfully removed.

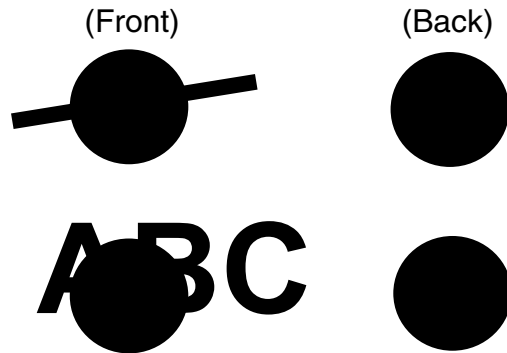


Figure 2-526

- Processing only by single image data
In case of scan area specification, the front area is different from the back area. In case of the flatbed, only one side exists. Thus, binder holes are removed as follows.
This machine determines the objects as binder holes and deletes those if the degrees of circularity* of such objects which exist in a target image area (20 mm around) exceed 0.8.

However, the objects whose area is 10 mm² or less are excluded.

- * Degree of circularity = $(\text{area} \times 4\pi) / (\text{circumference})^2$

10) Blank Skip

Judgment as to whether or not to record a document is determined by comparing the actual number of picture elements of the document with the user-preset percentage (0% to 20%) of number of black picture elements.

However, the margin of an image data (10% of lengths of each side edge) is excluded. Thus, the number of black picture elements in the central area is compared with the user-defined number of black picture elements. If the number of black picture elements in this target area exceeds the predefined number, the data are recorded. If not, the data are not recorded.

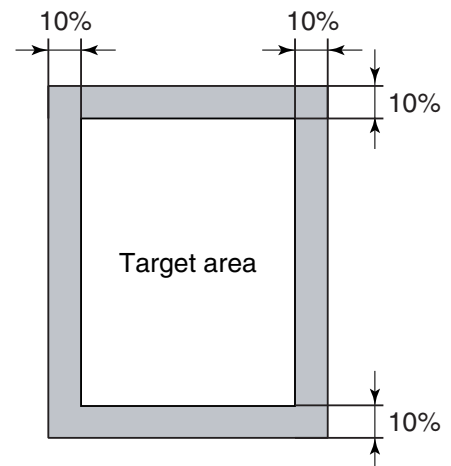


Figure 2-527

VI. POWER SUPPLY

1. Power Supply

The AC adapter is used for the power supply of this machine. The values of AC input and output power are 100-240V 50/60Hz and +16VDC, respectively.

Use the AC adapter which is enclosed with this machine.

The output power is input to the control PCB. And then, +3.3V and +5V are generated there.

+3.3V, +5V and +16V are supplied for each IC including the CPU, for CIS LED and ICs including the analog processor, and for driving the motors, respectively.

The power for the optional flatbed unit is

supplied by this machine.

The AC adapter has the overload protection function to automatically block the power output in the event of a failure such as short circuit on the load side of the AC adapter.

This machine will shift into the power saving mode if such states as no document feeding and no USB interface communication continue. In the power saving mode, the electrical circuits enter the sleep state. The CPU, however, does not shift into the sleep state.

The machine returns to the standby mode from the power saving mode when any communication is carried out on the computer side or when any job button is pressed.

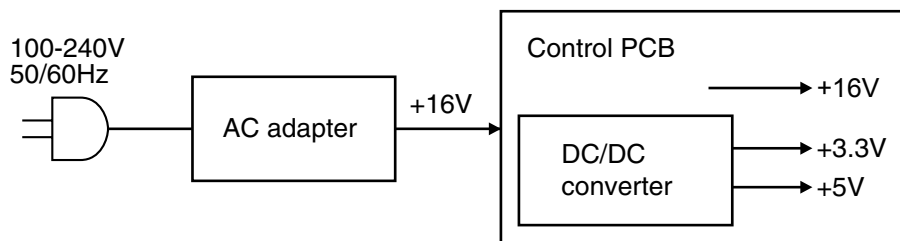


Figure 2-601

VII. FLATBED UNIT

1. Outline

The flatbed unit is prepared for DR-2580C as an option. In case that a document which cannot be fed, for example, a book, needs to be scanned, this unit should be used. The power and driving signals are supplied for the

unit from the main body of DR-2580C. Therefore, it does not work independently.

The CCD is used as an image reading sensor. The optical unit including the CCD is moved by the motor and timing belt to read images.

Table 2-701 includes the key specifications of the flatbed unit.

No.	Item	Specifications
1	Type	Desktop type flatbed scanner *No operation without main body DR-2580C
2	Dimensions (tray closed)	Flatbed itself: 315 (W) × 545 (D) × 82.5 (H) mm With DR-2580C: 315 (W) × 557 (D) × 155 (H) mm
3	Weight	Approx. 3.8 kg (with DR-2580C: Approx. 5.7 kg)
4	Type of sensor	CCD: 5340 picture elements × 4 lines (RGB/Grayscale)
5	Effective picture element	600 dpi, 5104 picture elements (216 mm)
6	Light source	Xenon lamp (white)
7	Reading size	216 × 297 mm maximum
8	Expected product life (in-house information)	One of the following two items, whichever comes first. 1) 5 years 2) Sheets scanned: 20,000 sheets (A4 size)
9	Installation	By users *Include detach/attachment with main body DR-2580C

Table 2-701

2. Configuration

1) Reading System

The color CCD sensor with 5340 picture elements \times 4 lines is used as an image sensor. The size of a picture element is $7\mu\text{m} \times 7\mu\text{m}$. And the picture elements are arranged with $7\mu\text{m}$ pitches. The length of a line is about 37.4 mm.

* CCD sensor



Figure 2-701

The unit, which consists of the CCD PCB with the CCD sensor, 4 mirrors, lens, and xenon lamp as a light source, is called "optical unit." Since this unit is adjusted before the shipment from a plant, do not disassemble the unit except for the lamp in the field.

The images of a document are reduced by the optical unit. And then, the 600dpi image data with 5104 effective picture elements (length: 210 mm) are output from the CCD sensor.

The shading plate for shading correction is slipped between the document board glass and cover.

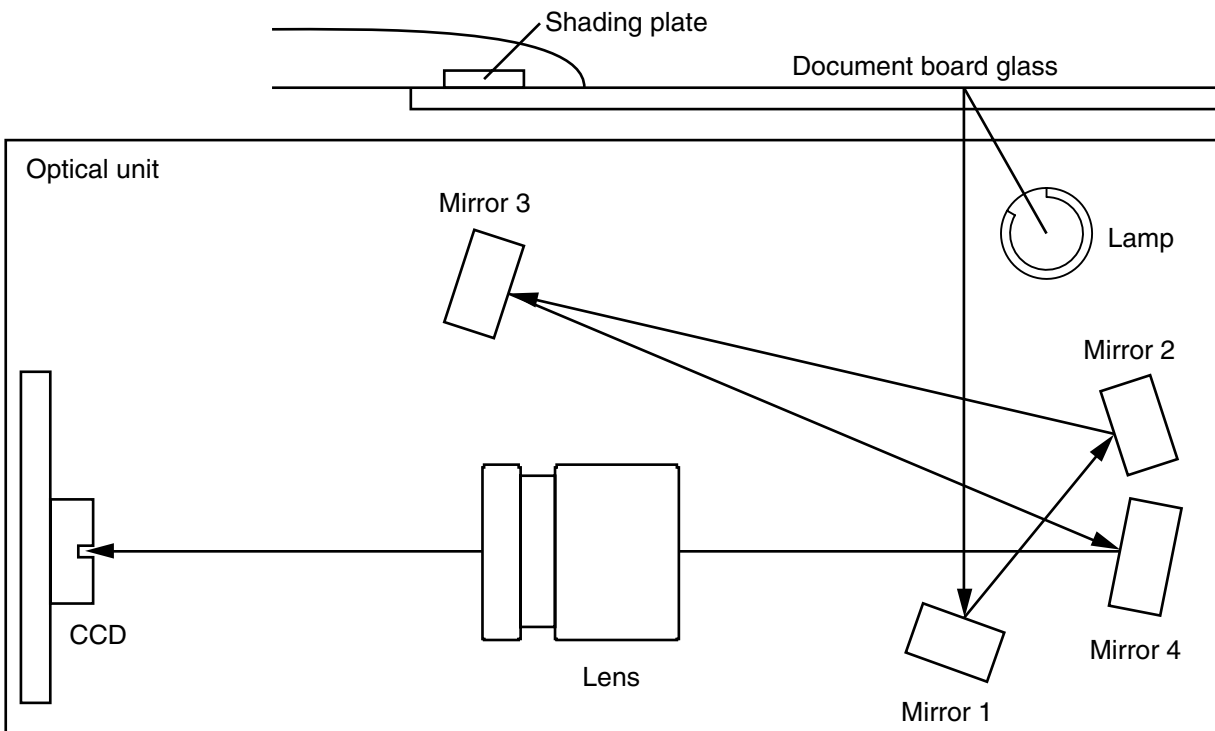


Figure 2-702

2) Drive System

Image data can be read in the sub-scanning direction by moving the optical unit horizontally.

A timing belt is fixed to the optical unit. The rotations of the stepping motors run the timing belt to move the optical unit. A shaft is installed as a guide for the unit movement.

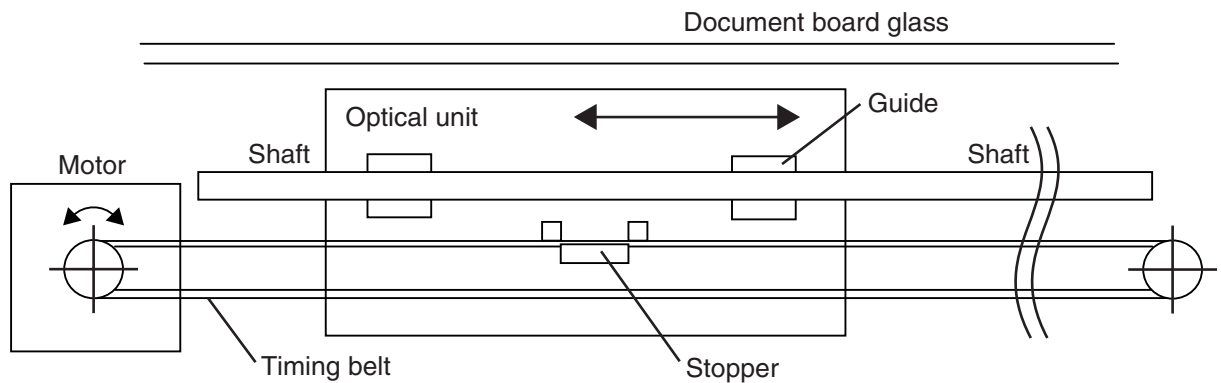


Figure 2-703

3) Control System

Driving signals for the CCD and motors are supplied from the main body of DR-2580C. After analog image data are converted into digital data in the optical CCD PCB, those data are output to the main body of DR-2580C.

Figures 2-704 and 2-705 describe the electric circuit block diagram and image processing block diagram, respectively.

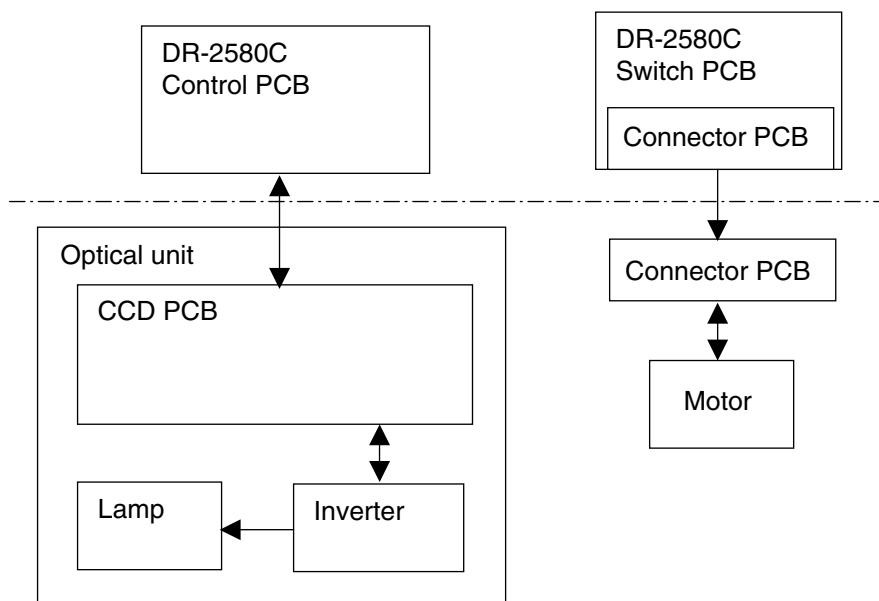


Figure 2-704

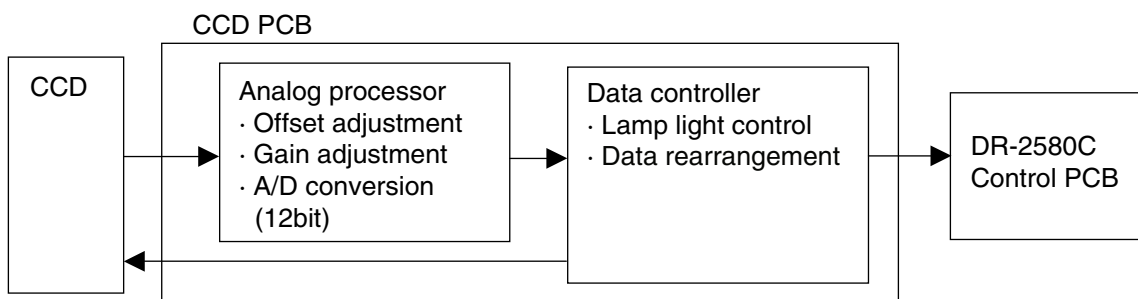


Figure 2-705

VIII. ELECTRICAL PARTS LAYOUT

1. Main Body

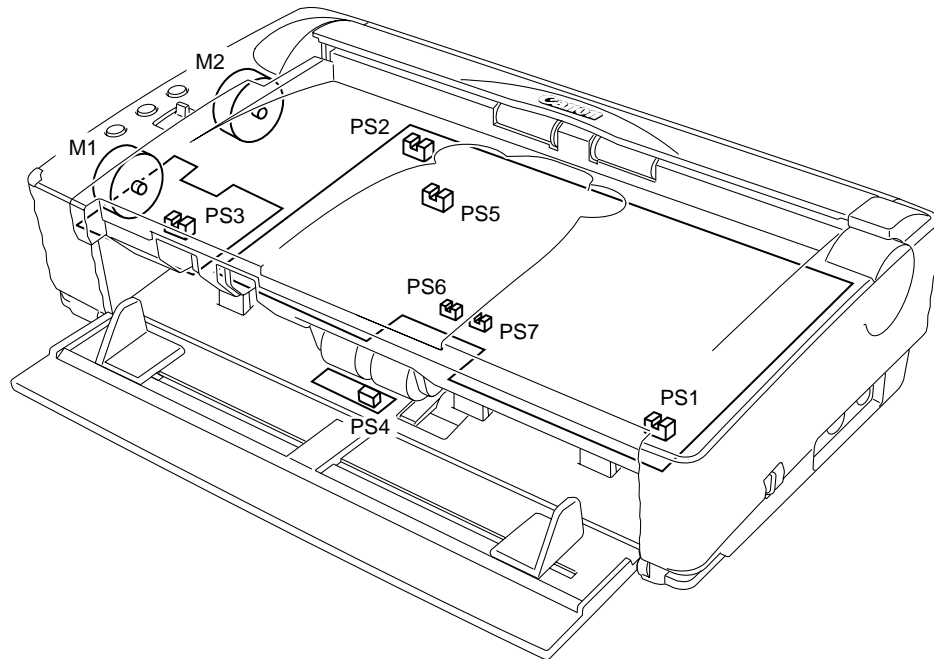


Figure 2-801

Category	Name	Symbol
Sensor	Power supply sensor	PS1
	Rear cover sensor	PS2
	Upper opening sensor	PS3
	Document board sensor	PS4
	Shading sensor	PS5
	Pre-registration sensor	PS6
	Registration sensor	PS7
Motor	Pickup motor	M1
	Carry motor	M2

Table 2-801

2. Flatbed

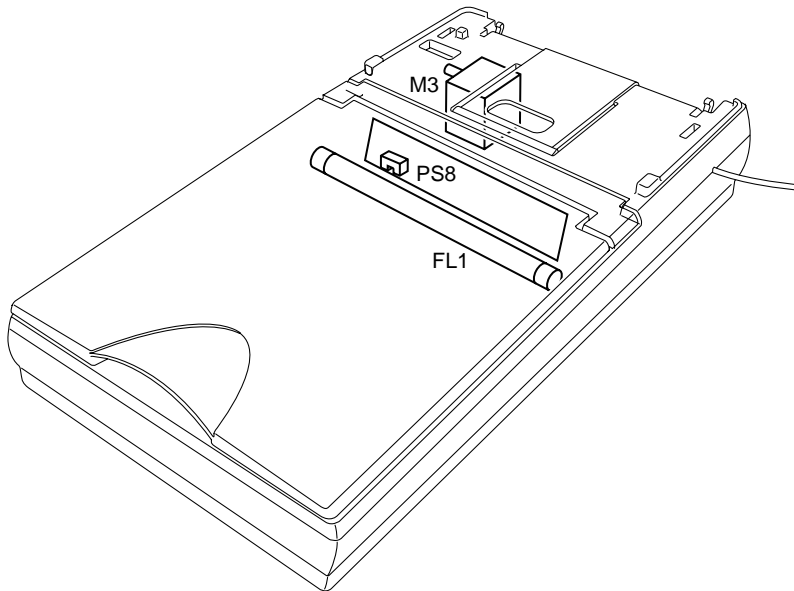


Figure 2-802

Category	Name	Symbol
Sensor	Optical unit sensor	PS8
Motor	Optical motor	M3
Lamp	Light source lamp	FL1

Table 2-802

IX. PARTS LAYOUT OF EACH PCB

Items that are not listed in the lists and items that are specified as usage prohibited must not be procured in the field.

1. Controller PCB

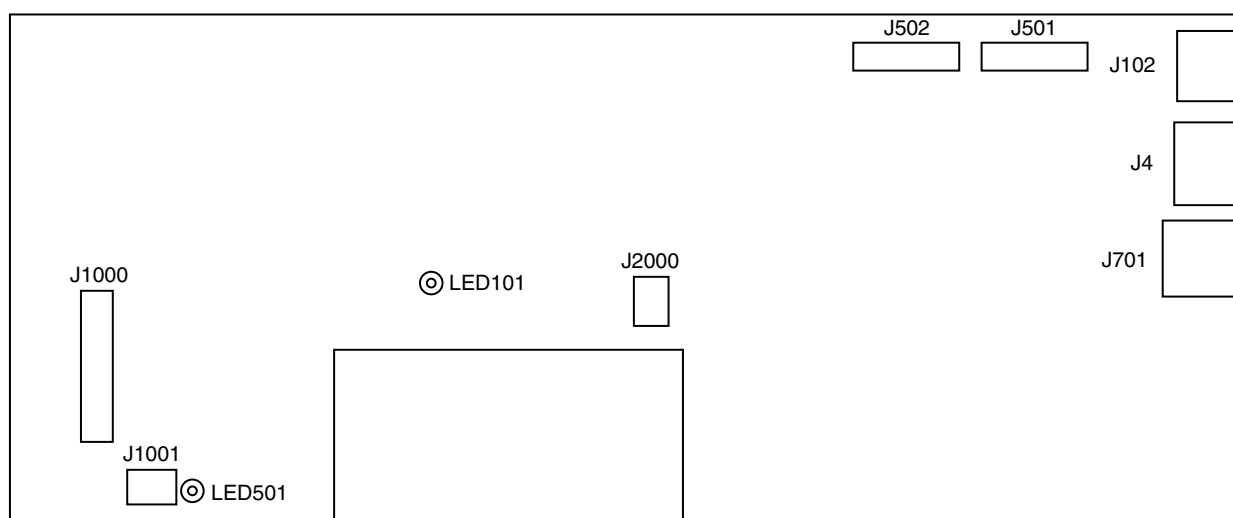


Figure 2-901

Connector		Description
J4	9P	Flatbed
J102	2P	AC adapter (16 VDC)
J501	16P	CIS PCB (front)
J502	16P	CIS PCB (back)
J701	5P	USB I/F
J1000	19P	Switch PCB
J1001	4P	Document board PCB
J2000	7P	Ultrasonic sensor PCB

Table 2-901

LED	Description
LED101	Blinking: CPU normal operation
LED501	Lighting: Normal power supply

Table 2-902

2. DC Control PCB

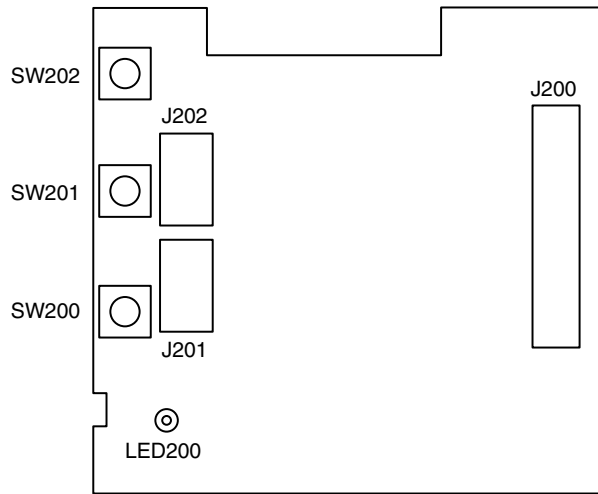


Figure 2-902

Connector		Description
J200	19P	Control PCB
J201	4P	Pickup motor
J202	4P	Carry motor

Table 2-903

LED	Description
LED200	Lighting: Normal Blinking: Scanner abnormal (jams and so on)

Table 2-904

CHAPTER 3

DISASSEMBLY & REASSEMBLY

I. EXTERNAL COVERS	3-1	III. LOWER UNIT	3-10
II. UPPER UNIT.....	3-4	IV. FLATBED.....	3-21

*** Notes on disassembly and assembly**

- 1) The upper unit sometimes closes while working. Thus, be careful not to get your fingers caught in the unit.
- 2) Many of parts are fixed with the fitting parts instead of screws or E rings. Do not deform such parts too much while working because they would be damaged. However, do not leave a gap between the parts when installing them.
- 3) Prepare a thin and flat head tool such as precision driver because it is necessary to unhook some fitting parts.

I. EXTERNAL COVERS

1. Rear Cover

- 1) Fully open the rear cover.
- 2) Bend the left or right arm ①, unhook the fitting parts, and remove the rear cover ②.

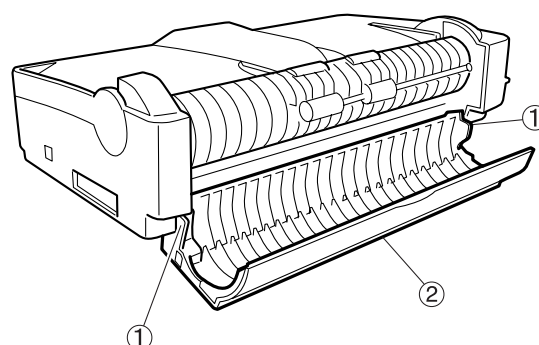


Figure 3-101

*** Notes on assembly**

Do not deform the grounding plate which is put on one of the fitting parts.

2. Right Cover

- 1) Remove the rear cover and fully open the pickup tray and upper unit.
- 2) Unhook the 5 fitting parts ① (one of them on the back side) and remove the right cover ②. At this time, the pickup tray ③ also comes off.

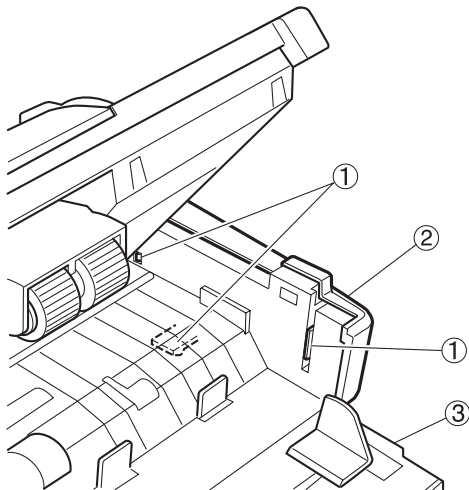


Figure 3-102

* Notes on assembly

Do not pinch the cable. In case that the power switching lever comes off, be sure to put it back.

3. Left Cover

- 1) Remove the rear cover and fully open the pickup tray and upper unit.
- 2) Unhook the 4 fitting parts ① (one of them on the back side) and remove the left cover ②. At this time, the pickup tray ③ also comes off.

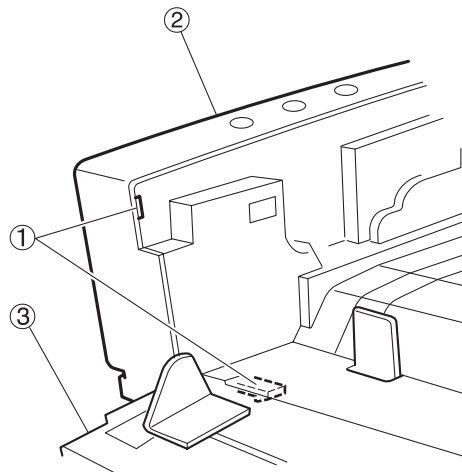


Figure 3-103

* Notes on assembly

Set the rear fitting parts and the edge of the eject selection lever in the mounting positions indicated on the main frame.

4. Pickup Tray

- 1) When the right cover or the left cover is removed, the pickup tray comes off.

5. Upper Cover

- 1) Remove the right cover.
- 2) After unhooking the 6 fitting parts ①, close the upper unit and remove the upper cover assembly ②.

Note: The arm ③ of the left and right reading units would come off after removing the upper cover assembly.

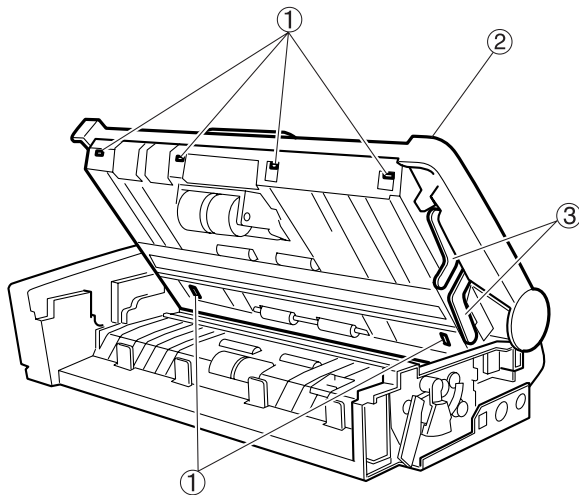


Figure 3-104

- 3) After opening the eject tray extension assembly ①, rotate it and remove the upper cover ②.

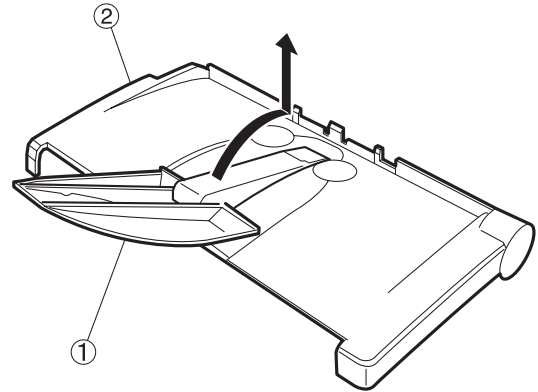


Figure 3-105

*** Notes on assembly**

Do not pinch the cable.

II. UPPER UNIT

1. Upper Unit

- 1) Remove the right cover, left cover and upper cover assembly.
- 2) Disconnect the cable ② which is connected to the PCB ①.

Note:After removing the reading unit, disconnect the cable for the reading unit.

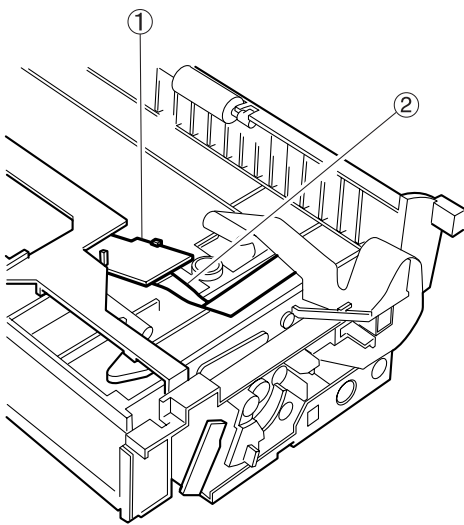


Figure 3-201

- 3) After further opening the upper unit, slide it to the left, unhook the right fitting parts ①, and remove the upper unit.

Note:Do not pull the upper unit too hard because the cable ② is connected to it.

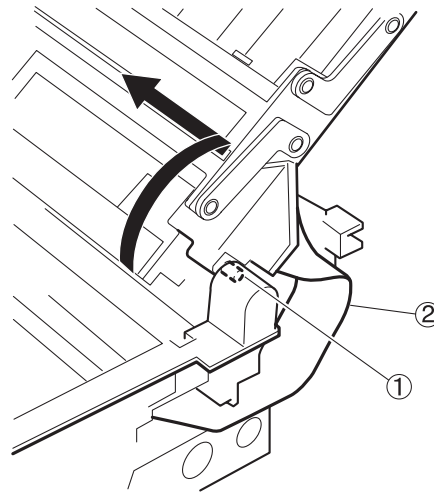


Figure 3-202

- 4) After unhooking the fitting parts ② which are put on the base of the reading unit arms ①, rotate the arms and unhook the fitting parts ③ which are put on the reading unit. Remove the arm "A" first. There are 4 arms installed in the right and left sides.

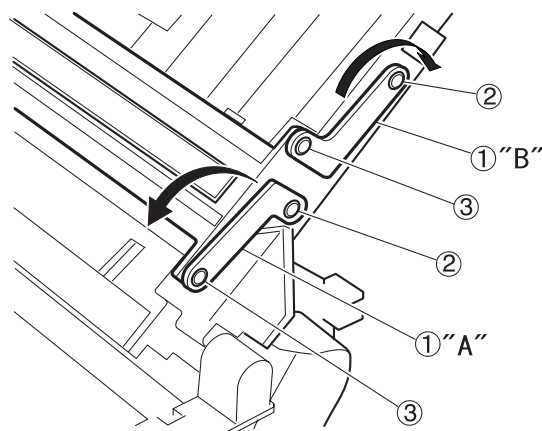


Figure 3-203

- 5) Rotate the follower roller shaft (ahead) ① to bring the flat part which contacts the coil spring ② to the front. Apply a flat head tool to a flat part of the roller shaft and rotate it.

Push the roller shaft downwards to slide it, unhook the right or left fitting parts ③, and remove the roller and roller shaft.

Note:The roller, roller shaft and coil spring would jump out when removing them. Do not mix up the coil spring for the follower roller (ahead) with the one for the follower roller (behind) because they are different. The coil spring for the follower roller (behind) is white.

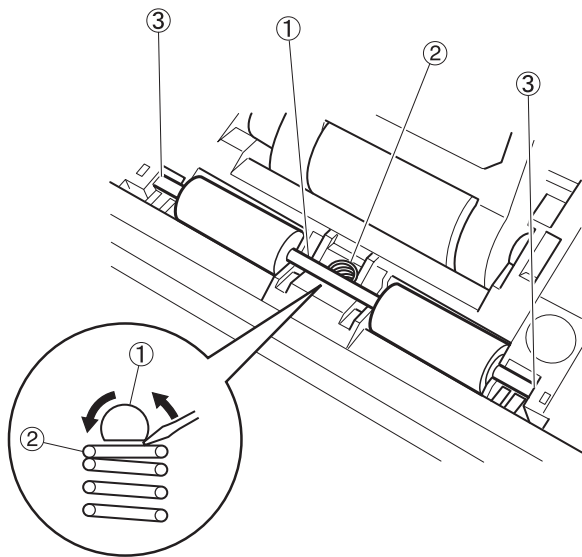


Figure 3-204

- 6) Remove the reading unit ① and disconnect the cable ② which is connected to its back side.

Note:In case that the cable which is connected to the lower unit are disconnected, it is not necessary to disconnect the cable.

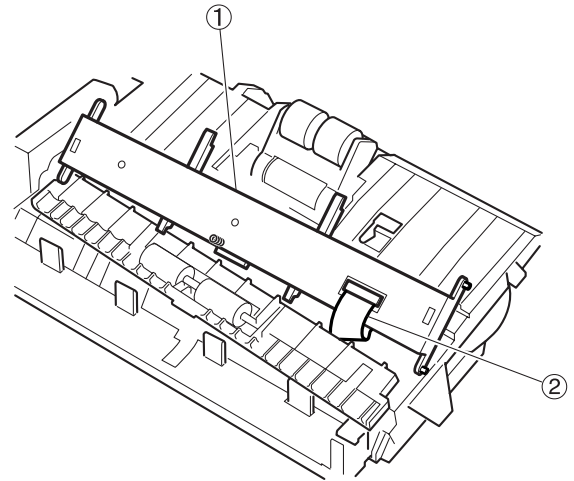


Figure 3-205

* **Notes on assembly 1**

When installing the upper cover, put the cable ① in the 2 cable holders ② to prevent them from being caught in the upper cover.

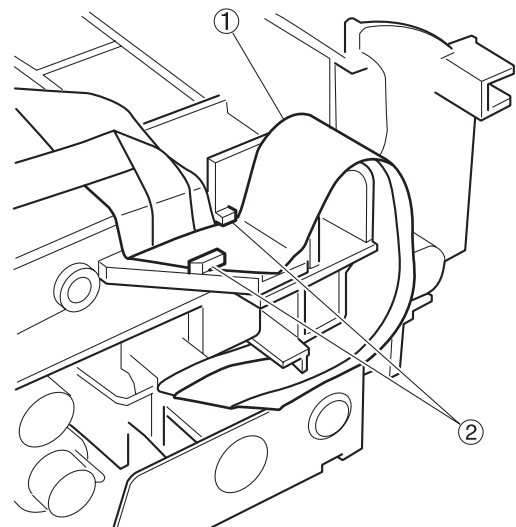


Figure 3-206

*** Notes on assembly 2**

Install the reading unit so that the coil spring on its back side can contact the grounding plate.

2. Follower Roller (Ahead)

- 1) Fully open the upper unit.
- 2) Rotate the roller shaft ① to bring the flat part which contacts the coil spring ② to the front. Apply a flat head tool to a flat part of the roller shaft and rotate it. Push the roller shaft downwards to slide it, unhook the right or left fitting parts ③, and remove the roller and roller shaft.

Note:The roller, roller shaft and coil spring would jump out when removing them. The coil spring for the follower roller (ahead) is metallic color.

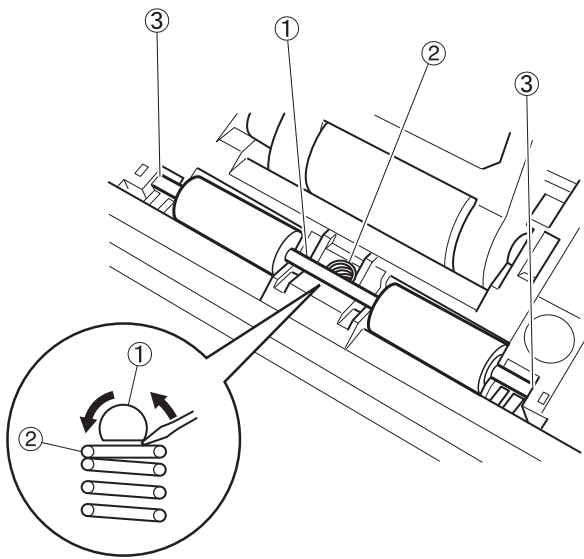


Figure 3-207

3. Follower Roller (Behind)

- 1) Fully open the upper unit.
- Note:**In case that there is not enough room to disassemble the follower roller (behind), remove the right cover, left cover and upper cover assembly to further open the upper unit.
- 2) Rotate the roller shaft ① to bring the flat part which contacts the coil spring ② to the front. Apply a flat head tool to a flat part of the roller shaft and rotate it. Push the roller shaft downwards to slide it, unhook the right or left fitting parts ③, and remove the roller and roller shaft.

Note:The roller, roller shaft and coil spring would jump out when removing them. The coil spring for the follower roller (behind) is white.

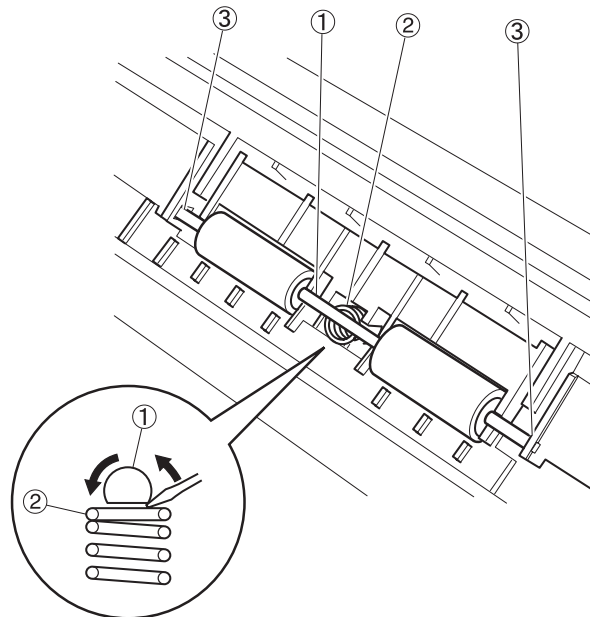


Figure 3-208

4. Roller Drive Shaft

- 1) Remove the roller unit.
- 2) Remove the right cover and upper cover assembly.
- 3) Remove the open/close knob ①.

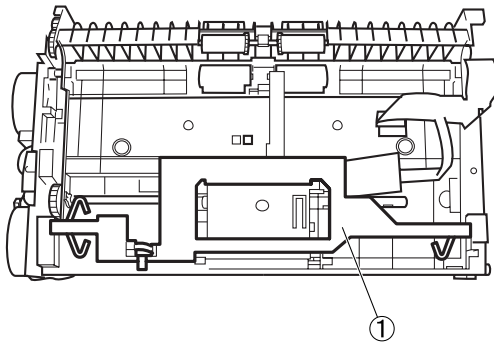


Figure 3-209

- 5) Unhook the fitting parts ① and rotate the bearing ② 90 degrees. After that, slide the roller drive shaft ③ to remove it.

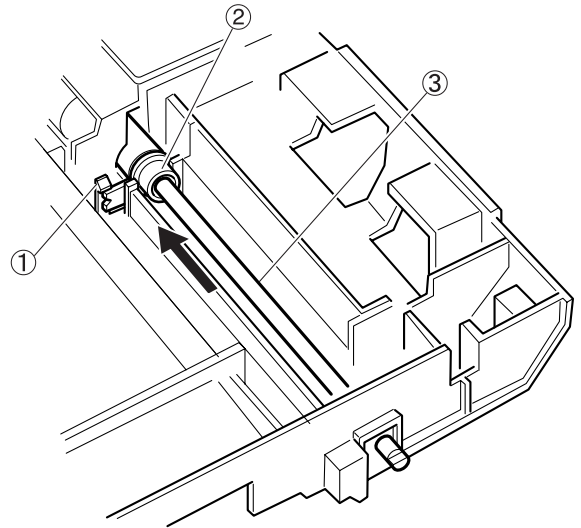


Figure 3-211

- 4) Unhook the fitting parts ① with a thin and flat head tool and remove the drive gear ②.

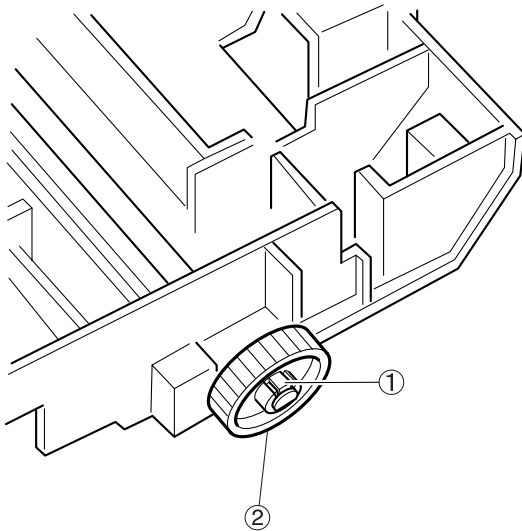


Figure 3-210

5. Reading Unit

- 1) Remove the right cover, left cover and upper cover assembly, and fully open the upper unit.
- 2) Refer to the procedure for "Upper Unit" to remove the 4 arms ① of the reading unit and follower roller (ahead) ②.

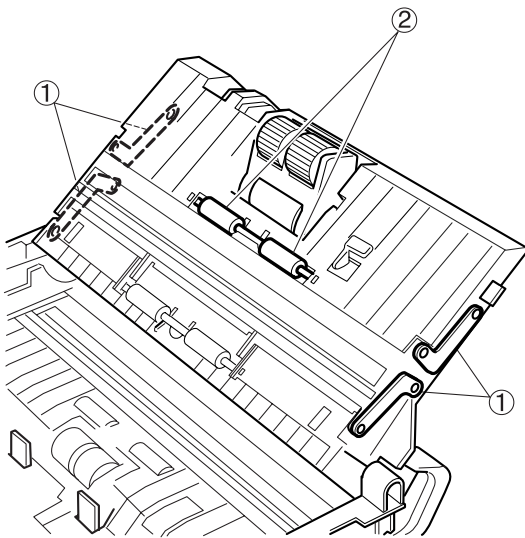


Figure 3-212

- 3) Remove the reading unit ① and disconnect the cable ② which is connected to its back side.

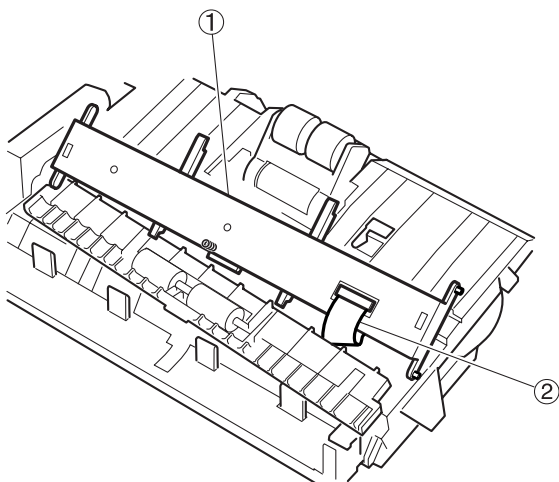


Figure 3-213

* Notes on assembly

Install the reading unit so that the coil spring on its back side can contact the grounding plate.

6. Reading Holder (with Glass)

- 1) Remove the reading unit.
- 2) Unhook the 8 fitting parts ① with a thin and flat head tool and remove the cover ②.

Note: Since the fitting part is bent easily, unhook it carefully.

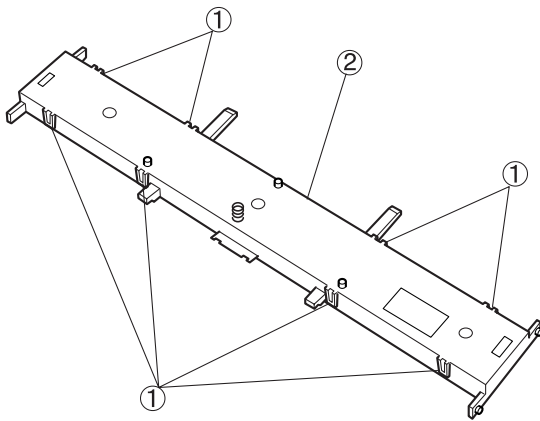


Figure 3-214

- 3) Draw the CIS unit ② out of the reading holder ①.

Note: Prevent scraps of paper or other foreign particles from getting into the CIS unit.

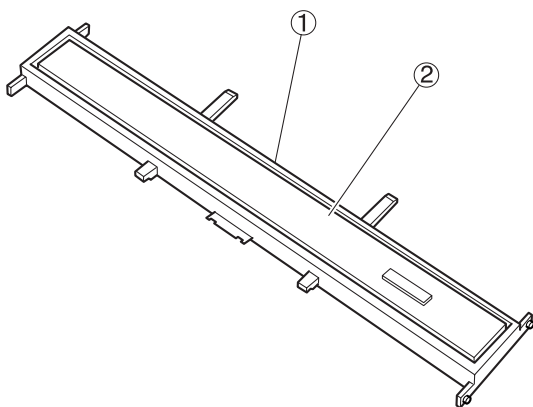


Figure 3-215

* Notes on assembly 1

Remove scraps of paper or other foreign particles out of the CIS unit with a tool such as blower. Install it after cleaning its inside including the glass which is put on the reading holder. And make sure that the coil spring is put in the cover.

* Notes on assembly 2

Do not stain or damage the shading plate installed on the reading holder. If it is stained, clean it and if it is damaged, replace the reading holder.

* Notes on assembly 3

The reading unit cover and CIS unit are the same as those for the upper unit. On the other hand, their reading holders are different in shape.

III. LOWER UNIT

A. Common

1. PCB Unit

- 1) Remove the right cover and left cover.
- 2) Remove the screw ① on the left and the 2 connectors ②.

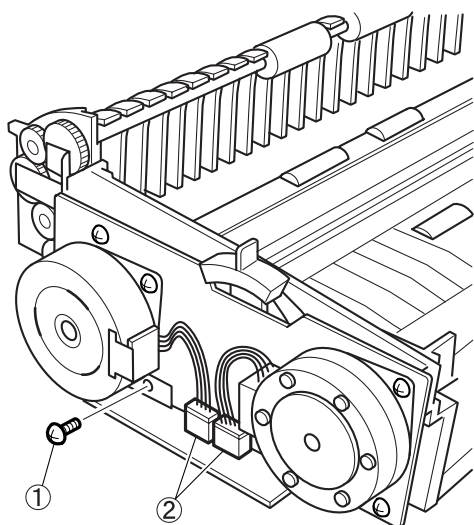


Figure 3-301

- 3) Insert a thin and flat head tool into the hole ① on the back side to remove the plate ②. Then, unhook the 2 fitting parts ③ and open the plate to the direction of the arrow. Be aware that the cable is connected to the inside of the unit.

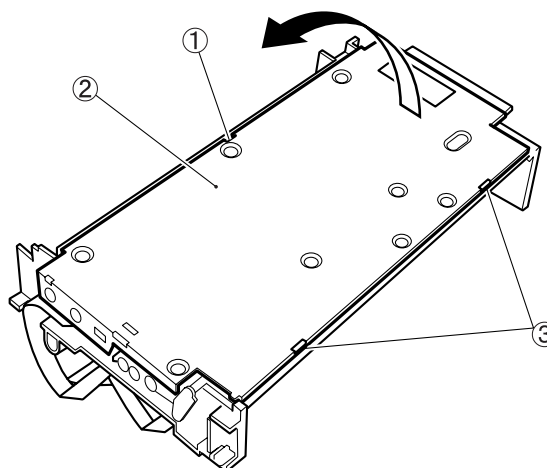


Figure 3-302

- 4) Disconnect the 3 cables ① which are connected to the PCB unit and remove the PCB unit ②.

Note: Be careful not to lose the sensor cover ③ because it comes off.

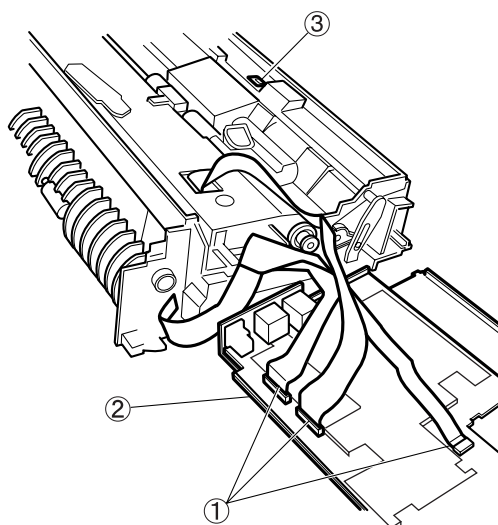


Figure 3-303

*** Notes on assembly 1**

Make sure that the cables for the upper and lower reading units are appropriately connected. The reinforcing plate for the contacts of the cable ① which is connected to the lower unit is blue, and this cable should be connected to the connector J502. The cable ② which is connected to the upper unit is aluminum shielded, and it should be connected to the connector J501.

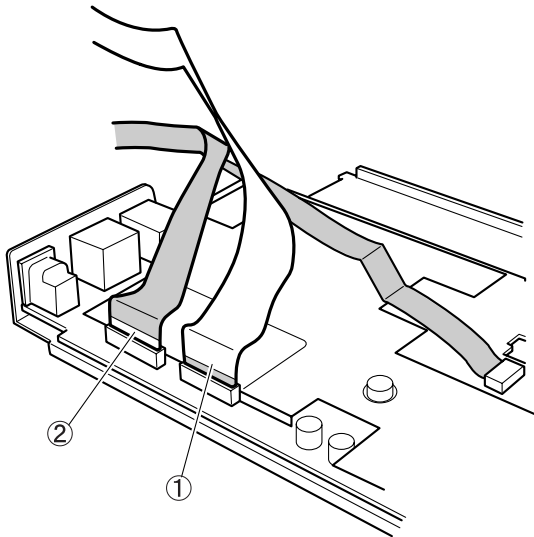


Figure 3-304

*** Notes on assembly 2**

Do not pinch the cables. Put the 2 cables ①, which are connected to the upper unit, in the 2 cable holders ②.

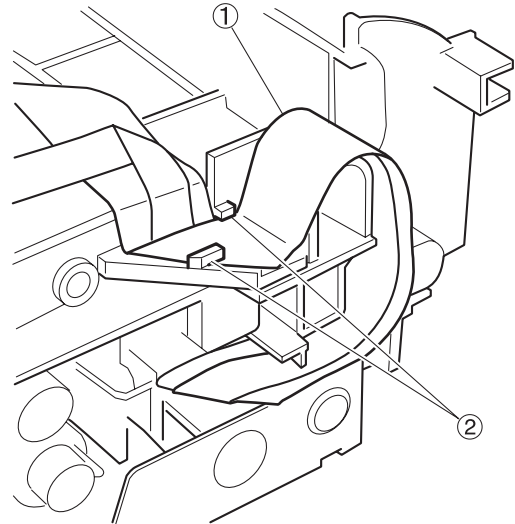


Figure 3-305

B. Feed System (Roller and Others)

1. Registration Roller

- 1) Remove the retard roller.
- 2) Remove the right cover, left cover and PCB unit.
- 3) Remove the retard roller shaft unit ①. For more details, refer to the section "Retard Roller Shaft Unit."

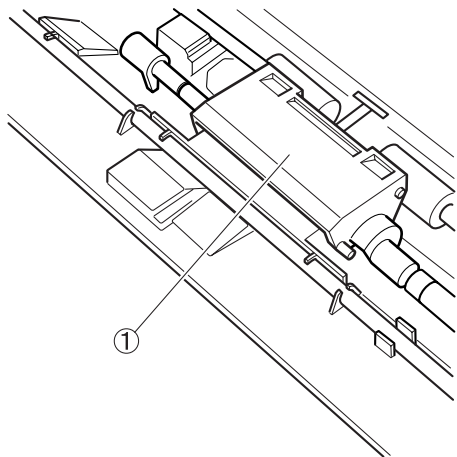


Figure 3-306

- 4) Remove the motor drive unit. For more details, refer to the section "Drive Unit."

- 5) Remove the gear ①, clutch gear ② and 2 ball bearings ③.

Note: Unhook the fitting parts mounted on the edge of the gear to pull the gear out.

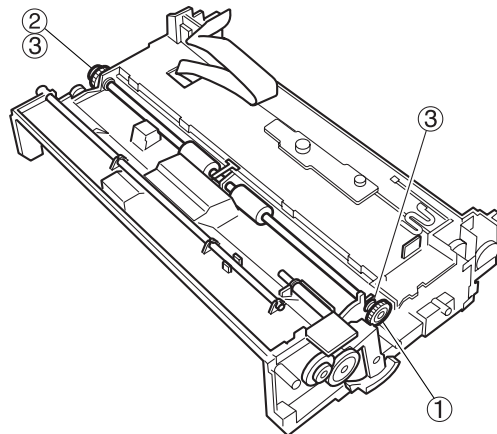


Figure 3-307

- 6) Pull the leaf spring ① out of the fitting parts. And then, pull the sensor lever ② out of the fitting parts. Finally, remove the registration roller ③.

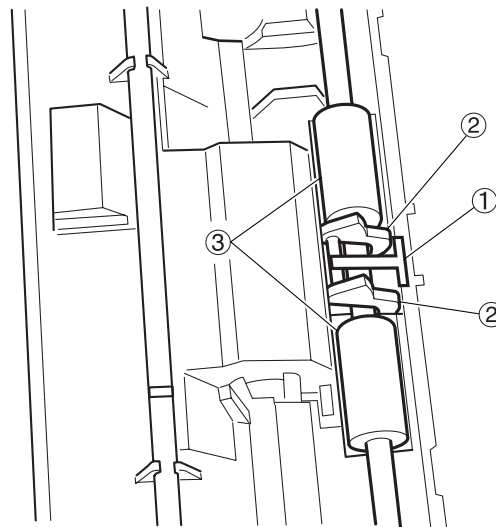


Figure 3-308

* Notes on assembly

Make sure if the registration roller smoothly rotates after the completion of assembly.

2. Retard Roller Shaft Unit

- 1) Remove the retard roller.
- 2) Remove the right cover, left cover and PCB unit.
- 3) Insert thin and flat head tools into the 2 fitting parts ① and remove the roller cover ②.

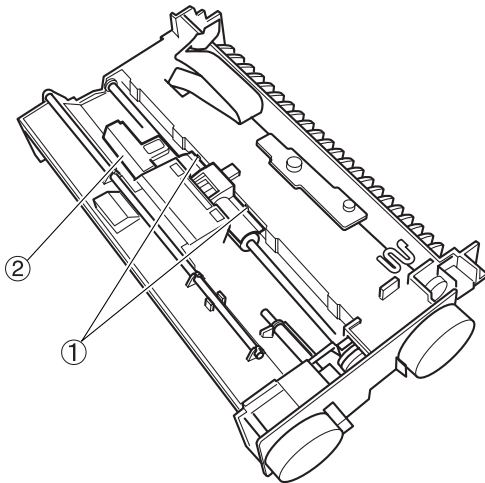


Figure 3-309

- 4) Insert thin and flat head tools into the small hole ② of the 2 C shaped collars ① and pull them out.

Note: Slightly press the C shaped collars when pulling it out to prevent it from being blown away.

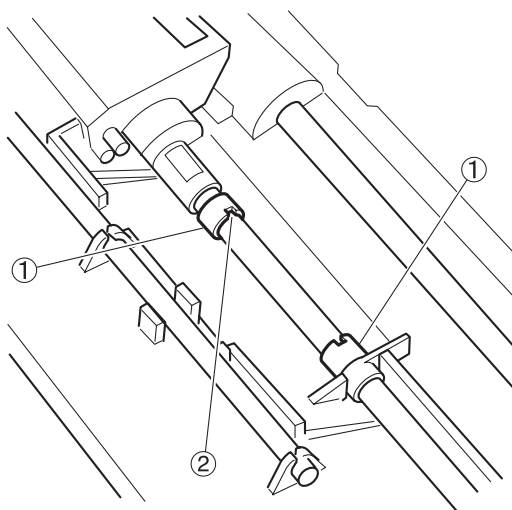


Figure 3-310

- 5) Push and rotate the right and left shafts ① to insert their edges into the inside of the frame.

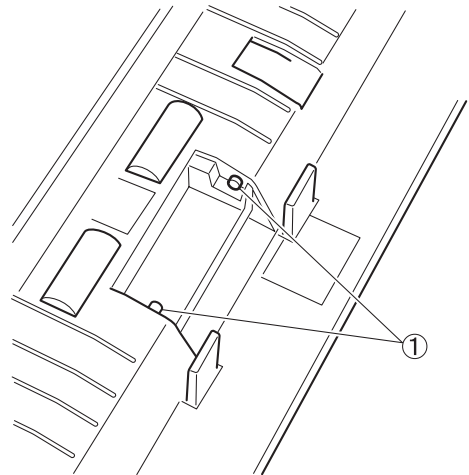


Figure 3-311

- 6) Rotate the retard roller shaft unit ① and unhook the left and right fitting parts ②.

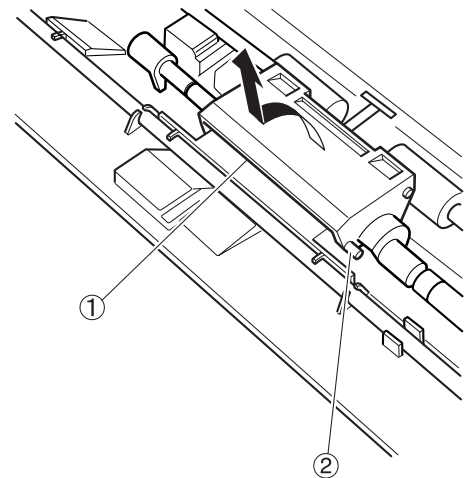


Figure 3-312

*** Notes on assembly**

Make sure if the retard roller smoothly rotates after the completion of assembly.

3. Eject Roller 1

- 1) Remove the right cover, left cover and PCB unit.
- 2) Remove the torsion spring ①. And bend the moving arm ② to unhook the 3 fitting parts ③ and remove the moving arm. And also, remove the edge ④ of the spring clutch.

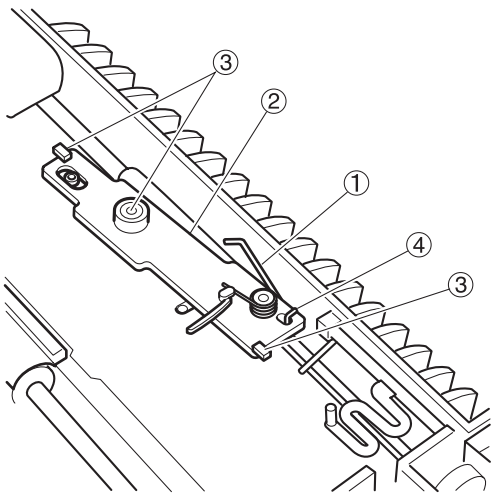


Figure 3-313

- 3) Insert thin and flat head tools into the 2 fitting parts ① and remove the roller cover ②.

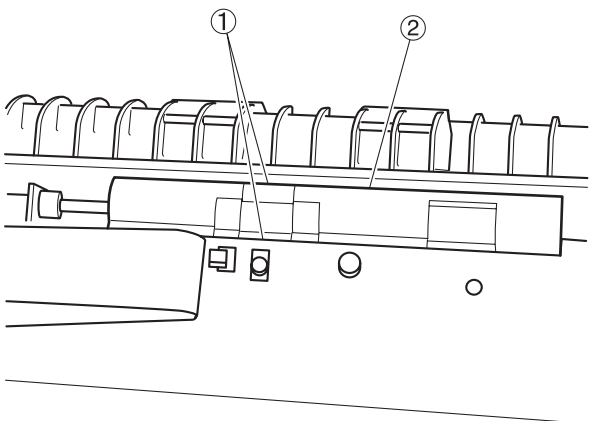


Figure 3-314

- 4) Remove the gear ①, right and left bearing stoppers ② and ③. Remove the eject roller 1 ④. And then, remove the mechanical clutch ⑤ out of the eject roller.

Note: Unhook the fitting parts mounted on the edge of the gear to pull the gear out.

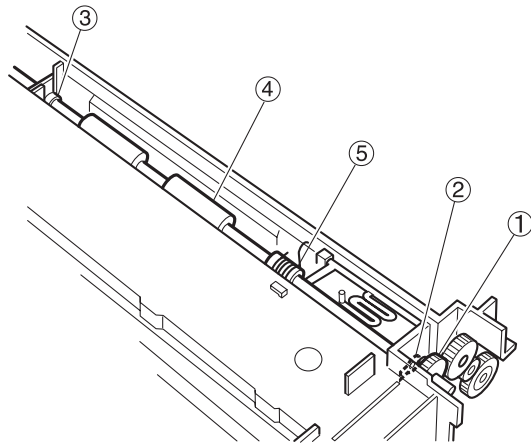


Figure 3-315

4. Eject Roller 2

- 1) Remove the left cover. Fully open the upper unit and rear cover.
- 2) Remove the gear ①, right and left bearing stoppers ② and ③. And remove the eject roller 2 ④.

Note: Unhook the fitting parts mounted on the edge of the gear to pull the gear out. Unhook the fitting parts to remove the bearing stopper ③.

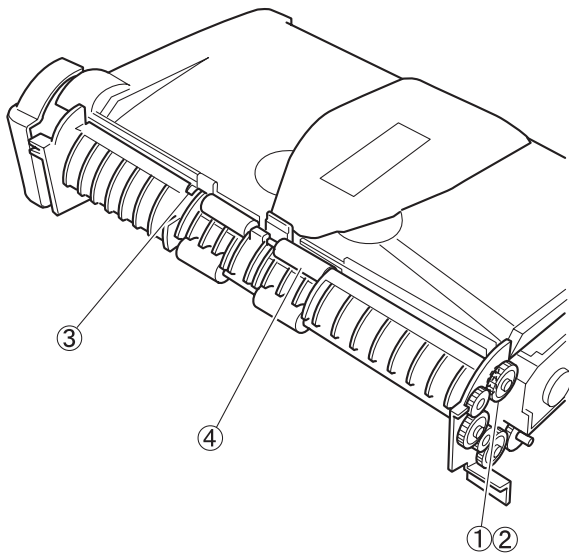


Figure 3-316

5. Carry Roller

- 1) Remove the left cover. Fully open the rear cover.
- 2) Remove the gear ①, right and left bearing stoppers ② and ③. And remove the carry roller ④.

Note: Unhook the fitting parts mounted on the edge of the gear to pull the gear out. Pull the bearing stopper ③ out and unhook the fitting parts mounted on the back side.

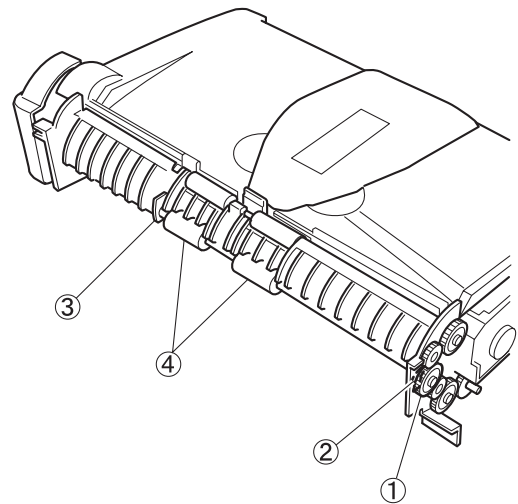


Figure 3-317

C. Drive System (Motor and Others)

1. Carry Motor

- 1) Remove the left cover.
- 2) Remove the connector ① and 2 screws ②. And slide the carry motor ③ to the right to remove it.

Note: The left side connector in the figure is for the carry motor.

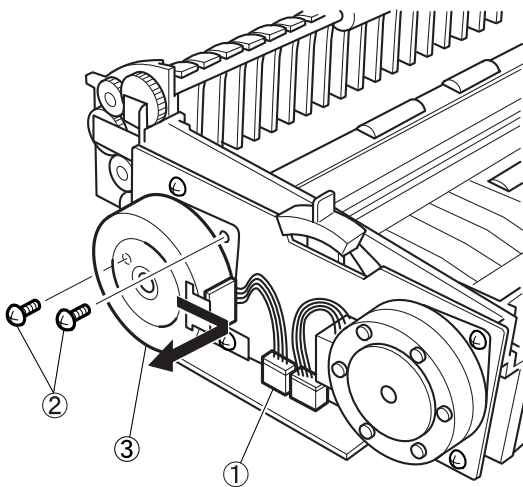


Figure 3-318

* Notes on assembly

Reeve the timing belt on the gear of the carry motor. If it is hard to do it, remove the motor mounting plate. For more details, refer to the section "Drive Unit."

2. Pickup Motor

- 1) Remove the left cover.
- 2) Remove the connector ① and 2 screws ②. And remove the carry motor ③.

Note: The right side connector in the figure is for the pickup motor.

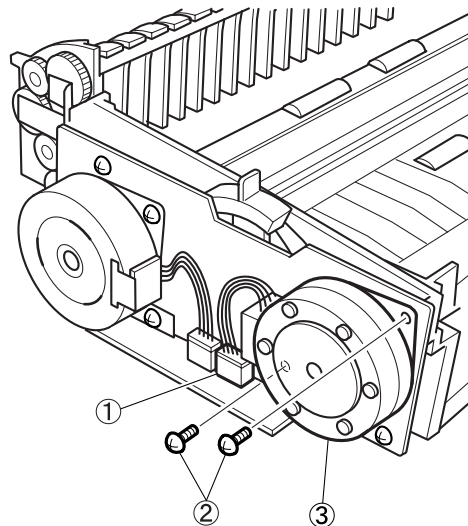


Figure 3-319

3. Drive Unit

- 1) Remove the right cover, left cover and PCB unit.
- 2) Remove the 2 screws ①. And remove the drive unit ②.

Note: The gear or something would drop when removing the drive unit.

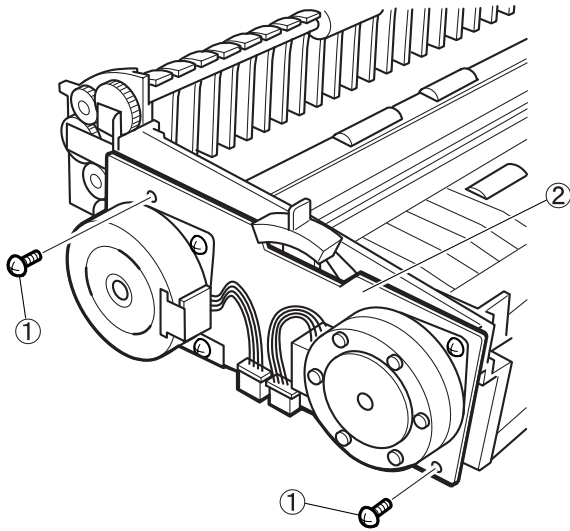


Figure 3-320

* Notes on assembly

Before installing the drive unit, install the gear, grounding plate and lever in the appropriate positions.

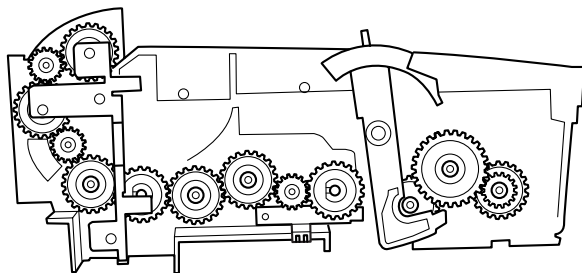


Figure 3-321

D. Reading System

1. Reading Unit

- 1) Remove the upper unit. For more details, refer to the section "Upper Unit."
- 2) Insert a flat head tool into the slit ① on the left and slightly lift the reading unit ② to remove it.

Note: The cable is connected to the right back side.

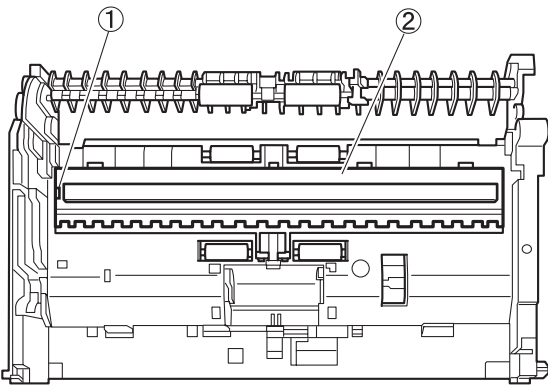


Figure 3-322

- 3) Disconnect the cable ① and remove the reading unit ②.

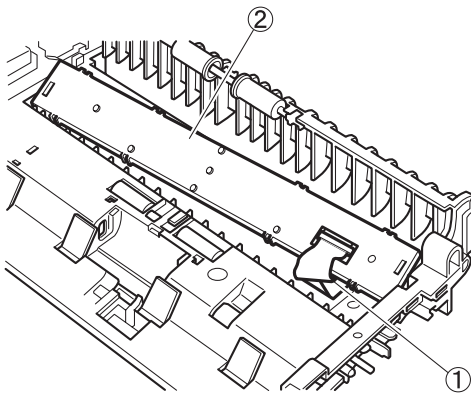


Figure 3-323

2. Reading Holder (with Glass)

- 1) Remove the reading unit.
- 2) Unhook the 8 fitting parts ① with a thin and flat head tool and remove the cover ②.

Note: Since the fitting part is bent easily, unhook it carefully.

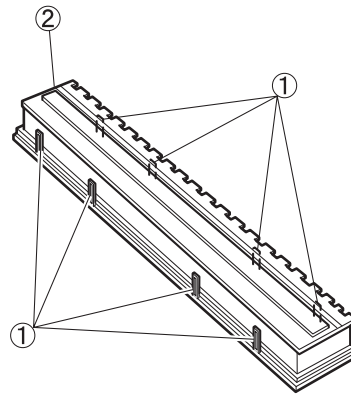


Figure 3-324

- 3) Draw the CIS unit ② out of the reading holder ①.

Note: Prevent scraps of paper or other foreign particles from getting into the CIS unit.

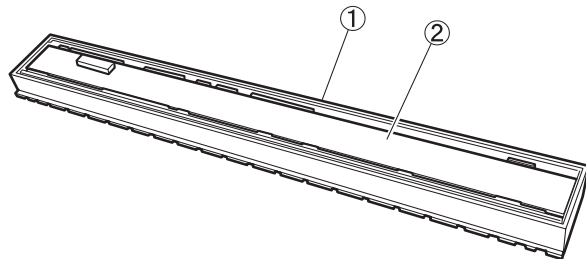


Figure 3-325

* **Notes on assembly 1**

Remove scraps of paper or other foreign particles out of the CIS unit with a tool such as blower. Install it after cleaning its inside including the glass which is put on the reading holder.

* **Notes on assembly 2**

Do not stain or damage the shading plate installed on the reading holder. If it is stained, clean it and if it is damaged, replace the reading holder.

* **Notes on assembly 3**

The reading unit cover and CIS unit are the same as those for the upper unit. On the other hand, their reading holders are different in shape. And no coil spring is included in the cover of the lower unit.

E. Electrical System (PCB and Others)

1. Control PCB

- 1) Remove the PCB unit.
- 2) Remove the connectors A ① and B ②.

Note:The connector A which should be removed is mounted on the switch PCB as indicated in the figure. The connector mounted on the other side (on the control PCB) cannot be removed.

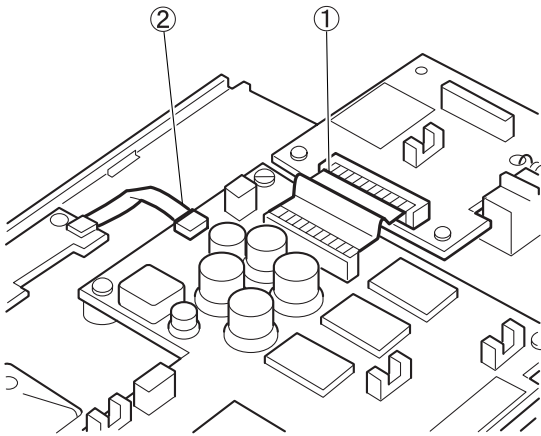


Figure 3-326

- 3) Remove the 8 screws ① and remove the control PCB ②.

Note:The screws on the USB connector are M3 and the others are M2.5.

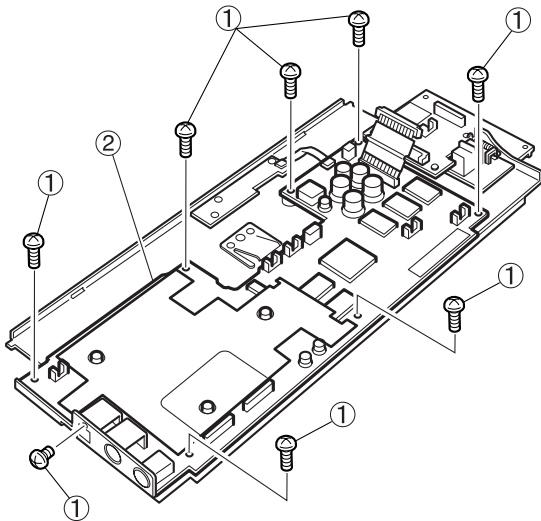


Figure 3-327

2. Switch PCB

- 1) Remove the PCB unit.
- 2) Remove the connector ① and spring ②. And remove the 2 screws ③ and remove the switch PCB ④.

Note:The connector which should be removed is mounted on the switch PCB as indicated in the figure. The connector mounted on the other side (on the control PCB) cannot be removed.

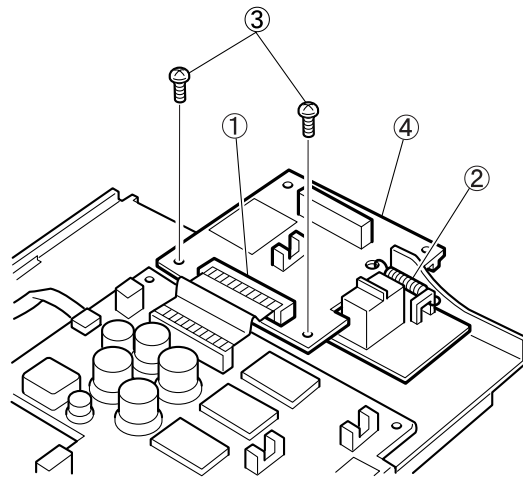


Figure 3-328

* Notes on assembly

Before installing the switch PCB, install the contact cover.

IV. FLATBED

A. Upper Unit

1. Upper Unit

- 1) Unlock the optical unit (reading unit).
- 2) Unhook the 2 fitting parts ① and slightly slide the upper unit ② backwards to remove it.

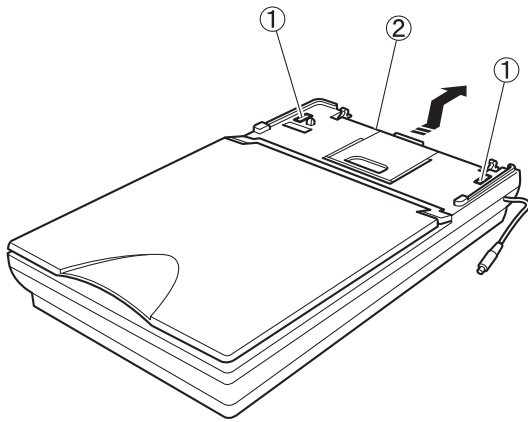


Figure 3-401

* Notes on assembly

Before installing the upper unit, clean the inner surface of the glass. And remove the dust if there is inside the unit.

2. Flatbed Cover Assembly

- 1) Fully open the flatbed cover.
- 2) Bend the stopper ①, insert a tool into the gap of the shaft ②, and slide the flatbed cover assembly ③ until it is removed.

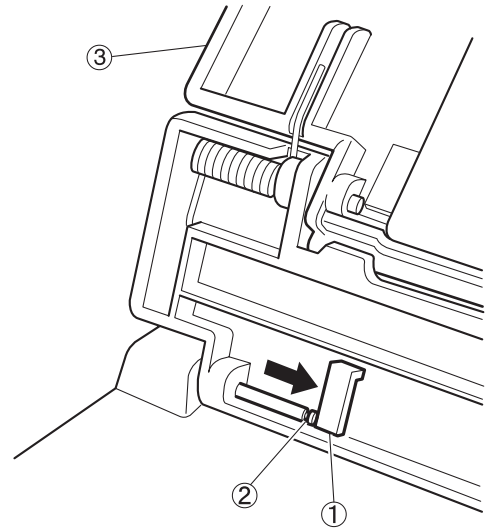


Figure 3-402

* Notes on part replacement

A black pressure board needs to be put on the position on which the document board glass is actually mounted. Thus, when replacing a part, prepare a flatbed cover without black pressure board and a black pressure board, and install them according to the following procedure.

- 1) Install the flatbed cover without black pressure board.

- 2) Remove the release papers of the adhesive tapes which are stuck on the back side of the black pressure board. Put it along the origin point mark indicated in the figure of the document board glass. It is included to prevent light from pouring from a gap.

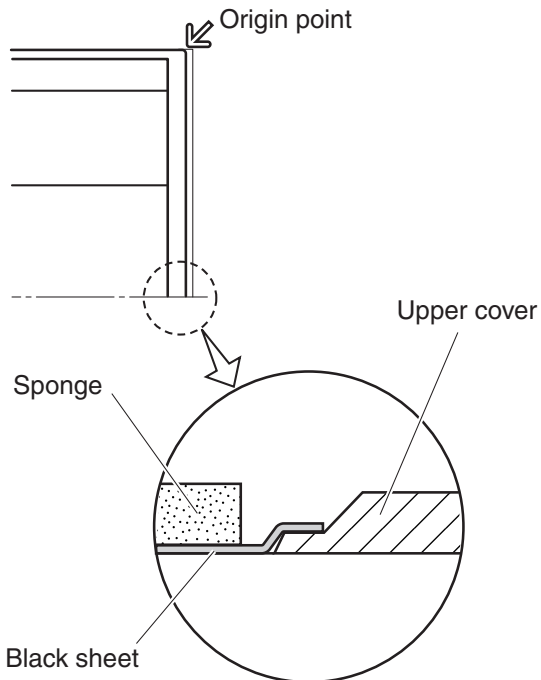
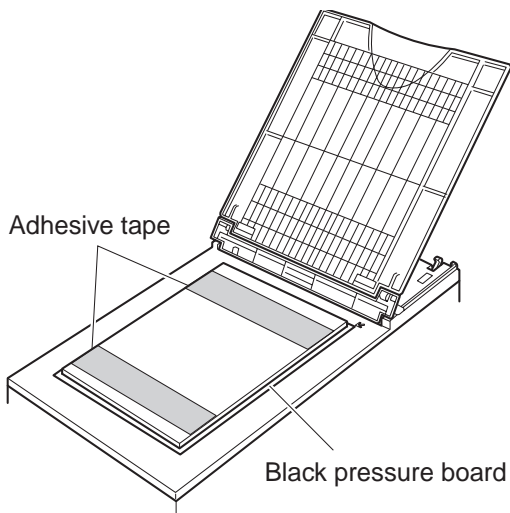


Figure 3-403

- 3) Slowly close the flatbed cover so that the black pressure board does not shift. And gently press the cover to stick the black pressure board to it.

3. Eject Tray

- 1) Slightly lift the edge of the eject tray ①, put it on the outer frame to remove it.

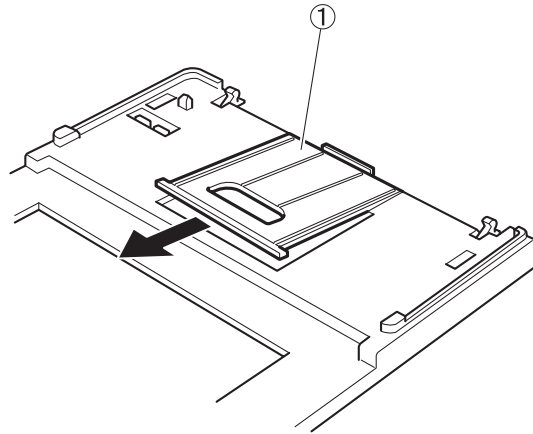


Figure 3-404

4. Lock Board (for Optical Unit)

- 1) Remove the upper unit. And fully open or remove the eject tray.
- 2) Bend the stopper ① mounted on the back side of the upper unit, and slide the lock plate ② until it is removed.

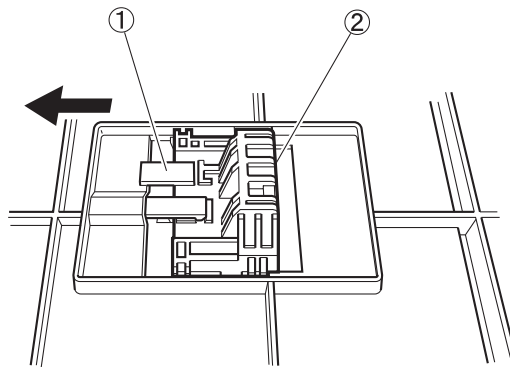


Figure 3-405

5. Hook (for Main Body)

- 1) Remove the upper unit.
- 2) Bend the 2 stoppers ① mounted on the back side of the upper unit and remove the hook ②.

Note: The same procedure applies to the disassemblies of both right and left hooks.

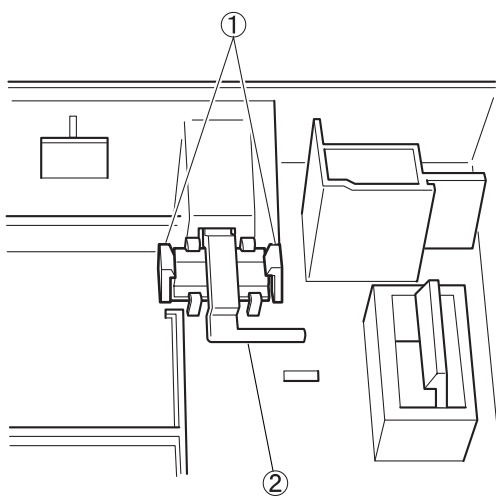


Figure 3-406

B. Lower Unit

Note:When moving the optical unit, move the timing belt by hand. Power cannot be evenly transmitted if using the rail mounted on the other side to move the optical unit.

1. Optical Unit

- 1) Remove the upper unit.
- 2) Lift the contact assembly ① to remove it. And disconnect the cable ② from the PCB and pull the main shaft ③ out of the optical unit ④.

Note:When disconnecting the cable from the connectors, press those connectors by hand to prevent the PCB from being damaged.

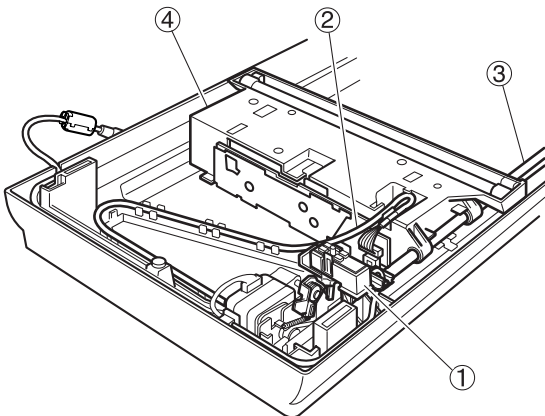


Figure 3-407

- 3) Remove the timing belt ① and cable guide ② out of the optical unit ③.

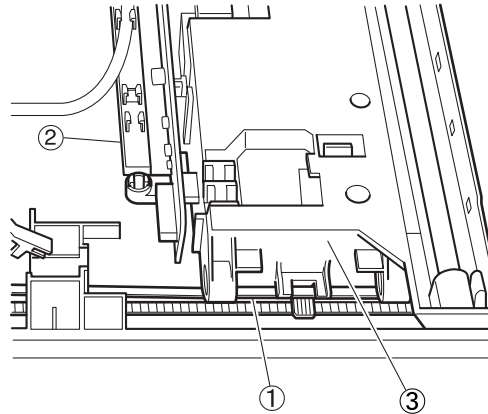


Figure 3-408

Note:Do not remove the cover of the optical unit. Do not touch the glass tube of the lamp.

* Notes on assembly

When assembling the contact assembly, hook the end of the lever ① on the projection ② of the contact assembly. Hold the cable with the 2 cable holders ③.

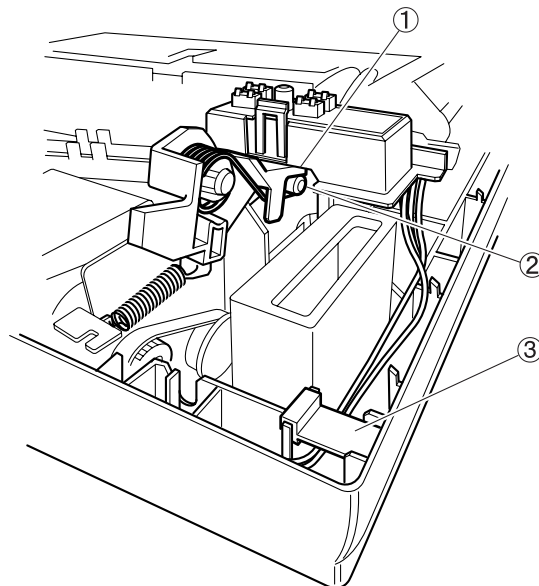


Figure 3-409

2. Lamp

- 1) Remove the upper unit.
- 2) Slightly tilt the optical unit ① and remove the connector ② (with lock). Unhook the 2 fitting parts ③ and remove the lamp ④.

Note: Do not touch the glass tube of the lamp. Be sure to turn the power OFF since the high voltage is applied to the lamp.

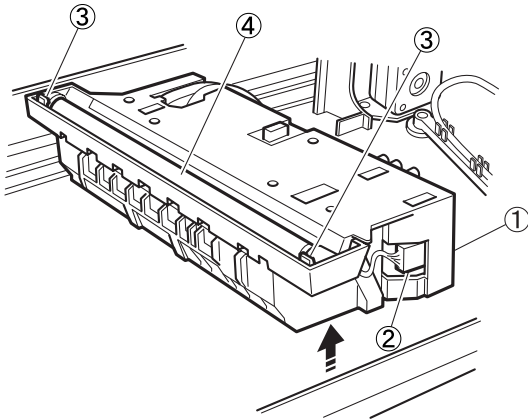


Figure 3-410

3. Motor Unit

- 1) Remove the upper unit.
- 2) Remove the contact assembly.
- 3) Remove the 2 screws ① and remove the motor unit ②.

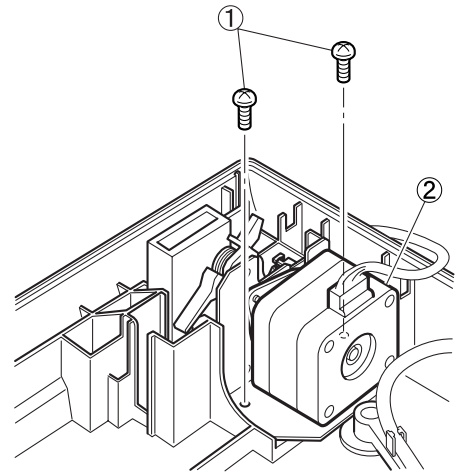


Figure 3-411

* Notes on assembly

Reeve the belt for the optical unit on the pulley.

* Tension adjustment for belt

If the tension of the belt for the optical unit needs to be adjusted, use the tension adjustment plate which is mounted on the other side of the motor.

Adjust the belt tension so that teeth are not skipped. If it is too tight, vibration becomes excessive and it is not good.

CHAPTER 4

INSTALLATION & MAINTENANCE

I. INSTALLATION	4-1	IV. LIST OF PERIODIC MAINTENANCE	
II. PERIODICALLY REPLACED PARTS	4-5	ITEMS.....	4-7
III. CONSUMABLE PARTS	4-6		

I. INSTALLATION

1. Unpacking

Open the outer packaging box and take out the main body and other items packed with it. Check that there are no missing items. The unpacking procedure is indicated on the box.

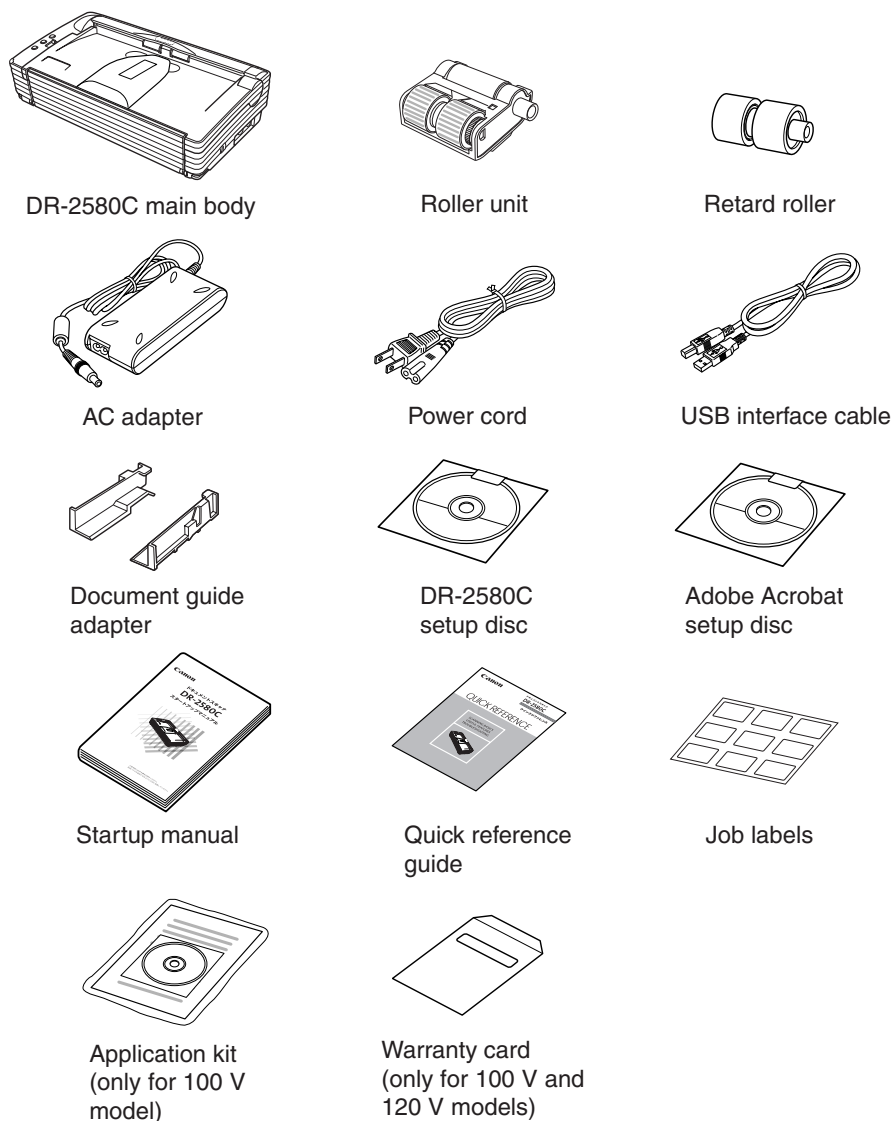


Figure 4-101

- The DR-2580C setup disk is inserted in the startup manual.
- Retain the outer packaging box and packing materials because they are required to store and transport this machine.

2. Protection Material Removal

- 1) Remove the protection tape from the main body.

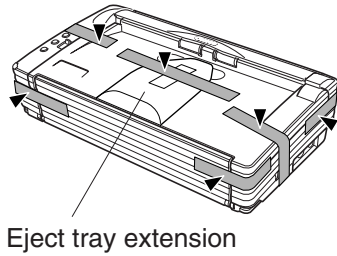


Figure 4-102

Note:When removing the protection tape holding the eject tray extension, remove it while holding the eject tray extension by hand.

- 2) Push both sides of the rear cover, open it backward, and remove the protection sheet.

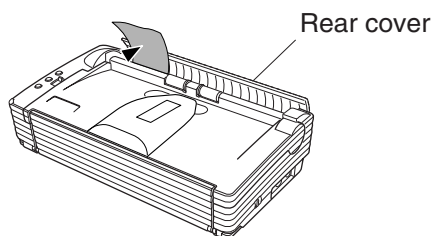


Figure 4-103

- 3) Push both sides of the rear cover and close it.

- 4) Open the pickup tray forward.

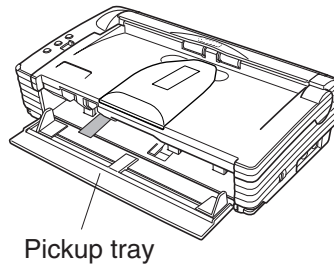


Figure 4-104

- 5) Push the OPEN knob from both sides, open the upper unit slowly, and remove the protection tape and protection sheet.

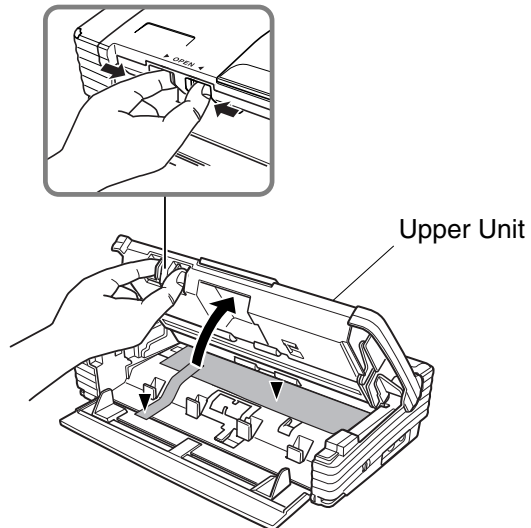


Figure 4-105

- 6) Close the upper unit slowly. Then push both sides of the upper unit with both hands and close it.

3. Roller Installation

Install the supplied “roller unit” and “retard roller” on the main body. For the installation method, refer to the user manual or “CHAPTER 1 INTRODUCTION, VI. User Maintenance” of this manual.

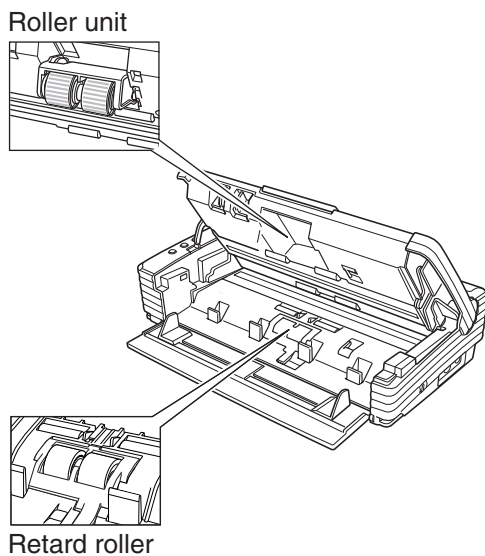


Figure 4-106

4. Connection to the computer

- 1) Check whether the computer has an I/F card and install one if necessary.
- 2) Connect an USB interface cable.
- 3) Connect the supplied AC adapter and power cord. Be sure to use the supplied power cord.
- 4) Switch this machine ON and then turn the computer ON.
- 5) Let the computer to recognize this machine (scanner).
- 6) Install software (drivers and applications) necessary for the computer.
- 7) Restart the computer as required.

5. Operation Check

- 1) Install the supplied document guide adapters as required.
- 2) Set documents.
- 3) Run the application software according to the operation procedure.
- 4) Check operation results.

6. Flatbed Unit Installation

This unit is installed by the user. For details, refer to the user manual supplied with the unit.

Switch the DR-2580C OFF when installing the unit.

1) Unlocking

Move the locking plate located under the eject tray extension and unlock the reading unit (optical unit).

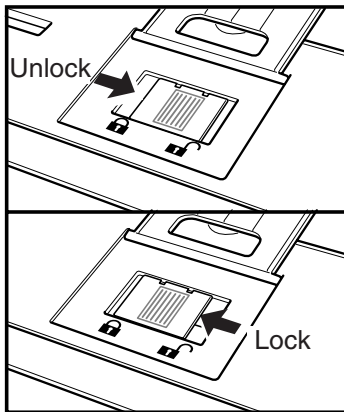


Figure 4-107

2) DR-2580C installation

Set the DR-2580C so that the projection on this unit is inserted into the hole in the bottom of the DR-2580C (①) and slide it forward (②).

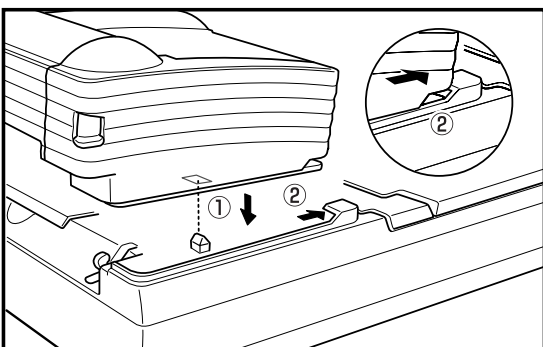


Figure 4-108

3) Scanner fixing

Hang the locking hooks on this unit on the scanner and fix them.

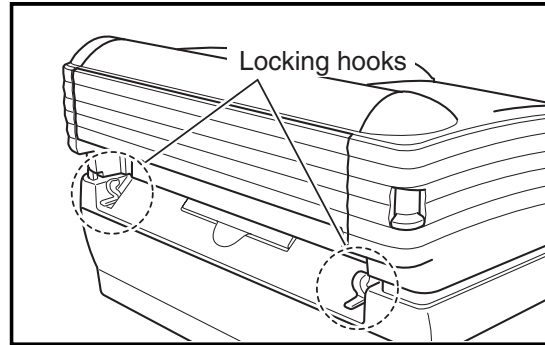


Figure 4-109

4) Connection

Connect the interface cord so that the arrow on the plug of the interface cord faces up.

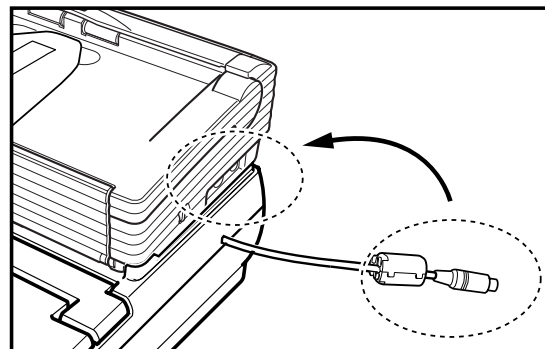


Figure 4-110

II. PERIODICALLY REPLACED PARTS

This machine has no periodically replaced parts, but it has consumable parts.

Reference: Differences periodically replaced parts and consumable parts

1. Periodically replaced parts shall be replaced when becoming at appointed time, and which are usually replaced by service technicians and assigned as service parts. However, if the storage period is limited, parts are assigned as commercially available products.
2. Consumable parts shall be replaced when becoming no good by users or service technicians, and which are assigned as service parts and/or commercially available products.

III. CONSUMABLE PARTS

No.	Part name	Part number	Expected life	Remarks
1	Roller unit	MG1-3720-000	100,000 sheets	It should be replaced when a roller is worn and the pickup failures or document jams are occurred after roller cleaning. Replacement is done by users.
2	Retard roller	MA2-7326-000		

Table 4-301

Note: Each roller is assigned as service parts and also assigned as commercially available products for a set named an exchange roller kit.

IV. LIST OF PERIODIC MAINTENANCE ITEMS

This machine has no items for the periodic maintenance by service technicians.

If service technicians visit users, check the rollers and reading glass and direct "User's Maintenance" if they are very dirty.

Reference:

List of User's Maintenance Items

[△: Cleaning, ●: Replace, ☆: Lubricate, □: Adjust, ◎: Check]

Unit name	Location/Parts	Intervals (sheets)			Remarks
		As necessary	100,000		
Feed section	Roller unit	△	●		Wipe with cloth slightly moistened with water, then wipe dry.
	Retard roller	△	●		
	Registration roller	△			
Reading section	Reading glass	△			
	Shading plate	△			

Table 4-401

Remove the paper dust and other dust on the feed section including document detection sensors as required.

CHAPTER 5

TROUBLESHOOTING

I. ERROR DISPLAY	5-1	IV. OPERATION TROUBLESHOOTING	5-16
II. SERVICE MODE.....	5-2	V. AFTER REPLACING PARTS	5-19
III. IMAGE TROUBLESHOOTING	5-13		

I. ERROR DISPLAY

1. Power Indicator

The DR-2580C does not have an error display area, but some errors are indicated by the power indicator on the operation panel of the main body.

If the DR-2580C operates normally, the power indicator lights. The power indicator blinks if it can not scan the document in case that the upper unit opens or the document jam occurs, etc.

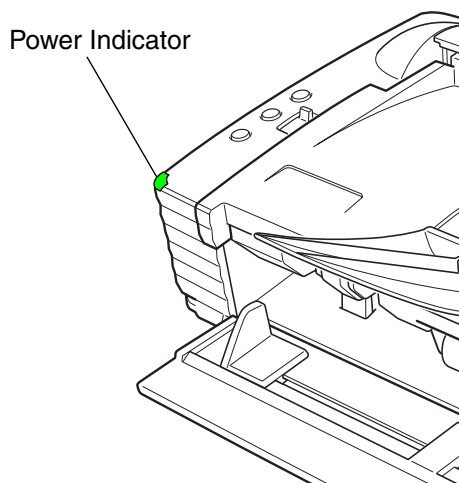


Figure 5-101

2. Error Messages

Error messages are displayed on the display connected to the computer.

The contents of the error message differ depending on the software that is used.

Most error messages are related to improper user operation and document jams. The user shall perform the remedy according to the error message. If the "motor abnormality," etc. occur, the matter must be referred to a service technician.

The followings show the main error messages displayed when the "CapturePerfect 3.0" is used.

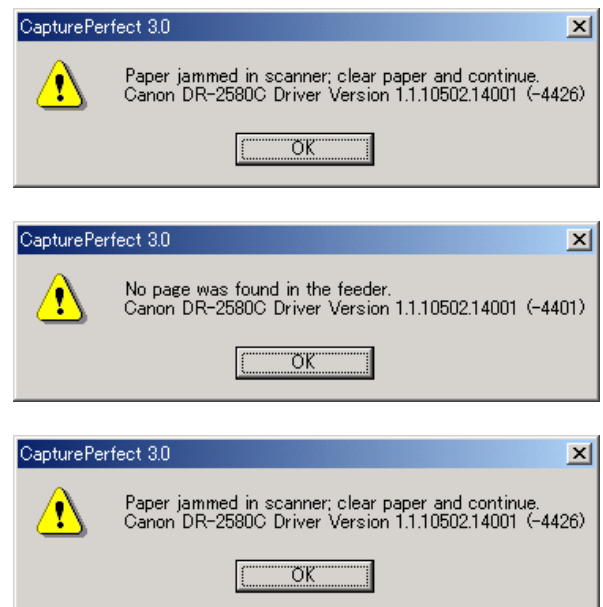


Figure 5-102

II. SERVICE MODE

1. Outline

The service mode of the DR-2580C can be executed by installing on the computer for servicing the service mode software located in the setup disk provided with the DR-2580C.

The system conditions for the computer to be used are the same as those described in the user manual. If the CPU performance or memory capacity is lower, the processing time might be longer, but the service mode can still be used.

Figure 5-201 shows the service screen.

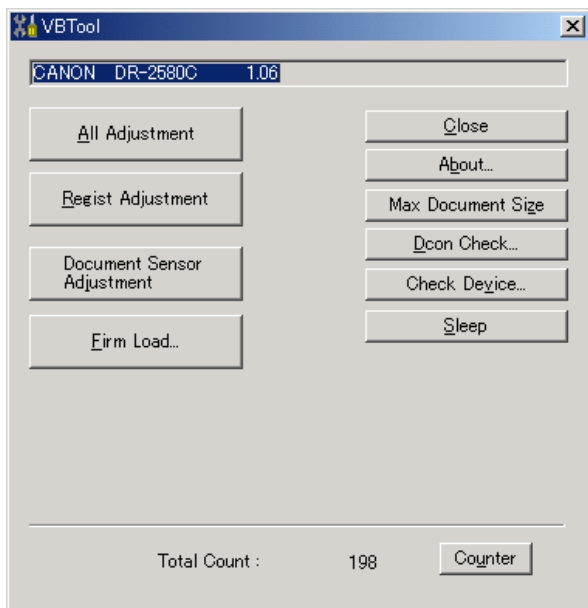


Figure 5-201

The service screen displays the buttons for selecting the various modes. Each service mode is performed from this screen.

Table 5-201 shows the list of the service modes.

No.	Button name/Functions
1	All Adjustment Perform all adjustments related to image reading.
2	Regist Adjustment Perform the registration adjustments.
3	Document Sensor Adjustment Perform the document board sensor adjustments.
4	Firm Load Change the firmware.
5	About Display this service mode version.
6	Max. Document Size Set the long document mode.
7	Dcon Check Check the operation of the hardware such as operation buttons, sensors, motors, etc.
8	Check Device Display the version of the internal devices of the DR-2580C.
9	Sleep Set the sleep mode.
10	Counter Display and change the total count (cumulative number of sheets fed) and the number of document jam.

Table 5-201

2. Installation Procedure

The service mode software installation procedure is described below. Do not install it on the user's computer.

- 1) Power ON the computer for servicing and start up the OS (Windows).
- 2) Set the DR-2580C setup disk supplied with this machine.
- 3) Copy the “\Driver\Tools” folder in the setup disk to one of the drives of the computer for servicing.

Note:For how to install the software provided with the DR-2580C, refer to the user manual.

However, for the specifications, such as the maximum number of documents that can be scanned at one time, see the computer system conditions described in the user manual.

3. Starting Up and Exiting Service Mode

The procedure for starting up the service mode is described below.

- 1) Connect the computer for servicing with the DR-2580C using a USB interface cable.
- 2) After powering ON the DR-2580C, power ON the computer.
- 3) Open the installed “Tools” folder and start up the “VBTool.exe” file. (See Figure 5-202.)
- 4) The password screen is displayed, so after inputting the six characters “market,” select [OK]. (See Figure 5-203.)
- 5) The service screen is displayed.

To exit the service mode, select [Close] in the service screen.

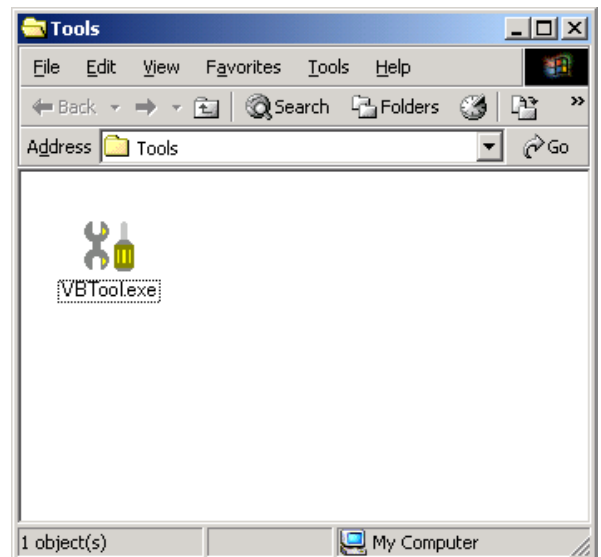


Figure 5-202



Figure 5-203

Note: After the DR-2580C is connected to the computer and the computer is powered ON for the first time, a screen requesting installation of “New Hardware” or a “Device Driver” is displayed. In this case, perform the “Scanner Recognition” according to the user manual.

Note: To execute the service mode with the user's computer, start up “VBTool.exe” on the setup disk supplied with the DR-2580C. Do not copy this program to the user's computer. Do not let the user know the folder name and password to be used.

4. All Adjustment

This mode is used to adjust all image reading adjustments at the same time. Since the adjustment value is saved on the control PCB, be sure to execute this mode after the control PCB have been replaced.

This mode consists of two individual adjustment items: “Regist Adjustment” and “Document Sensor Adjustment.”

- Operating Procedure

- 1) Clean the document board sensor window, the shading plate and the reading glass.
- 2) Set a piece of regular white copy paper (A4/LTR). The paper can be set both vertically and horizontally. Set the document guide position to the paper. This paper is used to perform “Regist Adjustment.”
- 3) Select [All Adjustment] on the service screen.

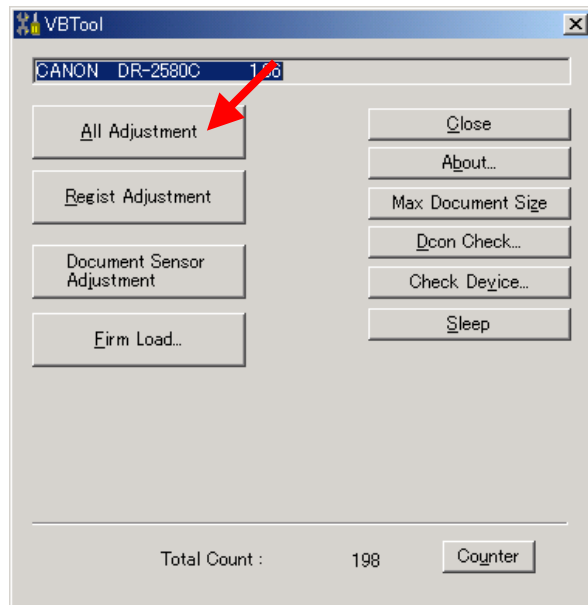


Figure 5-204

- 4) The adjustment starts automatically. The progress screen appears on the display. An example of display is shown below.

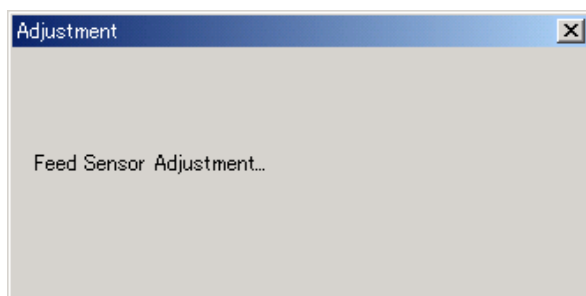
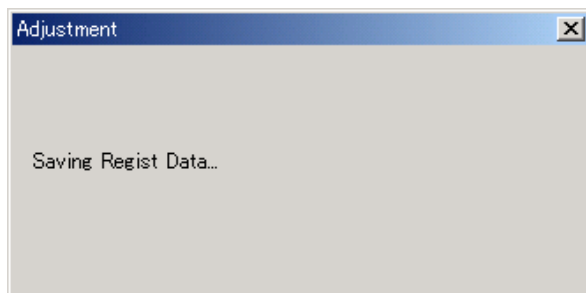
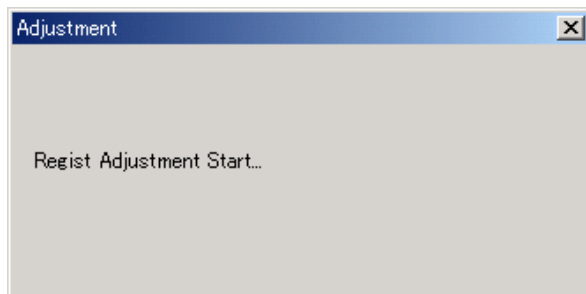
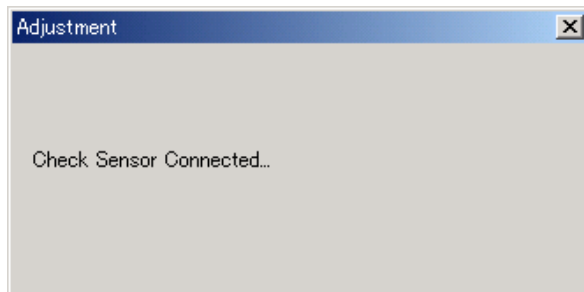


Figure 5-205

- 5) When the adjustment is finished, the progress screen disappears and the service screen appears.

It takes approx. 10 seconds to finish.

- Errors

If an adjustment value failure occurs in the while executing this mode, an error screen is displayed, and adjustment is interrupted. If an error screen is displayed, select [OK] in the screen to stop adjustment. Then after checking the operating procedure, perform adjustment again. If adjustment is interrupted, the adjustment value remains the value prior to adjustment.

Sample error screens are shown below.



Figure 5-206

5. Individual Adjustments

This section describes the following individual adjustment items. If all the two adjustments are performed, use [All Adjustment].

- [Regist Adjustment]
- [Document Sensor Adjustment]

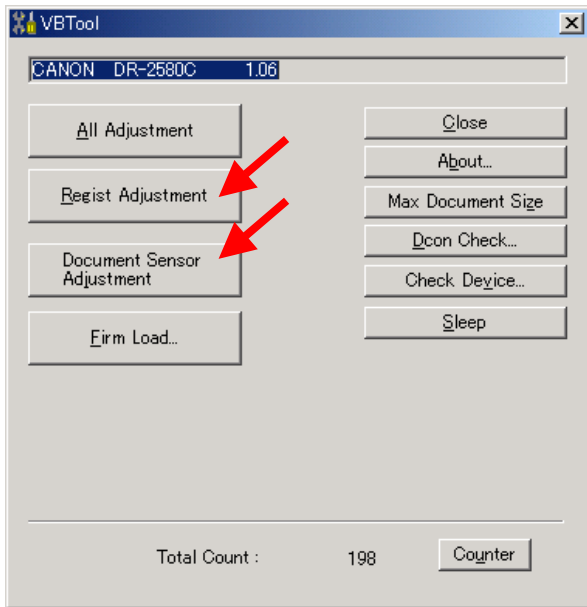


Figure 5-207

a. Regist Adjustment

The reading position is adjusted in this mode. Execute this mode if the leading edge and trailing edge of a read image are faulty.

- Operating Procedure

- 1) Set a piece of regular white copy paper (A4/LTR). Set the document guide position to the paper.
- 2) Select [Regist Adjustment] on the service screen.
- 3) The adjustment starts automatically. The progress screen appears on the display.
- 4) When the adjustment is finished, the progress screen disappears and the service screen appears.

b. Document Sensor Adjustment

The detection level of the document board sensor is adjusted in this mode. Execute this mode if there is a problem with document detection when a document is set.

Since this sensor is affected by stain on the sensor window and the external light, the sensor window should be cleaned and external light should be adjusted to the using state when executing this mode.

- Operating Procedure

- 1) Clean the document board sensor window.
- 2) Select [Document Sensor Adjustment] on the service screen.
- 3) The adjustment starts automatically. The progress screen appears on the display.
- 4) When the adjustment is finished, the progress screen disappears and the service screen appears.

6. Dcon Check

This mode is used when checking the operation of the hardware controlled with the control PCB.

- Operation screen

When [Dcon Check] is selected on the service screen, the operation screen is displayed.

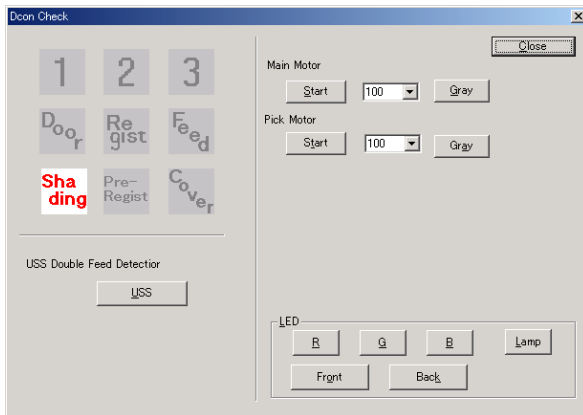


Figure 5-208

- a. Job buttons

When the job button is pressed, the corresponding mark lights.



Figure 5-209

- b. Sensors

When sensors enter the detection state, the corresponding mark lights. The case where the shading sensor enters the detection state is shown below.



Figure 5-210

Note 1: If the upper unit or the rear cover is open, the registration sensor function is invalid and its display is not correct.

Note 2: “USS Double Feed Detection” at the lower left side of the screen does not need to be used until the ultrasonic sensor is installed.

The contents of marks are shown below.

Mark	Sensor name	Lighting state
Door	Upper opening sensor	The upper unit is open.
Re gist	Registration sensor	The registration sensor detects a document.
Feed	Document board sensor	A document is set.
Sha ding	Shading sensor	The reading unit (lower) is at the shading position.
Pre-Regist	Pre-registration sensor	The pre-registration sensor detects a document.
Cover	Rear cover sensor	The rear cover is open.

Table 5-202

c. Motor

This section describes the operation check of the carry motor (main motor) and the eject motor (pick motor).

When the reading mode and resolution corresponding to each motor are selected and the [Start] button is selected, the motor runs at the speed that meets the conditions. When the button is selected again, the motor stops.

The operation screen is shown below.

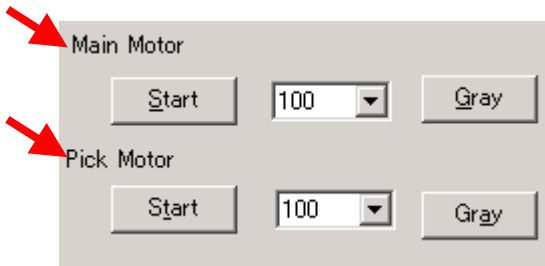


Figure 5-211

d. LED and lamp

The confirmation of the lighting of the lamp of the CIS unit LED and optional flatbed unit is shown.

When the corresponding button is selected, the lamp lights.

However, in case of the CIS unit LED, the lamp does not light unless the upper opening sensor is turned "ON." Open the upper unit, insert a piece of paper like folded thick paper into an opening of the upper opening sensor and hold it. Refer to Figure 5-212. When the sensor is "ON," the power indicator lights.

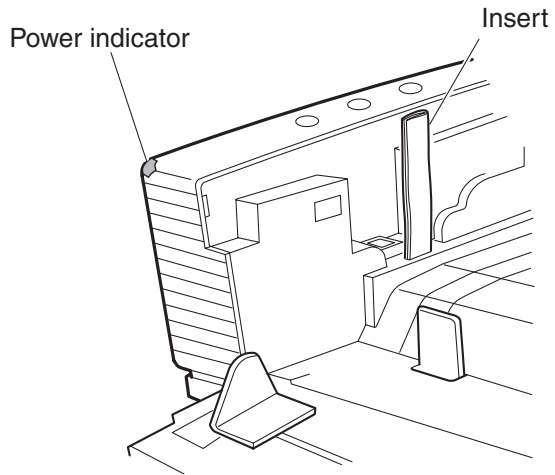


Figure 5-212

Select a reading surface (front, back) in addition to a color (R, G, B). In case of the flatbed unit lamp, select the [Lamp] button. When the button is selected again, it turns "OFF."

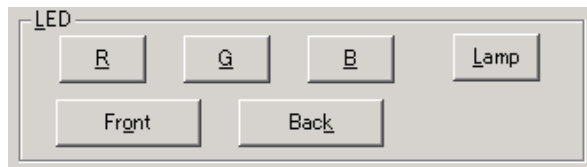


Figure 5-213

7. Max Document Size

This mode is used to set the long document mode. However, the long document mode is not standard specification, so it is used for special users only. Do not use it for general users.

When the long document mode is set, the document length is 1000 mm at the maximum, but there are restrictions shown below:

- Document size: "Automatic detection" only
- Feed: Feed a sheet of paper. Performance of paper pickup/eject is not guaranteed.

When [Max Document Size] is selected on the service screen, the setting screen is displayed. To set the long document mode, change the setting to [1000.0(mm)] and press the [OK] button.

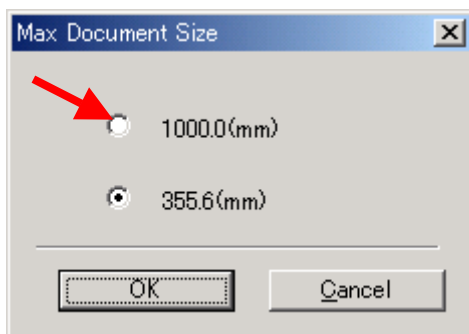


Figure 5-214

8. Sleep

This mode is used to set so that the sleep mode is not effective. However, the sleep mode OFF is not the standard specification, so it is used for special users only. Do not use it for general users.

When [Sleep] is selected on the service screen, the setting screen is displayed. To set the sleep mode OFF, change the setting to [Sleep Mode Off] and press the [OK] button.

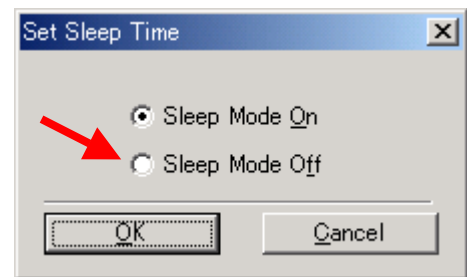


Figure 5-215

9. Check Device

This mode is used to check the versions of the internal devices of the DR-2580C.

When [Check Device] is selected on the service screen, the version screen is displayed.

[MAIN] indicates the version number of the firmware of the control PCB.

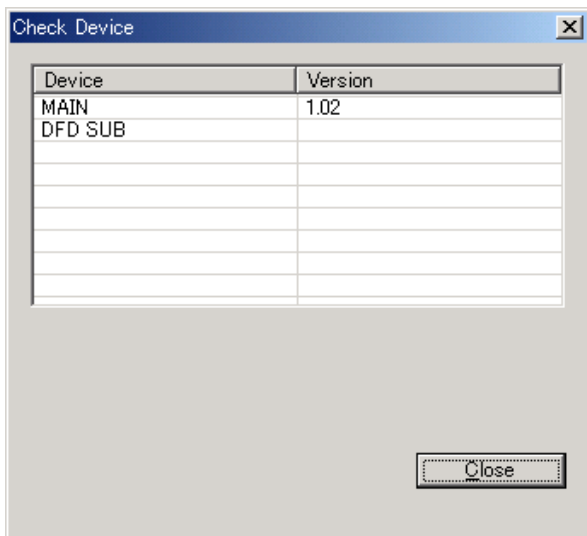


Figure 5-216

10. About

This mode is used to check the version of the software for this service mode.

When [About] is selected on the service screen, the version screen is displayed.

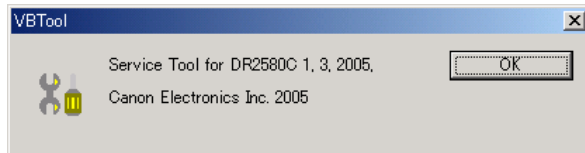


Figure 5-217

11. Counter

This mode is used to display/change total count (cumulative number of feed sheet) and display/change the number of document jams.

When [Counter] is selected on the service screen, the counter screen is displayed.

These values might be changed if the control PCB is replaced. Therefore, inputting the values again is required after the replacement. If the values before the replacement are not clear, it is better to input the recommended values.

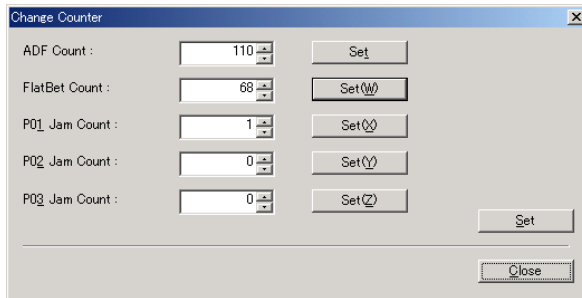


Figure 5-218

The contents of display are as follows:

- ADF Count
Indicates total count of the main unit.
- FlatBed Count
Indicates the number of scan of the flatbed unit.
- P01_Jam Count
Indicates the number of early reach jams.
- P02_Jam Count
Indicates the number of residual jams.
- P03_Jam Count
Indicates the number of fast feed jams.

The “Total Count” shown at the bottom of the service screen is the total of “ADF Count” and “FlatBed Count”.

When the [Set] button on the right or the [Set] on the lower right of the screen is selected after the value is changed, the changed value is determined.

To close the screen, press the [Close] button.

12. Firm Load

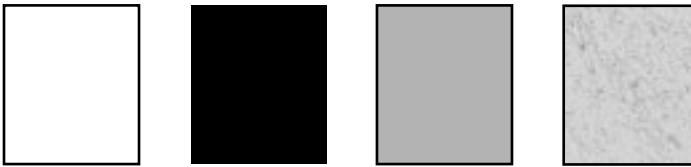
This mode is used to change the firmware of the DR-2580C. For details, refer to the service information issued during firmware changes. Be careful not to execute this mode by mistake.

- Operation procedure outline
 - 1) Select [Firm Load] in the service screen.
 - 2) The screen for selecting the file in which the firmware is saved is displayed.
 - 3) Select and open the file.
 - 4) The firmware is loaded to the DR-2580C.

III. IMAGE TROUBLESHOOTING

There are times when, depending on the type of image and settings, document reproducibility becomes poor. In such case, the image may be improved by changing the settings.

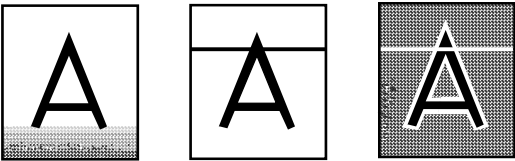
1	No image is output (completely white, completely black, completely gray, mottled)
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Cause/Faulty location	Step	Check Item	Result	Action
"Brightness" setting	1	Is the "Brightness" setting appropriate?	NO	Change the setting. Also change "Contrast" if necessary.
Reading glass	2	Is the reading glass clean?	NO	Clean it. If necessary, clean the roller too.
Shading plate	3	Is the shading plate clean?	NO	Clean it.
	4	Does the reading unit (lower) move when the power is turned ON?	NO	Check the mechanism related to the movement of the reading unit (lower).
Connection of reading unit	5	Are the reading related cables connected properly?	NO	Connect them properly.
Reading unit	6	Is the problem solved when the reading unit is replaced?	YES	End.
Control PCB	7	Is the problem solved when the control PCB is replaced?	YES	End.

Table 5-301

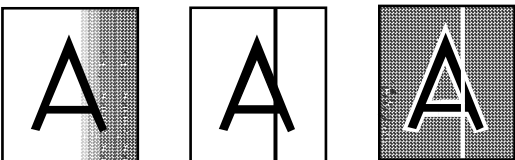
2 Uneven density, streaks (main-scanning direction)



Cause/Faulty location	Step	Check Item	Result	Action
Roller	1	Are the roller unit and retard roller properly installed?	NO	Install them properly.
	2	Are they dirty or deformed?	NO	Clean or replace them.
Gear, belt	3	Does it turn smoothly?	NO	Adjust assembling or replace parts.
Motor (M1, M2)	4	Is the problem solved when the motor is replaced?	YES	End.
Reading unit	5	Is the problem solved when the reading unit is replaced?	YES	End.
Control PCB	6	Is the problem solved when the control PCB is replaced?	YES	End.

Table 5-302

3 Uneven density, streaks (sub-scanning direction)



Cause/Faulty location	Step	Check Item	Result	Action
Reading glass	1	Is the reading glass clean?	NO	Clean it. If necessary, clean the roller too.
Shading plate	2	Is the shading plate clean?	NO	Clean it.
	3	Does the reading unit (lower) move when the power is turned ON?	NO	Check the mechanism related to the movement of the reading unit (lower).
Reading unit	4	Is the problem solved when the reading unit is replaced?	YES	End.
Control PCB	5	Is the problem solved when the control PCB is replaced?	YES	End.

Table 5-303

4	Faulty images of flatbed unit
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Cause/Faulty location	Step	Check Item	Result	Action
Document board glass	1	Is the document board glass clean?	NO	Clean it. Clean the inside glass surface if necessary.
Gear, belt, guide shaft	2	Does the optical unit move smoothly?	NO	Adjust assembling. (It includes the belt tension adjustment.) Replace parts.
Motor (M3)	3	Is the problem solved when the optical motor is replaced?	YES	End.
Optical unit	4	Is the problem solved when the optical unit is replaced?	YES	End.

Table 5-303

IV. OPERATION TROUBLESHOOTING

When an operation problem occurs, first check for an “Error Messages” on the display connected to the computer. In addition, check the operation of the various sensors, motors using the “Service Modes.”

1	No power
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Note: The machine power indicator does not light.

Cause/Faulty location	Step	Check Item	Result	Action
Connection of power cord	1	Are the power cord and AC adapter connected?	NO	Connect it properly.
AC power supply voltage	2	Is the specified voltage supplied at the outlet?	NO	Explain to the user that the trouble is not with the machine.
Power switch	3	Is the power switch turned ON?	NO	Turn the power switch ON.
PCB unit (connection)	4	Is the control PCB connected to the switch PCB connect?	NO	Connect it properly.
	5	Connect the power code and turn the power lever sensor ON. Does the LED of the control PCB light or blink properly?	YES	The power is supplied properly. Find out the other causes such as sensors, motors, etc.
	6	Is the problem solved when the switch PCB or control PCB is replaced?	YES	End.

Table 5-401

2	Computer does not recognize the machine
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Cause/Faulty location	Step	Check Item	Result	Action
Power supply	1	Is the power supplied to the machine?	NO	Perform the actions in section 1: "No power."
Connection of USB interface cable	2	Is the USB interface cable properly connected?	NO	Connect it properly.
Computer, I/F card	5	Are the computer and I/F card set properly?	NO	Use them properly.

Table 5-402

3	Motors do not operate
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Cause/Faulty location	Step	Check Item	Result	Action
Power supply	1	Is the power supplied to the machine?	NO	Perform the actions in section 1: "No power."
Connectors	2	Are the connectors for the motor connected properly?	NO	Connect them properly.
Transmission system load	3	Is the transmission system driven by the motor normal? Are such parts as gears and belts normal?	NO	Remove the abnormal load. Replace needed parts.
Sensor	4	Is the operation normal when checking the sensor detection display in the service mode?	NO	Replace the sensor.
	5	Is the problem solved when performing "Document Sensor Adjustment" in the service mode?	YES	End.
Motor	6	Is the operation normal when checking the operation in the service mode?	NO	Replace the motor.
Control PCB	7	Is the problem solved when the control PCB is replaced?	YES	End.

Table 5-403

4 Faulty document feeding (jam/double feed/wrinkles)

Cause/Faulty location	Step	Check Item	Result	Action
Document	1	Is the document within the specifications (thickness, dimensions, fold, curl, etc.)?	NO	Ask the user to use documents within the specifications.
Roller	2	Are the roller unit and retard roller properly installed?	NO	Install them properly.
	3	Are they dirty or deformed?	NO	Clean or replace them.
Parts in feed path	4	Are all parts that the documents contact properly installed (not loose or tilted)?	NO	Install them properly.
	5	Is the surface in contact with the document smooth (not scratched, no burrs)?	NO	Replace faulty parts.
Drive transmission system	6	Is any abnormal noise emitted when feeding documents? Are any gears broken or is the belt tension failed?	YES	Replace faulty parts. Adjust the belt tension.

Table 5-404**5 Flatbed unit does not operate**

Cause/Faulty location	Step	Check Item	Result	Action
Installation	1	Are the I/F cable connection, unlocking, and fixing to the main body correct?	NO	Set it properly.
“Reading side” setting	2	Is the “Reading side” set to “Flatbed”?	NO	Change the settings.
Motor (M3)	3	Is the problem solved if the optical motor is replaced?	YES	End.

Table 5-405

V. AFTER REPLACING PARTS

Some of the parts used in this machine require adjustments and settings after being replaced or disassembled/reassembled.

Check document feed and images after the replacement or disassembly/reassembly of the parts.

1. Control PCB

- 1) Perform “All Adjustment” and “Counter” in the service mode.
- 2) Perform the following service mode settings if required.
 - “Max Document Size”
 - “Sleep”

2. Registration Adjustment

Perform “Regist Adjustment” in the service mode when failures occur on the leading edge or trailing edge of scanned images after replacing or reassembling parts related to registration such as a registration sensor lever.

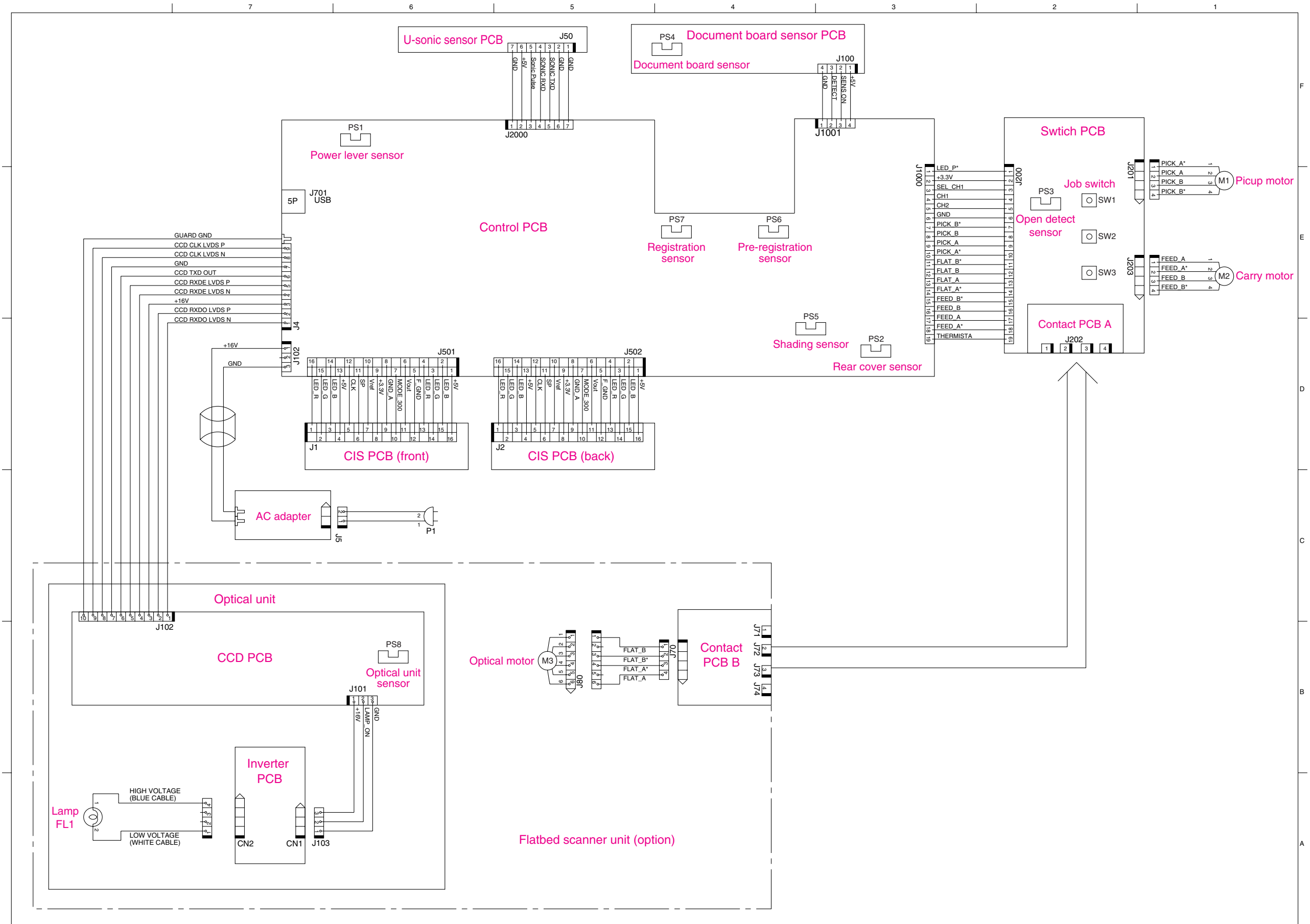
3. Document Board Sensor, Document Board Window, etc.

Perform “Document Sensor Adjustment” in the service mode when the document detection failures occur after replacing or reassembling parts related to the document board sensor.

APPENDIX

I. GENERAL DIAGRAM	A-1
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I. GENERAL DIAGRAM



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