imageFORMULA DR-M260

SERVICE MANUAL

Canon

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Rev. 0

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

PREFACE

This Service Manual describes necessary basic information for field service and maintenance for maintaining the product quality and functions of this machine.

Contents

Chapter 1: General description
Product 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
Error display and troubleshooting

Appendix: General diagram 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

I. PRODUCT OUTLINE 1-1
II. NAME OF PARTS 1-6
III. USER OPERATION 1-7

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I. PRODUCT OUTLINE

1. Features

1) High-speed machine with straight path
   This is successor model for the DR-M160II

2) Scanning speed (A4, 200dpi)
   B&W, Gray and Color modes: 60ppm/120ipm

3) Support USB3.1 Gen1 (Super Speed)

4) Improvement of reliability for the pickup and separation operations
   New mechanisms are provided
   Improvement of reliability by error detection sensor

5) Equip new image processing chip
   Achieve High-speed image processing by equipped the chip without support of PC

6) Includes easy to user application software
   CaptureOnTouch / CapturePerfect

“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.

2. Main Specifications

No.	Item	Specifications
1	Type	Desktop type sheet-fed scanner
2	Dimensions *See details at following.	1) Tray closed: 285 (W) x 254 (D) x 231 (H) mm 2) Tray opened: 285 (W) x 652 (D) x 367 (H) mm
3	Weight	3.4 kg (Main body only)
4	Power supply	AC adaptor 1) Input: 100V - 240VAC, 50/60Hz 1.06A (100V)-0.6A (240V) 2) Output: 24VDC, 2.0A
5	Power consumption	1) Maximum operation: 23W or low 2) Sleep mode: 1.4W or low 3) Power switch OFF: 0.1W or low
6	External interface	USB3.1 Gen1 (Super Speed)
7	Expected product life (In-house information only)	One of the following two items, whichever comes first. 1) 5 years 2) 2,500,000 sheets (A4) *Replace parts if necessary.
8	Installation	By user
9	Option	1) Flatbed scanner: FSU102, FSU201 2) Barcode module (software) 1-dimention, 2-dimenttions 3) Carrier sheet: For A4, and passports
10	Consumable parts (Commercial goods)	1) Exchange roller kit *Pickup roller and separation roller *Replacement by users. Expected life is 200,000 sheets
11	Bundle software	1) ISIS/TWAIN driver 2) CapturePerfect 3.1 3) CaptureOnTouch
12	Sensor type, Density	1 line/4 parallel-CMOS contact image sensor, 600dpi
13	Sensor operation mode	600dpi or 300dpi
14	Effective reading width	219mm (5184 pixels)
15	Light source	3-color (RGB) LED, Single-side illumination
16	Background color	White
17	Image data memory	DDR3-SDRAM 1GB *Used for the working memory together.

Table 1-101a

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<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>18</td><td>Output data to computer</td><td>1) Type: 8bit gray, 24bit color (JPEG outputting), or B&W
2) Resolution: 600x600dpi, 400x400dpi, 300x300dpi, 240x240dpi, 200x200dpi, 150x150dpi, 100x100dpi</td></tr>
<tr><td>19</td><td>Mode setting in driver</td><td>1) Binary: B&W, Error diffusion, ATE, ATE-II
2) Gray: 8bit
3) Color: 24bit
*Auto-color detection mode can be available.</td></tr>
<tr><td>20</td><td>Resolution setting in driver</td><td>600x600dpi, 400x400dpi, 300x300dpi, 240x240dpi, 200x200dpi, 150x150dpi, 100x100dpi
*Auto-resolution mode can be available.</td></tr>
<tr><td>21</td><td>Scanning speed (A4 size)</td><td>
<table>
<tr><th>Resolution</th><th>Gray（JPEG）</th><th>Color（JPEG）</th></tr>
<tr><td>200dpi</td><td>60ppm/120ipm</td><td>60ppm/120ipm</td></tr>
<tr><td>300dpi</td><td>60ppm/120ipm</td><td>50ppm/100ipm</td></tr>
<tr><td>400dpi</td><td>30ppm/60ipm</td><td>18ppm/36ipm</td></tr>
<tr><td>600dpi</td><td>30ppm/60ipm</td><td>12ppm/24ipm</td></tr>
</table>
*The numbers above may differ depending on the computer , the function settings and other conditions,
</td></tr>
<tr><td>22</td><td>Document feed path</td><td>Straight path</td></tr>
<tr><td>23</td><td>Document size</td><td>1) Width: 50 to 216mm
2) Length: 54 to 356mm</td></tr>
<tr><td>24</td><td>Document weight (Thickness)</td><td>1) Separation: 27 to 413g/㎡ (0.04 to 0.49mm)
2) Non separation: 27 to 413/㎡ (0.04 to 0.49mm)
*Exchange of separation is done by software.</td></tr>
<tr><td>25</td><td>Special document</td><td>Plastic card, Business card, Folio, Long document (Maximum 5,588mm) and others are available.
*There are some limitations required.</td></tr>
<tr><td>26</td><td>Document storage</td><td>1) Pickup:
A4 or smaller: 80 sheets max. (80 g/㎡) or low.
A4 over: 65 sheets max. (80 g/㎡) or low.
*Limitation on document storage depending on document weight.
2) Eject:
Number of sheets above max. and 15mm height max. (included curls).</td></tr>
<tr><td>27</td><td>Double feed detection</td><td>1) Length detection by registration sensor
2) Double feed detection by ultrasonic sensor</td></tr>
<tr><td>28</td><td>Operation/Indication</td><td>1) Button: Power, Start, Stop, Menu, ▲, ▼, OK
2) LCD: Monochrome LCD (132x65dot), no back light
2) LED: Power
3) Others: OPEN lever</td></tr>
</table>

Table 1-101b

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◆ External dimensions (Unit: mm)

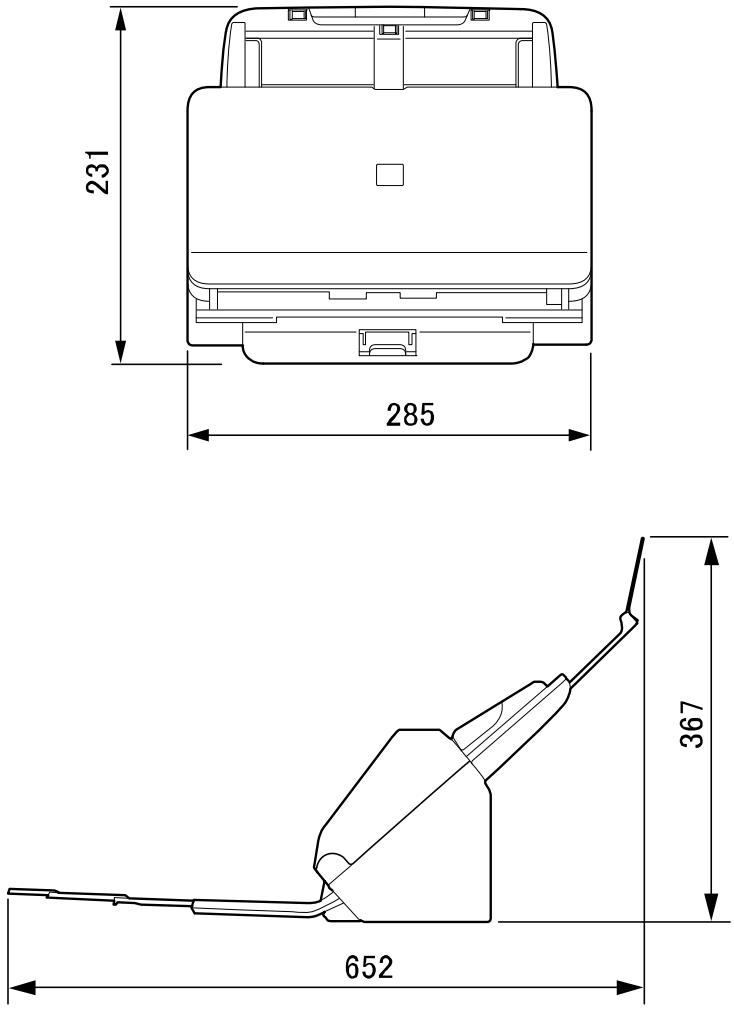

Figure 1-101

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3. Precautions

This section describes items that require particular care, for example, regarding human safety.

These precautions must be observed. The user should be explained the items that relate to user safety and instructed to take appropriate actions.

1) Power OFF in emergency
   If such abnormal conditions as extraordinary noise, smoke, heat and odor occur, immediately unplug the power cord.
   Be careful not to get clothing (ties, long hair, etc.) caught in this machine as it may cause injury. Should this occur, immediately unplug the power cord.
   Do not insert fingers in the feed section while rollers are moving.

2) Power OFF on disassembling
   When disassembling and assembling are performed, unplug the power cord.

3) Prohibition of modify
   This machine must not arbitrarily be modified or remade. If it is modified or remade, use of this machine may be forcibly suspended.
   To change the specifications or disassemble and reassemble this machine, follow the instructions described in this manual and the service information.

4) Electromagnetic wave interference
   This machine complies with some standards regarding electromagnetic wave interference, such as VCCI and FCC. However, the user may have to take countermeasures if the machine causes electromagnetic wave interference.

5) “User Manual”
   Read each “User Manual” thoroughly prior to use of this machine.

6) Disposal
   Follow local regulations when disposing the product and parts. This product is subject to the WEEE Directive in Europe.

II. NAME OF PARTS

1. Name of Parts

◆ Front View

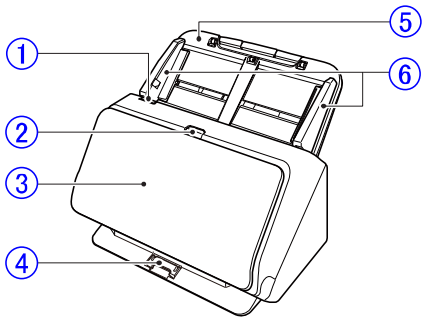

Figure 1-201

① OPEN lever
② Power button
③ Document eject tray
④ Document eject tray support
⑤ Document feed tray
⑥ Document guides

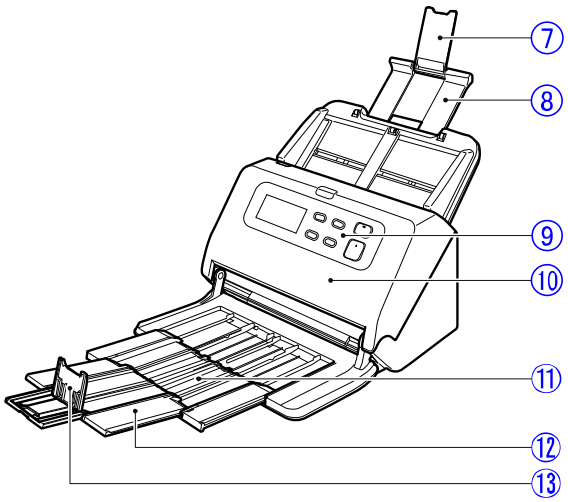

Figure 1-202

⑦ Feed support extension
⑧ Feed support
⑨ Operating panel
⑩ Front unit
⑪ Eject support
⑫ Document eject extension support
⑬ Eject stopper

◆ Rear View

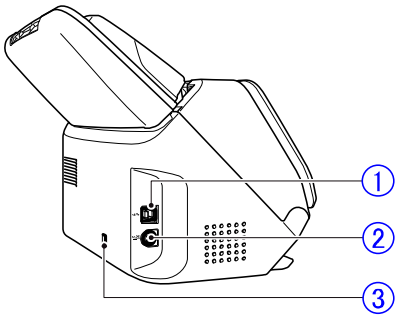

Figure 1-203

① USB connector
② Power connector
③ Security slot

◆ Operation Panel

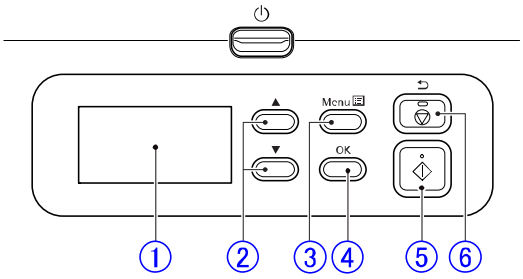

Figure 1-204

① Display panel
② ▲▼ button
③ Menu button
④ OK button
⑤ Start button
⑥ Stop button

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III. USER OPERATION

This section shows how to scan several sheets of a regular paper document using the initial settings of CaptureOnTouch. For details on other operations, refer to the “User Manual” for this machine.

1. Placing Documents

1) Open the document eject tray and use the eject support and feed support, etc. to suit the document.

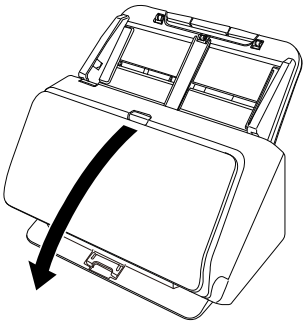

Figure 1-301

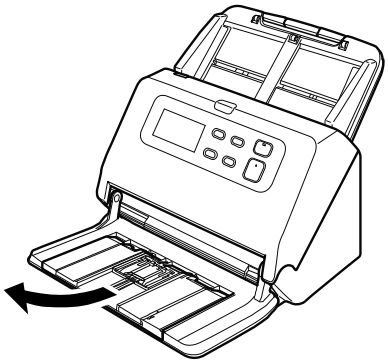

Figure 1-302

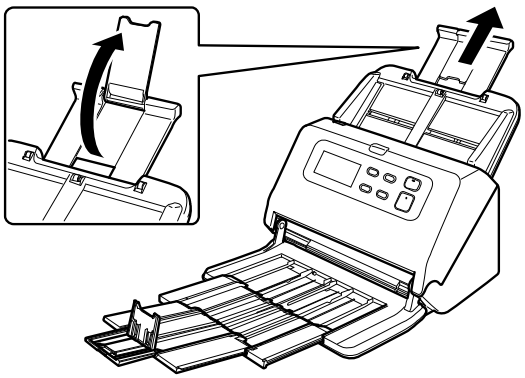

Figure 1-303

2) Place the document, and adjust the document guides to fit the document width.

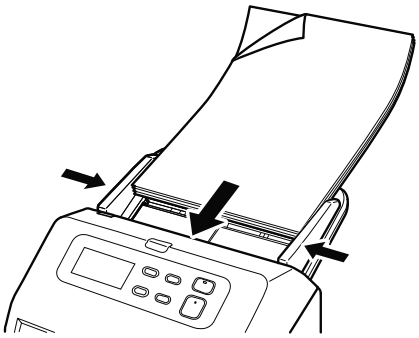

Figure 1-304

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2. Scanning

This section describes how to scan using [3 step scan] in CaptureOnTouch.

Note: CaptureOnTouch is TWAIN compatible application software.

1) Start CaptureOnTouch.
Click the CaptureOnTouch icon in the task bar, then click [Open CaptureOnTouch] on menu to display main menu.

Figure 1-305

2) Select the scanning mode from [1 Select document] according to the document type.
In the figure below, [Full auto] is selected.

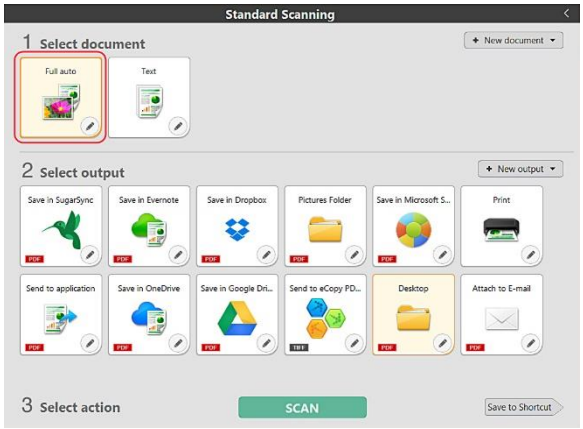

Figure 1-306

3) Select the output settings panel from [2 Select output] according to the purpose of use.
In the figure below, [Desktop] is selected.

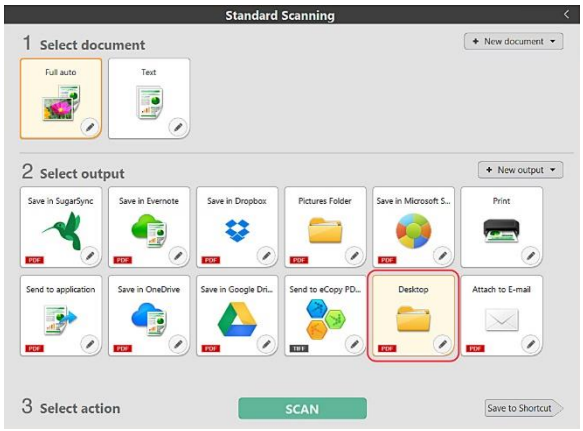

Figure 1-307

4) Click the [SCAN] button to start the scan.

Figure 1-308

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5) Once you have confirmed the image, click the [Finish] button.

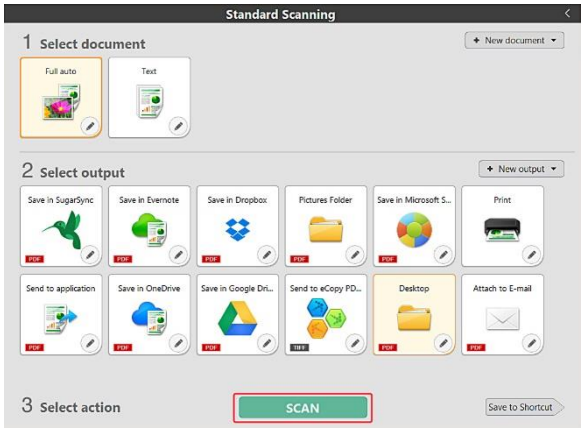

Figure 1-309

3. Clearing Paper Jams

1) Remove any remaining documents from the document feed tray.

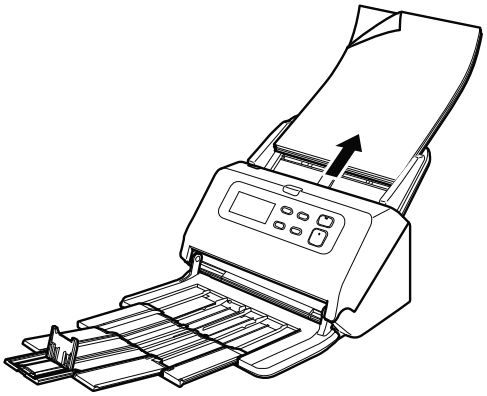

Figure 1-310

2) Pull the OPEN lever and open the front unit out towards you. Remove any jammed documents.

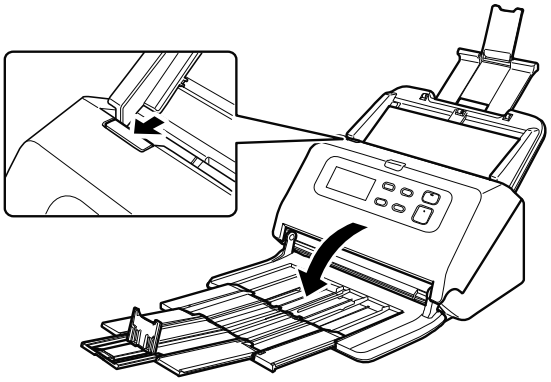

Figure 1-311

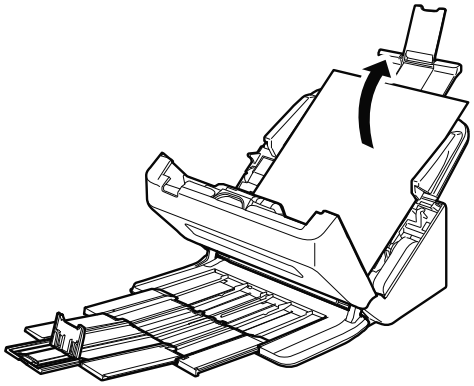

Figure 1-312

CHAPTER 2

FUNCTIONS & OPERATION

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IV. CONTROL SYSTEM....2-14
V. POWER SUPPLY....2-18
VI. ELECTRICAL PARTS LAYOUT....2-19
VII. PARTS LAYOUT ON EACH PCB....2-20

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I. OUTLINE

1. Main Configuration

Figure 2-201 shows the main configuration of this machine.

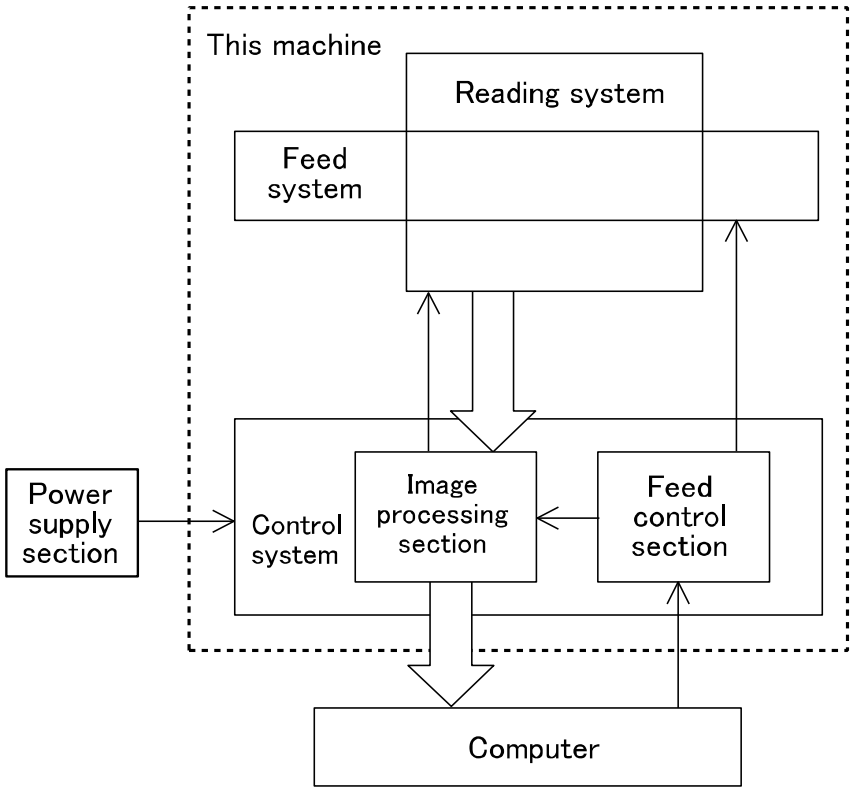

Figure 2-101

1) Reading system
This system reads image data from image sensors.

2) Feed system
This system performs from document pickup to document ejection.

3) Control system
This system is comprised of an image processing section and a feed control section.
The image processing section controls the reading system, and processes the read image data. The computer also processes image data.
The feed control section controls feed system.

4) Power supply section
This section supplies DC power, converted from AC power with the AC adapter, to the control PCB of this machine.

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2. Feed Path

A sectional view of the feed path of this machine is shown below.

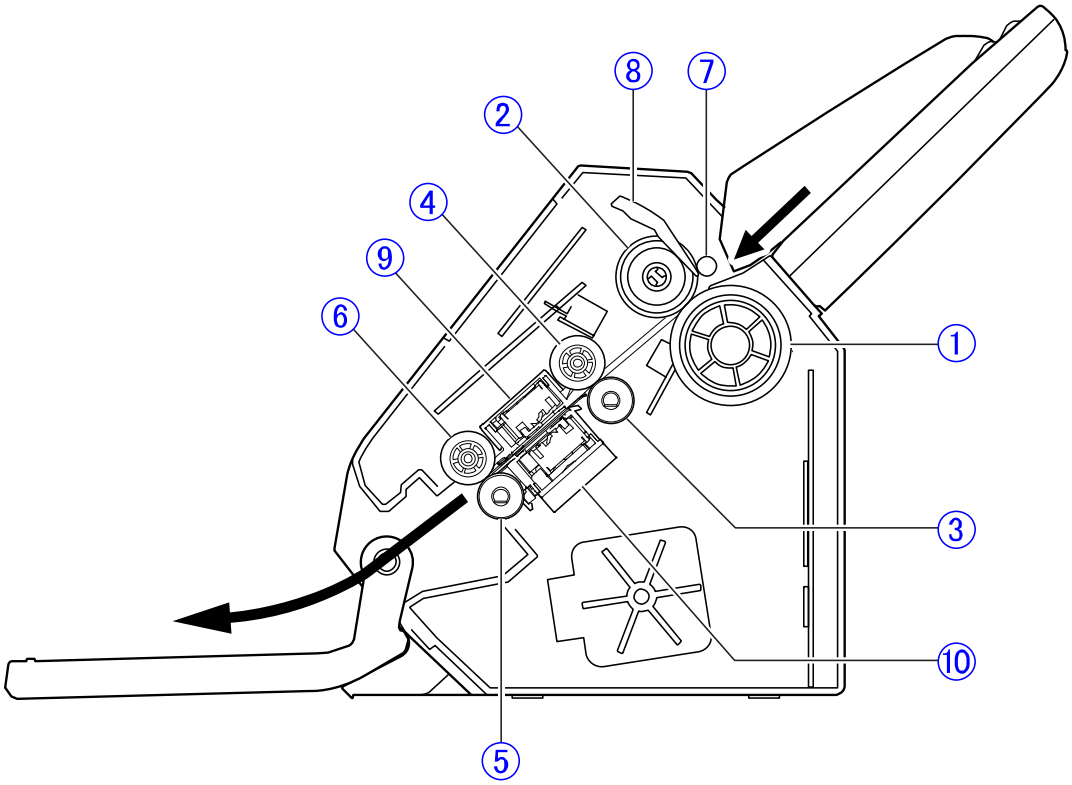

Figure 2-102

① Feed roller
② Retard roller
③ Registration roller (drive)
④ Registration roller (Follower)
⑤ Eject roller (drive)
⑥ Eject roller (Follower)
⑦ Pressure roller
⑧ Document stopper
⑨ Upper reading unit
⑩ Lower reading unit

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3. Motor Drive

This machine has a feed motor for picking up and separating documents and a main motor for feeding documents.

The stopper and pressure roller of the pickup area are also moved up and down by the main motor.

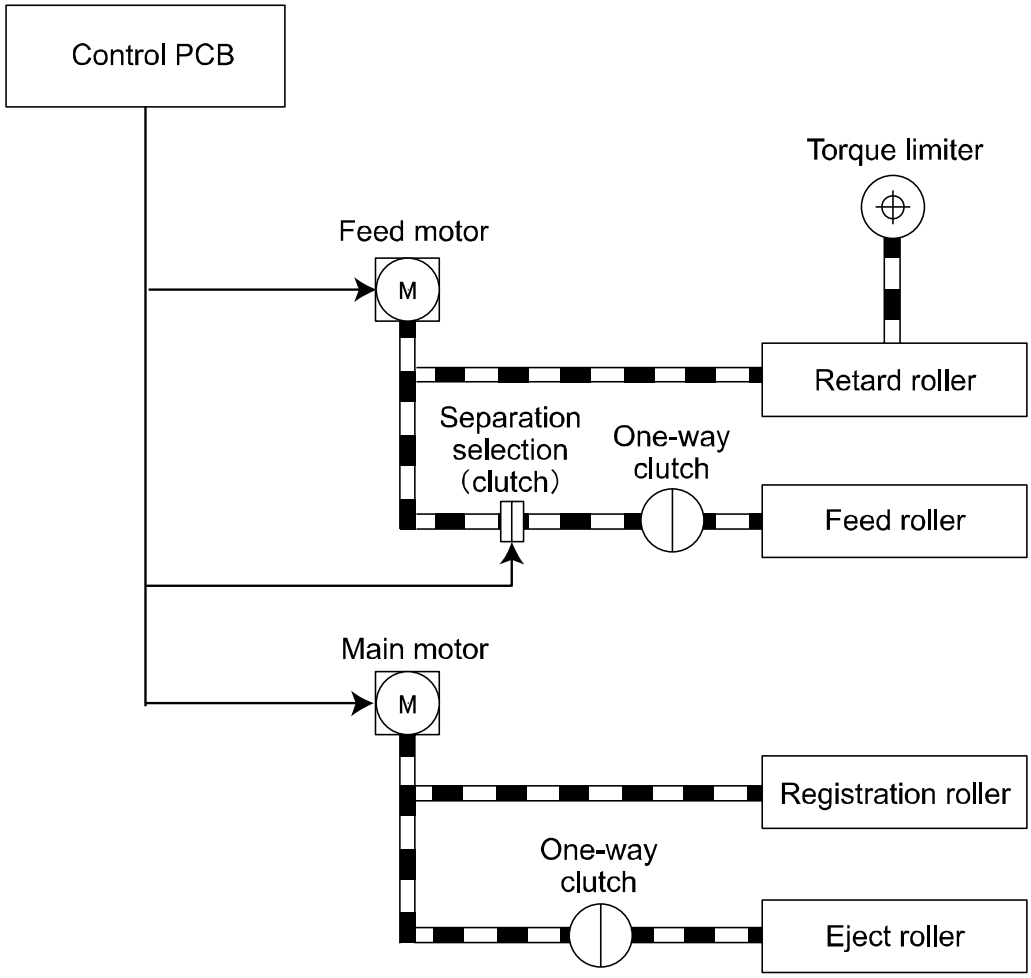

Figure 2-103

4. Electrical Circuits

An overview of the electrical circuits block diagram of this machine is shown below.

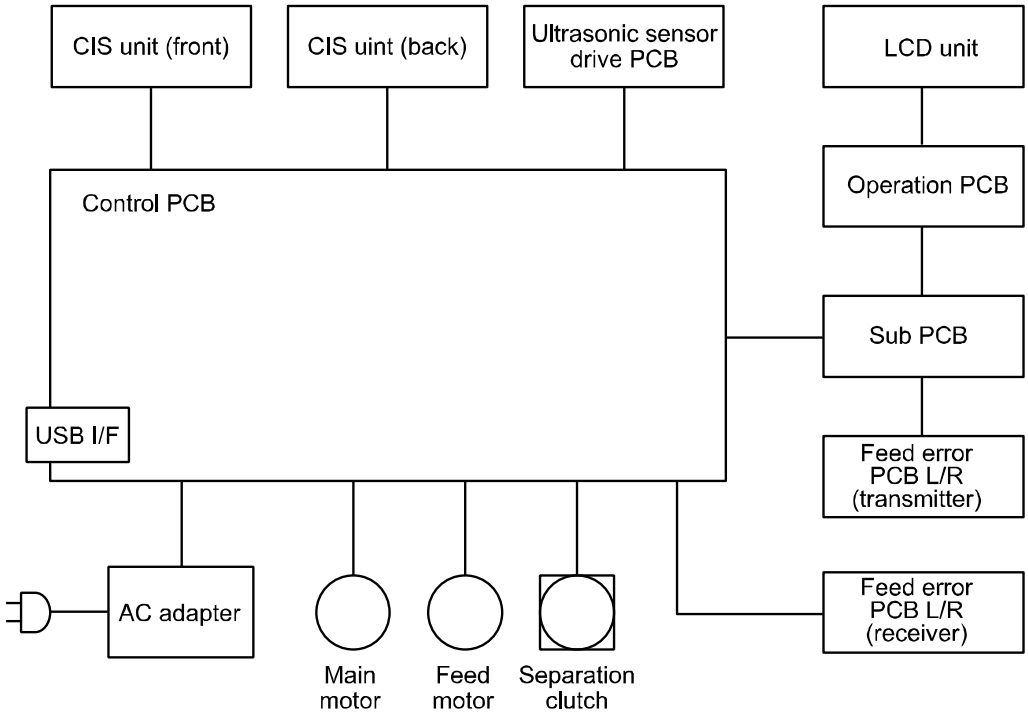

Figure 2-104

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5. Timing Chart

The timing chart when you separately pickup 2 sheets of document without separation retry is shown below.

Once the machine starts scanning, it activates the feed motor and the main motor and feeds the document after the initial operation.

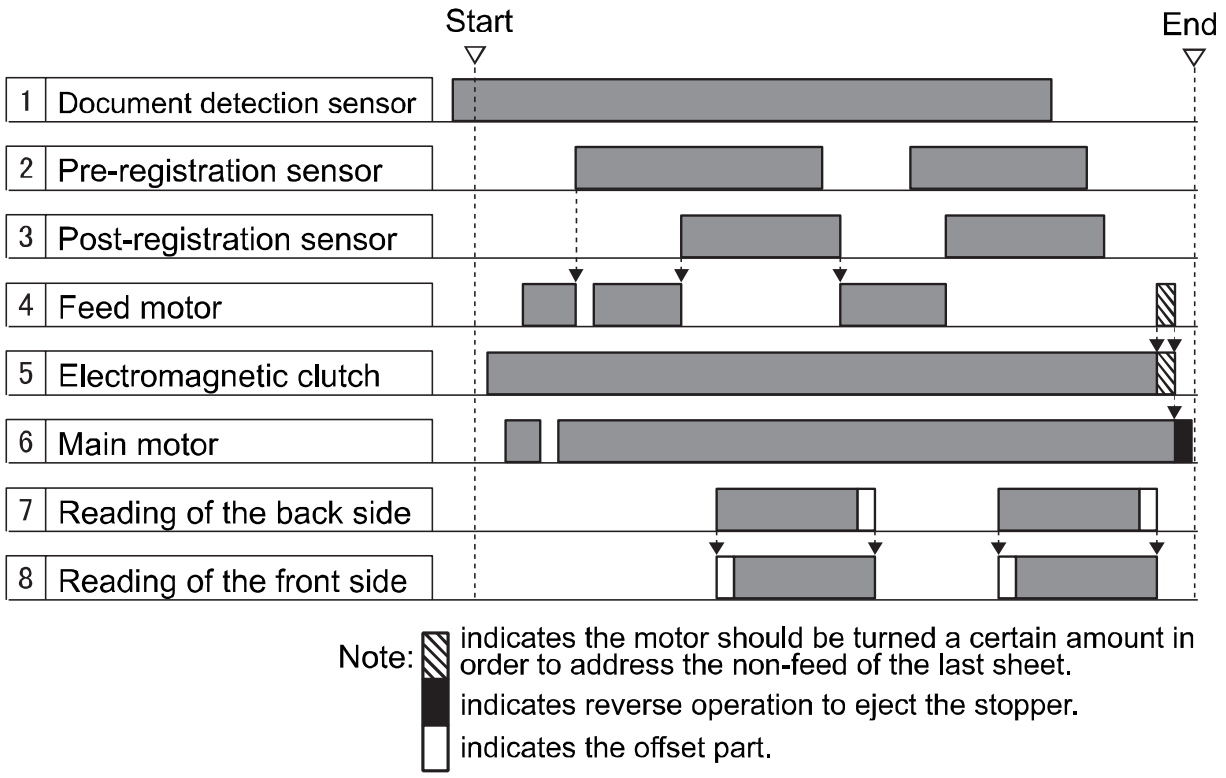

Figure 2-105

II. READING SYSTEM

1. Reading Unit

The sectional view of the reading system is shown below.

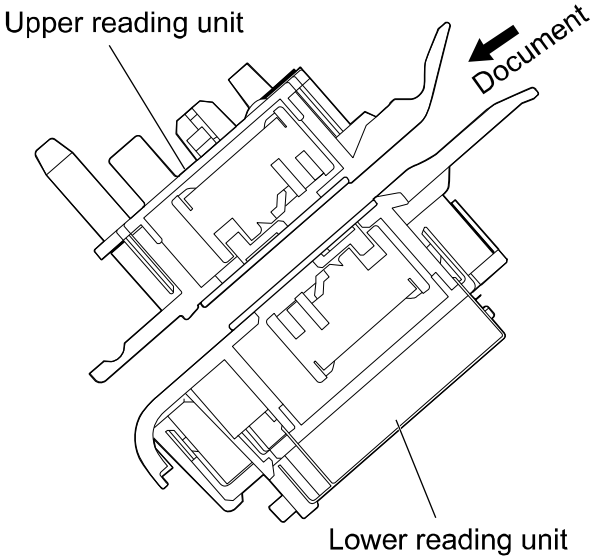

Figure 2-201

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

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

To prevent slowdown of the reading speed, the image data is divided by four and output in parallel.

The sectional view of the lower reading unit is shown below. The upper and lower reading units have the same configuration but the different holder shapes.

The scanning unit consists of CIS unit, guide, and cover.

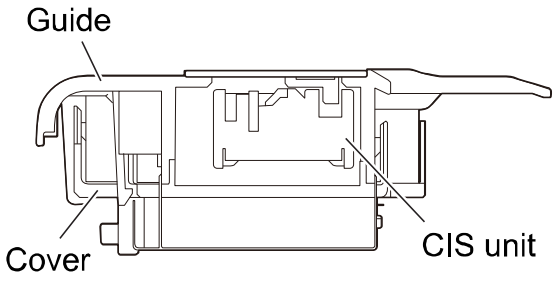

Figure 2-202

The CIS unit consists of CIS PCB, lens array, LED (R/G/B), light guide, and case.

The reading glass and white reference sheet are mounted on the guide.

Light receiving elements are mounted on the CIS PCB with a density of 600 dpi in a line. The effective reading width is 219 mm, and the number of effective picture elements is 5184.

A set of three basic color LEDs, red, green, and blue (RGB), is mounted only on the one side.

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, image data are read with color mode and remove a designated color by image processing.

In the color emphasis mode, image data are read with color mode and emphasize a designated color by image processing.

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2. Shading

This section explains the reading mechanism of the white reference sheet for determination of the shading correction value.

The sectional view of the reading unit is shown below.

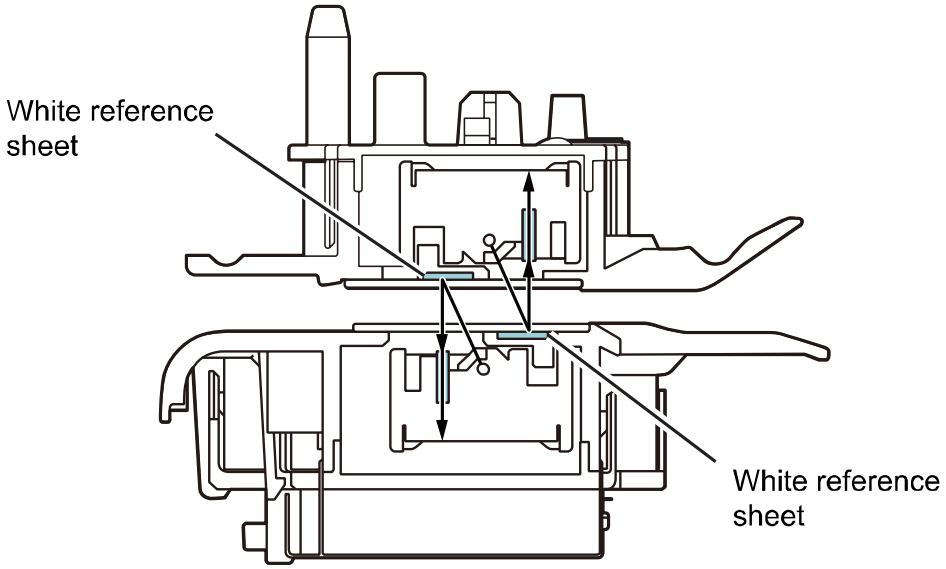

Figure 2-203

Unlike other scanners having the black background color, this machine can read the white reference data at the document reading position because its background color is white. Therefore, there is neither need to feed the shading sheet nor to move the internal shading sheet or the reading units.

For example, when the lower reading unit reads the white reference data, the LED emitted from the lower unit is reflected from the white reference sheet on the upper unit to be input to the sensor on the CIS PCB.

Since the white reference sheet is placed under the reading glass, document feeding does not cause dirt on it.

When this machine is turned on or starts scanning, it reads the white reference data to determine the shading correction value.

However, the slightly different optical paths to the light receiving element are used for the actual document and the white reference sheet. Therefore this machine needs fine adjustment of the shading correction value using the service mode. This fine adjustment is necessary after replacing the reading unit or after replacing the control PCB recording the shading correction value.

III. FEED SYSTEM

1. Feeding Mechanism

The sectional view of the feed system is shown below.

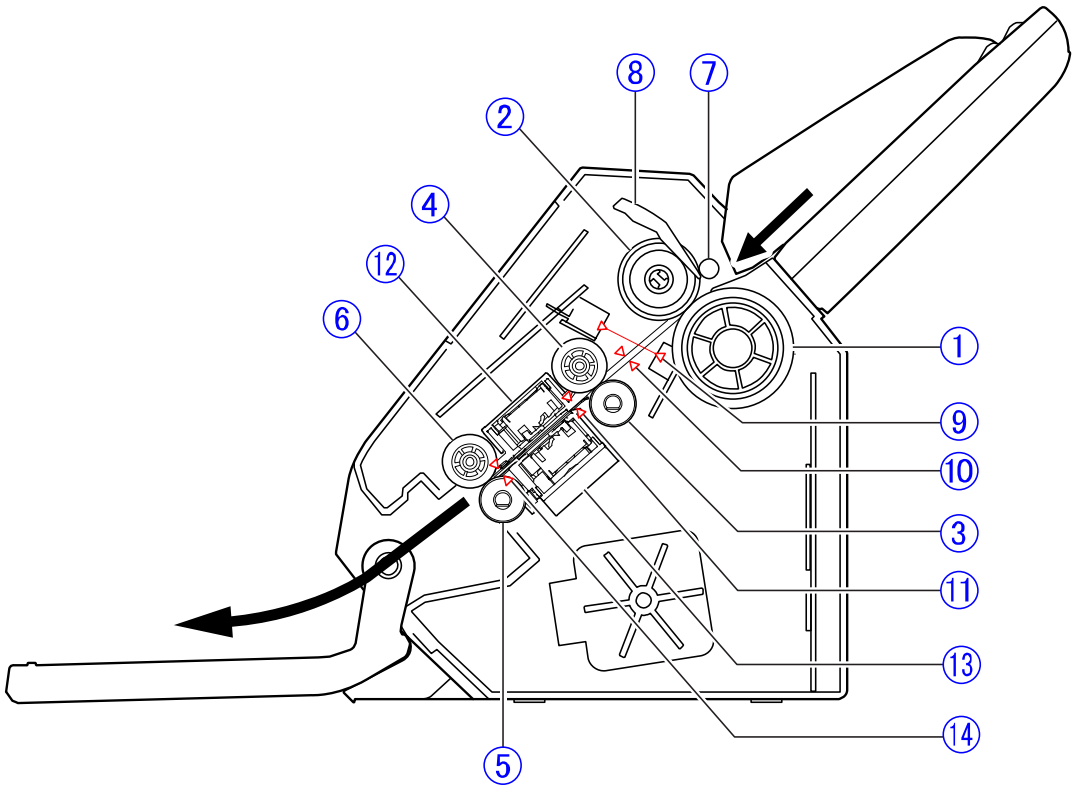

Figure 2-301

① Feed roller
② Retard roller
③ Registration roller (drive)
④ Registration roller (follower)
⑤ Eject roller (drive)
⑥ Eject roller (follower)
⑦ Pressure roller
⑧ Document stopper
⑨ Ultrasonic sensor detection point
⑩ Pre-registration sensor detection point
⑪ Post-registration sensor detection point
⑫ Upper reading unit
⑬ Lower reading unit
⑭ Eject sensor detection point

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1) Feed path

The feed path of this machine is a straight path tilting at an angle of approximately 40 degrees.

For details on the arrangement of the rollers, sensors, and other components, refer to the cross sectional diagram of the feed system in Figure 2-301.

Documents placed in the inlet are ejected to the eject tray. However, the document can be output even when the eject tray is closed. When feeding cards, orient the card sideways. Also, so that the machine can feed thicker documents, such as passports, the feed path gap was widened compared to earlier models, and the retraction distances of the upper reading unit, registration roller (follower), and eject roller (follower) were increased.

2) Drive

The feed motor drives the feed roller and retard roller, the main motor drives the registration roller and eject roller. The scanning condition determines the each of drive speed.

In addition, for the document stopper and the pressure roller are moved up and down by reversing the main motor.

3) Feed

The following shows a cross-sectional diagram of the pickup area before starting the feed. The document stopper is in the lowered position.

When a document is placed in the inlet, the edge of the document lines up at the document stopper. When a scan is started, the pressure roller moves down and then the document stopper moves up and the document begins to feed. Documents feed from the lower side of the placed document.

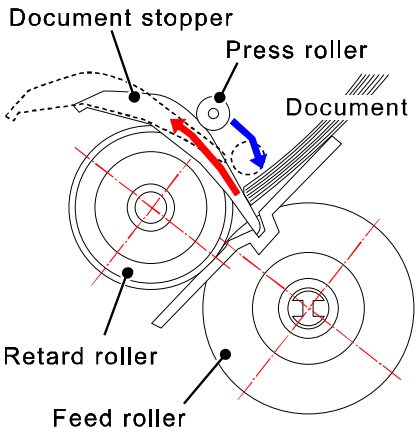

Figure 2-302

4) Separation

Separation of the documents is performed by the retard roller.

Since 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 2-303-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 rotates in the opposite direction so that the document in contact with the retard roller is not pushed in.

As shown in Figure 2-303-b, once a single document remains, the feed roller and the document add torque on the retard roller. When this torque exceeds the retard roller torque, the retard roller rotates in the direction to feed the document due to the torque limiter.

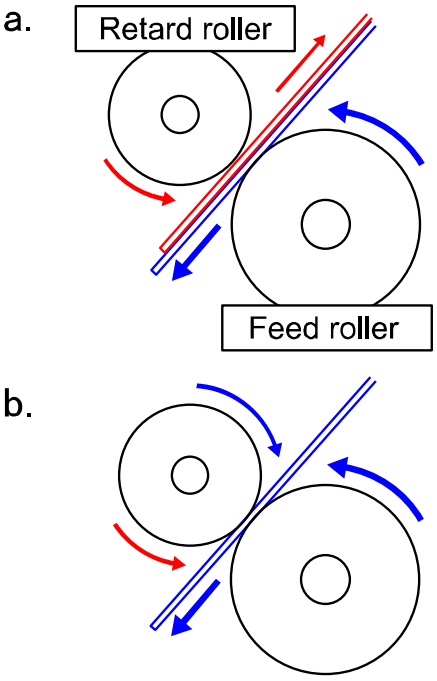

Figure 2-303

Note that if Folio mode or non-separating mode is selected, the separation clutch is operated to allow the feed roller to rotate freely and the feed motor is driven in re verse with the document fed by the rotation of the retard roller.

To provide space between the trailing edge of a document and the leading edge of the next document, the drive speed of the feed roller is slightly lower than of the registration roller and eject roller. If it is left as it is, the document is braked when it touches the feed roller and the registration roller, therefore, a one-way clutch is built into the gear used in the feed roller drive system to follow the drive speed of the registration roller.

5) Pickup and separation retry

This machine is equipped with pickup retry and separation retry functions. When a misfeed or double feed (faulty separation) occurs, scanning is able to continue if the fault can be cleared by repeating these operations.

If the document is not detected by the pre-registration sensor within the designated period of time, the pickup retry operates the separation clutch to allow the feed roller to rotate freely, and returns the document to the inlet by the rotation of the retard roller before trying again.

Separation retry stops the feed motor momentarily once the document is detected by the pre-registration sensor, and detects whether or not the document has double fed using an ultrasonic sensor. If a double feed is detected, the document is returned to the inlet the same as for pickup retry before trying again.

The following shows the state when a double fed document begins to be returned.

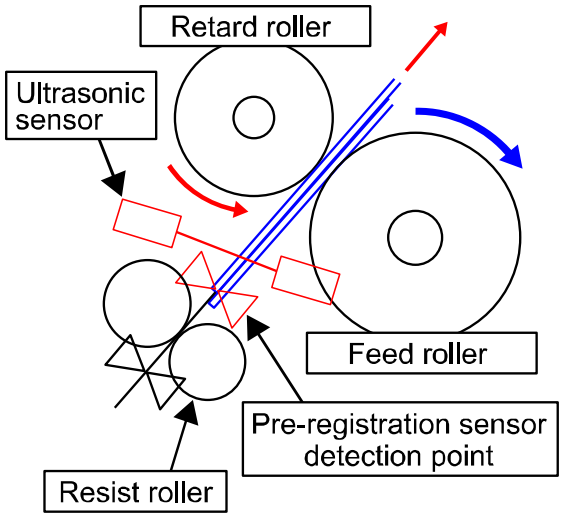

Figure 2-304

6) Sensor

The document sensor is mounted on the inlet, a total of 6 feed error sensors are mounted 3 each on left and right sides of the retard roller from front to back, the pre-registration sensors are mounted before

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the registration roller, a total of 3 post-registration sensors are mounted after, right and left, and middle of registration roller, and the eject sensor is mounted immediately before the eject rollers.
Furthermore, the ultrasonic sensor for double feed detection is mounted in front of the registration roller.

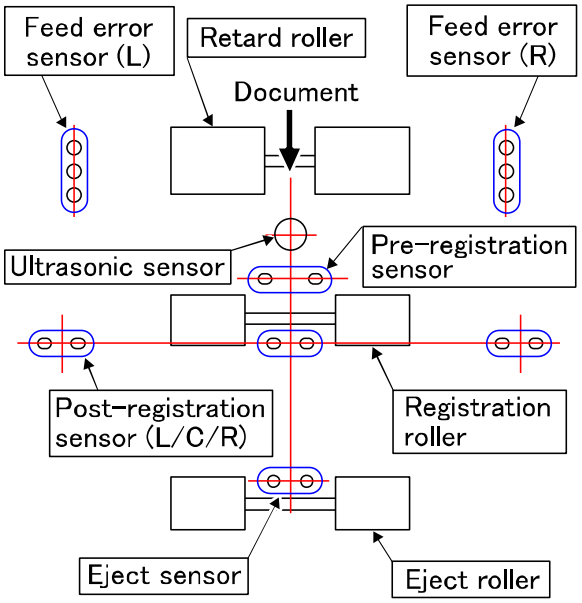
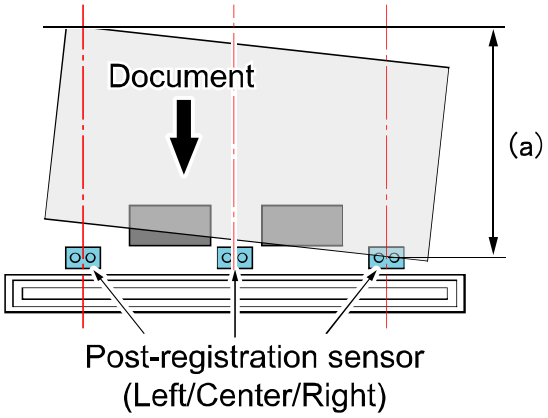


Figure 2-305

The 6 feed error sensors detect staples and jam by behavior of documents when feeding /separating documents before registration sensor.
If skewed documents are fed, post-registration sensor detects the leading/trailing edge which are not detected by the registration sensor in the center to prevent the lack of image.



(a) Document length that the sensor can detect.

Figure 2-306

2. Feed Error Detection

1) Paper Jam Detection

Paper jams are detected by the registration sensor and the eject sensor. The types of the document jams are described as follows.

a) Pickup Delay Jam (Pickup Error)
The leading edge of the document was not detected by the pre-registration sensor within the specified time after the machine starts scanning.

b) Early Reach Jam
The leading edge of the following document was detected after the trailing edge of the document was detected by the pre-registration sensor before the document has been fed for a specified length.

c) Residual Jam
The trailing edge of the document was not detected even though the document has been fed for the maximum specified length after the leading edge of the document was detected by the pre-registration sensor.

d) Fast Feed Jam
The trailing edge of the document was detected after the leading edge of the document was detected by the pre-registration sensor before the document has been fed for the minimum specified length.

e) Non-removal Jam
The machine starts scanning while the document is detected by the post-registration sensors and the eject sensor, and still remains inside this machine.

f) Unreached Jam
The document was not detected by the eject sensor within the specified time after the machine starts scanning.

2) Double Feed Detection

There are 2 double feed detection methods: the document length detection by the pre-registration sensor and the document overlapping detection by the ultrasonic sensor.

◆ Pre-registration sensor

The pre-registration sensor uses the first document length of the scanned batch as a reference to detect the document length. The 35 mm or more difference from the standard is interpreted as a double feed.

◆ Ultrasonic sensor

The ultrasonic drive sensor transmits the ultrasonic and the ultrasonic receive sensor receives the ultrasonic signal to gain a specific signal level. When overlapping documents are fed, the signal level is different from when properly feeding a single document. This machine interprets this difference as a double feed.

Note that since this difference in the signal occurs depending on the presence of a layer of air, a double feed will not be detected if the document is tightly adhered by static electricity or adhesive.

Furthermore, double feed is judged if a double feed is detected continuously for a specific amount of time. As a result, if the overlap between sheets is less than 50 mm when a document is being fed, it might not be judged as a double feed because the detection time is short. In the case of separation retry, since the detection is performed with the document stopped momentarily, double feed can be judged even if the overlap is short.

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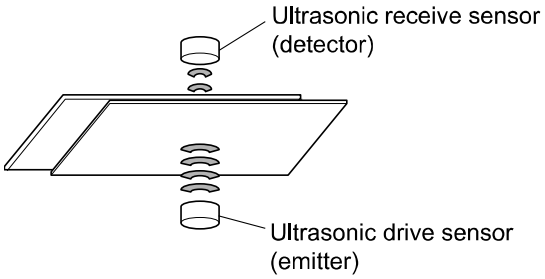
Ultrasonic receive sensor
(detector)
Ultrasonic drive sensor
(emitter)

Figure 2-307

IV. CONTROL SYSTEM

1. Control Circuits

The overall system of this machine is controlled by the control PCB.

The block diagram and the function list of major ICs are shown below.

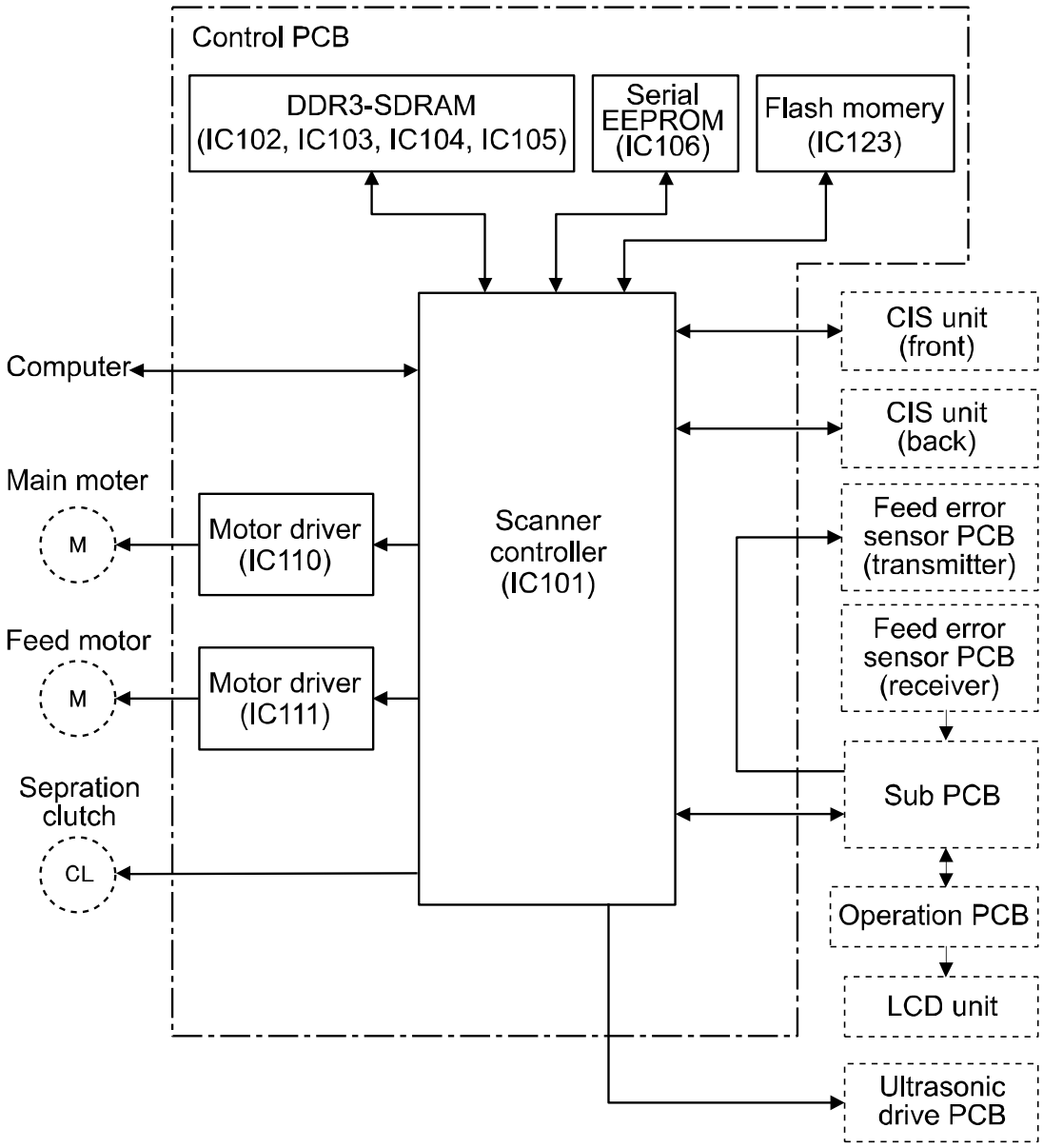

Figure 2-401

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◆ Function list of major ICs

IC No.	Name	Function
IC 101	Scanner controller	Overall scanner control
IC 102	DDR3-SDRAM (2 Gbit) x4	Working memory for the scanner controller and for storing image data temporarily
IC 103		
IC 104		
IC 105		
IC 106	Serial EEPROM (128 kbit)	Saves the various setting data
IC 123	Flash memory (32 Mbit)	Stores firmware
IC 110	Motor driver	For driving the main motor
IC 111	Motor driver	For driving the feed motor

Table 2-401

2. Image Processing

The block diagram of the image processing in the main body is shown below.

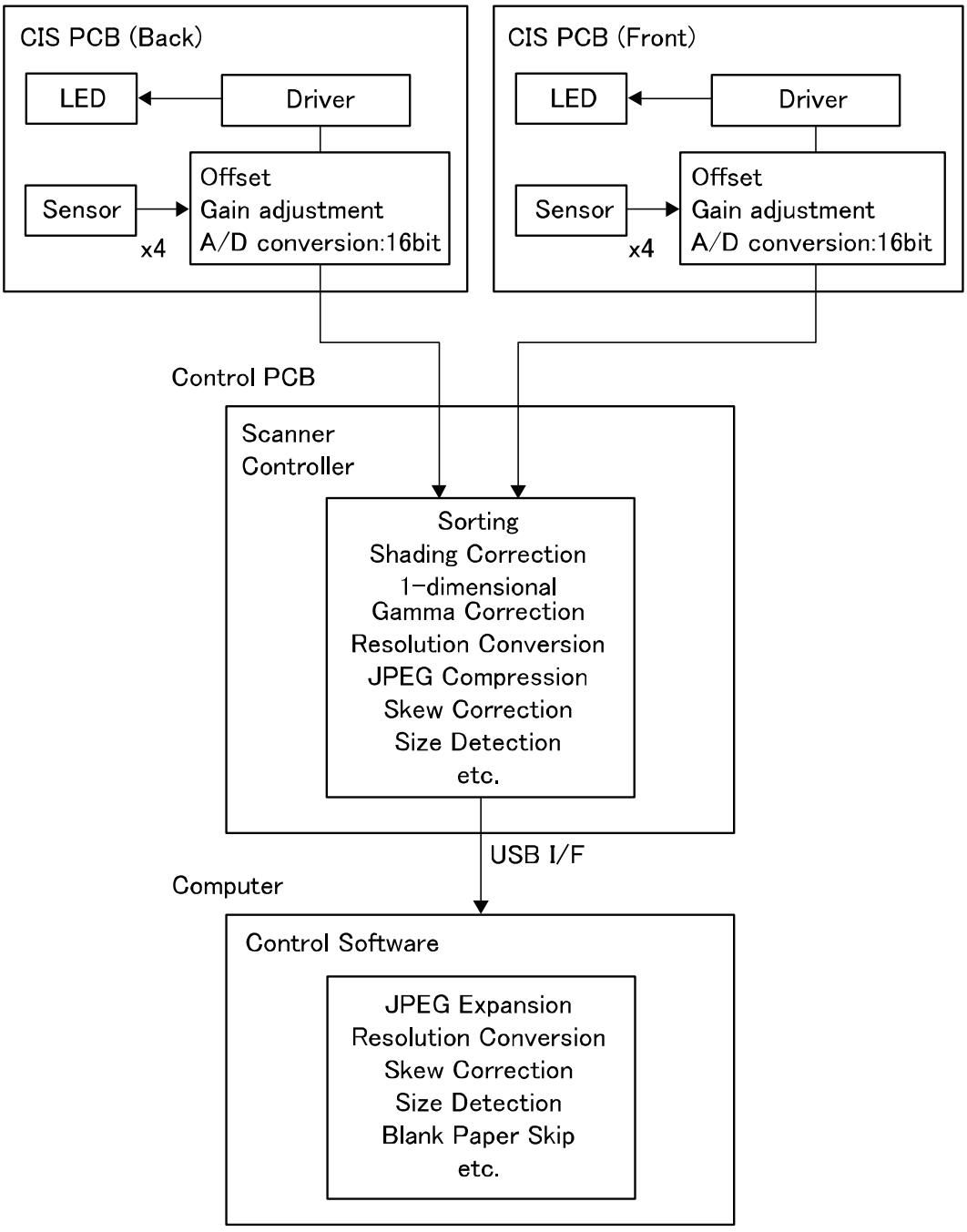

Figure 2-402

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Analog signals proportionate to the density of each picture element are output as 4 parallel lines from the image sensor on the CIS PCB to the analog processor. The analog processor carries out offset adjustment, gain adjustment, and A/D conversion. Analog signals are converted into digital signals in the analog processor.

This image data is sent to the scanner controller on the control PCB where data reordering, shading correction, one-dimensional gamma correction, resolution conversion, and various image processing are performed, JPEG compressed data is output to the computer via the USB interface.

Inside the computer, the various image processing is executed according to the use settings by the driver for this machine.

In image processing done by scanner controller, depending on the reading setting, some of them are processed by driver.

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V. POWER SUPPLY

1. Power Supply

This machine uses an AC adapter for its power supply. Its rated input voltage is 100-240 VAC, 50/60 Hz and whose output is 24 VDC. Use the AC adapter bundled with this machine. The power output from the AC adapter is input to the control PCB.

In case of excess voltage or current applied to the AC adapter output, the safety system cuts the power. In this case, unplug the AC plug. After removing the cause, plug it back.

The power switch for the machine is mounted on the operation PCB. When the switch is turned on, a DC/DC converter activates to generate each of the DC voltages and supply power to each of the components.

When no documents have been fed or there has been no communication via this USB I/F for an extended period of time, the machine enters the sleep mode (Energy Star mode). When the machine is in the sleep mode, the electrical circuits enter a sleeping state. However, the CPU does not enter a sleeping state. This machine automatically returns from the sleep mode when it receives communication from a computer or when a key on the operation panel is pressed.

Furthermore, the power will be turned OFF automatically if no operations are performed for a long period of time (4 hours).

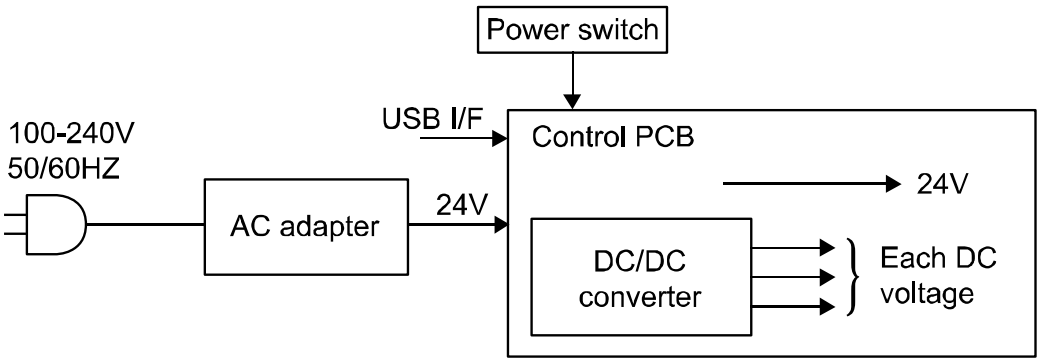

Figure 2-501

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VI. LAYOUT OF ELECTRICAL COMPONENTS

1. Layout of Electrical Components

For sensors etc. on the PCBs, refer to “VII. PARTS LAYOUT ON EACH PCB”.

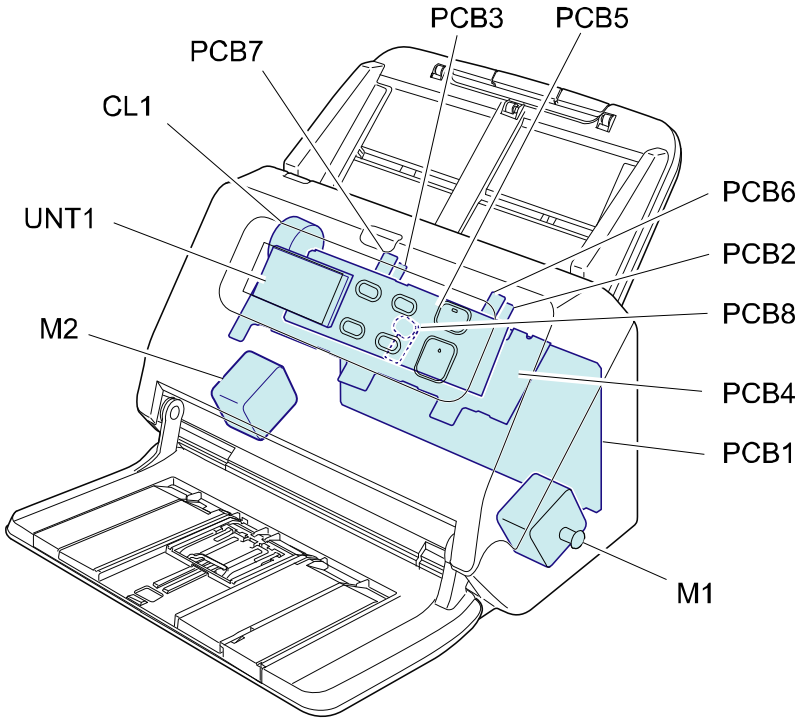

Figure 2-601

Category	Name	Location	Symbol
Motor	Main motor	Base unit (right)	M1
	Feed motor	Base unit (left)	M2
Clutch	Separation clutch	Base unit (left)	CL1
PCB	Control PCB	Base unit	PCB1
	Right feed error sensor (transmitter)	Base unit	PCB2
	Light feed error sensor (transmitter)	Base unit	PCB3
	Sub PCB	Front unit	PCB4
	Operation PCB	Front unit	PCB5
	Right feed error sensor (receiver)	Front unit	PCB6
	Light feed error sensor (receiver)	Front unit	PCB7
	Ultrasonic drive PCB	Front unit	PCB8
Unit	LCD unit	Front unit	UNT1

Table 2-601

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VII. PARTS LAYOUT ON EACH PCB

1. Control PCB

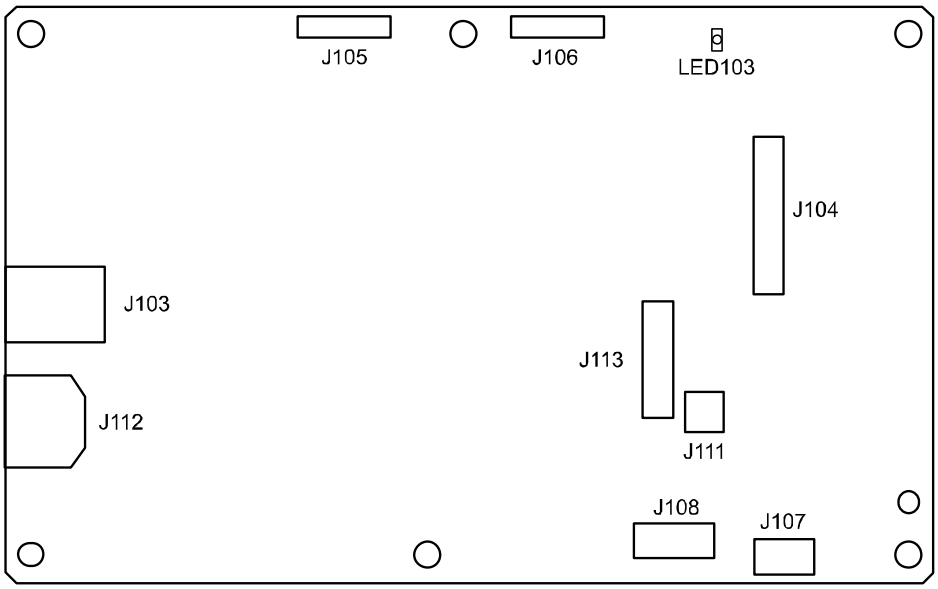

Figure 2-701

Connector		Description
J103	-	USB I/F
J104	16P	Sub PCB
J105	20P	CIS PCB (front)
J106	20P	CIS PCB (back)
J107	4P	Main motor
J108	6P	Feed motor
J111	2P	Separation clutch
J112	-	AC adapter
J113	11P	Ultrasonic driver PCB Right feed error sensor (transmitter) Left feed error sensor (transmitter)

Table 2-701

Symbol	Description
LED103	Power supply LED (Lighting: Power ON)

Table 2-702

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2. Sub PCB

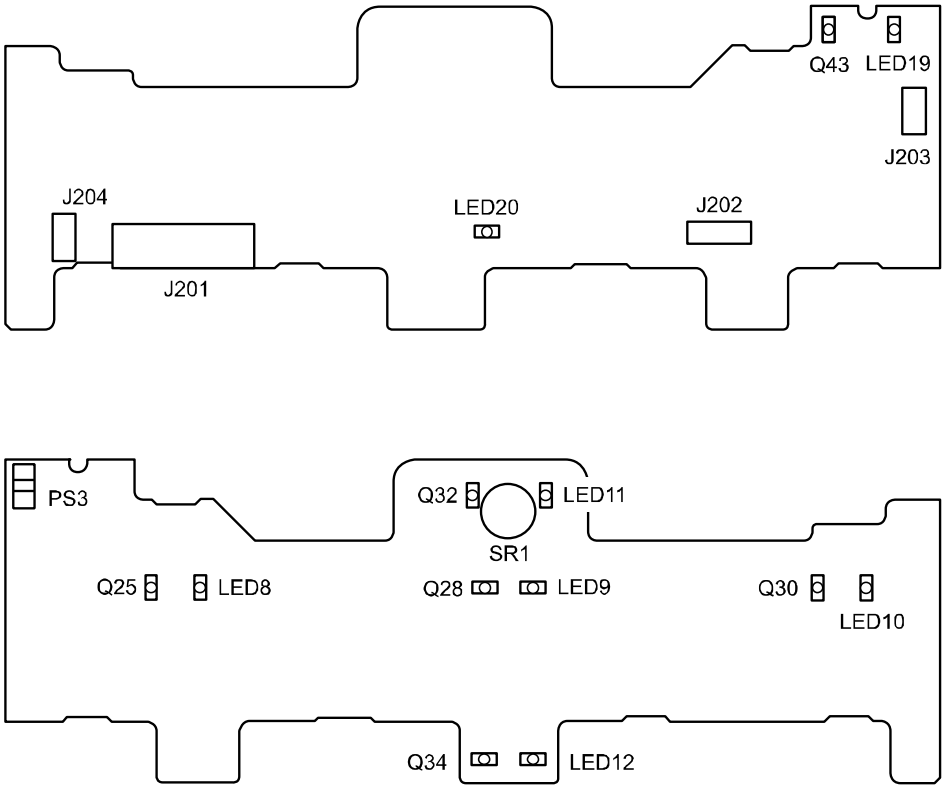

Figure 2-702

Connector		Description
J201	16P	Control PCB
J202	18P	Operation PCB
J203	5P	Right feed error sensor (receiver)
J204	5P	Left feed error sensor (receiver)

Table 2-703

Symbol	Description
LED8/Q25	Post-registration (right) sensor
LED9/Q4	Post-registration (center) sensor
LED10/Q30	Post-registration (left) sensor
LED11/Q32	Pre-registration sensor
LED12/Q34	Eject sensor
LED19/Q43	Document sensor
LED20	Boot complete LED (Blinking: Normal boot complete)
PS1	Door sensor
SR1	Ultrasonic sensor (receiver)

Table 2-704

3. Operation PCB

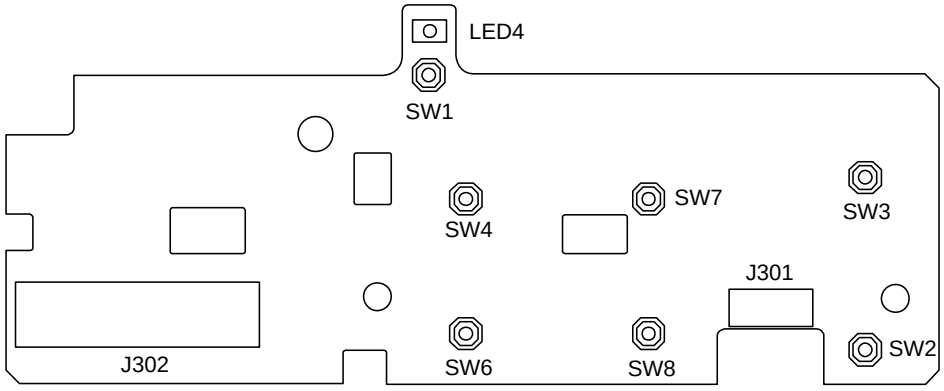

Figure 2-703

Connector		Description
J301	18P	Sub PCB
J302	30P	LCD unit

Table 2-705

Symbol	Description
LED4	Power supply LED Lighting: Power on Blinking (slowly): Sleep mode Blinking (quickly): Error
SW1	[Power]
SW2	[Start]
SW3	[Stop]
SW4	[up]
SW6	[down]
SW7	[Menu]
SW8	[OK]

Table 2-706

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CHAPTER 3

DISASSEMBLY & REASSEMBLY

Note: The machine shown in the photographs of the figures in this chapter may have any difference from mass-produced machines.

I. EXTERNAL PARTS.....3-1
II. FRONT UNIT.....3-3
III. BASE UNIT 3-13
IV. READING UNIT.....3-21

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I. EXTERNAL PARTS

1. Pickup Tray

1) Pull up the pickup tray①, and unhook the fitting parts ②on the right and left side then remove the pickup tray.

Figure 3-101

Note: When you disassemble this machine, it is better to remove this pickup tray at first.

2. Eject Tray

1) Open the eject tray①, then unhook it by bending the fitting part ② on the left side. Next, unhook the fitting part ③on the right side, then remove the eject tray.

Note: Remove lower cover while eject tray is detached may cause the front unit removed.

Figure 3-102

3. Upper Cover

1) Open the front unit, unhook the 4 fitting part ① on the bottom side while pushing towards the far side. Next, unhook the 2 fitting part ② on the upper side by pushing up and remove the upper cover ③.

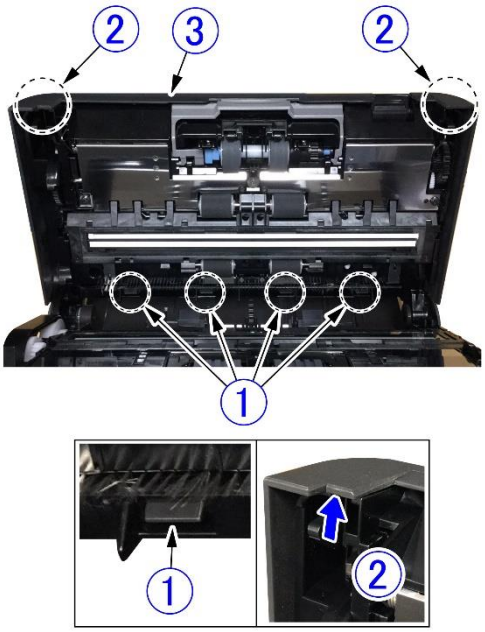

Figure 3-103

Note: Remove the upper cover may cause the lock lever shaft ① and the coil spring ② removed easily. (Page 3-3)

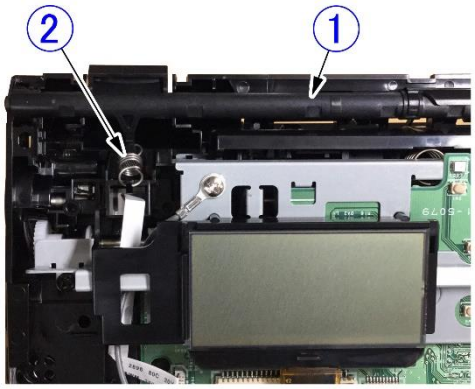

Figure 3-104

4. Lower Cover

1) Unhook the 3 pairs on the left side ① and 2 pairs of right side ② of the fitting part, and remove the lower cover while opening the gap between the lower cover ③ and the base unit.

Note: Remove the lower cover while the eject tray is detached may cause the front unit removed.

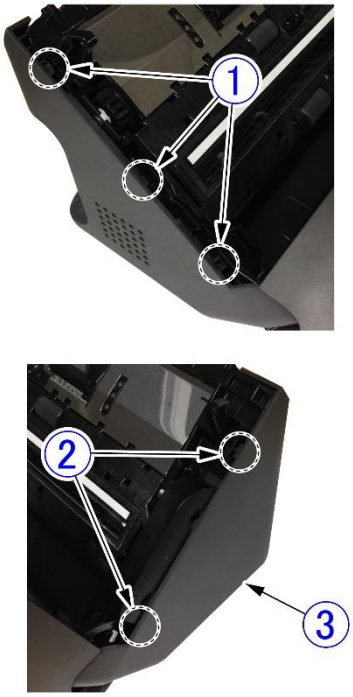

Figure 3-105

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II. FRONT UNIT

1. Lock Lever Shaft

Note: Leave the lock lever shaft off when disassemble other parts since it is easily removed.

1) Remove the upper cover.
(Page 3-2)
2) Pull down the roller cover ①and move the feed arm unit ② backward. Next, lift up the document detection lever ③of the lock lever shaft, remove the lock lever shaft ⑤ and the coil spring ⑥ carefully not to touch to the document stopper④.

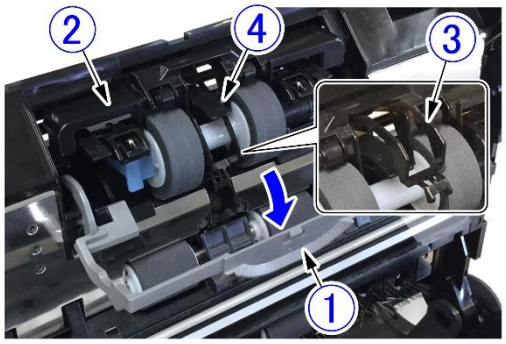


Figure 3-201

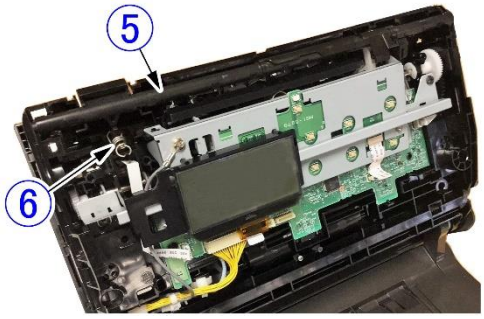
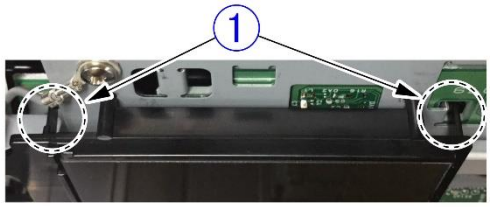


Figure 3-202

2. LCD Unit

1) Remove the upper cover.
(Page 3-2)
2) Insert the tool from upper side, and unhook the 2 pairs of the fitting part①. Next, tilt the LCD unit ② towards you then unhook the 2 pairs of the lower fitting part ③ and LCD unit.



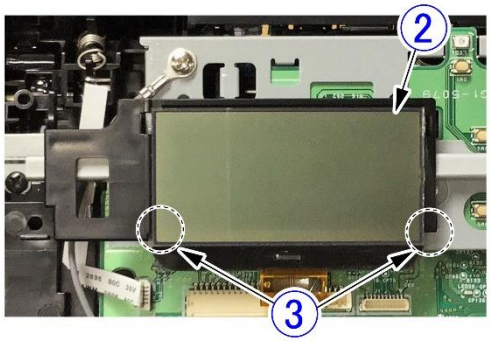


Figure 3-203

3) Hold the LCD unit and unlock the connector ① then remove the cable ②(FFC) and LCD unit.

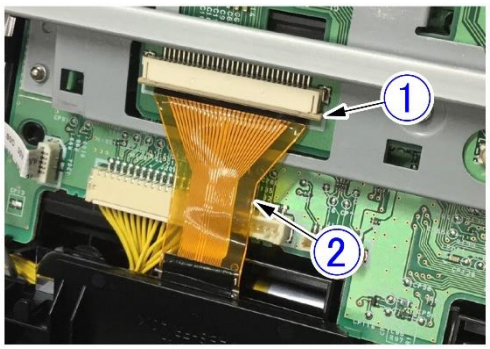


Figure 3-204

3. Sub PCB

1) Remove the LCD unit.
(Page 3-3)
2) Remove the 2 screws ① (M3x8, BH, self-tapping) and the upper reinforcing plate ②.
Next, remove the screw③ (M3, BH, round head), grounding cord ④, cable ⑤, and 2 cable ⑥ (FFC).

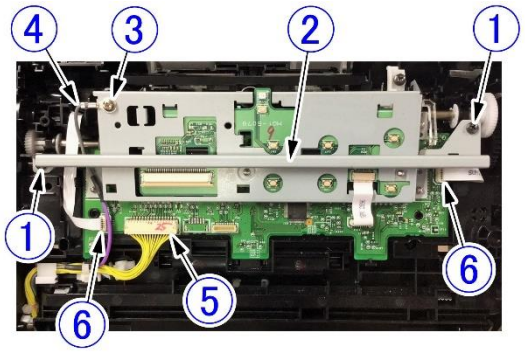


Figure 3-205

3) Unhook the 2 fitting part ① (sheet metal), and 2 fitting part ②.
Next, tilt the sub PCB ③ towards you then unhook the 2 pairs of the lower fitting part ④ and remove the sub PCB unit.

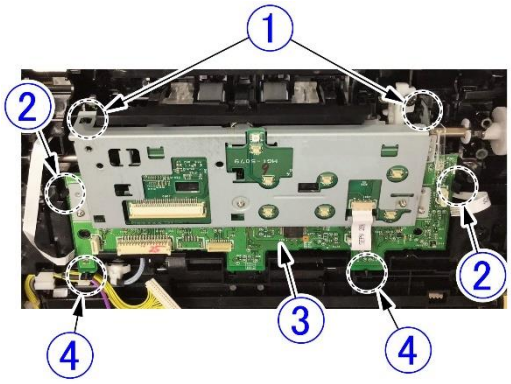


Figure 3-206

4) Remove the cable ① (FFC) from the sub PCB and turn over the sub PCB.
Next, remove the 2 screw ② (M3, BH, round head) and the sub PCB ③.

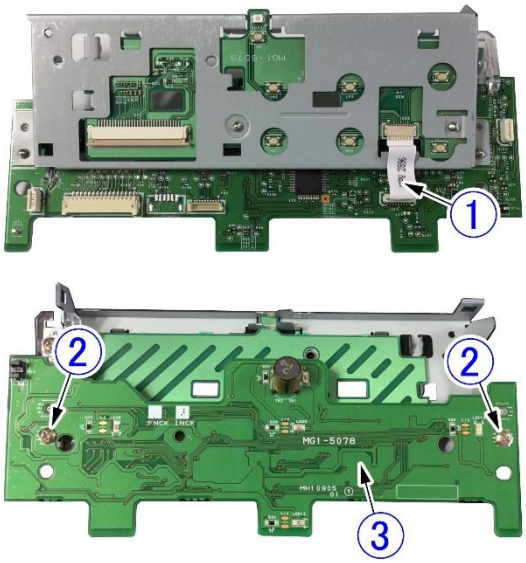


Figure 3-207

◆ **Notes on assembling**

1) You should attach the screws after fitting
The 2 pins ① on the mounting plate with the holes for setting the position on the sub PCB.

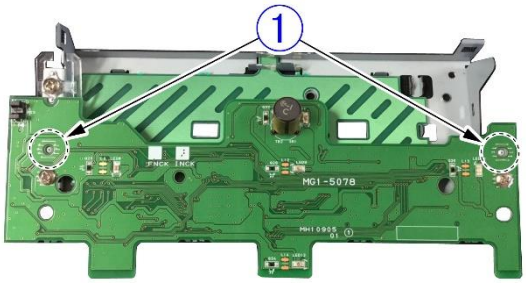


Figure 3-208

2) When mounting the sub PCB unit on the base, and assemble the coil spring ① in the mounting plate ②, and then all of the fitting parts should be fully seated. There should not be any raised parts.

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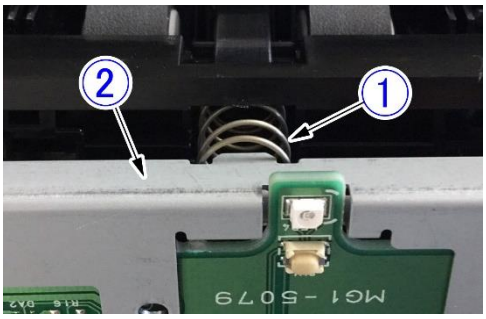

Figure 3-209

3) Fold the cable ① (FFC) of the sub PCB unit like below not to attach with the top cover.

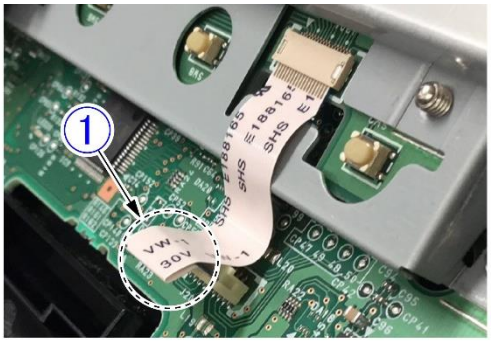

Figure 3-210

4) Place the grounding cable ① on the right side of the rib ② and through the rib ③. And then tighten the screw for the grounding terminal ④ with 45 degrees angle down.

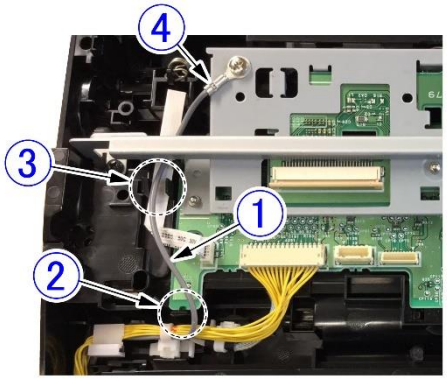

Figure 3-211

4. Operation PCB

1) Remove the sub PCB.
(Page 3-4)
2) Remove the cable ① (FFC).
Next, remove the 2 screw ② (M3x8, BH, self-tapping) and the operation PCB ③.

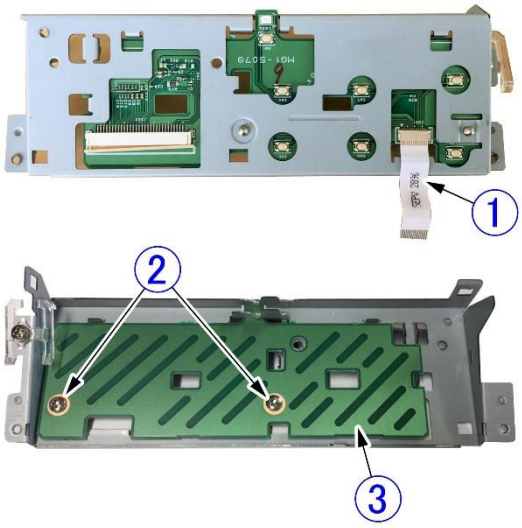

Figure 3-212

◆ Notes on assembling

1) The operation PCB should be assembled on the mounting plate after connecting the cable (FFC).
2) Fit the 2 holes ① for setting the position for operation PCB with extrusion parts of the mounting plate.
Next, tighten the screws carefully that operation PCB not to be on the extrusion parts.

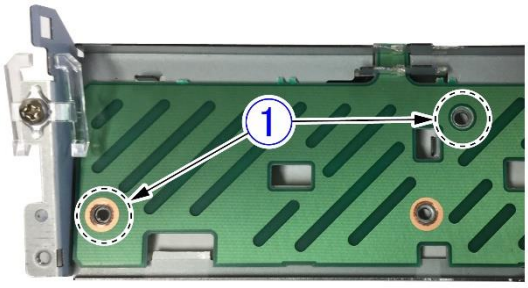

Figure 3-213

5. Stop Cam Drive Unit

1) Remove the sub PCB unit.
   Refer to “3. Sub PCB”.
   (Page 3-4)
2) Remove the 2 screws ① (M3x8, BH, self-tapping). Next, detach the retaining ring ② and slide the bearing ③ in the direction of the arrow and unhook.

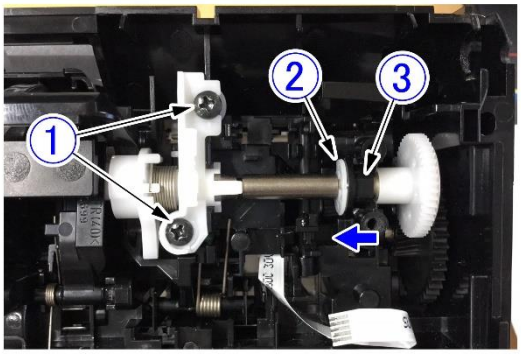

Figure 3-214

3) Open the front unit, down the roller cover ① and move the pickup arm unit backward.
   Next, push the document stopper ③ and remove the stop cam drive unit ④.

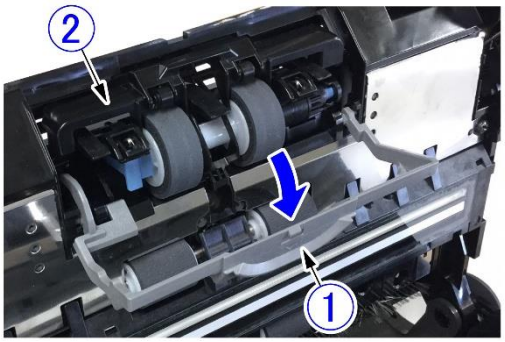

Figure 3-215

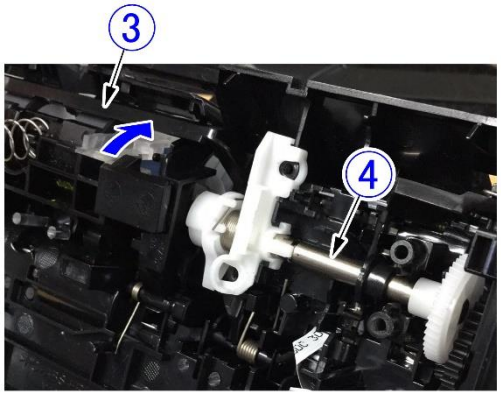

Figure 3-216

◆ **Notes on assembling**

1) When assembling the bearing ①, set its flat surface face up.
2) When attaching the stop cam driving unit with screws, attach in order of screw-1 ② , and screw-2 ③.

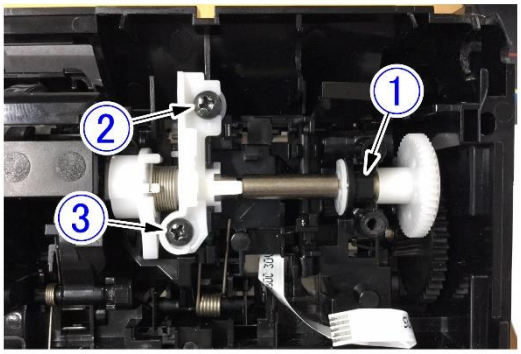

Figure 3-217

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6. Upper Drive Unit

1) Remove the stop cam drive unit.
(Page 3-6)

2) Remove the separation float unit ① from the torsion spring ②.
Next, unhook the fitting parts of document stopper ③ in order of ⓐ and ⓑ.
Slide the document stopper to right and unhook the fitting parts in order of ⓒ and ⓓ.

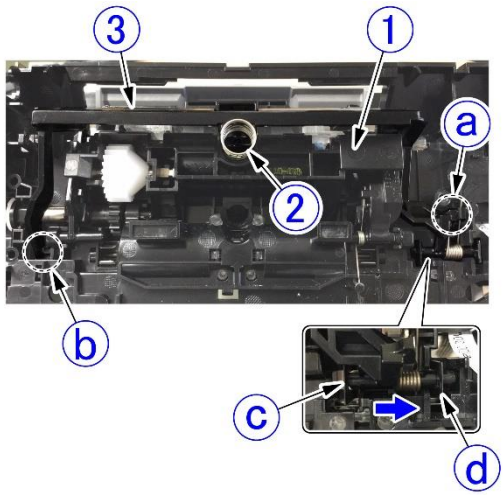

Figure 3-218

3) Pull the separation float unit ① toward you and slide in the direction of arrow to remove it.

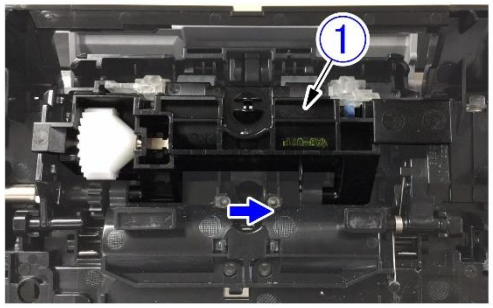

Figure 3-219

4) Put the pickup arm unit ① in front by bending part Ⓐ of the front unit.
Next, down the pickup arm unit till the stopper ③ of the fitting part ② is unhook, then unhook the fitting part ②and④.

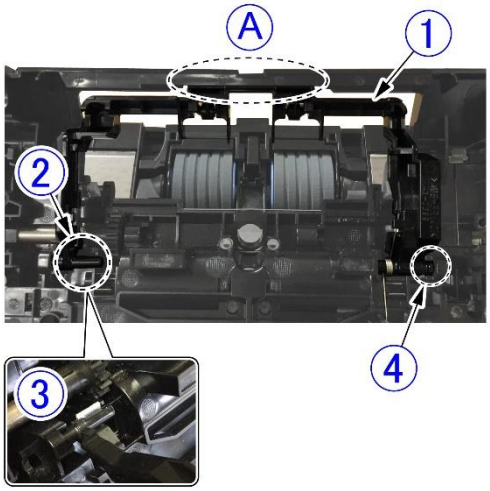

Figure 3-220

5) Unhook 2 retaining ring ①, slide the bearing ② in the direction of arrow, and remove the upper driving unit ③.

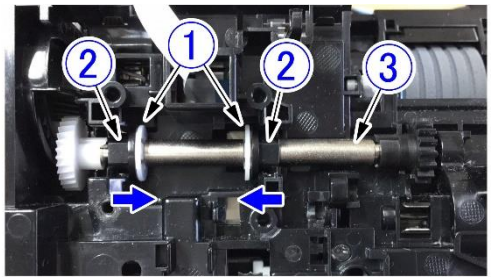

Figure 3-221

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◆ **Notes on assembling**

1) When assembling the bearing, set its flat surface face up.
2) When assembling the document stopper, fit the coil spring ②with part of arrow ③ of the upper frame.

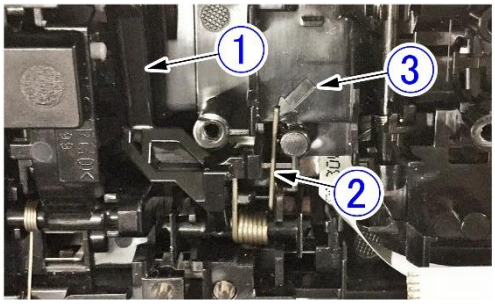

Figure 3-212

3) Pull out the pickup arm unit from the front unit after assembling.
4) Hook the folding part of the coil spring ① to the separation float unit ② to assemble.

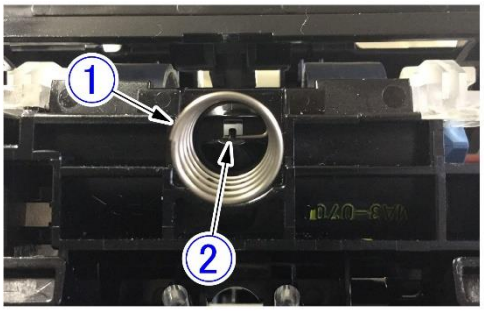

Figure 3-223

7. Front Unit

1) Remove the upper cover.
(Page 3-2)
2) Remove the upper reading unit.
(Page 3-21)
3) Remove the lower cover.
(Page 3-2)
4) Remove the screw ①(M3, BH, round head) and the grounding cable ②.
Next, remove the sub PCB from the connector ③, and free the cable for the reading unit.

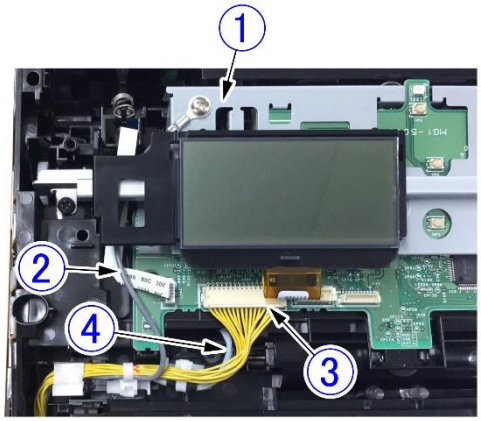

Figure 3-224

5) Remove the cable holder ① and the 2 cable holder ② (reusable type).

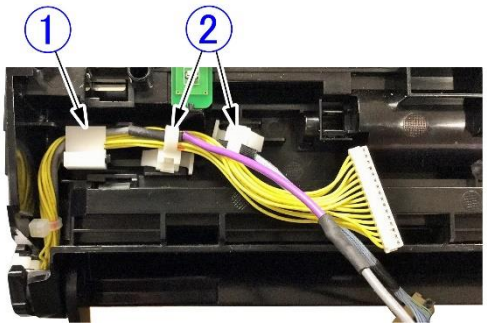

Figure 3-225

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6) Remove the eject tray.
(Page 3-1)

7) Free the cable ① upward no to be hold. Next, open the front unit ② and slide in the direction of arrow and remove it.

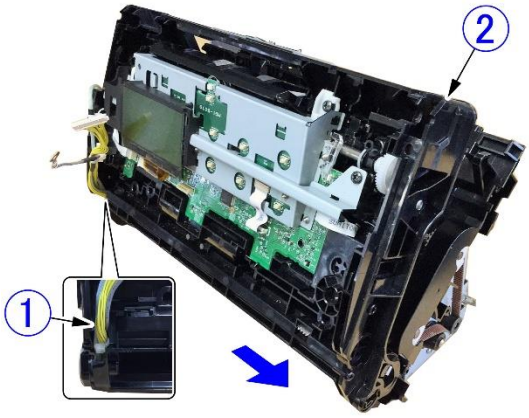

Figure 3-226

◆ **Notes on assembling**

1) When assembling the front unit, be careful that cable not to be pinch to the fitting part.
2) Place the grounding cable ① on the right side of the rib ② and through the rib ③. And then tighten the screw for the grounding terminal ④ with 45 degrees angle down.

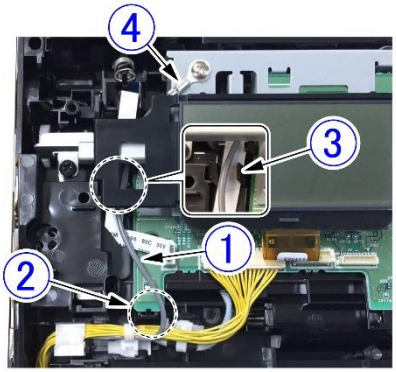

Figure 3-227

8. Upper Feed Guide Plate

1) Remove the upper reading unit.
(Page 3-21)
2) Remove the 2 screws ① (M3x8, BH, self-tapping). Unhook the center fitting part ③ of the upper feed guide plate ②, pull the lower side of the upper feed guide plate toward you, and unhook 4 fitting part ④.

Note: To unhook the central fitting part ③, bend the part upward by using the tool with thin and flat edge.

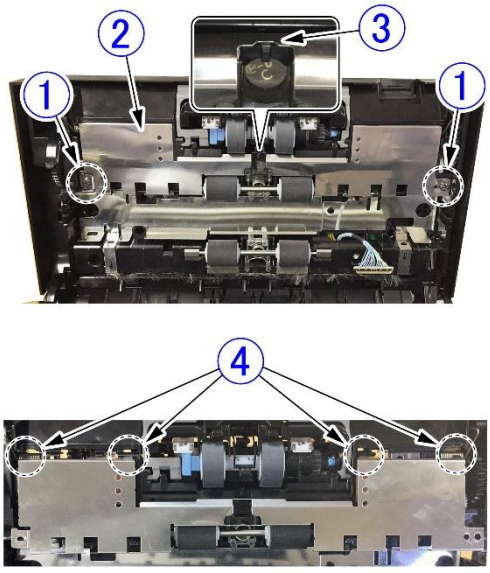

Figure 3-228

◆ **Notes on assembling**

1) Insert the 4 upper claws and mount the central fitting part.
The claws of upper feed guide plate and the fitting parts should be fully seated. There should not be any raised parts.
2) You should attach the screws after inserting the upper frame protrusion ② positioned to the left of the right side screw ① into the hole for setting the position on the upper feed guide plate.

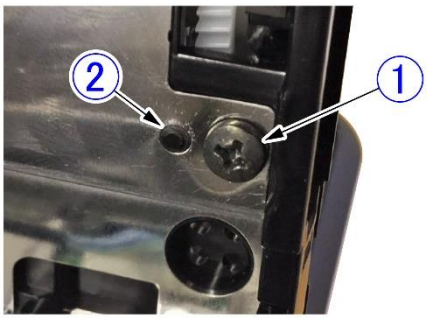

Figure 3-229

3) Do not make scratch on the light guide with edge of the upper feed sheet metal.
4) If the upper feed guide plate is deformed and affect to paper feeding, modify its form to the original shape, or replace with new parts.

9. Feed Error Sensor (Receiver)

Note: The feed error sensor and the light guide have same parts on both right and left side and are assembled after rotate 180 degrees.

1) Remove the upper feed guide plate. (Page 3-9)
2) Unhook the fitting part ① and the light guide ②.

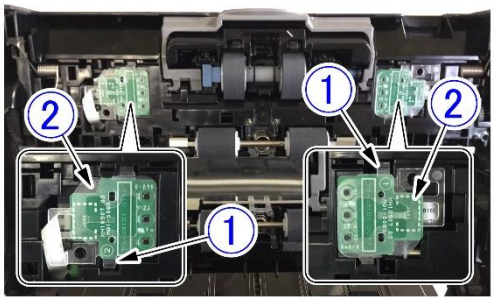

Figure 3-230

3) Remove the feed error sensor ① and the cable ② (FFC).

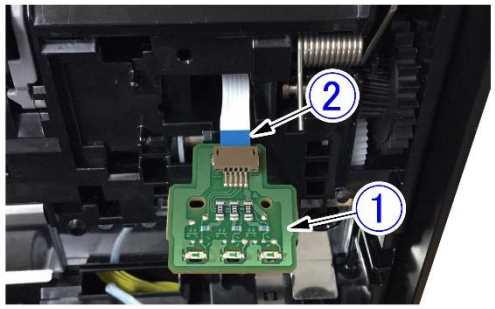

Figure 3-231

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10.Follower Roller (Regist Side)

Note: The follower roller has both on the registration side and on the eject side, as for the component parts, the shaft on both side has different shapes.

1) Remove the upper feed guide plate.
(Page 3-9)
2) Remove the sub PCB unit.
Refer to “3. Sub PCB”.
(Page 3-4)
3) Unhook the fitting part of shaft holder ① from back side, 2 follower roller ②, shaft ③, and the coil spring ④.

Note: Unhook the fitting parts of shaft while holding the shaft holder since the roller shaft is applied load by coil spring.

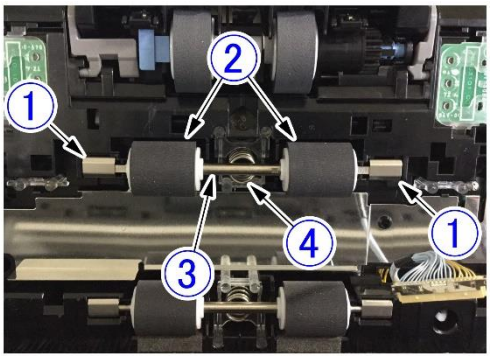

Figure 3-232

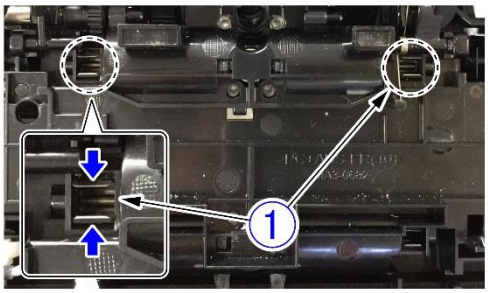

Figure 3-233

◆ **Notes on assembling**

To get a grounding correctly, place the coil spring so its edge ① appear on the bottom. Then, check the each sides of the shaft ② have a “D” cut shape, and hold the cut surface by the shaft holder ③.

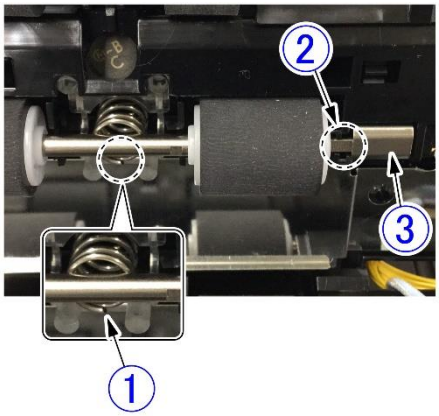

Figure 3-234

11. Follower Roller (Eject Side)

1) Remove the upper cover.
(Page 3-2)
2) Remove the upper reading unit.
(Page 3-21)
3) Unhook the fitting part of shaft holder ① from back side, 2 follower roller ②, shaft ③, and the coil spring ④.

Note: Unhook the fitting parts of shaft while holding the shaft holder since the roller shaft is applied load by coil spring.

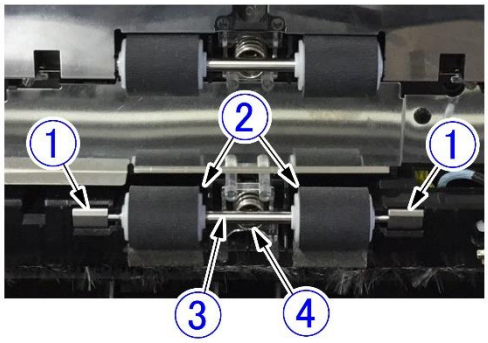

Figure 3-235

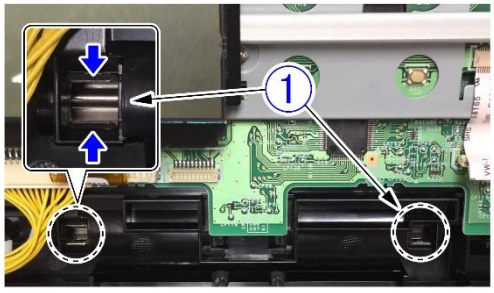

Figure 3-236

◆ **Notes on assembling**

To get a grounding correctly, place the coil spring so its edge ① appear on the top. Then, check the each sides of the shaft ② does not have a “D” cut shape, and hold the coil spring by the plain face ③ in the center of the shaft.

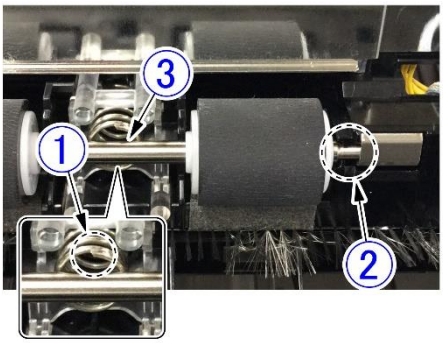

Figure 3-237

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III. BASE UNIT

1. Control PCB

1) Remove the lower cover.
(Page 3-2)
2) Remove the cable ① to ⑤ from the control PCB.

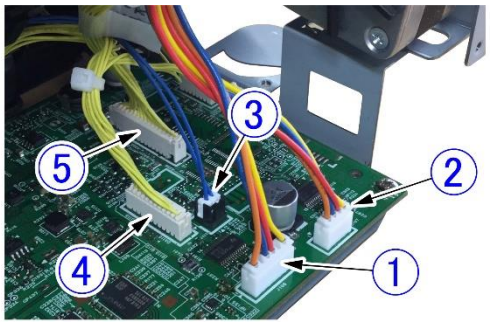

Figure 3-301

3) Remove the 2 screws ② (BH, M3, round head) with the mounting plate ①.

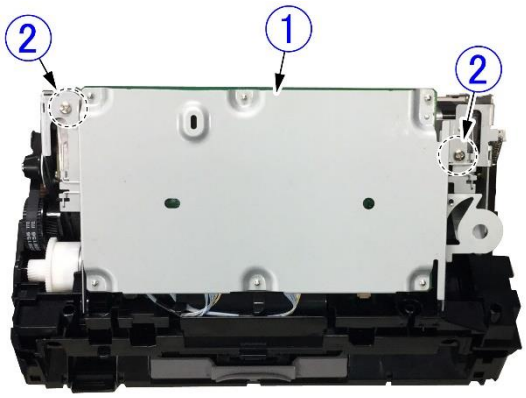

Figure 3-302

4) Pull the mounting plate ② toward you using the fitting part ① as an axis, disconnect the 2 connectors ③ for the reading unit.

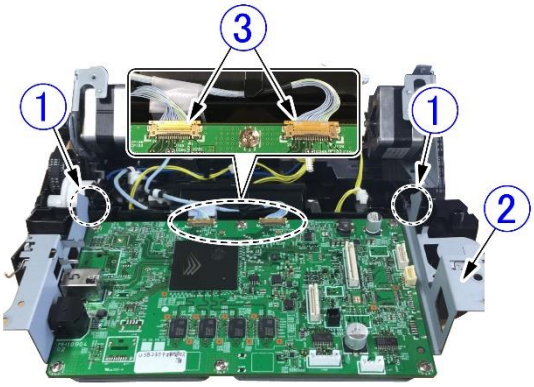

Figure 3-303

5) Remove the 6 screws ① (BH, M3, round head) and the control PCB ② from the mounting plate.

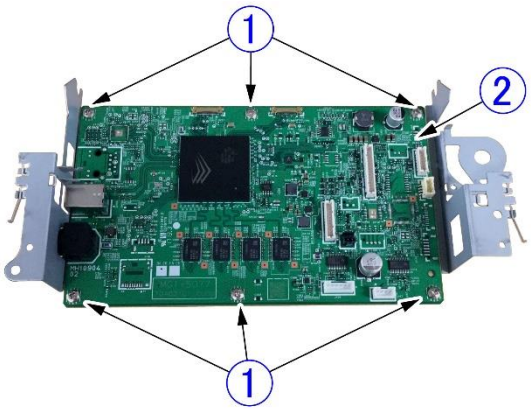

Figure 3-304

◆ **Notes on assembling**

1) The grounding spring of both sides of the mounting plate should touch the sides of both motors.
2) The cable connector of the reading units very thin, handle it carefully.

2. Feed Motor

Note: The connector size for the feed motor is different from the one for the main motor. The 6-pins type connector is the one for the feed motor.
(Part #: MH7-1174)

1) Remove the lower cover.
(Page 3-2)
2) Remove the cable ① of the feed motor mounted on the control PCB and release it from the cable guide ②.
Next, remove the 2 screws ③ (M3, BH, round head) to remove the feed motor ④.

Note: The tapered roller ⑤is easy to be off, handle it with care.

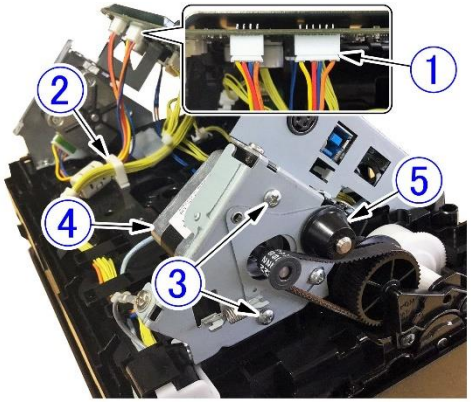

Figure 3-305

◆ **Notes on assembling**

1) Place the ferrite core ① in front of the cable guide ②.

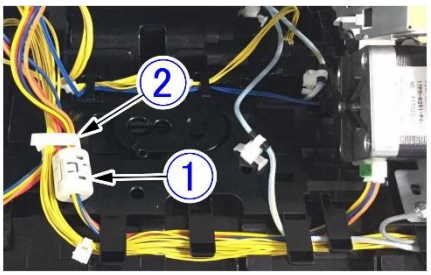

Figure 3-306

2) To adjust the belt tension correctly, follow the instruction below after mounting the feed motor.
3) Connect the cable of the feed motor after the belt tension adjustment.

◆ **Adjustment of tension**

1) Stand up the machine and open the front unit.
2) Make a mark ② on the motor pulley ① to be able to check the rotation of the motor pulley.

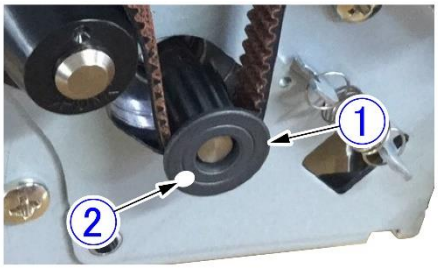

Figure 3-307

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3) Loosen the screw ① to free the tensioner ②. Next, turn the pulley ③ in the direction of arrow by hand, turn the motor pulley ④ 5-turns.

Note: Do not loosen the screw too much since it is easy to be remove the tensioner from the extrusion ⑤.
Remove the motor cable when rotate the pulley.
Do not stick oil to the pulley ③and belt ⑥.

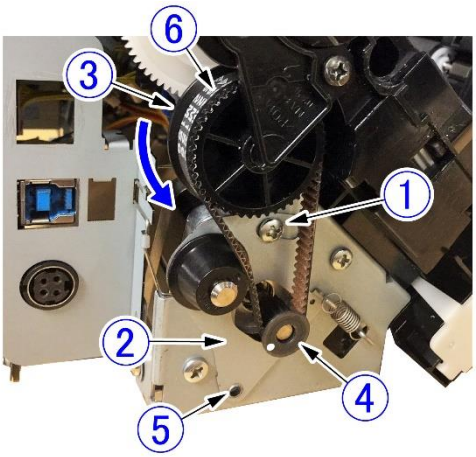

Figure 3-308

4) Check the tensioner is not removed from the extrusion and fix the screw.
5) Connect the cable of the motor to the connector.

3. Main Motor

Note: The connector size for the feed motor is different from the one for the main motor. The 4-pins type connector is the one for the main motor.
(Part #: MH7-1199)

1) Remove the lower cover.
(Page 3-2)
2) Remove the cable of the main motor ① mounted on the control PCB and release it from the cable guide ②.
Next, remove the 2 screws ③ (M3, BH, round head) and the main motor ④.

Note: The tapered roller ⑤is easy to be off, handle it with care.

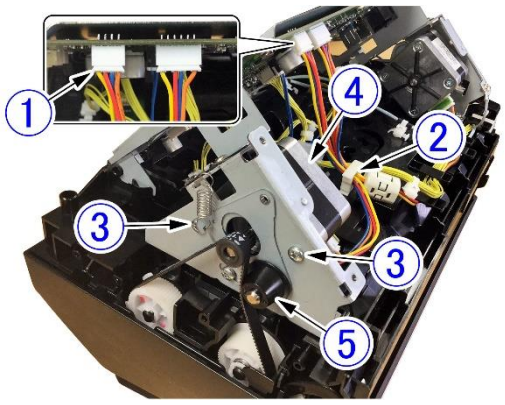

Figure 3-309

◆ Notes on assembling

1) To adjust the belt tension correctly, follow the instruction below after mounting the main motor.
2) Connect the cable of the main motor after the belt tension adjustment.

◆ **Adjustment of tension**

1) Stand up the machine and open the front unit.
2) Remove the lower reading unit. (Page 3-23)
3) Make a mark ② on the motor pulley ① to be able to check the rotation of the motor pulley.

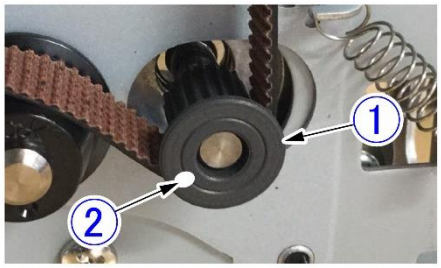

Figure 3-310

4) Loosen the screw ① to free the tensioner ②. Next, turn the drive roller ③ in the direction of arrow by hand, turn the motor pulley ④ 5-turns.

Note: Do not loosen the screw too much since it is easy to be remove the tensioner② form the extrusion ⑤.
Remove the motor cable when rotate the drive roller.
Do not stick oil to the roller.

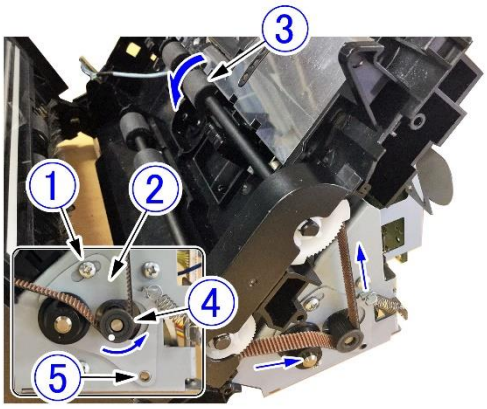

Figure 3-311

5) Check the tensioner is not removed from the extrusion and fix the screw.
6) Connect the cable of the motor to the connector.

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4. Dust Cover

1) Remove the mounting plate (with control PCB).
   Refer to "1. Control PCB".
   (Page 3-13)
2) Remove the feed motor.
   (Page 3-14)
3) Remove the main motor.
   (Page 3-15)
4) Disconnect the 3 connectors ①, release the 4 cable holders ② (reusable type), and remove each cable from the cable guide.

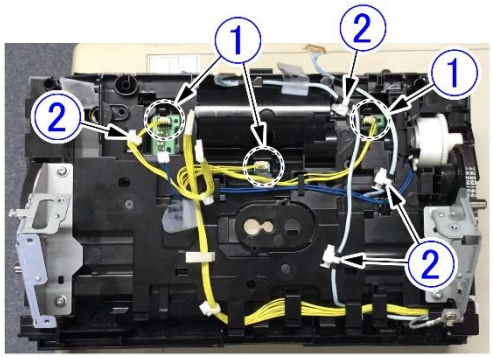

Figure 3-312

5) Use a tool with thin and flat edge to unhook the fitting parts ① (6 places).
   Next, remove the dust cover ②slowly, and then remove the cable ③ of the lower reading unit

Note: Once you remove the dust cover, the ultrasonic drive PCB can be removed.

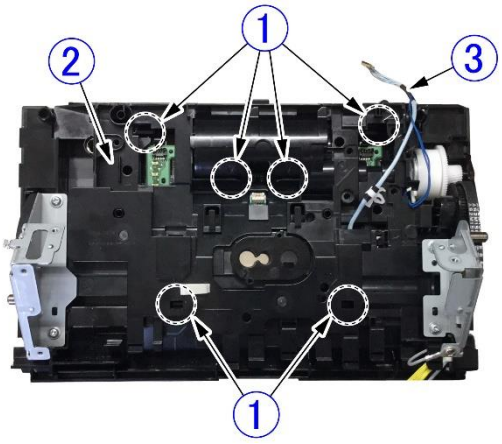

Figure 3-313

◆ **Notes on assembling**

1) Attach the ultrasonic drive PCB first.
2) All of the fitting parts (6 places) should be fully seated. There should not be any raised parts.
3) The cable holder should be inserted in the original position and the cable should be placed to align with the cable guide.
4) When mounting the dust cover, put the clutch rotation stopper ① against the frame, and then mount the dust cover ②.

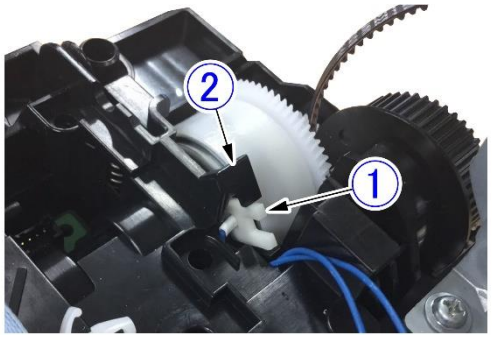

Figure 3-314

5. Feed Error Sensor (Transmitter)

Note: The feed error sensor has same parts on both right and left side.

1) Remove the dust cover.
(Page 3-17)
2) Unhook the fitting part ① and remove the feed error sensor ②.

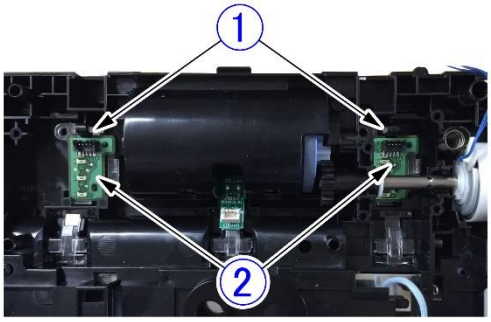

Figure 3-315

6. Clutch Unit

1) Remove the dust cover.
(Page 3-17)
2) Remove the 2 screws ① (M3x8, BH, self-tapping) and the stopper ②.
Next, remove the belt and the pulley.

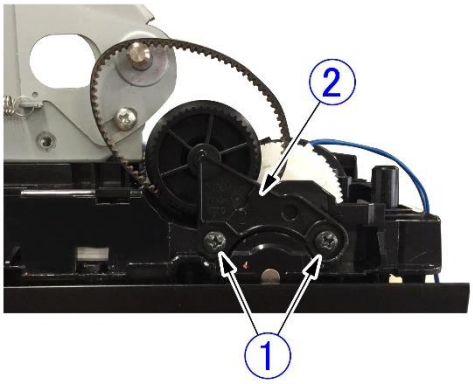

Figure 3-316

3) Remove a stopper ring ① and slide the bearing ② in the direction of the arrow to remove the clutch unit③.
Next, remove the spring ④.

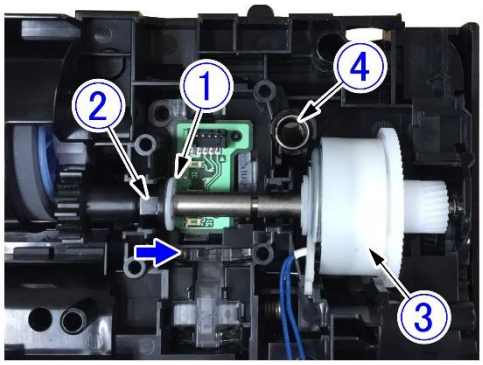

Figure 3-317

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◆ **Notes on assembling**

1) Attach the spring after mounting the clutch unit.
2) When fixing the stopper with the screw, fix in order of ①, and ② that are indicated on the stopper.

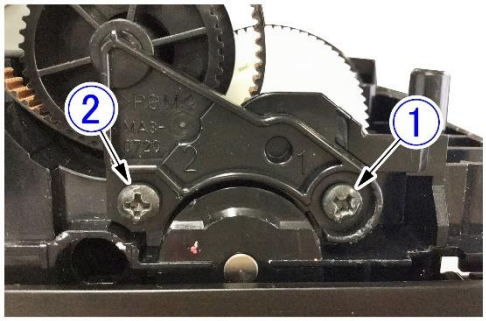

Figure 3-318

7. Drive Roller

Note: The registration side (upper) and the eject side (lower) of the drive roller have different component.

1) Remove the lower reading unit.
(Page 3-23)
2) Remove the lower cover.
(Page 3-2)
3) Remove the fitting part in order of ①, ②, and the pulley cover ③.
Next, remove the belt from the pulley.

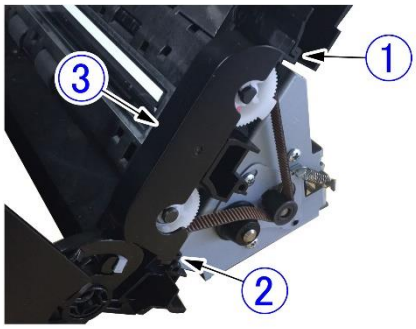

Figure 3-319

4) Remove the mounting plate (with control PCB).
Refer to "1. Control PCB".
(Page 3-13)
5) Remove the 2 screw ① (M3x8, TP, self-tapping) and the main motor mounting plate ② (with main motor).
Next, remove the 2 coil spring ③ under the mounting plate.

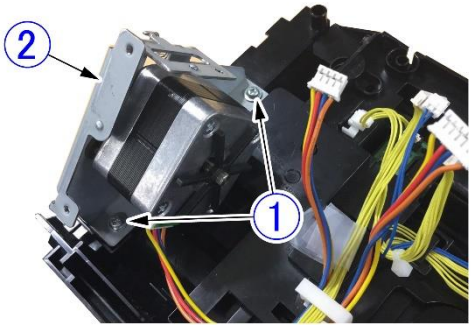

Figure 3-320

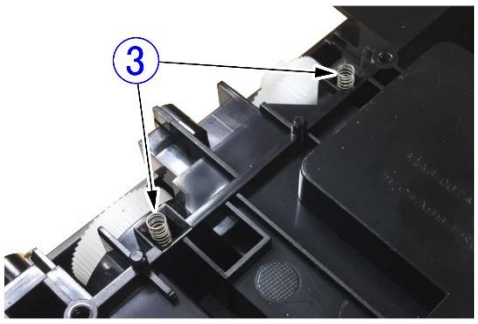

Figure 3-321

6) Remove the stopper ring ① and the bearing ②.

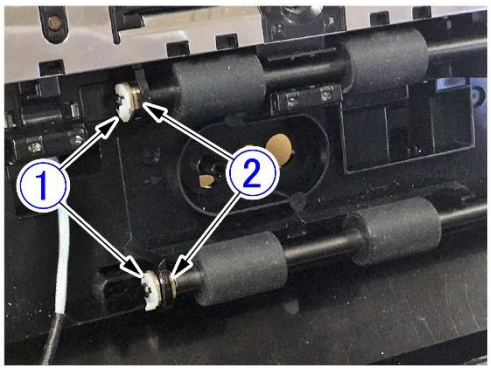

Figure 3-322

7) For the registration side roller, remove the stopper ring ①, pulley ②, gear ③, and washer ④. And then slide the bearing ⑤ to remove the drive roller ⑥.
For the eject side roller, remove the stopper ring ①, and pulley ⑦and washer ④. Next, slide the bearing ⑤ to remove the drive roller ⑧.

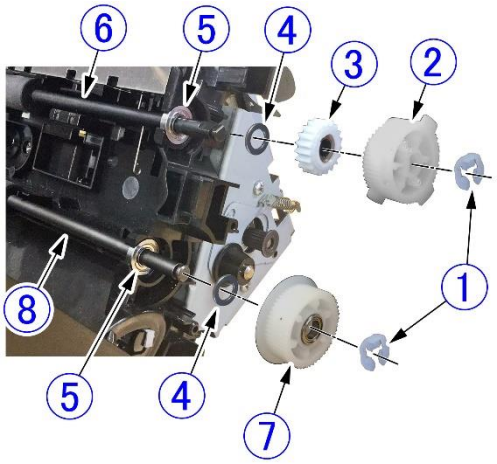

Figure 3-323

◆ **Notes on assembling**

1) After fixing the main motor mounting plate and the belt, adjust the belt tension referring to “3. Main Motor”. (Page 3-15)
2) Connect the main motor cable to the connector after the belt adjustment.

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IV. READING UNIT

1. Upper Reading Unit

Note: The shapes of the reading guides for the upper reading unit and the lower reading unit are different.

1) Insert a tool with thin and flat edge into the left and right gap ①, and lift up the reading unit ② a little bit using the tool while unhooking the inside fitting parts.
   Next, remove the reading unit by pulling it straight up.

Note: Do not pull the cable excessively because it is connected to the rear side of the upper reading unit.

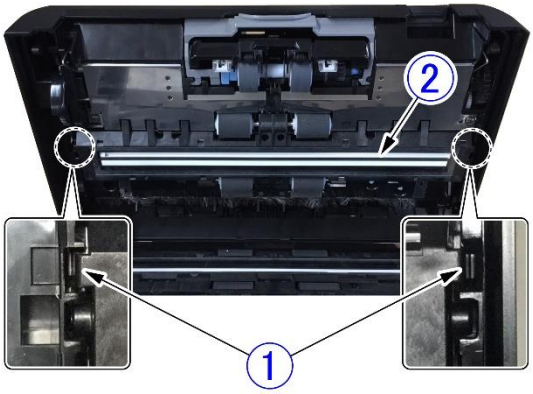

Figure 3-401

2) Disconnect the cable ① from the cable holder ②, and disconnect the connector ③ from the upper reading unit ④.

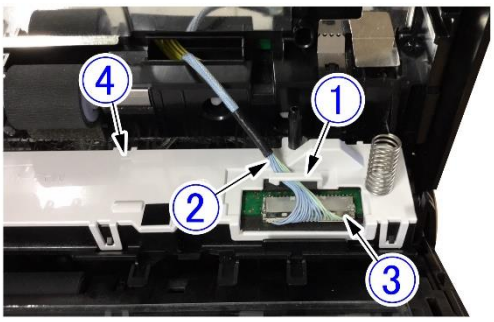

Figure 3-402

◆ **Notes on assembling**

1) After connecting the cable, attach the upper reading unit while pushing the cable inside of the upper frame.
2) Check if the upper reading unit move smoothly when the unit is attached. If it does not move smoothly, attach it again.

2. Upper Reading Guide

Note: The reading unit has the reading glass and white reference sheet mounted on it. This component should not be disassembled unless necessary because once the reading unit has been disassembled, there is a risk of dust getting inside the reading unit.
When disassembling, be careful with dusts and do not touch the inner surface of the glass or the surface of the lens array.

1) Remove the upper reading unit.
(Page 3-21)
2) Remove the 2 coil spring ①.
Next, unhook the fitting part ② (8 places) and remove the lid ③.
Next, remove the CIS unit ④.

Note: Unhook the fitting parts without damaging the hooks.

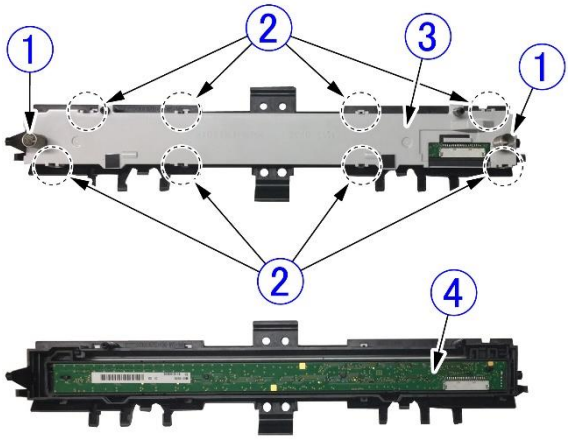

Figure 3-403

Note: When removing the CIS unit, do not drop the shading plate ① because they are detached.
If the shading plate is detached, mount the shading plate aligning it with the protrusions ② of the reading guide.

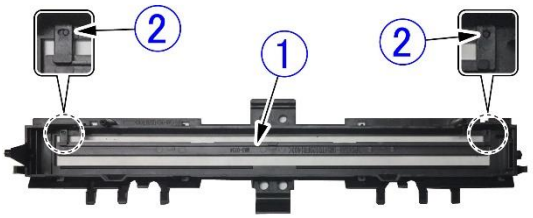

Figure 3-404

◆ **Notes on assembling**

The hooks of the fitting parts should not be raised or have gaps.

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3. Lower Reading Unit

Note: The shapes of the reading guides for the upper reading unit and the lower reading unit are different.

1) Insert a tool with thin and flat edge into the left and right holes ① (4 places), and lift up the lower reading unit ② a little bit using the tool while unhooking the inside fitting parts. Next, remove the lower reading unit by pulling it straight up.

Note: Do not pull the cable excessively because it is connected to the rear side of the lower reading unit.

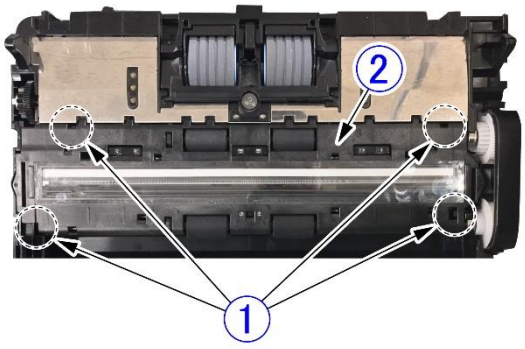

Figure 3-405

2) Remove the cable ② from the cable holder ①, and disconnect the connector ④ from the lower reading unit ③.

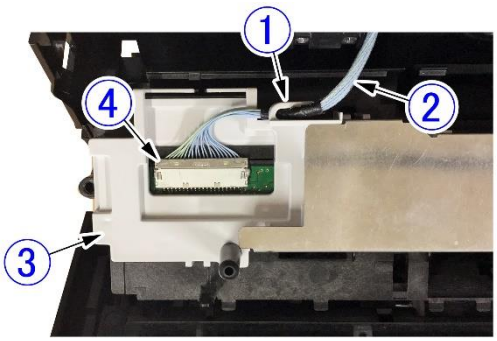

Figure 3-406

◆ **Notes on assembling**

After connecting the cable, attach the lower reading unit while pushing the cable inside of the frame.

4. Lower Reading Guide

Note: The reading unit has the reading glass and white reference sheet mounted on it. This component should not be disassembled unless necessary because once the component has been removed, there is a risk of dust getting inside the reading unit.
When disassembling, be careful with dusts and do not touch the inner surface of the glass or the surface of the lens array.

1) Remove the lower reading unit.
(Page 3-23)
2) Using a tool with thin and flat edge, unhook the fitting part ① (8 places), and remove the lid ② (with shield plate). Next, remove the CIS unit ③.

Note: Unhook the fitting parts without damaging the hooks.

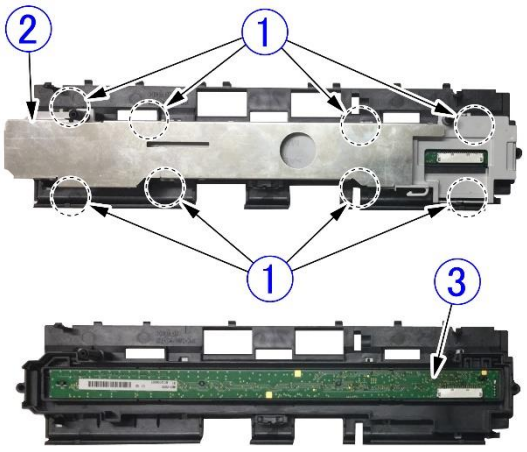

Figure 3-407

Note: When removing the CIS unit, do not drop the shading plate ① because they are detached.
If the shading plate is detached, mount the shading plate aligning it with the protrusions ② of the reading guide.

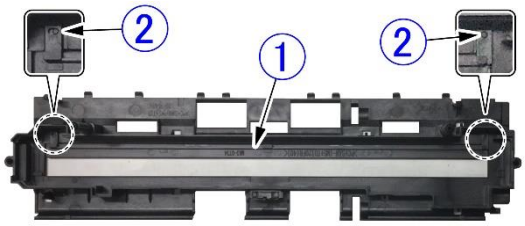

Figure 3-408

◆ **Notes on assembling**

The hooks of the fitting parts should not be raised or have gaps.

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CHAPTER 4

INSTALLATION & MAINTENANCE

I. INSTALLATION 4-1
II. PARTS REPLACEMENT.....4-4
III. MAINTENANCE 4-6

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I. INSTALLATION

This machine is installed by the user. The user should be advised to install the scanner by reading the Setup Guide thoroughly. This section gives an overview of the procedure. For details, refer to the user manual.

1. System Requirements

The recommended system is as follows.

1) Computer
   CPU: Inter Core 2 Duo 1.66 GHz or higher
   Memory: 1GB or more
   Hard disk: 3GB or more space
   USB interface: USB3.1 Gen1 / USB2.0
   Monitor: Resolution 1024 x 768 (XGA) or higher
   Optical drive: Able to read CDs

2) OS
   Microsoft Windows 7 (32/64 bit edition)
   Microsoft Windows 8.1 (32/64 bit edition)
   Microsoft Windows 10 (32/64 bit edition)
   Microsoft Windows Server 2008 R2 SP1
   Microsoft Windows Server 2012 R2
   Microsoft Windows Server 2016

Note: For details on each version, refer to the "User Manual".

2. Checking the Accessories

Open the package, and take out the main body and its accessories.

① Main body
② Document feed tray
③ USB cable (USB3.1 capable)
④ AC adapter
⑤ Power cord
⑥ Setup Guide
⑦ Setup disk
⑧ Warranty, etc. (depends on the shipping region)

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3. Document Feed Tray and Packing Material

Remove all of the tape and protective material, and install the document feed tray.

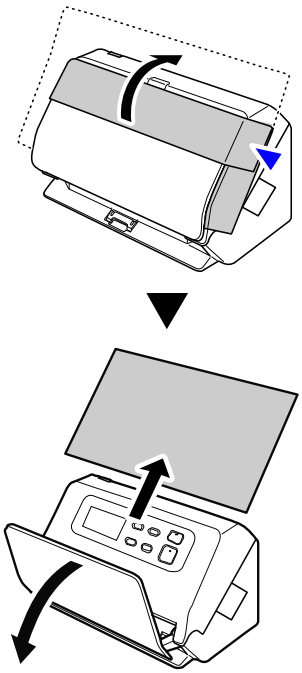

Figure 4-101

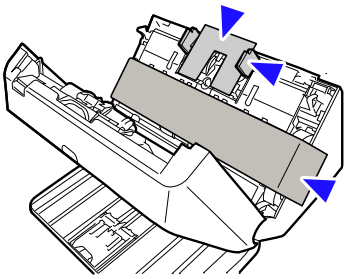

Figure 4-102

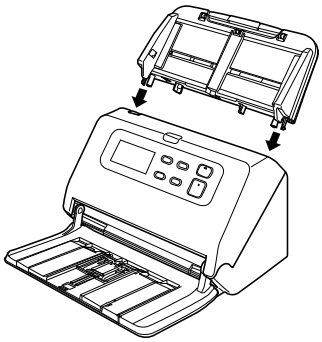

Figure 4-103

4. Installing the Software

Install the software from the included setup disk that is required in order to use the scanner.

Note: The software should be installed before connecting the machine to a computer.

The following shows an outline of the installation on Windows.

1) Login using an account with Administrator privileges.
2) Before installing the software, exit all other application.
3) Load the setup disk into the DVD drive of the computer.
4) The setup menu starts automatically.
5) Click [Typical Installation].

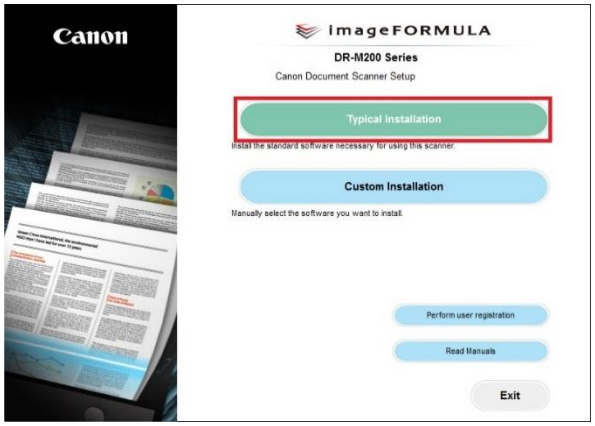

Figure 4-104

Finish the installation by following the on-screen messages.

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5. Connecting to a Computer

Note: Always use the power cord and AC adapter supplied with the machine.

1) Connect the power cord to the AC adapter.
2) Insert the plug from the AC adapter into the connector on the main body, and connect the power cord to the outlet.
3) Check that the power switch of the machine is off. Of the power is on, turn it off.
4) Connect the machine and the computer using the included USB cable.

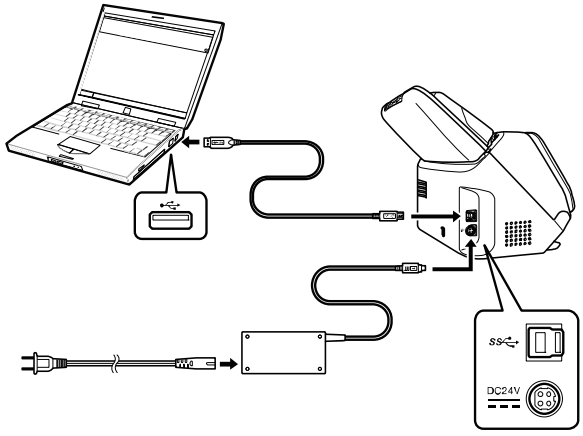

Figure 4-105

6. Power On

Press the power button. The power button lights when the power turns ON.

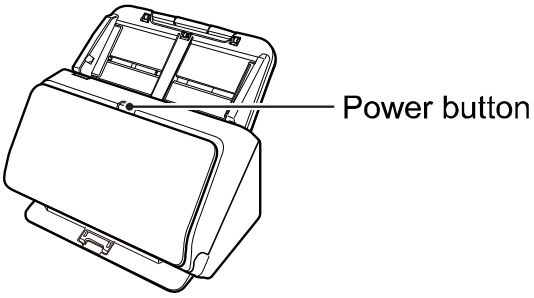

Figure 4-106

When you turn this machine connected to the computer ON, the plug-and –play function recognizes this machine, and the device driver is automatically installed.

The preparation is now complete. Check whether scanning is really performed. Refer to the “User Manual” for the details.

Note: To turn the power OFF, hold down the power button until the light goes off.

II. PARTS TO BE REPLACED

1. Periodically Replaced Parts

The recommended does not have any periodically replaced parts.

2. Consumable Parts

1) Parts replaced by users

No.	Parts name	Parts number	Expected life	Remarks
1	Feed roller	MG1-5152-000	200,000 sheets	Note that “200,000 sheets” is an estimated value for replacement and not a guaranteed value. Because of the worn rollers, it is necessary to replace when the feed error are occurred after cleaning.
2	Retard roller	MG1-5123-000		

Note: The items above are assigned as service parts, and an exchange roller kit also for sales goods for a set.

Table 4-201

2) Replaced by service technicians

None

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3. Major Parts List

The list below shows the major service parts, except for the parts replaced by users. Refer to the “Parts Catalog” for the details.

No.	Parts name	Parts number	Q’ty	Remarks
1	Control PCB	MG1-5077-000	1	
2	Sub PCB	MG1-5078-000	1	
3	Operation PCB	MG1-5079-000	1	
4	LCD Unit	MF1-4919-000	1	
5	Upper Reading Unit	MG1-8331-000	1	
6	Lower Reading Unit	MG1-8342-000	1	
7	Ultra sound drive PCB	MG1-4599-000	1	
8	Feed Error PCB (Transmitter)	MG1-4881-000	2	
9	Feed Error PCB (Receiver)	MG1-5080-000	2	
10	Registration Roller	MA3-0670-000	1	
11	Eject Roller	MA3-0671-000	1	
12	Follower Roller	MA2-9469-000	4	
13	Feed Motor	MH7-1174-000	1	
14	Main Motor	MH7-1199-000	1	
15	AC Adapter	MG1-5039-000	1	Outside of Chine
16	AC Adapter (China)	MG1-5041-000	1	China only

Table 4-202

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III. MAINTENANCE

1. User Maintenance

Refer to the “User Manual” for the details.

1) List

[△: Cleaning, ●: Replace]

No.	Location/Parts	Intervals		Details
		As necessary	200,000 sheets	
1	Main body	△		Use a cloth slightly dampened with water and well wrung out to remove any dirt, and then use a clean, dry cloth to wipe the main body.
2	Reading glass	△		Use a soft, clean, and dry cloth to wipe off any dirt.
3	Retard roller	△	●	Use a cloth slightly dampened with water and well wrung out to remove any dirt, and then use a clean, dry cloth to wipe the main body. Note: Remove the retard/feed roller from the main body before cleaning.
4	Feed roller	△	●	
5	Other rollers	△		
6	Feed path	△		Use such as air blowers to remove any dust and paper particles that have accumulated on the feed path.

Table 4-301

2) Locations to be cleaned

◆ Reading glass

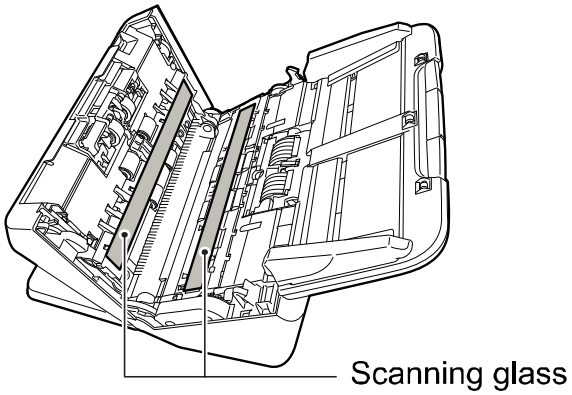

Figure 4-301

◆ Roller

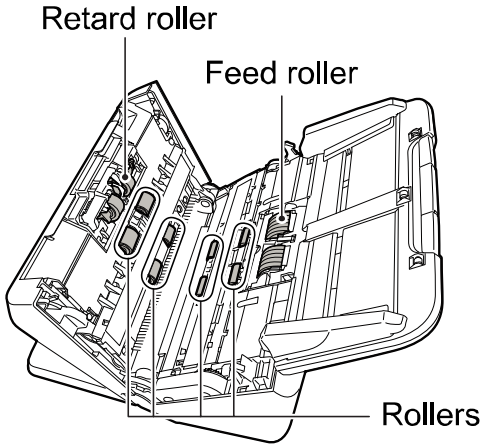

Figure 4-302

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3) Replace Rollers Display

Once the number of sheets fed exceeds the guide for replacement of 200,000 sheets, a screen displaying the message [Time to Replace Rollers] is displayed the when reboot the machine.

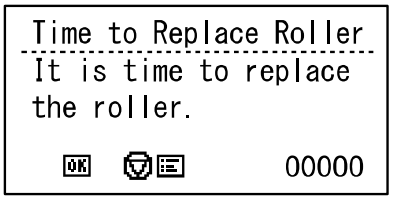

Figure 4-303

Also, a screen displaying the message [Replace Rollers] is displayed the next time the computer recognizes the machine.

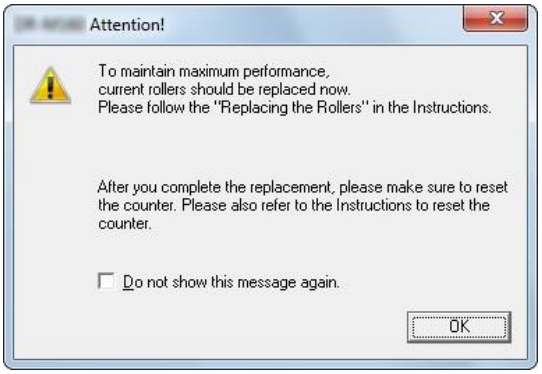

Figure 4-304

4) Method for Replacing Rollers

◆ Feed roller

Open the roller cover and remove the roller. Then assemble the new roller with the stopper on the left side facing the correct way.

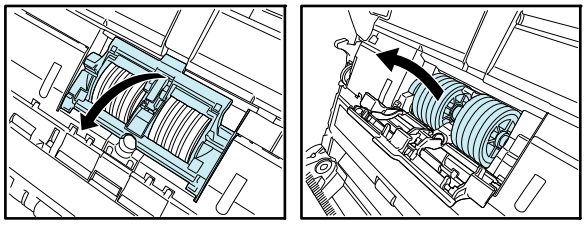

Figure 4-305

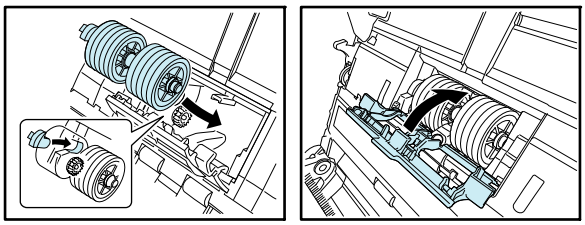

Figure 4-306

◆ Retard roller

Open the roller cover and remove the roller by pulling the lever. Then assemble the new roller by inserting the gear side to the main body first.

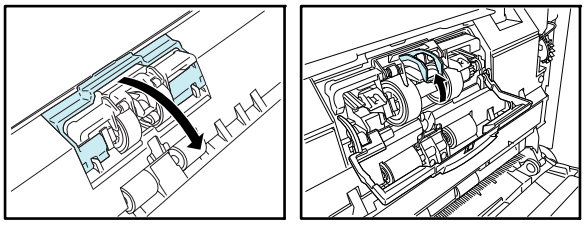

Figure 4-307

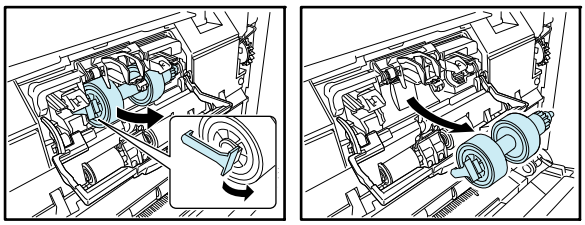

Figure 4-308

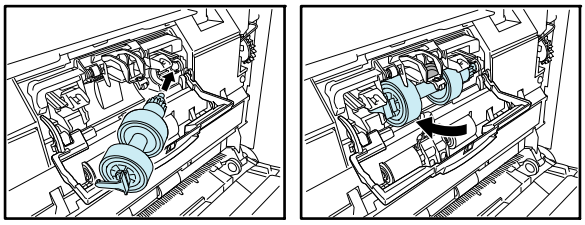

Figure 4-309

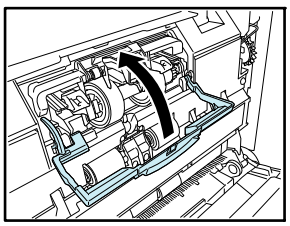

Figure 4-310

5) Resetting after replacement

The counters need to be reset after replacing the rollers. There are 2 methods to reset counters, one is by operation panel of the machine, and another is by application [Canon imageFORMULA driver setting tool].

Refer to the “User Manual” for the details.

◆ Operation of operation panel

Reset the counters by following operation.

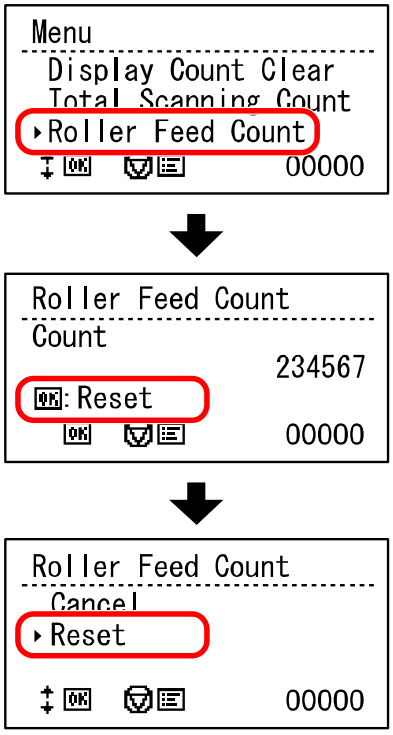

Figure 4-311

◆ [Canon imageFORMULA driver setting tool]

Open [Maintenance], click [Reset] to reset the roller feed count.

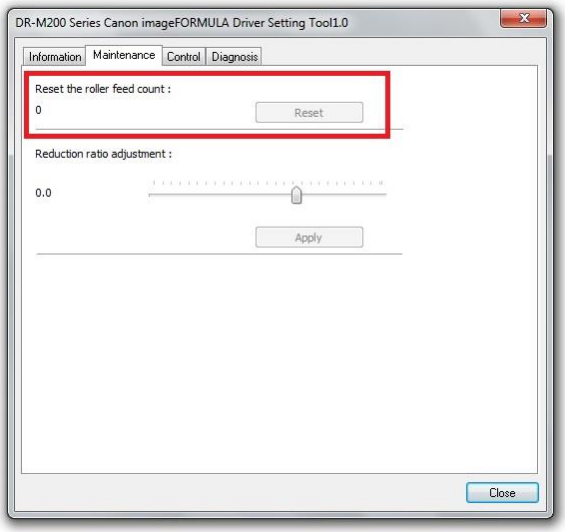

Figure 4-312

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2. Service Maintenance

For this machine, no periodical maintenance item by the service technicians is specified.

However, when visiting a user, check whether the reading glasses and the rollers are dirty. If they are very dirty, instruct the user to follow the “user maintenance” procedures. Recommend the user to replace consumable parts if necessary.

Furthermore, remove the cover, check that there is no paper dust or other foreign matter inside the main body, and then perform cleaning.

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CHAPTER 5

TROUBLESHOOTING

I. ERROR DISPLAY 5-1
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III. TROUBLESHOOTING LIST 5-43
IV. OPERATION TROUBLESHOOTING 5-44
V. IMAGE TROUBLESHOOTING.....5-48
VI. AFTER REPLACING PARTS 5-53

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I. ERROR DISPLAY

1. Main Body

When an error occurs, the power switch is blinking and contents of error is displayed on LCD panel.

The details of this display are as follows.

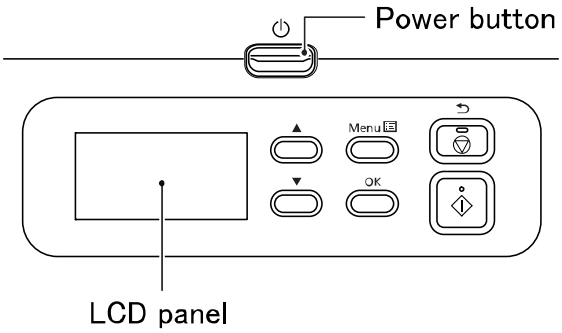

Figure 5-101

◆ Power switch

Display	Details
On	Power On
Blinking (0.5 times/sec.)	Sleep mode
Blinking (2 times/sec.)	Error

Table 5-101

◆ Error display

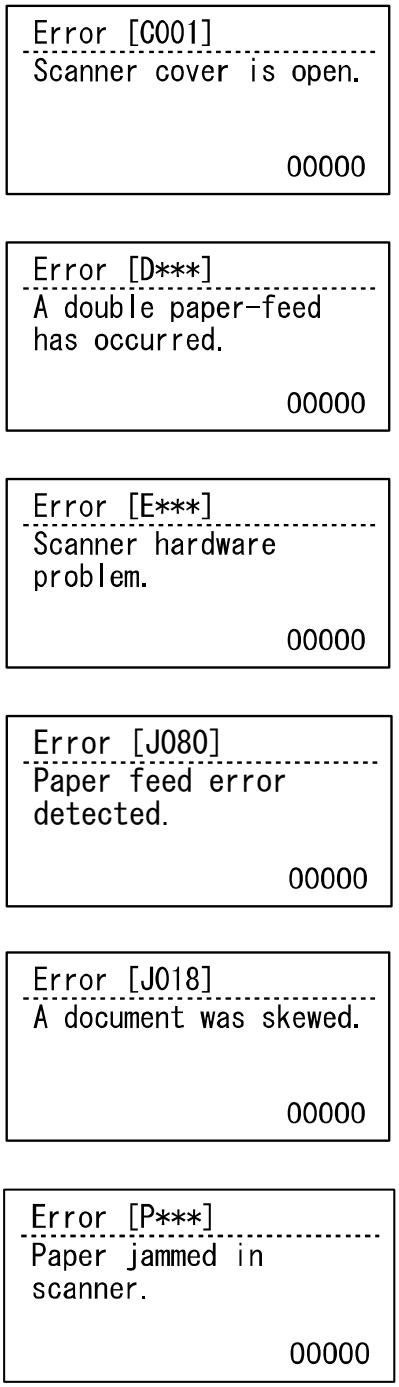

Figure 5-102

2. Computer

Error messages are displayed on the screen of the computer connected to the machine.

Each software (applications, drivers, OS) has own unique messages which they control. There are many user-related messages, such as when the user performs an incorrect operation. Users should resolve problems according to the error messages.

The following shows an example of an error message when using CaptureOnTouch.

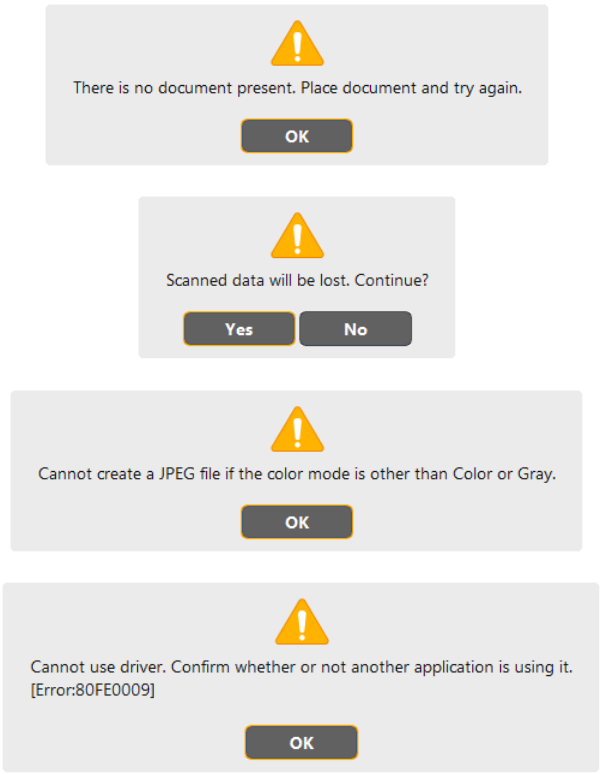

Figure 5-103

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II. SERVICE MODE

1. Outline

To execute the service mode, install the software (service tool) for the service mode, which is stored in the packaged setup disc or distributed for the service in the computer for servicing. This service tool is an integrated tool that consists of a common EXE file and product-specific DLL files.

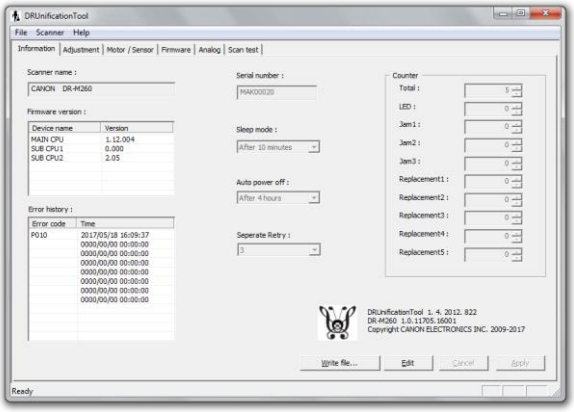
The system requirements for the computer are equivalent to those indicated in the user manual. The processing speed may drop if the CPU or memory capacity are not up to the specs.

When you select an operation button on the initial screen, the corresponding screen is displayed allowing you to execute each of the service modes.

The main screens are shown below.

● **Initial screen**

● **Information**



● **Adjustment**

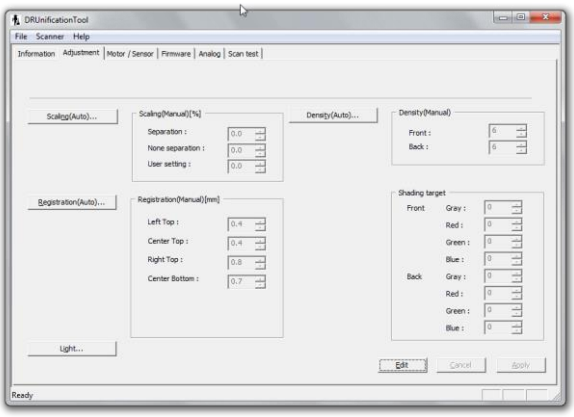
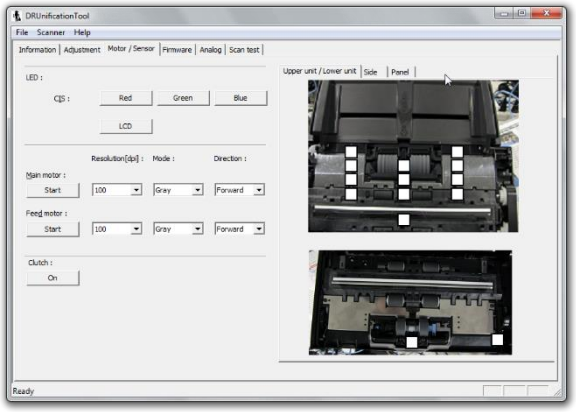
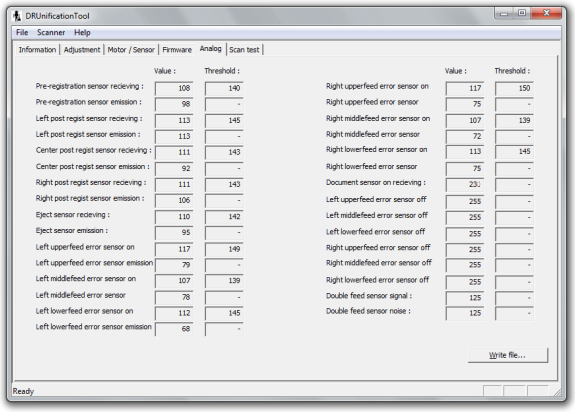


Figure 5-201a

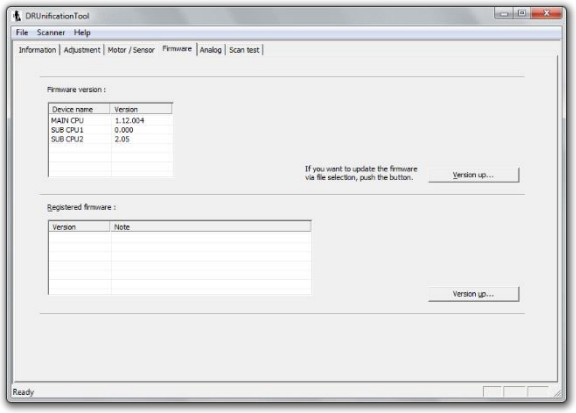
● Motor/Sensor



● Analog



● Firmware



● Scan test

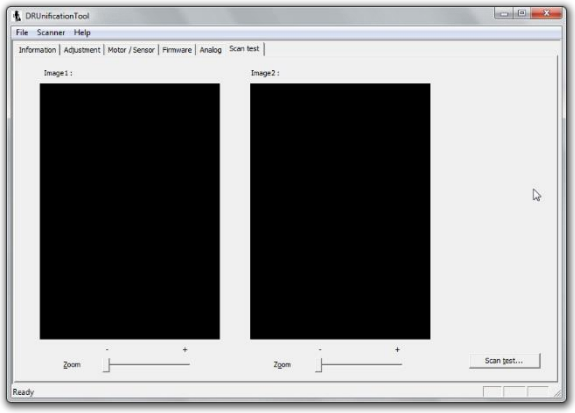


Figure 5-201b

A list of the modes is show below.

No.	Component/display name		Function
1	Information		
2		Scanner name	Scanner name display
3		Firmware version	Current firmware version display
4		Error history	Display the latest error code up to 8
5		Serial number	Display the serial number of the main body
6		Sleep mode	Sets the sleep mode start time
7		Auto power off	Auto power ON/OFF selection
8		Separate retry	Sets the number of separation retry
9		Counter	Display and change an accumulated number of fed sheets, replacement parts counter, etc.
10		Write file	Save the above information on the text file

Table 5-201a

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No.	Component/display name	Function
11	Edit	Change the serial number, counter values, sleep mode, auto power ON/OFF, and number of separation retry selection.
12	Cancel	Cancel the changed value
13	Apply	Save the changed value
14	Adjustment	
15	Scaling (Auto)	Automatic adjustment
16	Scaling (Manual)	Manual setting for scale parameter
17	Registration (Auto)	Automatic adjustment of the reading start position
18	Registration (Manual)	Manual adjustment of the reading start position
19	Light	Adjust the shading correction value
20	Density (Auto)	Automatically adjusts the image density
21	Density (Manual)	Manually adjusts the image density
22	Shading target	Manually adjusts the shading correction value
23	Edit	Manual adjustment value change
24	Cancel	Cancel the changed value
25	Apply	Save the changed value
26	Motor/Sensor	
27	LED CIS	Check the lighting of the LED on the reading unit
28	LED Panel	Check the lighting of the LCD unit
29	Main motor	Checks the operation of the main motor
30	Feed motor	Checks the operation of the feed motor
31	Clutch	Checks the operation of the electromagnetic clutch
32	Upper unit/Lower unit	Checks detection by the registration/eject/double-feed/document/door/skew/feed error/staple sensors
33	Side	Checks communication of USB3.1 I/F
34	Panel	Checks detection of ▲ / ▼ / Menu / OK/ stop / start / power switch

Table 5-201b

No.	Component/display name		Function
35	Firmware		
36		Firmware version	Current firmware version display
37		Version up	Version upgrade from unregistered firmware
38		Registered firmware	Content display and selection of registered firmware
39		Version up	Version upgrade from registered firmware
40	Analog		
41		Pre-registration sensor receiving	Pre-registration sensor's operation and data display
42		Pre-registration sensor emission	
43		Left post regist sensor receiving	Left post registration sensor's operation and data display
44		Left post regist sensor emission	
45		Center post regist sensor receiving	Center post registration sensor's operation and data display
46		Center post regist sensor emission	
47		Right post regist sensor receiving	Right post registration sensor's operation and data display
48		Right post regist sensor emission	
49		Eject sensor receiving	Eject sensor's operation and data display
50		Eject sensor emission	
51		Left upperfeed error sensor on (receiving)	Left upper feed error sensor's operation and data display
52		Left upperfeed error sensor emission	
53		Left middlefeed error sensor on (receiving)	Left middle feed error sensor's operation and data display
54		Left middlefeed error sensor (emission)	
55		Left lowerfeed error sensor on (receiving)	Left lower feed error sensor's operation and data display
56		Left lowerfeed error sensor emission	
57		Right upperfeed error sensor on (receiving)	Right upper feed error sensor's operation and data display
58		Right upperfeed error sensor emission	
59		Right middlefeed error sensor on (receiving)	Right middle feed error sensor's operation and data display
60		Right middlefeed error sensor (emission)	

Table 5-201c

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No.	Component/display name		Function
61		Right lowerfeed error sensor on (receiving)	Right lower feed error sensor's operation and data display
62		Right lowerfeed error sensor (emission)	
63		Document sensor on receiving	Document sensor's operation and data display
64		Left upperfeed error sensor off	Left feed error sensor's operation and data display (receiving at off)
65		Left middlefeed error sensor off	
66		Left lowerfeed error sensor off	
67		Right upperfeed error sensor off	Left feed error sensor's operation and data display (receiving at off)
68		Right middlefeed error sensor off	
69		Right lowerfeed error sensor off	
70		Double feed sensor signal	Operates the sensor detected document and displays data
71		Double feed sensor noise	Operates the sensor detected for 2 documents (double-feeding) and displays data
72		Write file	Saves the above information to computer
73	Scan test		
74		Image 1	Display scanned image (the second last one)
75		Image 2	Display scanned image (the last one)
76		Zoom (Image 1)	Enlarge image 1
77		Zoom (Image 2)	Enlarge image 2
78		Scan test	Scanning execution
79	Firm registration		
80		Register	Registers firmware
81		Delete	Deletes registered firmware
82		Add Note	Adds remarks to the registered firmware
83	Application information		Displays the service tool (EXE file) version
84	Simulation mode		Executes simulated operation without connecting to the scanner

Table 5-201d

2. How to Install

The following shows the procedure for installing the service tool from the setup disk. Never install it in the user's computer.

1) Turn ON the computer for servicing to start OS (Windows).
2) Install the setup disc packaged with this machine.
3) An installation screen for the user is displayed, but ignore this, right-click the [Start] button, and select "Explorer".
4) Copy the folder "\Driver\Tools" in the setup disc on any drive in the computer for servicing.

Note: Make sure to also install the driver for this machine onto the computer for servicing. You should also install CaptureOnTouch if necessary.
Please refer to the "User Manual" on installation of the driver.
However, when checking a specification such as the scanning speed, the system requirements for a computer described in the user manual should be satisfied.

Note: Keep the name of the folder and the password confidential from the user.

Note: If there is already a folder for another integrated tool, you can copy the files within the "Tools" folder for this product into that folder. However, you should copy by only overwriting with newer files. If you are not sure whether a file is newer or not, check the "Modified date" of each file before executing.

Reference: Folders and files

The files needed by the integrated tool should be saved in the same folder. Although you can change the folder name to any name, you should not change the file names. There are 4 files needed for this machine as follows.

- DRUnificationTool.exe
  Executable file (EXE file)
  This is used in common for all product
- DR-M260.dll
  Product-specific file (DLL file)
- DRUnificationTool.LOC
  Language localization file (Japanese/English) for DRUnificationTool.exe
  Only required for displaying Japanese
- UnificationToolU.LOC
  Language localization file (Japanese/English) for DLL file
  Only required for displaying Japanese

The DLL files for other products for the integrated tool that are created in the future can be used by saving them in this folder.

When the sale of this product started, a new DLL file was created and LOC file was updated.

Furthermore, the folders and files that are required are created in this folder when "Firm Registration" is executed. For details, refer to the "Firm Registration" section.

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3. How to Start and Finish

◆ How to start

1) Start the computer for servicing.
2) If an icon of CaptureOnTouch is displayed on the task bar, click the icon to terminate it.

Note: Refer to the “User Manual” for the details of how to operate CaptureOnTouch.

3) Connect the USB cable and then turn on the machine.
4) Run the installed file “DRUnification-Tool.exe”.

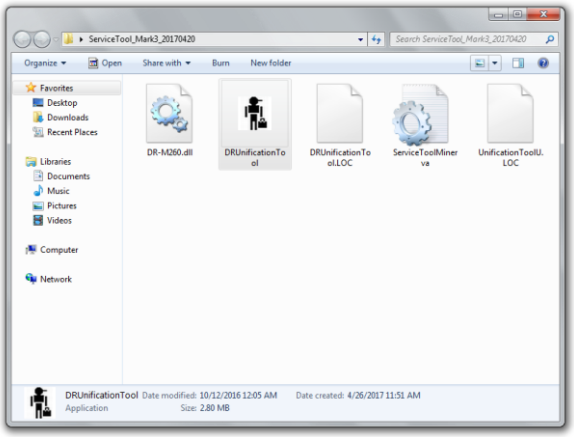


Figure 5-202

5) Password dialogue box appears, and enter six characters as “market” and select [OK].

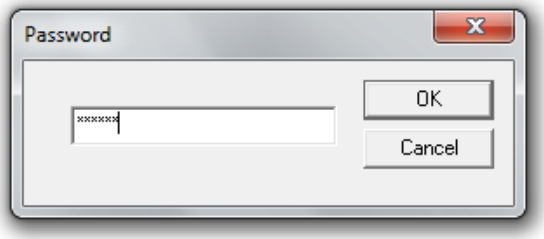


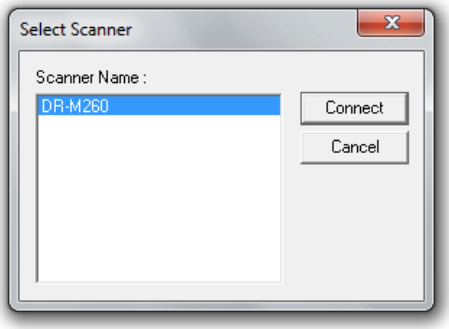
Figure 5-203

6) The initial screen is displayed.

Figure 5-204

7) Select [Select Scanner] to run each service mode, ore select [Firm Registration] to register firmware.
8) If you select [Select Scanner], the scanner selection screen is displayed to select the connected scanner.

- For DR-M260.DLL



- When there are other DLLs

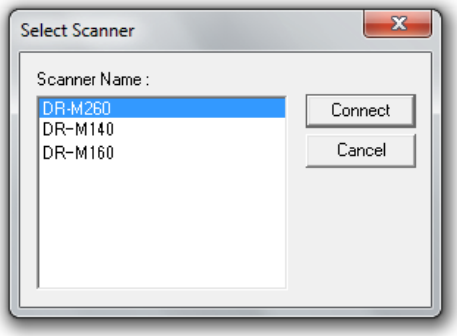


Figure 5-205

9) The information screen appears.

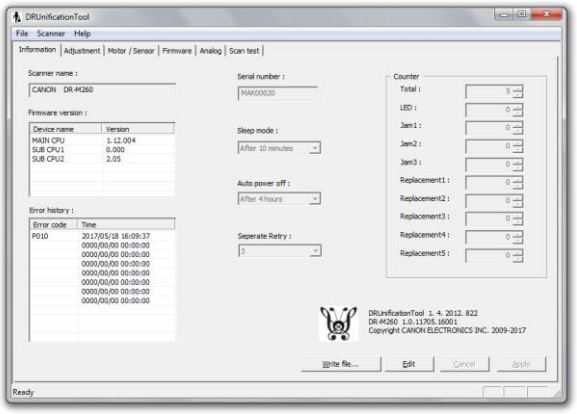


Figure 5-206

Note: Do not run any other application software such as CaptureOnTouch or turn off the machine while the service tool is running. If the tool becomes unresponsive, you should restart the computer.

Note: If “Connect” is selected before completing scanner recognition, the “No devices found.” Screen below appears. Select “Retry” in a few seconds.
The “No devices found.” Screen also appears if the scanner is not operated correctly, such as if it is not turned on. Check the operation procedure.

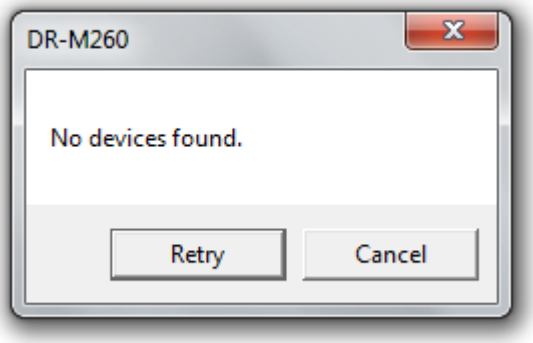


Figure 5-207

◆ How to finish

Either select [☒:Close] on the operation screen or select [Exit Application] from the [File] menu in the toolbar.

However, if “Firmware version update” is performed, removed and reinstall the USB cable at the end to reset the power properly.
Refer to the “Firmware version update” section for the details.

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4. Application Information

This mode is used to check the detailed version of the service mode software (EXE file).

Select [Help] from the toolbar at the top of the screen and then select [Application information].

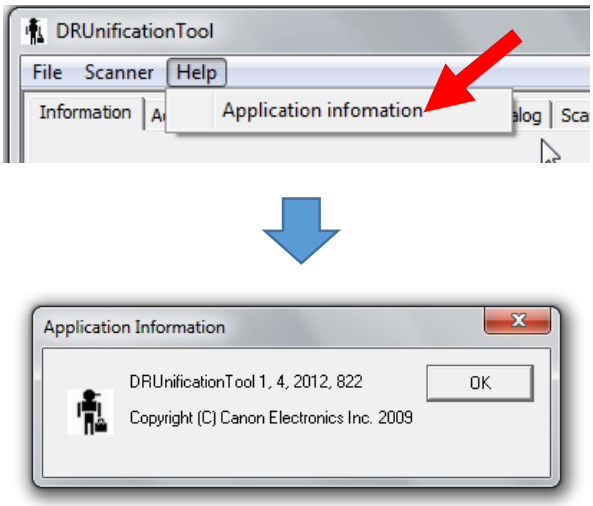

Figure 5-208

5. Simulation Mode

This mode is used to train service technicians about service mode without connecting to the scanner.

◆ Operation Procedure

1) Enter the 8 characters “training” as the password.

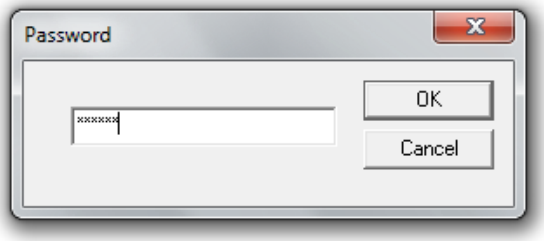

Figure 5-209

2) The screen is the same as in the real procedure, and can be operated in the same way except for some buttons that are grayed out.

Note: You cannot execute operations that require communication with the scanner.

A. Information

1. Scanner Name

This mode is used to check the connected scanner.

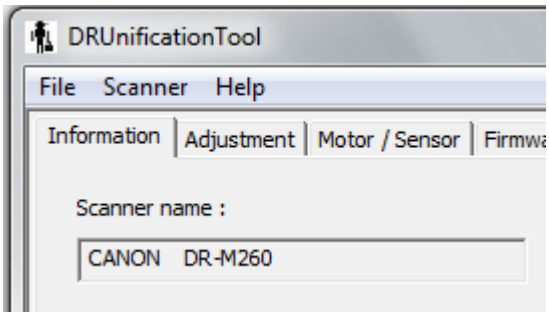

Figure 5-210

2. Firmware Version

This mode is used to check the versions of the main body firmware and the internal devices of the scanner.

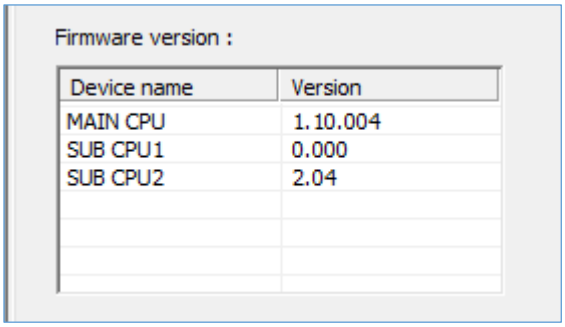

Figure 5-211

- [MAIN CPU]
  Main Controller

- [SUB CPU2]
  Each sensor's detection

Note: [SUB CPU1] does not have version number. Version of the main body firmware can also be confirmed on the user's driver screen.

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3. Error History

This mode is used for checking the code and occurrence time of errors.
Displays up to 8 errors.

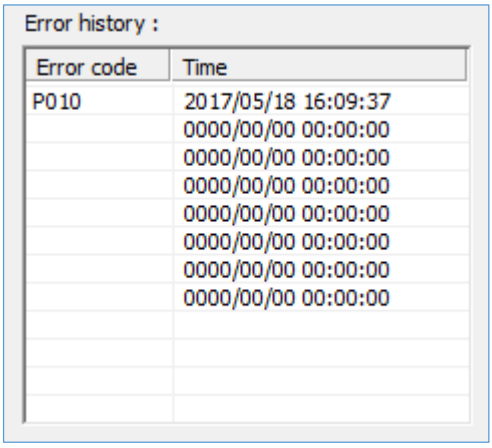

Figure 5-212

Error codes are shown below. Note that not all errors are displayed, and also that only the first error code is displayed, such that the error indicated may differ from the observed error.

For example, if the cable in front of the reading unit is disconnected, an initial-stage processing error will be displayed instead of E054, with E041 being displayed.

Note: For errors while in mechanical feed mode, the time is not displayed as a computer is not connected.

Codes	Details
C001	Cover open
D002	Double-feed detected
D004	Double-feed (ultrasonic) detected
E041	Light adjustment at scan error
E042	Light adjustment at scan start error
E043	SUB CPU1 communication error
E044	SUB CPU2 communication error
E054	Front image sensor connection error
E055	Rear image sensor connection error
E086	EEPROM write error
J018	Skew detected
J080	Feed error
P001	Entering pre-registration sensor JAM
P002	Leaving pre-registration sensor JAM
P004	Eject JAM
P006	Entering post-registration sensor JAM
P007	Leaving post-registration sensor JAM
P010	Eject sensor unreached JAM
P050	Force-stop command from controller

Table 5-202

4. Serial Number

This mode is used to check the serial number.

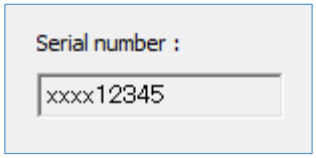

Figure 5-213

Serial number data is saved on the control PCB. When this PCB is replaced, values are displayed validly by selecting the [Edit] button on the information screen.

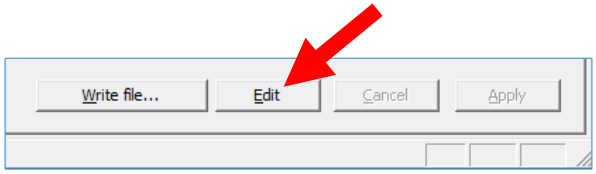

Figure 5-214

Enter the serial number shown on the rating label on the main body.

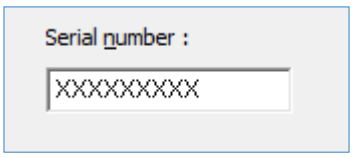

Figure 5-215

After entry, select the [Apply] button on the information screen and save the values.

If the [Cancel] button is selected on the information screen, the changed values are not saved.

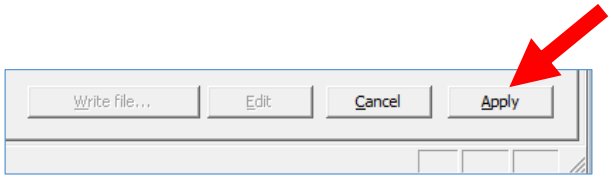

Figure 5-216

5. Sleep Mode

This mode is used to change the time before entering sleep mode. This is set to [After 10 minutes] by factory default.

This setting can be changed depending on the user usage conditions. If you change this setting, notify the user that you are changing it. Other than [After 10 minutes], selectable times are [After 1 hour] and [After 4 hours].

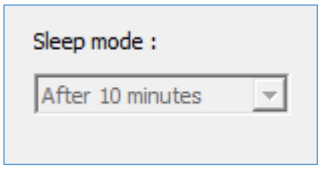

Figure 5-217

To change the sleep mode setting, select the [Edit] button in the information screen to enable selection and setting change.

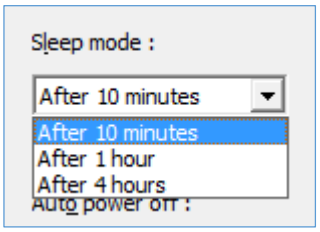

Figure 5-218

After selecting, be sure to select the [Apply] button on the information screen and save the settings.

If the [Cancel] button is selected on the information screen, the changed settings are not saved.

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6. Auto Power OFF

This mode is used to change setting of the power to turn off automatically when 4 hours of inactivity elapse since the last operation. This is set to [after 4 hours] by factory default.

Select [OFF] to disable Auto power off or [After 4 hours] for Auto power off.

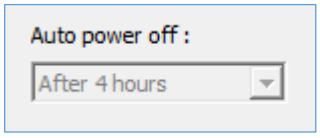

Figure 5-219

To change the Auto power off setting, select the [Edit] button on the information screen to enable selection and setting change.

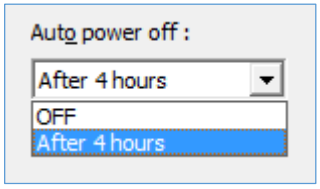

Figure 5-220

After selecting, be sure to select the [Apply] button on the information screen and save the settings. If the [Cancel] button is selected on the information screen, the changed settings are not saved.

7. Number of Separation Retry

This mode is used to set the number of retry document to inlet when detect separation fault. This is set to [3] by factory default.

This setting can be changed depending on the user usage conditions. If you change this setting, notify the user that you are changing it.

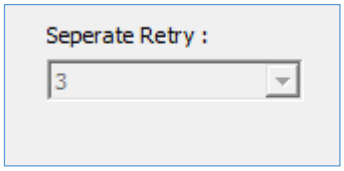

Figure 5-221

To change the number of separation retry setting, select the [Edit] button on the information screen to enable selection and setting change.

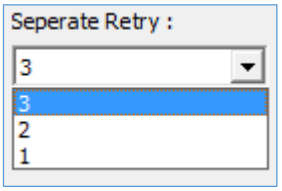

Figure 5-222

After selecting, be sure to select the [Apply] button on the information screen and save the settings. If the [Cancel] button is selected on the information screen, the changed settings are not saved.

8. Counter

This mode is used to display or change the scanning count and the number of document jams.

Note: Do not change the value of each item by mistake. Change it only if necessary.

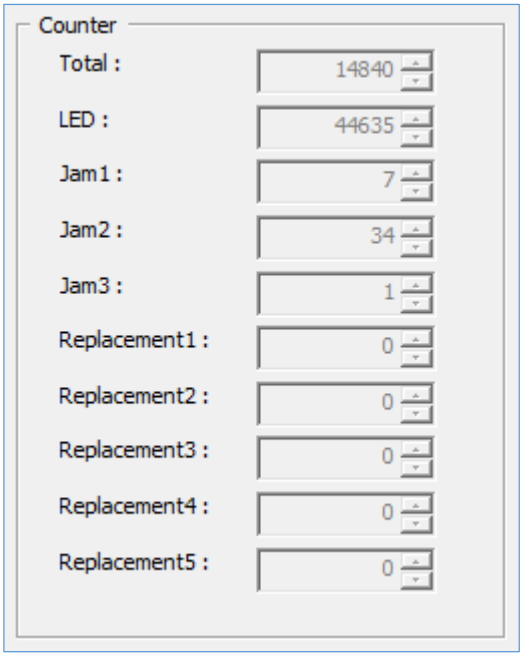

Figure 5-223

Display	Details
Total	Total number of sheets that have been fed.
LED	Total amount of time that the LED used by the reading unit (upper and lower) has been alight. Note that the units are in “seconds”. 1000 hours = 3,600,000 seconds.
Jam 1	The number of paper jams in the pickup section. Error code P001.
Jam 2	The number of paper jams in the registration section. Error code P002/P006/P007.
Jam 3	Number of document jams in the eject section. Error code P004/P010.
Replacement 1	Number of feeds when replacing the user replaceable parts (expected to replacement: 200,000 sheets). This displays the total number of sheets fed when reset in user mode.
Replacement 2	Replacement 2 to 5 are used by the service technicians to manually input the total number of sheets fed when replacing a part to serve as a rough guide until the next replacement. The corresponding parts can be decided within each local region or by the service technicians as necessary.
Replacement 3	
Replacement 4	
Replacement 5	

Table 5-203

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These values are changed when the control PCB is replaced. After the replacing the control PCB, input the same values as before the replacement. If you don't know the values before the replacement, input the estimated values.

When the "Edit" button on the information screen is selected, values are displayed validly and can be modified.

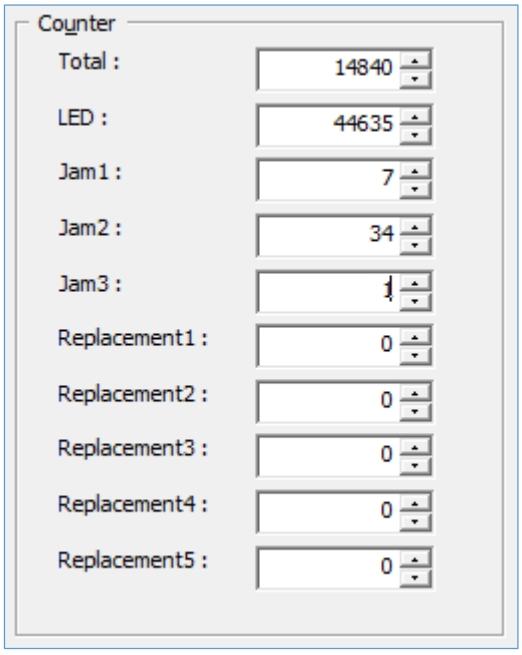

Figure 5-224

If the [Apply] button on the information screen is selected, the values are saved, and if the [Cancel] button is selected, they are not saved.

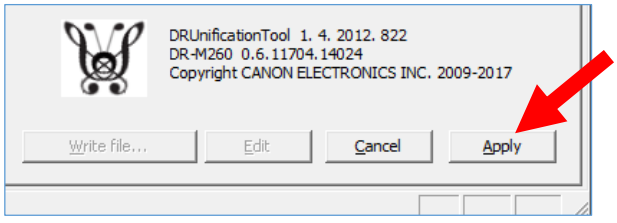

Figure 5-225

9. Write File

This mode is used to output the data shown on the information screen as a text file.

When [Write file] on the lower right side of the screen is selected, displayed information can be saved in a text file.

◆ Operation Procedure

1) Select [Write file].

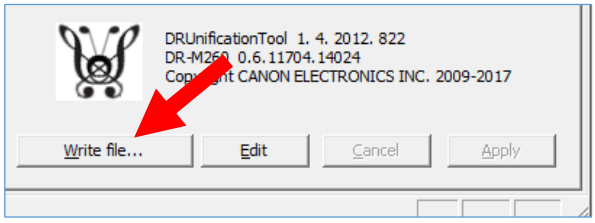

Figure 5-226

2) When the save screen is displayed, set the save location.

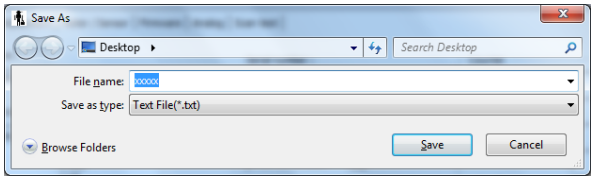

Figure 5-227

3) The information is saved.

The following shows some of the details in the file that is saved.

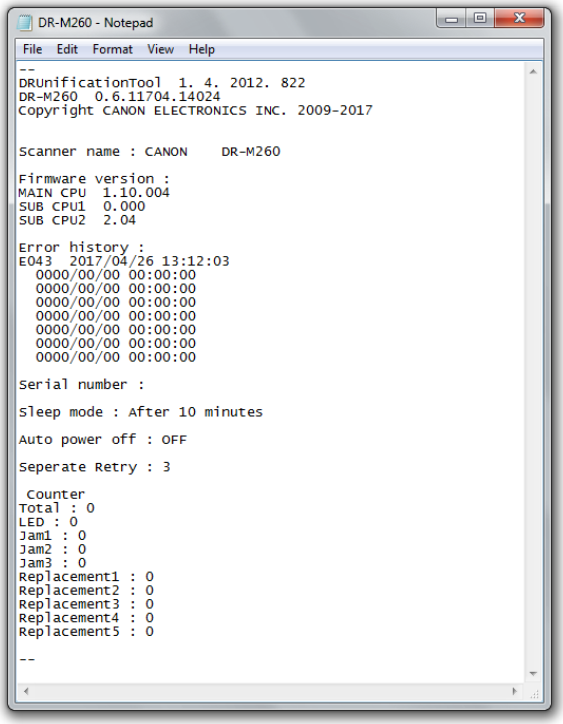

Figure 5-228

B. Adjustment

Adjustment should follow this order.

Adjust in the order of scaling→registration→light→density. If previous adjustment results are fine as they are, an adjustment item can be omitted.

However, making adjustments in the reverse order may prevent adjustments from being made correctly.

1. Scaling (Auto)

This mode automatically adjusts the feeding speed to make the length of the image in the feed direction correct. It adjusts by scanning the given length of the adjustment sheet. Adjustment is made first for separation feeding and then for none separation feeding. Adjustment is made with the front image.

◆ Adjustment sheet

Use a special adjustment sheet (TKM-0348).

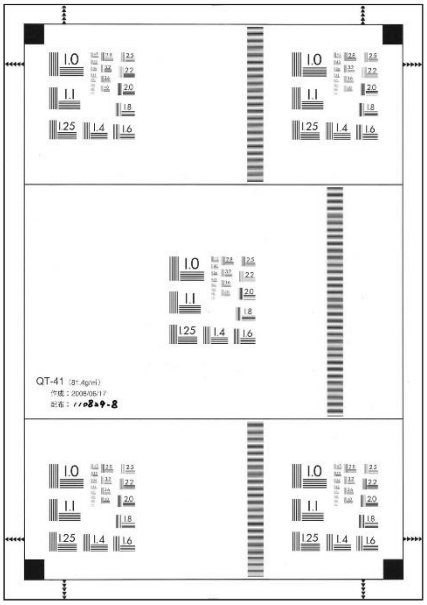

Figure 5-229

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◆ Operation Procedure

1) Place a single adjustment sheet in upside down and put its leading edge on the tip. Make sure to set the document guides so they are fit with the adjustment sheet to prevent skews.

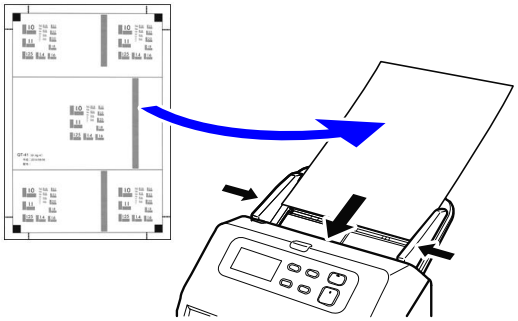

Figure 5-230

2) Select [Scaling (Auto)].

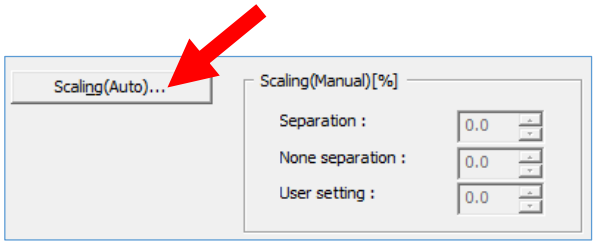

Figure 5-231

3) A progress screen appears, and the adjustment sheet is fed.

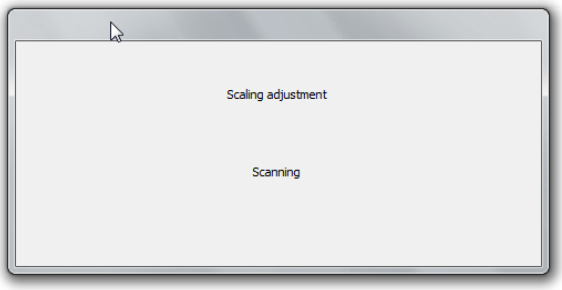

Figure 5-232

4) After the adjustment sheet is ejected, a dialog with instructions to load the adjustment sheet appears again. Place the adjustment sheet and click the [OK] button.

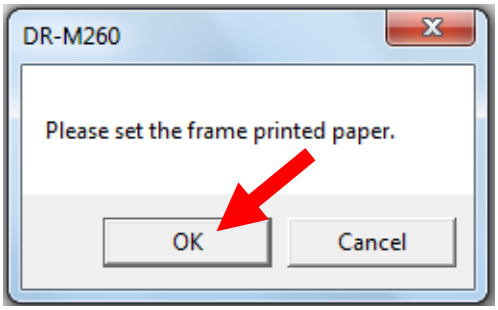

Figure 5-233

5) The adjustment sheet is ejected. The process is completed when the progress screen disappears.

◆ For market items, perform this adjustment for scale parameter faults due to friction, etc. or after replacing the control PCB.

2. Scaling (Manual)

Scaling adjustment is normally performed in automatic mode. This manual adjustment is a mode for manually adjusting the scale parameter of an image against the result of automatic adjustment.

◆ Types

There are 3 types of scale parameter adjustment.

1) Factory scale for separation mode
2) Factory scale for none separation mode
3) User setting

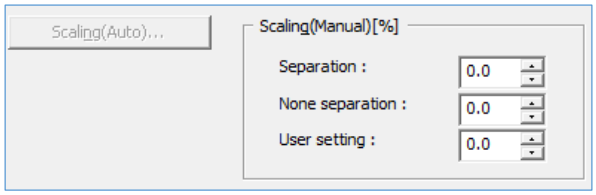

Figure 5-234

Since the feed method differs between separation and none separation mode, a slight difference occurs in the scale parameter and the individual scale parameters are set when shipped from the factory.

Furthermore, there is a user scale parameter to enable the user to re-adjust after the product ships. The setting can be configured from the maintenance tab in “Canon imageFORMULA driver setting tool”. That value is linked with the “User setting” in this mode.

◆ Adjustment sheet

Service tool: You can use the TKM-0271 test sheet or automatic adjustment sheet TKM-0348.

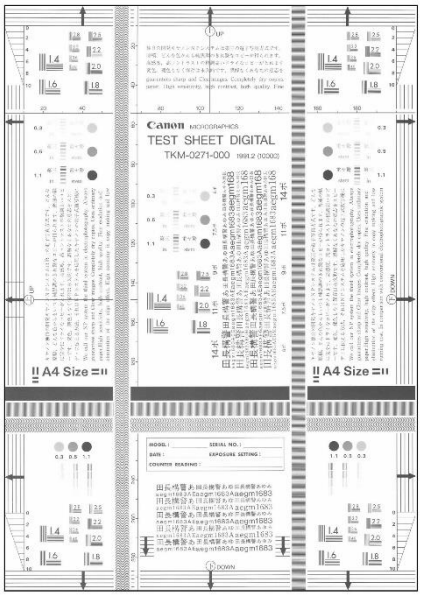

Figure 5-235

◆ Operation Procedure

1) Select the [Edit] button.

Note: If you adjust the scale parameter after replacing the control PCB or want to set the scale parameter adjustment value that is displayed in the user operating screen to “0.0”, you should first set all three of the adjustment values to “0.0” and select the [Apply] button.

2) Place a single adjustment sheet in upside down, put its leading edge on the tip. Align the document guide with the adjustment sheet to prevent skew.

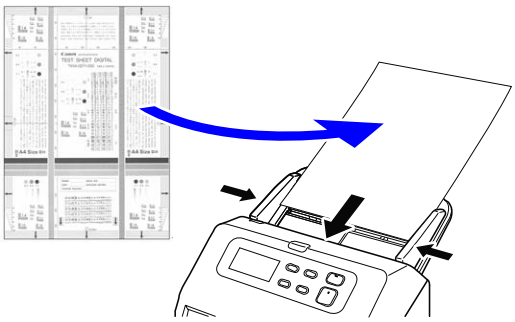

Figure 5-236

3) Open [Scan test] tab.

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4) Select [Scan test] button, select “separation mode” or “none separation mode” and scan.

Note: To set both “separation mode” and “none separation mode”, do this twice.

5) The scanned image is displayed on preview window of [image 1].

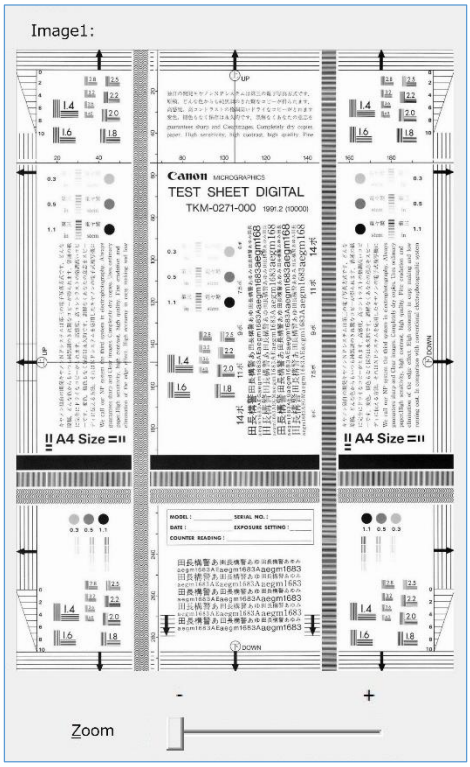

Figure 5-237

6) Moving slider to enlarge the image to check the leading edge is in correct position.

Note: If the position of the leading edge is incorrect or the image is skewed, perform the scan again.

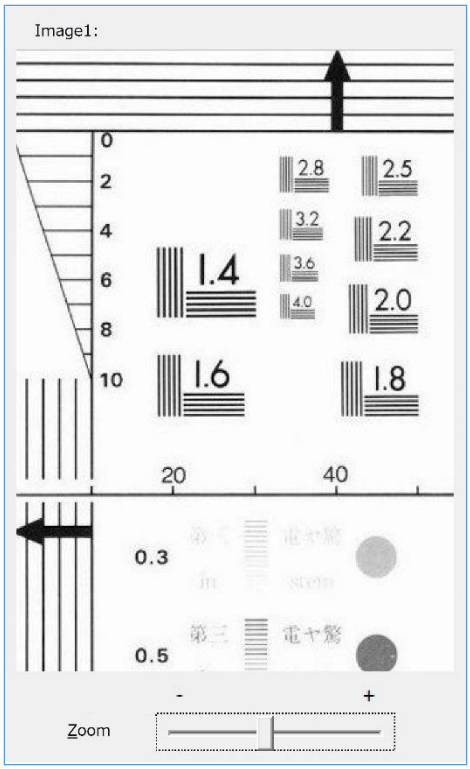

Figure 5-238

7) Check the trailing edge image next and set the adjustment values. For example, if you want to extend by 2.0 mm with A4 size, then since 2.0÷297→0.7%, add “0.7” to the value. If the original value is “0.0”, set the setting value to “0.7”. After you have set the value, click the [Apply] button. In the below figure, “Factory scale for separation mode” is set.

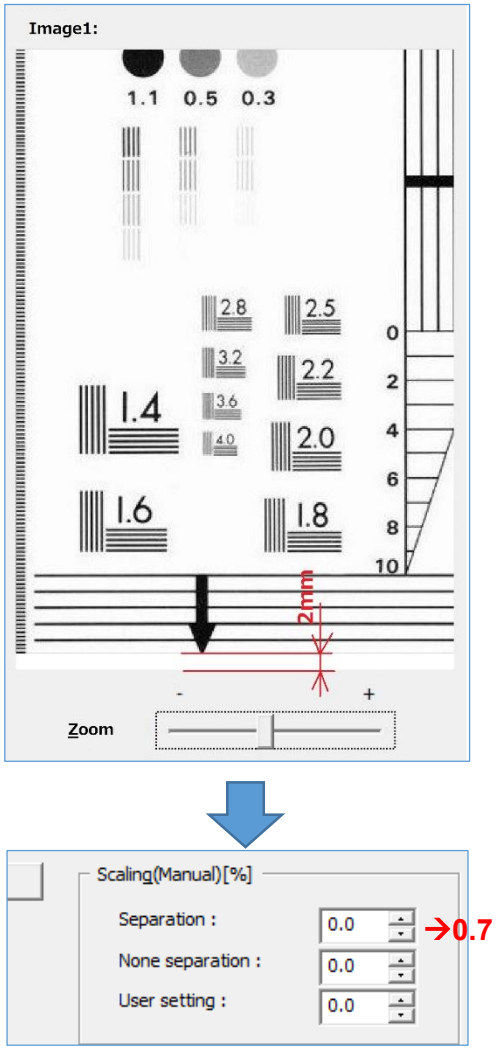

Figure 5-239

Note: The adjustment might not be enough using the factory adjustment value alone. If this happens, use the user adjustment value as well. Or, replace the rollers.

8) Place the adjustment sheet and scan again. Check the displayed image.

Note: Repeat the procedure again if the adjustments were not corrected properly.

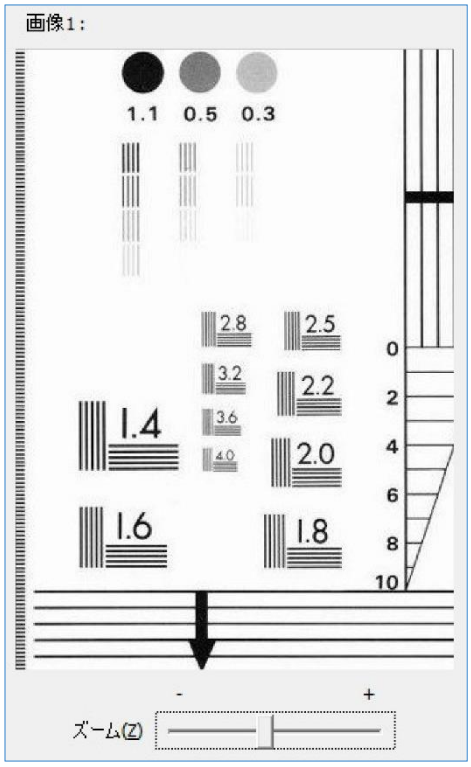

Figure 5-240

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3. Registration (Auto)

This mode performs adjustment of the reading-start position and reading-end position in the feed direction automatically.

If the leading-and trailing-edge positions of a scanned image are improper, perform this adjustment.

This mode also needs to be run if the reading unit or registration detection-related parts have been replaced ore reassembled, an if the control PCB has recorded adjustment data and it has been replaced.

◆ Adjustment sheet

General-purpose white copy paper is required to run this mode. The paper must be standard A4 or LTR size paper. This paper can be easily obtained, and so is not specified as a service tool.

Be sure not to use paper with a slanted shape, or that tends to jam or skew.

◆ Operation Procedure

1) Clean feed path, rollers, and scanning glass.
2) Load 2 adjustment sheets. Make sure to set the document guides to fit the sheet to prevent skews.

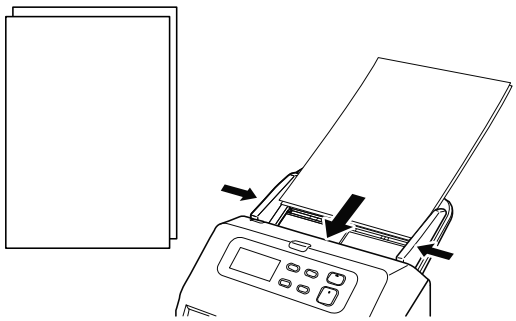

Figure 5-241

3) Select [Registration (Auto)].

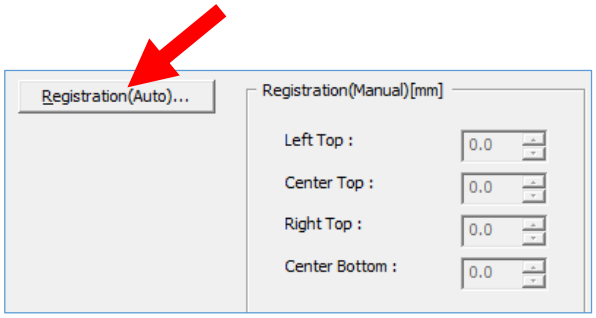

Figure 5-242

4) The adjustment proceeds automatically while the progress screens are displayed.

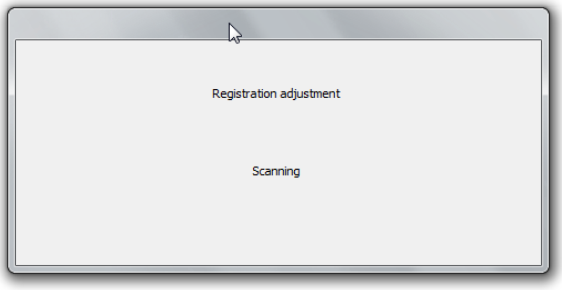

Figure 5-243

5) After the adjustment is complete, the progress screen disappears.

4. Registration (Manual)

Registration adjustment is normally performed in automatic mode. This manual adjustment is a mode that performs fine adjustment of the result of the automatic adjustment. Note that it does not reduce variations in the registration position.

◆ Adjustment sheet

Use the same sheet as the Registration (Auto) adjustment sheet.

◆ Operation Procedure

1) Clean feed path, rollers, and scanning glass.
2) Load a registration sheet. Make sure to set the document guides to fit the sheet to prevent skews.
3) Select the [Edit] button.
4) As for the value to adjust, the amount of additional change is added to the value previously set by the automatic adjustment. For example, add [1.0] to each values of [Left Top], [Center Top], and [Right Top] if you want to make the reading start of the leading edge 1mm earlier, or add [-1.0] if you want to subtract 1mm.
   And adjusting the reading end, execute the way to the value of [Center Bottom] as the same as the reading start's way.
5) Input the value to adjust by, and click the [Apply] button.
6) Select the scan test tab, and select the scan test. Specify the resolution as [300dpi] or [600dpi], the size as [AutoSize], and the mode as [Gray] or [Color] to make scan settings.
7) The sheet is fed and the procedure is complete.

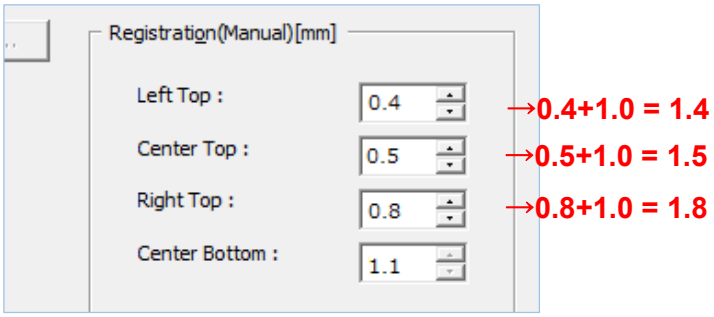

Figure 5-244

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5. Light

This mode performs fine adjustments on the shading correction values since the reading point differs between the white reference sheet inside of the reading unit and the actual document.

If the scanned image quality is degraded, perform this adjustment. Also perform this adjustment after replacing the reading unit or after replacing the control PCB recording the adjustment data.

◆ Adjustment sheet

The shading sheet is required to execute this mode. Use TKM-0332.

Do not use a sheet with any dirt or creases.

◆ Operation Procedure

1) Clean feed path, roller, and reading glass.
2) Open the document guides fully extended, then load a shading sheet you prepared to fit the width between the document guides.

Note: Do not set extra sheets.

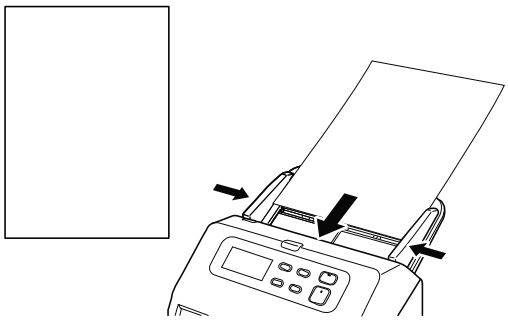

Figure 5-245

3) On the service screen, select [Light].

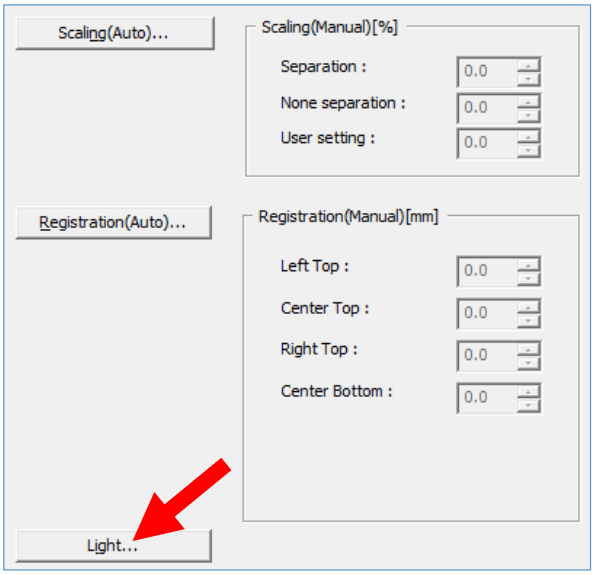

Figure 5-246

4) The adjustment starts automatically. The sheet is fed, and a progress screen is displayed.

Figure 5-247

5) Even after the sheet has been ejected, the data may be processed inside the machine. The progress screen disappears, and a caution screen is displayed. Do not turn OFF the machine or perform any operations until the caution screen disappears.

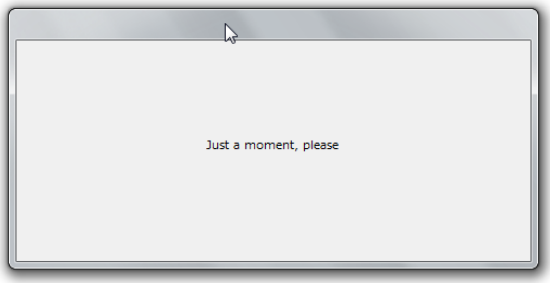

Figure 5-248

6) After the adjustment is complete, the caution screen disappears.

6. Density (Auto)

This mode automatically adjusts the density of front and back images. It measures the average density of the adjustment sheet and derives the value to adjust by.

◆ Adjustment sheet

Use a special adjustment sheet (TKM-0351).

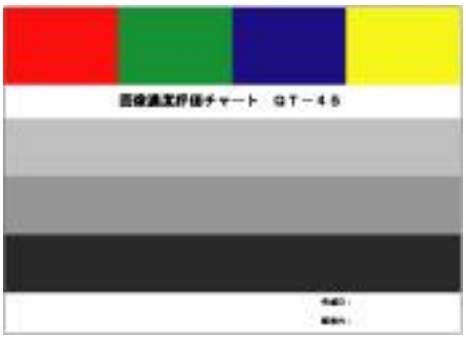

Figure 5-249

◆ Operation Procedure

1) After cleaning the feed path, place the color chart on the top edge and set the adjustment sheet upside down. Make sure to set the document guides so they are fit with the adjustment sheet to prevent skews.

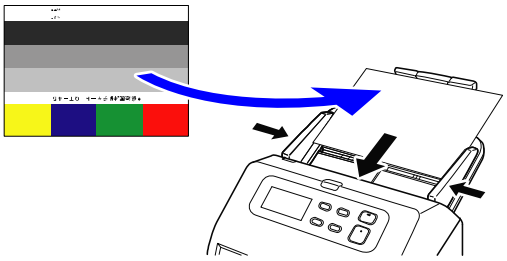

Figure 5-250

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2) Select [Density (Auto)].

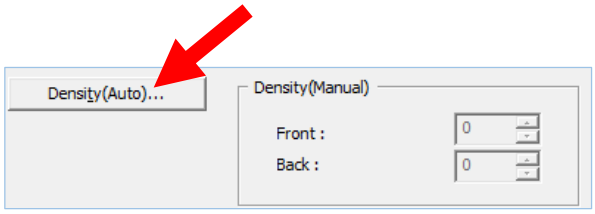

Figure 5-251

3) The adjustment sheet is fed. Once ejected a confirmation screen appears for “backside” adjustment.

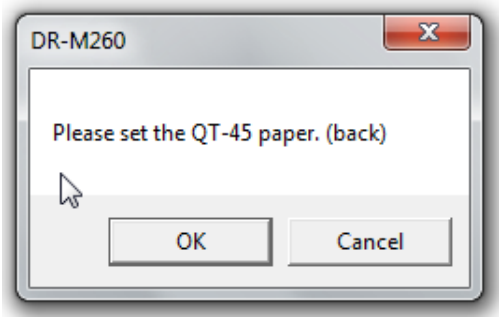

Figure 5-252

4) Set the adjustment sheet front side up, and select [OK].

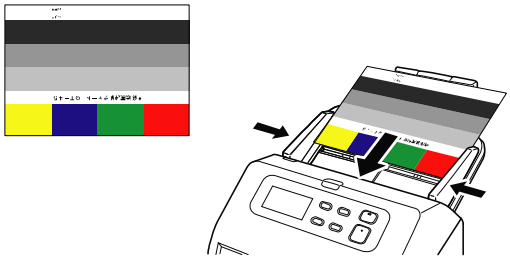

Figure 5-253

5) The adjustment sheet is fed/ejected again. Adjustment is now completed, and the progress screen disappears.

◆ For market items, perform this adjustment for density faults (including differences in front and back densities), or after replacing the control PCB.

7. Density (Manual)

This mode is for manually changing values set at factory shipment or with [Density (Auto)].

The value set automatically is equivalent to the midrange value of [128] for the driver’s brightness adjustment. Density of the midrange value [128] can be changed with this manual adjustment. Differences in front- and backside densities can also be adjusted.

◆ Operation Procedure

1) First, determine the amount by which to adjust from an actual scan image. The amount for adjustment by the driver is equivalent to the setting value of this mode.

Note: For example, to change the density of the driver’s setting value [118] to the midrange value, based on an adjustment amount of 118-128=-10, the setting values for this mode should be [-10].

2) Select [Edit].

3) Enter the setting value in the data box using the scroll arrows. Front- and backside setting values are independent. The figure below shows only the front side being changed from [0] to [-10]. The setting value can be in a range of ±20.

Note: <u>The recommended range is ±10</u>

Exceeding this range may prevent image processing such as automatic size detection and B&W/color detection from running correctly.

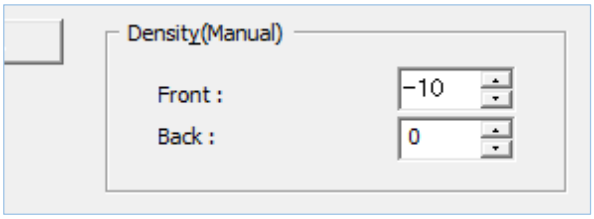

Figure 5-254

4) Input the adjustment value and select [Apply].
5) Check a scan image after making the change. Readjust as necessary.

Note: Make sure to check density of an image scanned under the same conditions as an actual scan. If conditions differ, results may not be the same as adjustment results. As the density of images gained with [scanning] in service mode differs from those scanned by the user, make sure not to use for checking density adjustment.

◆ Example of density adjustment results

1) Setting value [-10] →Darker

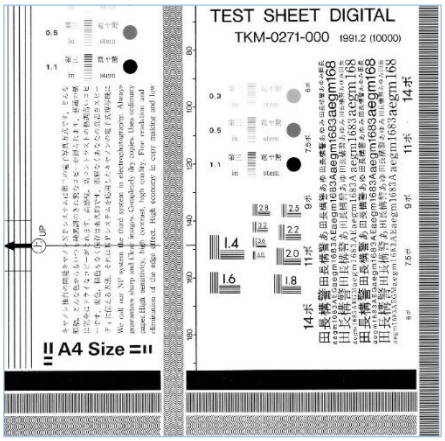

Figure 5-255

2) Setting value [10] →Lighter

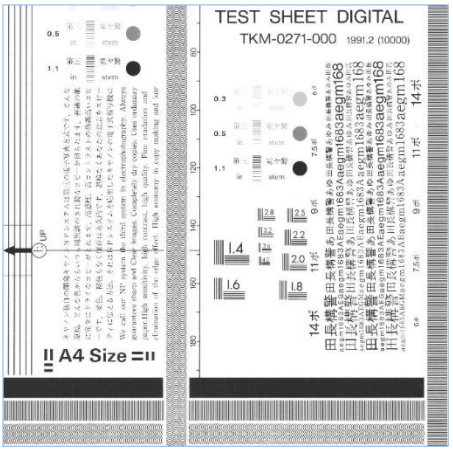

Figure 5-256

Note: Adjustment should follow this order. Adjust in the order of scaling→registration →light→density. If previous adjustment results are fine as they are, an adjustment item can be omitted. However, making adjustments in the reverse order may prevent adjustments from being made correctly.

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8. Shading Target

This mode is used for changing image color due to the user's usage requirements even after running normal automatic shading adjustment and light adjustment with a service tool. Is not normally used.

◆ Operation Procedure

1) By selecting the [Edit] button, the shading target settings screen is displayable. All initial values are "0".

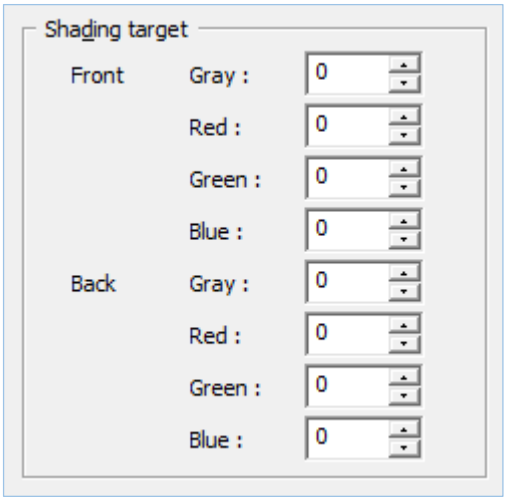

Figure 5-257

2) Use the scroll arrows to set the adjustment value. The set value is displayed. Setting items for each of front- and backsides are gray, red, green, and blue.
3) After setting, select the [Apply] button. Select the [Cancel] button to return values to before they were changed.
4) In the scan test tab, select a scan test, make an actual scan of a document, and check the image.

C. Motor/Sensor

1. LED

Check operation of each LED.

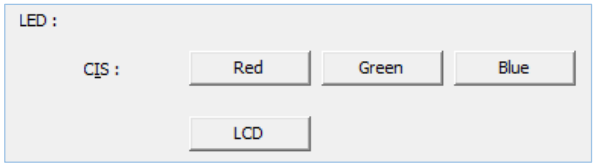

Figure 5-258

1) CIS
Check lighting of the reading unit's LED. Open the upper unit, and then select a corresponding button to turn on the LED. Select the button again to turn off the LED.
2) LCD
Check lighting of the control panel LCD. Select "LCD" to turn on the all the dot for display.
Selecting either again returns either LCD to off.

2. Sensors/Buttons

Check operation of sensors/buttons and check communication of USB I/F.

Displayed screens are divided into “Upper unit/Lower unit” tab, “Side” tab, and “Panel” tab screens.

When the sensors of each tab is in detection state, the corresponding mark is lighting.

1) Upper Unit/Lower Unit

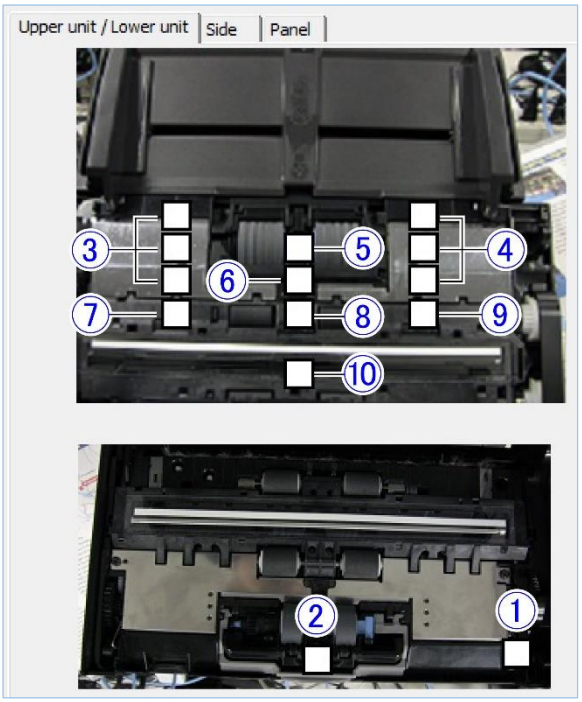

Figure 5-259

No.	Name
1	Door sensor
2	Document sensor
3	Left feed error sensor (upper/middle/lower)
4	Right feed error sensor (upper/middle/lower)
5	Ultrasonic double feeding detection sensor
6	Pre-registration sensor
7	Left post-registration sensor
8	Middle post-registration sensor
9	Right post-registration sensor
10	Eject sensor

Table 5-204

The door sensor lights when the upper unit is opened.

Place any piece of paper over a sensor and close the upper unit. Sensor lights when the paper is detected.

Ultrasonic sensor lights when several papers are placed over it.

2) Side

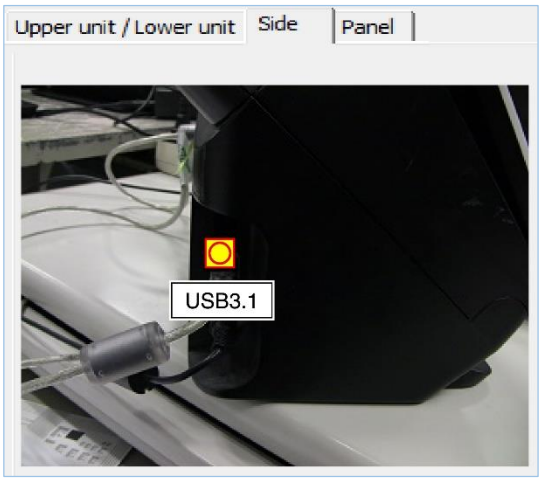

Figure 5-260

During checking communication of USB I/F, the sensor lights when communicating with computer with USB3.1.

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3) Panel

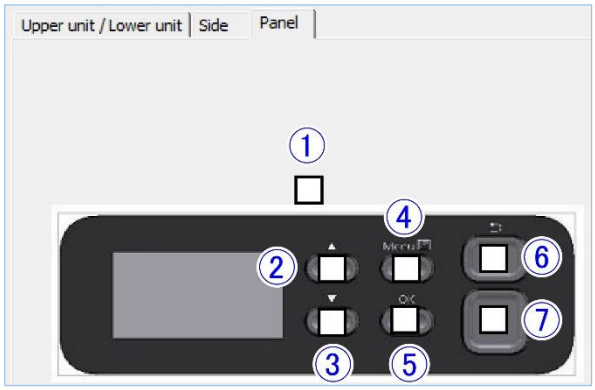

Figure 5-261

No.	Name
1	Power switch
2	▲ (up)
3	▼ (down)
4	Menu
5	OK
6	Stop
7	Start

Table 5-205

Corresponding marks light for buttons pressed on the control panel.

3. Motor/Feed Test

This mode is for checking operation of the feed motor and main motor as well as of actual document feeding.

The corresponding screen and items are shown below.

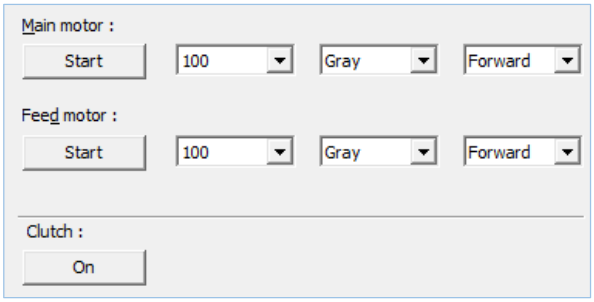

Figure 5-262

Display	Options
Resolution	100/200/300/400/600(dpi)
Mode	Gray/Color
Direction	Forward (Main motor) Forward/Backward (Feed motor)
Clutch	Off /On

Note: Items that have under line are initial setting.

Table 5-206

As for clutch, check the operation by rotating the feed roller with hand.

When [Clutch] is ON, the clutch activates and the feed roller will not rotate backwards. When OFF, the feed roller rotates in both directions.

Note: When clutch is ON, do not forget to turn it OFF after checking the operation.

◆ Operation Procedure

1) Select operating conditions for a motor, then select [Start] to run the motor. Select [Start] again to stop the motor.
2) Specify operating conditions for the motor, load a piece of paper, then select [Start] to start feeding. Select [Start] again to stop feeding.

Note: Before carrying out a test, be sure that the feed motor and main motor are operating by the same conditions. They will not operate properly by other conditions.

D. Firmware

There are two methods for updating the firmware: One is to select and execute pre-registered firmware, and the other is to select and execute firmware saved on the computer. The methods using pre-registration makes it possible to store all of the firmware within the same folder and attach comments to firmware, and is easy to manage.

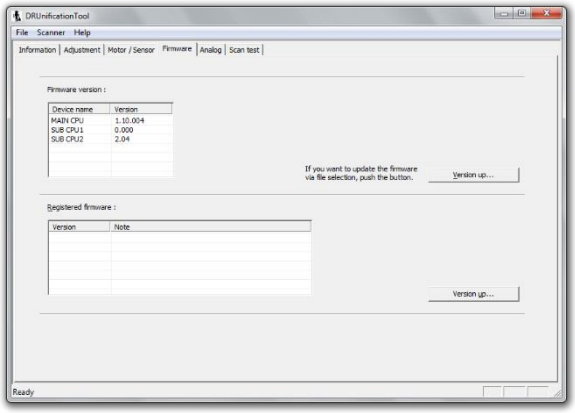

Figure 5-263

Note: For details on firmware updates, refer also to the separately issued service information.

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1. Firm Registration

This mode saves scanner firmware on a computer for servicing in advance, making it possible to correctly perform actual firmware updates.

◆ Operation Procedure

1) On the initial screen, select [Firm Registration]. Or, select [Registration of Firm] form the scanner in the task bar of the initial screen or other screens.

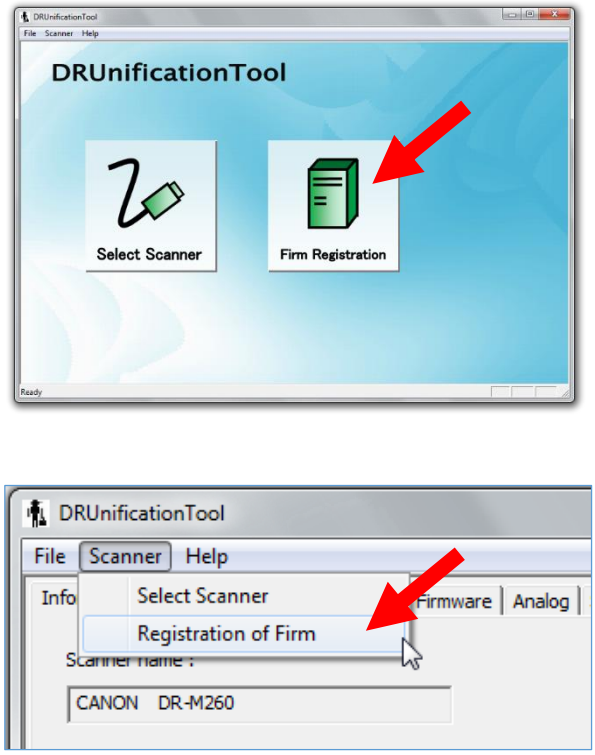

Figure 5-264

2) The following screen is displayed only if there are no firmware already registered. Select [OK].

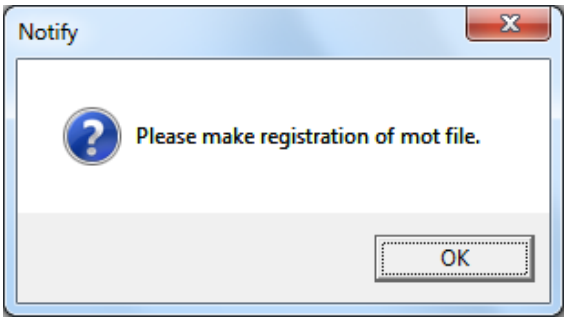

Figure 5-265

3) The firmware registration screen is displayed. Select [Register].

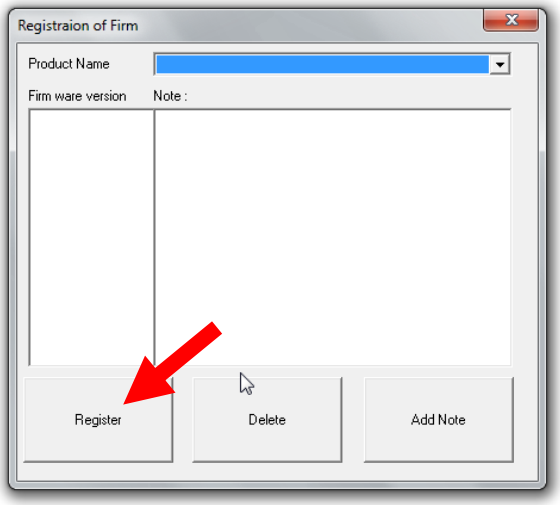

Figure 5-266

4) When the file selection screen is displayed, select the file.

Note: The file format is “mot”. The file name can be changed to anything.

5) The firmware is automatically registered. The “Product Name” and “Firmware version” are displayed on the firmware registration screen.

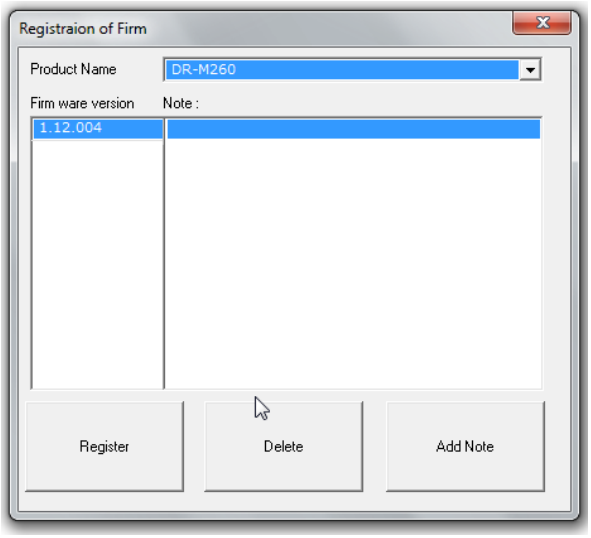

Figure 5-267

Note: The registered firmware is saved together within the service tool folder. Since the product name, version number, etc. are written in the “mot” file, the folder name is decided to match them. Furthermore, an “ini” file that contains the setting conditions is saved ate the same time. The following shows an example of the folder.

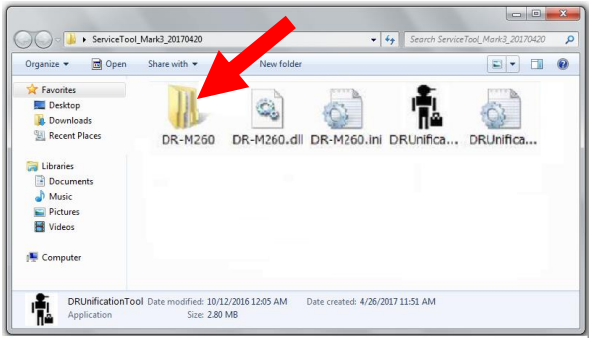

Figure 5-268

6) Select [Add Note] if necessary and enter any arbitrary information. After entering the information, select [OK].

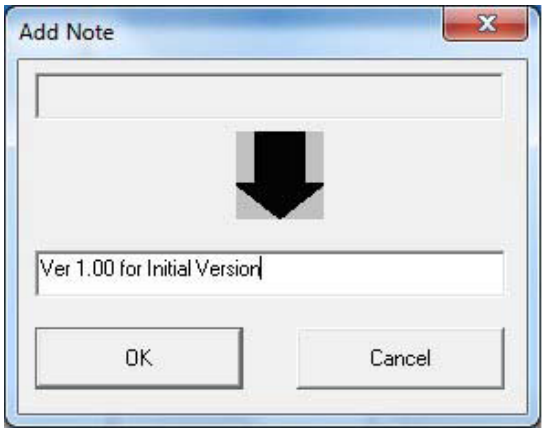

Figure 5-269

Note: To delete from the registration screen, select the target version and then select [Delete]. Note that the file is not deleted from the folder.

Note: The registered firmware is displayed in the “Firmware” screen on the next restart or when returning from another screen.

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2. Firm Load

This method for writing firmware varies depending on whether that firmware has already been registered or has not been registered. The operation procedures are shown below.

Note: Do not remove the USB cable or turn the power OFF during loading. If the power is turned OFF, it returns to its original state when restarted, but his is not guaranteed.

◆ For registered firmware

In this mode, the file saved in the service tool is selected and its version is upgraded.

1) Select the version to write and then select [Version up].

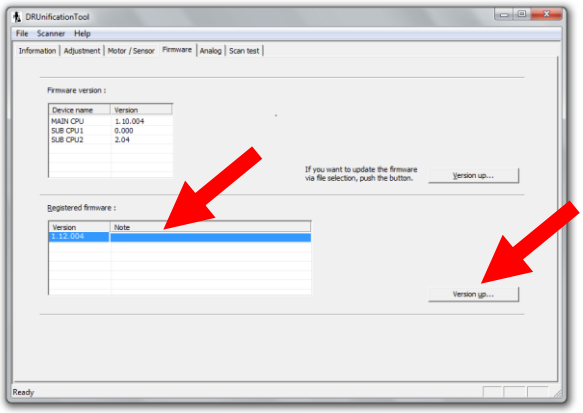

Figure 5-270

2) The confirmation screen is displayed. Select [OK].

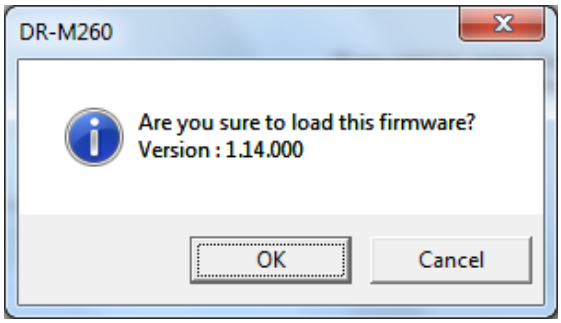

Figure 5-271

3) Writing starts automatically and the progress screen is displayed.

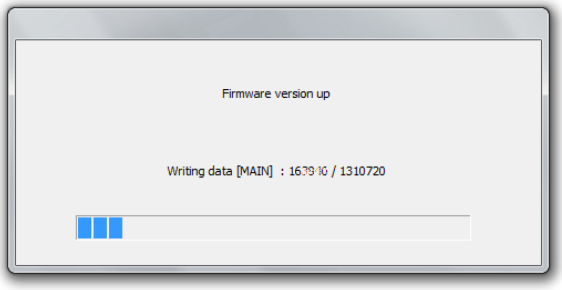

Figure 5-272

4) When finished, the progress disappears and the complete screen appears. Select [OK].

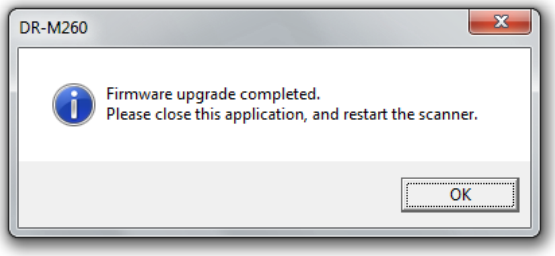

Figure 5-273

5) After the firmware is upgraded, all tabs except the firmware disappear to prevent operation mistakes of the service tool.

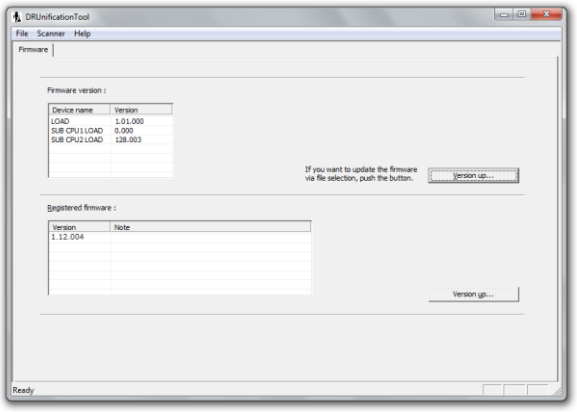

Figure 5-274

6) Restart the service tool and scanner main body and then check the version number.

◆ For unregistered firmware
In this mode, the file saved in the software is selected and its version is upgraded.

1) Select [Version up].

Figure 5-275

2) When the file selection screen is displayed, select the file.
3) Writing starts automatically and the progress screen is displayed. The rest of the procedure is the same as in “For registered firmware”.

Note: This automatically detects whether the file is for the connected scanner and only executes writing if it is suitable.

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E. Analog
1. Analog Sensor

This mode is used to check analog data for the following sensors. However, sensor operation is normally checked using “Motor/Sensor”.

For threshold values shown on the right side of analog data, “-“ is displayed if there are no threshold values.

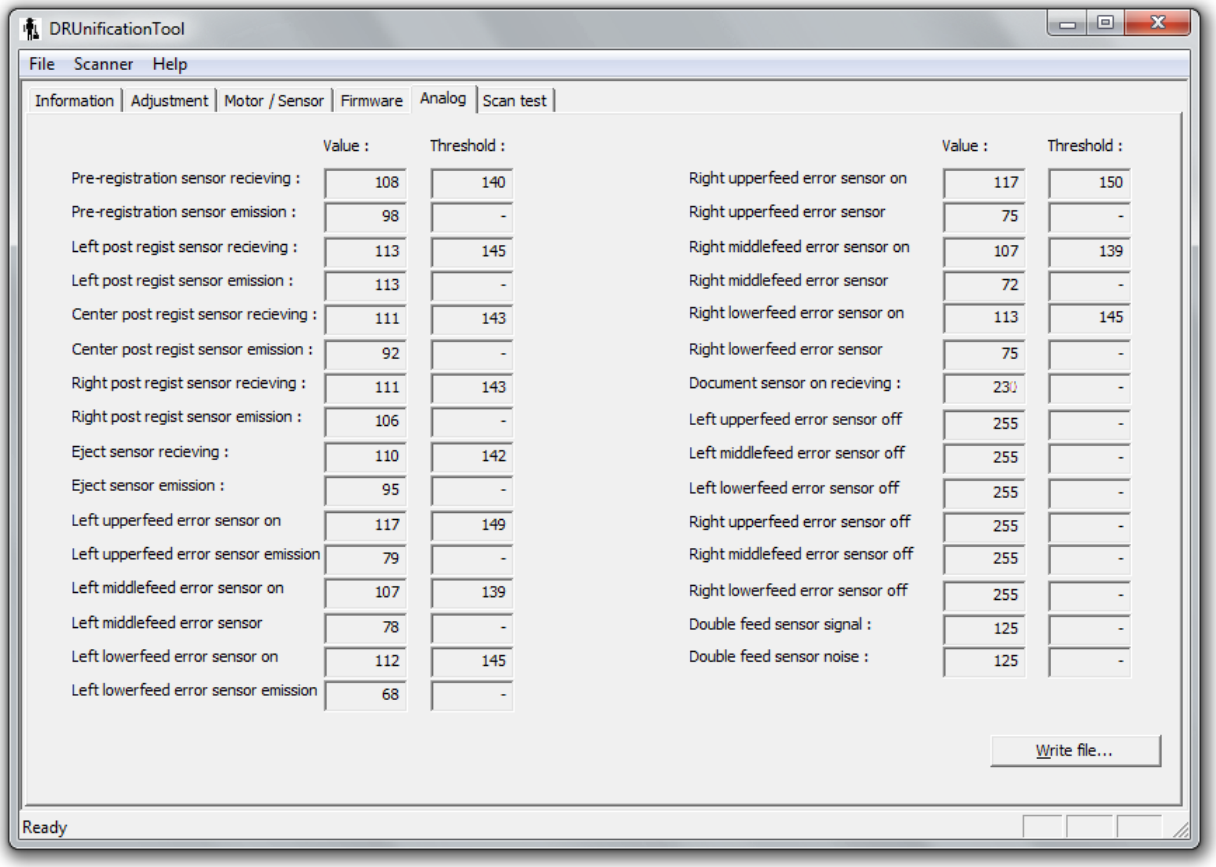

Figure 5-276

2. Write File

When [Write file] on the lower right side of the analog screen is selected, displayed information can be saved in a text file.

The operation procedure is the same as that in “A. Information, 9. Write File.”

Part of the contents of a saved file is shown below.

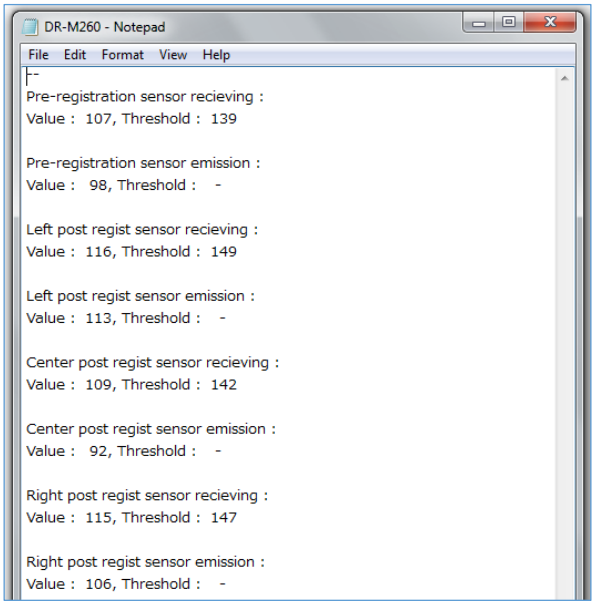

Figure 5-277

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F. Scan Test

1. Scan

Used to perform scans in service mode.
Scanned images are displayed and saved.

◆ Description of screen

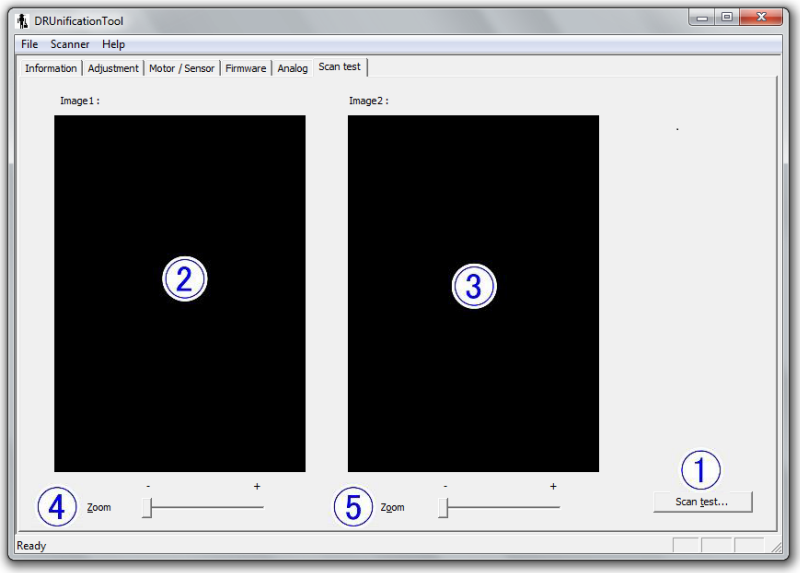

Figure 5-278

No.	Details
1	Scan test The scan setting dialog appears and a scan is carried out. Scanned images are saved.
2	Image 1 If only one sheet is scanned, the scanned front image is displayed. If multiple sheets are scanned, the second last scanned image is displayed. Move the image by dragging the mouse.
3	Image 2 In only one sheet is scanned, the scanned back image is displayed. If multiple sheets are scanned, the last scanned image is displayed. Move the image by dragging the mouse.
4	Zoom (Image 1) Enlarges the image in ② above using a slide bar. They can be enlarged up to 10 times from the initial display state.
5	Zoom (Image 2) Enlarges the image in ③ above using a slide bar. They can be enlarged up to 10 times from the initial display state.

Table 5-207

◆ Operation Procedure

1) Place the document.
2) When the Scan button is clicked, a scanner setting dialog in the driver appears. Set the scanner properly and click the “OK” button.

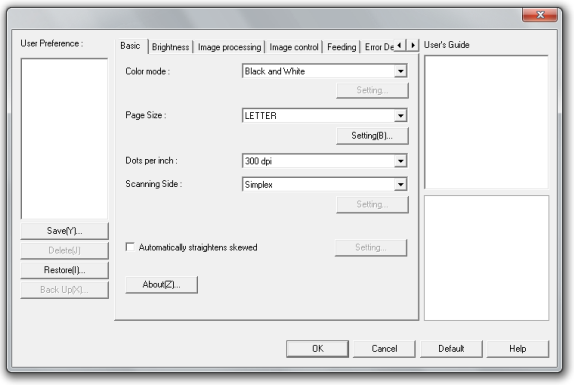

Figure 5-279

3) The screen for saving scanned images is displayed. Set a save location and click the “Save” button. The scanned image is saved in bitmap form.
4) The document is scanned.
5) The data is saved and the image is displayed as well. If only one sheet is scanned, the front surface is displayed in “Image 1” and back surface is displayed in “Image 2”.
   If multiple sheets are scanned, the last document image is displayed in “Image 2”, and the last scanned image but one is displayed in “Image 1”.

G. Other Functions

1. Obtainment of Log Files

The software for this machine automatically collects log files of user usage status information, and is equipped with a function for recovering these log files.

Since the log files are designed to be useful for resolving problems, the user may be asked to do the operation to recover the files.

The following gives an overview of the log files and the procedure for recovering them.

◆ Types of information

1) User operations
2) Error
3) Settings
4) Debugging
   (Note that this excludes default settings)
5) Latest information when recovering the files

◆ Obtainment procedure

1) Start “Canon imageFORMULA driver setting tool” and open [Diagnosis] tab.

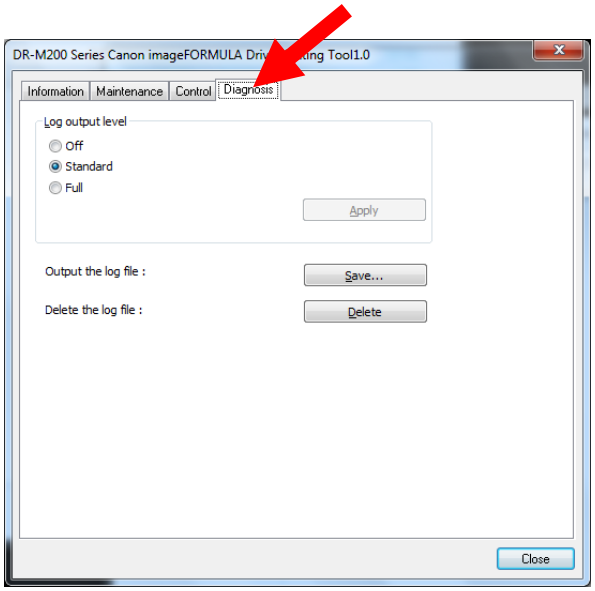

Figure 5-280

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2) Click the [Save] button for the [Output the log file].

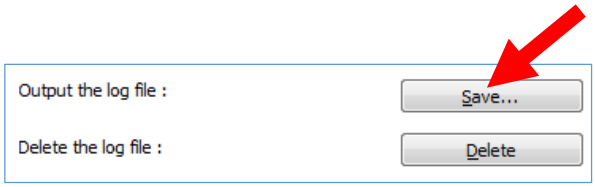

Figure 5-281

3) The Save Settings screen is displayed. Select the appropriate location to save the files.
4) The files are saved with [xxx.dat] attached.

Note: The obtainment of log files can execute from other locations as followings.

- The “About” in the [Help] of the [CapturePerfect]
- The [Maintenance] tab in the [Environment settings] of the [CaptureOnTouch]
- The “About” button in the [Basic] tab of the scanner driver’s screen

◆ Log output level

Select [Standard] or [Full] of log file level.

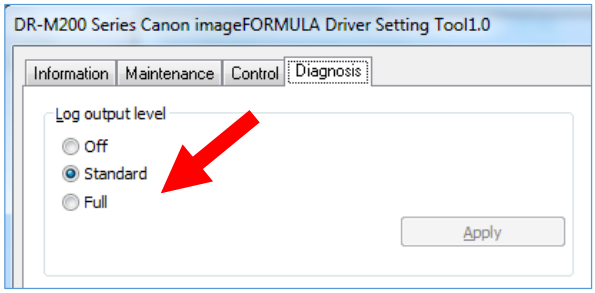

Figure 5-282

The default setting is [Standard]. If you need the [Full] information, set to [Full] and click the [Apply] button. Then, perform the steps to reproduce the problem and perform the obtainment operation. Note that when set to [Full], the scanning speed may be reduced.
Also, outputting log file may stop when you select [Off].

◆ Delete log file

The log files data of the past year are saved on the user computer. The maximum size of the log files is approx. 200 MB. Once this limit is exceeded, old data is deleted. When you delete the old log files data, follow the procedure below.

1) Start “Canon imageFORMULA driver setting tool” and open [Diagnosis] tab, then select [Delete] button for the [Delete the log file].

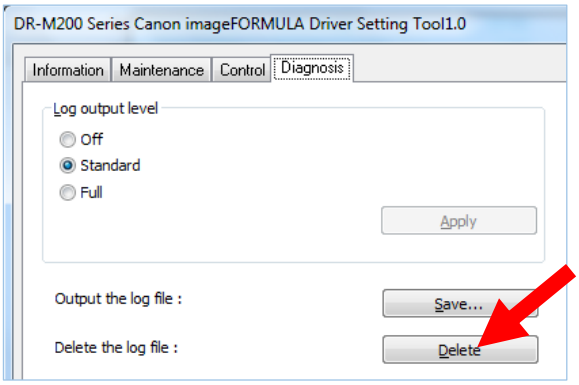

Figure 5-283

2. Mechanical Feed Mode

This machine is equipped with a mechanical feed mode for checking the state of the feed transport without using a computer. Use this mode as necessary and do not disclose this mode to users.

◆ Entering mechanical feed mode

1) Set the cursor to Job No. [50] on the display panel and turn the power OFF.

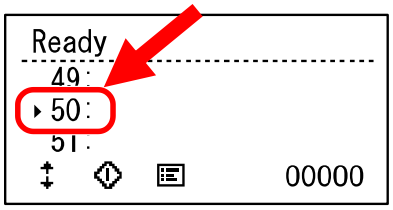

Figure 5-284

2) Turn the power ON while holding down [▲], [OK], and [Stop] button together.

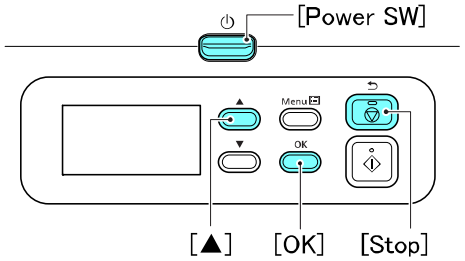

Figure 5-285

3) Display the menu.

4) Press [▲] button 1 time and set the cursor to “Test Top”, press [OK] and enter the [test mode].

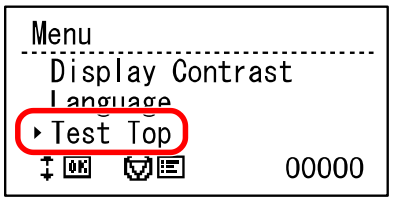

Figure 5-286

5) Set the cursor to “Mecha Mode” and press [OK] and enter the [mechanical feed mode].

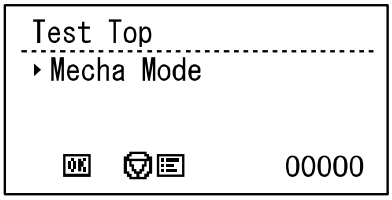

Figure 5-287

◆ Feeding paper

1) Press [▲] or [▼] to select the feed mode.

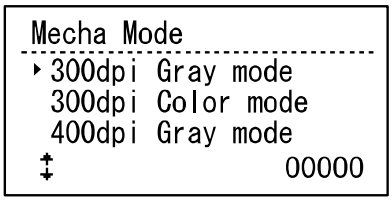

Figure 5-288

2) Set paper and press [OK] to start feeding, and then stop feeding.

◆ How to finish

Hold down the power button continuously until the lamp stops lighting. This is the same as turning the power off normally.

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III. TROUBLESHOOTING LIST

The lists below give the major failures conditions and their causes. Refer to the next section for details of the causes and the measures to be taken.

1. Operation Failures

Note: Major causes of each failure are marked “X”.

No.	Failure \ Cause	System/ Soft-ware	Hard-ware	Connec-tion	Dirt/dust	Docu-ment	Settings
1	Power does not come ON.		X	X			
2	No scanner is found.	X	X	X			
3	Scanner does not start.	X	X	X		X	X
4	Scanning does not feed properly.		X		X	X	
5	Scanning speed is slow.	X			X	X	X

Table 5-301

2. Image Failures

Note: Major causes of each failure are marked “X”.

No.	Failure \ Cause	System/ Soft-ware	Hard-ware	Connec-tion	Dirt/dust	Docu-ment	Settings
1	All black/all white/all streaked.	X	X		X		X
2	Too dark/too light.		X		X	X	X
3	Streaks in image.		X		X		
4	Image slanted.		X			X	X
5	Wrong image size.				X	X	X
6	Text cannot be seen.					X	X
7	Moire in image.					X	X

Table 5-302

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IV. OPERATION TROUBLESHOOTING

When an operation problem occurs, check the error message displayed on the display connected to a computer. Also perform an operation check on the sensors and motors using the service mode.

1. Power Does Not Come ON

The power indicator is mot lit.

Note: Make sure to use the AC adapter and power cord supplied with the machine.

Cause/Faulty Locations	Step	Check Item	Result	Action
Connection of power cord	1	Is the power cord connected?	NO	Connect the connectors correctly.
AC power supply voltage	2	Is the power outlet supplying power at the rated voltage?	NO	Explain to the user that this is not a problem with the machine.
Connection of AC adapter	3	Is the AC adapter connected?	NO	Connect the connectors correctly.
Power button	4	Is the power button on?	NO	Turn the power button on.
Power cord	5	Does replacing the power cord fix the problem?	YES	Done.
AC adapter	6	Does replacing the AC adapter fix the problem?	YES	Done.
Sub PCB Operation PCB	7	Is the cable connected?	NO	Connect the connectors correctly.
			YES	Replace the PCB.
Control PCB	8	Is the problem solved by replacing the control PCB?	YES	Done.

Table 5-401

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2. No Scanner is Found

Note: You should install the driver on the computer before connecting the scanner.

Cause/Faulty Locations	Step	Check Item	Result	Action
Power Supply	1	Is power supplied to the machine?	NO	Perform "1. Power Does Not Come ON."
Connection of the USB cable	2	Is the USB cable connected?	NO	Connect the USB cable correctly.
Computer and USB I/F	3	Are the computer and USB I/F compatible?	NO	Use compatible equipment.

Table 5-402

3. Scanning Does Not Start

Note: The "cover open", "no document", "feed", and "skew detection" error messages may be displayed and scanning may not start due to sensor problems.

Cause/Faulty Locations	Step	Check Item	Result	Action
System	1	Was the problem solved by resetting the power of the scanner or restarting the computer?	YES	Done.
Software	2	Was the problem solved by reinstalling the scanner driver or application?	YES	Done.
Connection of the connector (control PCB)	3	Are the motor and sensor connectors connected correctly?	NO	Connect the connectors correctly.
Drive transmission system	4	Is the transmission system of the motors normal? Are parts such as gears and belts normal?	NO	Attach the parts correctly. Replace the parts.
Motors	5	Is the operation normal when you perform an operation check with the service mode?	NO	Check the cable connections. Replace the motors.
Sensors	6	Was the problem solved by replacing each PCB?	NO	Check the attachment of sensors, sensor levers and sensor cables.
Each sensor PCB	7	Was the problem solved by replacing each PCB?	YES	Done.
Control PCB Sub PCB	8	Is the problem solved by replacing the control PCB?	YES	Done.

Table 5-403

4. Scanner Does Not Feed Properly

Note: A “paper jam”, “double-feed”, “feed”, or “skew detection” error message may be displayed due to a sensor problem.

Cause/Faulty Locations	Step	Check Item	Result	Action
Document	1	Specified document? (thickness, size, fold or curl)	NO	Use documents compliant with the specified.
Placing documents	2	Are documents stuck together?	YES	Fan the documents well.
	3	Is the position of the document guide correct?	NO	Correct the position.
Separation/ None separation	4	Is the setting of none separation mode is correct?	NO	Set none separation mode properly.
Rollers	5	Are the rollers attached correctly?	NO	Attach the rollers correctly.
	6	Are they dirty or deformed?	NO	Clean or replace the rollers.
Parts in feed path	7	Parts touching documents installed properly? (no float, slant or gaps)	NO	Attach the parts correctly.
	8	Is the surface touching documents smooth? (No scratches or burrs)	NO	Replace inferior parts.
Drive transmission system	9	Does an abnormal noise occur while feeding?	YES	Attach the parts correctly. Replace inferior part.
Motors	10	Is the operation normal when you perform and operation check with the service mode?	NO	Check the cable connections. Replace the motors.
Sensors	11	Is the operation normal when you perform an operation check with the service mode?	NO	Check the attachment of sensors and sensor levers. Check the connections of sensor cables.
Each sensor PCB	12	Was the problem solved by replacing the each PCB?	YES	Done.
Control PCB Sub PCB	13	Was the problem solved by replacing the each PCB?	YES	Done.

Table 5-404

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5. Scanning Speed is Slow

The basic speed of this machine is 60 ppm. (A4R/200dpi)

The speed is further reduced if high resolution, color settings, or special functions are selected.

If the scanning speed is slow after taking these considerations, the cause may be as follows.

Cause/Faulty Locations	Step	Check Item	Result	Action
Insufficient computer memory	1	Is the memory sufficient?	NO	Increase the memory.
	2	Are other applications running?	YES	Close the other applications.
	3	Are resident applications such as a virus protection program running?	YES	Close the service-type applications.
	4	Is there insufficient hard disc space?	YES	Increase the hard disc space.
USB3.1Gen1 and Hi-speed USB 2.0 not supported	5	Is the USB port supported?	NO	Use a computer that supports it.
	6	Is the USB cable supported?	NO	Use the included USB cable.
	7	Is the USB hub supported?	NO	Use a USB hub that supports it.
The log file setting is [Full]	8	Is the log file setting set to [Full]?	YES	Set to [Standard].

Table 5-405

V. IMAGE TROUBLESHOOTING

◆ Image Sample

Document	Normal (B&W)	All black	All white	All streaked
Too dark	Too light	Streaks 1	Streaks 2	Streaks 3
Slanting →	Skew correction	Wrong size →	Auto size	With shadows
Original document (B)	Missing leading edge	Margin at leading edge	Stretched	Compressed

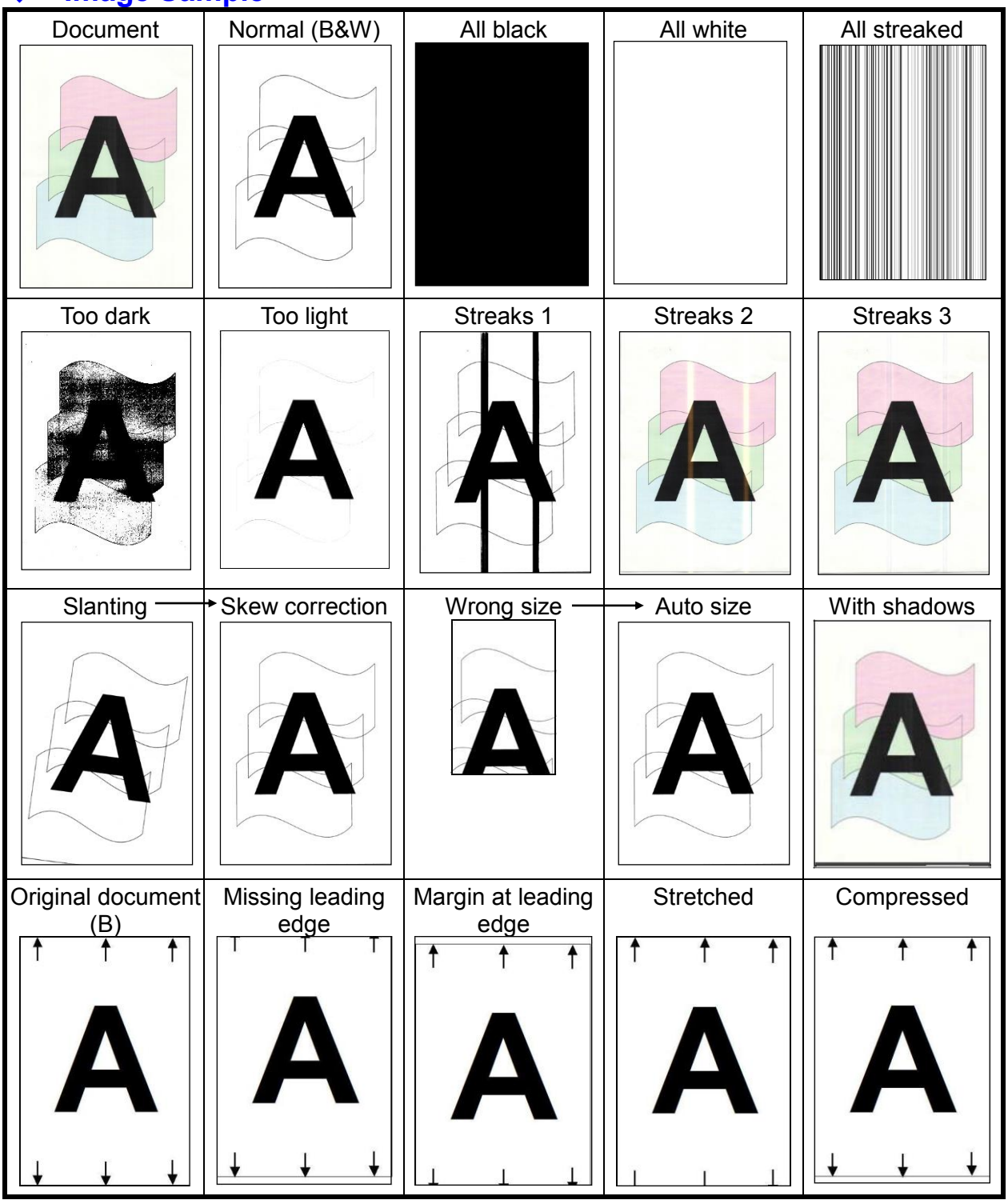

Table 5-501

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Note: The level of reproducing the image depends on types of documents and setup conditions. Changing setup conditions sometimes works.

1. All Black/All White/All Streaked

The image is all black, all white, or all streaked.

Cause/Faulty Locations	Step	Check Item	Result	Action
Placing documents	1	Is the document placed with the front/back around the right way?	NO	Place properly.
Setup of “Brightness”	2	“Brightness” setup properly?	NO	Change the setup. Change “Contrast” if necessary.
System	3	Was the problem solved by resetting the power of the scanner or restarting the computer?	YES	Done.
Reading Unit	4	Reading-related cables connected properly?	NO	Connect properly.
	5	Was the problem solved by replacing the reading unit?	YES	Done.
Control PCB	6	Was the problem solved by replacing the control PCB?	YES	Done.

Table 5-502

2. Too Dark/Too Light

The image cannot be seen properly because the brightness is inappropriate.

Cause/Faulty Locations	Step	Check Item	Result	Action
Setup of “Brightness”	1	“Brightness” setup properly? Normally middle value is fine, but this may need to be changed, depending on the document.	NO	Change the setup.
Setup of “Contrast”	2	“Contrast” setup properly?	NO	Change the setup.
Light Adjustment	3	Have you executed Light Adjustment?	NO	Execute the adjustment.

Table 5-503

3. Streaks in Image

Streaks in the feeding direction may appear in the image due to dirt on the reading glass. Dirt on the feeding rollers may also be transferred to the document.

When white streaks appear in the image, this is due to shading correction being performed when the reading glass is dirty.

Cause/Faulty Locations	Step	Check Item	Result	Action
Reading glass	1	Is the reading glass clean?	NO	Clean it. Replace the reading guide (reading glass) if it is damaged.
Roller	2	Is the surface clean?	NO	Clean or replace it.
Feed Unit	3	Is the feed path clean?	NO	Clean it.
CIS unit	4	Is the inside of the CIS unit clean?	NO	Clean or replace the reading unit.
Light Adjustment	5	Have you executed Light Adjustment?	NO	Execute the adjustment.

Table 5-504

4. Image Slanted

If the document is fed at an angle, the image will become slanted.

Cause/Faulty Locations	Step	Check Item	Result	Action
Placing documents	1	Is the document placed properly?	NO	Place properly.
	2	Are the document guides adjusted to fit the document width?	NO	Correct the position.
Setup of “Skew correction”	3	Was “Skew correction” set?	NO	Set it. You can correct the slant of an image using image processing.
Feeding documents	4	Are documents fed straight?	NO	Perform the checks in “IV. RESOLVING MALFUNCTIONS, 4.The Document Does Not Feed Properly”.
Setup of “skew detection”	5	Was “skew detection” set?	NO	Set it. The skew sensor can detect the slant of an image and prevent skewed feeding.

Table 5-505

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5. Wrong Image Size

There are margins around the image, or some of the image is missing.

Note: Set the paper size to “auto detection” when scanning batch of different size documents.

Cause/Faulty Locations	Step	Check Item	Result	Action
Setup of “Paper size”	1	Is the setup of “Paper size” correct?	NO	Change the setup.
Placing documents	2	Was the document placed in the correct position?	NO	Place the document in the correct position.
Setup of “Auto detection” for the paper size	3	Was “Auto detection” set?	NO	Set it.
Registration adjustment	4	Have you executed automatic registration adjustment or manual registration adjustment?	NO	Execute the adjustment.
Scale parameter adjustment	5	Have you executed scale parameter adjustment?	NO	Execute the adjustment.

Table 5-506

6. Text Cannot be Seen

When the background includes colors or patterns, text may be hidden by the background when scanning in black and white. There are special modes such as “Advanced Text Enhancement” etc. for solving this problem.

Note: The problem may not be fixed, depending on the type of document.

Cause/Faulty Locations	Step	Check Item	Result	Action
Setup of “Mode”	1	Was the problem solved by setting to “Color” or “Grayscale”?	YES	Done.
	2	Was the problem solved by setting to a special mode such as [Advanced Text Enhancement]?	YES	Done.
Setup of “Brightness”	3	Was the problem solved by changing the setup of “Brightness”?	YES	Done.

Table 5-507

7. Moire in Image

The moire effect occur when photos from magazines, catalogs, etc. are scanned at a low resolution.

Cause/Faulty Locations	Step	Check Item	Result	Action
Setup of “Moire Reduction”	1	Is “Moire Reduction” set?	NO	Set it.
			YES	Increase the resolution. Set to “High Quality Moire Reduction”.

Table 5-508

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VI. AFTER REPLACING PARTS

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

You should check the feed and images after replacing parts ore reassembling and re-assembling the machine.

◆ Control PCB

1) Execute [Registration (Auto)] and [Light], [Density (Auto)], and [Scaling (Auto)] in the [Adjustment] screen in service mode. If required, also execute [Registration (Manual)], [Density (Manual)], and [Scaling Rate (Manual)].
2) Change the value in [Counter] in the [Information] screen in service mode.

◆ Reading Unit

Execute [Registration (Auto)] and [Light], and [Density (Auto)] in the [Adjustment] screen in service mode. If required, also execute [Registration (Manual)] and [Density (Manual)].

◆ Registration Related Parts

If there are any problems with the leading edge or trailing edge positions of a scanned image after registration-related parts have been replaced ore reassembled, change [Scaling (Auto)] in the [Adjustment] screen in service mode. If required, also execute [Scaling (Manual)].

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APPENDIX

I. GENERAL DIAGRAM A-1
II. LIST OF SPECIAL TOOLS..... A-2

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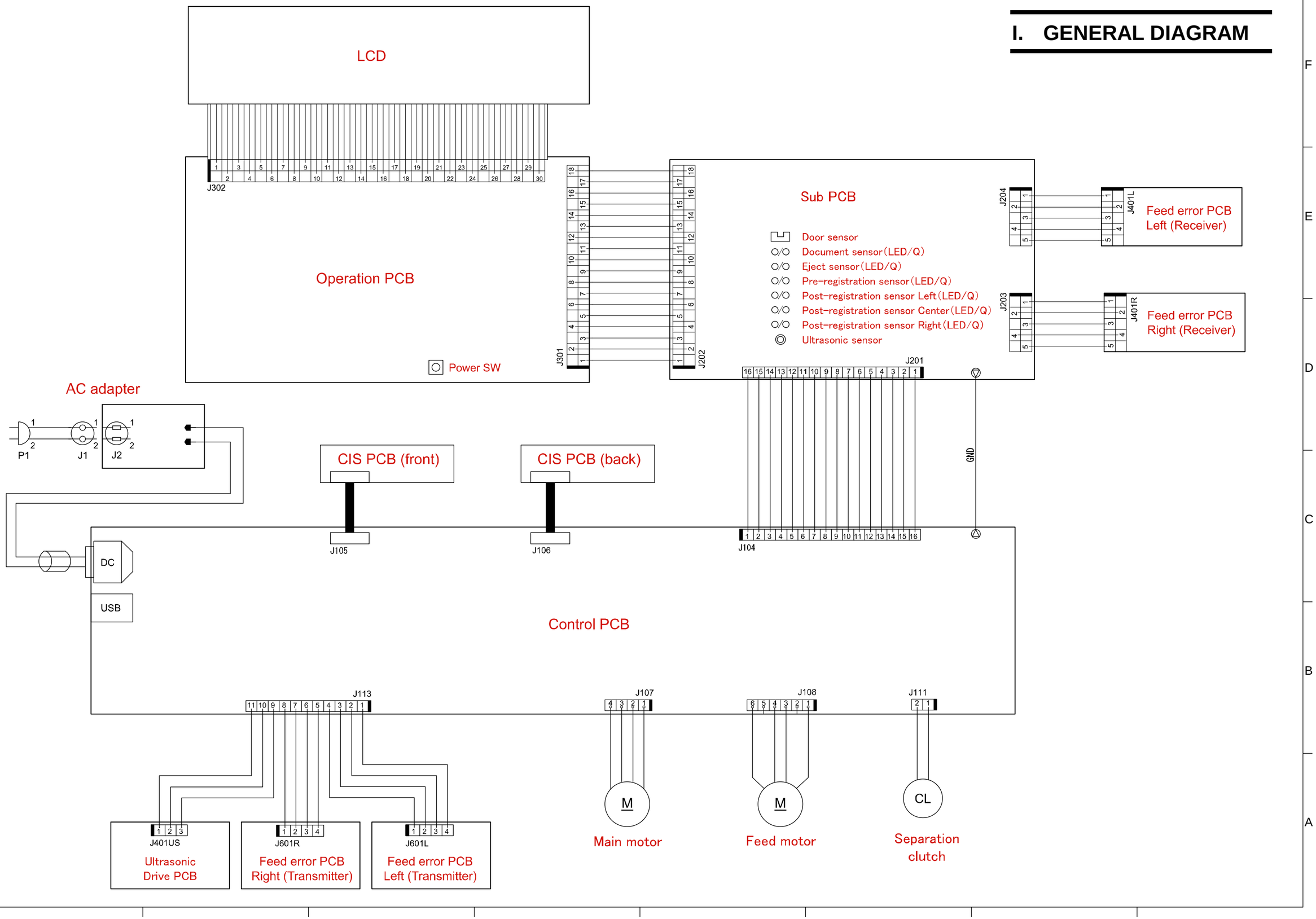
I. GENERAL DIAGRAM



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II. LIST OF SPECIAL EQUIPMENT

The list of special tools needed for servicing this machine are the following.
However, density adjustment sheet: TKM-0351 is a new tool, and others are existing ones.

No.	Tool name	Tool number	Rank	Usage/Remarks
1	Test sheet	TKM-0271	A	For manual scale adjustment and for general image check
2	Shading sheet	TKM-0332	B	For light adjustment 10 sheets/1 set
3	Scale adjustment sheet	TKM-0348	B	For automatic scaling adjustment 10 sheets/1 set
4	Density adjustment sheet	TKM-0351	B	For density adjustment 10 sheets/1 set

Figure A-201

Note: Rank symbol
A: Equipment that each service technician must carry.
B: Equipment that can be shared among a group of 5 service technicians.
C: Equipment that each workshop needs to have.

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