

DR-2020U

SERVICE MANUAL

WITH PARTS CATALOG

FIRST EDITION

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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

Features, specifications, name of parts, operation method

Chapter 2: Functions and operation

Description of operation of machine system and electrical system by function

Chapter 3: Disassembly and reassembly

Disassembly method, reassembly method

Chapter 4: Installation and maintenance

Installation method, maintenance method

Chapter 5: Troubleshooting

Error display and troubleshooting

Appendix: General electrical block diagram and parts catalog, etc.

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

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

Quality Assurance Center
Canon Electronics Inc.

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CHAPTER 1

GENERAL DESCRIPTION

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I. OUTLINE

1. Features

- 1) Upper model for DR-1210C
1-path duplex scanning is available

- 2) Three way scanning
 - ◆ Feeder (1-path duplex scanning)
 - ◆ Flatbed
 - ◆ Business card

- 3) Reading speed (feeder, A4)
 - ◆ Black and White/Grayscale, 200/300 dpi: Simplex 20 ppm, Duplex 40 ipm
 - ◆ Color, 200 dpi: 20 ppm, 20 ipm, 300 dpi: 13 ppm, 12 ipm

- 4) Easy scan
Improved Job function

- 5) Service ability is improved
Service parts are increased (adding the main PCB, ADF unit, flatbed unit etc.)

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2. Specifications

No.	Item	Specifications
Appearance / Installation		
1	Type	Desktop type A4 flatbed scanner with ADF
2	Dimensions	Tray closed: 440 (W) × 400 (D) × 180 (H) mm
3	Weight	7.8 kg (Main body only, excepting AC adapter)
4	Power rating	1) Main body 24 VDC, 1.2 A 2) AC adapter Input: 100 V-240 VAC, 50/60 Hz, 1.2 A (100 V)-0.7 A (240 V) Output: 24 VDC, 2.2 A
5	External interface	USB2.0 (Hi-Speed)
6	Expected product life (In-house information)	One of the following items, whichever comes first. 1) 5 years 2) Feeder: 150,000 sheets (A4 copy paper) * There are parts needed to replace. 3) Flatbed: 50,000 sheets 4) Business card slot: 15,000 sheets
7	Installation	By user
8	Consumable parts (commercial goods)	1) Roller unit 2) Separation pad * Expected life 50,000 sheets
9	Option	None
Feeder (ADF)		
10	Document feed path	U-turn path
11	Document size	1) Width: 139.7 to 216 mm 2) Length: 100 to 355.6 mm
12	Document weight (thickness)	50 to 128 g/m ² (0.06 to 0.15 mm)
13	Document storage (pickup)	1) A4 or less: 50 sheets max. and 5 mm height max. 2) A4 over: Feeding function is no guarantee, and recommended one sheet at a time.
14	Double feed detection	Length detection only
Business card		
15	Document feed path	Straight path
16	Document size	1) Width: 49 to 55 mm 2) Length: 85 to 91 mm
17	Document weight (thickness)	128 to 300 g/m ² (0.15 to 0.30 mm)
18	Document storage (pickup)	15 sheets max.

Table 1-101a

No.	Item	Specifications																																		
Flatbed																																				
19	Maximum reading size	216 × 297 mm																																		
Document reading																																				
20	Number of reading units	1) One in the ADF, it is called as upper reading unit. 2) One in the FB, it is called as lower reading unit.																																		
21	Reading type/elements	CCD-ROS (Reduction Optical System)																																		
22	Light source	CCFL (Cold Cathode Fluorescent Lamp)																																		
23	Background color	Black																																		
24	Image data memory size	64 MB																																		
25	Output mode (at CapturePerfect3.0)	1) Binary (Black and White/Error diffusion/ATE/ATE-II) * ATE=Advanced Text Enhancement 2) Grayscale (8 bit) 3) Color (24 bit)																																		
26	Output resolution (at CapturePerfect3.0)	100 × 100 dpi, 150 × 150 dpi, 200 × 200 dpi, 240 × 240 dpi, 300 × 300 dpi, 400 × 400 dpi, 600 × 600 dpi																																		
27	Reading speed (at A4 size, and CapturePerfect3.0)	<table border="1"> <thead> <tr> <th rowspan="2">Mode</th> <th rowspan="2">Resolu- tion</th> <th colspan="2">ADF</th> <th>FB</th> </tr> <tr> <th>Simplex</th> <th>Duplex</th> <th>Sheet</th> </tr> </thead> <tbody> <tr> <td rowspan="3">B&W/ Gray- scale</td> <td>200 dpi</td> <td>20 ppm</td> <td>40 ipm</td> <td>3.6 sec</td> </tr> <tr> <td>300 dpi</td> <td>20 ppm</td> <td>40 ipm</td> <td>3.6 sec</td> </tr> <tr> <td>600 dpi</td> <td>10 ppm</td> <td>12 ipm</td> <td>4.8 sec</td> </tr> <tr> <td rowspan="3">Color</td> <td>200 dpi</td> <td>20 ppm</td> <td>20 ipm</td> <td>3.6 sec</td> </tr> <tr> <td>300 dpi</td> <td>13 ppm</td> <td>12 ipm</td> <td>4.8 sec</td> </tr> <tr> <td>600 dpi</td> <td>6 ppm</td> <td>5 ipm</td> <td>8.7 sec</td> </tr> </tbody> </table>	Mode	Resolu- tion	ADF		FB	Simplex	Duplex	Sheet	B&W/ Gray- scale	200 dpi	20 ppm	40 ipm	3.6 sec	300 dpi	20 ppm	40 ipm	3.6 sec	600 dpi	10 ppm	12 ipm	4.8 sec	Color	200 dpi	20 ppm	20 ipm	3.6 sec	300 dpi	13 ppm	12 ipm	4.8 sec	600 dpi	6 ppm	5 ipm	8.7 sec
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300 dpi	13 ppm		12 ipm	4.8 sec																																
600 dpi	6 ppm		5 ipm	8.7 sec																																
* The numbers above may differ depending on the computer, the function settings and other conditions.																																				
Others																																				
28	Operation panel	1) POWER button 2) START button, STOP button 3) Job buttons (COPY, FILE, E-MAIL) 4) User Job buttons (A, B, C, D, E) 5) Job scroll keys (Up, Down) 6) Display panel (LCD)																																		

Table 1-101b

◆ Dimensions (unit: mm)

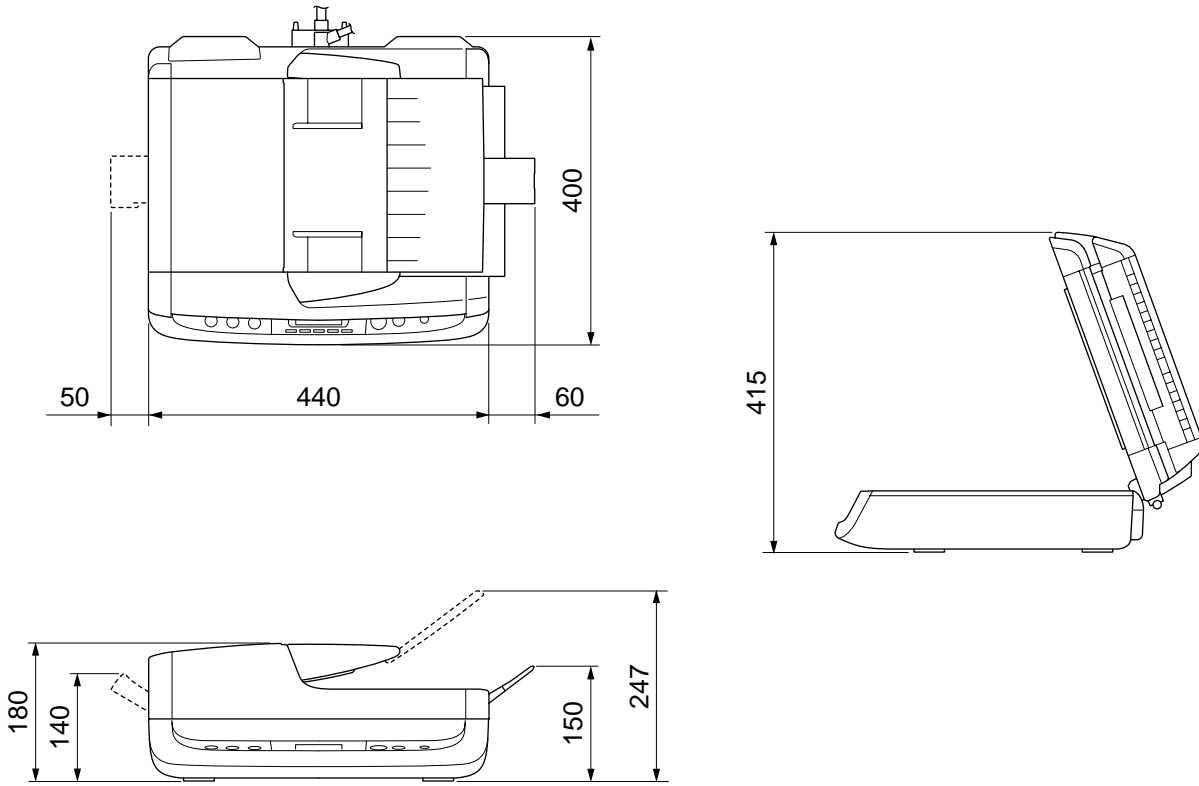


Figure 1-101

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 moving the rollers.

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, use 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 of the product and parts. This product is subject to the WEEE Directive in Europe. The lamps (CCFL) for the reading units inside this product contain Mercury and must be recycled or disposed according to local, state or federal laws.

II. NAME OF PARTS

1. Front Side

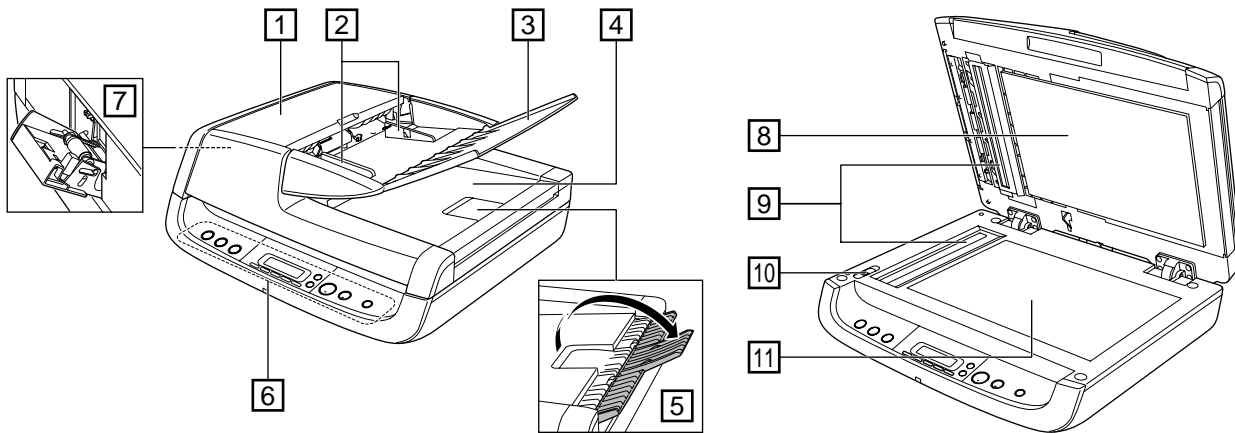


Figure 1-201

- | | |
|--------------------------------|---------------------------------------|
| 1 Feeder Cover | 7 Business Card Feeder |
| 2 Document Guides *See Note | 8 Pressure Board |
| 3 Document Feed Tray *See Note | 9 Scanning Glass (Feeder) *See Note |
| 4 Document Eject Tray | 10 Lock Switch |
| 5 Eject Tray Extension | 11 Scanning Glass (Flatbed) *See Note |
| 6 Operation Panel | |

Note: In this manual, “Document Feed Tray” and “Document Guides” together may be mentioned as “Document Pickup Tray”. And “Scanning Glass” may be mentioned as “Reading Glass”.

2. Operation Panel

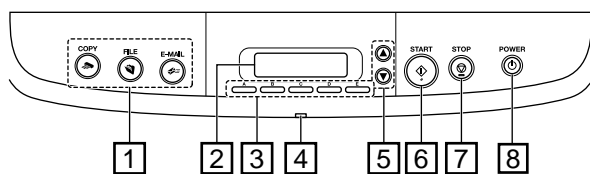


Figure 1-202

- 1 Job Buttons (COPY, FILE, E-MAIL)
- 2 Display Panel
- 3 User Defined Job Buttons (A, B, C, D, E)
- 4 Power Indicator
- 5 Scroll Keys (Up, Down)
- 6 START Button
- 7 STOP Button
- 8 POWER Button

3. Rear Side

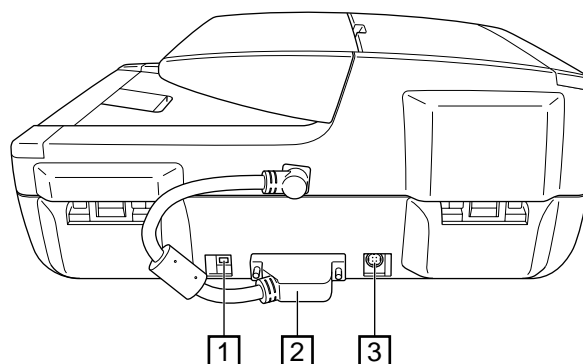


Figure 1-203

- 1 USB Connector
- 2 ADF Connector
- 3 Power Connector

III. USER OPERATION

For details, refer to the “User Manual” of this machine.

For installation and maintenance, refer to “CHAPTER 4 INSTALLATION & MAINTENANCE”.

1. Document Setting

There are three feeding methods (feeder, flatbed, business card feeder) for scanning documents with this scanner. The types of documents that can be scanned with each method. Each document method is different with its feeding method.

1) Feeder

Fan the pages of the document to be scanned, and load the document into the feeder with the scanning side facing up. And then, adjust the document guides to the edges of the document.

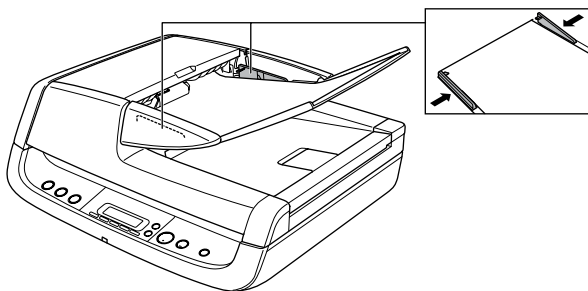


Figure 1-301

2) Flatbed

Place the document on the flatbed with the scanning side facing down, and align the upper left corner of the document with the positioning guide on the flatbed.

Note: Open and close the feeder gently. Excessive force may result in damage to the feeder or breaking the scanning glass and personal injury.

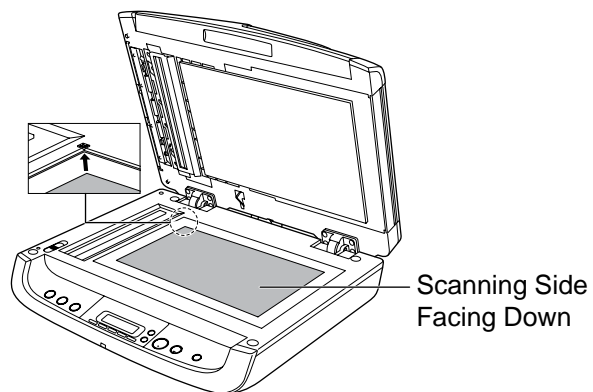


Figure 1-302

3) Business card feeder

Open the business card feeder. And then, place the cards into the business card feeder with the scanning side facing up.

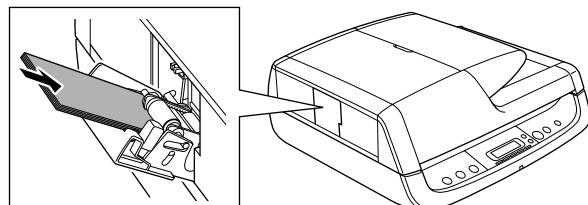


Figure 1-303

Note: Close the business card feeder when scanning has finished.

2. CaptureOnTouch

A [CaptureOnTouch] and [CapturePerfect 3.0] are supplied with the scanner, and can be installed from the supplied Setup disc. On this section, the CaptureOnTouch is only described.

Using CaptureOnTouch allows you to scan using easy-to-follow onscreen instructions. In addition, by assigning scan functions to the buttons on the DR-2020U scanner's operation panel, you can perform scanning procedures without your computer.

The following describes the output procedures for the two screens found in CaptureOnTouch.

1) Scan First

The screen of the [Scan First] tab is shown below.

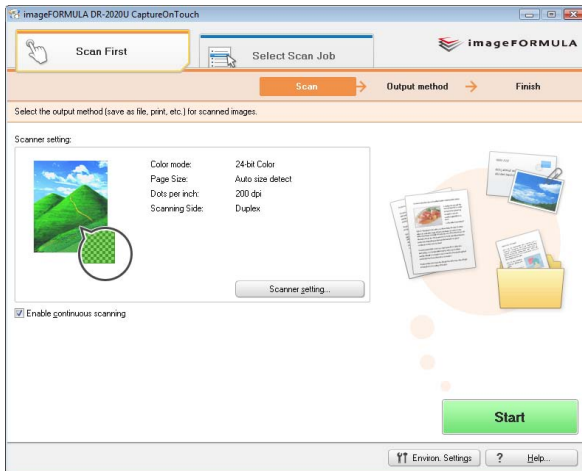


Figure 1-304

Select an output method after a document is scanned, and then configure the necessary settings.

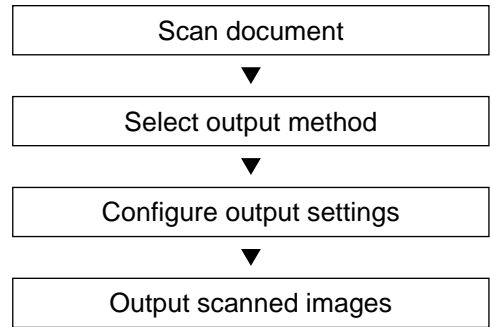


Figure 1-305

To use the Scan First default settings, press the START button when “Ready” appears on the display panel.

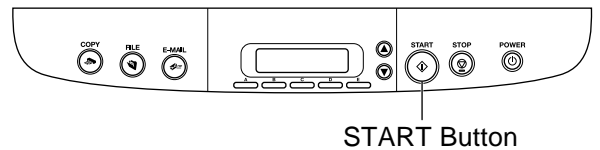


Figure 1-306

If you press the START button while a job appears on the display panel, scanning for that job will begin.

2) Select Scan Job

The screen of the [Select Scan Job] tab is shown below.

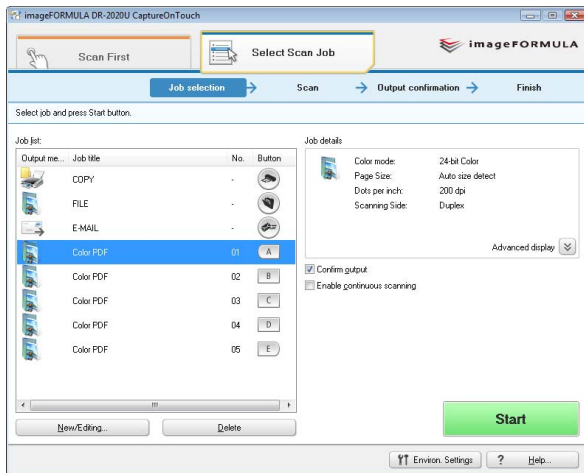


Figure 1-307

Register the scanning conditions and output methods as jobs, and then select a job that matches your intended purpose to begin scanning.

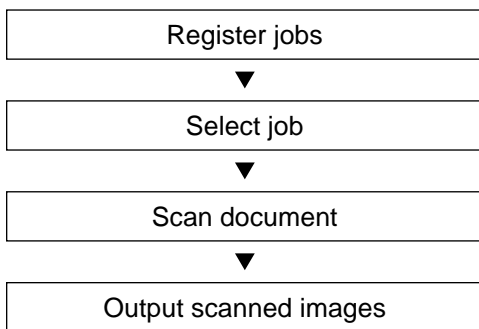


Figure 1-308

You can also select registered jobs using the buttons on the operation panel.

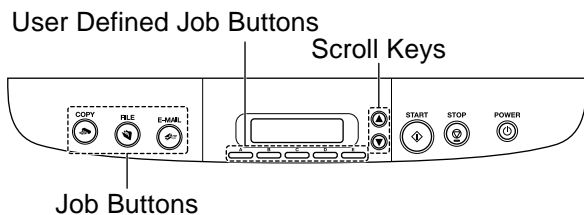


Figure 1-309

- Three preset jobs are assigned to the job buttons, and the respective scanning procedures will be processed automatically when these buttons are pressed.
- Registered jobs can be assigned to the user defined job buttons. When you press a user defined job button and then press the START button, the scan job assigned to the button begins.
- You can also select registered jobs using the scroll keys. When you press the START button, the selected scanning job begins.

3. Paper Jam Handling

If a paper jam occurs while scanning from the feeder, an error message appears on the display panel. Follow the procedure below to clear the jam.

Be careful not to cut your fingers on the edges of the paper when clearing the paper jam.

- 1) Remove any documents remaining in the document feed tray and the eject outlet.
- 2) Open the feeder cover, and confirm the location of the paper jam.

If the paper jam is not inside the feeder cover, check the underside of the feeder or the eject outlet.

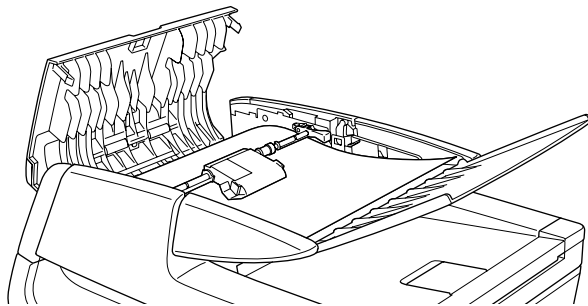


Figure 1-310

- 3) If the jammed document does not appear wrinkled or otherwise damaged, close the feeder cover, and press the STOP button. The jammed document is ejected, and the error message is cleared on the display.

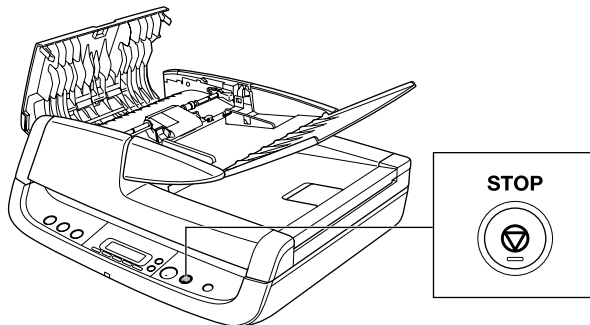


Figure 1-311

- 4) If the document is jammed at an angle or wrinkled, carefully remove the document without tearing it.

Do not pull with excessive force. Be sure to remove any pieces of paper remaining in the scanner.

- 5) Close the feeder cover gently.
- 6) Press the STOP button to clear the error message on the display.

After clearing the paper jam, confirm whether the last document was scanned before you continue scanning.

CHAPTER 2

FUNCTIONS & OPERATION

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III. FEED SYSTEM.....	2-9	VI. PARTS LAYOUT ON PCB.....	2-18

I. OUTLINE

1. System Configuration

The figure below shows the system configuration.

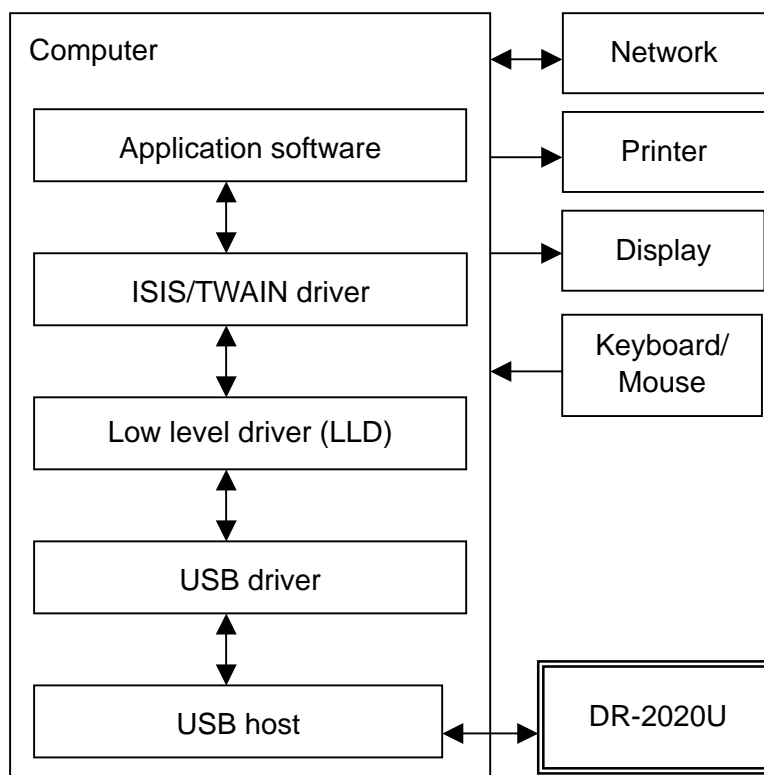


Figure 2-101

Item	Function
DR-2020U	Reading images and making output to computer
Computer	Controlling system
Application software	Saving and searching images
ISIS/TWAIN driver	Setting conditions and processing images
Low level driver (LLD)	Controlling DR-2020U (equivalent to firmware)
USB driver	Interface between LLD and USB host
USB host	Interface for image data input

Table 2-101

2. Machine Configuration

The figure below shows the configuration of this machine.

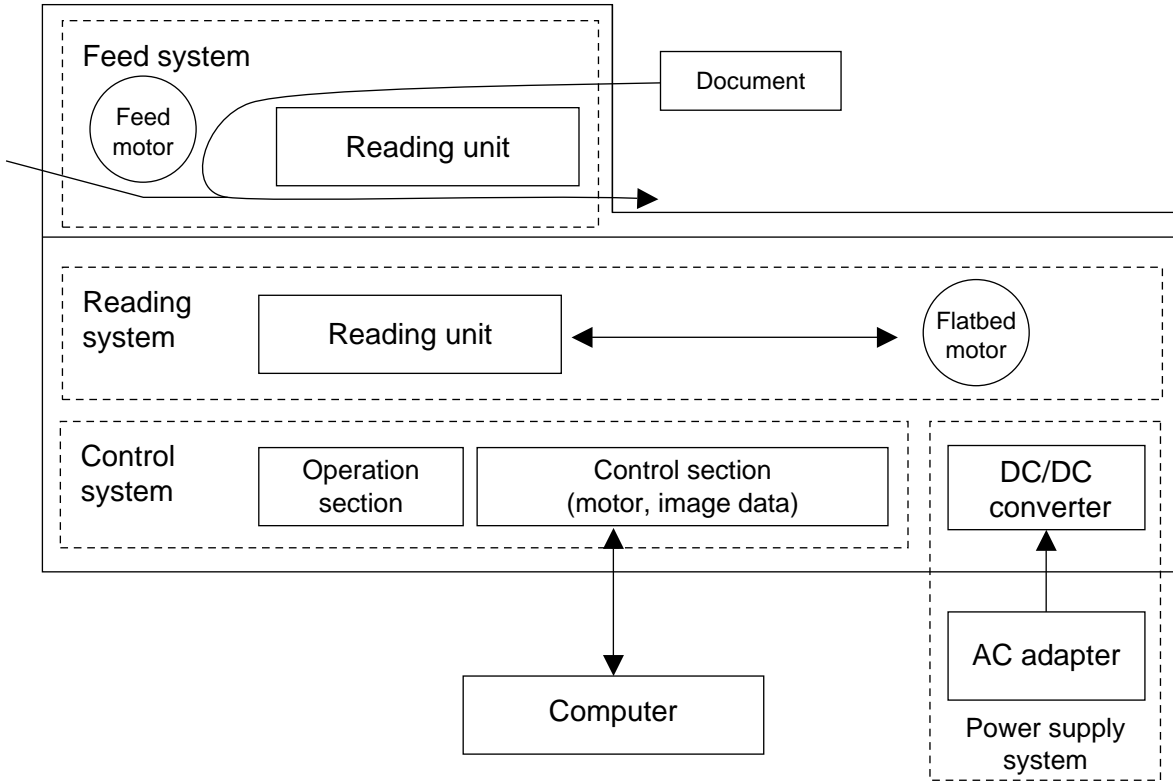


Figure 2-102

1) Reading system

Using the reading units, the reading system reads the image data. The reading units are placed in ADF and Flatbed units.

2) Feed system

Feeds documents from pickup to ejection. Two document trays are provided. One is for the general documents, and other is for business cards only.

3) Control system

Consists of the operation section (operation panel) and the control section which controls the motors and image data. The control system controls the image data reading according to commands sent

from the operation section or the computer. It further processes the read image data and outputs it to the computer. Note, however, that the computer also processes the image data.

4) Power supply system

Consists of a packaged AC adapter, DC/DC converters and regulators set on the internal PCB.

The system generates DC power from AC adapter, which is supplied to the individual sections.

3. Outline of Electric Circuit

The figure below shows the outlines of the block diagram.

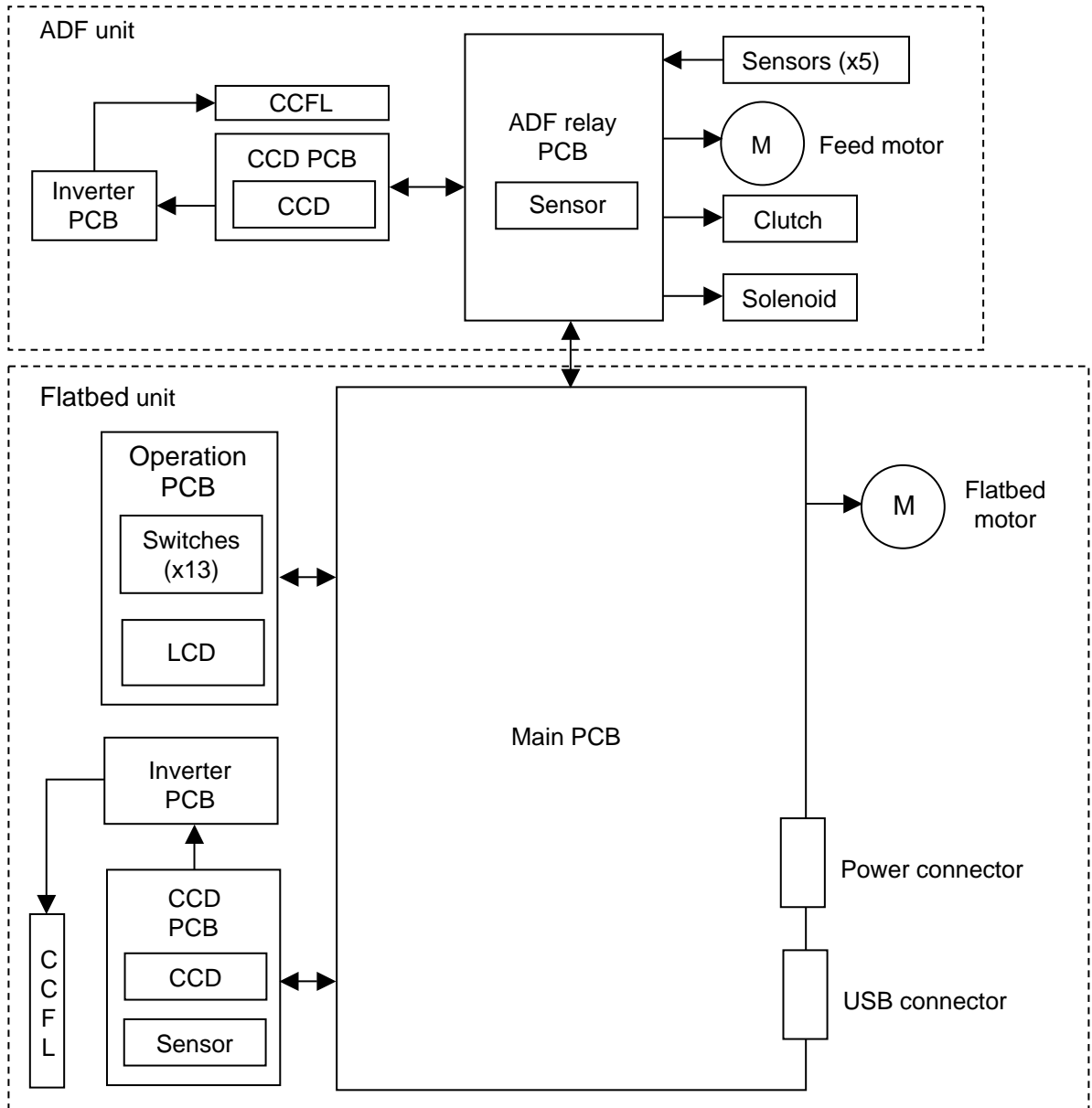


Figure 2-103

II. READING SYSTEM

1. Outline

The reading units are placed in the flatbed unit and ADF unit. In the flatbed scanning, the reading unit in the flatbed unit named lower reading unit is used for its reading.

In the feeder scanning, the lower read-

ing unit is used for the front side reading, and the reading unit in the ADF unit named upper reading unit is used for the back side reading. For the business card scanning, it is reversed on the side.

The cross section of the reading system is shown below.

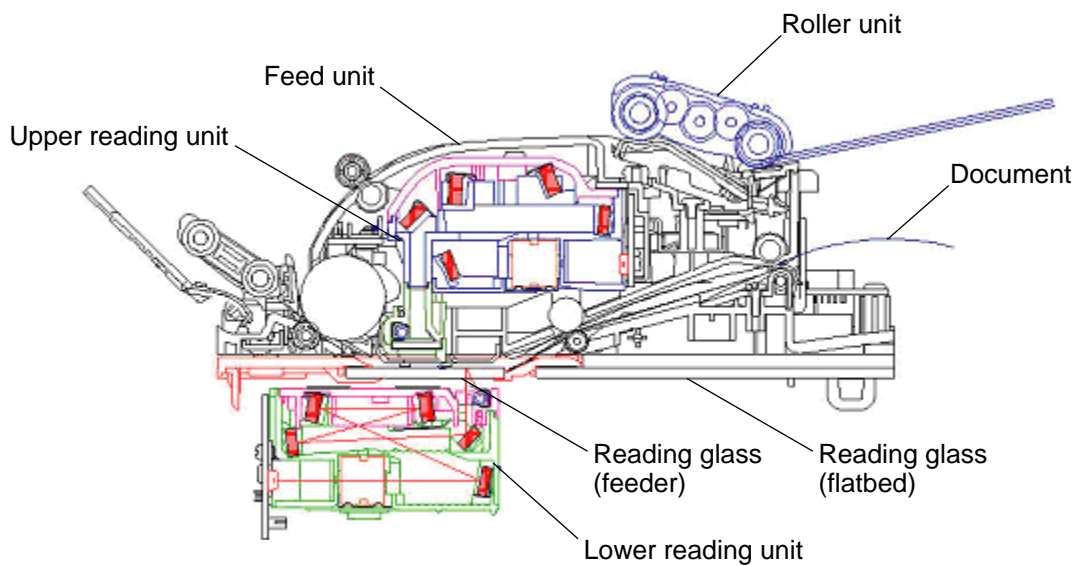


Figure 2-201

2. Flatbed

The figure below shows a cross section of the lower reading unit. And the basic of reading is described using this figure.

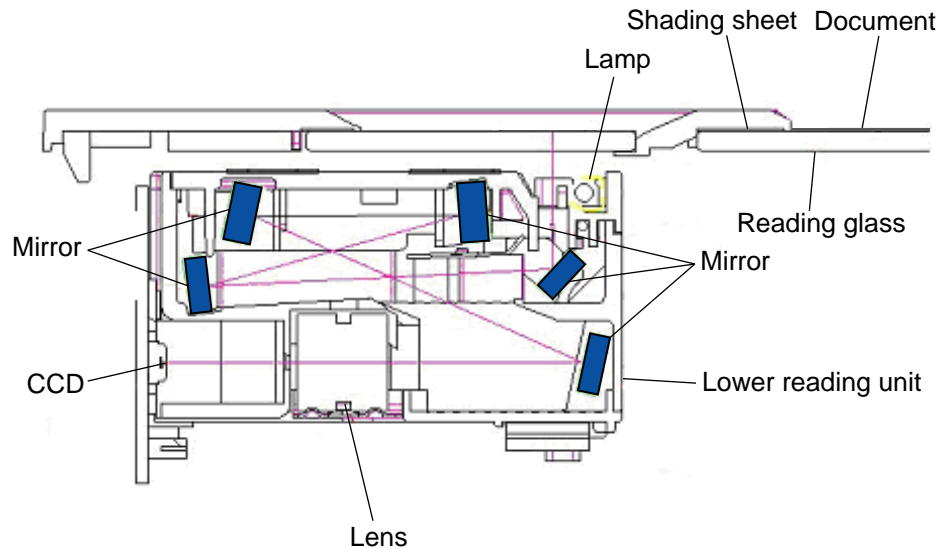


Figure 2-202

While the lower reading is moving, the light emitted by the light source (fluorescent lamp) passes through the reading glass, is reflected by the document, then goes into the reading unit. In the reading unit, the incident light is reflected by five mirrors, passes through a lens and reaches the CCD. The CCD PCB converts the data to analog signals, which are output to the main PCB.

As the light source, the machine uses a cold cathode fluorescent lamp (CCFL), which is generally called a fluorescent lamp. The CCD is a three-color (R/G/B), three-line sensor having a picture element density of 1200 dpi and an effective picture element of 10680 pixels. It is noticeable that the CCD can make analog grayscale outputs besides the R/G/B outputs. And an actual output density is 600 dpi or 300 dpi.

The shading sheet is placed between the reading glass and the flatbed cover, so

that it is aligned to the home position of the reading unit. The reading unit has a sensor to detect the home position.

After such events as the machine power is turned on, the driver setting is changed and an error occurs, the machine reads the shading sheet data and calculates the corrected values prior to scanning.

In addition, the machine reads the shading sheet data prior to each scanning operation to ensure the light intensity from the fluorescent lamp. In case of low or unstable light intensity from the fluorescent lamp, which may be encountered after the machine power is turned on and the machine is resumed from the sleep mode, the machine goes into the warming up state, showing "Warming up" on the display, and does not carry out scanning before resuming the normal condition.

The figure below shows the driving system for the lower reading unit.

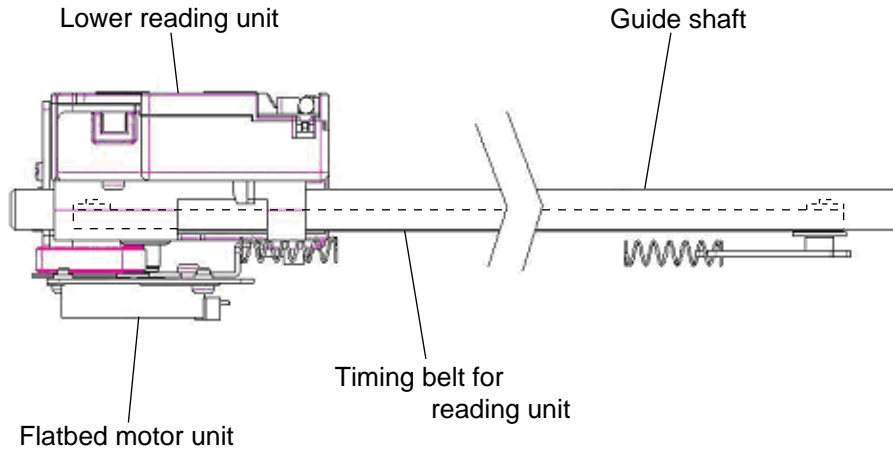


Figure 2-203

To move the lower reading unit, the machine has a flatbed motor unit, a timing belt and a pair of guide shafts.

For the flatbed scanning, the document does not move and the lower reading unit moves. For the feeder scanning, on the other hand, the lower reading unit is placed at a specific position and the document moves.

The figure below shows the movement at the flatbed scanning.

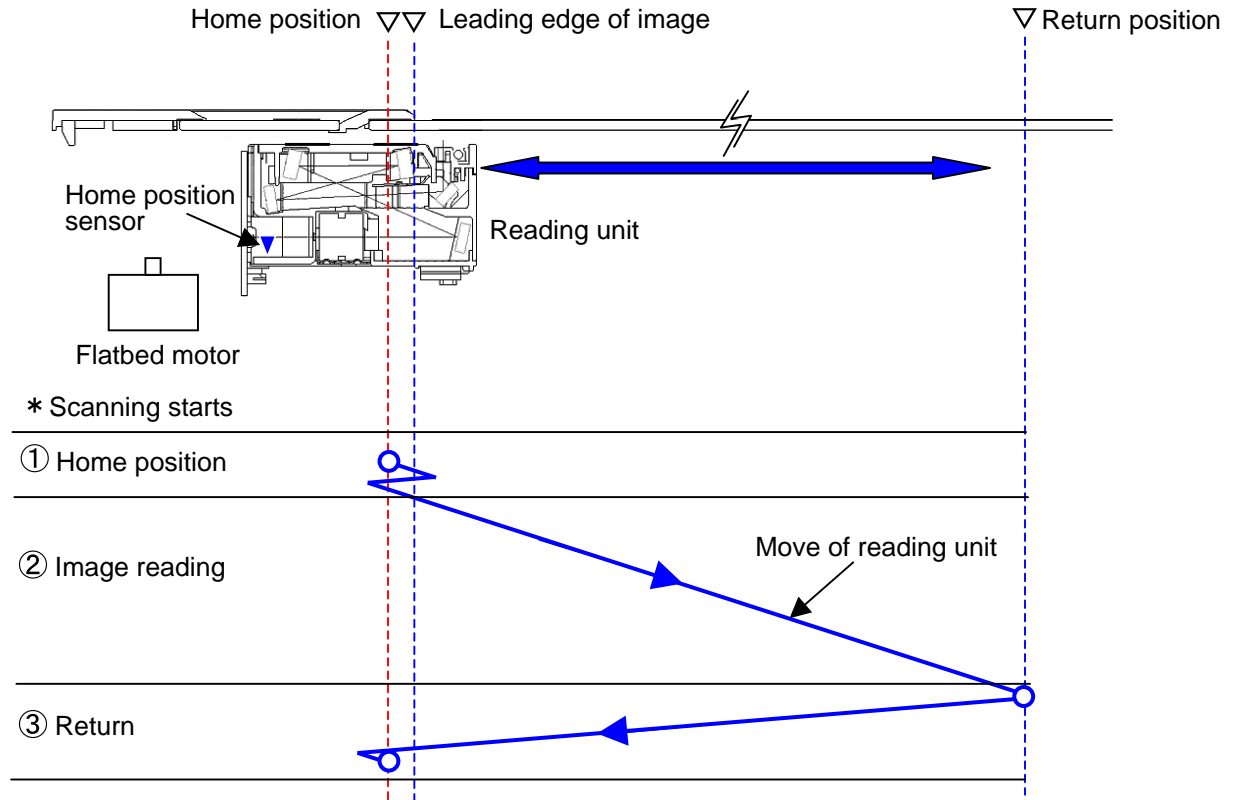


Figure 2-204

When the scanning start signal is output, the reading unit moves forward and backward from the home position to read the shading sheet and reconfirm the home position. Then it moves at a speed appropriate to the reading conditions, reading the image within the required area. Thereafter, the reading unit goes back to the home position at a specified speed, then stops there.

3. Feeder

In the feeder scanning, the lower reading unit is used for the front side reading, and the upper reading unit is used for the

back side reading. The general specifications and compositions of the upper reading unit are the same as the lower reading unit.

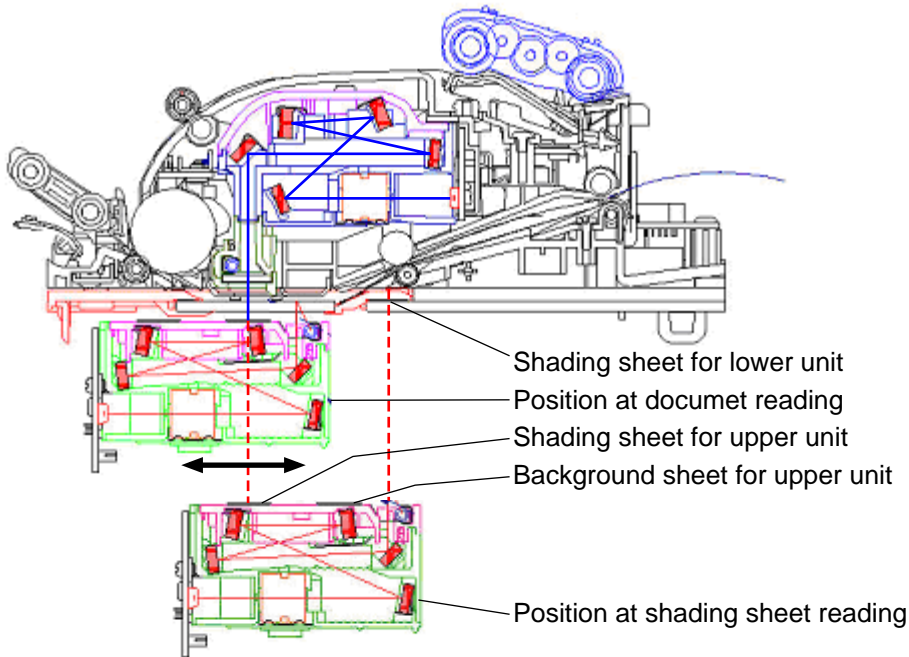


Figure 2-205

In the same way as the flatbed scanning, when the scanning start signal is output, the lower reading unit reads the shading sheet and reconfirms the home position. Then it moves to the front side reading position and reads the image there.

On the top surface of the lower reading unit, a white long sheet and black long sheet are attached. The white one is used for the shading, and the black one is used for the background for the upper reading unit.

Therefore, the upper reading unit can read the shading sheet at the same time as the lower reading unit reads the shading sheet. And the upper reading unit can read the back side of document at the same time as the lower reading unit read the front side of document.

After completing image reading, the lower reading unit goes back to the home position.

III. FEED SYSTEM

1. Outline

The figure below shows a sectional view of the feed system.

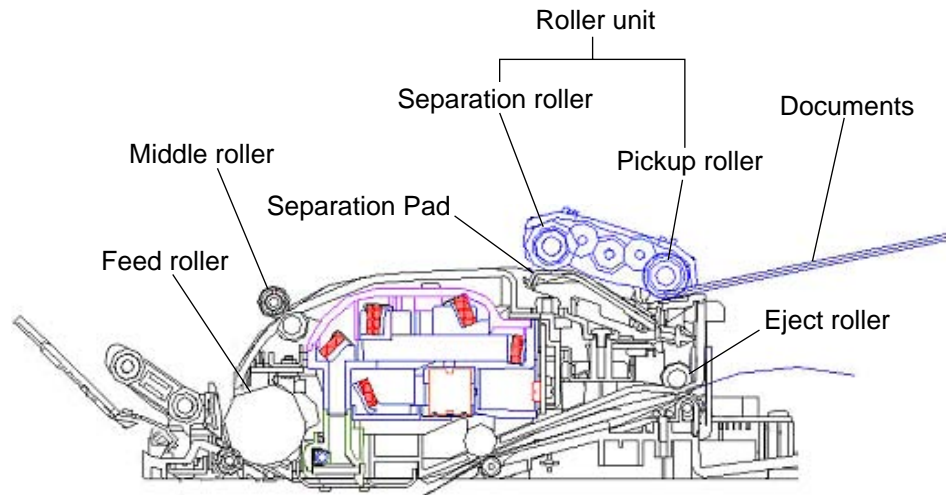


Figure 2-301

The feed system consists of a document setting section, a feed section and an eject section.

After fed by the pickup roller, the documents are separated one sheet by another by the separation roller and the separation pad. The unit consisting of these rollers is called the roller unit. The feed roller feeds the document to the image reading position and lastly the eject roller ejects the document. These rollers are driven by the feed motor and the gears.

To control the operation, the feed section has sensors, which detect the document by the shift of the detection lever.

There is a document set section for business cards on the left side of the above figure. Refer to the "5. Business Card Feeding" section for details.

2. Pickup Operation

The figure below shows the appearance of the pickup side of the feed system.

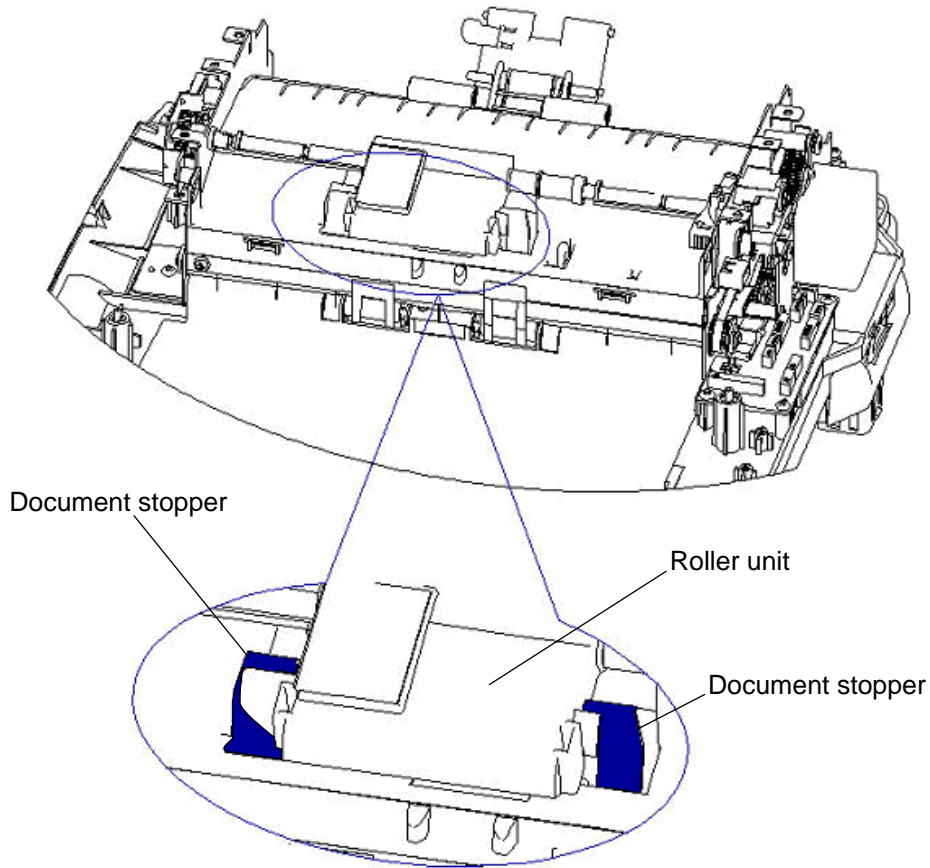


Figure 2-302

When execute the feeder scanning, the roller unit will rise an angle, then put document in the document feed tray, for preventing document go into the pickup roller too deep, the document stoppers will stop document. When start a feeding, the roller unit will go down and the document will be forwarded and the document stoppers down to let document go through it.

3. Feed Operation

The figure below shows the appearance of the feed side of the feed system.

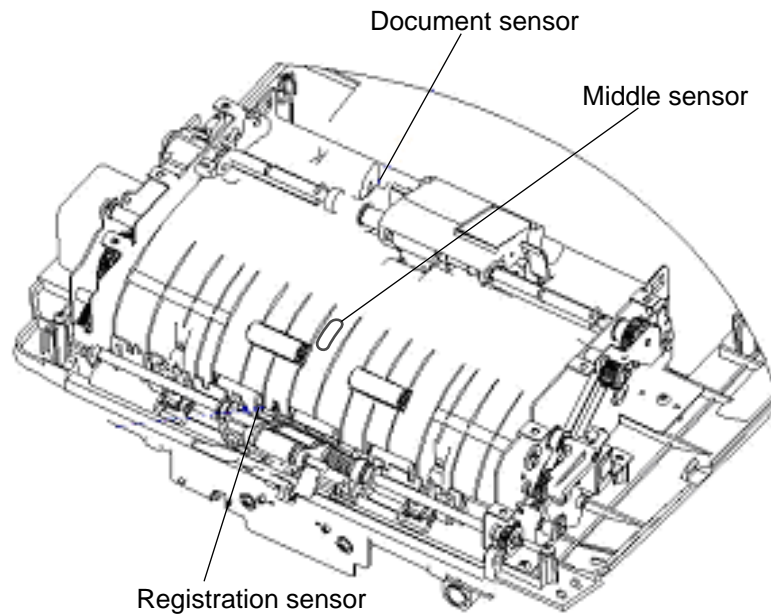


Figure 2-303

The document sensor is assembled in the pickup side as the first sensor for the feed system. The document sensor can detect whether there is document or not. When put the document in the document tray, the document will push the sensor arm down and start detecting.

When feeder scanning starts, the pickup roller will pick up one document into the feeder, then the document will transport to the inside more. When the document is detected by the registration sensor, the feed motor will go forward the specified steps then the reading unit starts reading.

The first document tail comes off document sensor, if another document is detected by the document sensor, the following document will continue to transport to the feeder. It will repeat until no document is detected by the document sensor.

The middle sensor is used for the con-

trol at the Scan Ahead OFF setting and the detection for the short length document.

4. Sequence of Operation

The figure below shows a timing chart of the feeder scanning in case where the machine uses a document of two sheets and basic conditions (black and white, 300 dpi, A4).

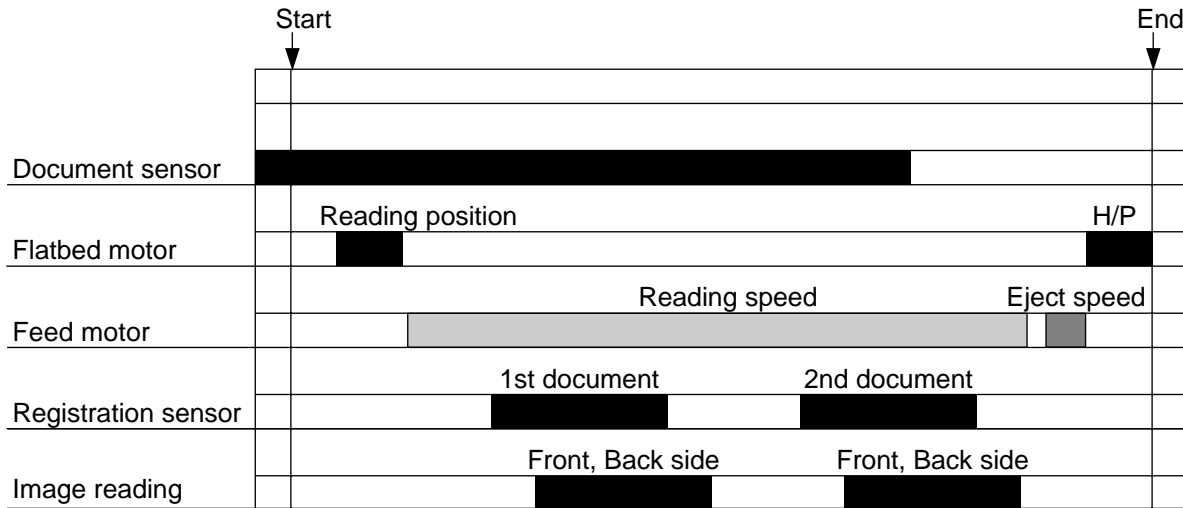


Figure 2-304

When the scanning start signal is output, the flatbed motor starts running and moves the lower reading unit to the reading position for the feeder scanning.

Then the feed motor runs at the reading speed and sends the 1st document to the feed section. Image reading starts after the registration sensor is set on and the specified length of document is fed. The lower reading unit reads the front side of the document and the upper reading unit reads the back side.

The feed motor keeps running until the 1st document is fed to the eject area. And the machine repeats the same procedures to read the image of the 2nd document.

Then the feed motor stops for a moment, then ejects the 2nd document at the eject speed. When the pickup area has no more document and the document sensor is turned off, the machine determines the

present document as the last one and ejects it at the eject speed.

When the setting of “Scan Ahead” is cancelled, the 2nd document need to stop in the feeding area until the image data of the 1st document is sent out. Therefore, a magnetic clutch is turned on, and then the rollers in feeding area excepting the feed roller are stopped to stop the 2nd document.

Error signal “Paper Jam” is output in the following events.

- ◆ Even after the machine starts feeding and the specified time; 30 seconds passes, the registration sensor does not detect the document.
- ◆ Even after the registration sensor detects the document and the specified length; 406 mm (16 inches) passes, the registration sensor detects the document till.

5. Business Card Feeding

The figure below shows a sectional view of the business card feed system.

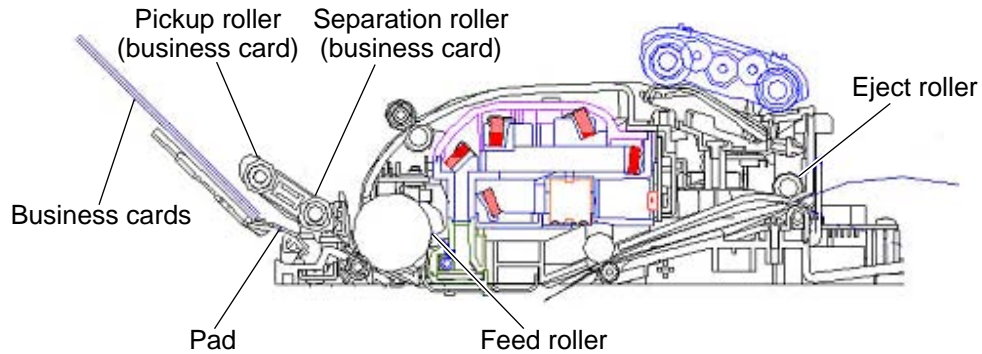


Figure 2-305

When the business cards are put in a business card feeder then the pickup roller will pick up one business card into the feeder then the separation roller will separate the business card and feed the business card to the feed roller.

The feed roller will transport the business card to a scanning line, at the same time the lower reading unit will go to the feeder scanning line as the same as the feeder scanning, then start reading the business card data. The upper reading unit reads the front side of the business card, and the lower reading unit reads the back side.

And then the eject roller will eject the business card out.

When the business card feeder has opened, a business card sensor has detected it. And then the clutch and solenoid operate to stop the rollers in the feeding area excepting the feed roller, and keep it.

IV. CONTROL SYSTEM

1. Control Block Diagram

The electrical control system of this machine is shown as below.

The system is composed by the main PCB, operation panel, two reading units and two motors mainly. And this system is controlled by the scanner controller on the main

PCB. The operation panel and reading units are connected to the main PCB.

The 24 VDC power is provided by the AC adaptor. The USB connector on Main PCB is to connect the computer using the USB cable.

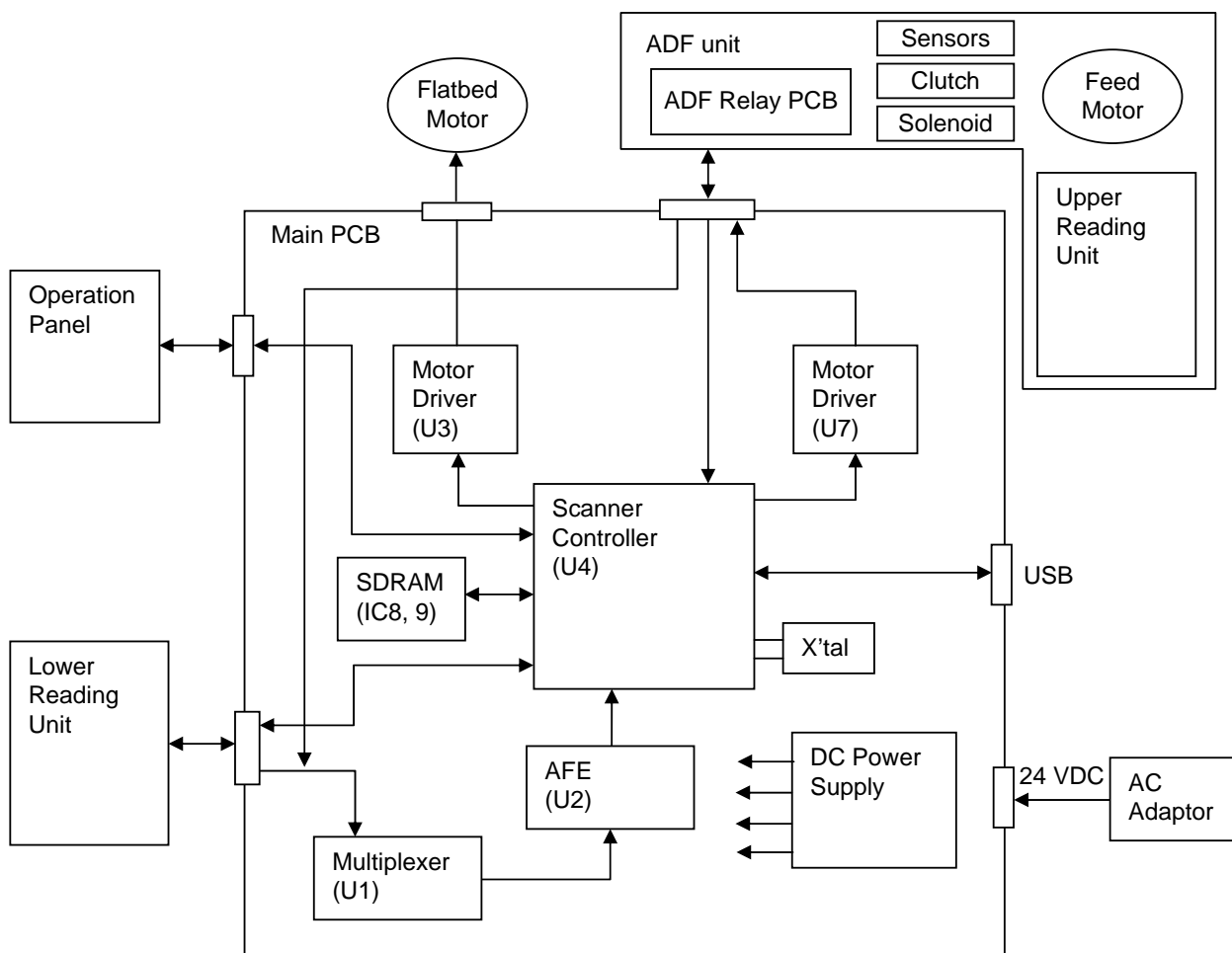


Figure 2-401

2. Image Processing

The figure below shows a block diagram of image processing executed by this machine.

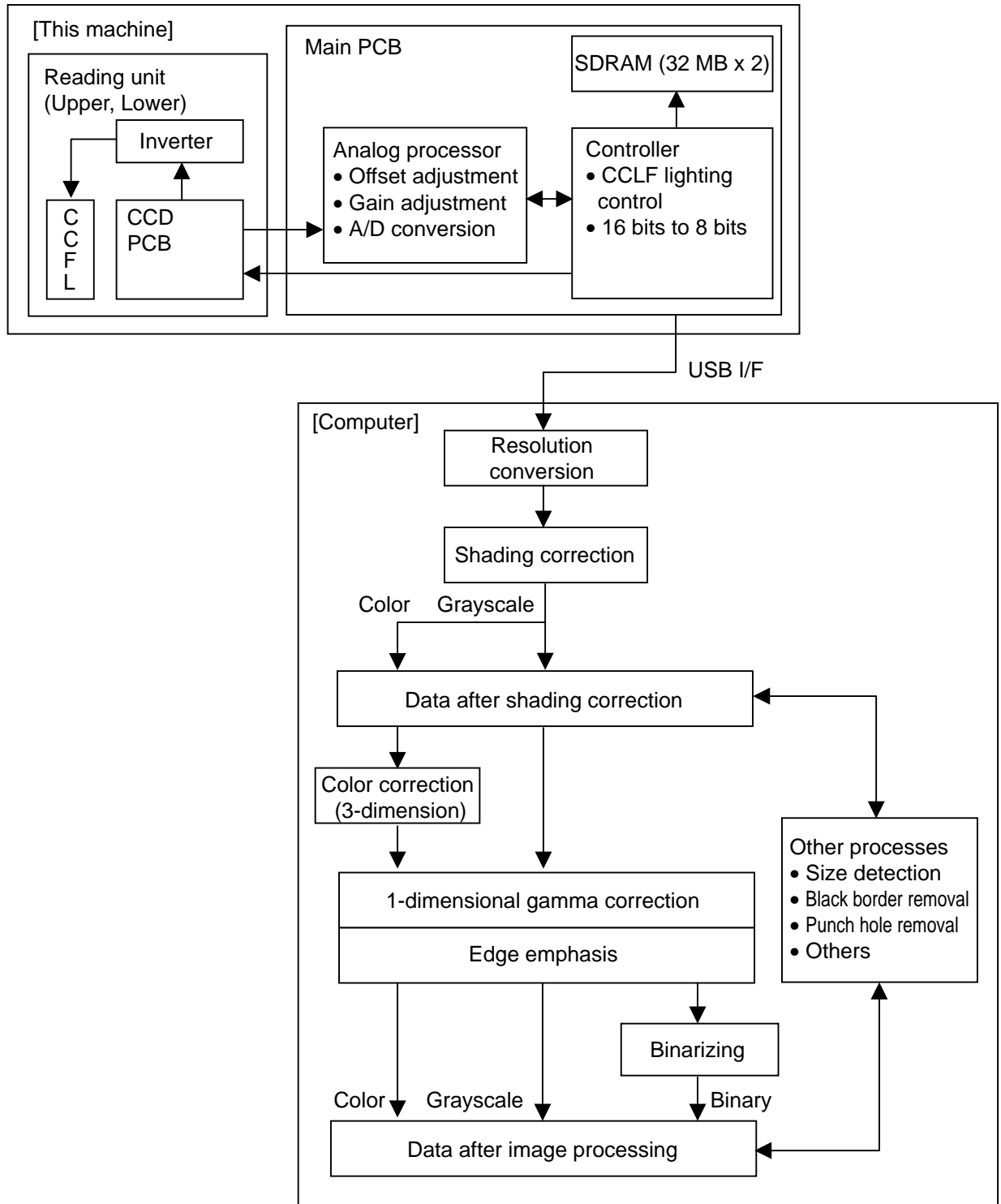


Figure 2-402

Corresponding to the density of each picture element, the CCD PCB outputs an analog signal to the analog processor on the main PCB.

The analog processor adjusts the offset and the gain and then executes A/D conversion. Thereby the analog signal is converted to a 16bit digital signal. Then the image data is output to the controller, where it is tentatively saved in the SDRAM. This 16bit signal is converted to an 8bit signal at this time. There are 2 SDRAMs, one for the front side image, and another for the back side.

The image data is then output to the computer via the USB interface.

All the image processing executed by this machine is as described above. Any other image processing is carried out inside the computer. Refer to the Figure 2-402 for details. Inside the computer, the image is processed as settings by the user.

This machine can output the resolution of 600 dpi or 300 dpi. In case of the setting resolution is 300 dpi or less, this machine outputs 300 dpi data. And in case of the 400 dpi or 600 dpi, 600 dpi data is output. If the smoothing is selected, the resolution is kept at 600 dpi.

V. ELECTRICAL PARTS LAYOUT

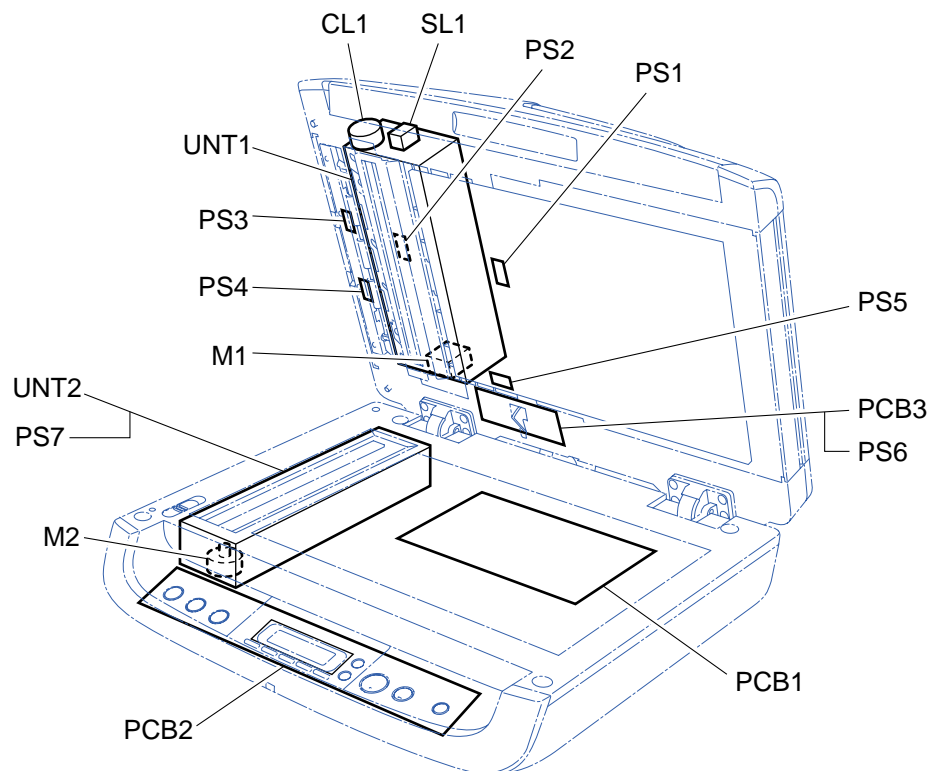


Figure 2-501

Unit	Name	Symbol
ADF unit	Document sensor	PS1
	Middle sensor	PS2
	Registration sensor	PS3
	Business card sensor	PS4
	Feed cover sensor	PS5
	ADF open sensor	PS6
	Feed motor	M1
	Clutch	CL1
	Solenoid	SL1
	ADF relay PCB	PCB3
	Upper reading unit	UNT1
Flatbed unit	Home position sensor	PS7
	Flatbed motor	M2
	Main PCB	PCB1
	Operation PCB	PCB2
	Lower reading unit	UNT2

Table 2-501

VI. PARTS LAYOUT ON PCB

1. Main PCB

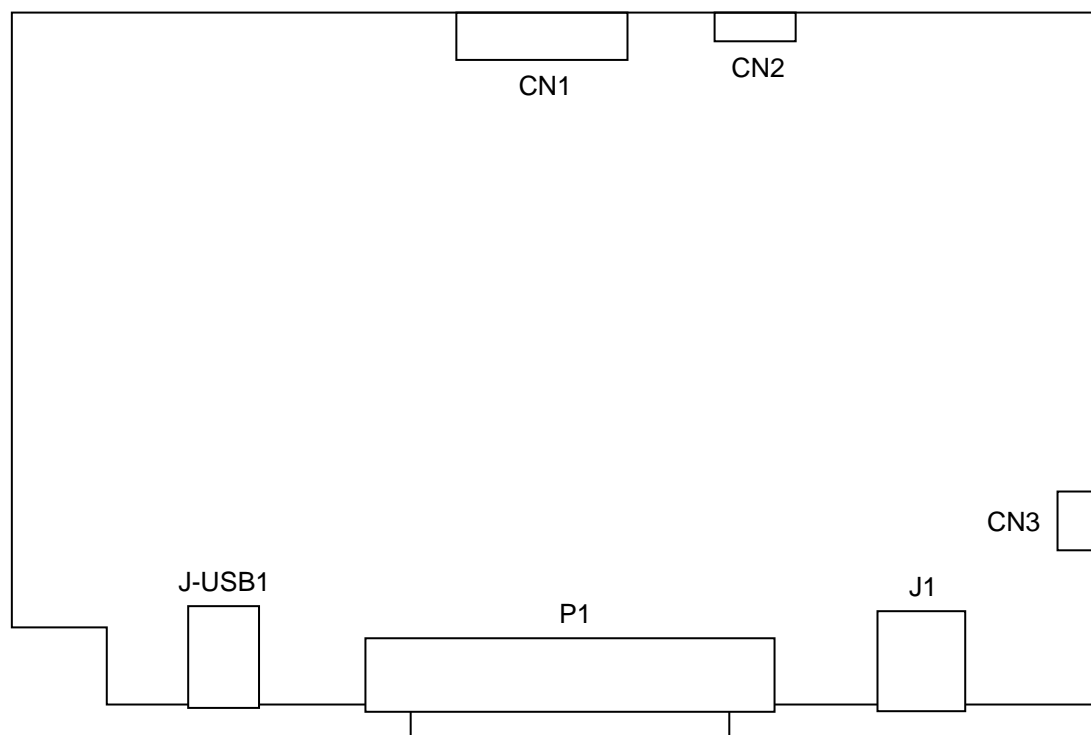
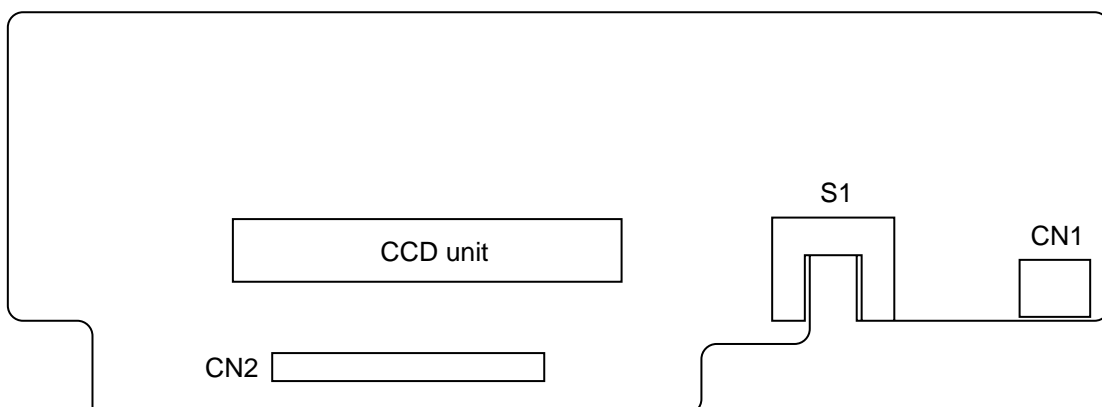


Figure 2-601

No.	Name	Function
1	J-USB1	USB connector
2	P1	ADF cable connector
3	CN3	Flatbed motor connector
4	CN2	Operation panel connector
5	CN1	Lower CCD connector

Table 2-601

2. Lower CCD PCB



Note: Do not remove this PCB from the lower reading unit.

Figure 2-602

No.	Name	Function
1	CN2	CCD FFC connector
2	S1	Home position sensor
3	CN1	Inverter connector

Table 2-602

3. ADF Relay PCB

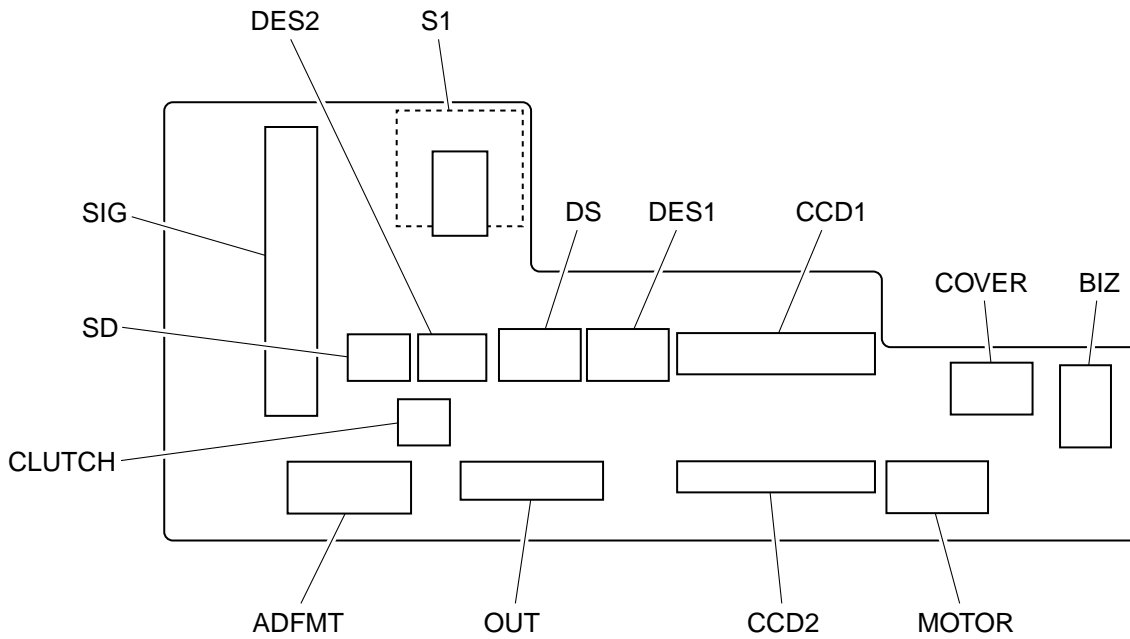


Figure 2-603

No.	Name	Function
1	BIZ	Business card sensor connector
2	SD	Solenoid connector
3	COVER	Feed cover sensor connector
4	MOTOR	Feed motor connector (OUT)
5	CCD1	CCD timing FFC connector
6	CCD2	CCD output FFC connector
7	DES1	Document sensor connector
8	DES2	Middle sensor connector
9	DS	Registration sensor connector
10	CLUTCH	Clutch connector
11	ADFMT	Feed motor connector (IN)
12	SIG	CCD timing connector
13	OUT	CCD output connector
14	S1	ADF open sensor

Table 2-603

CHAPTER 3

DISASSEMBLY & REASSEMBLY

I. ADF UNIT.....	3-1	II. FLATBED UNIT	3-10
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I. ADF UNIT

1. ADF Unit (Entire)

- 1) Remove 2 screws ① (with a connector) on the rear side and remove the connector ②.

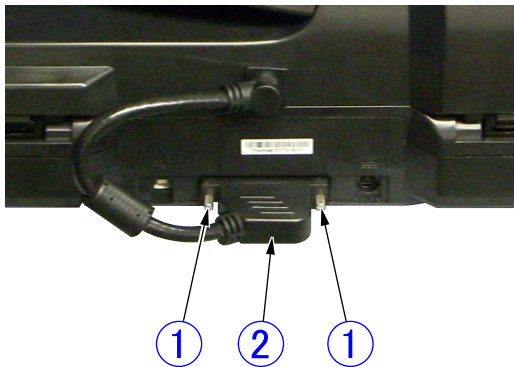


Figure 3-101

- 2) Fully open the ADF unit ①, lift it, and remove it while removing the right and left hinges ②.

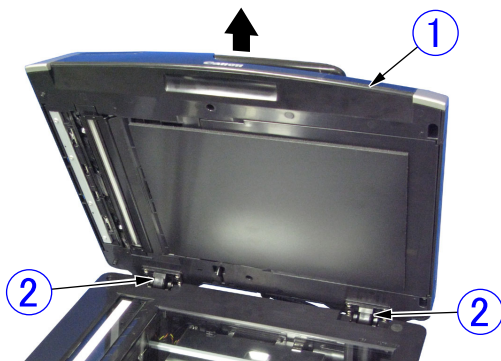


Figure 3-102

2. Pickup Tray Unit

- 1) Open the feed cover ①, tilt the rear side plate ② inward, unhook the fitting parts ③, and slide it to the front slightly. Then, slide the fitting parts ④ on the opposite side and remove the pickup tray unit ⑤.

Note: Since the fitting parts strike the part marked with *, perform work to avoid damage to them. This also applies during assembly.

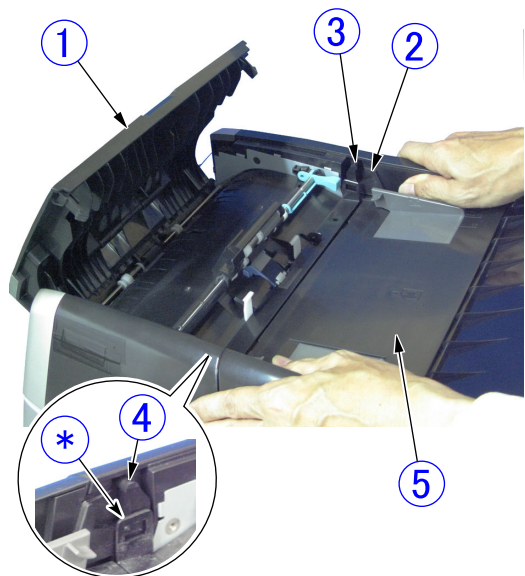


Figure 3-103

Note: Since other disassembling work may become easier, this pickup tray unit may be removed even if it is not specified in the procedure for this chapter.

Note: The machine in the figure for this chapter may have a few difference with the mass-production's one.

3. ADF Front Cover

- 1) Remove 2 screws ① (M3x8, self-tapping) on the back side.

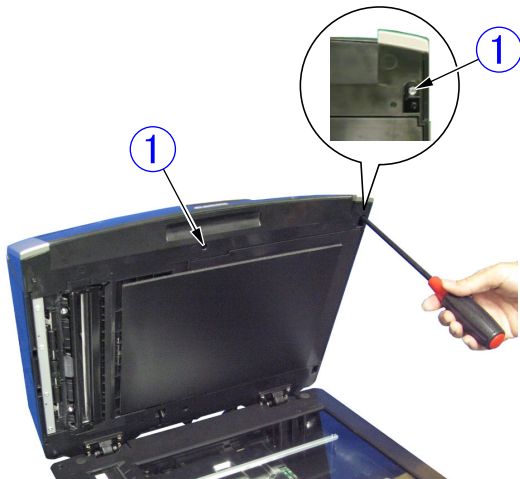


Figure 3-104

- 2) While pressing the surface of the corner cover ①, slide it to the outside, unhook 2 pairs of the fitting parts ② inside, and remove the corner cover.



Figure 3-105

- 3) Open the feed cover ① and remove the screw ② (M3x8, self-tapping). Press the central part ③ of the side, unhook the fitting parts ④ inside, then remove the ADF front cover ⑤ while lifting it.

Note: When the ADF front cover is removed, the eject extension cover is detached.

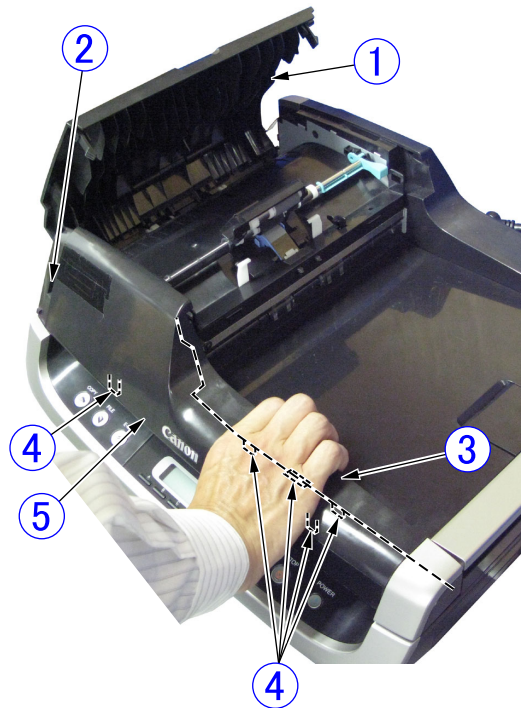


Figure 3-106

◆ Notes on assembling

First, assemble the fitting parts of the ADF front cover and the eject extension cover.

4. ADF Rear Cover

- 1) Remove the ADF unit (entire).
(Page 3-1)
- 2) Remove 2 screws ① (M3x8, self-tapping) and 4 screws ② (M4x20, self-tapping).

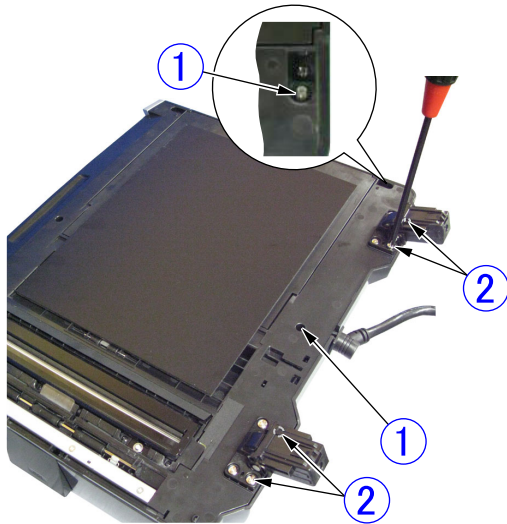


Figure 3-107

- 3) While pressing the surface of the corner cover ①, slide it to the outside, unhook a pair of the fitting part ② inside, and remove the corner cover. If it is hard to remove, open the feed cover and insert the tool from the hole with triangle mark ③, and then down the fitting part to remove.

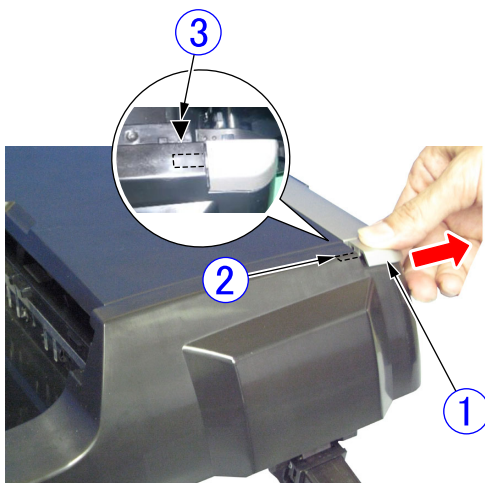


Figure 3-108

- 4) Open the feed cover ① and remove the screw ② (M3x8, self-tapping). Press the central part ③ of the side, unhook the fitting parts ④ inside, then remove the ADF rear cover ⑤ while lifting it.

Note: Do not pull it excessively because a cover stopper is connected to it. When the ADF rear cover is removed, the eject extension cover is detached.

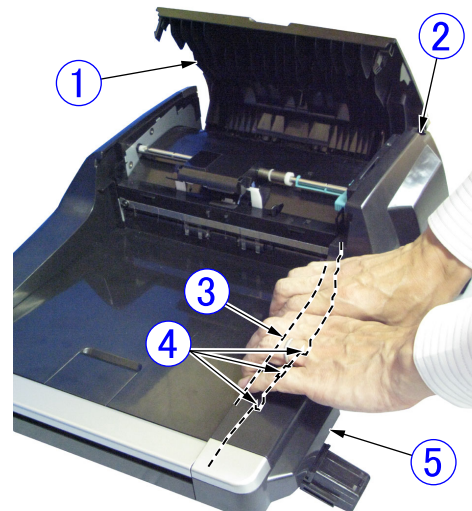


Figure 3-109

- 5) Remove the cover stopper ① from the ADF rear cover.

Note: Take care of it not to break, a tweezers can use if necessary. And this step 5 can be done before step 4.

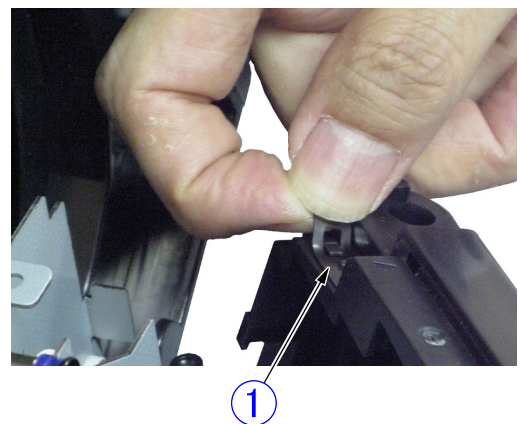


Figure 3-110

5. Business Card Tray Unit

- 1) Open the business card tray unit ①, press and widen 2 guide plates ② and remove the ends of the roller shaft ③.

Note: These guide plates are placed into the grooves.

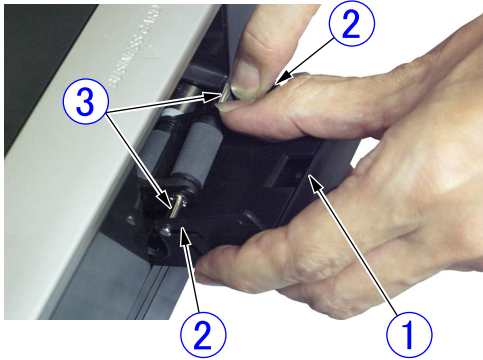


Figure 3-111

- 2) Pull the business card tray unit ① straight, unhook 2 pairs of fitting parts ② and remove the business card tray unit.

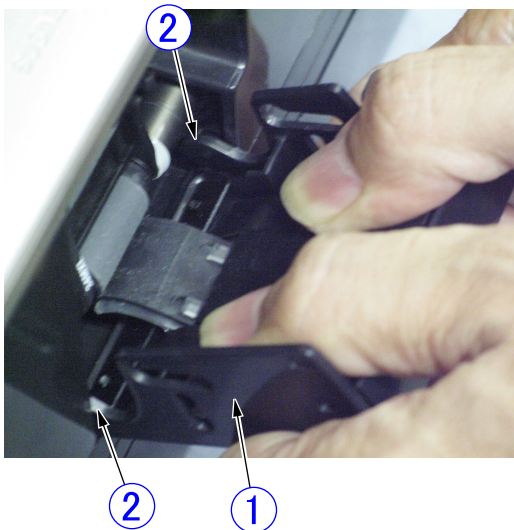


Figure 3-112

6. Business Card Roller

- 1) Remove the business card tray unit. ([Page 3-4](#))
- 2) Remove one of the E-rings ①, remove the roller shaft ② and business card roller ③.

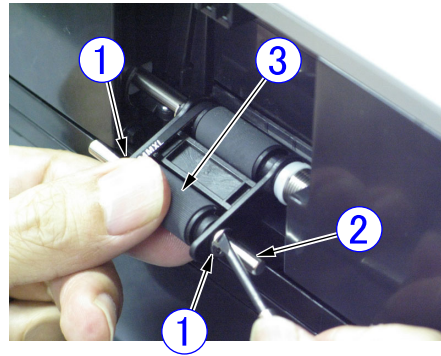


Figure 3-113

◆ Notes on assembling

Install the timing belt in the business card roller.

7. Feed Cover

- 1) Remove the ADF rear cover.
([Page 3-3](#))
- 2) Remove the business card tray unit.
([Page 3-4](#))
- 3) Remove the connector ①.

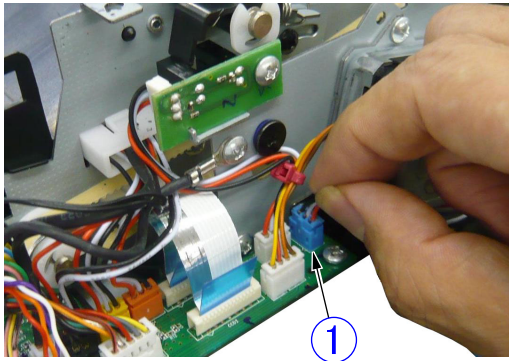


Figure 3-114

◆ Notes on assembling

The business card roller ① must be outside the feed cover. Insert the above shaft fitting parts ⑤ in the step 4, close the feed cover, and hook the fitting parts in the reverse order of the removal.



Figure 3-116

- 4) Open the feed cover ①, tilt the rear side, unhook the fitting parts ②, fitting parts ③, and fitting parts ④ in this order, and finally unhook the shaft fitting parts ⑤ of the front side, and remove the feed cover.

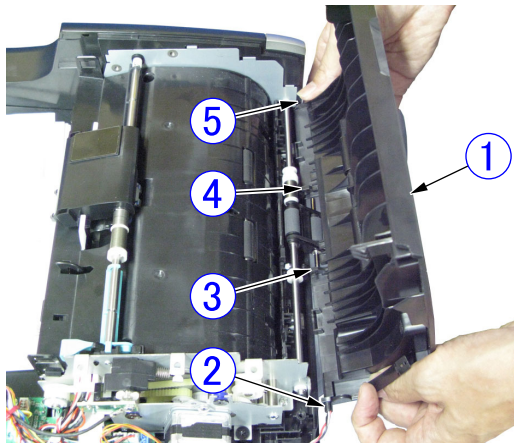


Figure 3-115

8. Hinge (Right)

- 1) Remove the ADF rear cover.
[\(Page 3-3\)](#)
- 2) Remove 2 screws ① (M4x12, self-tapping).

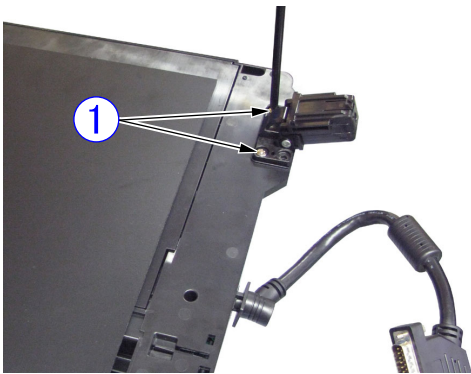


Figure 3-117

- 3) Remove the screw ① (M4x12, self-tapping) and remove the hinge (right) ②.

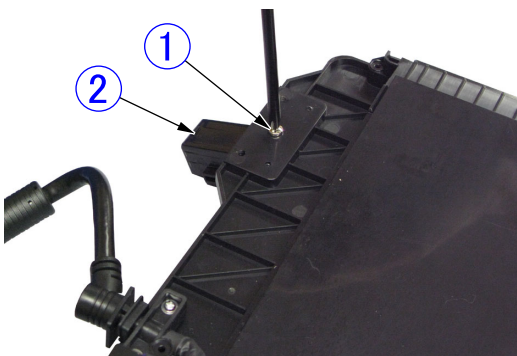


Figure 3-118

◆ Notes on assembling

The hinge (right) and the hinge (left) are the same parts.

9. Hinge (Left)

- 1) Remove the ADF rear cover.
[\(Page 3-3\)](#)
- 2) Remove 2 screws ① (M4x12, self-tapping).

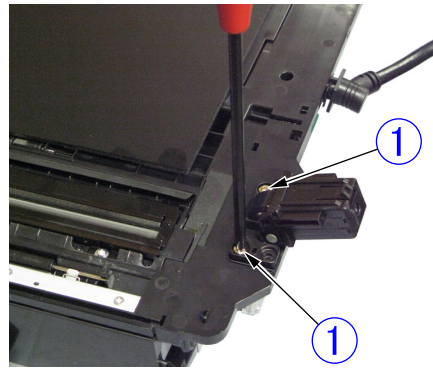


Figure 3-119

- 3) Remove the feed motor.
[\(Page 3-7\)](#)
- 4) Remove the screw ① (M4x12, self-tapping) and remove the hinge (left) ②.

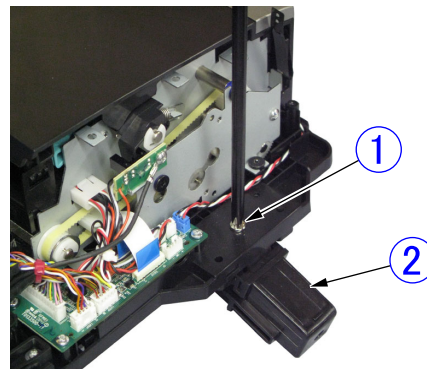


Figure 3-120

◆ Notes on assembling

The hinge (right) and the hinge (left) are the same parts.

10. Feed Motor

- 1) Remove the ADF rear cover.
([Page 3-3](#))
- 2) Remove the connector ① and 2 screws ② (M3x4), align the gear with the hole position of the side plate, and pull out the feed motor ③ straight.

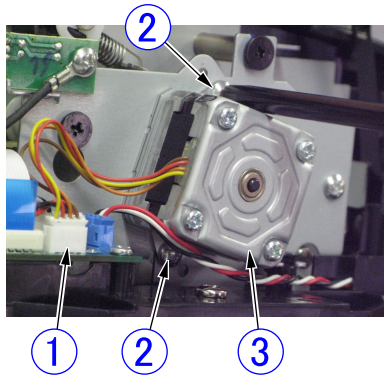


Figure 3-121

11. ADF Cable

- 1) Remove the ADF rear cover.
([Page 3-3](#))
- 2) Remove 2 screws ① (TP head, self-tapping), the screw ② (M3x4), and 3 connectors ③ and remove the ADF cable ④.

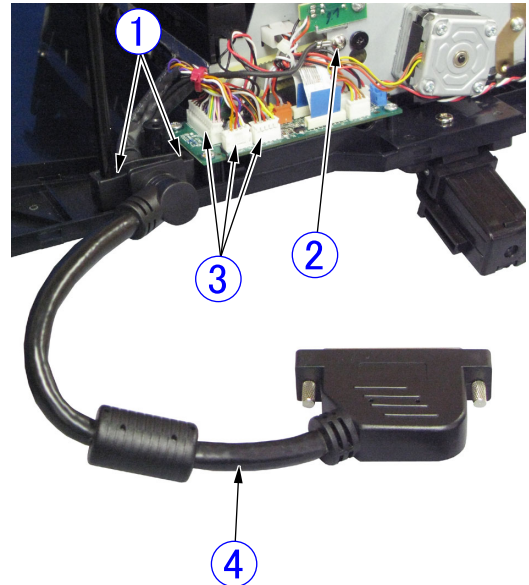


Figure 3-122

12. ADF Relay PCB

- 1) Remove the ADF cable.
[\(Page 3-7\)](#)
- 2) Remove 3 screws ① (M3x8, self-tapping) and 10 connectors ② (including 2 FFCs) and remove the ADF relay PCB ③.

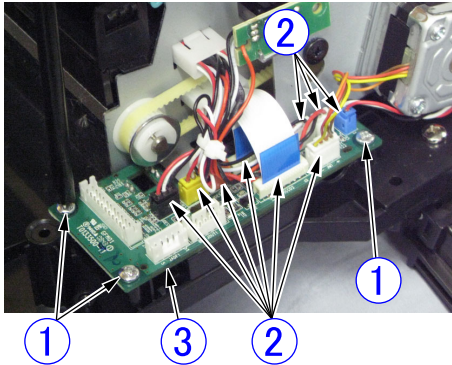


Figure 3-123

◆ Notes on assembling

Connect the connectors (excepting the FFCs) to the receptacles on the PCB to meet the same color and pin numbers.

13. Feed and Reading Unit

- 1) Remove the ADF front cover.
[\(Page 3-2\)](#)
- 2) Remove the ADF rear cover.
[\(Page 3-3\)](#)
- 3) Remove the feed cover.
[\(Page 3-5\)](#)
- 4) Remove the feed motor.
[\(Page 3-7\)](#)
- 5) Remove 5 screws ① (M3x8, self-tapping), 2 screws ② (flat head, stepped), the screw ③ (M3x4) for the grounding cable of the ADF cable and the cables connected to the ADF relay PCB ④, and then remove the feed and reading unit ⑤.

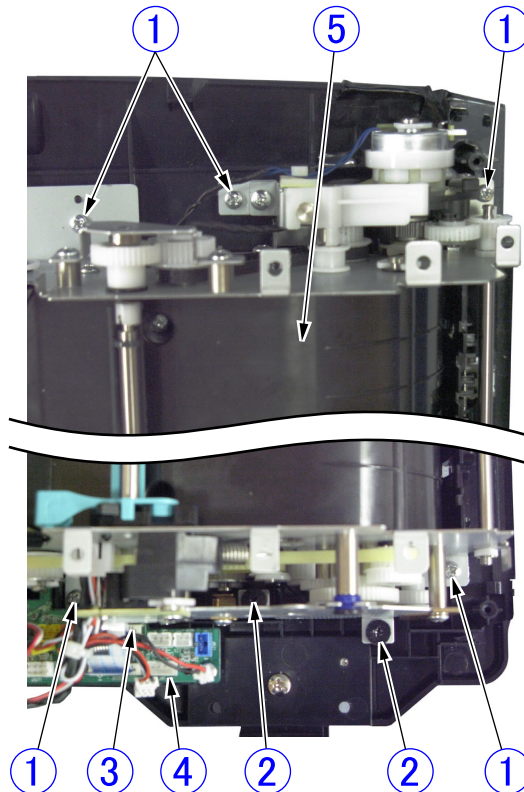


Figure 3-124

14. ADF Bottom Cover

- 1) Remove the feed and reading unit.
([Page 3-8](#))
- 2) Remove the ADF relay PCB.
([Page 3-8](#))
- 3) Remove the hinges (left) and (right).
([Page 3-6](#)), ([Page 3-6](#))
- 4) The remaining part is the ADF bottom cover ①.

Note:The black pressure board is attached with adhesive tape.

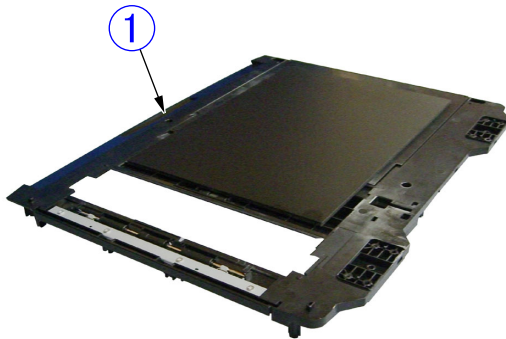


Figure 3-125

II. FLATBED UNIT

Note:For details on removal of the ADF unit (entire), refer to page 3-1.

Note:Since dust may enter the inside easily when the top cover is removed, perform work in a place where there is as little dust as possible to prevent dust from entering.

1. Top Cover

1) First release the lock lever ① of the reading unit.

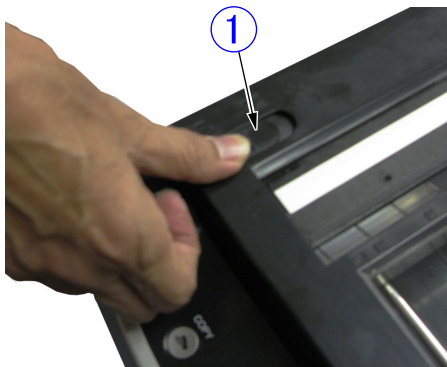


Figure 3-201

2) Pull out 4 caps ① with a tool with a flat, thin tip and remove 4 inner screws (M3x8, self-tapping).

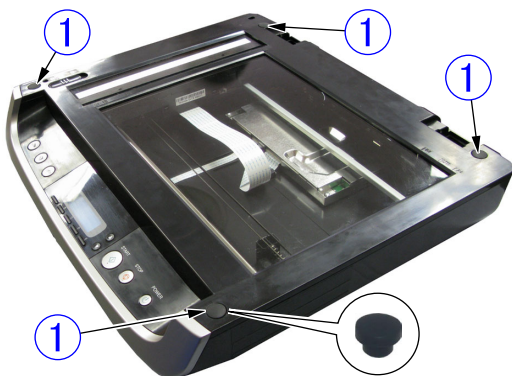


Figure 3-202

3) Hold the hinge insertion hole with a hand and pull off the top cover ① from the base side.

Note:For details on how to unhook the front fitting parts, refer to the following procedure.

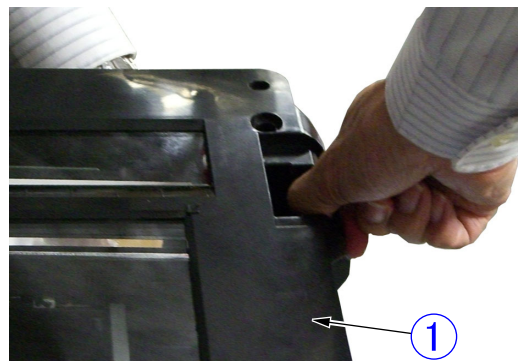


Figure 3-203

4) Since the front side is fitted with the front lower cover ①, remove it while tilting the top cover ② slowly.

Note:Prevent damage to the fitting parts with the front lower cover.



Figure 3-204

◆ Notes on assembling

If there is any dust inside, remove it and then install the top cover. And clean a back side of the reading glass.

2. Front Lower Cover

- 1) Remove the top cover.
([Page 3-10](#))
- 2) Pull the front lower cover ① to the front and remove it while unhooking the inner fitting parts.

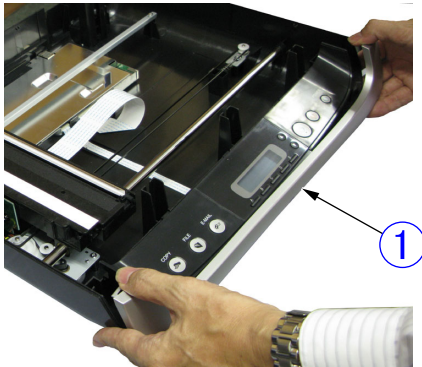


Figure 3-205

3. Operation Panel Unit

- 1) Remove 2 screws ① (M3x8, self-tapping) on the back side.

Note: If the flatbed unit is turned over after removing the top cover, one side of the reading unit falls. Therefore, first remove the screws on the back side.



Figure 3-206

- 2) Remove the top cover.
([Page 3-10](#))
- 3) Remove the front lower cover.
([Page 3-11](#))
- 4) Remove the operation panel ① and remove the cable on the back side.

Note: Do not pull it excessively because a cable is connected to the back side.

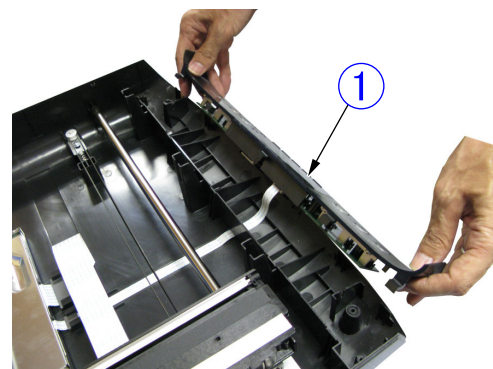


Figure 3-207

4. Reading Unit

Note: Handle the reading unit carefully. Do not give a shock to it. Do not stain the fluorescent tube or the reflection plate at the place where the image is read, and the black and white sheets. Prevent dust from entering the inside.

1) Remove the top cover.

[\(Page 3-10\)](#)

2) Remove the screw ① (TP head, self-tapping), slide the tension plate ② and remove the belt ③ from the pulley. Remove the screw ④ (M3x8, self-tapping), and remove the stopper ⑤ and ground cable ⑥.

Note: The belt is fixed to the reading unit.

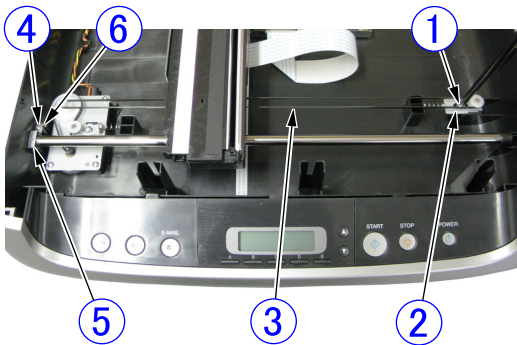


Figure 3-208

3) Remove the guide shaft ① from the base and reading unit ②.

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

Grease is applied on the guide shaft. If grease is on a finger, remove it.

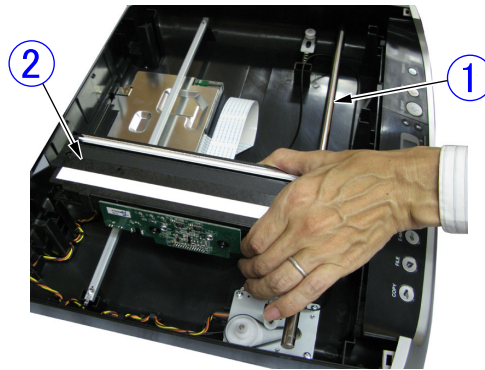


Figure 3-209

4) Remove the cable ① from the connector.

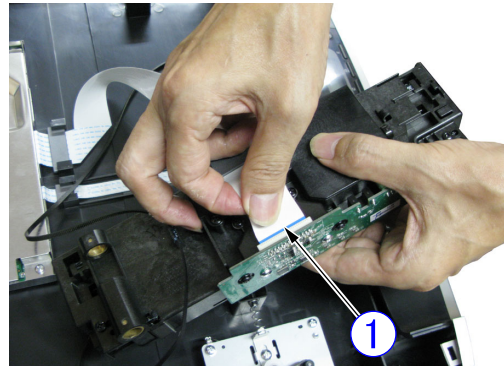


Figure 3-210

◆ Notes on assembling

After assembly, verify that the reading unit slides correctly by moving the belt by hand.

5. Main PCB

- 1) Remove the reading unit.

(Page 3-12)

Alternatively, carry out subsequent work while moving the reading unit to where it is out of the way.

- 2) Remove 2 screws ① (M3x8, self-tapping) and remove 2 grounding wire terminals ② and support plate ③.

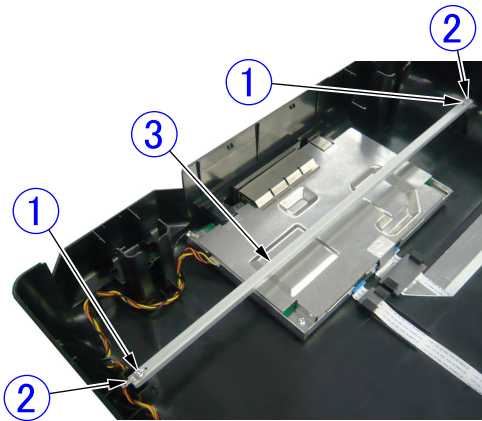


Figure 3-211

- 3) To reduce deformation of parts in the following procedure, remove 2 screws ① (hexagon head) at the rear using a dedicated tool or pliers with a thin tip.

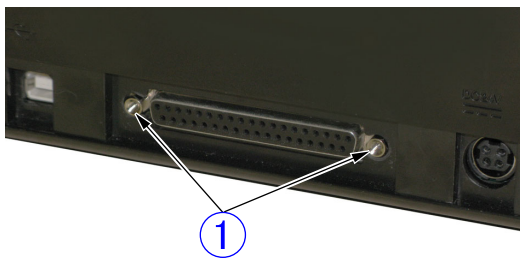


Figure 3-212

- 4) Remove 5 screws ① (M3x8, self-tapping) and remove 2 grounding wire terminals ②. Then, remove the shield tape ③ and remove the upper shield plate ④. At this time, do not deform the connector shield plate ⑤ as much as possible.

Note: Since the upper and the lower shield plates are thin, take care to avoid injury due to their corners or edges.

Note: If the shield tape is reused, do not damage it during removal. The main PCB, which is a service part, is supplied with a piece of shield tape.

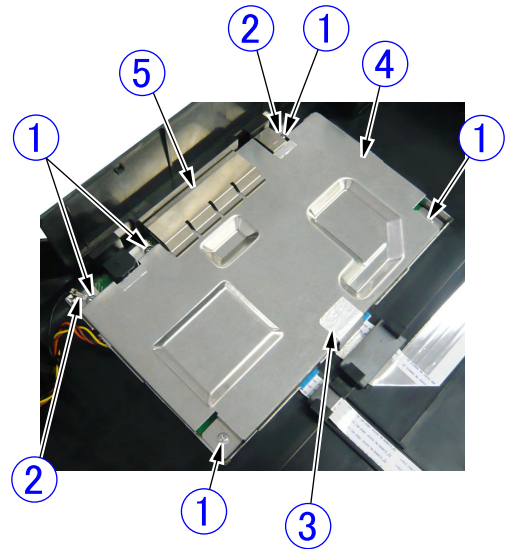


Figure 3-213

- 5) Remove 2 FFCs ①, and relieve the cable ② from the cable stoppers ③.

Note: The connector for the FFC has a lock, it needs to be opened before removing the FFC. Refer to the figure below for details.

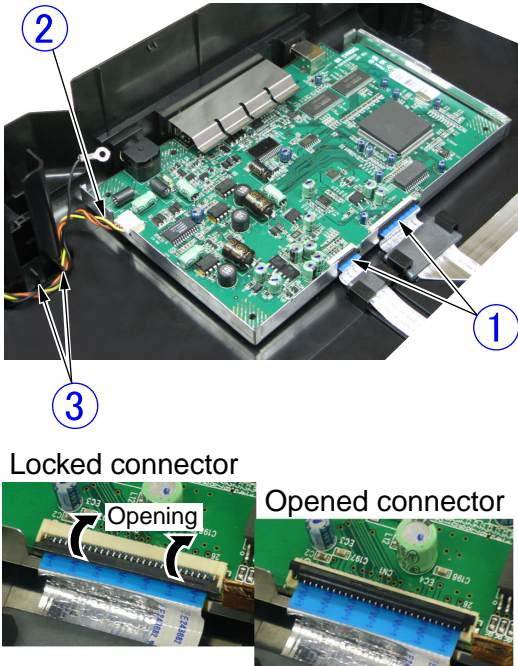


Figure 3-214

- 6) Tilt the main PCB ①, pull out the connectors through the holes on the back and remove the main PCB. At this time, the connector shield plate ② is also detached.

And remove the cable ③.

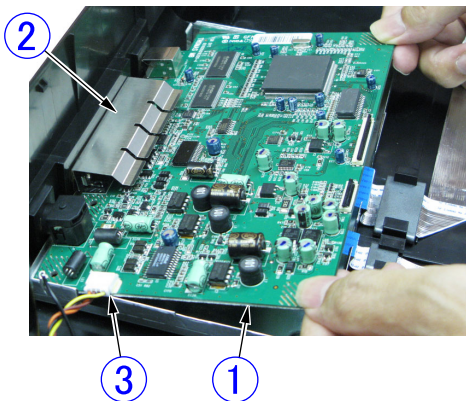


Figure 3-215

◆ **Notes on assembling**

- 1) The main PCB, which is a service part, consists of a PCB body, a connector shield plate, and a piece of shield tape. It does not include 3 rubber sheets for radiation. If the main PCB is replaced, use the parts attached to the old main PCB. Refer to the next item for details.
- 2) Verify that 3 rubber sheets ① for radiation are placed on the specified ICs.

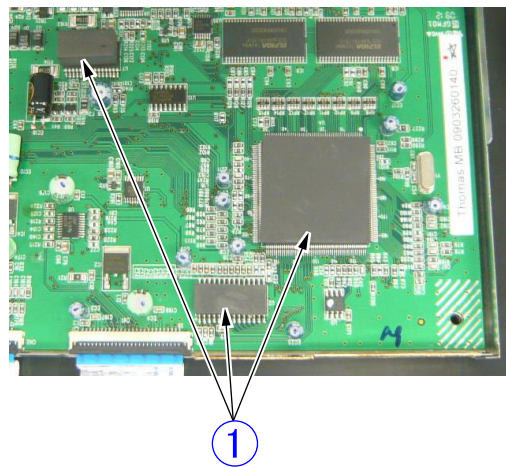


Figure 3-216

- 3) If the connector shield plate is deformed, correct it manually. The connector shield plate must contact the upper shield plate without any gap.

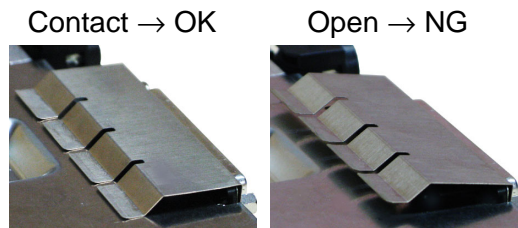


Figure 3-217

- 4) The FFC must be inserted straightly into the connector and the lock must be closed.

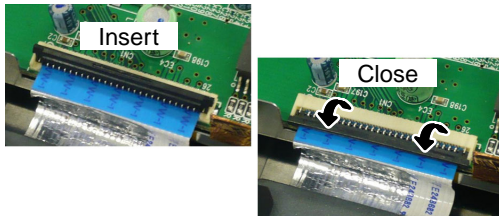


Figure 3-218

- 5) When assembling the upper shield plate, do not deform the connector shield plate as much as possible and both parts must contact each other correctly after assembly. Assemble them, being careful not to strike the end of the upper shield plate against the component on the PCB. The bend ① at the rear contacts the outside of the lower shield plate.

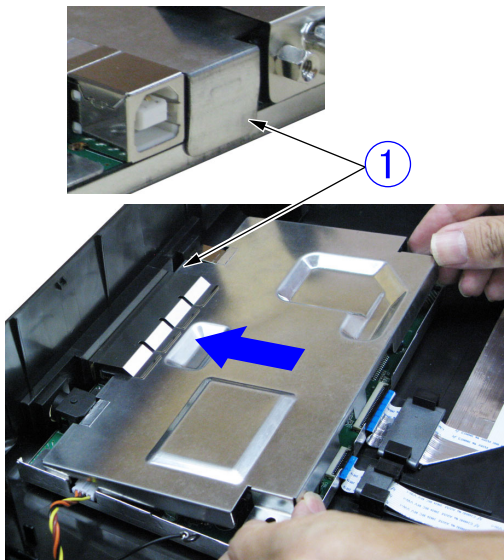


Figure 3-219

- 6) Attach the shield tape ① so that it joins the FFC shield part and the upper shield plate.

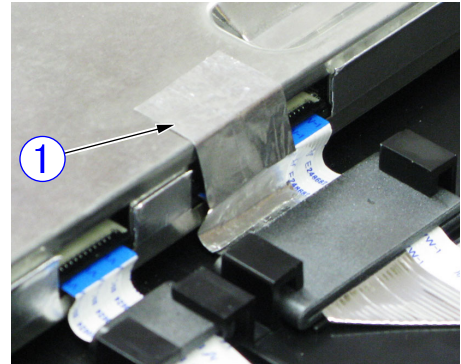


Figure 3-220

- 7) When fixing the connector shield plate with 2 screws (hexagon head), hold the connector shield plate lightly with fingers so that it does not lift.

CHAPTER 4

INSTALLATION & MAINTENANCE

I. INSTALLATION	4-1	III. MAINTENANCE	4-6
II. PARTS REPLACEMENT.....	4-5		

I. INSTALLATION

This machine can be installed by users. For installation, refer to “Reference Guide” packaged with the product. The installation procedures are as follows.

1. Checking the Accessories

Unpack the product and make sure that it contains all of the following accessories. Note that the packaged accessories may differ depending on the sales region.

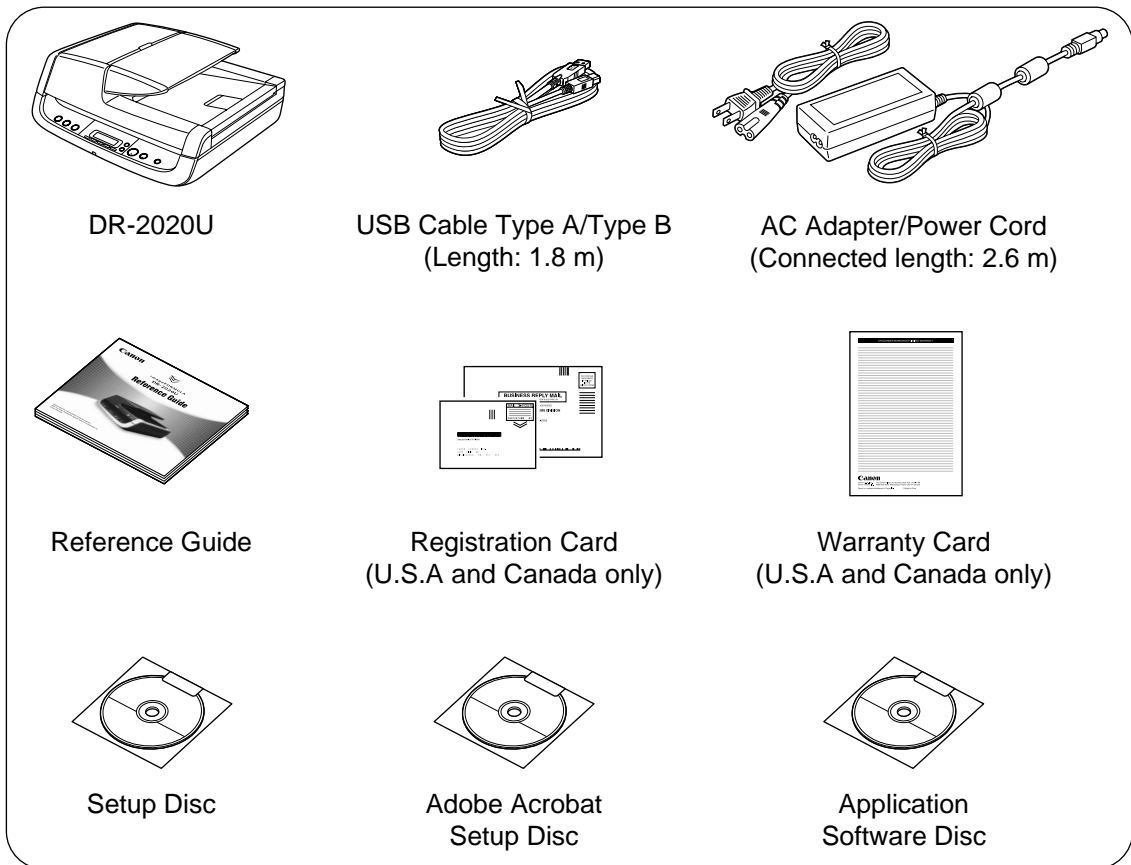


Figure 4-101

Note: It is recommended to keep the packaging and the packing materials for storing and transporting the machine.

2. Removing the Packing Materials

Remove the scanner from the box, remove the orange tapes (▼) and protective sheets from the scanner, and then release the lock switch.

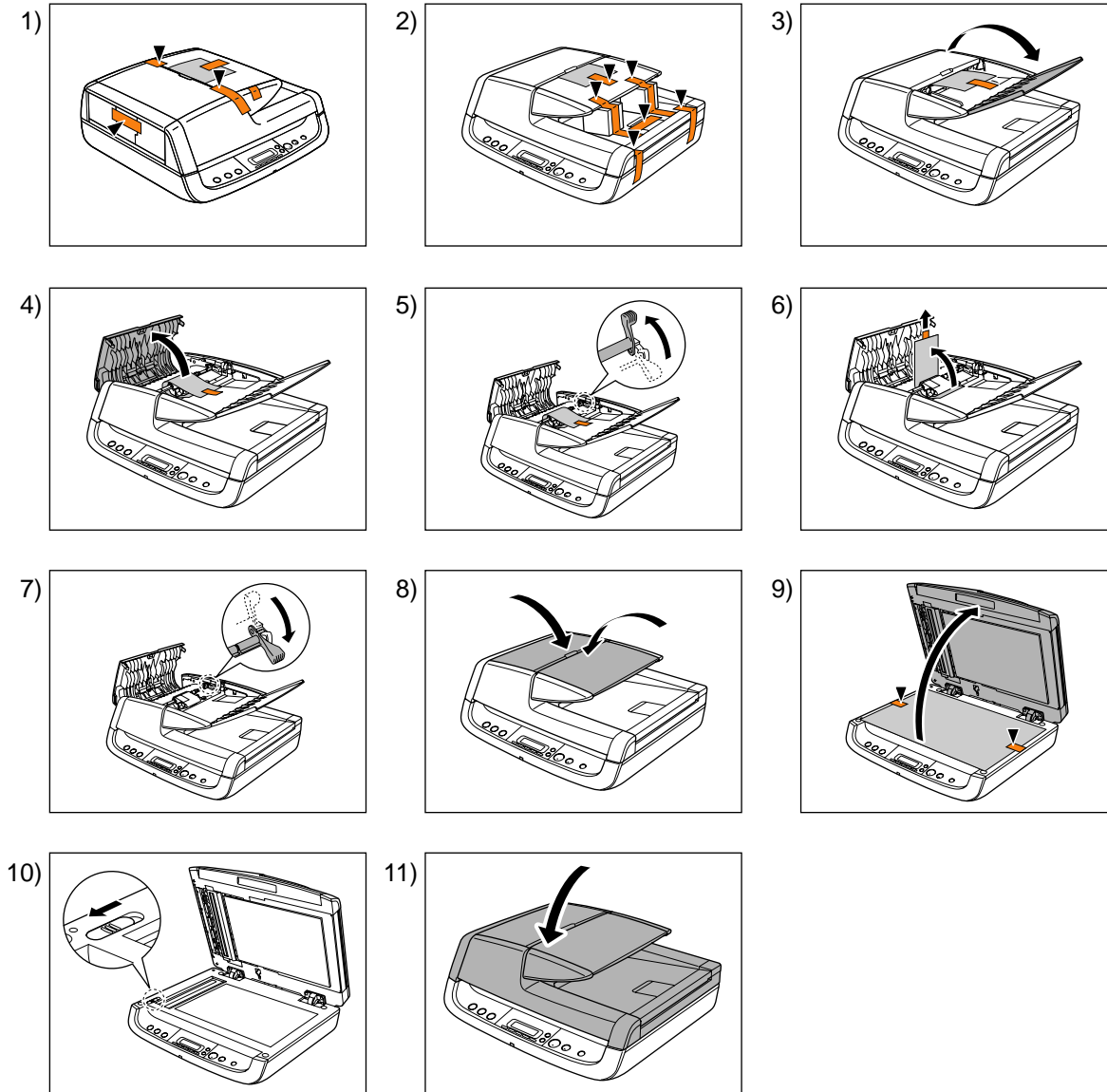


Figure 4-102

3. Installing the Software

Precautions

- ◆ Install the software before connecting the scanner to the computer.
- ◆ Be sure to log on to the OS (Windows) with administrator privileges.
- ◆ Close all other applications before installing the software.
- ◆ Check the operating environment of the computer system.
Refer to user manual for details.

1) Turn the computer power on.

Note: If the scanner is connected and the computer power is turned on before the software is installed, the following wizard screen appears. Click the [Cancel] button to close the wizard. Install the software before connecting the scanner.

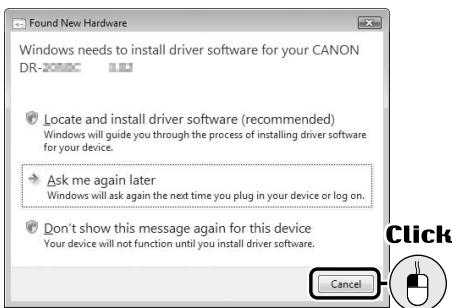


Figure 4-103

2) Insert the Setup Disc into the CD drive. The setup wizard automatically starts up.

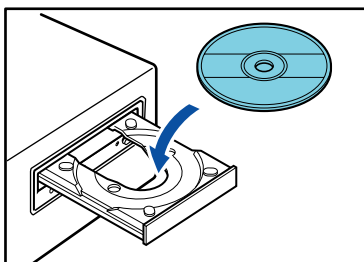


Figure 4-104

◆ For Windows Vista

If the following screen appears, enter the current administrator password and click [OK].



Figure 4-105

3) Click [Typical Installation].

All the software is installed. Refer to user manual for the other options.

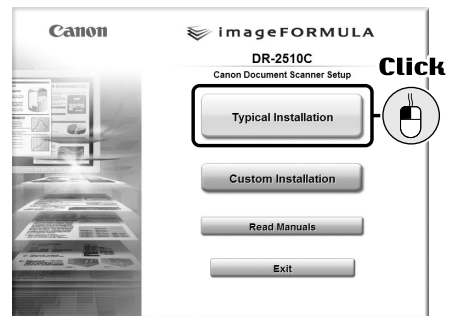


Figure 4-106

4) Follow the instructions on the screens to complete.

4. Connection to a Computer

Connect the cables as the figure below.

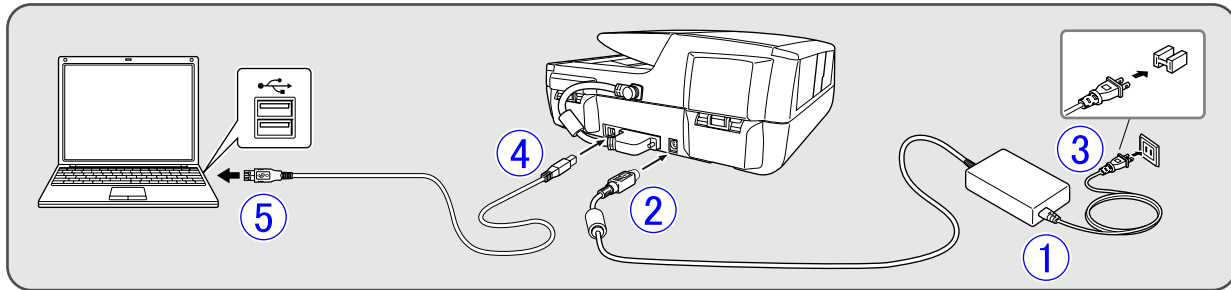


Figure 4-107

5. Turning the Scanner ON

Press the POWER button to turn the scanner on, and the power indicator will light. And an indication “Scan First” will be displayed in the display panel (LCD) after a initial operation is done. For details of the power link function, refer to the figure below.

To turn the scanner off, press and hold the POWER button till an indication “Power off” is displayed (for 2 seconds).

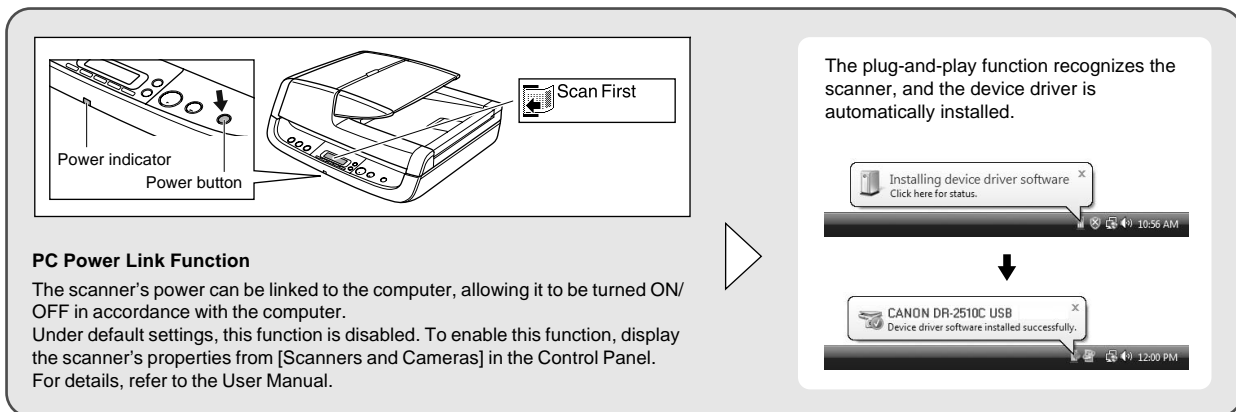


Figure 4-108

II. PARTS REPLACEMENT

1. Periodically Replaced Parts

This machine does not have any periodically replaced parts.

2. Consumable Parts

The consumable parts are as listed below. All of them are to be replaced by the user. They are assigned as sales products and service parts.

Note: This machine has no feed counter.

No.	Part Name	Product Code	Expected life	Remarks
1	Roller unit	4048B001	50,000 sheets	To be replaced when cleaning does not clear feed failures.
2	Separation pad	4048B002	50,000 sheets	

Table 4-201

Reference: Differences between periodically replaced parts and consumable parts

1. The periodically replaced parts are those that must be replaced periodically. They are usually assigned as service parts, which must be replaced by service technicians. Note, however, that those periodically replaced parts that have limited storage periods are assigned as commercially available products.
2. The consumable parts are those that are replaced when in failure. They are assigned as products and/or service parts. The users or the service technicians replace them.

Note: Refer to "Appendix II. PARTS CATALOG" for the service parts.

III. MAINTENANCE

1. User Maintenance

Refer to user manual for details.

1) List

No.	Location/Part	Item	Details
1	Main body	Cleaning	Wipe the surfaces with a cloth dipped into water and wrung tightly, then wipe dry.
2	Feed path	Cleaning	Using a blower, etc., remove dust and paper powder from the document feed opening and inside of the feeder.
3	Reading glass	Cleaning	Wipe with a clean and dry cloth.
4	Pressure board	Cleaning	
5	Roller unit	Cleaning, replacement	Remove the roller unit from the main body. Wipe the surfaces with a cloth dipped into water and wrung tightly, then wipe dry. The roller unit and the separation pad are consumable parts and which expected life is 50,000 sheets. See the next section for details.
6	Separation pad	Cleaning, replacement	

Table 4-301

2) Roller unit and separation pad

How to remove them and where to clean are as follows.

i) Open the document feed tray and feeder cover. And then, raise the lock lever of roller unit in 2 steps.

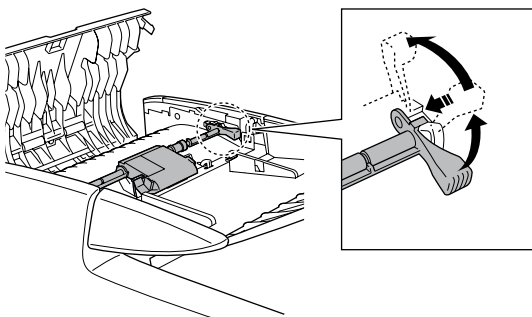


Figure 4-301

ii) Remove the roller unit.

Lift the lock lever side, then the shaft side on the other side.

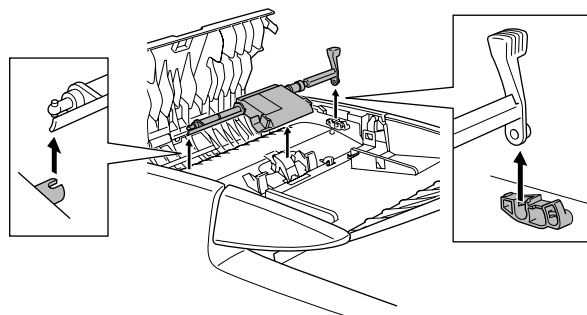


Figure 4-302

- iii) Grasp both sides of the separation pad with your fingers, and remove the separation pad.

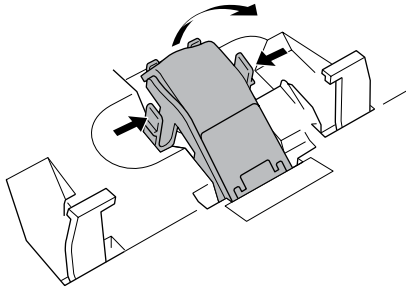


Figure 4-303

- iv) Use a cloth dampened with water and thoroughly wrung out to wipe the rollers and separation pad clean.

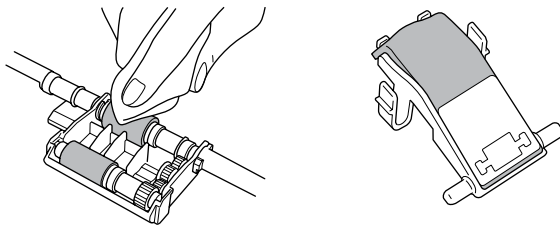


Figure 4-304

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 glass and the roller are dirty. If they are very dirty, instruct the user to follow the “user maintenance” procedures. Recommend the user to replace consumable part(s) if necessary.

To transport this machine, lock the reading unit using the lock switch.

CHAPTER 5

TROUBLESHOOTING

I. ERROR DISPLAY	5-1	III. OPERATION TROUBLESHOOTING	5-6
II. LIST OF ERRORS	5-4	IV. IMAGE TROUBLESHOOTING.....	5-12

I. ERROR DISPLAY

1. Operation Panel

The operation panel displays icons and error messages. The details are as described below. Note that these messages may not appear instantaneously.

For the detailed causes and counter-measures, refer to “III / IV. OPERATING / IMAGE TROUBLESHOOTING”.

1) Scanner recognition

After the power of this machine is turned ON, only one icon with no message, shown in No. 1-1 in the table below, is displayed on the operation panel. If the scanner is connected to a computer in which software (including CaptureOn-Touch) has been installed, the scanner is recognized by the computer and the display changes. However, the display after recognition is different according to conditions. Main displays are shown in No. 1-2 in the table below.





No.	Display
1-1	
1-2	 Scan First
	 Waiting...
	 Ready

Table 5-101

If the first display is not changed to the next one, there must be a failure in the USB cable connection, software installation, or others. Check and take measures.

2) Error display

An error icon and message are displayed. An example of display and a list of messages are shown below. The error icon is the same. The message with long sentence will be scrolled for displaying.

◆ Example

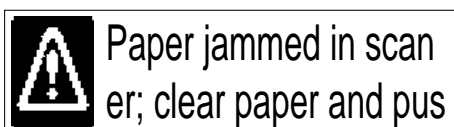


Figure 5-101

No.	Message	Meaning	Primary Measure
2-1	Paper jammed in scanner; clear paper and push STOP button.	The document is jamming. The roller and/or the separation pad are dirty.	Clean the roller and the separation pad.
2-2	The scanner feeder cover or upper unit is open. Close it, and push STOP button.	User operation mistake. The feeder scanning is executed while the feed cover or ADF unit is opened.	Close it, and scan again.
2-3	A double paper-feed has occurred. Please check the document and the scanned image on the display and scan the document again.	The double feed has occurred. And need to check which document has scanned correctly.	Clean the roller and the separation pad.
2-4	Release the lock switch. After releasing the lock switch, press the STOP button.	User operation mistake. Scanning or power on is executed while the lock switch is locked.	Release it, and scan again.
2-5	Lamp Error	The lamp is not lit. Light intensity is abnormal.	Reset the power./Restart the computer.
2-6	Feeder is not connected.	The ADF cable is disconnected. Communications with the feeder impossible.	Power Off and connect the ADF cable, then power on.

Table 5-102

2. Computer

The display connected to the computer shows error messages. Their contents differ depending on the software being used.

Most errors are associated with users, such as user operation mistakes and document jams. The user must take appropriate actions according to error messages.

The figure below shows several examples of error messages when using “CapturePerfect 3.0”.

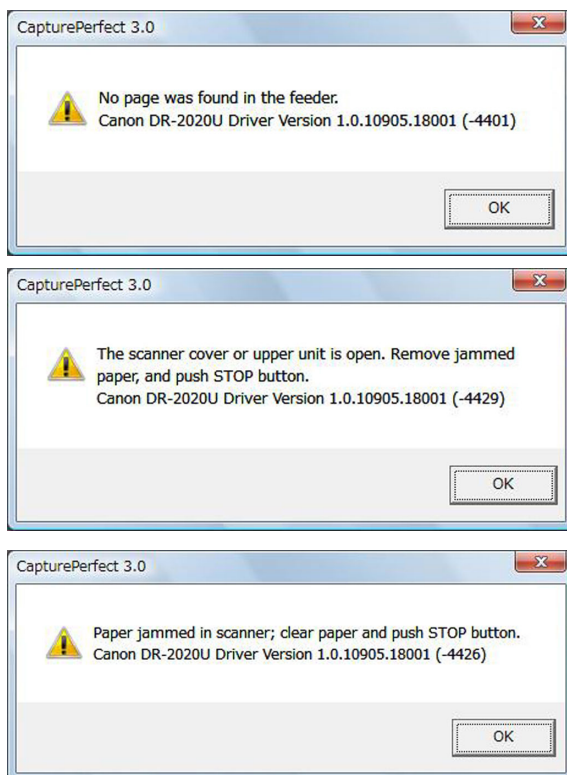


Figure 5-102

If the scanning is performed immediately after turning the power on or returning from a sleep mode, the following display is shown on the computer display.

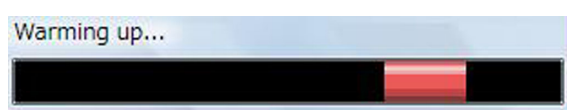


Figure 5-103

II. LIST OF ERRORS

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

Because no service mode and no software for servicing are available in this

machine, the service technician is required to operate in the same way as the user does when checking the machine operation. Use the driver packaged with the product and appropriate application software.

1. Operation Errors

Note: Major causes of each error are marked "X".

No.	Error	Cause	System/ Software	Hard- ware	Conne- tion	Dirt	Docu- ment	Setting
1	No power.			X	X			
2	Not recognized by computer.		X		X			
3	Scanning does not start.		X	X	X			X
4	Slow scanning speed.		X					X
5	Motor does not work.			X				
6	Document is not fed.			X				X
7	Jam/double feed /skew.			X		X	X	

Table 5-201

2. Images Errors

Note: Major causes of each error are marked "X".

No.	Error	Cause	System/ Software	Hard- ware	Connec- tion	Dirt	Docu- ment	Setting
1	Completely black/ completely white.			X		X		X
2	Too dark/too light.					X		X
3	Black borders around image.						X	X
4	Image skews.						X	X
5	Moire on image.						X	X
6	Spots and streaks on image.			X		X		
7	Outer areas of im- age disappear.						X	X

Table 5-202

III. OPERATION TROUBLESHOOTING

1. No Power

The power indicator and display do not light.

The fluorescent lamp of the reading unit does not light.

Cause/Faulty location	Step	Check item	Result	Action
Connection of power cord	1	Are the power cord and the AC adapter connected?	NO	Connect properly.
AC power supply voltage	2	Is the specified voltage supplied to the power outlet?	NO	Explain user that the trouble is not with this machine.
Power cord, AC adapter	3	Is the problem solved by replacing the power cord and the AC adapter?	YES	End.
Operation PCB	4	Is the problem solved by replacing the operation PCB?	YES	End.
Main PCB	5	Is the problem solved by replacing the main PCB?	YES	End.

Table 5-301

2. Not Recognized by Computer

Note: Install the driver in the computer before connecting the scanner.

Cause/Faulty location	Step	Check item	Result	Action
Connection of USB cable	1	Is the USB cable connected?	NO	Connect properly.
System	2	Is the problem solved by resetting the machine power and restarting the computer?	YES	End.
Scanner driver	3	Is the scanner driver installed?	NO	Install.
USB cable	4	Is the problem solved by replacing the USB cable?	YES	End.
Main PCB	5	Is the problem solved by replacing the main PCB?	YES	End.

Table 5-302

3. Scanning Does Not Start

Error message appears. The reading unit does not work.

Type of message	Step	Check item	Result	Action
▲Door open	1	Is the feeder cover or ADF unit open?	YES	Close it, and push STOP button.
▲Lock switch	1	Is the lock switch released?	NO	Release it, and push STOP button.
▲Lamp Error	1	Is the lamp lit?	NO	Check the cable connection.
			YES	Reset the power. Restart the computer. Check the shading sheet.
▲Feeder disconnect	1	Is the ADF connector connected?	NO	Connect it.
Job- related error	1	Is the job properly set?	NO	Set properly.
			YES	Check the system including the network.
Error messages above	2	Is the problem solved by resetting the power and restarting the computer?	YES	End.
			NO	Check the connection of inside parts.
Main PCB	3	Is the problem solved by replacing the main PCB?	YES	End.

Table 5-303

- ◆ Scanning by the job function is impossible if “Disable device events” is selected on the Windows event setting screen.
- ◆ Tens of seconds are required to warming up the lamp after the machine power is turned on or the machine is resumed from the sleep mode. This is not a failure. By the Windows power control setting screen, however, the user can change the time before the sleep mode is on. Refer to the user manual for details.

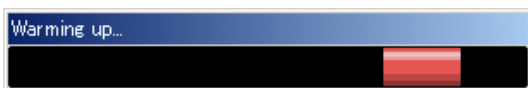


Figure 5-301

4. Slow Scanning Speed

Selecting higher resolutions, color setting and/or special functions further makes the scanning speed slower.

Should the scanning speed be too slow after taking all of these considerations, the possible causes are as listed below.

Cause/Faulty location	Step	Check item	Result	Action
Insufficient memory capacity in computer	1	Is any other application activated?	YES	Close unnecessary applications.
	2	Is the hard disk short of empty memory?	YES	Increase empty memory of the hard disk.
Hi-Speed USB2.0 is not supported	1	Is the USB card supported?	NO	Use a recommended USB card.
	2	Is the USB cable supported?	NO	Use a supported USB cable.

Table 5-304

5. Motor Does Not Work

1) Flatbed motor: The lower reading unit does not slide.

Cause/Faulty location	Step	Check item	Result	Action
Lock Switch	1	Is the lock switch released?	NO	Release it, and push STOP button.
System	2	Is the problem solved by resetting the machine power and restarting the computer?	YES	End.
Cable connection	3	Is the connection of the motor cable correct?	NO	Connect it correctly.
Belt assembly	4	Is the assembly of the timing belt correct?	NO	Assemble it correctly.
Main PCB	5	Is the problem solved by replacing the main PCB?	YES	End.

Table 5-305

2) Feed motor: Rollers do not rotate.

Cause/Faulty location	Step	Check item	Result	Action
System	1	Is the problem solved by resetting the machine power and restarting the computer?	YES	End.
Cable connection	2	Is the connection of the motor cable correct?	NO	Connect it correctly.
Motor	3	Is the problem solved by replacing the feed motor?	YES	End.
Main PCB	4	Is the problem solved by replacing the main PCB?	YES	End.

Table 5-306

6. Document is Not Fed

Document is not fed at all. Document cannot be detected.

Error message “No page was found in the feeder” appears on the computer display.

Cause/Faulty location	Step	Check item	Result	Action
Scanner setting	1	Is the “Paper Source” properly set? (Auto/Feeder)	NO	Properly set.
Document sensor	2	Does the document sensor lever normally function?	NO	Check the move of the lever and replace the feed & reading unit if necessary.
	3	Is the document sensor properly connected?	NO	Properly connect.

Table 5-307

7. Document is Not Properly Fed (Jam/Double Feed/Skew)

Document is wrinkled or folded. Double feed or skew occurs.

Document feed stops.

Cause/Faulty location	Step	Check item	Result	Action
Document	1	Does the document meet the specifications? (Size, thickness, quality, fold, etc.)	NO	Ask user to use documents that meet the specifications. Ask user to use the flatbed.
Document setting	2	Is the document properly set? (Curled, stuck, slant documents, misuse of document guide, etc.)	NO	Properly set document.
Roller unit, Separation pad	3	Are they properly mounted?	NO	Properly mount.
	4	Are the surfaces clean?	NO	Clean or replace the roller unit and/or the separation pad.
Feed path	5	Are the surfaces contacting the documents smooth? (Dirt, damages, burrs, etc.)	NO	Clean there properly.
Feed & reading unit	6	Is the feed & reading unit properly mounted?	NO	Mount it properly.
	7	Is the problem solved by replacing the feed & reading unit?	YES	End.

Table 5-308

IV. IMAGE TROUBLESHOOTING

◆ Image Samples

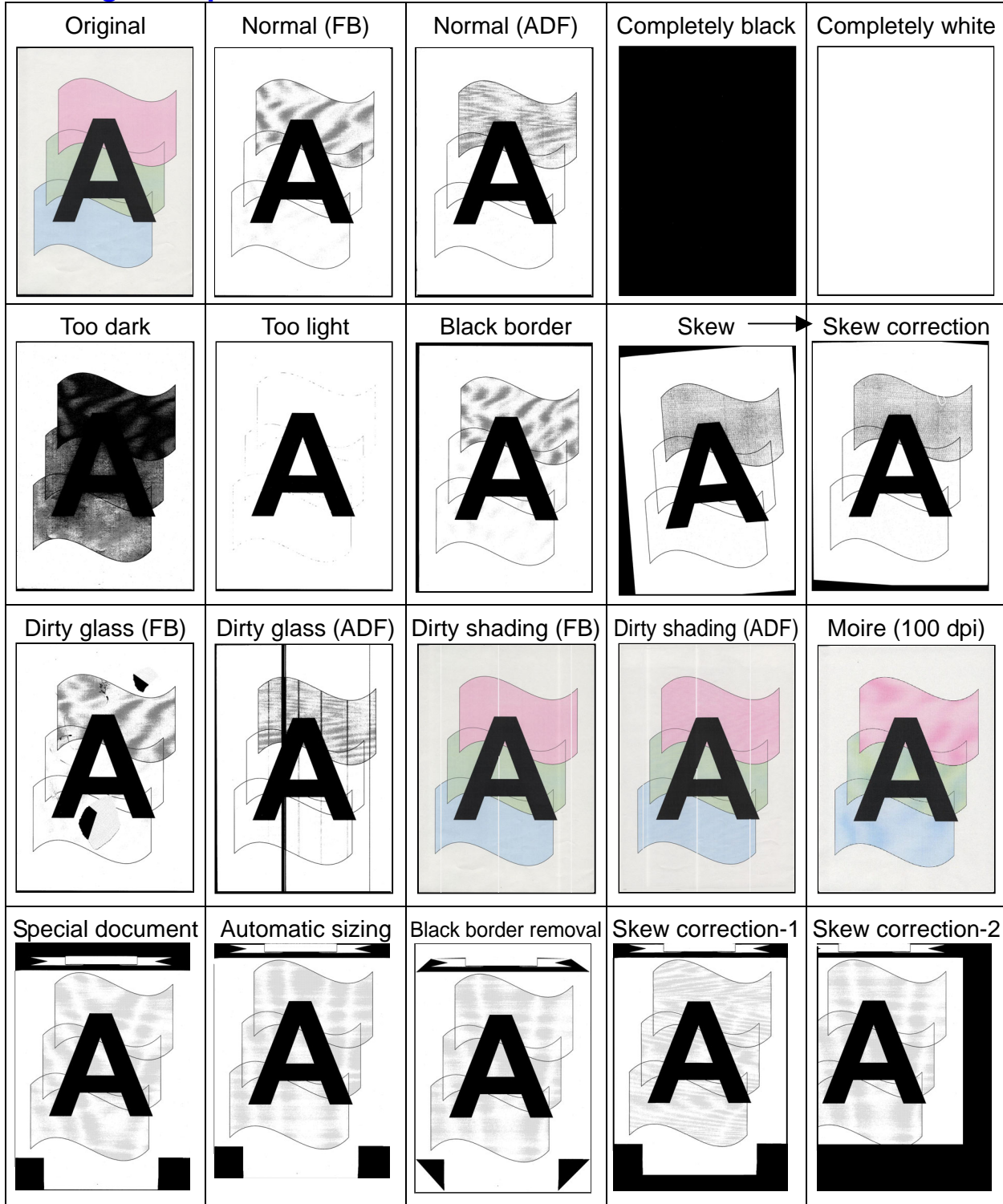


Figure 5-401

Note: Depending on the type of image and on the setting, document reproducibility might be poor. In such a case, the image may be improved by changing the setting items.

This machine has the lower reading unit and upper one. Therefore, if only the image on the same side is bad, the cause is in the reading unit for that side or a part related to it.

1. Completely Black/Completely White

Scanned image is completely black, completely white or has black stripes only.

Cause/Faulty location	Step	Check item	Result	Action
"Brightness" setting	1	Is the "Brightness" properly set?	NO	Change the setting. Adjust the "Contrast" in addition if necessary.
"Paper Source" setting	2	Is the "Paper Source" properly set? Completely black image results from selecting flat-bed with no document set there.	NO	Change setting.
ADF cable connection	3	Is the ADF cable connected?	NO	Connect. See note below.
Lock switch position	4	Is the lock switch released?	NO	Release. See note below.
System	5	Is the problem solved by resetting the machine power and restarting the computer?	YES	End.
			NO	Possibly the machine or the software is faulty. Carry out check items listed in "III. OPERATION TROUBLESHOOTING". See note below.
Reading unit	6	Is the connection of the cable correct?	NO	Connect it properly.
	7	Is the problem solved by replacing the reading unit? *The feed & reading unit for upper reading unit.	YES	End.
Main PCB	8	Is the problem solved by replacing the main PCB?	YES	End.

Note: Self diagnosis is executed prior to commencement of first scanning after the machine power is turned on. Should an error be found at this time, the machine gives an error message. Thereafter, however, the error message may not be shown and the scanner may only make an output of completely black or completely white image.

Table 5-401

2. Too Dark/Too Light

Image does not look appropriate due to improper brightness.

Cause/Faulty location	Step	Check item	Result	Action
"Brightness" setting	1	Is the "Brightness" properly set? The brightness should be set to "Auto" in ordinary case but may be required to change according to the type of document.	NO	Change the setting. Adjust the "Contrast" in addition if necessary.
Dark background document	2	Is the "Advanced Text Enhancement" selected?	NO	Select. Dark background is eliminated and the scanned image looks better.

Table 5-402

3. Black Borders Around Image

Black borders appear around the images. However, that borders having a thickness of about 1 mm are within the specifications, so they are not a failure.

Cause/Faulty location	Step	Check item	Result	Action
"Page Size" setting	1	Is the "Page Size" properly set?	NO	Change the setting.
Document setting	2	Is the document set at the correct position?	NO	Set at the correct position.
Setting of "Auto-detection" for paper size or "Border Removal"	3	Is "Auto-detection" or "Border Removal" set?	NO	Set. Black border can be removed by image processing.

Table 5-403

4. Image Skews

If the document is set slanting for flatbed scanning or skews when fed for feeder scanning, then the image skews.

Cause/Faulty location	Step	Check item	Result	Action
Document setting	1	Is the document properly set?	NO	Properly set.
“Deskew” setting	2	Is the “Deskew” set?	NO	Set. Slant can be corrected by image processing.
Document feeding	3	Is the document fed straight?	NO	Carry out check items listed in “III. OPERATION TROUBLESHOOTING 7. Document is Not Properly Fed”.

Table 5-404

5. Moire on Image

Moire is likely to appear when a photograph is color scanned with a low resolution from a magazine or a catalog.

When the “Color Smoothing” is set on, the averaging function converts the resolution for the data read with a resolution of 600 dpi, suppressing occurrence of moire.

Cause/Faulty location	Step	Check item	Result	Action
“Color Smoothing” setting	1	Is the “Color Smoothing” set?	NO	Set.
			YES	Heighten the resolution.

Table 5-405

6. Spots and Streaks on Image

If the reading glass surface is dirty when the flatbed scanning is used, the state of the spot on the glass (shape and color) appears on the scanned image. In case of the feeder scanning, spots on the feed system including the feed roller etc. appear on the document or those on the reading glass for the feeder that make streaks in the feed direction on the scanned image. On the other hand, white streaks appearing on the scanned images for both flatbed and feeder scanning are caused by dirty shading sheet in most cases. In particular, if white streaks appear outstanding in a slightly light area on a color and gray image, it can be said that it is caused by dirty shading sheet.

Cause/Faulty location	Step	Check item	Result	Action
Roller unit and separation pad (for feeder scanning)	1	Are the surfaces clean?	NO	Clean or replace the roller unit and/or the separation pad.
Feed unit (for feeder scanning)	2	Is the feed path clean?	NO	Clean.
Reading glass	3	Are the reading glasses clean? (for both flatbed and feeder scanning)	NO	Clean. Replace the feeder cover unit if scratches are found on the back surface.
Shading sheet	4	Are the shading sheets clean? (for both flatbed and feeder scanning)	NO	Clean.
			YES	Clean the dust on the entrance area of the reading unit, or replace the reading unit.

Table 5-406

7. Outer Areas of Image Disappear

When scanning a document with black or deep color outer areas, and selecting the "Auto-detection," the "Deskew" or the "Border Removal" may cause the outer areas to disappear from the scanned image.

Cause/Faulty location	Step	Check item	Result	Action
Document	1	Is there any black or deep color on the document outer areas?	YES	Disable the functions such as the "Auto-detection".

Table 5-407

APPENDIX

I. ELECTRICAL BLOCK DIAGRAM	A-1		II. PARTS CATALOG	A-2
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I. ELECTRICAL BLOCK DIAGRAM

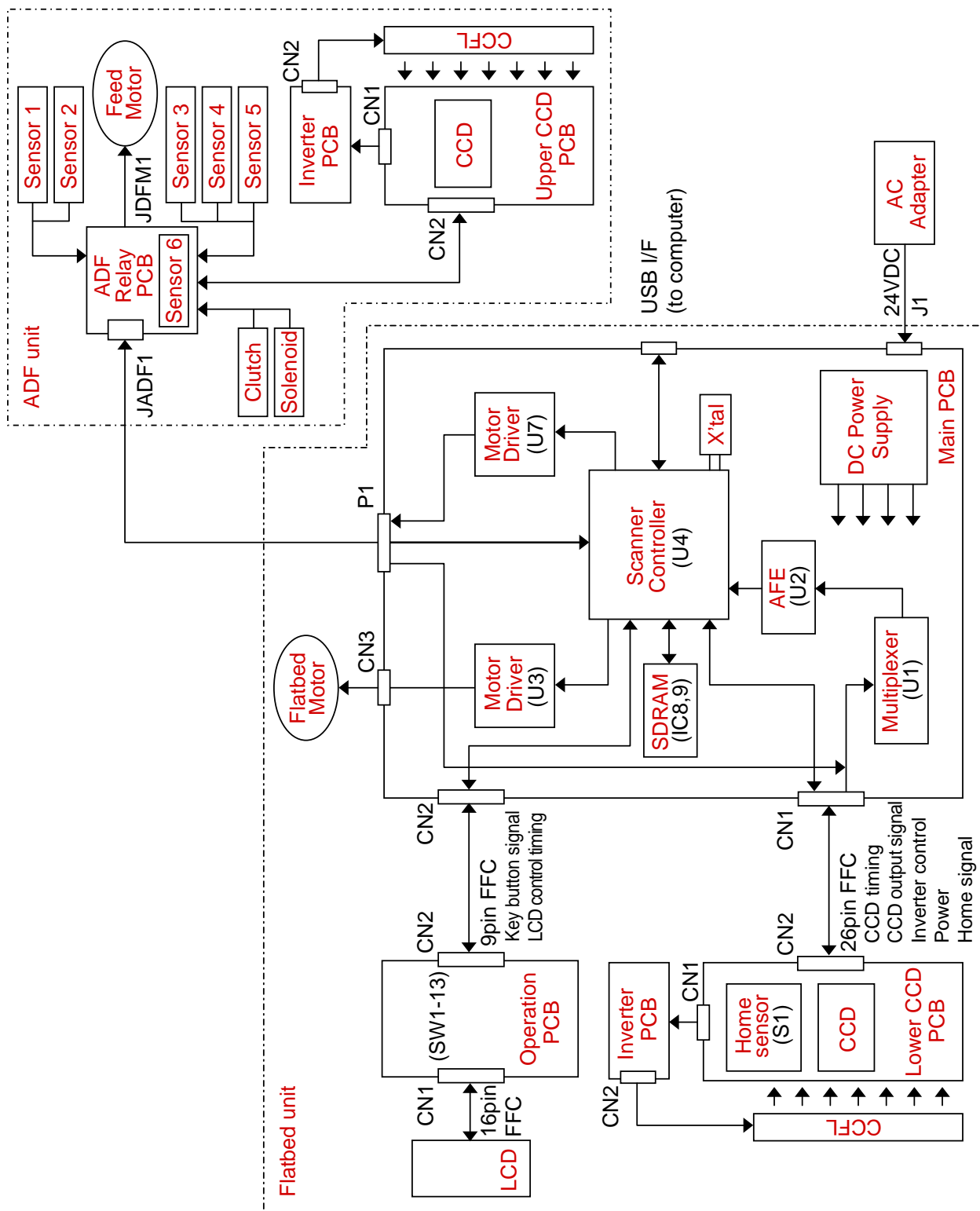


FIGURE & KEY NO.	PART NUMBER	RANK	Q'TY	DESCRIPTION	REMARKS
100-1	910400019060		1	ADF UNIT	
2	910400019200		1	COVER, BLIND, LEFT-FRONT	
3	910400019190		1	COVER, BLIND, LEFT-REAR	
4	910400019090		1	COVER, ADF FRONT	
5	910400019100		1	COVER, ADF REAR	
6	910400019070		1	PICKUP TRAY UNIT, DOCUMENT	
7	910400019110		1	TRAY, EJECT EXTENSION	
8	910400019150		1	ROLLER UNIT, DOCUMENT	4048B001
9	910400020410		2	SCREW, STEPPED, M3	
10	910400019140		1	MOTOR, STEPPING DC	
11	910400019210		1	CABLE ASSEMBLY, ADF	
12	910400019170		1	PAD, SEPARATION	4048B002
13	910400019220		2	HINGE	
14	910400019120		1	ADF BOTTOM COVER UNIT	
15	910400019130		1	FEED AND READING UNIT	
16	910400019160		1	ROLLER, PICKUP CARD	
17	910400019080		1	FEEDER COVER UNIT	
18	910400019180		1	PICKUP TRAY UNIT, CARD	
50	XB4-7300-805		14	SCREW, TAPPING B, BH M3x8	
51	XB1-2300-405		3	SCREW, BH M3x4	
52	XA9-1539-000		2	SCREW, TAPPING B, TP M3x6	
53	XB4-7401-205		6	SCREW, TAPPING B, BH M4X12	
54	XB4-7402-005		4	SCREW, TAPPING B, BH M4X20	

2. Flatbed Unit

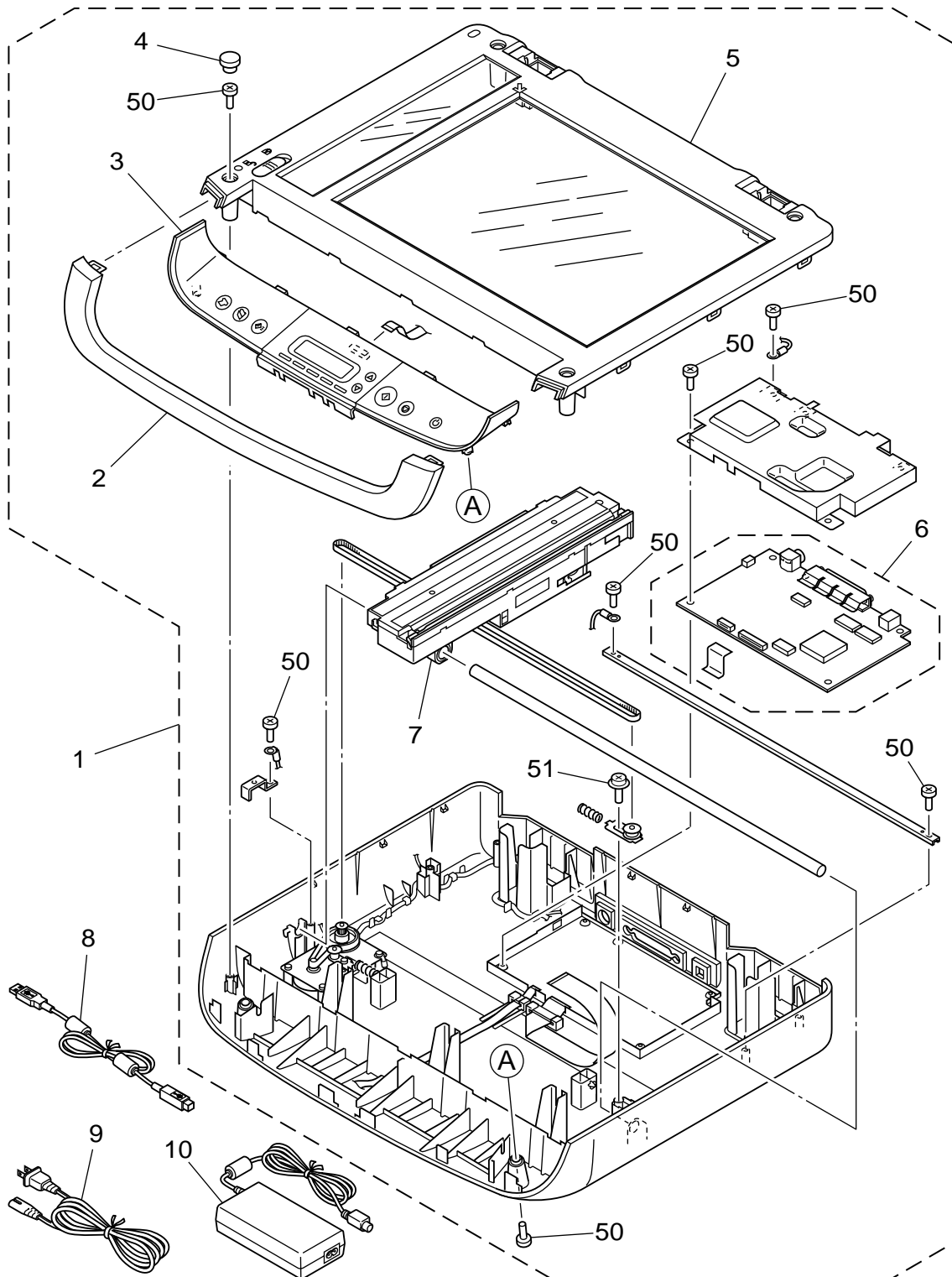


Figure 200

FIGURE & KEY NO.	PART NUMBER	RANK	Q'TY	DESCRIPTION	REMARKS
200-1	910400019230		1	FLATBED UNIT	
2	910400019260		1	COVER, FRONT LOWER	
3	910400019250		1	OPERATION PANEL UNIT	
4	910400019290		4	CAP, BLIND	
5	910400019240		1	COVER, FLATBED TOP	
6	910400019270		1	PCB ASSEMBLY, MAIN	
7	910400020400		1	LOWER READING UNIT	
8	910400011050		1	CABLE, USB	
9	910400019320		1	CORD, POWER, 220-240V AUS	CA
	910400019330		1	CORD, POWER, 220-240V EUR	220-240V
	910400019340		1	CORD, POWER, 220-240V UK	UK
	910400019350		1	CORD, POWER, 220-240V KR	KR
	910400019360		1	CORD, POWER, 120V US	120V
	910400019370		1	CORD, POWER, 220-240V MLC	CN
10	910400019300		1	ADAPTER, AC	
50	XB4-7300-805		14	SCREW, TAPPING B, BH M3x8	
51	XA9-1539-000		1	SCREW, TAPPING B, TP M3x6	

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