imageFORMULA DR-F120

SERVICE MANUAL

with Parts Catalog

Canon

June 1, 2014
Rev. 0

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 2 FUNCTIONS & OPERATION

CHAPTER 3 DISASSEMBLY & REASSEMBLY

CHAPTER 4 INSTALLATION & MAINTENANCE

CHAPTER 5 TROUBLESHOOTING

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CHAPTER 1

GENERAL DESCRIPTION

I. OUTLINE

1. Features

1) Lower model for the DR-2020U
   Flatbed (FB) scanner with ADF
   ADF is available for the one-path duplex scanning

2) Reading speed (ADF, A4 size, 200 dpi)
   B&W: 20 ppm / 36 ipm
   Gray: 20 ppm / 36 ipm
   Color:10 ppm / 18 ipm

3) Maximum reading size
   A4 or Legal

4) Warm-up time “Zero”
   LED light source

5) Service ability
   i) Installation by user
   ii) Roller replacement by user using the exchange roller kit
   iii) periodically maintenance by service technician
   iv) Service mode available

2. Specifications

No.	Item	Specifications
Appearance / Installation		
1	Type	Desktop type flatbed scanner with ADF
2	Dimensions	Tray closed: 469 (W) × 335 (D) × 120 (H) mm
3	Weight	4.6 kg (Main body only, AC adapter not included)
4	Power supply	AC adapter 1) Input: 100 V-240 VAC, 50/60 Hz 2) Output: 24 VDC, 2.0 A
5	Power consumption	1) Operation: 19.9 W max. (120 V, 220-240 V) 20.8 W max. (100 V) 2) Sleep mode: 2.5 W max. 3) Power switch OFF: 0.5 W max.
6	External interface	USB 2.0 (Hi-Speed)
7	Expected product life (In-house information)	One of the following two items, whichever comes first. 1) 5 years 2) Scanning count (A4 size, by life of reading unit) B&W/Gray, 300 dpi: 150,000 scans Color, 300 dpi: 70,000 scans
8	Installation	By user
9	Consumable parts (user replacement)	1) Roller unit 2) Retard roller *Expected life 75,000 sheets, Commercial goods
10	Option	None
Feeder (ADF)		
11	Document feed path	U-turn path
12	Reading side	1) Simplex (front side): By the lower CIS unit. 2) Duplex: Front side by the lower CIS unit, back side by the upper CIS unit.
13	Document size	1) Width: 75 to 216 mm (35 to 52 g/m^2), 58 to 216 mm (52 to 128 g/m^2) 2) Length: 89 to 355.6 mm 3) Weight (thickness): 35 to 128 g/m^2 (0.04 to 0.15 mm)
14	Long document mode	Available (1000 mm)
15	Document storage (pickup & eject)	50 sheets (80 g/m^2) max. and 5 mm height max. or 6 mm height max. including curl
16	Double feed detection	Length detection only
Flatbed (FB)		
17	Reading method	Reading unit movement
18	Maximum reading size	216 x 355.6 mm

To be continued

Table 1-101a

<table>
<tr><th>No.</th><th>Item</th><th colspan="5">Specifications</th></tr>
<tr><td colspan="7">Document reading</td></tr>
<tr><td>19</td><td>Sensor type</td><td colspan="5">1-line, CMOS contact image sensor</td></tr>
<tr><td>20</td><td>Elements</td><td colspan="5">1200 dpi, 216 mm</td></tr>
<tr><td>21</td><td>Operation mode</td><td colspan="5">1200 dpi / 600 dpi / 300 dpi</td></tr>
<tr><td>22</td><td>Light source</td><td colspan="5">3-color (RGB) LEDs</td></tr>
<tr><td>23</td><td>Background color</td><td colspan="5">1) ADF: White (both sides)
2) FB: Black</td></tr>
<tr><td colspan="7">Output</td></tr>
<tr><td>24</td><td>Software</td><td colspan="5">1) Driver: ISIS/TWAIN/WIA
*WIA has a limit on the function.
*Linux will be released later, and it has a limit on the function.
2) Bundled application: CaptureOnTouch</td></tr>
<tr><td>25</td><td>Output mode (CaptureOnTouch)</td><td colspan="5">1) Binary (Black&White / ATE / ATE-II / Error diffusion)
2) Gray (8-bit)
3) Color (24-bit)</td></tr>
<tr><td>26</td><td>Output resolution (CaptureOnTouch)</td><td colspan="5">100 x 100 dpi, 150 x 150 dpi, 200 x 200 dpi, 240 x 240 dpi, 300 x 300 dpi, 400 x 400 dpi, 600 x 600 dpi, 1200 x 1200 dpi, 2400 x 2400 dpi</td></tr>
<tr><td rowspan="9">27</td><td rowspan="9">Reading speed at A4 size (CaptureOnTouch)</td><td rowspan="2">Mode</td><td rowspan="2">Resolu-tion</td><td colspan="2">ADF</td><td>FB</td></tr>
<tr><td>Simplex</td><td>Duplex</td><td>Per sheet</td></tr>
<tr><td rowspan="3">B&W/ Gray-scale</td><td>200 dpi</td><td>20 ppm</td><td>36 ipm</td><td>10 sec</td></tr>
<tr><td>300 dpi</td><td>20 ppm</td><td>36 ipm</td><td>10 sec</td></tr>
<tr><td>600 dpi</td><td>5 ppm</td><td>9 ipm</td><td>16 sec</td></tr>
<tr><td rowspan="3">Color</td><td>200 dpi</td><td>10 ppm</td><td>18 ipm</td><td>10 sec</td></tr>
<tr><td>300 dpi</td><td>6 ppm</td><td>12 ipm</td><td>14 sec</td></tr>
<tr><td>600 dpi</td><td>1 ppm</td><td>3 ipm</td><td>40 sec</td></tr>
<tr><td colspan="5">*Numbers above are set the default conditions.
*Numbers above may differ depending on the computer, the function settings and other conditions.</td></tr>
<tr><td colspan="7">Others</td></tr>
<tr><td>28</td><td>Operation panel</td><td colspan="5">1) Button: Power, Start, Stop, Job x 3
2) Indication: Power LED</td></tr>
</table>

Table 1-101b

◆ Dimensions (unit: mm)

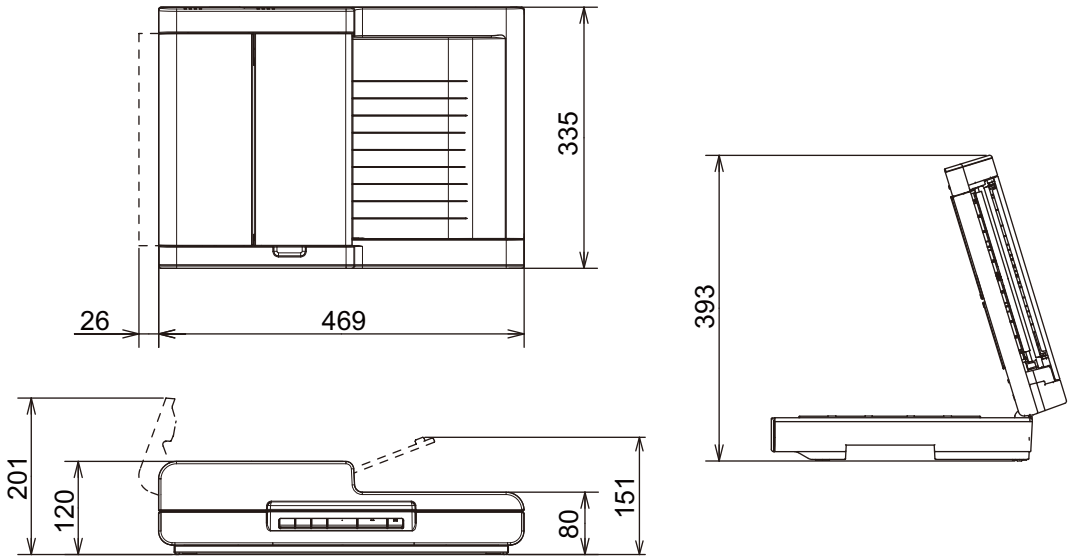


Figure 1-101

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 about 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 modification
   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.

II. NAME OF PARTS

1. Front Side

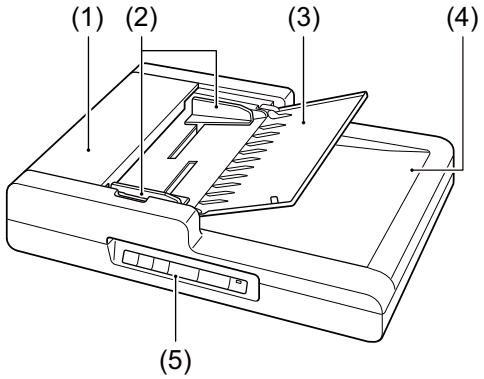


Figure 1-201

1 Feeder Cover
2 Document Guides
3 Document Feed Tray
4 Document Eject Tray
5 Operation Panel

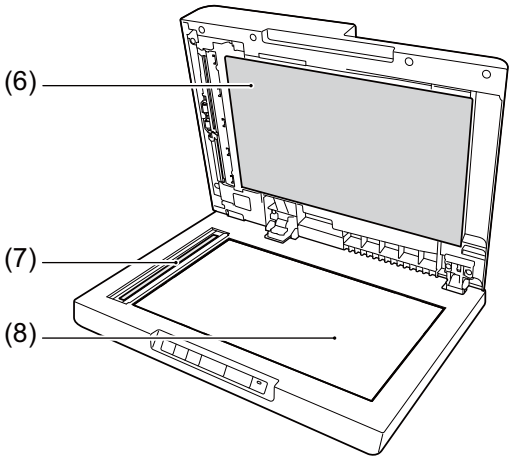


Figure 1-202

6 Pressure Board
7 Scanning Glass (Feeder)
8 Scanning Glass (Flatbed)

2. Rear Side

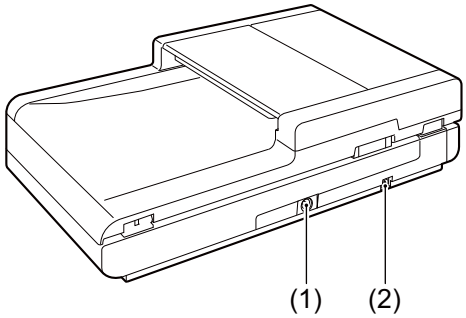


Figure 1-203

1 Power Connector
2 USB Connector

3. Operation Panel

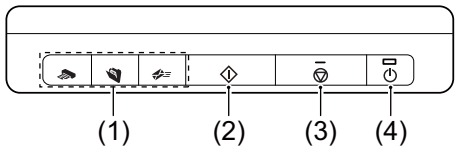


Figure 1-204

1 Job Buttons
2 START Button
3 STOP Button
4 POWER Button

III. USER OPERATION

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

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

1. Placing Document

There are two scanning methods with this machine. One is using an ADF and the other is using a flatbed. Following describes how to place a document for each method.

◆ ADF

1) Open the document feed tray.

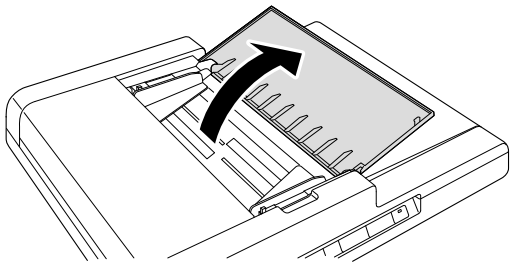


Figure 1-301

2) Set the documents with the surfaces facing up.

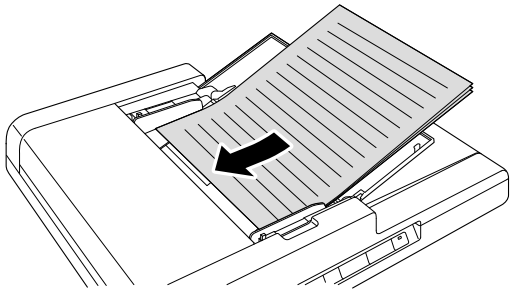


Figure 1-302

3) Adjust the document guides.

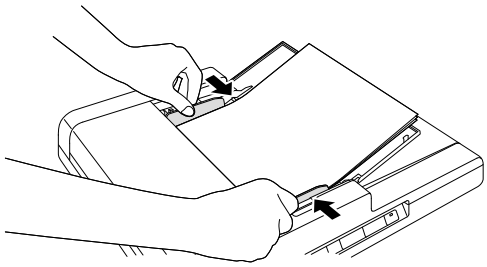


Figure 1-303

◆ Flatbed

1) Carefully open the feeder.

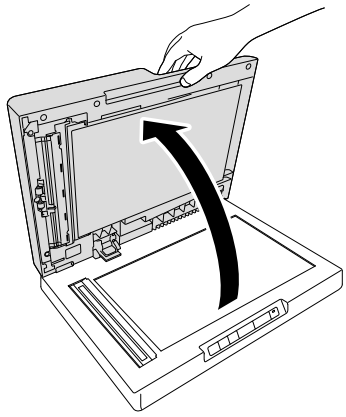


Figure 1-304

2) Place the document face down and align the top edge of the document with the back edge of the platen glass (by the alignment mark in the top left corner).

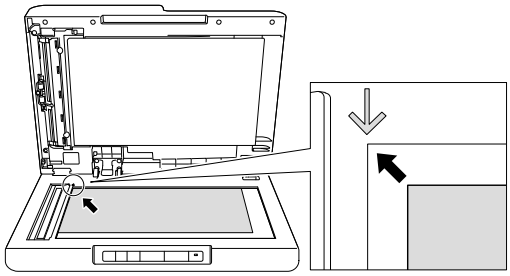


Figure 1-305

3) Carefully close the feeder.

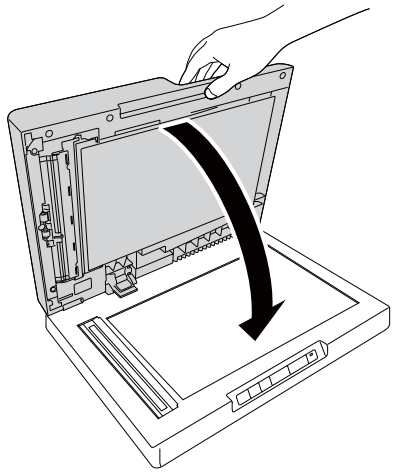


Figure 1-306

2. CaptureOnTouch

CaptureOnTouch is supplied with this machine, and can be installed from the supplied Setup disc.

CaptureOnTouch is a scanning application that enables you to scan a document simply with a simple operation merely by selecting the screen panel.

CaptureOnTouch supports the following scanning methods.

- Standard Scanning
- Scanning Shortcut
- Start button

The starting screen of the Standard Scanning is shown below.

For detail, refer to “User Manual”.

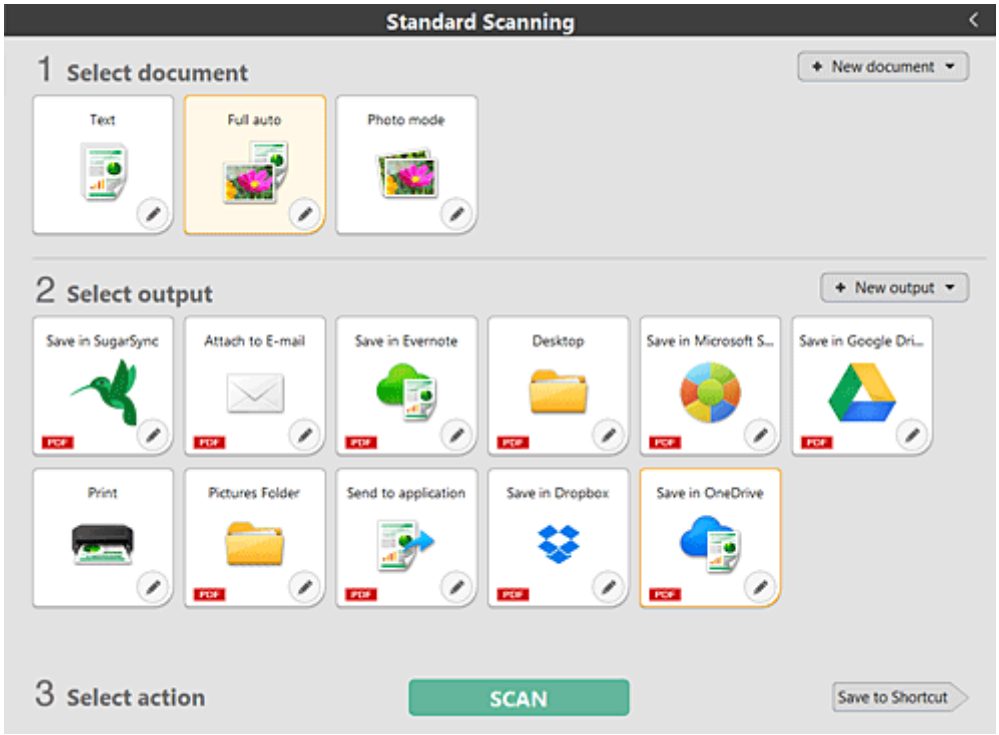


Figure 1-307

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.

For detail, refer to “User Manual”.

1) Remove any documents remaining in the document feed tray and the document eject tray.

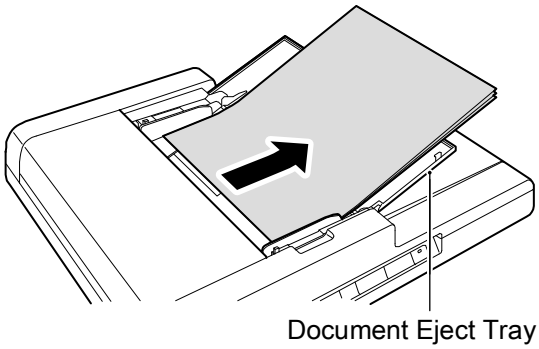


Figure 1-308

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.

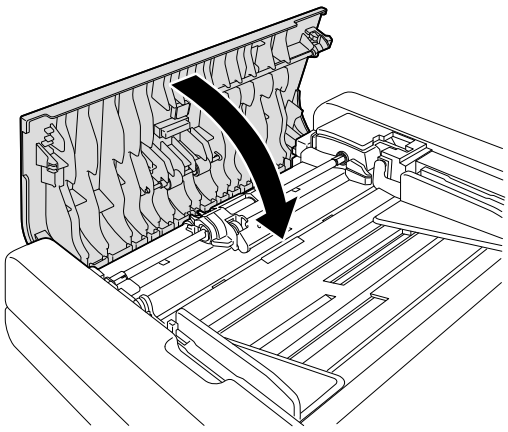


Figure 1-309

3) Remove the jammed document.
   If the jammed document is skewed or ripped, carefully remove it manually.

CHAPTER 2

FUNCTIONS & OPERATION

I. OUTLINE

1. Machine Configuration

The figure below shows the configuration of this machine.

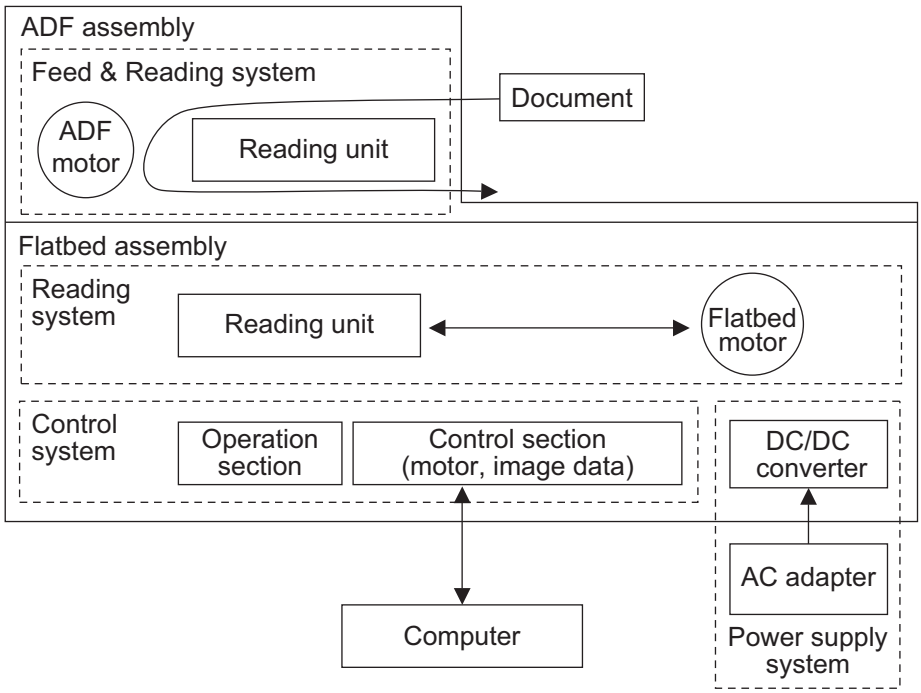


Figure 2-101

1) Reading system
Using the reading units, the reading system reads the image data. The reading units are placed in ADF and flatbed assemblies.
The position of the reading unit is fixed in the ADF assembly, but it is moved by the motor in the flatbed assembly.

2) Feed system
Feeds documents from pickup to ejection. The sensors to detect the document position for feed control are equipped.

3) Control system
Consists of the operation section (operation panel) and the control section which controls the motors and image data.
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.

2. Outline of Electric Circuit

The figure below shows the outlines of the block diagram.

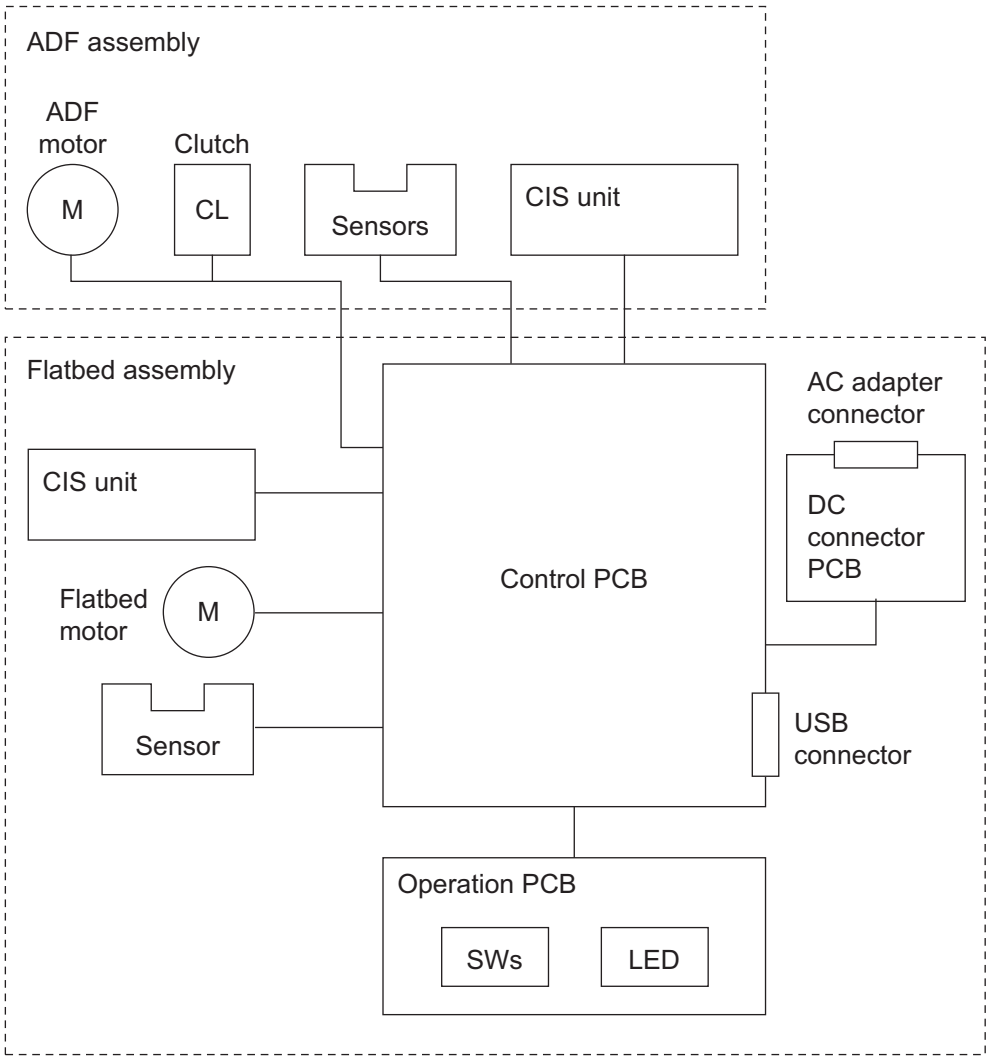


Figure 2-102

II. READING SYSTEM

1. Outline

The CIS units are placed in the flatbed and ADF assemblies.

In the flatbed scanning, the CIS reading unit in the flatbed assembly, which is called the lower CIS unit, is used for reading. And the CIS unit will read the document surface by moving horizontally with the motor.

In the ADF scanning, the lower CIS unit is used for the front-side reading, and the CIS unit in the ADF assembly which is called the upper CIS unit, is used for the back-side reading. The upper CIS unit is fixed, and the lower CIS unit is also stopped in the predefined position to read the document. The document will move.

The cross section of the reading system is shown below.

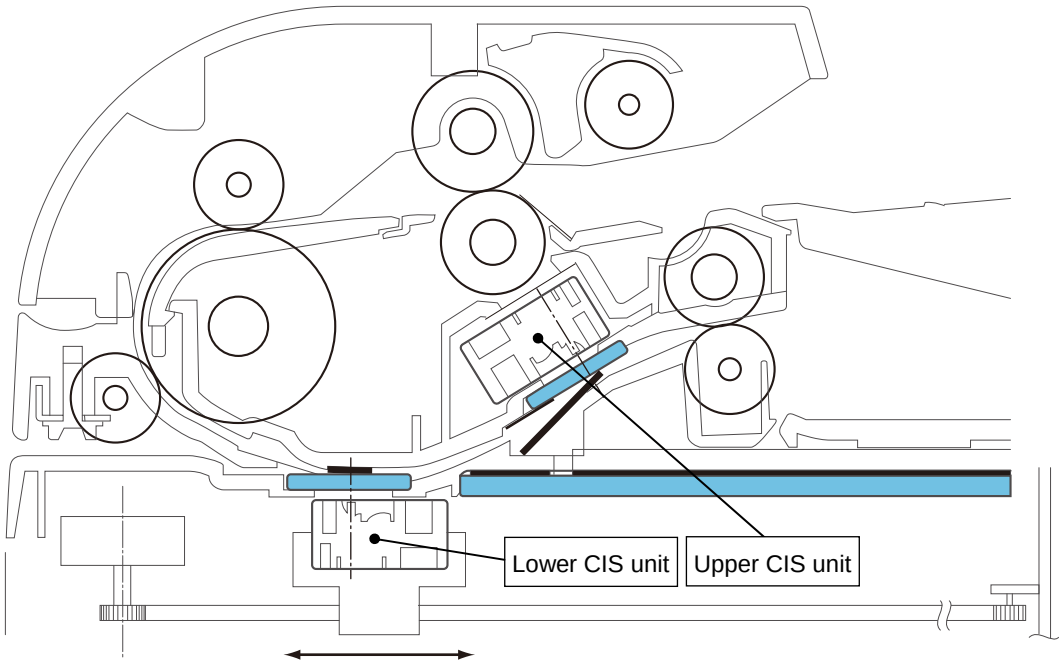


Figure 2-201

2. Flatbed Reading

The figure below shows a top view of the flatbed assembly without the top cover. The basic of reading is described using this figure.

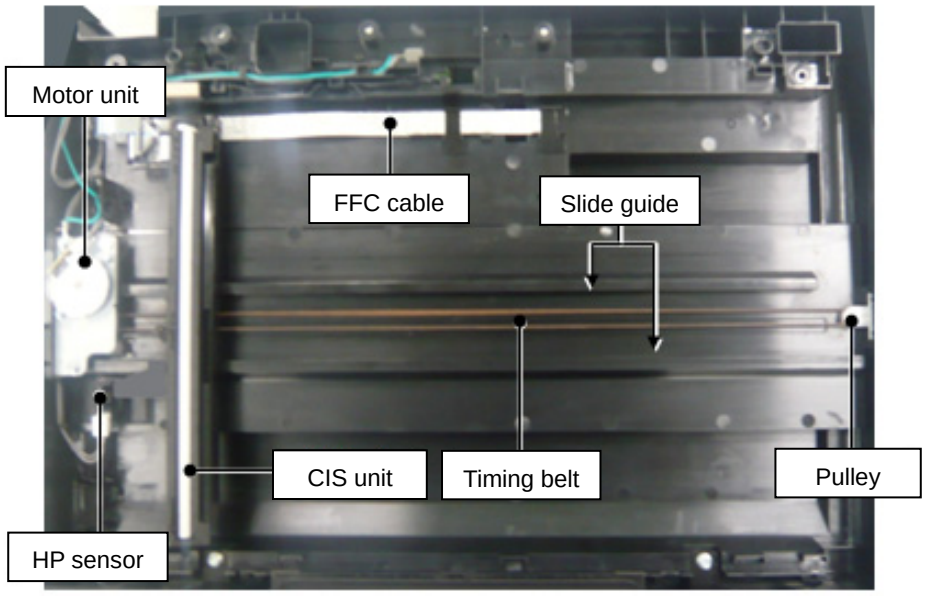


Figure 2-202

1) CIS unit

In the case of the flatbed scanning, the document is placed on the flatbed scanning glass of the top cover, and the reading of the image data is performed by the lower CIS unit.

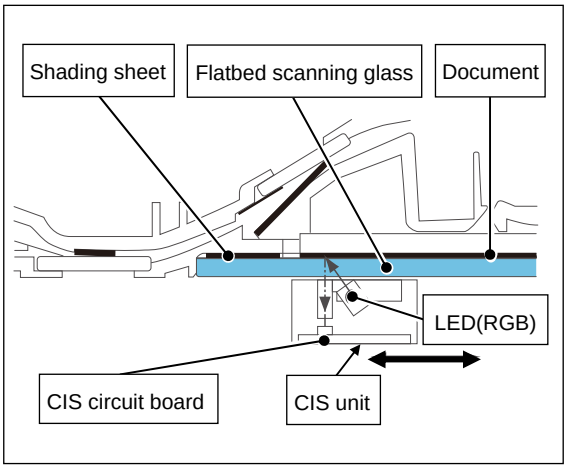


Figure 2-203

The structure of the CIS unit is the same as the one used for the general DR scanner. The same CIS unit as the one used on the ADF reading for this machine is used. However, the CIS unit for the flatbed moves while contacting the scanning glass surface, so sliders are mounted on the both edges of the surface.

LEDs in 3 colors of RGB are used as the light source for the CIS unit. The light from the LED reflected from the document is read by the photo-sensitive element mounted on the CIS PCB.

The read image data is input to the control PCB via the FFC cable.

Also, the shading sheet to determine the shading correction value is mounted between the flatbed scanning glass and the cover.

2) Slide mechanism

The document is read by moving the CIS horizontally matching the specified document length for the flatbed scanning. Therefore, it is equipped with a motor unit.

The CIS unit is mounted in the bracket equipped with a timing belt. The timing belt is rotated by driving the motor unit, and the CIS unit is moved together with the bracket. Also, controlling of the position is performed with the home position (HP) sensor.

There are 2 slide guides at the base section. The slider mounted on the bracket will move in contact with the 2 slide guides, so the CIS unit will move straight.

3. ADF Reading

Following indicates the layout drawing of the lower CIS unit and the upper CIS unit.

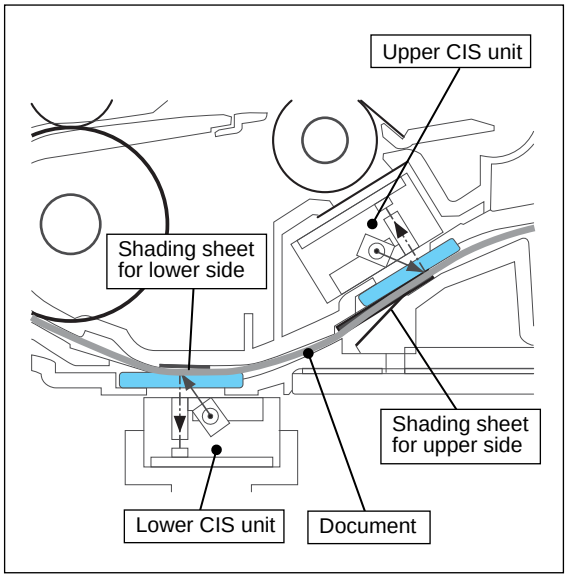


Figure 2-204

In the ADF scanning, the lower CIS unit is used for the front side reading, and the upper CIS unit is used for the back side reading. The general specifications and compositions of the upper CIS unit are the same as the lower CIS unit.

The lower CIS unit will read the image by stopping in the predefined position indicated in the figure. In the case of the duplex read, the image data read by each CIS unit is input to the control PCB. Then, they are arranged as the front side image and back side image in the control PCB. The shading sheets are mounted on each side of the lower and upper CIS units.

The document is fed by the feed system. The detail is described in the next section.

III. FEED SYSTEM

1. Outline

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

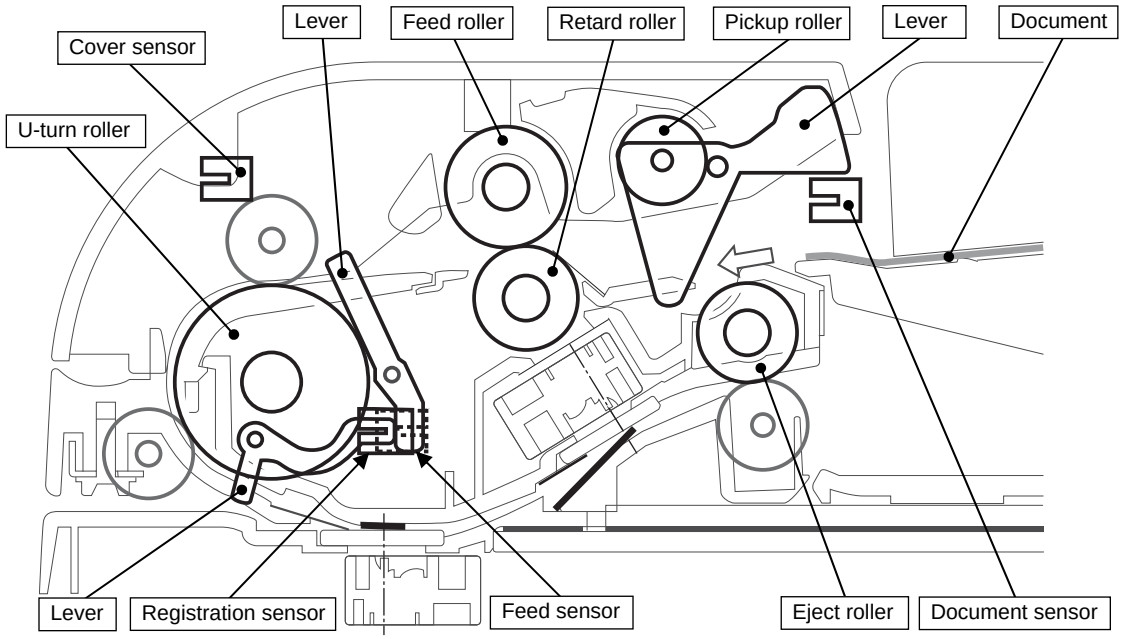


Figure 2-301

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

After being fed by the pickup roller, the documents are fed one sheet after another by the feed roller and the retard roller. The unit consisting of pickup and retard rollers is called the roller unit or the pickup roller assembly. The U-turn roller feeds the document to the image reading position and lastly the eject roller ejects the document. These rollers are driven by the ADF motor and the gears.

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

2. Sequence of Operation

Following is the timing chart of simplex scanning and duplex scanning for one document sheet.

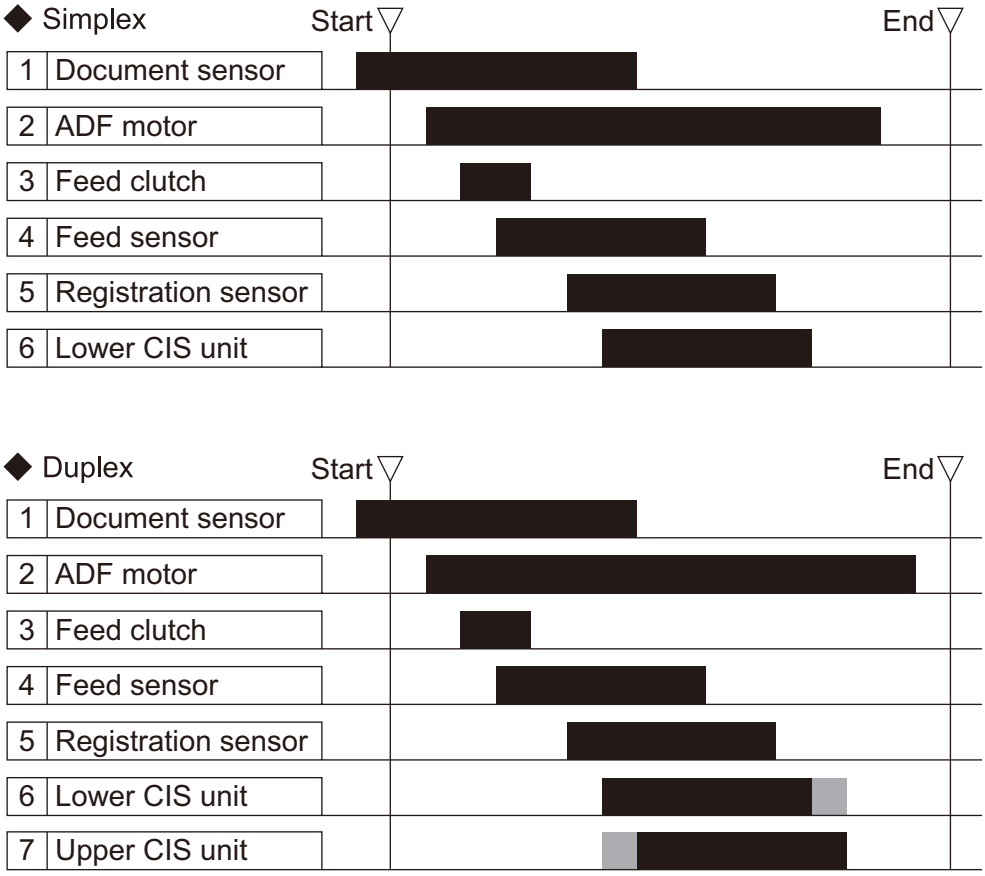


Figure 2-302

When the start signal is output, the ADF 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 CIS unit reads the front side of the document and the upper CIS unit reads back side.

The reading position of the lower CIS unit and that of the upper CIS unit are mis-aligned, so a dummy time is provided for each of them when performing duplex scanning.

The ADF 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.

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.

IV. CONTROL SYSTEM

1. Control Block Diagram

This machine is controlled by the scanner controller on the control PCB.

The electrical control system of this machine is shown below.

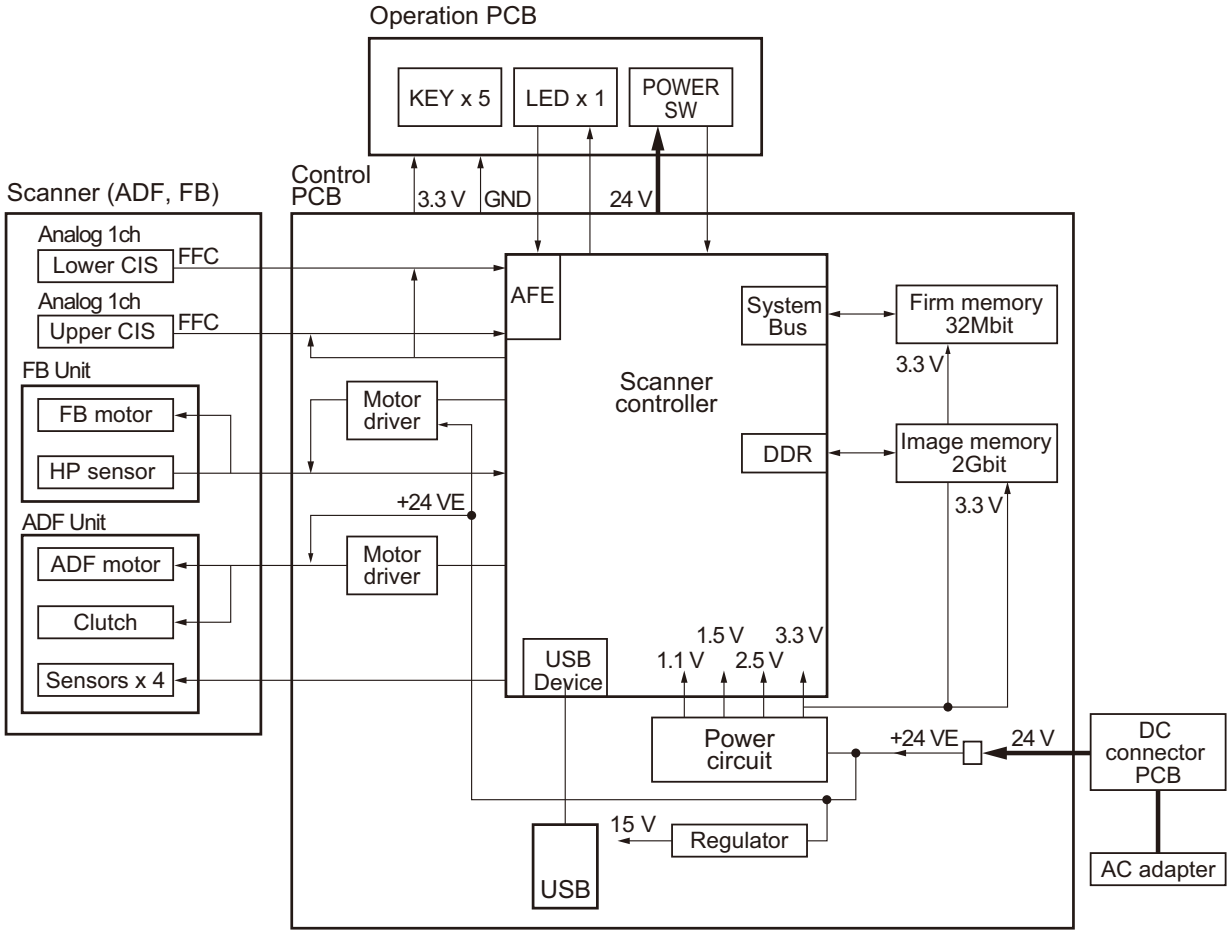


Figure 2-401

2. Image Processing

The figure below shows a block diagram of image processing.

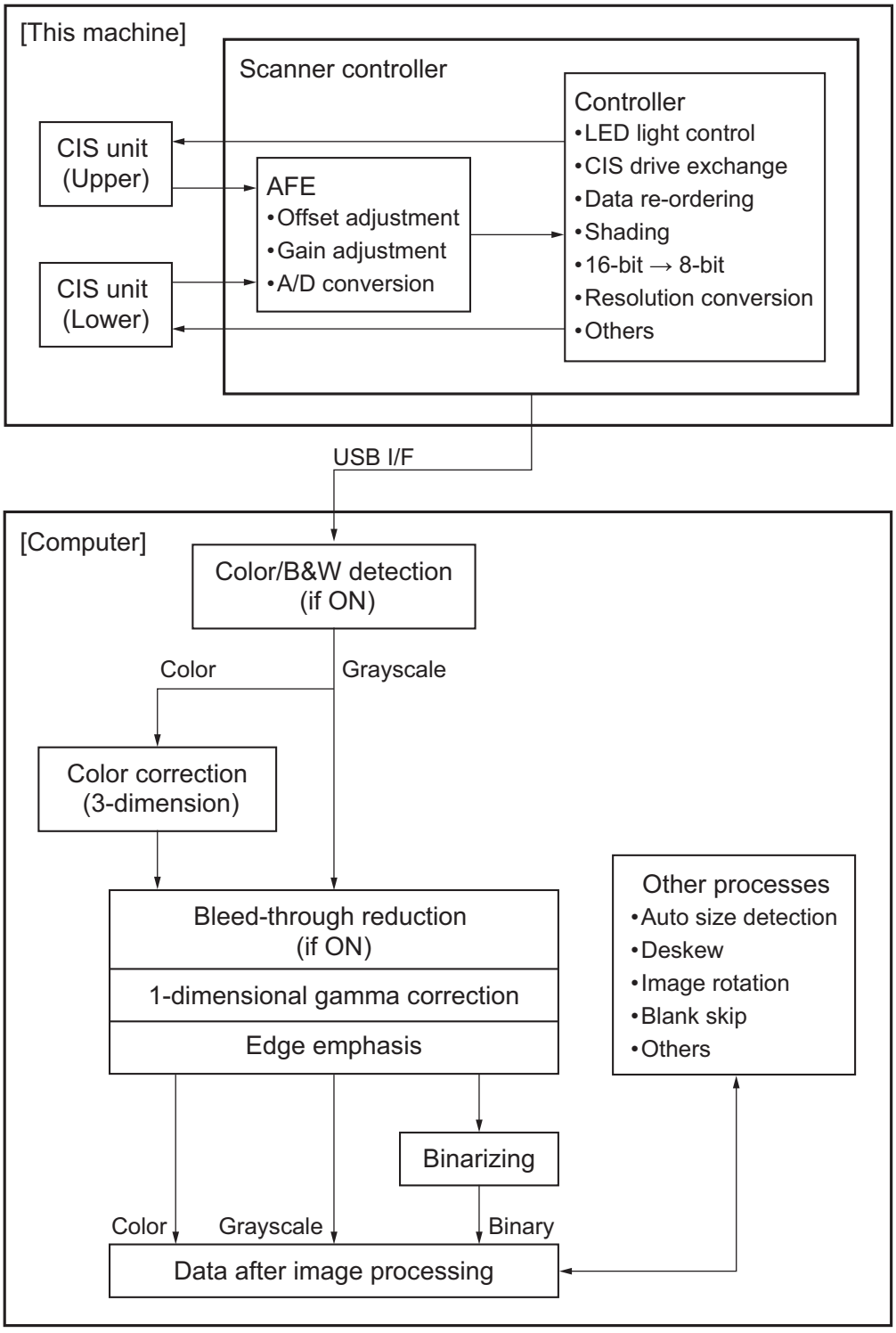


Figure 2-402

Corresponding to the density of each picture element, the CIS unit outputs an analog signal to the analog processor (AFE: analog front end) on the scanner controller.

The analog processor adjusts the offset and the gain and then executes A/D conversion. Thereby the analog signal is converted to a 16-bit digital signal. Then the image data is output to the controller and it is changed to meet the user settings.

This 16-bit signal is converted to an 8-bit signal at this time.

The image data is then output to the computer via the USB interface and various types of image processing are performed. Image processing is performed both inside the machine and on the computer.

V. ELECTRICAL PARTS LAYOUT

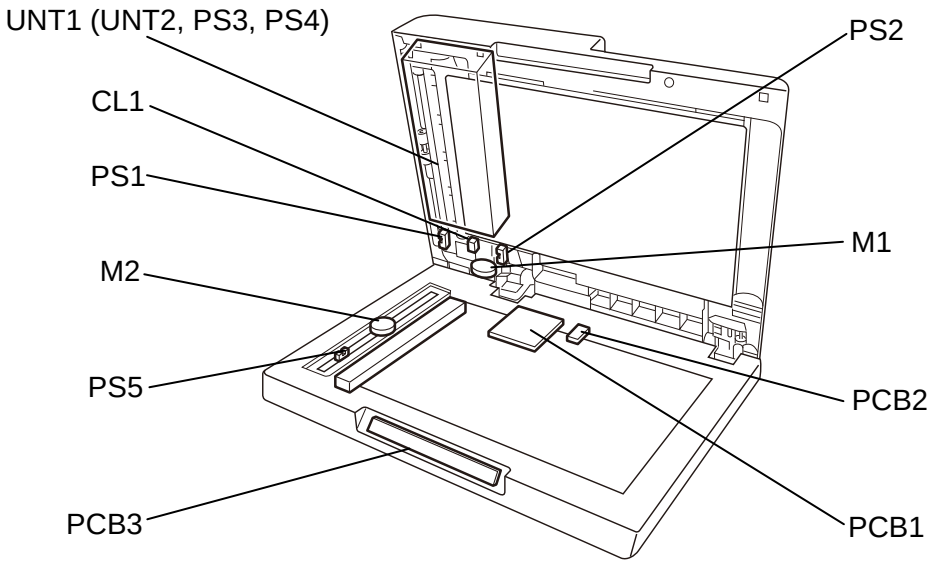


Figure 2-501

Unit	Name	Symbol
ADF	Cover sensor	PS1
	Document sensor	PS2
	ADF motor	M1
	Clutch	CL1
	ADF feed & reading assembly	UNT1
	Upper CIS unit	(UNT2)
	Feed sensor	(PS3)
	Registration sensor	(PS4)
Flatbed	Control PCB	PCB1
	DC connector PCB	PCB2
	Operation PCB	PCB3
	Lower CIS unit	UNT3
	Flatbed motor	M2
	HP sensor	PS5

Note: UNT2, PS3, and PS4 are embedded in UNT1.

Table 2-501

VI. PARTS LAYOUT ON PCB

1. Control PCB

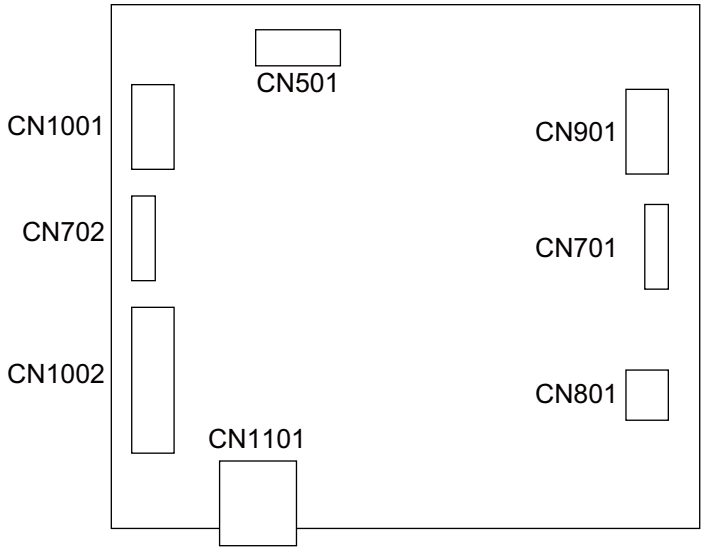


Figure 2-601

No.	Symbol	Function
1	CN1001	ADF motor & clutch connector
2	CN1002	Sensor connector
3	CN1101	USB connector
4	CN501	Operation PCB connector
5	CN701	Lower CIS connector
6	CN702	Upper CIS connector
7	CN801	DC connector PCB connector
8	CN901	Flatbed motor & HP sensor connector

Table 2-601

CHAPTER 3

DISASSEMBLY & REASSEMBLY

I. ADF ASSEMBLY

1. ADF Assembly (Entire)

1) Turn over the main body.
2) Remove 4 screws ① (M3x8, hex-head, self-tapping) and remove the control PCB cover ②.

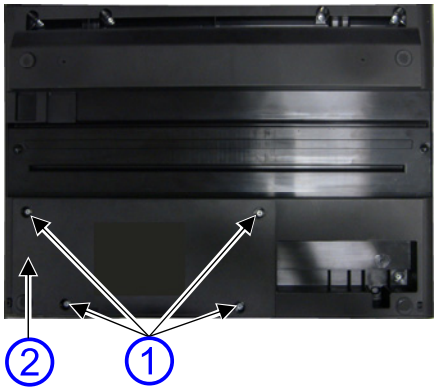


Figure 3-101

3) Remove the screw ① (M3x8, hex-head, self-tapping), and remove the grounding cable ② and 3 cables ③. Then, pull out the cables from the cable clamps.

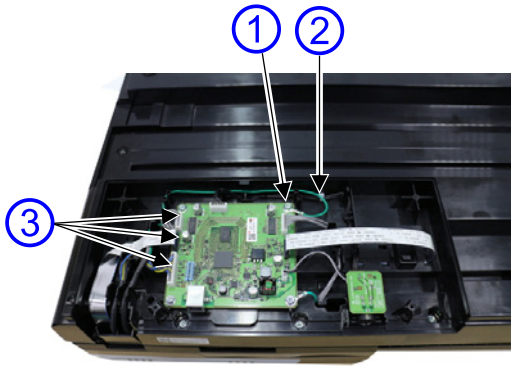


Figure 3-102

4) Turn over the main body to its original position.
5) Fully open the ADF assembly and lift the right hinge ①. Push in the bottom center ② of the hinge and remove the right hinge. Then, remove the left hinge ③, lift and remove the ADF assembly ④ (entire).

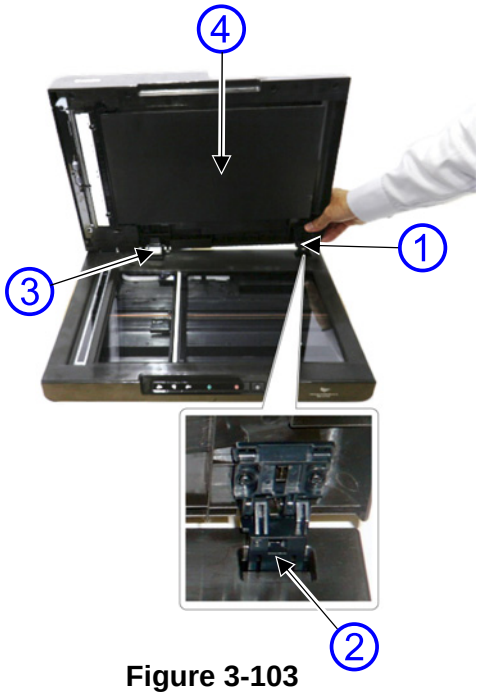


Figure 3-103

2. Pickup Tray Assembly

1) Open the pickup extend tray① and the ADF top cover ②.

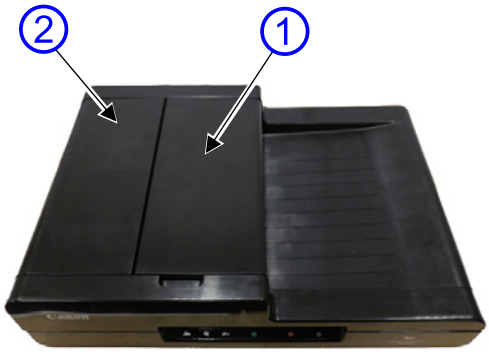


Figure 3-104

2) Remove the fitting ① on one side by warping the shaft. Then, remove the fitting ② on the other side, and remove the pickup tray assembly ③.

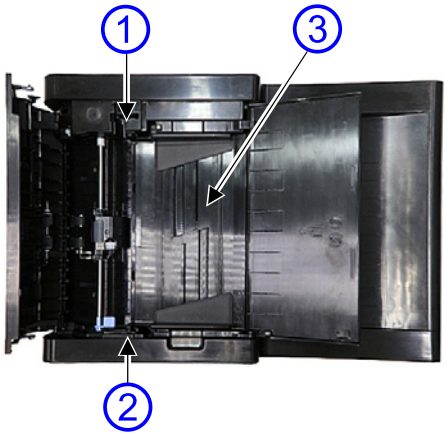


Figure 3-105

3. ADF Rear Cover

1) Remove the pickup tray assembly. (Page 3-2)
2) Remove 2 screws ① (M3x8, hex-head, self-tapping), and remove the ADF rear cover ②.

Note: There are fitting portions inside, so it may be hard to remove.

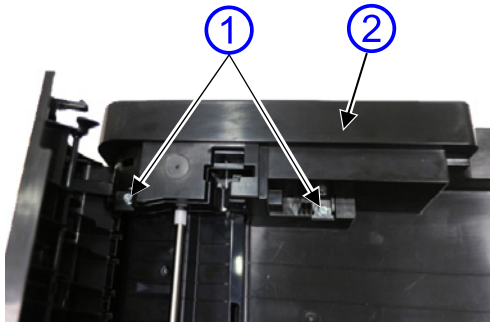


Figure 3-106

◆ **Notes on assembling**

When assembling the cover, do not nipped the cable.

4. ADF Top Cover

1) Remove the ADF rear cover. (Page 3-2)
2) Fully open the ADF top cover ①. Then remove the ADF top cover while sliding so both shafts ② can come off.

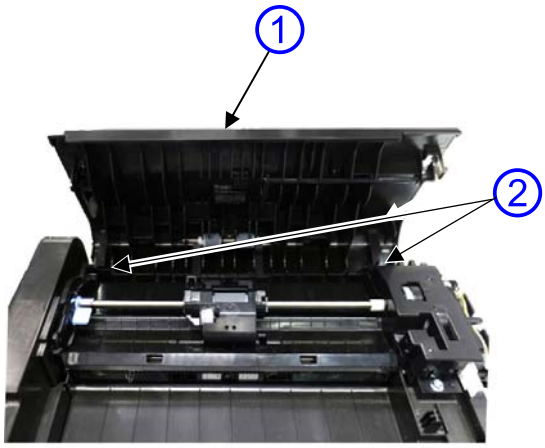


Figure 3-107

5. ADF Front Cover

1) Remove the pickup tray assembly. (Page 3-2)
2) Fully open the ADF assembly.
3) It is good to cover with a sheet so the glass of the flatbed assembly is not damaged.
4) Remove 4 screws ① (M3x10, black, self-tapping), and remove the ADF front cover ②.

Note: There are fitting portions inside, so it may be hard to remove.

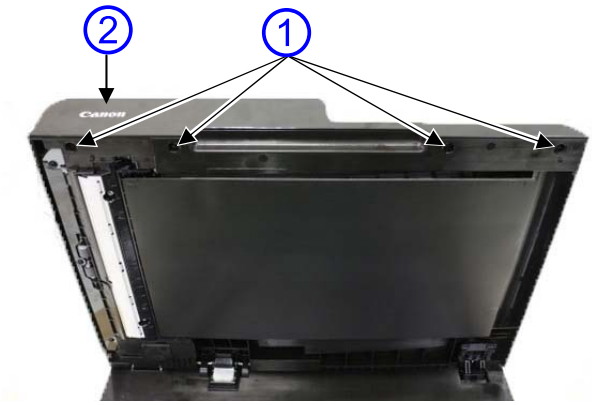


Figure 3-108

6. Motor Drive Assembly

1) Remove the ADF rear cover. (Page 3-2)
2) Remove the pickup roller assembly.
3) Remove the screw ① (M3x8, hex-head, self-tapping) and the screw ② (M3x6, hex-head), and move the motor drive cover assembly ③ aside.

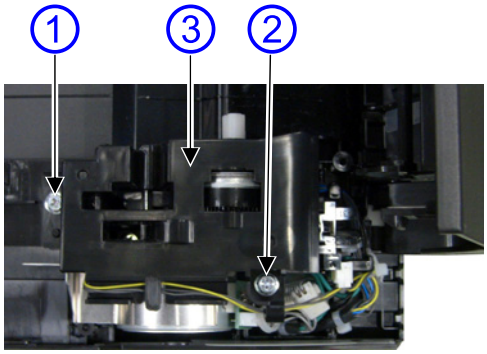


Figure 3-109

4) Remove the connector ①, and open the motor drive cover assembly ②.

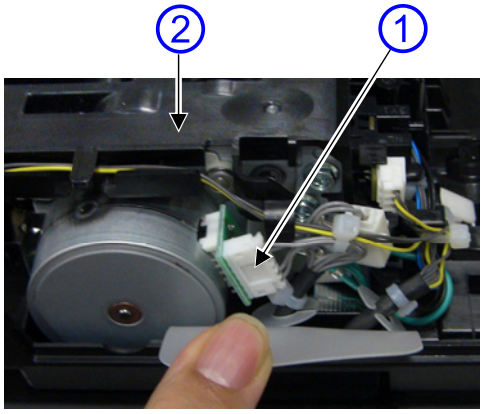


Figure 3-110

5) Remove 3 screws ① (M3x8, hex-head, self-tapping), and remove the motor drive assembly ②.

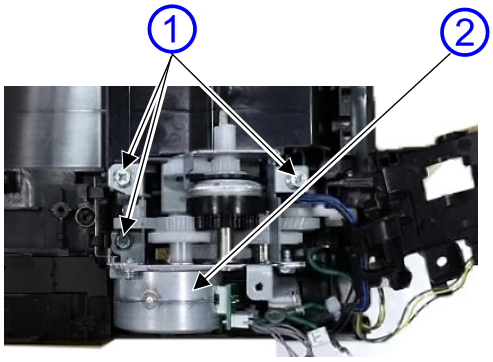


Figure 3-111

Note: The cables are still connected, so do not pull it excessively.

6) Remove the motor drive assembly ① from the mounting position, remove 2 screws ② (M3x6, hex-head), and remove 2 grounding cables.

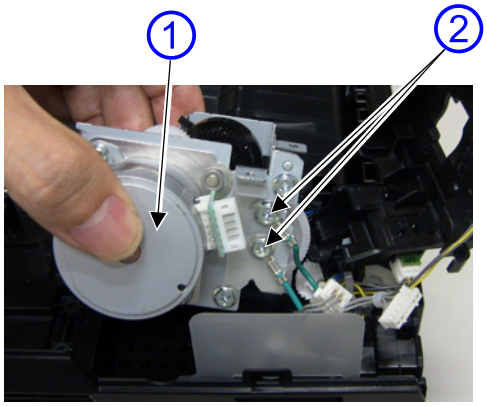


Figure 3-112

7) Cut the cable tie fixing the cables to the motor drive cover assembly, and remove the motor drive assembly.

◆ **Notes on assembling**

Route the cable so the cable does not get nipped or the sensors do not malfunction

when assembling the motor drive cover assembly and the motor drive assembly. Fix with a cable tie again when the cable tie for the cables is cut. Be sure to use the UL-certified cable tie.

7. ADF Feed and Reading Assembly

1) Remove the ADF assembly (entire). (Page 3-1)
2) Remove the ADF rear cover. (Page 3-2)
3) Remove the ADF top cover. (Page 3-3)
4) Remove the ADF front cover. (Page 3-3)
5) Remove the motor drive assembly. (Page 3-4)
6) Remove 2 screws ① (M3x8, hex-head, self-tapping), pull out 2 cables connected to the flatbed from the cable cover, and remove the ADF feed and reading assembly ②.

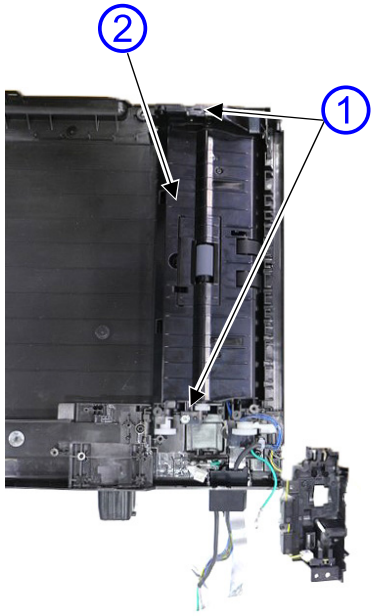


Figure 3-113

◆ **Notes on assembling**

Insert the cable into the cable cover before assembling the assembly.

Insert 2 leading fittings ① into the base.

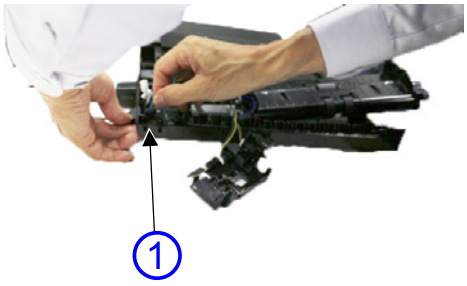


Figure 3-114

8. ADF F&R Lower Cover

1) Remove the ADF feed and reading assembly.
(Page 3-5)
2) Remove 2 screws ① (M3x8, hex-head, self-tapping), insert a tool with narrow tip into the joint ② with the base (other side of the static eliminator), and remove the ADF F&R lower cover ③.

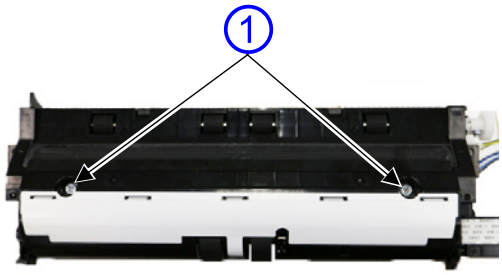


Figure 3-115

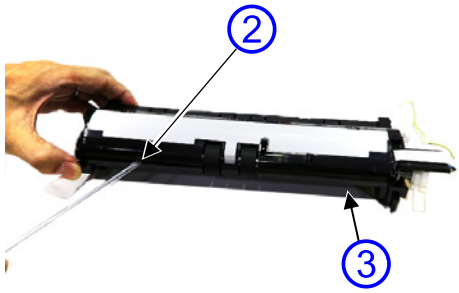


Figure 3-116

9. CIS Unit (Upper)

1) Remove the ADF feed and reading assembly.
(Page 3-5)
2) Remove the ADF F&R lower cover.
(Page 3-6)
3) Remove the CIS unit ① from the base and disconnect the cable ② from the connector on the back.

Note: Do not touch inside the CIS unit (including the glass surface). Do not touch the terminals of the connector to prevent the static damage.

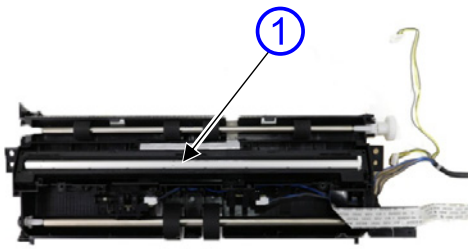


Figure 3-117

Figure 3-118

◆ **Notes on assembling**

Be careful with handling as at the time of disassembling.

Dusts may have entered inside, so remove them using a blower, etc.

10. Eject Assembly

1) Remove the ADF feed and reading assembly.
(Page 3-5)
2) Remove the eject assembly ①.

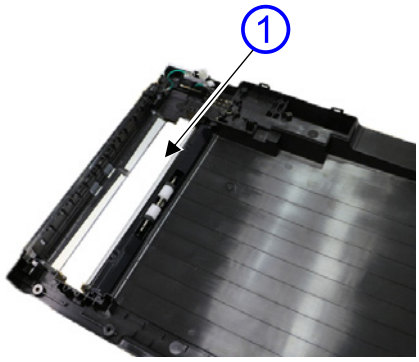


Figure 3-119

11. Left Hinge

Note: An adjustment will be required after assembly when the hinge is removed. Do not remove unless it is necessary.

1) Remove the ADF assembly (entire). (Page 3-1)
2) To mount in the original position, confirm the mounting position before removing the hinge. Either record the position of the marker or mark the position.

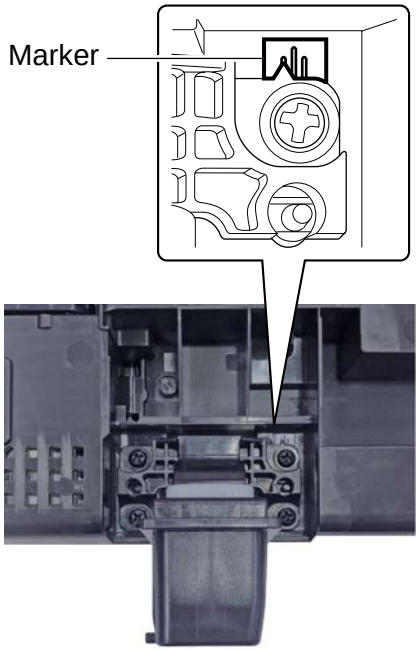


Figure 3-120

3) Remove 4 screws ① (M3x10, black, self-tapping), and toothed washers ② for each. And then remove the left hinge ③. The left hinge will slide horizontally.

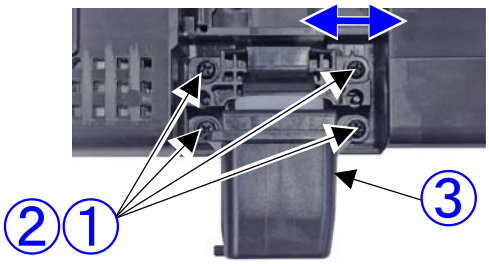


Figure 3-121

◆ **Notes on assembling**

1) Mount the hinge to the original position referring to the mark.
2) Read double-sided image with ADF scanning.
3) Perform the position adjustment with the “Adjusting Edges” in the service mode. For detail, refer to the service mode section.

12. Right Hinge

Note: An adjustment will be required after assembly when the hinge is removed. Do not remove unless it is necessary.

1) Remove the ADF assembly (entire). (Page 3-1)
2) To mount in the original position, confirm the mounting position before removing the hinge. Either record the position of the marker or mark the position.

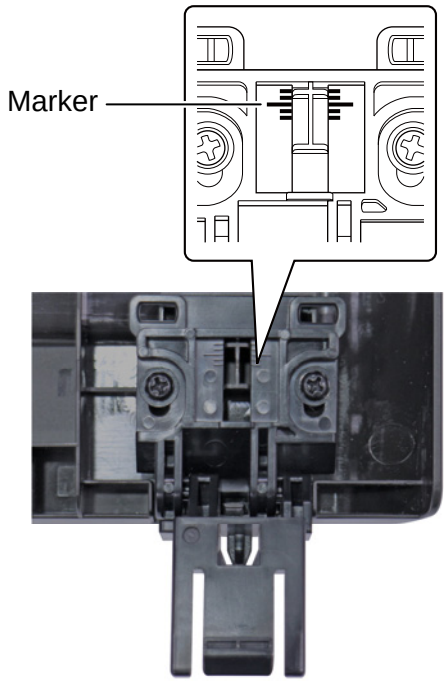


Figure 3-122

3) Remove 2 screws ① (M3x10, black, self-tapping) and remove the right hinge ②. The right hinge will slide vertically.

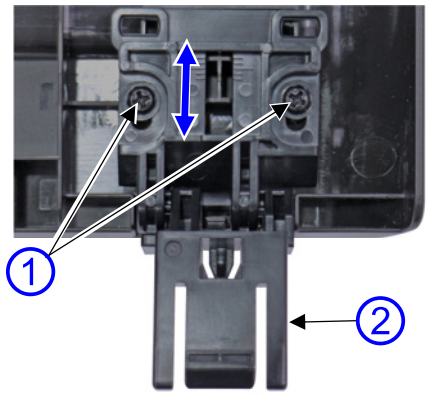


Figure 3-123

4) Separate the upper ① and the lower ② of the right hinge by sliding them.

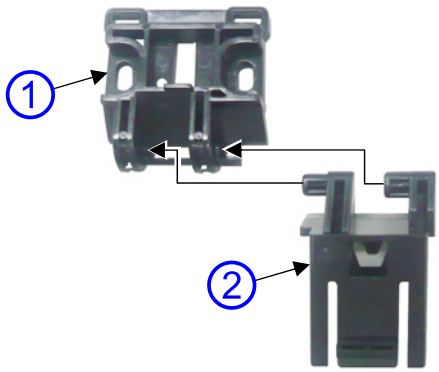


Figure 3-124

◆ **Notes on assembling**

1) Mount the hinge to the original position referring to the mark.
2) Read double-sided image with ADF scanning.
3) Perform the position adjustment with the “Adjusting Edges” in the service mode. For detail, refer to the service mode section.

II. FLATBED ASSEMBLY

1. Control PCB

1) Turn over the main body.
2) Remove 4 screws ① (M3x8, hex-head, self-tapping), and remove the control PCB cover ②.

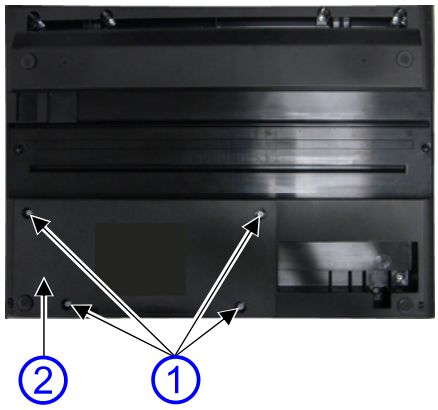


Figure 3-201

3) Remove 7 cables ③.

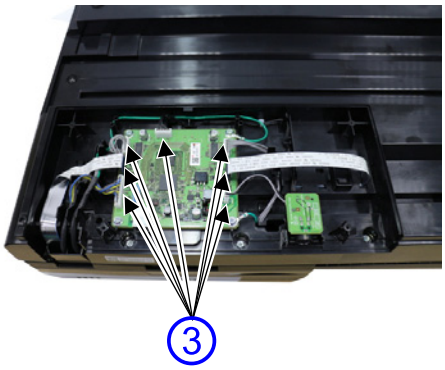


Figure 3-202

4) Remove 4 screws ① (M3x8, hex-head, self-tapping), and remove 2 grounding cables ② and the control PCB ③.

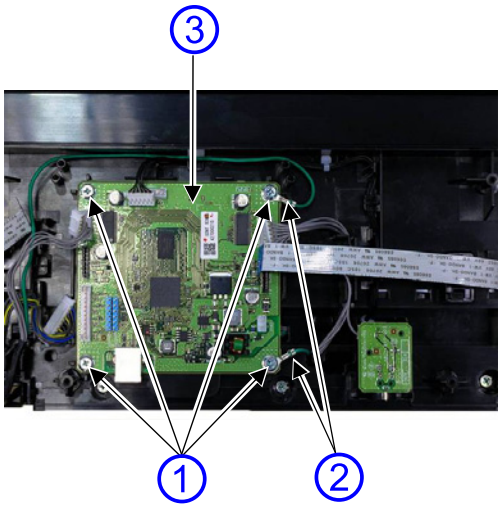


Figure 3-203

◆ **Notes on assembling**

Place the cables in the cable guide, and the cables should not be nipped.

2. Flatbed Top Cover Assembly

1) Remove the ADF assembly (entire). (Page 3-1)
2) Turn over the main body.
3) Remove 9 screws ① (M3x8, hex-head, self-tapping).

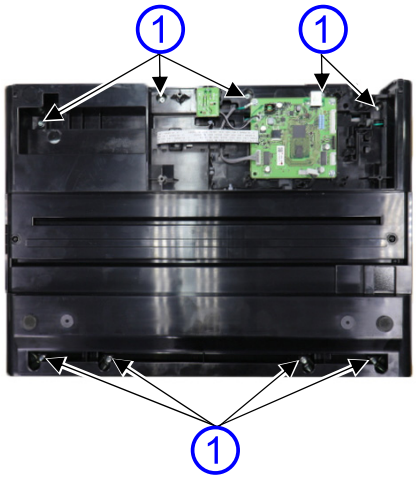


Figure 3-204

4) Turn over the main body to its original position.
5) Lift the rear of the flatbed top cover assembly ① slightly and separate it from the base. Then, remove the entire part from the base.

Note: There is a fitting inside, so remove little by little.
Handle with care since there is a glass assembled.

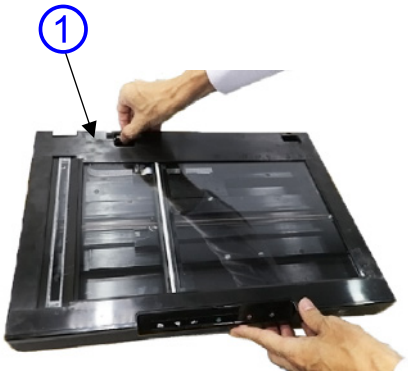


Figure 3-205

◆ **Notes on assembling**

Clean the inside glass surface.
Dusts may have entered inside the CIS unit, so remove them using a blower, etc.
Also, confirm that the cables are in the cable guide before attaching the cover

3. Operation Cover Assembly

1) Remove the flatbed top cover assembly. (Page 3-11)
2) Remove 2 screws ① (M3x8, hex-head, self-tapping), and remove the operation cover assembly ②.

Note: The cable is connected inside, so do not pull excessively.

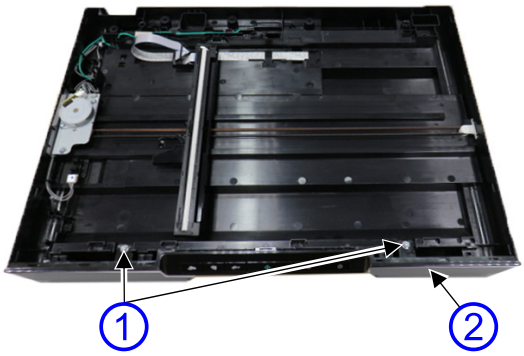


Figure 3-206

3) Remove the cable ①.

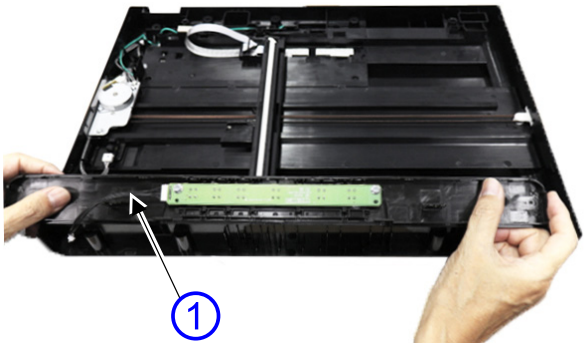


Figure 3-207

◆ **Notes on assembling**

When assembling the assembly, align the fitting of the base.

Place the cables in the cable guide, and the cables should not be nipped.

4. CIS Unit (Lower)

1) Remove the flatbed top cover assembly. (Page 3-11)
2) Rotate and stand up the CIS unit ①.Then slide it and remove from the CIS bracket ②.

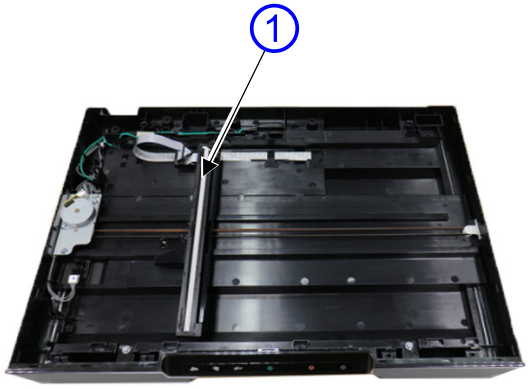


Figure 3-208

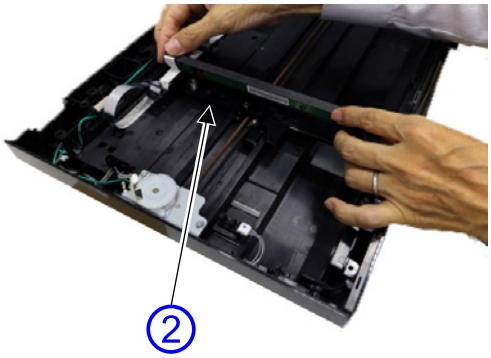


Figure 3-209

3) Disconnect the cable ① from the connector on the back.

Note: Do not touch inside the CIS unit (including the glass surface). Do not touch the terminals of the connector to prevent static damage.

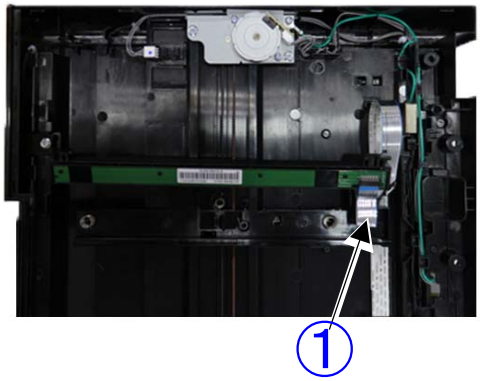


Figure 3-210

◆ **Difference of the CIS unit**

This lower CIS unit has a black sheet on the center of backside. And it needs 2 sliders ① assembled on the edge of the front side.

- Lower CIS unit

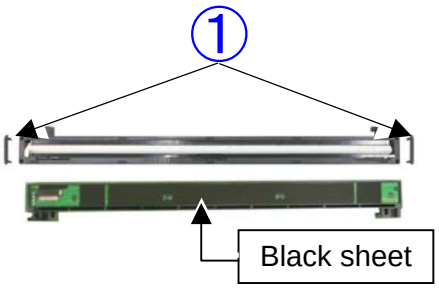


Figure 3-211

- Upper CIS unit

Figure 3-212

◆ **Notes on assembling**

Handle with care in the same manner as disassembling. Dusts might have entered inside, so remove them using a blower, etc.

When the bracket has come off the base, push the guide holder ① behind the bracket into the guide of the base.

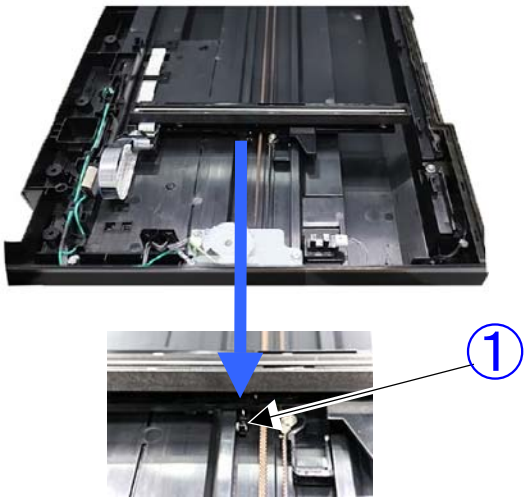


Figure 3-213

◆ **Notes on assembling**

Handle with care in the same manner as disassembling. Dusts might have entered inside, so remove them using a blower, etc.

When the bracket has come off the base, push the guide holder ① behind the bracket into the guide of the base.

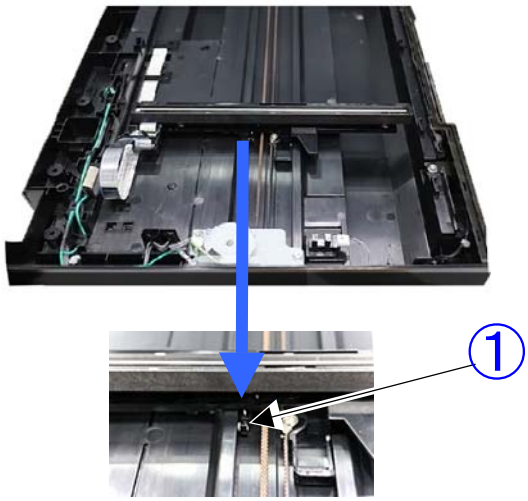


Figure 3-213

5. Flatbed Motor Assembly

1) Remove the flatbed top cover assembly. (Page 3-11)
2) Remove the pulley support ① and idler pulley guide ② from the fitting and then from the base. The idler pulley ③ is removed at the same time.

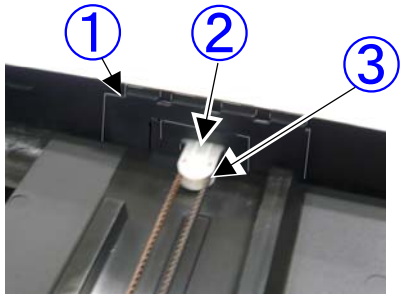


Figure 3-214

3) Remove the cable ①. Remove 2 screws ② (M3x8, hex-head, self-tapping) and the screw ③ (M3x4, with washers), and remove the grounding cable ④ and the flatbed motor assembly⑤.

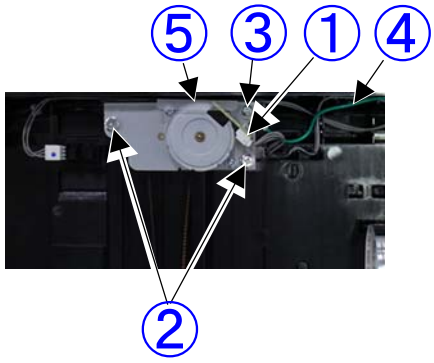


Figure 3-215

◆ **Notes on assembling**

Place the cables in the cable guide, and the cables should not be nipped.

III. CABLE WIRING AND ROUTING

1. Motor Drive Assembly in the ADF

The photo shown in Figure 1 shows the protective sheet ①, but Figure 2 shows it without the protective sheet so that the cables are easily visible.

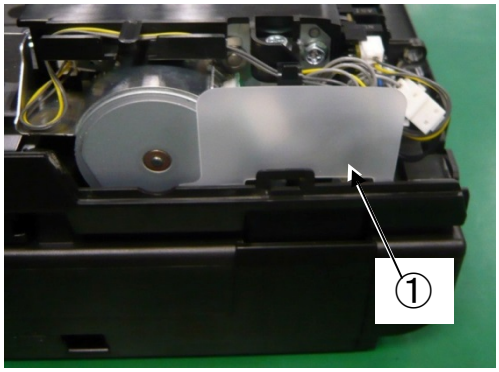


Figure 1

1) Before assembling the Motor Drive Cover, you must place the grounding wire ① (green) around the post of the base

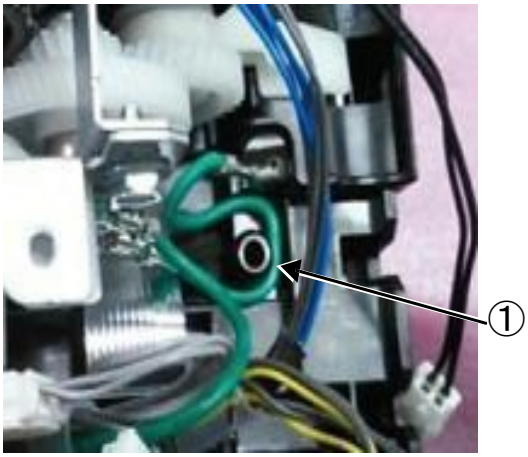


Figure 2

2) Separate all cables: motor ①, grounding ② (green) and clutch cables ③ of the Motor Cable Assembly.

Figure 3

3) The sensor cable ① (yellow and gray), connected to the sensors with the Motor Drive Cover of the Sensor Cable Assembly, should be placed along the outside of the grounding wire (green) and clutch cable ② of the Motor Cable Assembly. Another sensor cable ③ (blue and gray) connected to the sensors of the Feed/Reading Assembly, should be placed under the Grounding Cable.

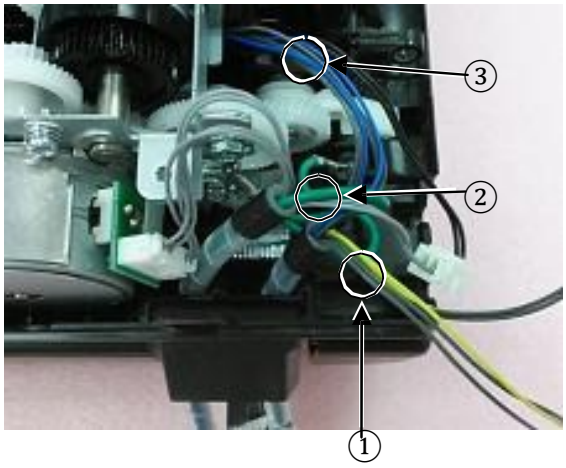


Figure 4

4) Connect the sensor cable (yellow and gray) to the sensors of the Motor Drive Cover ①, then assemble the Motor Drive Cover.

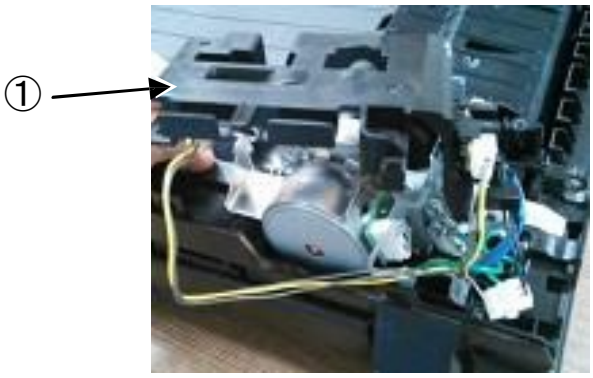


Figure 5

5) Route the extra length of cable, for the motor cable ① and the right side sensor cable ②, in an arc form. Then form the left side sensor cable ③ in a smaller arc shape. Therefore, the spiral tubes ④ of the Motor Cable Assembly and the Sensor Cable Assembly, should be slightly inclined.

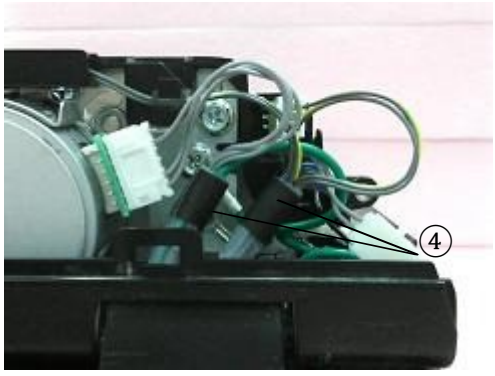


Figure 6

6) Route the extra length of the Left Side Sensor Cable ① to prevent it from touching the edge of the motor plate ②.

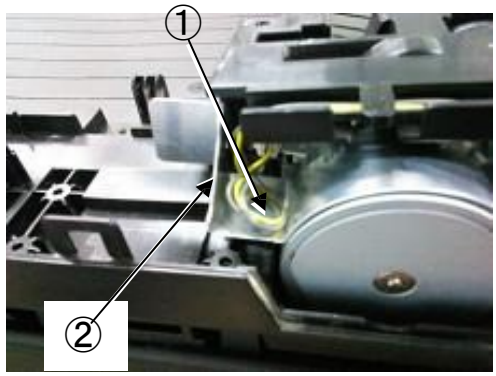


Figure 7

7) Place the sensor cable, which is the blue and gray wire connected to the Feed/Read Assembly, and Clutch Cable ① into the cable guides ② of the Motor Drive Cover. The cable band ③ should be placed between the guides as well.

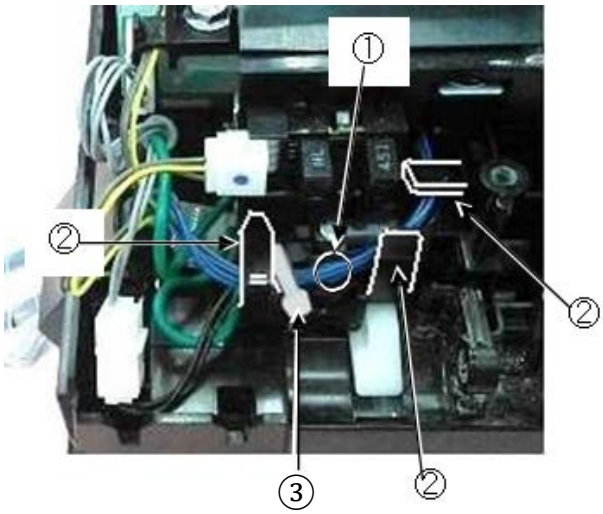


Figure 8

Note: When band the sensor and clutch cables together, leave some extra slack so that the cable can be moved if needed.

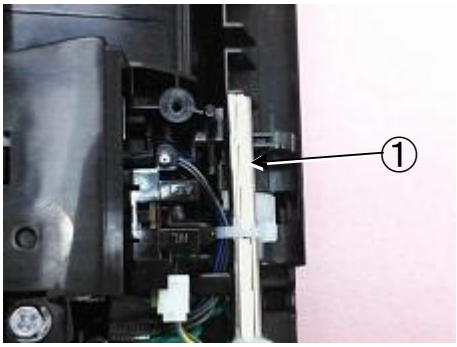


Figure 9

2. Flatbed Cables

1) Place the spiral tubes ① of the Motor Cable and Sensor Cable Assemblies into the cable guides and push them towards the bottom. Place the cable stoppers ② between the spiral tube and the cable band.

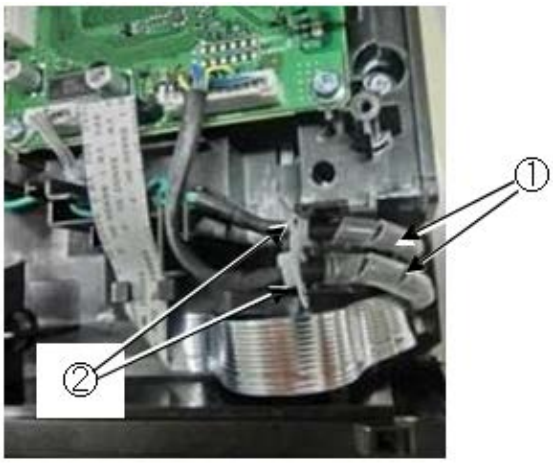


Figure 10

3. Confirmation of Cable Placement

1) With your finger, touch the spiral tube ① of the Sensor Cable Assembly, then open and close the ADF 5 times. You must confirm that the Sensor Cable ② moves smoothly and does not come off the cable guides of the Motor Drive Cover. Remove your finger and open/close the ADF 5 more times.

Figure 11a & 11b

2) Lastly, you would need to check the cables again.

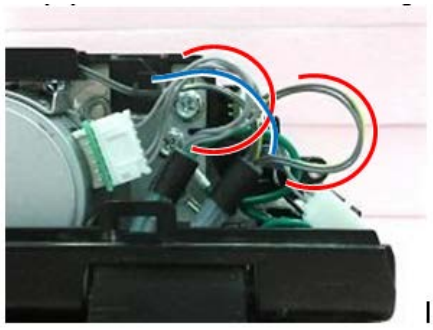


Figure 12a & 12b

CHAPTER 4

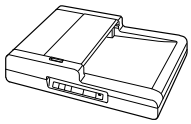
INSTALLATION & MAINTENANCE

I. INSTALLATION

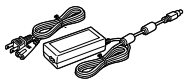
This machine can be installed by users. For installation, refer to “Setup Guide” packaged with the product. The outline of installation procedures are as follows.

1. Checking the Accessories

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



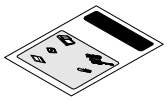
DR-F120



AC Adapter/Power Cord

USB Cable Type A/Type B

Setup Disc



Setup Guide

Figure 4-101

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

2. Removing the Packing Materials

Remove this machine from the box, and then remove the protective tapes (▼) and sheets from this machine.

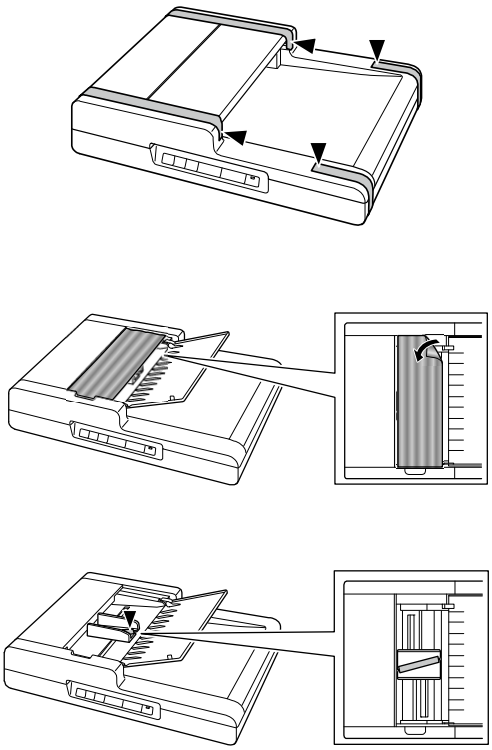


Figure 4-102

3. Installing the Software

Precautions

◆ Install the software before connecting the scanner to the computer.

Install the following software necessary for using this machine from the supplied Setup Disc.

- CaptureOnTouch
- Scanner Driver

1) Insert the Setup Disc into the disc drive of the computer.
The setup menu automatically starts up when you insert the disc into the drive.

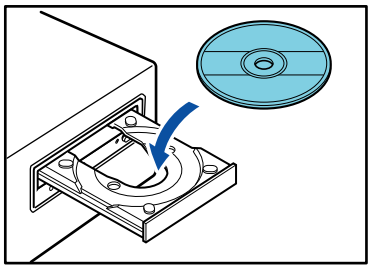


Figure 4-103

◆ For Windows 8.1/8/7/Vista
If the [User Account Control] screen appears, click [Yes] or [Allow].

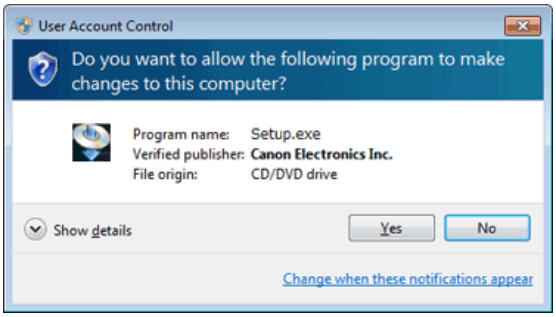


Figure 4-104

2) Click [Typical Installation].

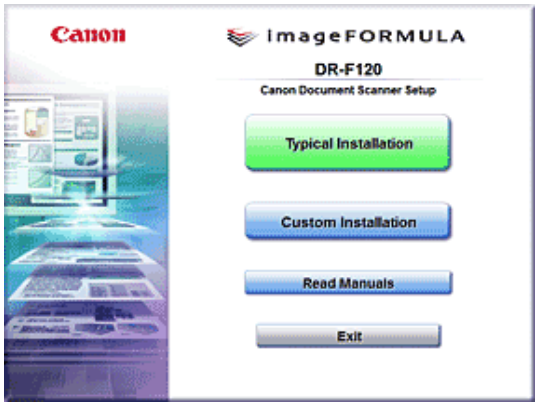


Figure 4-105

3) Click [Install].

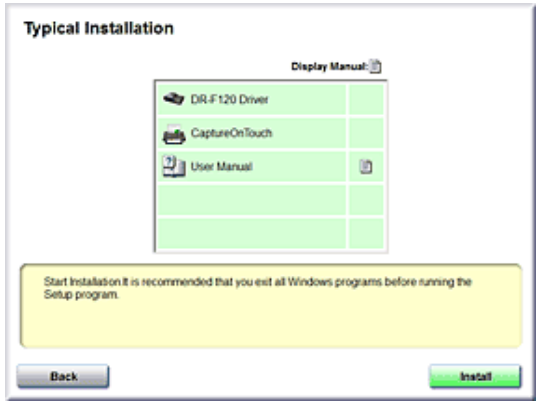


Figure 4-106

4) Follow the instructions on the screen to complete installation.

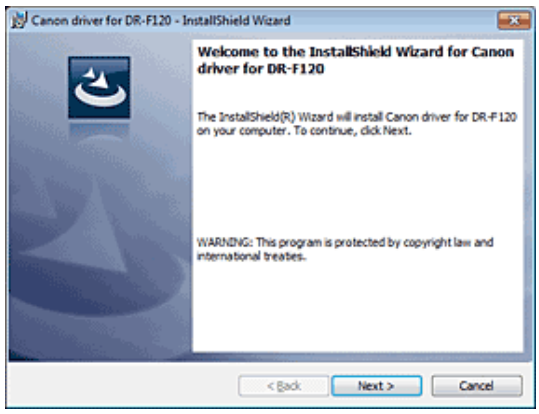


Figure 4-107

5) Click [Exit] to finish installing the software.

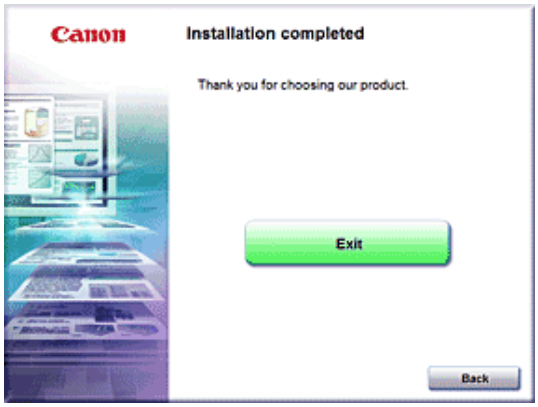


Figure 4-108

4. Connecting to the Computer

1) Connect the power cord to the AC adapter. Connect the plug of the AC adapter to the power connector on the back of this machine.

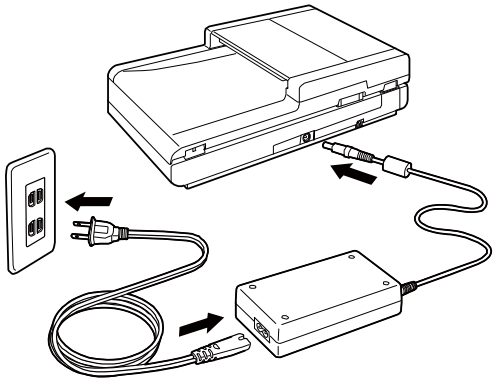


Figure 4-109

2) Use the supplied USB cable to connect this machine to the computer.

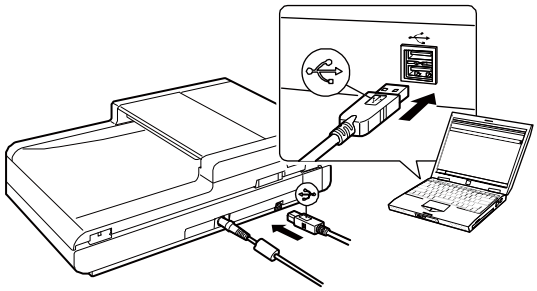


Figure 4-110

5. Turning the Power ON

1) Make sure that this machine and the computer are connected properly with a USB cable.
2) Press the power button.

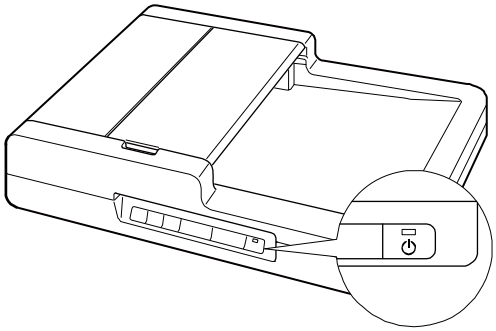


Figure 4-111

The power indicator lights blue when the power is ON.

Note: When this machine is turned on for the first time, the balloon message shown below appears on the Windows task bar. If you wait a while, automatic scanner recognition will end and this machine will become ready to use.

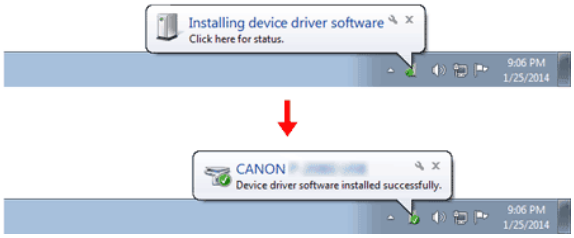


Figure 4-112

When this machine is properly connected to the computer, the (CaptureOnTouch) icon appears on the taskbar as follows.

Figure 4-113

If the taskbar icon appears as , this machine is not properly connected to the computer.
Check the status of the power and USB cable.

The setup is now completed.
When using this machine, be sure to use CaptureOnTouch.

II. PARTS REPLACEMENT

1. Periodically Replaced Parts

This machine does not have any periodically replaced parts.

2. Consumable Parts

The exchange roller kit is assigned as a consumable part. The replacement work is to be performed by the user. Also, the mechanism parts of the exchange roller kit (roller unit and retard roller) are assigned as service parts.

No.	Part name	Product code	Expected life	Remarks
1	Exchange roller kit (Roller unit Retard roller)	9934B001	75,000 sheets	To be replaced when cleaning does not clear feed failures.

Table 4-201

Note: Refer to “Appendix II. PARTS CATLOG” 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	Scanning glass	Cleaning	Wipe with a clean, dry cloth.
4	Pressure board	Cleaning	
5	Shading sheet	Cleaning	
6	Roller unit	Cleaning, replacement	Remove the parts from the main body. Wipe the surfaces with a cloth dipped into water and wrung tightly, then wipe dry. Its expected life is 75,000 sheets.
7	Retard roller	Cleaning, replacement	

Table 4-301

Note for the shading sheet:

The shading sheet is used in two locations: Left side of the pressure board and area that appears when you pull open with a thumb hook, as shown in the figure.

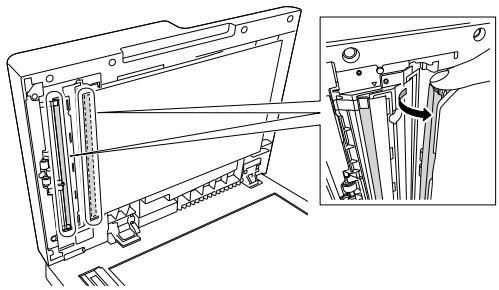


Figure 4-301

2) Roller unit and retard roller
How to remove them is as follows.

i) Raise the roller unit's lock lever.

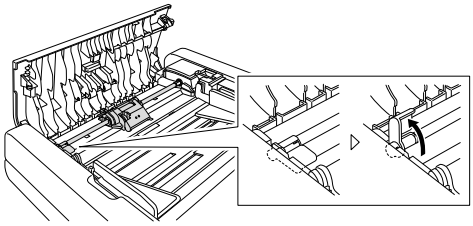


Figure 4-302

ii) Remove the roller unit.
Hold the center of the roller unit (roller portion), lift the lock lever side ①, then the other side ②.

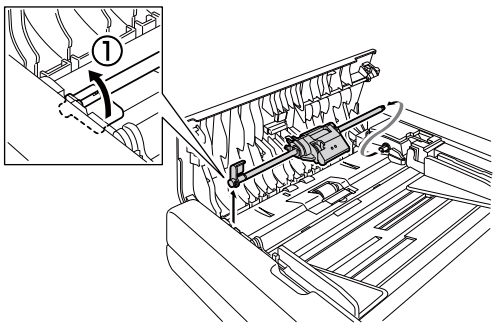


Figure 4-303

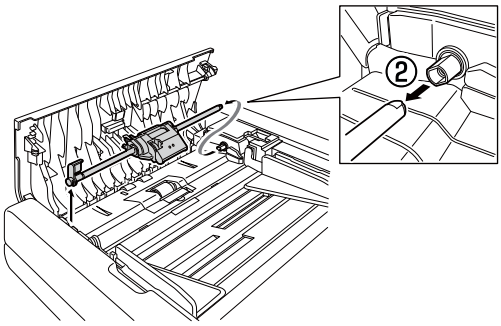


Figure 4-304

iii) Put your finger in the thumb hook, as shown in the figure, and open the cover in the direction of the arrow.

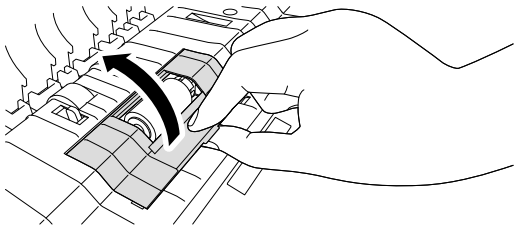


Figure 4-305

iv) Push the retard roller to the right to separate it from its axis and remove it.

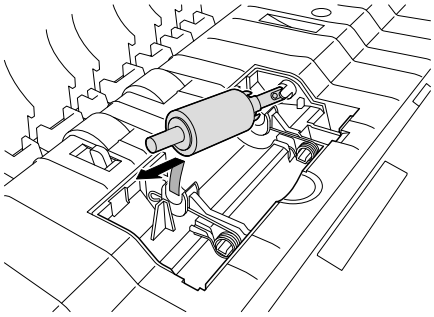


Figure 4-306

2. Service Maintenance

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

However, when visiting a user, check whether the scanning 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 if necessary.

CHAPTER 5

TROUBLESHOOTING

I. ERROR DISPLAY

1. Main Body

Although this machine does not have an error display unit, errors are indicated by the power indicator.

If the machine state is normal, the power indicator lights up when the power is turned ON. When the machine is unable to scan, such as when the feeder cover is open or when a paper jam occurs, the power indicator flashes.

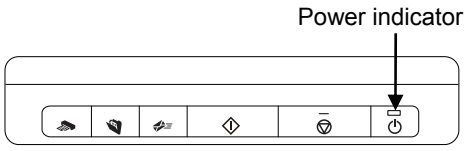


Figure 5-101

2. Computer

Error messages are displayed on the screen of the computer connected to the machine. Each software (applications, drivers, OSs) have their 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 (Windows).

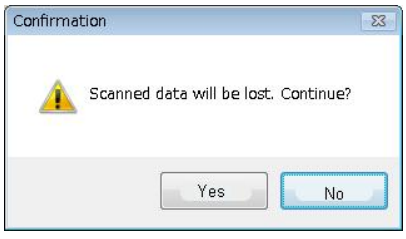


Figure 5-102

II. SERVICE MODE

1. Outline

To execute the service mode, install the software (service tool) for the service mode, which is stored in the supplied setup disc, in the computer for servicing. However, it is not an integration type, but a type that uses a dedicated EXE file. This software supports only the Windows operating system.

The system requirements for the computer are equivalent to those indicated in the “User Manual”.

The service screen is shown below.

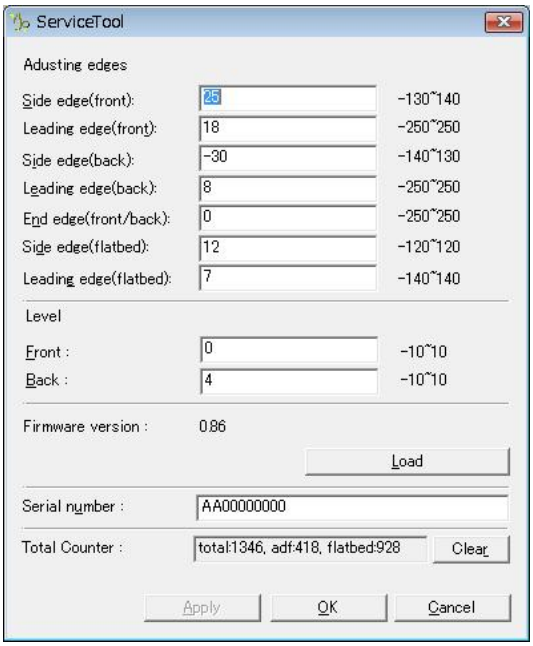


Figure 5-201

The service screen shows item names, indication values, and buttons. A list of items is shown below.

No.	Items
1	Adjusting edges → Adjusts the position of image
1-1	Side edge (front)
1-2	Leading edge (front)
1-3	Side edge (back)
1-4	Leading edge (back)
1-5	End edge (front/back) → Not used
1-6	Side edge (flatbed)
1-7	Leading edge (flatbed)
2	Level → Adjusts density of image
2-1	Front
2-2	Back
3	Firmware → Checks the firmware version number → Changes the firmware
4	Serial number → Checks the serial number → Input the serial number
5	Total Counter → Checks the scanning count numbers → Clears the count numbers

Table 5-201

2. How to Install

Following shows the procedure for installing the service tool from the setup disc. Never install it in the user's computer.

1) Turn ON the computer for servicing to start the OS (Windows).
2) Install the setup disc supplied with this machine.
3) An installation screen for the user is displayed, but ignore this, right-click the [Start] button, and select “Explorer”.
4) Open the folder “\Driver\Tools” in the setup disc. Copy the “DRF120ServiceTool.exe" file in the folder on any drive of the computer for servicing.

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

3. How to Start and Finish

◆ How to start

1) Start the computer for servicing.
2) If other applications are running, exit them.
3) Connect the machine to the computer for servicing use with a USB cable. And then turn on the power of this machine.
4) Start the installed file “DRF120ServiceTool.exe".

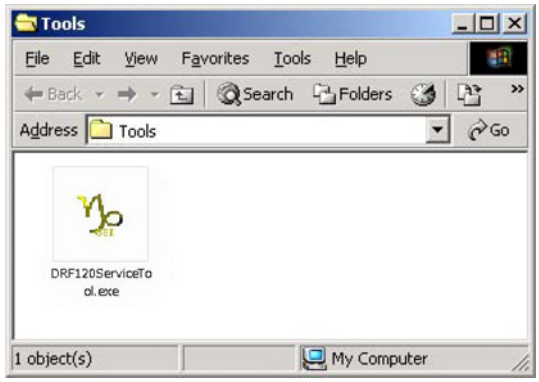


Figure 5-202

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

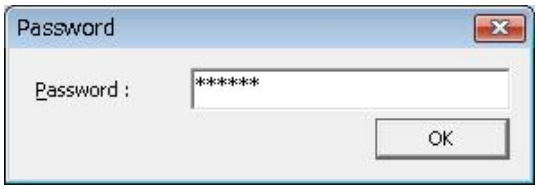


Figure 5-203

6) The service screen appears.

Note: Do not start other application software while starting the service tool. If it becomes inoperative, restart the computer.

A sample error screen is shown below.

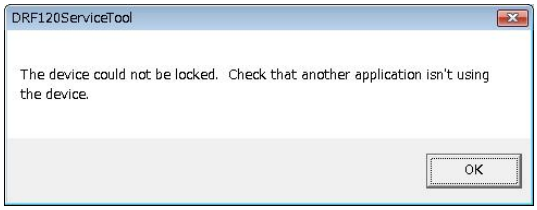


Figure 5-204

◆ How to finish

1) Select [OK] on the service screen.

4. Adjusting Edges

This mode adjusts the position of the scanned image manually.

This is adjusted by changing the scan start and end timing for the position for front, back, and both sides for the ADF scanning and the flatbed scanning individually.

This is required when the image position has changed after replacing the CIS unit or after disassembling and assembling, or when performing the fine adjustment. Also, readjustment is required after replacing the control PCB, where the setting values are recorded.

◆ Description of the screen

Following indicates the corresponding part in the service screen.

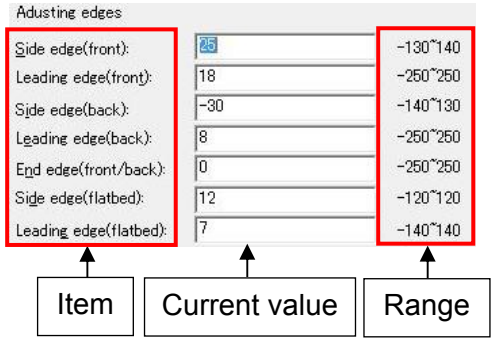


Figure 5-205

1) Item

Side edge (front)	ADF scanning
Leading edge (front)	
Side edge (back)	
Leading edge (back)	
End edge (front/back)	*Note
Side edge (flatbed)	Flatbed scanning
Leading edge (flatbed)	

Table 5-202

Note: "End edge (front/back)" is disabled on this machine. Do not use it in the market. The position of the image does not change even if the value is changed.

2) Current value
The current setting value is displayed. The initial value is set at the time of shipment from the factory. The unit is the length of 1 pixel at 1200 dpi, and it is calculated as 0.021 mm, making it approximately 2 mm when set to 100.

3) Range
The range that can be input is displayed.

◆ Changing the setting value

1) Procedure

i) Determine the item and the length to change from the scanned image.

ii) Move the cursor to the current value of the item to be changed and change to the value with the value to change added to the current value.
- Move the scan start forward
  → Minus value
- Move the scan start backward
  → Plus value

iii) [Apply] at the bottom of the screen becomes enabled. Select the button to set the value.

iv) Scan an image and confirm that the change was performed correctly after exiting the service tool.

2) Case of the ADF

i) Original image
The left edge of front is missing 2 mm.

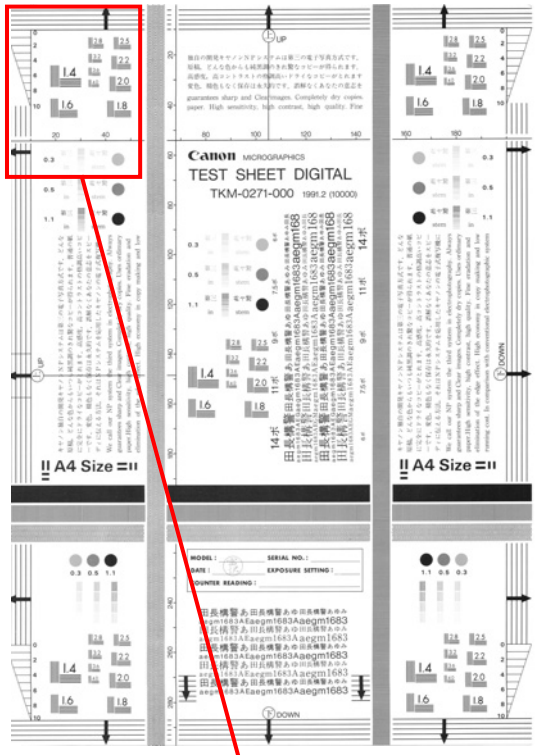


Figure 5-206

ii) Changing the value

Move the scan start for the side direction 2 mm forward. Subtract 100 from the current value [25] for the Side edges (front), and make it [-75].

Figure 5-207

iii) Setting the value

Select [Apply] at the bottom of the screen.

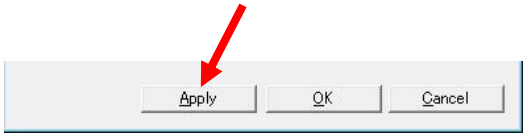


Figure 5-208

iv) Image after change

Enlarged view

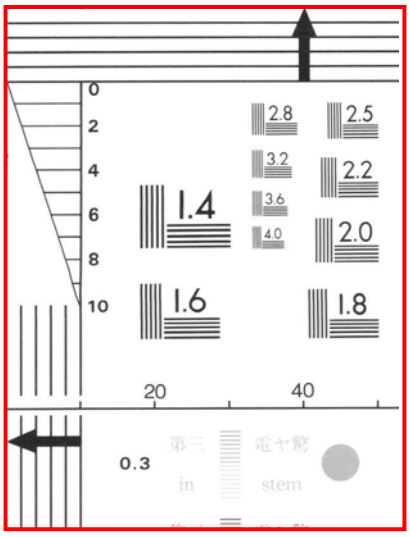
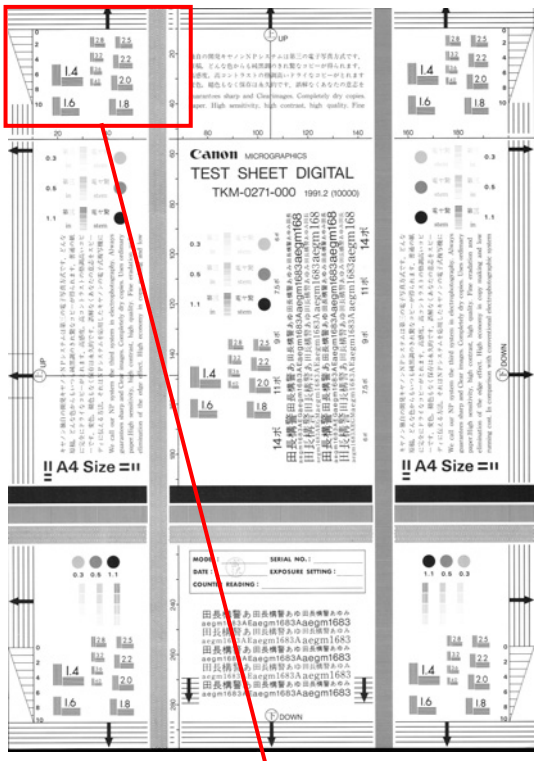


Figure 5-209

3) Case of the flatbed

i) Original image

The leading edge of the image is missing 2 mm.



Enlarged view

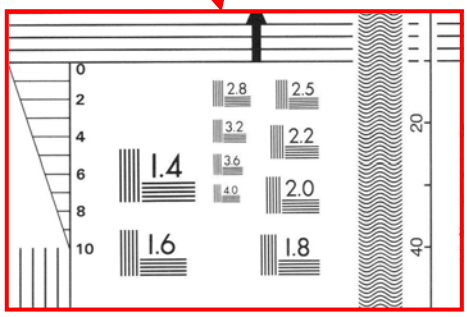


Figure 5-210

ii) Changing the value

Move the scan start for the feed direction 2 mm forward. Subtract 100 from the current value [7] for the Side edges (front), and make it [-93].

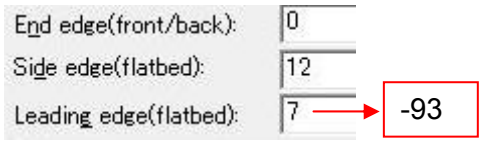


Figure 5-211

iii) Setting the value

Select [Apply] at the bottom of the screen.

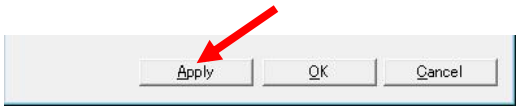


Figure 5-212

iv) Image after change

Enlarged view

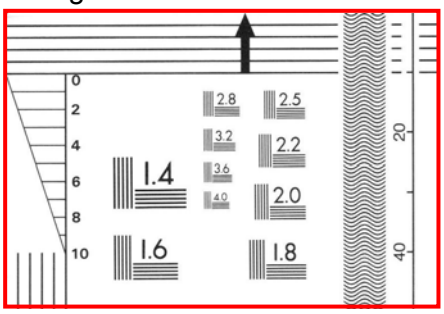


Figure 5-213

5. Level

This mode adjusts the density of the image scanned with the ADF scanning manually.

The adjustment of the image scanned with the flatbed scanning is not performed. This is because the scanning construction of each shading sheet data is different, and the density of the image scanned with the ADF scanning is easier to shift than the image scanned with the flatbed scanning.

Resetting is necessary when the CIS unit or the control PCB is replaced in the market. This is also used when the image position has changed after disassembly and assembly, or when fine adjustment is necessary.

◆ Description of the screen

Following indicates the corresponding part in the service screen.

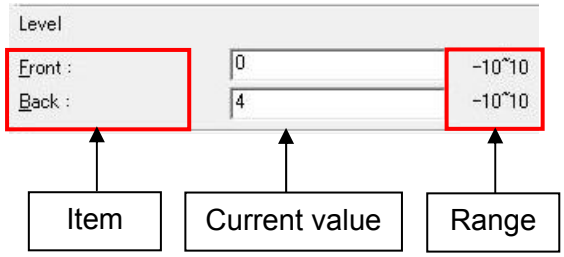


Figure 5-214

1) Item

Front	ADF scanning
Back	

Table 5-203

2) Current value

The current setting value is displayed. The initial value is set at the time of shipment from the factory. There is no unit,

and it is a level of a density.

3) Range
The range that can be input is displayed.

◆ Changing the setting value

1) Procedure

i) Determine the side to change (front or back) and either to darken or lighten from the scanned image.

ii) Move the cursor to the current value of the item to be changed and change to the value with the value to change added to the current value.
- To lighten → Plus value
- To darken → Minus value

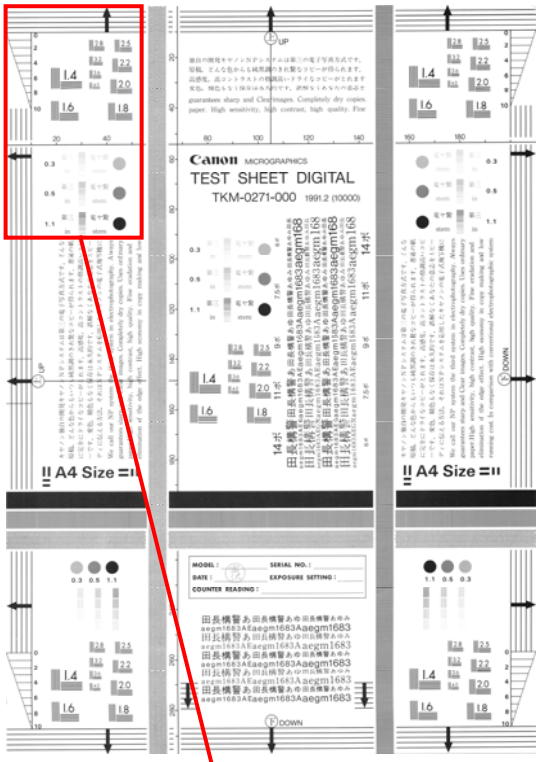
iii) [Apply] at the bottom of the screen becomes enabled. Select the button to set the value.

iv) Scan an image and confirm that the change was performed correctly after exiting the service tool.

v) Perform again if it is not correctly changed.

Note: The method to change and set the value is the same as the previous "4. Adjusting Edges".

2) Example



Setting value: 0 Setting value: 10 (lighten) Setting value: -10 (darken)

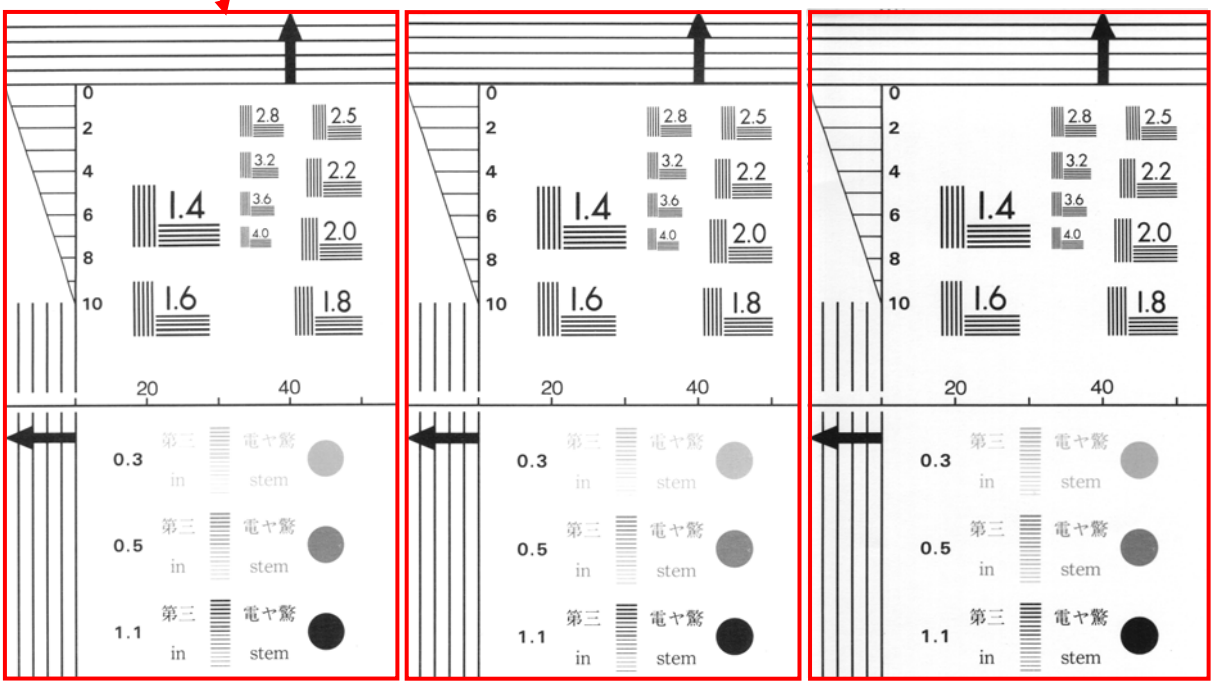


Figure 5-215

6. Firmware

This mode performs the display and change of the version number of the firmware.

◆ Description of the screen

Following indicates the corresponding part in the service screen.

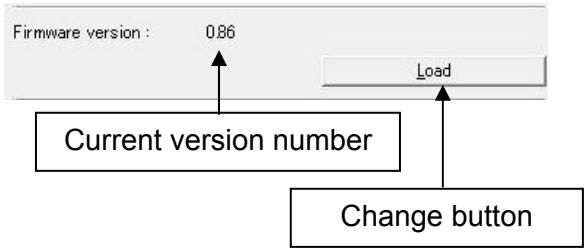


Figure 5-216

Figure 5-217

◆ Change procedure

1) Install the new firmware in the service computer in advance. The file extension is “brn”.
   For the content of the change, refer to the issued service information.
2) Select [Load] in the screen.
3) A screen to select the file is displayed.
4) Select the file for the firmware and open it.
5) The display of the service screen will gray out.
6) After the lower CIS unit has moved slightly, the service screen is displayed correctly. Confirm that the display of the “Firmware version” has correctly changed.
7) Select “OK” and exit the service tool.

7. Serial Number

This mode performs the display and change of the serial number.

The serial number of the main body is set at the time of factory shipment. Since that data is saved in the control PCB, it is necessary to set the data to match the display in the rating label of the main body when the control PCB is replaced.

◆ Description of the screen
Following indicates the corresponding part in the service screen.

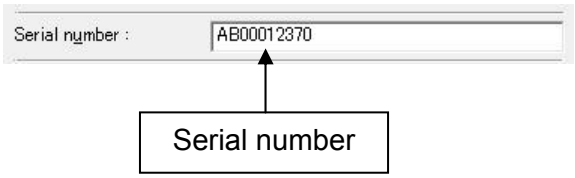


Figure 5-218

◆ Setting procedure

1) Move the cursor and enter the serial number of the main body.
2) [Apply] at the bottom of the screen becomes enabled. Select the button to set the value.

Note: The method to change and set the value is the same as the previous "4. Adjusting Edges".

8. Total Counter

This mode performs the display and clear of the total counter.

There are total of 3 counters, one for ADF scanning, one for flatbed scanning, and one for total of both. Since those data are saved in the control PCB, it is necessary to perform clear after replacing the control PCB.

◆ Description of the screen
Following indicates the corresponding part in the service screen.

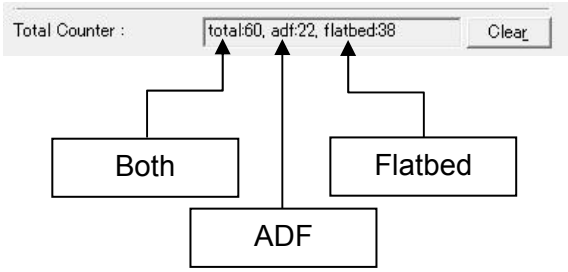


Figure 5-219

◆ Clear procedure

1) Select [Clear].
2) A confirmation screen is displayed, so select [Yes] to execute, or [No] to cancel.

Note: Do not execute erroneously.

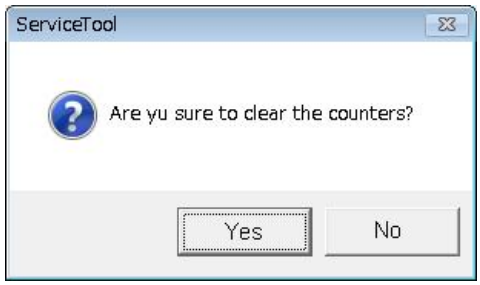


Figure 5-220

3) The values of the counters will be set to [0] when executed.

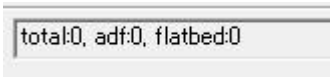


Figure 5-221

III. USER UTILITY

1. Driver Setting Screen

The About screen is displayed by selecting [About] in the [Basic] tab of the driver setting screen.

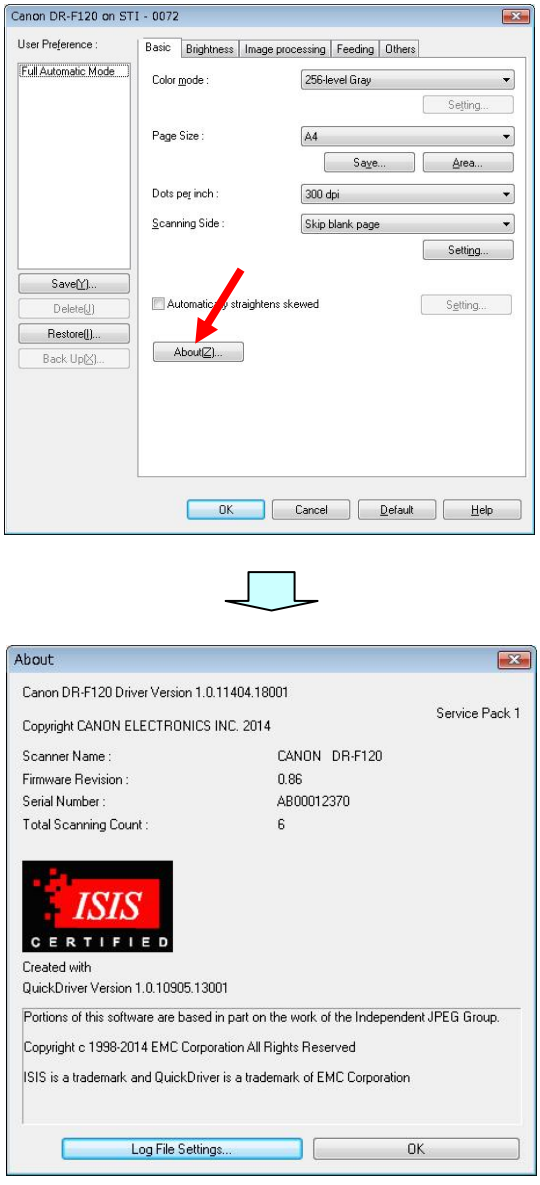


Figure 5-301

The following information can be obtained from this screen.

- Driver Version
- Firmware Revision (Version)
- Serial Number
- Total Scanning Count
  (ADF + Flatbed)

Also, it is possible to collect the usage status of the user as information to a file by selecting [Log File Settings].

For detail, refer to “Driver Help”.

2. Canon imageFORMULA Utility

The following items can be set from the Properties screen of the computer connected to this machine. For detail, refer to the User Manual.

- Current Roller Counts Reset
- Reduction Ratio
- Auto Power Off
- Long Document Mode

◆ Screen display procedure

1) Click the Start button, and then click [All Programs], [Canon DR-F120], and [Canon imageFORMULA Utility].
The following screen is displayed.

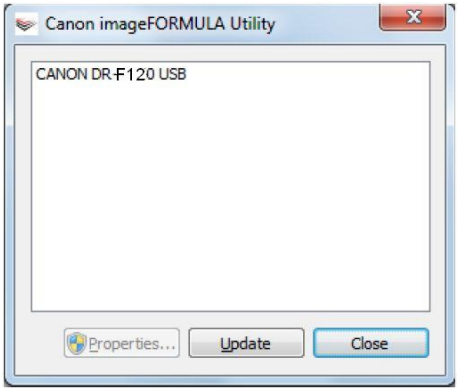


Figure 5-302

2) Click [Canon DR-F120 USB] and click [Properties].
The following screen is displayed.

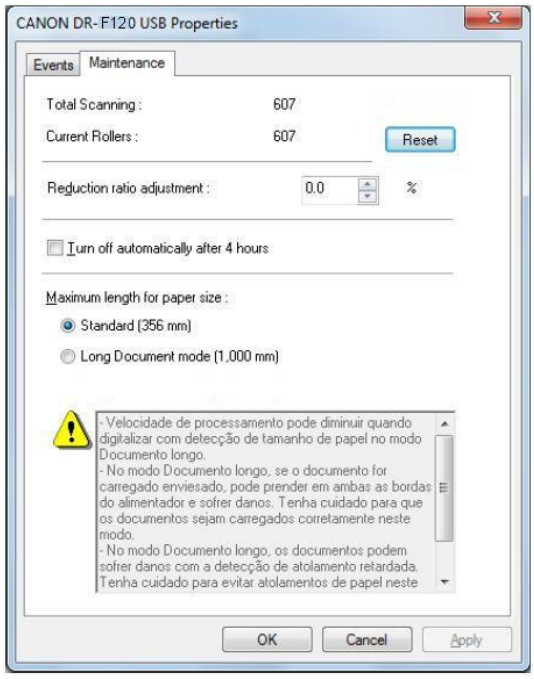


Figure 5-303

IV. TROUBLE LIST

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

1. Operation Troubles

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

No.	Cause / Trouble	System/ Software	Hard-ware	Connec-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	Jam/double feed/ skew.		X		X	X	

Table 5-401

2. Image Troubles

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

No.	Cause / Trouble	System/ Software	Hard-ware	Connec-tion	Dirt	Docu-ment	Setting
1	All black/All white.	X	X		X		X
2	Too dark/too light.				X		X
3	Black borders around image.					X	X
4	Image skews.					X	X
5	Spots and streaks on image.		X		X		
6	Wrong image size.		X			X	X

Table 5-402

V. OPERATION TROUBLESHOOTING

1. No Power

The power indicator does not light.

Make sure to use the AC adapter and Power cord supplied with the machine.

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.
Control PCB	5	Is the problem solved by replacing the control PCB?	YES	End.

Table 5-501

2. Not Recognized by Computer

Note: Install the driver in the computer before connecting this machine.

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.
USB cable	3	Is the problem solved by replacing the USB cable?	YES	End.
Control	4	Is the problem solved by replacing the control PCB?	YES	End.

Table 5-502

3. Scanning Does Not Start

When the power indicator flashes, scanning may not start.

Cause/Faulty location	Step	Check Item	Result	Action
System	1	Was the problem solved by resetting the power of this machine 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.
Sensors	5	Was the problem solved by replacing sensor?	YES	Done.
Control PCB	6	Was the problem solved by replacing the control PCB?	YES	Done.

Table 5-503

4. Slow Scanning Speed

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

Cause/Faulty location	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.
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 [Mini].

Table 5-504

5. Jam/Double Feed/Skew

Use the flatbed scanning, if document is not good for the ADF scanning.

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, Retard roller	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 them properly.

Table 5-505

VI. IMAGE TROUBLESHOOTING

◆Image Samples

Original	Normal (FB)	Normal (ADF)	All black	All white
Too dark	Too light	Black border	Skew →	Skew correction
Dirty glass (FB)	Dirty glass (ADF)	Dirty shading (FB)	Dirty shading (ADF)	(blank)
Good edges	Missing leading edge	Margin at leading edge	Stretched	Compressed

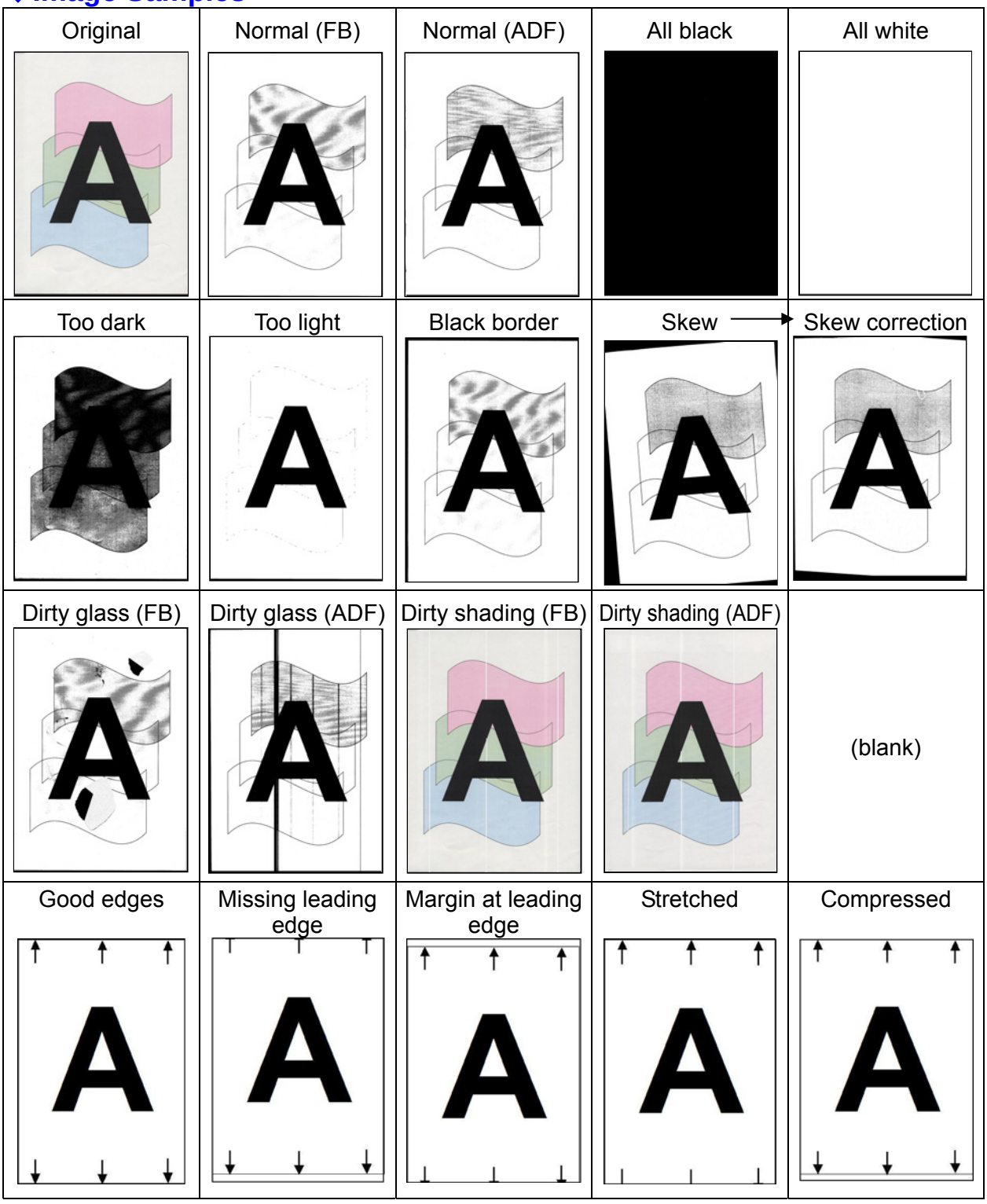


Figure 5-601

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

Scanned image is all black, all 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.
“Feeder/Flatbed” setting	2	Is the “Feeder / Flatbed” properly set? All black image results from selecting flatbed with no document set there.	NO	Change setting.
System	3	Is the problem solved by resetting the machine power and restarting the computer?	YES	End.
Reading unit	4	Is the connection of the cable correct?	NO	Connect it properly.
	5	Is the problem solved by replacing the reading unit?	YES	End.
Control PCB	6	Is the problem solved by replacing the control PCB?	YES	End.

Table 5-601

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 changed 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 5-602

3. Black Borders Around Image

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 5-603

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 “IV. OPERATION TROUBLESHOOTING 5. Jam/Double Feed/ Skew”.

Table 5-604

5. Spots and Streaks on Image

If the scanning 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 ADF scanning, spots on the feed system including the feed roller etc. appear on the document or those on the scanning 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 ADF 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 retard roller	1	Are the surfaces clean?	NO	Clean or replace the roller unit and/or the separation pad.
Feed path	2	Is the feed path clean?	NO	Clean.
Scanning glass	3	Are the scanning glasses clean? (for both flatbed and ADF scanning)	NO	Clean. Replace the flatbed top cover unit if scratches are found on the surface.
Shading sheet	4	Are the shading sheets clean?	NO	Clean.

Table 5-605

6. 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 location	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.
Adjusting Edges	4	Have you executed the adjusting edges in the service mode?	NO	Execute the adjustment.
Reduction ratio adjustment	5	Have you executed a reduction ratio adjustment in the user utility?	NO	Execute the adjustment.

Table 5-606

VII. AFTER REPLACING PARTS

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

You should check the feed and images after replacing parts or reassembling and reassembling the machine.

◆ Control PCB and CIS unit

After replacing the control PCB and CIS unit, execute the service mode. For detail, refer to “II. SERVICE MODE”.

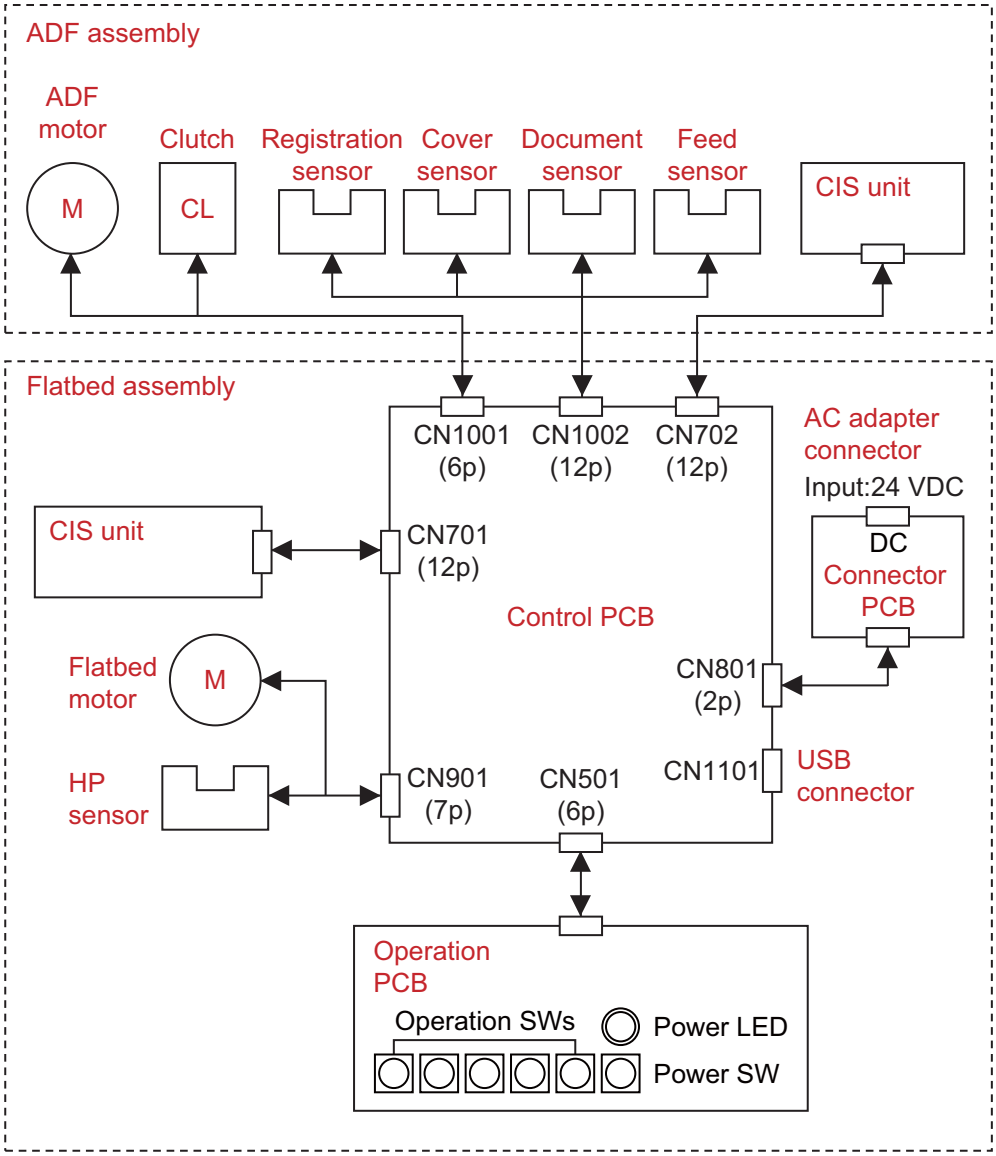
◆ Hinge

After replacing or reassembling the right and left hinges, the image position needs to be adjusted.

For details, refer to “Chapter 3, I-11. Left Hinge” and “I-12. Right Hinge”.

APPENDIX

I. ELECTRICAL BLOCK DIAGRAM



II. PARTS CATALOG

1. ADF Assembly

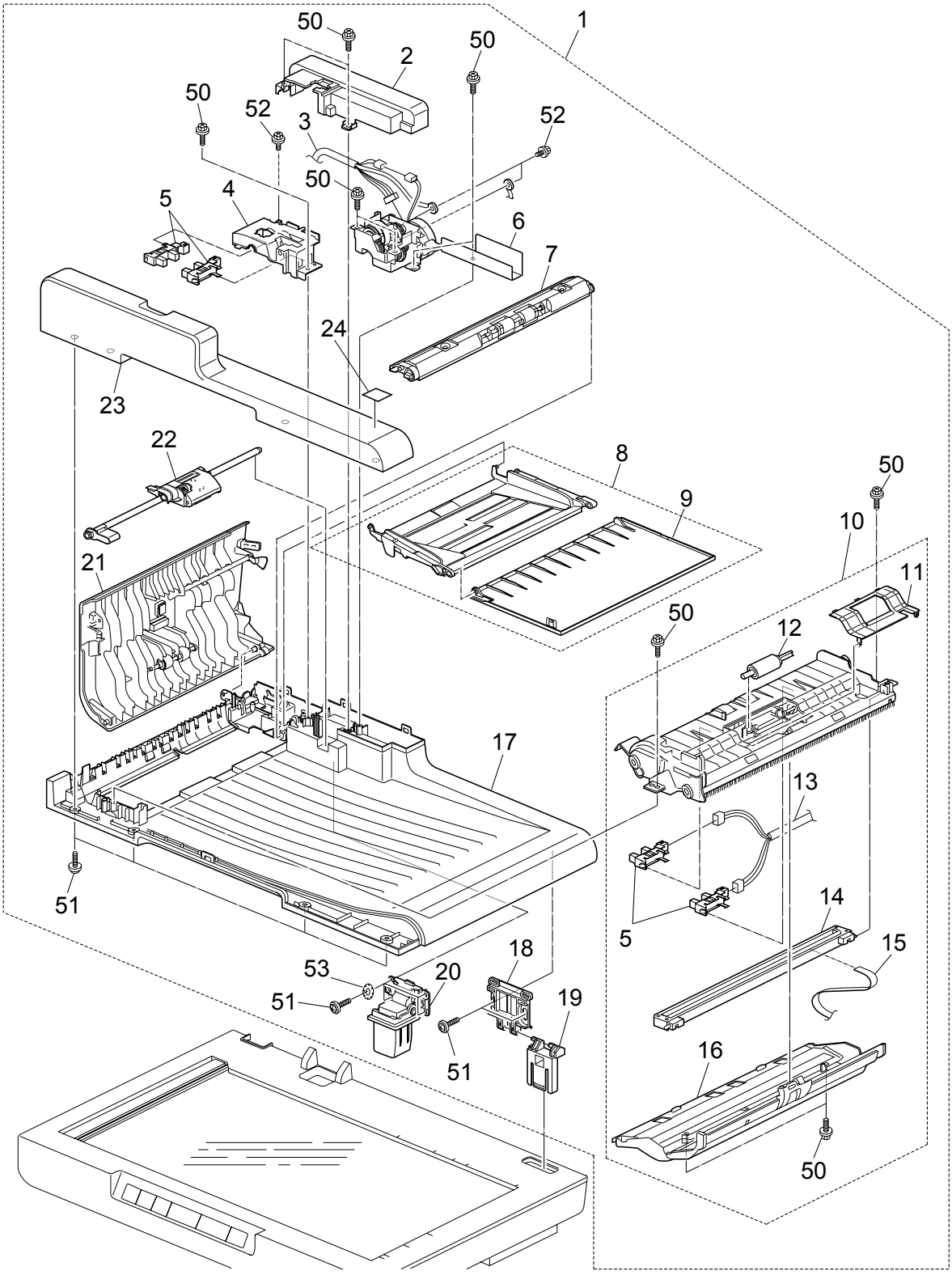


FIGURE & KEY NO.	PART NUMBER	RANK	Q'TY	DESCRIPTION	REMARKS
100- 1	MD1-0928-000	N	1	ADF ASSEMBLY	
2	MD2-3192-000	N	1	COVER, ADF REAR	
3	MD1-0937-000		1	CABLE ASSEMBLY, MOTOR-CLUTCH	
4	MD2-3208-000	N	1	COVER, MOTOR DRIVE	
5	MD9-0505-000		4	PHOTO INTERRUPTER	
6	MD1-0936-000		1	MOTOR DRIVE ASSEMBLY, CLUTCH	
7	MD1-0931-000	N	1	EJECT ASSEMBLY, W/ROLLER	
8	MD1-0940-000		1	TRAY ASSEMBLY, PICKUP	
9	MD2-3199-000		1	TRAY, EXTEND PICKUP	
10	MD1-0932-000		1	ADF FEED AND READING ASSEMBLY	
11	MD2-3207-000	N	1	COVER, SEPARATION ROLLER	
12	MD1-0934-000		1	SEPARATION ROLLER	
13	MD1-0935-000		1	CABLE ASSEMBLY, SENSOR	
14	MD8-0135-000		1	READING UNIT, CIS	
15	MD6-0246-000		1	CABLE, FFC, ADF	
16	MD1-0933-000	N	1	COVER ASSEMBLY, ADF LOWER	
17	MD1-0929-000		1	LID ASSEMBLY, W/BLACK PLATE	
18	MD2-3205-000		1	HINGE, RIGHT UPPER	
19	MD2-3206-000		1	HINGE, RIGHT LOWER	
20	MD1-0930-000		1	HINGE ASSEMBLY, LEFT	
21	MD1-0939-000		1	COVER ASSEMBLY, ADF TOP	
22	MD1-0938-000		1	PICKUP ROLLER ASSEMBLY	
23	MD2-3200-000		1	COVER, ADF FRONT	
24	MA2-8926-000	N	1	LABEL, ENERGY STAR BLACK	
50	MD2-3213-000		11	SCREW, TAPPING P, HEX M3x8	
51	MD2-3214-000		10	SCREW, TAPPING P, TP M3x10 B	
52	MD2-3216-000		3	SCREW, TAPPING RS, HEX M3x6	
53	XD1-4100-302		4	WASHER, OUTER TOOTH 3	

2. Flatbed Assembly

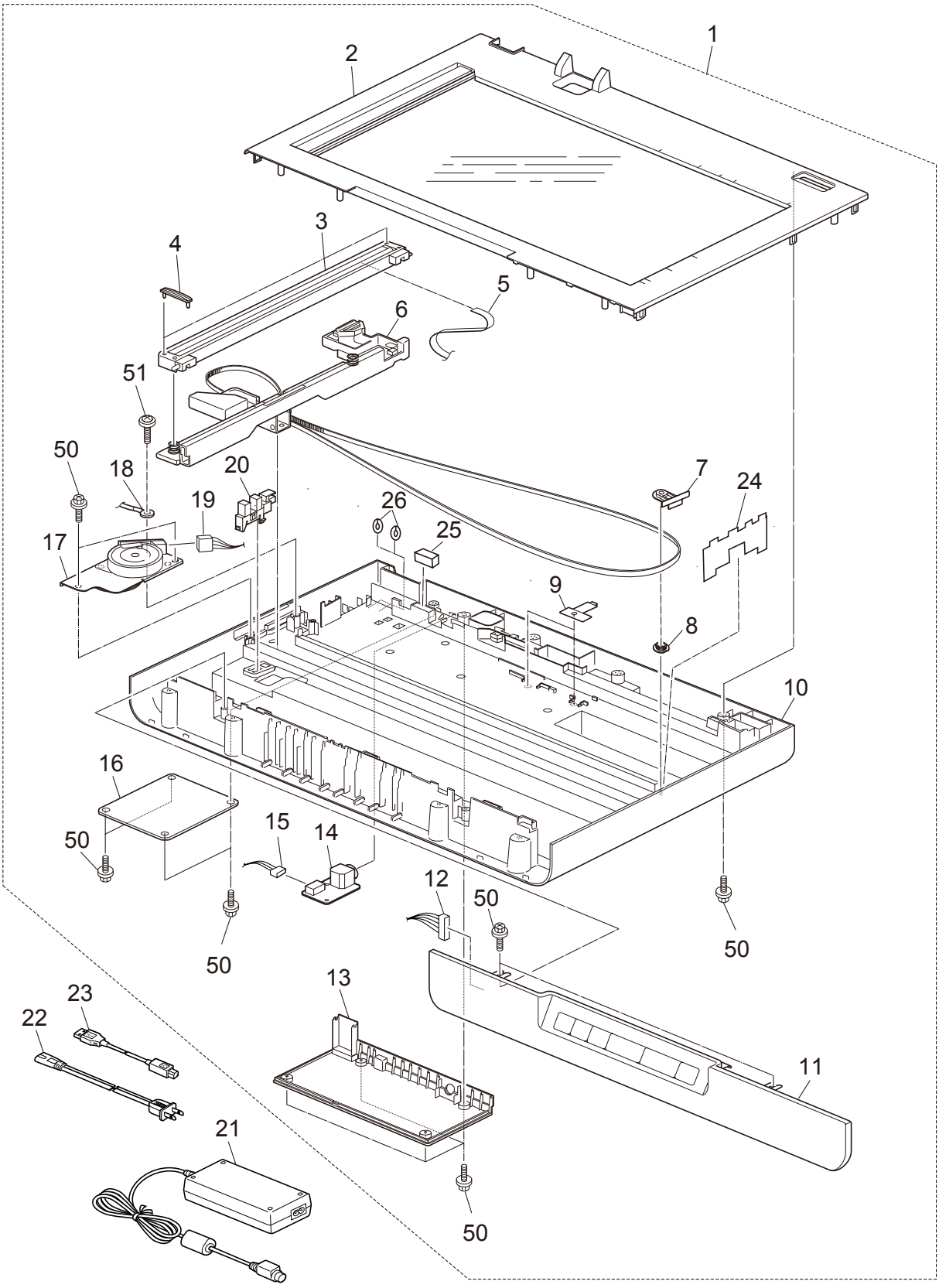


FIGURE & KEY NO.	PART NUMBER	RANK	Q'TY	DESCRIPTION	REMARKS
200- 1	MD1-0941-000	N	1	FLATBED ASSEMBLY	
2	MD4-0237-000		1	COVER ASSEMBLY, FLATBED TOP	
3	MD8-0136-000		1	READING UNIT, CIS FB	
4	MD2-3211-000		2	SLIDER, GLASS	
5	MD4-0247-000		1	CABLE, FFC FLATBED	
6	MD1-0946-000	N	1	BRACKET ASSEMBLY, FLATBED CIS	
7	MD2-3209-000	N	1	GUIDE, IDOLER PULLEY	
8	MD2-3210-000		1	PULLEY, IDOLER	
9	MD2-3204-000	N	2	STOPPER, FFC	
10	MD4-0236-000		1	COVER ASSEMBLY, FLATBED BOTTOM	
11	MD1-0943-000		1	COVER ASSEMBLY, OPERATION	
12	MD1-0948-000		1	CABLE ASSEMBLY, OPERATION	
13	MD2-3196-000		1	COVER, CONTROL PCB	
14	MD1-0945-000		1	PCB ASSEMBLY, DC CONNECTOR	
15	MD1-0949-000		1	CABLE ASSEMBLY, DC POWER	
16	MD1-0944-000		1	PCB ASSEMBLY, CONTROL	
17	MD1-0942-000		1	MOTOR ASSEMBLY, FLATBED	
18	MD1-0950-000		1	CABLE ASSEMBLY, FLATBED GROUND	
19	MD1-0947-000		1	CABLE ASSEMBLY, FLATBED MOTOR	
20	MD9-0505-000		1	PHOTO INTERRUPTER	
21	MG1-4558-000		1	ADAPTER, DC24V, AC100-240V	Excluding CN
	MG1-4892-000		1	ADAPTER, DC24V, AC CHINA	CN only
22	MD9-0506-000		1	CORD, POWER, 100V JPN	100V
	MD9-0507-000		1	CORD, POWER, 120V USA	120V
	MD9-0508-000		1	CORD, POWER, 220-240V EURO	220-240V, CME
	MD9-0509-000		1	CORD, POWER, 220-240V KR	KR
	MD9-0510-000		1	CORD, POWER, 220-240V CN	CN
	MD9-0511-000		1	CORD, POWER, 220-240V AUS	CA
23	MD9-0512-000		1	CABLE, USB	
24	MD2-3218-000	N	1	SUPPORT, PULLEY	
25	MD2-3217-000	N	1	GASKET, GROUNDING	
26	MD2-3219-000	N	2	STOPPER, CABLE	
50	MD2-3213-000		21	SCREW, TAPPING P, HEX M3x8	
51	MD2-3215-000		1	SCREW, W/WASHERS, PH M3x4	

3. Numerical Index

PART NUMBER	FIGURE & KEY NO.	Q'TY	PART NUMBER	FIGURE & KEY NO.	Q'TY
MA2-8926-000	100-24	1	MD2-3213-000	100-50	11
MD1-0928-000	100-01	1	↓	200-50	21
MD1-0929-000	100-17	1	MD2-3214-000	100-51	10
MD1-0930-000	100-20	1	MD2-3215-000	200-51	1
MD1-0931-000	100-07	1	MD2-3216-000	100-52	3
MD1-0932-000	100-10	1	MD2-3217-000	200-25	1
MD1-0933-000	100-16	1	MD2-3218-000	200-24	1
MD1-0934-000	100-12	1	MD2-3219-000	200-26	2
MD1-0935-000	100-13	1	MD4-0236-000	200-10	1
MD1-0936-000	100-06	1	MD4-0237-000	200-02	1
MD1-0937-000	100-03	1	MD4-0247-000	200-05	1
MD1-0938-000	100-22	1	MD6-0246-000	100-15	1
MD1-0939-000	100-21	1	MD8-0135-000	100-14	1
MD1-0940-000	100-08	1	MD8-0136-000	200-03	1
MD1-0941-000	200-01	1	MD9-0505-000	100-05	4
MD1-0942-000	200-17	1	↓	200-20	1
MD1-0943-000	200-11	1	MD9-0506-000	200-22	1
MD1-0944-000	200-16	1	MD9-0507-000	200-22	1
MD1-0945-000	200-14	1	MD9-0508-000	200-22	1
MD1-0946-000	200-06	1	MD9-0509-000	200-22	1
MD1-0947-000	200-19	1	MD9-0510-000	200-22	1
MD1-0948-000	200-12	1	MD9-0511-000	200-22	1
MD1-0949-000	200-15	1	MD9-0512-000	200-23	1
MD1-0950-000	200-18	1			
MD2-3192-000	100-02	1	MG1-4558-000	200-21	1
MD2-3196-000	200-13	1	MG1-4892-000	200-21	1
MD2-3199-000	100-09	1			
MD2-3200-000	100-23	1	XD1-4100-302	100-53	4
MD2-3204-000	200-09	2			
MD2-3205-000	100-18	1			
MD2-3206-000	100-19	1			
MD2-3207-000	100-11	1			
MD2-3208-000	100-04	1			
MD2-3209-000	200-07	1			
MD2-3210-000	200-08	1			
MD2-3211-000	200-04	2			

Prepared by

Quality Assurance Center
Canon Electronics Inc.

3-17-10 Shibakoen, Minato-ku
Tokyo 105-0011, Japan

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Canon