

CR-190i

SERVICE MANUAL

FIRST EDITION

Canon

MAY 2010

MY8-13AM-000

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

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

Contents

Chapter 1: General Description

Product specifications, name of parts, operation method

Chapter 2: Functions and Operation

Description of operation of machine system and electrical system by function

Chapter 3: Disassembly and Reassembly

Disassembly method, reassembly method

Chapter 4: Installation and Maintenance

Installation method, maintenance method

Chapter 5: Troubleshooting

Service mode and troubleshooting

Appendix: General diagram etc.

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

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

Quality Assurance Center
Canon Electronics Inc.

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CHAPTER 1

GENERAL DESCRIPTION

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I. PRODUCT OUTLINE

1. Features

- 1) Succeeding model of the CR-180/II
- 2) High speed reading
190 sheets
(Personal check, Double-side, FTF, 200 dpi, Auto-size detection, and Sorting)
However, it may differ depending on the specification of the computer and others.
- 3) Improved recognition rate of MICR
Accuracy of Magnetic reading is improved, and MICR recognition by OCR is added.
- 4) Improved image quality
It is better image by the FTF that improved conventional ATE.
- 5) Improved imprinter
Canon 4lines ink cartridge is used for the imprinter. (Black ink only)
- 6) Improved mechanical items
Document alignment by the jogger
The separation roller gap adjustment

“Windows” is a trademark of Microsoft Corporation in the U.S. and other countries.
Other company names and product names mentioned in this document are registered trademarks or trademarks of the respective companies.

2. Main Specifications

No.	Item	Specifications
Appearance / Installation		
1	Type	Desktop type sheet-fed scanner (for check)
2	Dimensions	Tray closed: 476 (W) × 272(D) × 213.5 (H) mm
3	Weight	8.2 kg (Main body only)
4	Power supply	1) 120 V model: 120 VAC, 60 Hz 2) 220-240 V model: 220-240 VAC, 50/60 Hz
5	External interface	USB 2.0 (Hi-speed)
6	Expected product life (In-house information only)	One of the following two items, whichever comes first. 1) 5 years 2) 24,000,000 sheets (personal check) * There are parts need to be replaced.
7	Installation	By Service technician
8	Consumable parts (Commercial goods)	1) Pickup roller/Feed roller/Separation roller *Expected life 1,000,000 sheets 2) Ink cartridge 3) Ink disposal tank * All above can be replaced by user.
Document reading/Out putting		
9	Sensor type, Density	1 line-CMOS image sensor, 1200 dpi
10	Effective elements	5100 pixels/line, 108 mm
11	Light source	3-color (RGB) LED, Double-side illumination
12	Background color	White
13	Max. reading dimensions	108 × 245 mm
14	Output mode	1) Binary (Black and White, Error diffusion, FTF) *FTF=Fine Text Filtering 2) Gray (8-bit, 4-bit) * Output from the main body is 8-bit gray only, other modes are converted by the driver.
15	Output resolution	100 × 100 dpi, 120 × 120 dpi, 150 × 150 dpi, 200 × 200 dpi, 240 × 240 dpi, 300 × 300 dpi * Outputs from the main body are 200 × 200 and 300 × 300 dpi only, other resolutions are converted by the driver.
16	Reading speed	Double-side, FTF, 200 dpi, Auto-size detection and Sorting.
		Person check Business check Mixed
		190 cpm 140 cpm 155 cpm
* The numbers above may differ depending on the computer, the function settings and other conditions.		
17	MICR reading	E13B, CMC7 available (by magnetic head) * This machine has an assistance function by imaging OCR.

Table 1-101a

No.	Item	Specifications
Document feeding		
18	Document feed path	M shape U-turn path with check's bottom side being based.
19	Document size	1) Width: 68 to 108 mm 2) Length: 120 to 245 mm
20	Document weight (thickness)	1) Separation: 64 to 157 g/m ² (0.08 to 0.2 mm) 2) Non-separation: 64 to 413 g/m ² (0.08 to 0.5 mm) * Document of 157 g/m ² (0.2 mm) over means only the envelope. And its image quality, MICR recognition rate and others are not guaranteed.
21	Document storage	1) Pickup: 250 sheets max. and 25 mm height max. 2) Eject pocket 1: 200 sheets max. and 20 mm height max. 3) Eject pocket 2: 200 sheets max. and 20 mm height max. 4) Eject pocket 3: 50 sheets max. and 5 mm height max. * Height above is including any curls.
22	Double feed detection	Provided (ultra-sonic sensor)
23	Pocket full detection	Provided
24	Pocket empty detection	Provided
25	Separation OFF button	Provided (button)
26	Separation roller gap adjustment dial	Provided (with cover and marking)
27	Jogger	Provided
Others		
28	Operation panel	1) Indicator: Power LED, Function LED 2) Button: START, STOP, F (function), JOG
29	Imprinter	1) Numbers of character in line: 48 characters max. 2) Numbers of line: 4 lines max. 3) Bitmap print: Available 4) Color of ink: Black
30	Bundle software	Canon Driver, Scanning Utility, Ranger

Table 1-101b

◆ External dimensions

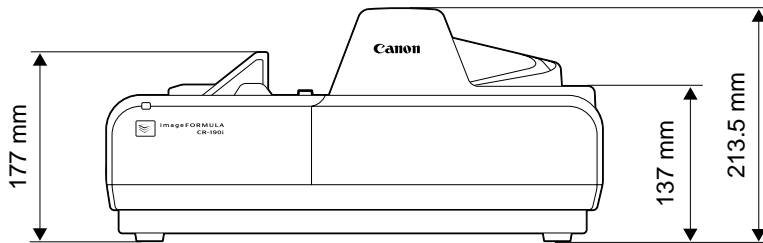
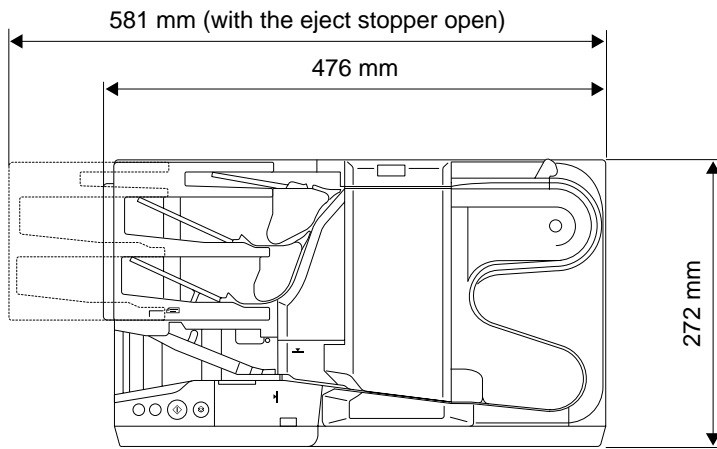


Figure 1-101

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.

7) Cardiac Pacemaker Users

This product emits magnetic flux. If you use a cardiac pacemaker and feel abnormalities, please be away from this product and consult your doctor.

A magnetic head is installed in this product and a permanent magnet installed near the magnetic head. In addition, a permanent magnet is installed on the external cover (back area cover).

II. NAME OF PARTS

1. Front View

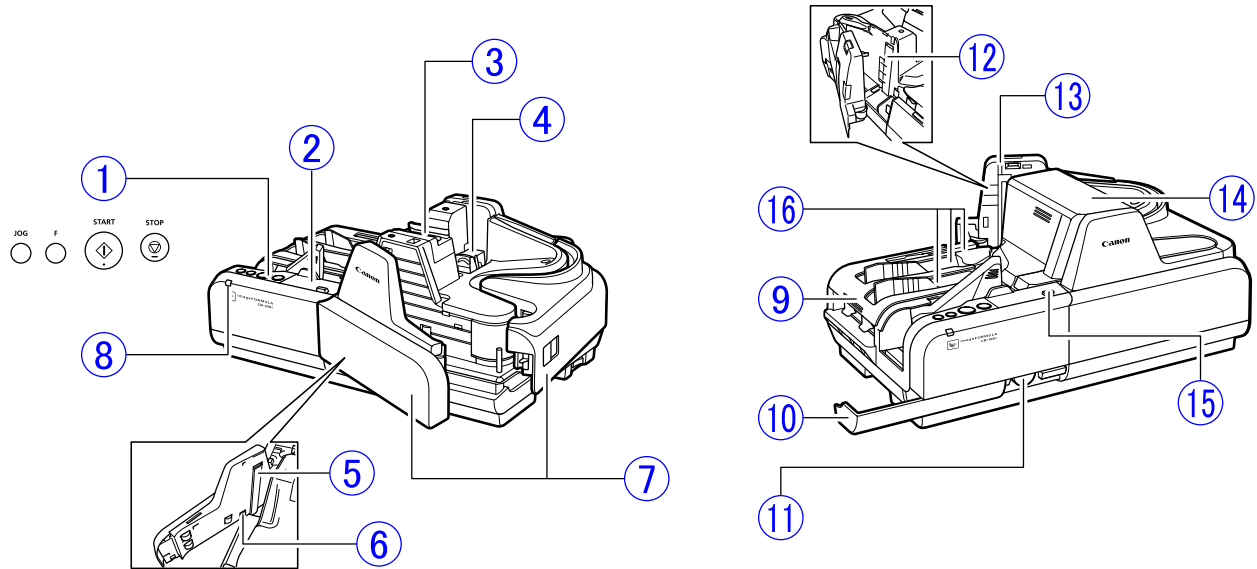


Figure 1-201

- | | |
|--------------------------------|------------------------------|
| ① Operation Buttons | ⑨ Eject Stopper |
| ② Roller Cover | ⑩ Adjustment Dial Cover |
| ③ Built-in Nozzle Cleaning Pad | ⑪ Adjustment Dial |
| ④ Ink Cartridge | ⑫ Scanner Unit (Back)→Note |
| ⑤ Scanner Unit (Front)→Note | ⑬ Back Maintenance Cover |
| ⑥ Magnetic Head for MICR | ⑭ Top Cover |
| ⑦ Front Maintenance Cover | ⑮ Separation OFF Mode Button |
| ⑧ Power LED | ⑯ Eject Pocket |

Note:The scanner unit is referred to as a reading unit in Chapter 2 and later chapters of this document.

2. Rear View

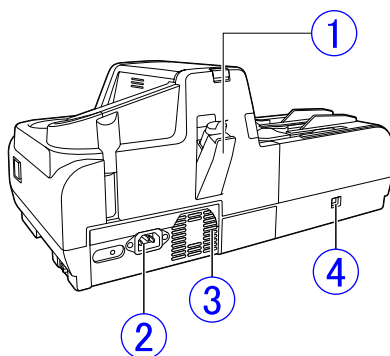


Figure 1-202

- | |
|------------------------|
| ① Ink Absorber Pocket |
| ② Power Cord Connector |
| ③ Air Vent |
| ④ USB 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. Basic Scanning Procedure

- 1) Connect the scanner to a computer.
- 2) Turn ON the power.
- 3) Place the document in the scanner.

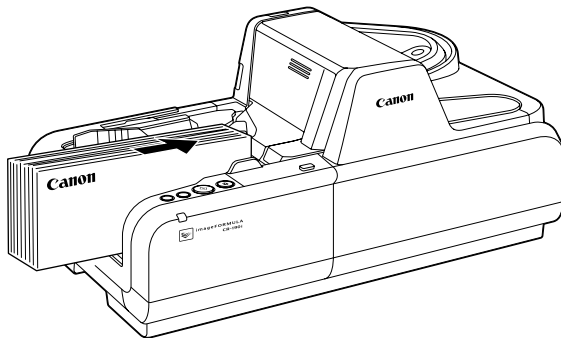


Figure 1-301

- 4) If the document is not aligned, press the JOG Button.

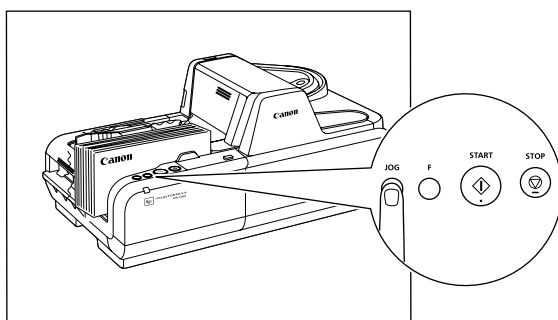


Figure 1-302

- 5) Adjust the Eject Stopper in accordance with the document.
- 6) Set the scanning conditions.
- 7) Scanning Starts.

2. Paper Jam Handling

- 1) Remove scanned documents from the Eject Pockets.
- 2) Pull the Open Button, and pull the Front Maintenance Cover open to the right and left.

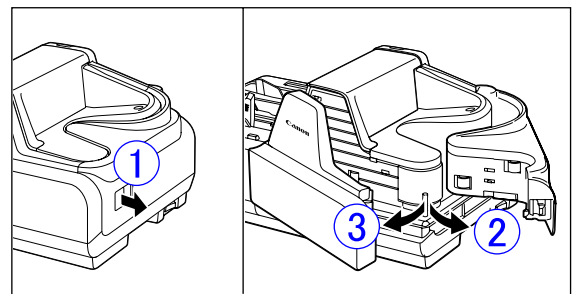


Figure 1-303

- 3) Press the Open Button, and push the Back Maintenance Cover open to the back.

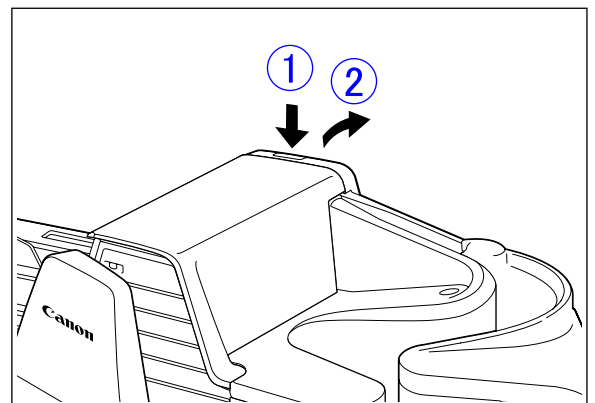


Figure 1-304

- 4) Remove the paper that has jammed.

CHAPTER 2

FUNCTIONS & OPERATION

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IV. CONTROL SYSTEM.....	2-14	VII. PARTS LAYOUT ON EACH PCB.....	2-22

I. OUTLINE

1. Main Configuration

Figure 2-101 shows the main configuration of this machine.

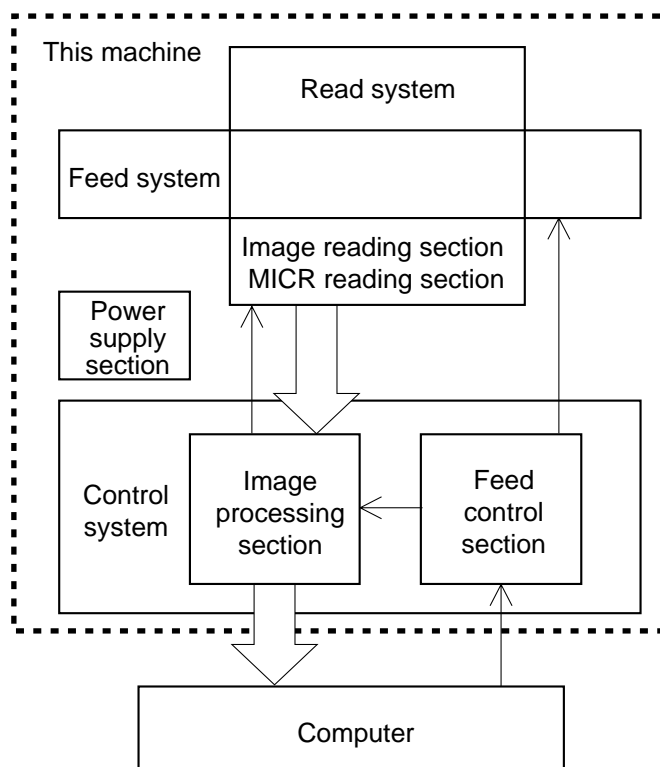


Figure 2-101

1) Reading system

This system is comprised of an image reading section that reads image data from reading unit, and a MICR reading section that reads MICR characters from a magnetic head.

The image processing section controls the reading system, and processes the read image data. The computer also processes image data.

The feed control section controls the feed system.

2) Feed system

This system performs from document pickup to document ejection.

4) Power supply section

The power supply section converts the AC power supplied from external into the DC power and supplies it to the internal PCB.

3) Control system

This system is comprised of an image processing section and a feed control section.

2. Feed Path

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

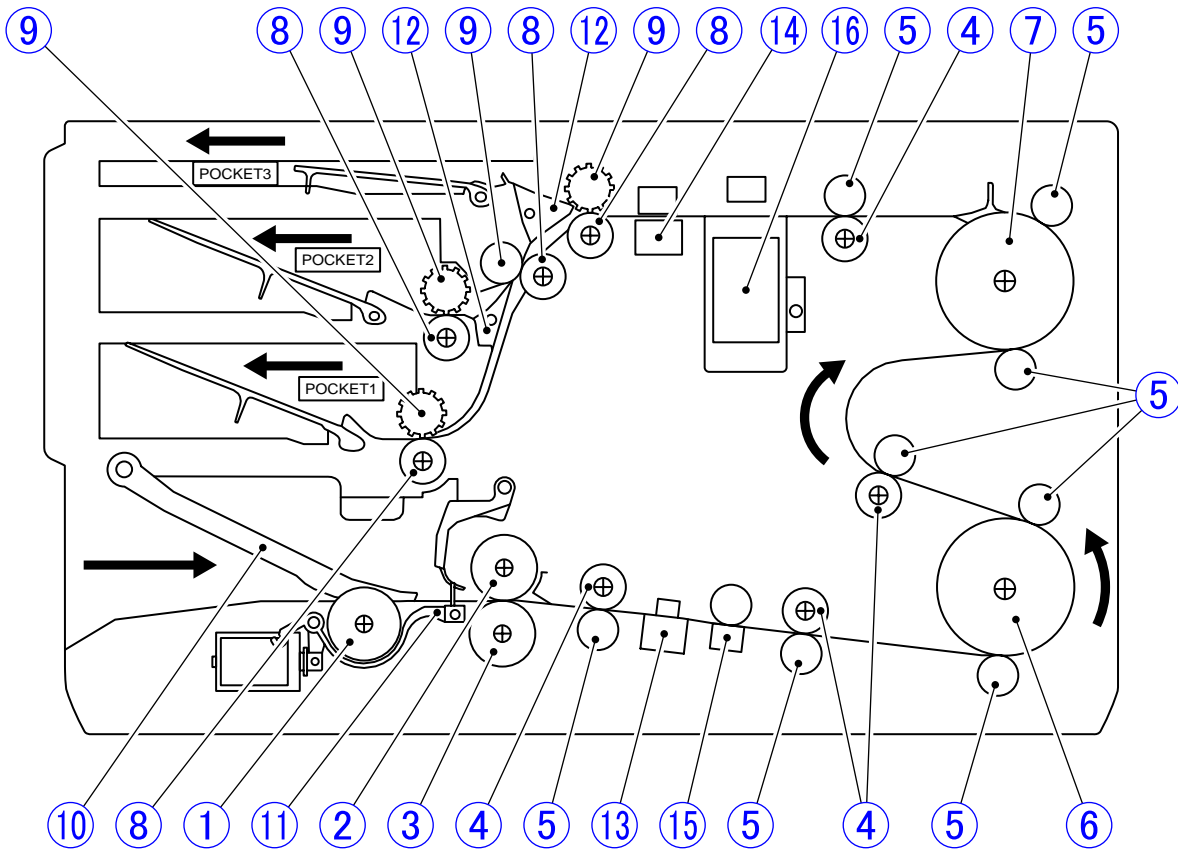


Figure 2-102

- | | |
|-----------------------------|---------------------------|
| ① Pickup roller | ⑨ Follower roller (Eject) |
| ② Separation roller | ⑩ Document presser |
| ③ Feed roller | ⑪ Pickup shutter |
| ④ Drive roller (Feed) | ⑫ Flapper |
| ⑤ Follower roller (Feed) | ⑬ Reading unit (Front) |
| ⑥ Large roller (Front area) | ⑭ Reading unit (Back) |
| ⑦ Large roller (Back area) | ⑮ Magnetic head |
| ⑧ Drive roller (Eject) | ⑯ Imprinter |

3. Motor Drive

This machine has 2 motors for feeding documents. It also has the motors for jogger and pick-up.

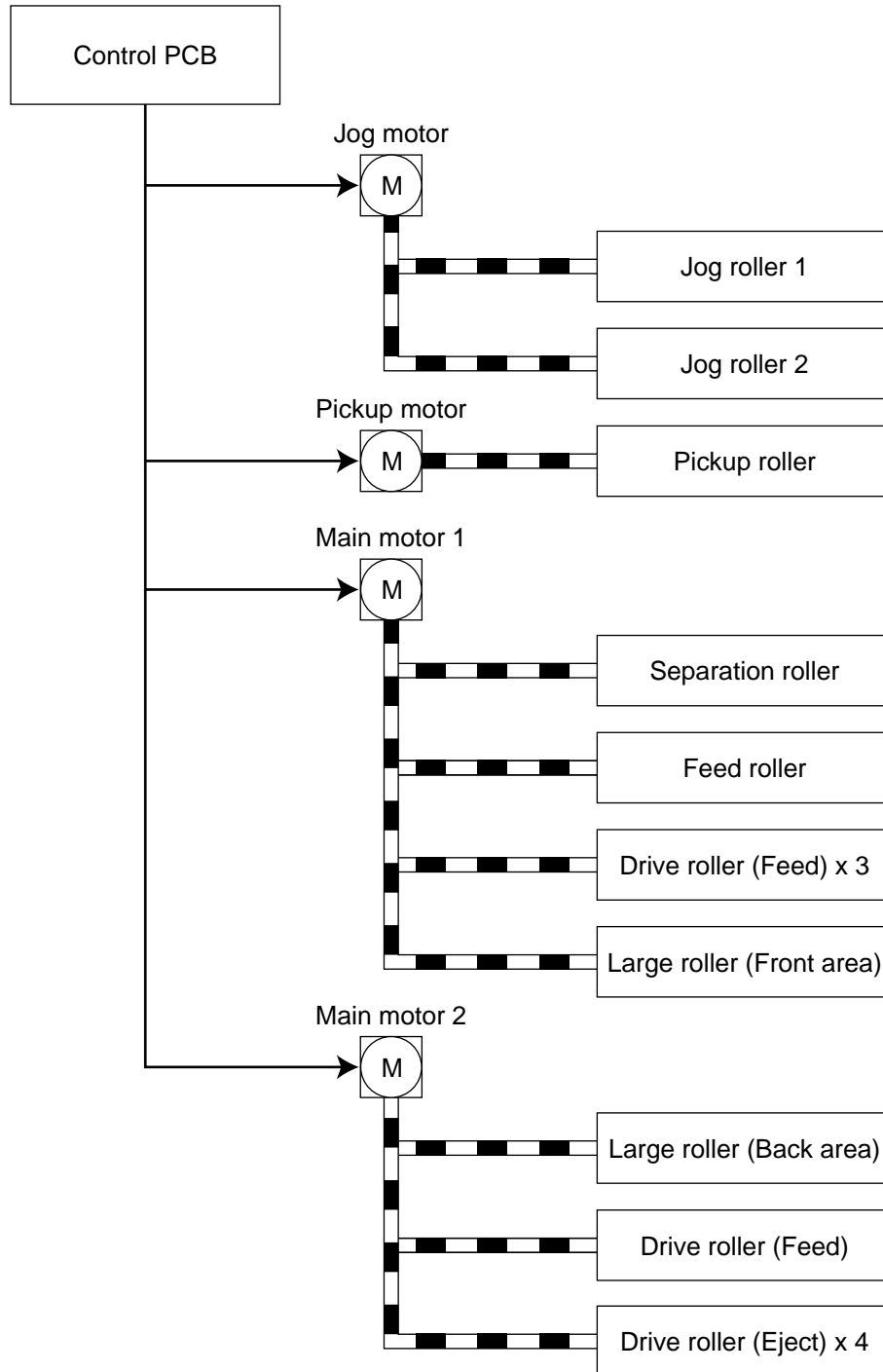


Figure 2-103

4. Electrical Circuits

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

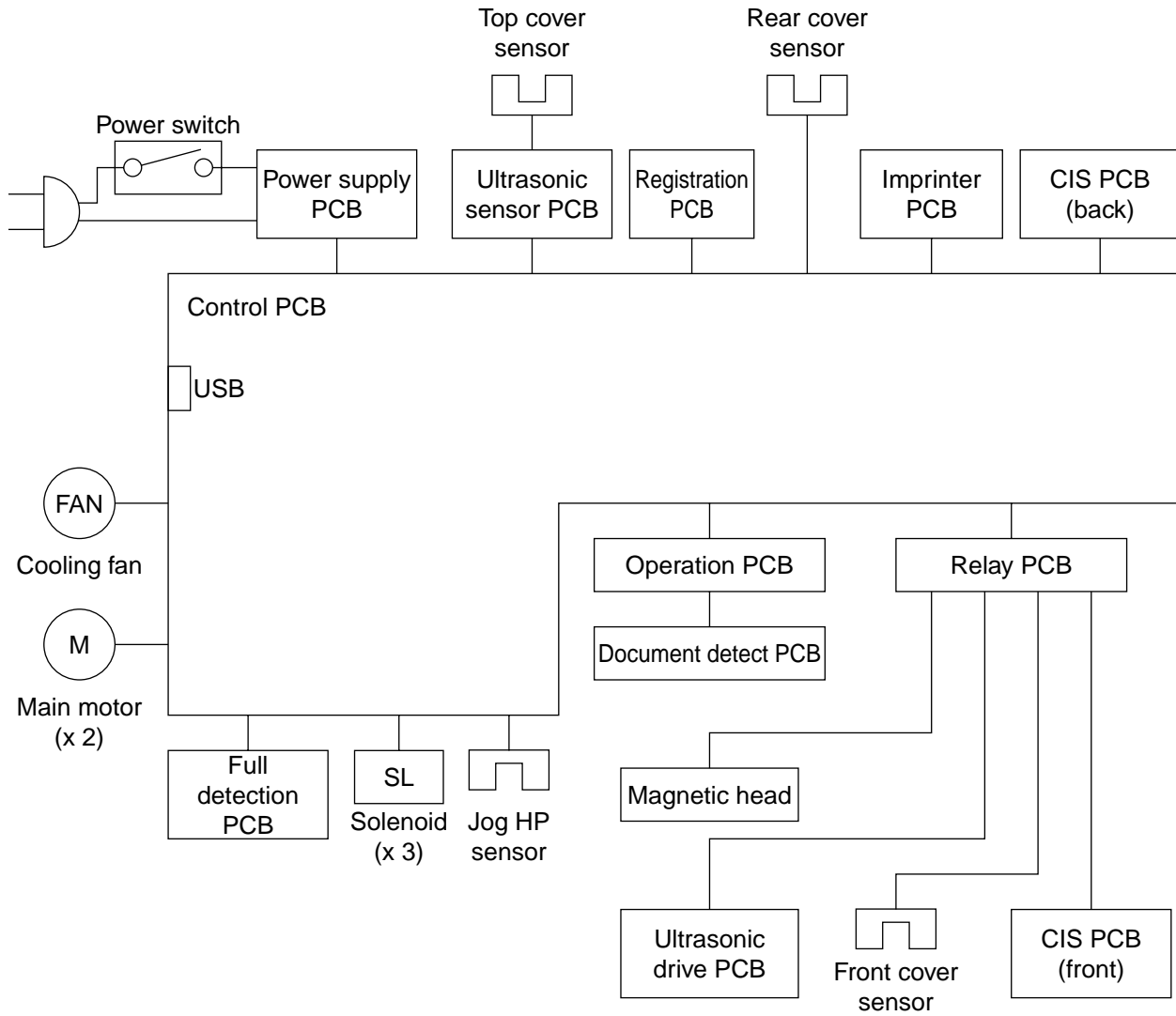


Figure 2-104

5. Timing Chart

The basic timing chart when the power is turned ON and 2 checks are scanned is shown below.

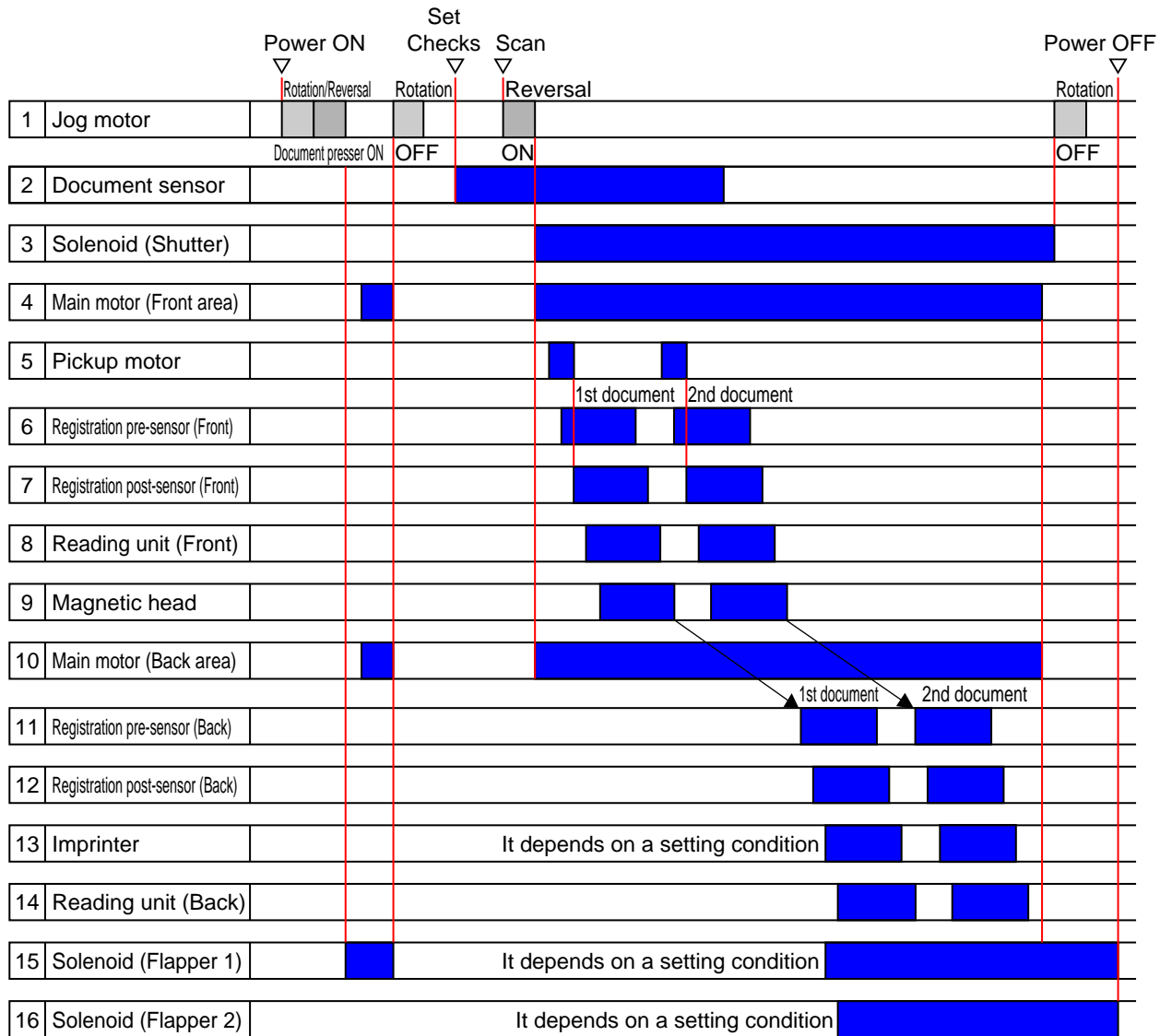


Figure 2-105

II. READING SYSTEM

1. Image Reading

This machine reads images with two reading units. The unit on the pickup section side reads the front side and the unit on the eject section side reads the back side. Both the units have the same configuration, but differ in some dimensions.

A platen unit is installed opposite the units. The platen unit has a function to press a document against the reading unit and make the background color white.

A sectional view of the reading unit and the platen roller is shown below.

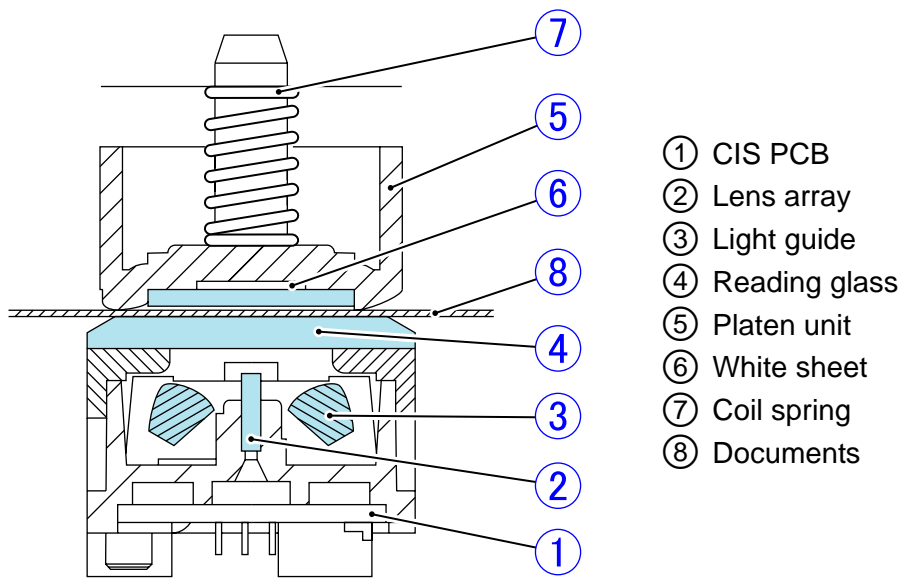


Figure 2-201

The reading unit consists of a CIS PCB, a lens array, LEDs (R/G/B), a light guide, a case and a cover including reading glass.

The CIS PCB has a line of light-receiving elements having an optical resolution of 1200 dpi. This light-receiving element is a CMOS image sensor and the effective length is 108 mm and the number of effective picture elements is 5100. However, the actual output resolution is 300 dpi or 200 dpi.

In the binary or grayscale modes, In the binary and grayscale modes, the R and G (2 colors) LEDs light. Only 2 colors are used

because in case of the scanner for check, the pattern of the background is not important. In the color dropout mode, only the LED of a designated color lights. In the color emphasis mode, the LED of a color other than a designated color lights.

Analog data of the image sensor is divided into 3 parts and output to the control PCB to prevent slowdown in transfer.

The lights from the LEDs illuminate the document through the light guides and the reading glass. The lights reflected from the document enter the image sensors through the lens arrays. The image sensors convert

the lights to analog signals.

In the platen unit, a white sheet is installed under the glass. This makes the background color white. The white sheet does not get dirty because it is protected by the glass.

This machine does not obtain a shading correction value during normal operation. This prevents troubles caused by a dirty shading sheet. The shading correction value is obtained in the factory before shipping. A service technician obtains it in the field using a dedicated shading sheet.

2. MICR Reading

Figure 2-202 shows a sectional view of the MICR reading section.

Magnets are located in front of the magnetic head, and there is a document presser roller opposite the magnetic head.

The magnet magnetizes the MICR characters, causing the formation of an N pole at the right of each character. When the

magnetized MICR characters pass by the magnetic head, a voltage waveform is produced at the magnetic head. This analog waveform is output to the control PCB, identifies characters from the characteristics, and outputs the corresponding character code.

Figure 2-203 shows a typical voltage waveform of the magnetic head.

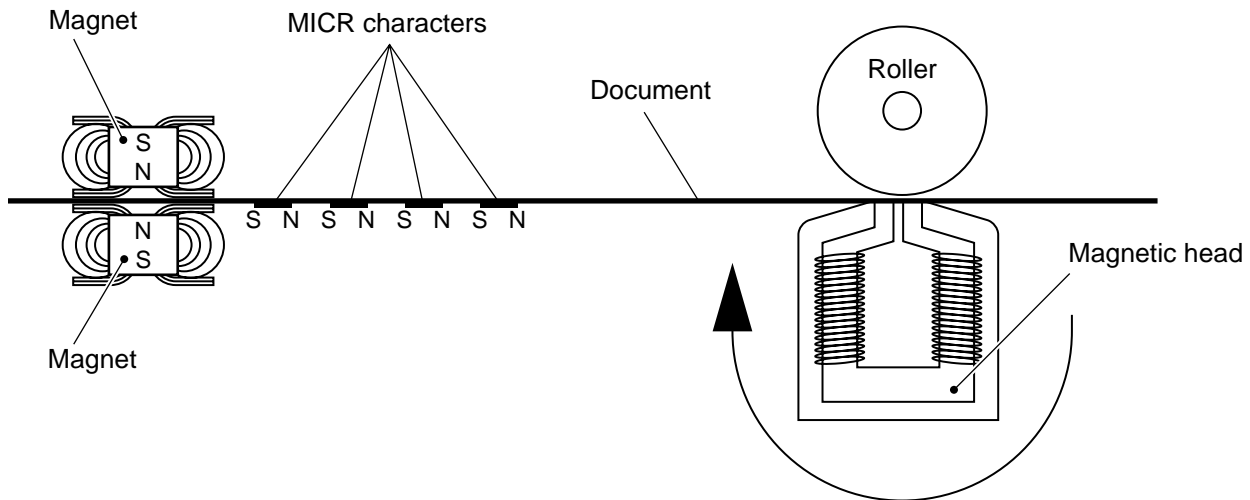


Figure 2-202

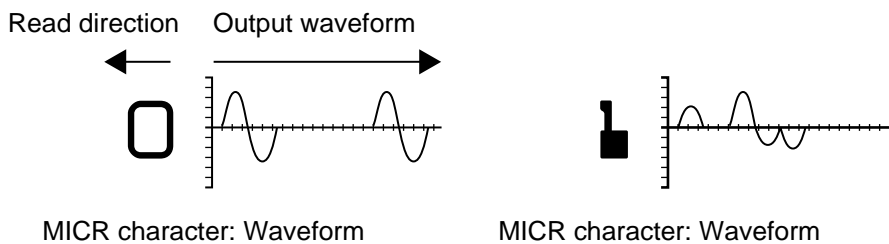


Figure 2-203

Compared with the conventional CR-180II, this machine improves the MICR recognition rate. First, the method of identifying characters from MICR data read by the magnetic head has been improved. The MOCR function that processes the result of OCR processing at the MICR section from image data and the result with the magnetic head has been added. The MOCR supports

both fonts of E13B and CMC7 and is always valid during MICR recognition.

III. FEED SYSTEM

1. Outline

Figure 2-301 shows the sectional view of the feed system.

This machine being designed for feeding documents such as checks, personal

checks, and promissory notes, documents are fed upright so that their bottom edge, which serves as the reference for MICR reading, is in contact with the feed plane.

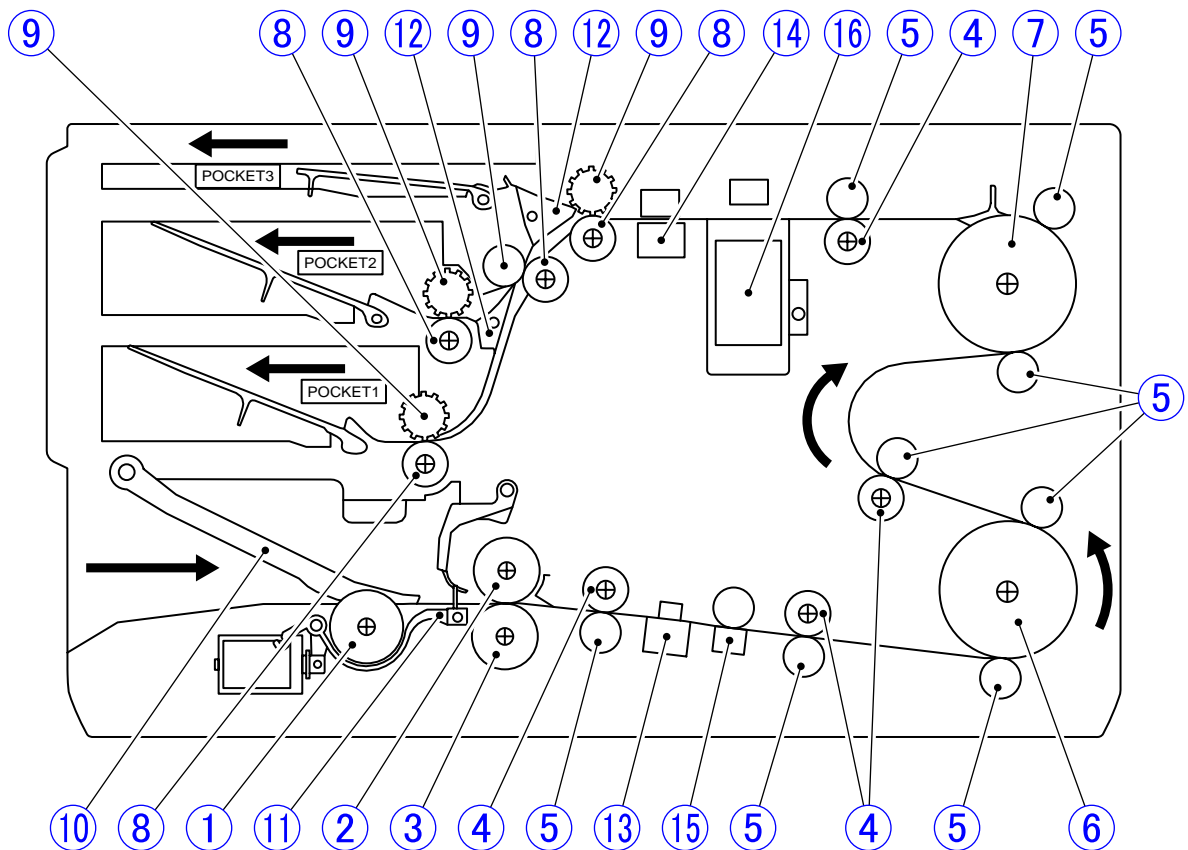


Figure 2-301

- | | |
|-----------------------------|---------------------------|
| ① Pickup roller | ⑨ Follower roller (Eject) |
| ② Separation roller | ⑩ Document presser |
| ③ Feed roller | ⑪ Pickup shutter |
| ④ Drive roller (Feed) | ⑫ Flapper |
| ⑤ Follower roller (Feed) | ⑬ Reading unit (Front) |
| ⑥ Large roller (Front area) | ⑭ Reading unit (Back) |
| ⑦ Large roller (Back area) | ⑮ Magnetic head |
| ⑧ Drive roller (Eject) | ⑯ Imprinter |

This machine has four motors to drive the feed system. They are used for the jogger, for the pickup roller, for the front area feeding and for the back area feeding including ejection. In addition, a total of three solenoids are used in the feed system: one for a pickup shutter and two for two flappers.

This machine comes with a jogger mechanism for lining up documents in the document setting section.

When scan start is selected, the pickup shutter opens and the pickup roller picks up a document.

The document passes through the separation roller and feed roller, and then passes through the reading unit for the front side, the magnetic head for MICR reading, the large roller for front area, the M-shaped feed path, the large roller for the back area, the imprinter and the reading unit for the back side.

The front area and back area of the feed path are driven by independent motors. Since two documents can be fed and stopped individually, the next document can be picked up before sorting the previous document.

This machine has three eject pockets. The document is delivered into each eject pocket according to the setting during scanning. The two flappers are driven by solenoids.

Read timing and faulty document feed detection sensors are also provided along the feed path. In addition, a sensor is provided in the eject pocket section to detect the number of documents in the eject pocket.

This machine has an improved feed system to perform faster scanning than the conventional CR-180II.

In particular, to implement pocket sorting while keeping high-speed scanning, processing time is necessary for the software to give a sorting instruction during feeding. This machine can finish scanning without returning the document during pocket sorting as previously by using a unique method of arranging and driving the feed system. Some improvements are shown below.

- 1) An M-shaped feed path is provided.
This lengthens the distance from the MICR reading point to the dead point where the sorting instruction is determined.
- 2) The reading unit for the front side is located in front of the magnetic head.
Since front side image data is read at almost the same time as MICR data, a sorting instruction can be given more quickly according to OCR results by the application software.

In addition, changes made according to MICR data can be printed on the target document itself using the “dynamic imprint function” of the application that uses CR-SDK by placing the imprinter immediately before the reading unit for the back side.

2. Jogger Mechanism

The jogger is an important function for the scanner for checking. Scanning after aligning the check is useful to improve the MICR reading rate and prevent paper jams.

When the jog is selected, the jog motor rotates, the document presser plate is released, and the jog roller rotates. Since the jog roller has a special sectional form, it can align the document by vibrating it.

In particular, the alignment of the leading edge of the document has been improved by changing the shape, etc. of the jog roller from the conventional CR-180II.

The mechanism of the jogger and the differences of sectional forms of jog rollers are shown below. The sectional form of the CR-180II is square, but that of this machine is a form with six vertexes as shown in the figure below.

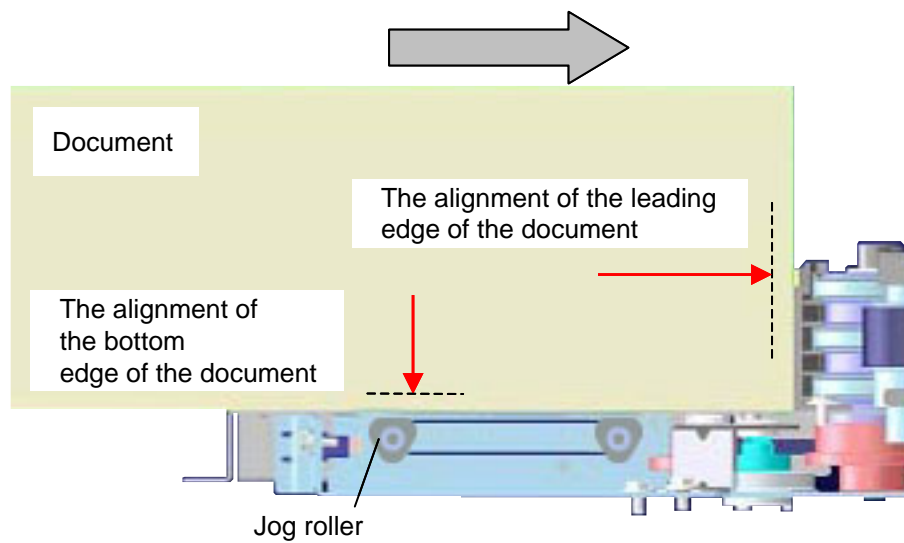
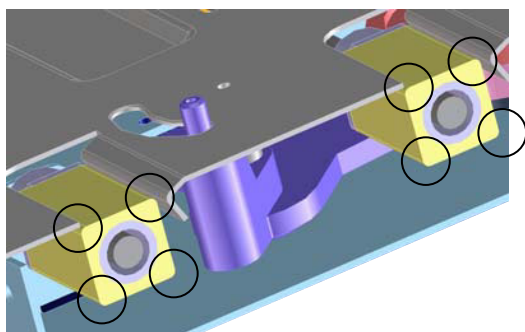


Figure 2-302

◆ Rollers for CR-180II



◆ Rollers for CR-190i

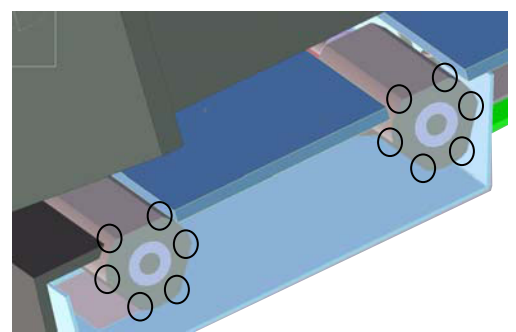


Figure 2-303

3. Separation Mechanism

The separation method of this machine is the same as that of the conventional CR-180II, which is the corrugation retard roller method (same as the comb-shaped roller method). Its mechanism is also almost the same.

For the corrugation retard roller method, the feed roller has a different coefficient of friction of paper from the separation roller, and these rollers rotate clockwise. Since the coefficient of friction between each roller and paper is higher than that between sheets of paper, paper is moved by each roller and the document is separated. The gap between the separation roller and feed roller is adjusted so that only one sheet of paper is fed and both rollers touch one sheet of paper, but since the coefficient of friction between

the feed roller and paper is higher than that between the separation roller and paper, only one sheet of paper is fed in the correct feeding direction.

For the separation section, the method of gap adjustment by the user has been improved for this machine compared with the conventional CR-180II.

- 1) The adjustment dial is fitted with a cover to prevent from being touched mistakenly by the user.
- 2) The adjustment dial is graduated to clarify the adjustment volume.

The separation section and adjustment dial section are shown below.

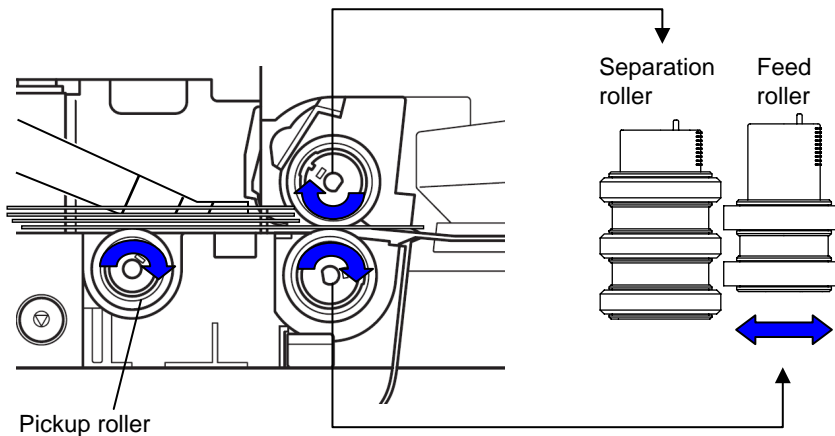


Figure 2-304

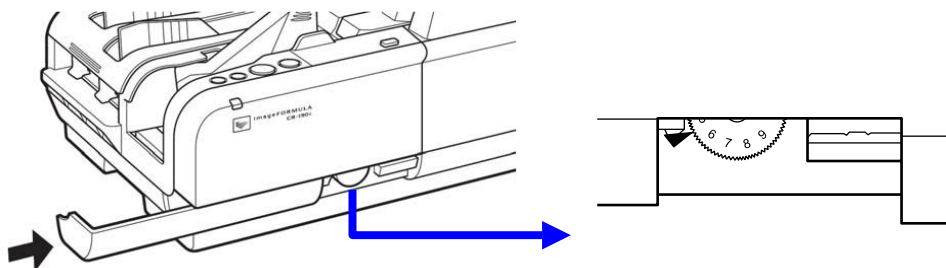


Figure 2-305

4. Imprinter

The back side of a document can be printed on by installing an imprinter in the middle of the feed path. The installation location is before the back side reading.

An ink cartridge is installed on the ink carriage of the main body. A Canon PG-50 or PG-40 black ink cartridge can be used.

It is equipped with an ink disposal tank that stores preliminarily ejected ink and a cleaning pad for cleaning ink jet nozzles in addition to the ink cartridge.

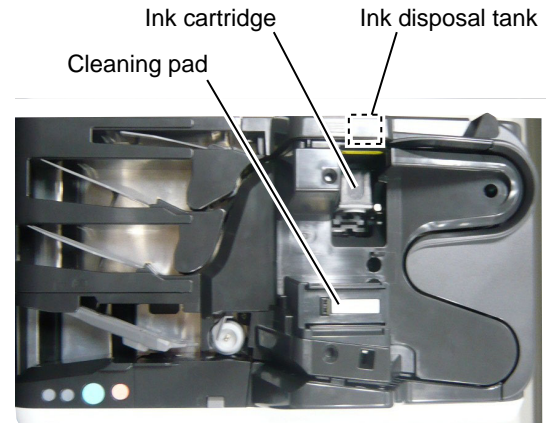


Figure 2-306

No.	Item	Description
1	Type	Pre-imprinter
2	Form	Built in the main body
3	Printing side	Back
4	Head movement method	Manual
5	Printing width	12.7 mm (0.5 inches)
6	Maximum number of characters	48 characters/line, a maximum of 4 lines
7	Character font	Original (small type, boldface)
8	Character string	1) ASCII codes: 20H to 7FH (Alphanumeric characters, symbols) 2) Special: counter, time, date, arrow
9	Printing position	1) Horizontal: Specified from the leading or trailing edge of the document. 2) Vertical: The center is 36 mm or 55.2 mm from the feed surface.
10	Printing orientation	0/90/180/270°
11	Printing mode	Normal, economy, high quality
12	Residual amount detection	Yes

Table 2-301

Note: Ink does not become solid immediately after it is ejected into the ink disposal tank.

Therefore, do not turn the main body over immediately after preliminary ejection of a lot of ink. Since solid ink may come off and fall down, remove the ink disposal tank beforehand if the main body is turned over.

IV. CONTROL SYSTEM

1. Control PCB

The overall system of this machine is controlled by the control PCB. The block diagram and the function list of major ICs are shown below.

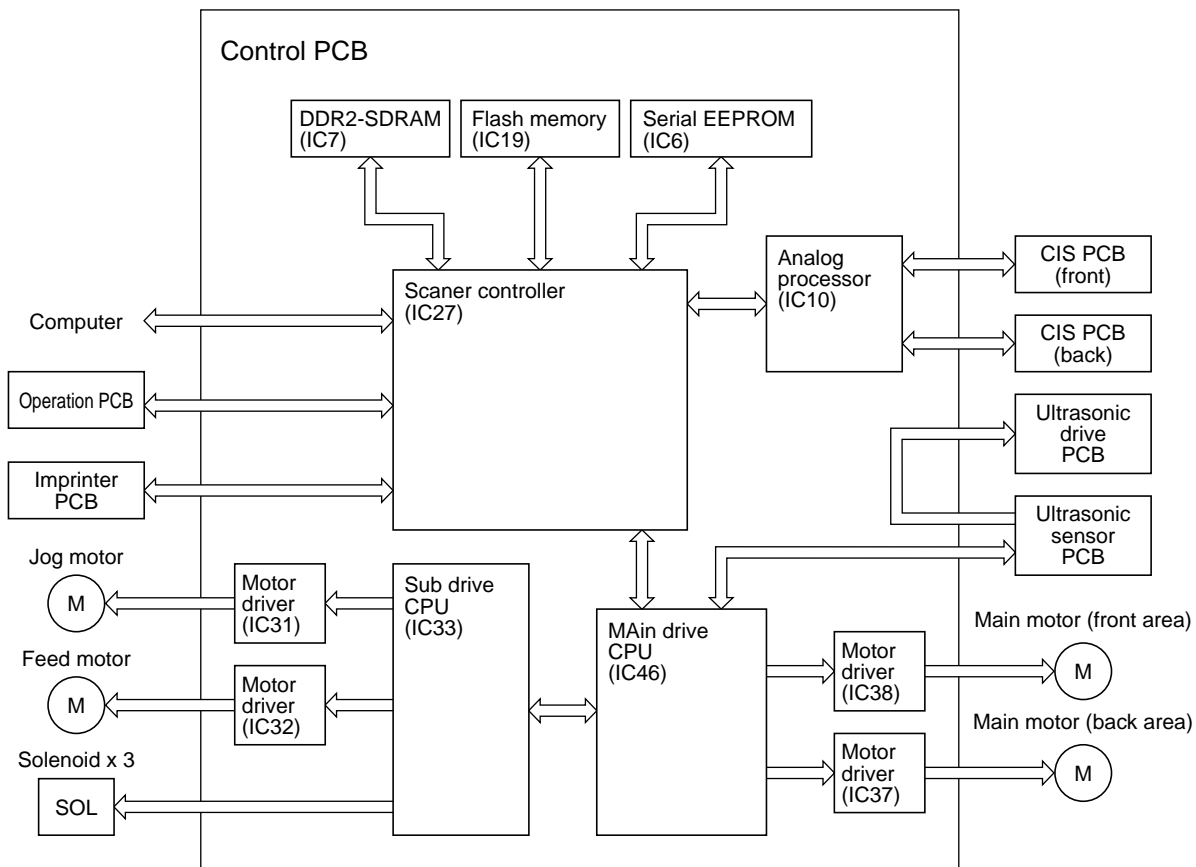


Figure 2-401

◆ Function list of major ICs

IC No.	Name	Function
6	Serial EEPROM (4 Kbit)	Storage of various setting data
7	DDR2-SDRAM (1 Gbit)	For scanner controller work, Temporary storage of image data
10	Analog processor	Image data correction, A/D conversion
19	Flash memory (16 Mbit)	Stores firmware
27	Scanner controller	General scanner control
31	Motor driver	For jog motor driving
32	Motor driver	For pickup motor driving
33	Sub drive CPU	Controls the jog motor and pickup motor, Controls the solenoid
37	Motor driver	For main motor (back area) driving
38	Motor driver	For main motor (front area) driving
46	Main drive CPU	Controls the main motor, Communication with ultrasonic sensor PCB

Table 2-401

2. Image Processing

The block diagram of the image processing in this machine and a computer is shown below.

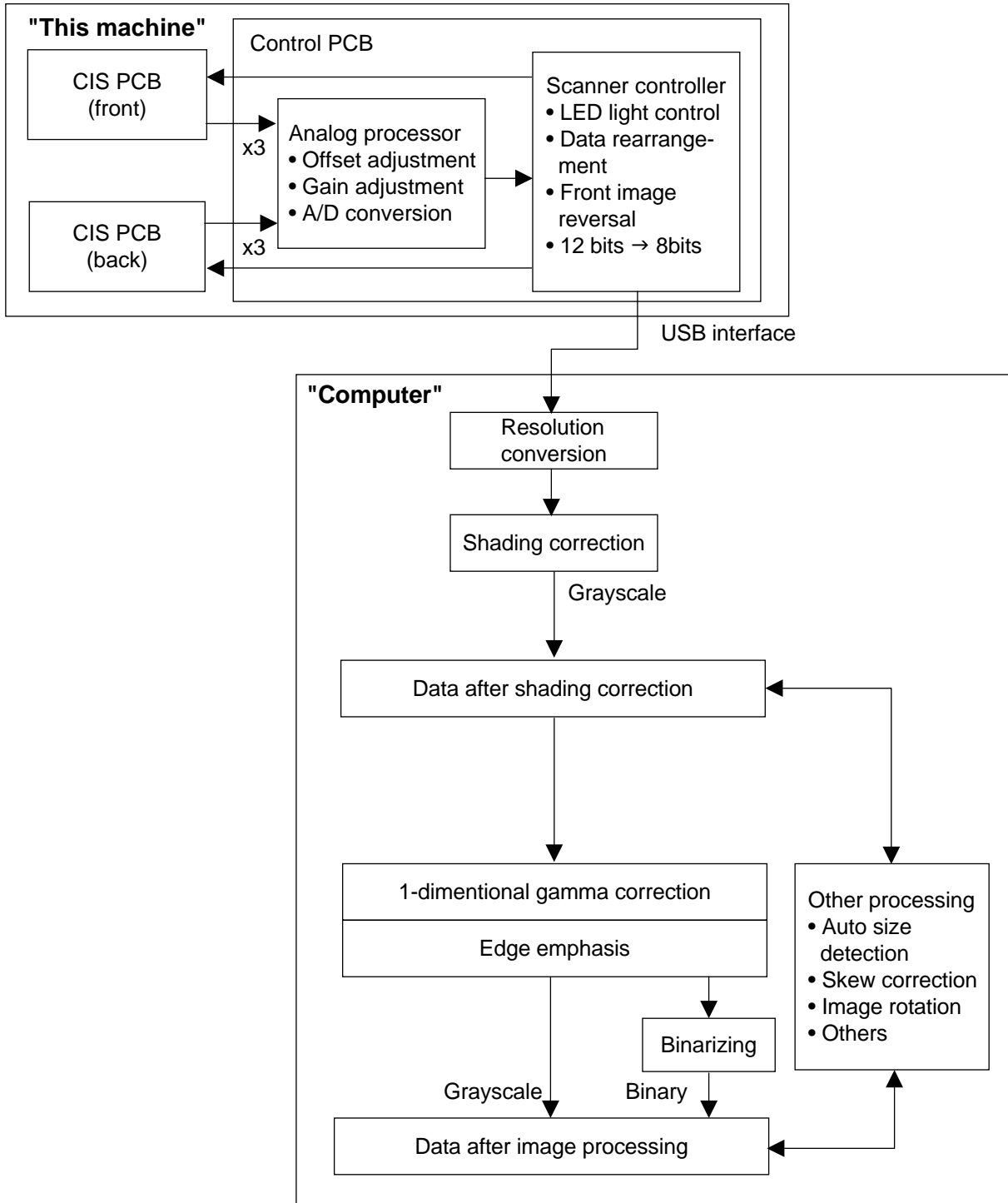


Figure 2-402

Analog signals proportionate to the density of each picture element are divided by three and output in parallel to the analog processor on the control PCB from the CIS PCB. The resolution of the output data is either 300 dpi or 200 dpi according to the user settings.

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

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

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

3. Sensor

This machine has control sensors. A list of sensors and a layout are shown below. The numbers in this list correspond to the numbers in the layout.

No.	Name	Location	Function/feature
1	Jog HP sensor	Jogger Unit	Jog roller HP detection
2	Roller cover sensor	Operation PCB	Roller cover open detection
3	Document sensor	Document detection PCB	Detection of a document in the pickup section
4	Registration pre-sensor (front)	Ultrasonic sensor PCB	Detection of a document in the feed path (front area)
5	Ultrasonic sensor (drive)	Ultrasonic drive PCB	Double feed detection
6	Ultrasonic sensor (receive)	Ultrasonic sensor PCB	Double feed detection
7	Registration post-sensor (front)	Ultrasonic sensor PCB	Determination of timing of reading the front image
8	Front cover sensor	Front right side	Maintenance cover (front) open detection
9	Registration pre-sensor (back)	Registration PCB	Detection of a document in the feed path (back area)
10	Registration post-sensor (back)	Registration PCB	Determination of timing of reading the back image Imprint timing determination
11	Rear cover sensor	Above the reading unit (rear)	Maintenance cover (back) open detection
12	Full sensor x 3	Full detection PCB	Pocket1/2/3 document full detection
13	Empty sensor x 3	Full detection PCB	Pocket1/2/3 document empty detection
14	Top cover sensor	Front center	Top cover open detection

Table 2-402

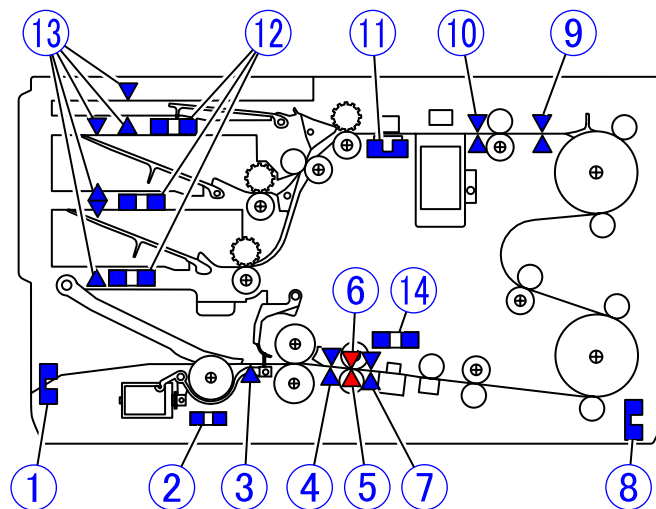


Figure 2-403

V. POWER SUPPLY

1. Power Supply

The power supply PCB of this machine is divided into a 100 V system (for 100 V/120 V) and a 200 V system (for 220-240 V).

The supplied AC power is converted by a rectifying bridge to unsmoothed power and

converted to 24 VDC power.

This DC power is supplied to the control PCB and is converted to a necessary DC voltage.

The block diagram of the power supply PCB is shown below.

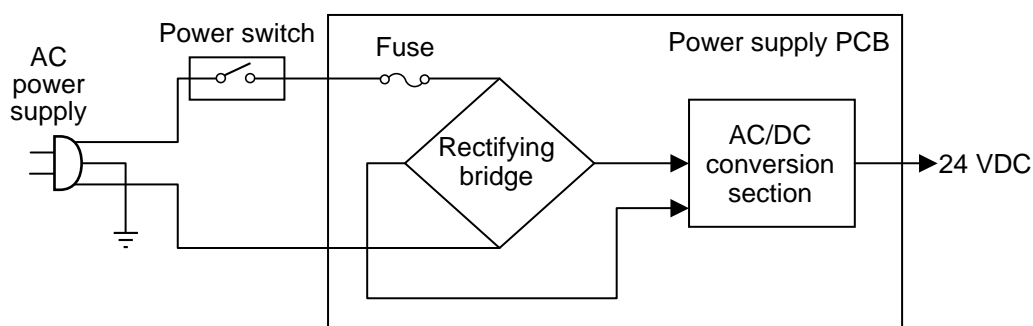


Figure 2-501

The power supply PCB contains a fuse, and if an excessive current flows, the fuse blows and the power supply stops. The motor driver has a protection function and if an excessive current flows, the power supply to the motor stops.

This machine will shift into the sleep mode (Energy Star mode) if no key or no scan operation takes place for an extended period of time after the power is turned ON. Shifting time is set to "12 minutes".

If communication is performed from a computer or a key on the operation panel is pressed, the machine resumes from the sleep mode.

VI. LAYOUT OF ELECTRICAL COMPONENTS

1. Switch, PCB, Unit

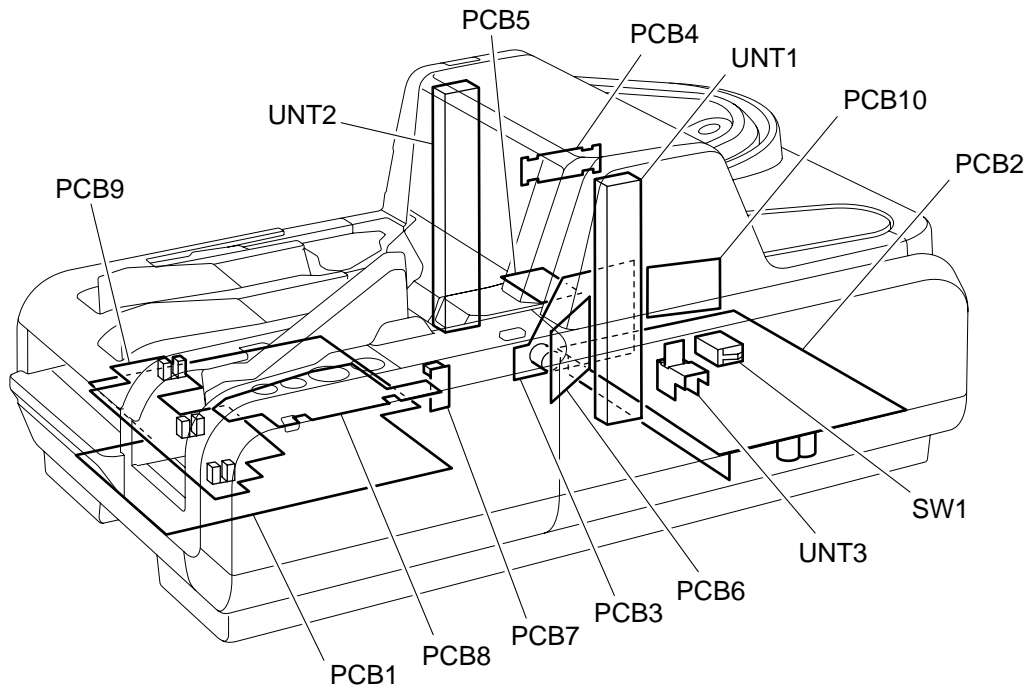


Figure 2-601

Category	Symbol	Name	Location
Switch	SW1	Power switch	Bottom side
PCB	PCB1	Control PCB	Bottom side
	PCB2	Power supply PCB	Bottom side
	PCB3	Ultrasonic sensor PCB	Upper side (Front area)
	PCB4	Registration PCB	Upper side (Back area)
	PCB5	Imprinter PCB	Upper side (Back area)
	PCB6	Ultrasonic drive PCB	Upper side (Front area)
	PCB7	Document detection PCB	Upper side (Pickup)
	PCB8	Operation PCB	Upper side (Pickup)
	PCB9	Full detection PCB	Bottom side
	PCB10	Relay PCB	Upper side (Back area)
Unit	UNT1	Reading unit (Front)	Upper side (Front area)
	UNT2	Reading unit (Back)	Upper side (Back area)
	UNT3	Magnetic head unit	Upper side (Front area)

Table 2-601

2. Motor, Solenoid, Fan

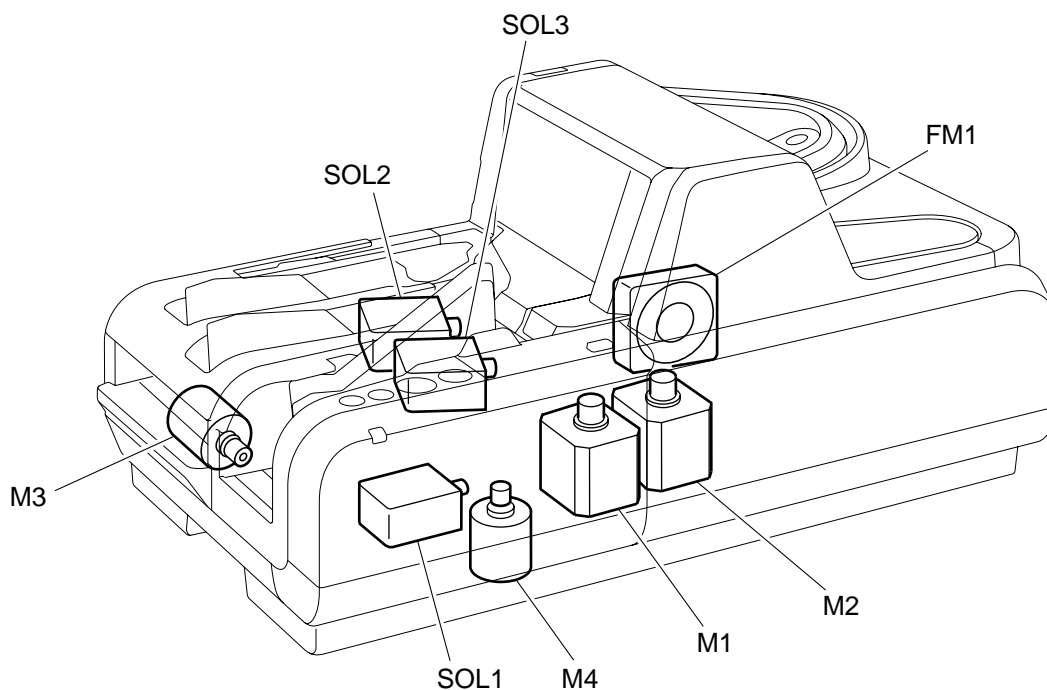


Figure 2-602

Category	Symbol	Name	Location
Motor	M1	Main motor (Back area)	Bottom side
	M2	Main motor (Front area)	Bottom side
	M3	Jog motor	Bottom side
	M4	Pickup motor	Bottom side
Solenoid	SOL1	Solenoid (Shutter)	Upper side (Pickup)
	SOL2	Solenoid (Flapper 1)	Bottom side
	SOL3	Solenoid (Flapper 2)	Bottom side
Fan	FM1	Cooling fan	Bottom side

Table 2-602

Note: For details of sensors, refer to the “IV. CONTROL SYSTEM 3. Sensor.”

VII. PARTS LAYOUT ON EACH PCB

1. Control PCB

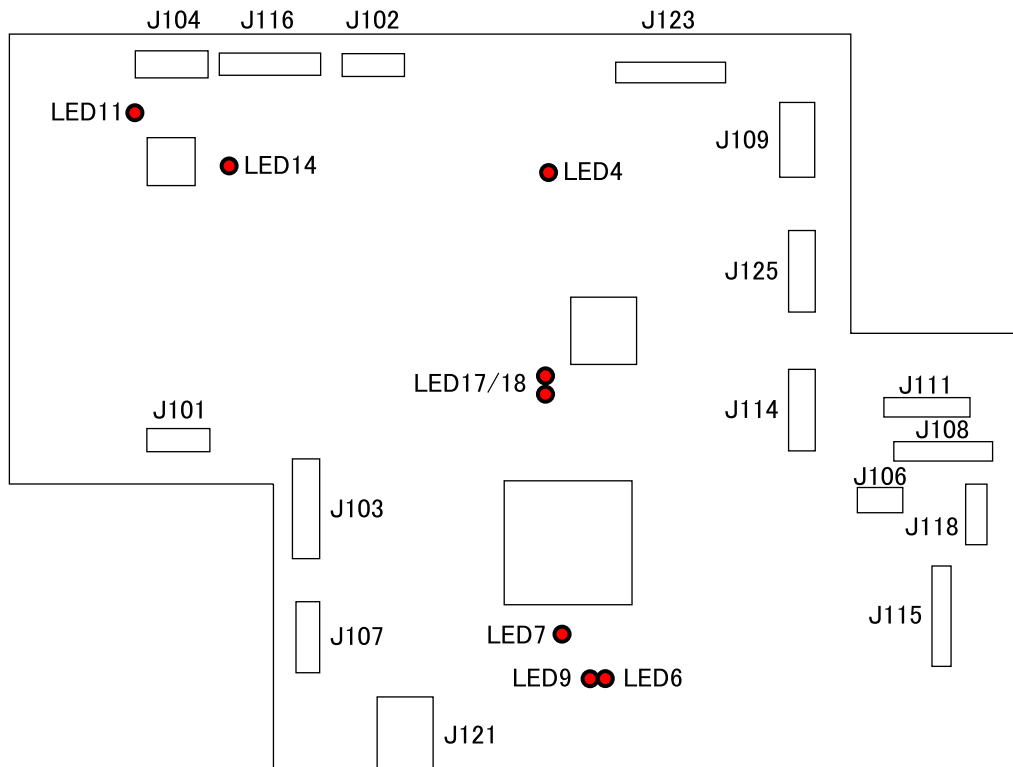


Figure 2-701

Connector		Description
J101	12P	Jog motor
J102	12P	Pickup motor
J103	13P	Full detection PCB
J104	4P	Solenoid (Shutter) Jog HP sensor
J106	3P	Cooling fan
J107	4P	Solenoid (Flapper 1/2)
J108	13P	Registration PCB Rear cover sensor
J109	4P	Power supply PCB
J111	10P	Ultrasonic sensor PCB
J114	6P	Main motor (Front area)
J115	20P	CIS PCB (Back)
J116	13P	Operation PCB
J118	20P	Imprinter PCB
J121	--	USB
J123	40P	Relay PCB
J125	6P	Main motor (Back area)

Table 2-701

Symbol	Description
LED4	Lit: 24 VDC good condition
LED6 LED7 LED9	Flashing: CPU (Scanner) good condition However, LED9 flashes slowly.
LED11	Flashing: CPU (Sub drive) good condition However, at the sleep mode, LED will be put out lights.
LED14	Lit: 5 VDC good condition However, at the sleep mode, LED will be put out lights.
LED17 LED18	Flashing: CPU (Main drive) good condition

Table 2-702

2. Power Supply PCB

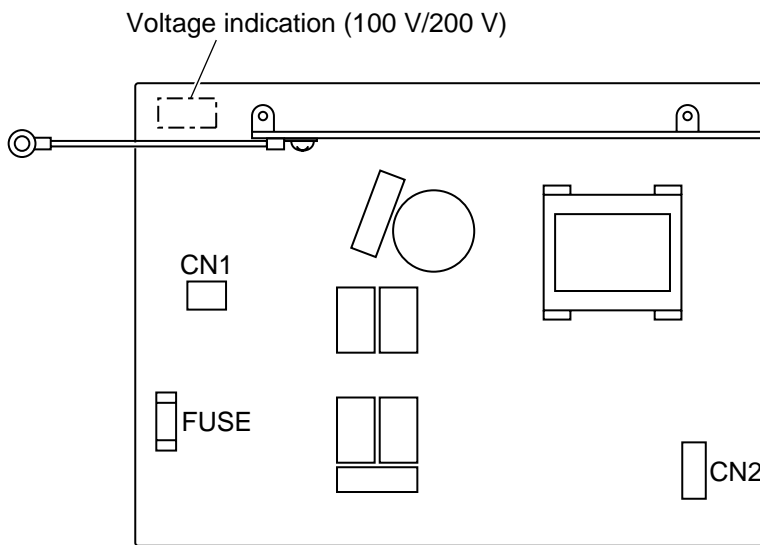


Figure 2-702

Symbol	Description
CN1 (2P)	AC input
CN2 (4P)	24 VDC output

Table 2-703

CHAPTER 3

DISASSEMBLY & REASSEMBLY

Note:

1. The machine shown in the photographs of the figures in this chapter may be different from some mass-produced machines.
2. Since ink may drop if the ink disposal tank comes down, remove the ink disposal tank beforehand when the ink disposal tank is turned over or placed on its side.

I. EXTERNAL COVERS	3-1	III. LOWER PART-RELATED.....	3-18
II. UPPER PART-RELATED	3-8		

I. EXTERNAL COVERS

1. Bottom Cover Assembly

1) Remove the ink disposal tank.

Note: Since ink may drop if the ink disposal tank comes down, remove it beforehand. This also applies to other disassembly and assembly.

2) Turn the main body over and remove 5 screws ① (M4x6) in the holes. Insert a tool with a thin tip at part A between the bottom cover ② and base, spread the bottom cover, take out the inlet ③, screw ④ and power switch through the aperture and remove the bottom cover assembly.

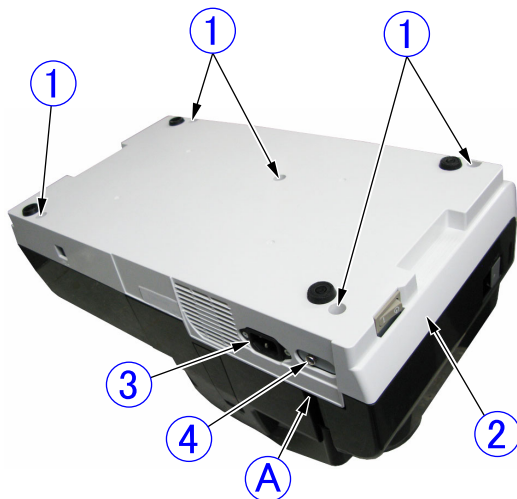


Figure 3-101

◆ Notes on assembling

Give high priority to the positioning standard for the order of tightening screws on the bottom cover; first tighten the screw at A for the round hole standard, second, tighten the screw at B for the oblong hole standard, and tighten the three other screws arbitrarily.



Figure 3-102

Install the bottom cover assembly, turn the power switch OFF.

2. Roller Replacement Cover

1) Remove the top cover.

2) Put your fingers on part A, lift the roller replacement cover ①, and while unhooking inner fitting parts, remove it.

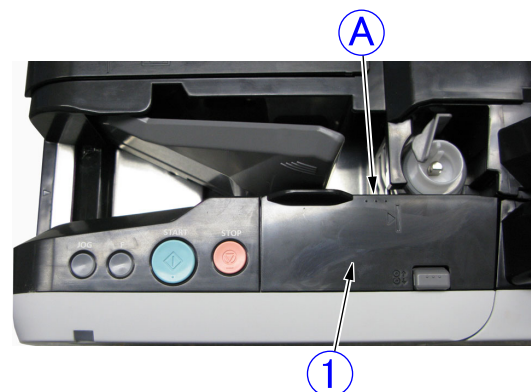


Figure 3-103

3. Blind Cover

- 1) Remove the top cover.
- 2) Pull the OPEN lever and open the maintenance cover (front).
- 3) Remove 2 screws ① (M4x6) and the screw ② (M3x4). Then, while unhooking 2 pairs of fitting parts ③, remove the blind cover assembly ④.

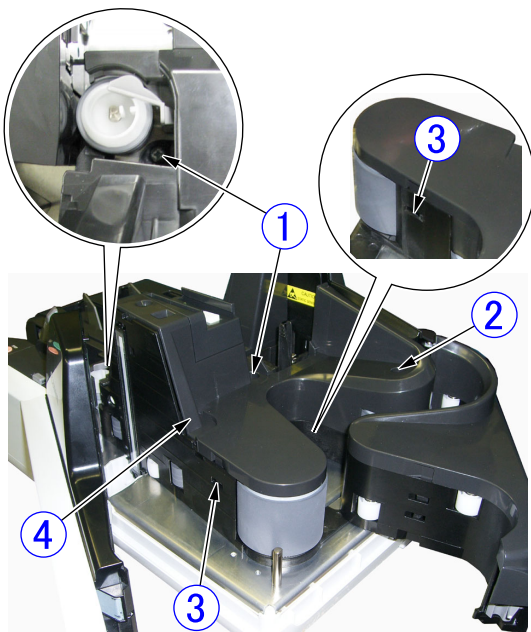


Figure 3-104

- 4) As required, remove the screw ① (M3, self-tapping, black) and remove the recovery kit ②.

Note: Since the recovery kit is stained with ink, be careful not to stain your fingers or other parts. This also applies during assembly.

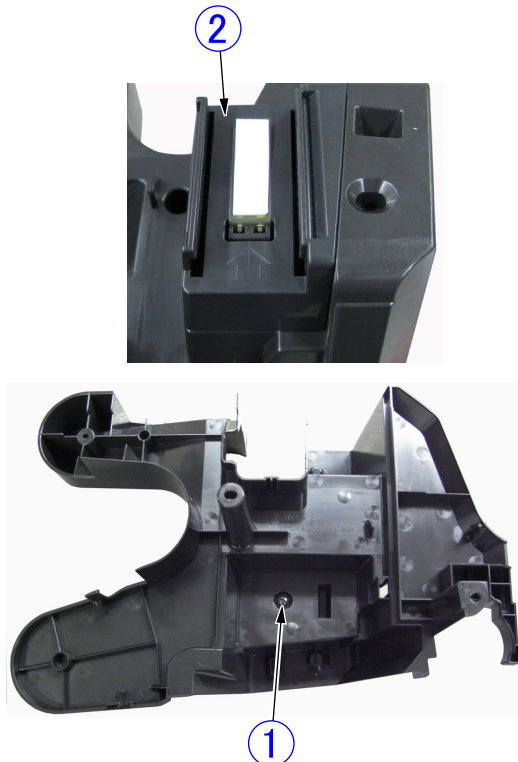


Figure 3-105

◆ Notes on assembling

Do not get cables caught in parts during assembling.

4. Front Right Cover (White)

- 1) Place the main body on its side.
- 2) Pull the OPEN lever and open the maintenance cover (front).

- Unhook 2 pairs of fitting parts ① with a tool. Then unhook 3 pairs of inner fitting parts on the opposite side (the upper part of the product) and remove the front right cover (white) ②.

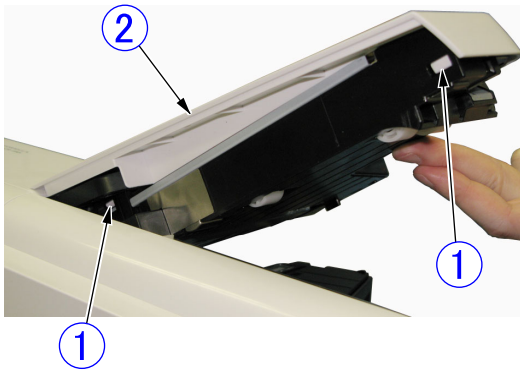


Figure 3-106

5. Front Right Cover (Black)

- Remove the front right cover (white).
[\(Page 3-2\)](#)
- Slide the front right cover (black) in the direction of the arrow, unhook fitting parts and remove it.

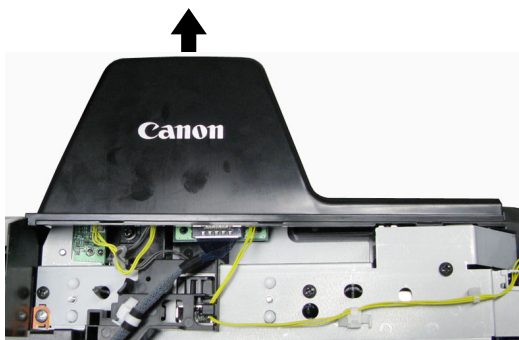


Figure 3-107

6. Pickup/Eject Cover Assembly

- Remove the blind cover.
[\(Page 3-2\)](#)
- Remove the roller replacement cover and remove the pickup roller and feed roller.
[\(Page 3-1\)](#)

Note: Remove the feed roller by pressing the separation OFF button.

- Open the maintenance cover (rear).
- Remove 3 screws ① (M4x6) and 2 screws ② (M4, flat head). Press part A and unhook 2 pairs of fitting parts ③. Place your fingers on part B, pull it, unhook 3 pairs of inner fitting parts (position marks ④), and while moving the paper pushing plate ⑤ and roller shaft out of the way, remove the pickup/eject cover assembly ⑥.

Note: Be careful not to damage the connection between the pickup section and the eject section because it is weak.

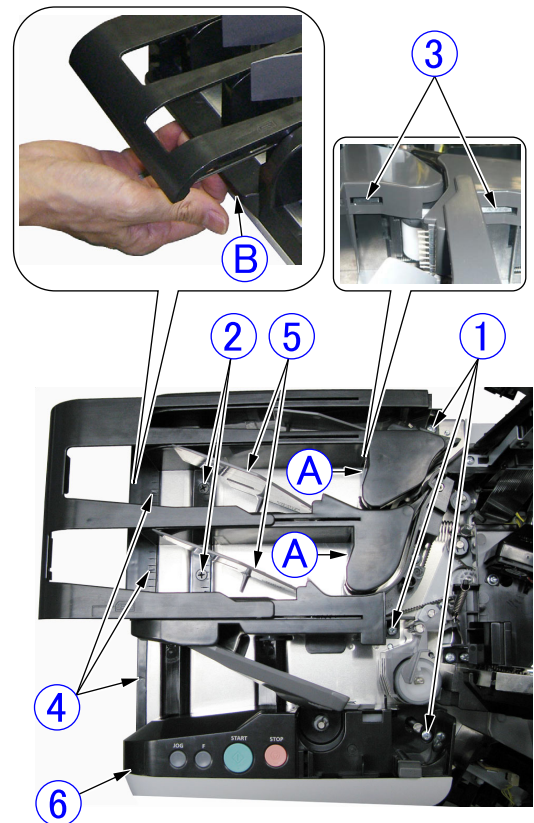


Figure 3-108

7. Front Left Cover (White)

- Remove the pickup/eject cover assembly.
[\(Page 3-3\)](#)

- Turn the pickup/eject cover assembly over, unhook 2 pairs of fitting parts ①, unhook 2 pairs of inner fitting parts on the opposite side (the upper part of the product), and remove the front left cover (white) ②. The light guide for the power LED and the separation OFF button also become detached.

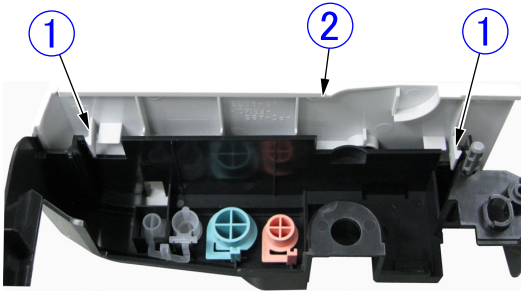


Figure 3-109

◆ **Notes on assembling**

Before assembling the front left cover (white) into the main body, install the light guide for the power LED and the separation OFF button.

8. Eject Stopper

- Pull the wire ① at the back and release it from the fitting parts. Lift 4 ends of the guide ②, unhook fitting parts and remove the eject stopper ③.

Note: If the end of the guide cannot be removed, remove it while spreading the grooves.

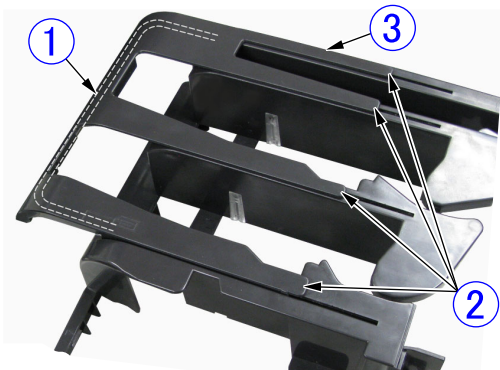


Figure 3-110

9. Back Area Cover

- Press the OPEN button and open the maintenance cover (rear).
- Unhook 3 pairs of fitting parts ①, open the back area cover assembly ② gradually, spread the space in the frame assembly ③ and while unhooking 2 pairs of the remaining fitting parts, remove the back area cover assembly. The OPEN button ④ is also removed at this time.

Note: Do not lose the built-in coil springs because they may come off and fall down. Refer to “Notes on assembling” A magnet is installed on part A.

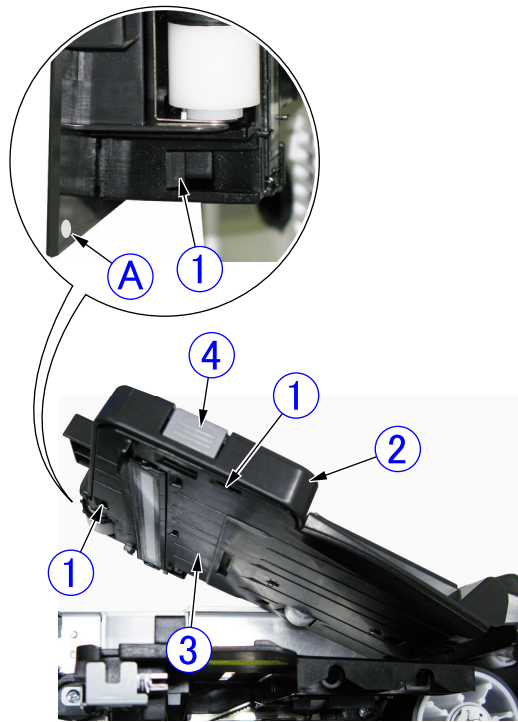


Figure 3-111

- 3) Rotate the pocket ①, unhook 2 pairs of fitting parts ② and remove the pocket.

Note: Since the ink disposal tank ③ in the pocket is stained with ink, do not ink your fingers or other places. Since solid ink may come off and drop, the ink disposal tank should be removed beforehand.

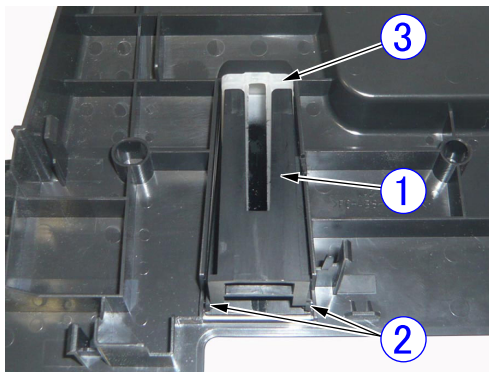


Figure 3-112

◆ **Notes on assembling**

Close the frame assembly as a base, align each fitting part and the position of the cover on the retaining shaft side, and push the back area cover assembly straight.

Before assembling the back area cover assembly, install the coil spring and OPEN button on the frame assembly. Compress the coil spring ① with a tool, and while bending the top of the OPEN button, insert the coil spring between the frame and the OPEN button. Refer to the figure below.

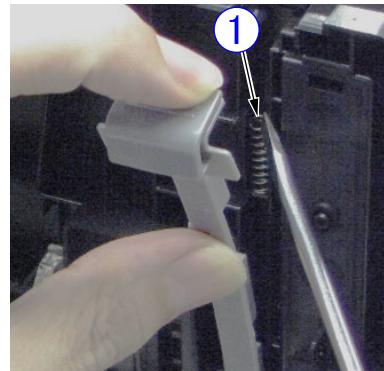


Figure 3-113

10. M-Shaped Cover

- 1) Remove the back area cover assembly.
([Page 3-4](#))
- 2) Remove the stopper ring ① and remove the back area frame assembly ② Then remove the intermediate assembly ③.

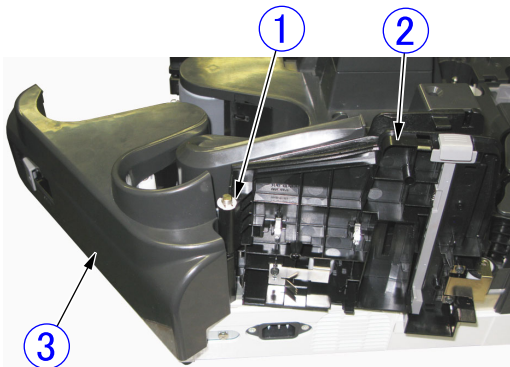


Figure 3-114

- 3) Unhook 3 pairs of fitting parts ① and spread the space between the M-shaped cover ② and frame ③. Then, while removing the fitting part ④ and OPEN lever through the hole, remove the M-shaped cover.

Note: Be careful not to lose the torsion spring built in the OPEN lever shaft because it may come off and fall down.

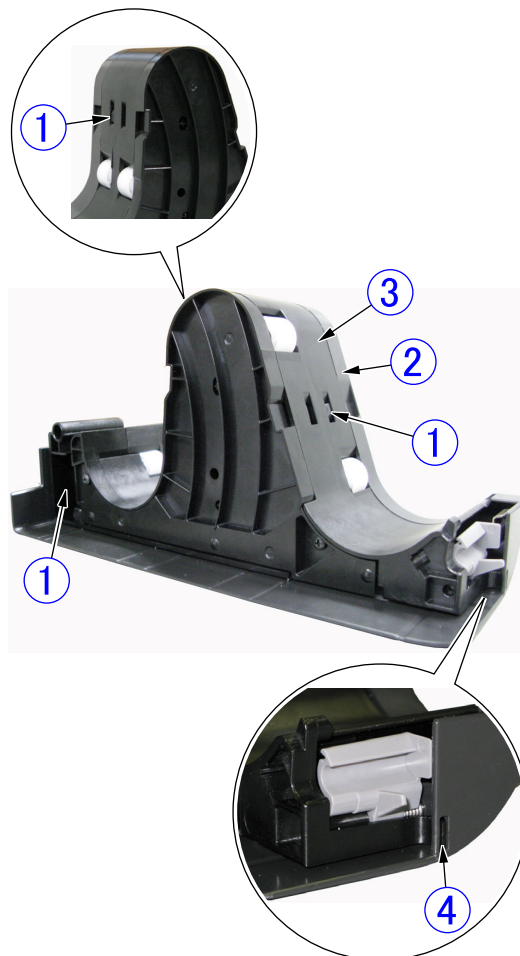


Figure 3-115

◆ Notes on assembling

When assembling the back area frame assembly and intermediate assembly, get over the convex part for open/close control.

After assembling the back area frame assembly, be sure to install the stopper ring. If the torsion spring comes off, hook the long wire on the frame rib. Refer to the figure below.



Figure 3-116

When assembling the M-shaped cover onto the frame, insert the rotation shaft of the OPEN lever into the hole as well as hooking the fitting parts that were unhooked during disassembling.

II. UPPER PART-RELATED

1. Reading Unit (Front)

1) Remove the front right covers (white and black).

[\(Page 3-2\)](#), [\(Page 3-3\)](#)

2) Remove the cable ① (FFC). While holding the reading unit (front) on the back lightly, remove the screw ② (M2.6, self-tapping, TP head, black) and remove the reading unit (front).

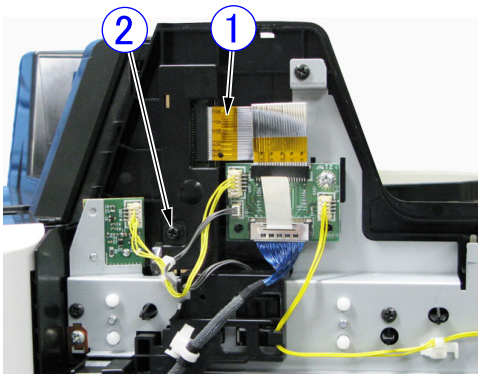


Figure 3-201

◆ Notes on assembling

The reading unit (front) is different from the reading unit (back) in only the thickness of the reading glass, but they resemble each other in appearance. Check the part numbers shown on the back side.

Reading unit (front): thick MH7-7069

Reading unit (back): thin MH7-7070

When tightening a screw, hold the reading unit so that it is not inclined and tighten the screw so that it is also not inclined.

Insert the cable straightly into the connectors on the reading unit side and the PCB side. Take sufficient care because the cable may be bent easily.

2. Reading Unit (Back)

Note: If a short screwdriver is available, perform the following procedure: If not, remove the back area holder assembly and then perform the procedure.

1) Remove the blind cover.

[\(Page 3-2\)](#)

2) Remove the cable ① (FFC) and cable ② (with a cable holder).

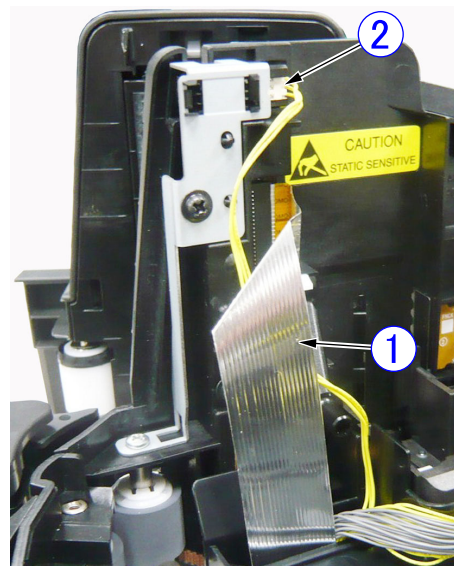


Figure 3-202

- 3) Remove the screw ① (M2.6, self-tapping, TP head, black). While holding the reading unit on the back side lightly, unhook 2 pairs of fitting parts ② and remove the reading unit (back) and ink guard.

Note: The ink guard is attached to the reading unit with adhesive double coated tape. Remove them as necessary.

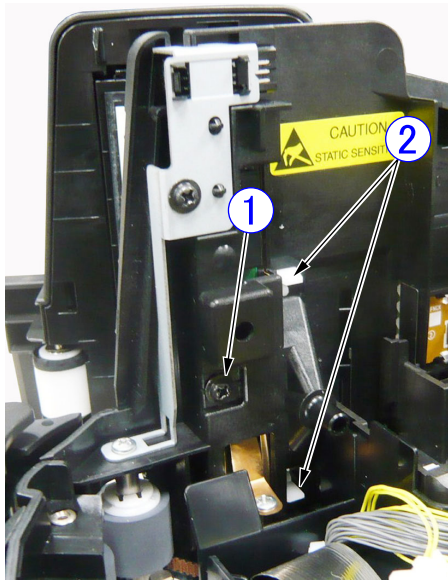


Figure 3-203

◆ **Notes on assembling**

If the reading unit (back) is replaced, prepare for an ink guard. It may not be reused because the adhesive double coated tape comes off.

In addition, refer to the notes of the reading unit (front).

3. Platen Unit (Front)

- 1) Pull the OPEN lever and open the maintenance cover (front).

- 2) While holding the platen unit (front) ① lightly, spread the hook ② on the base side upwards and remove the platen unit (front).

Note: Coil springs are installed at the back of the platen unit.

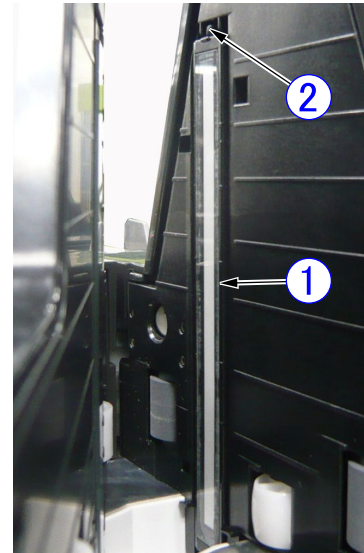


Figure 3-204

- 3) Remove 2 coil springs ② from the platen unit (front) ①.

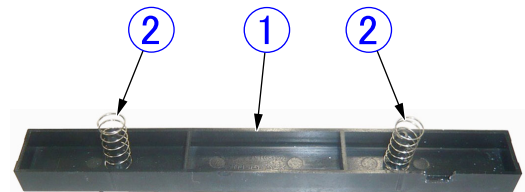


Figure 3-205

◆ **Notes on assembling**

The platen unit (front) and the platen unit (back) are same parts. The coil springs are also same.

However, the direction of installing the platen units is different. Install the platen unit (front) with its notch facing down and the platen unit (back) with its notch facing up.

4. Platen Unit (Back)

- 1) Press the OPEN button and open the maintenance cover (back).
- 2) While holding the platen unit (back) ① lightly, spread the hook ② on the base side upwards and remove the platen unit (back).

Note:Coil springs are installed at the back of the platen unit.



Figure 3-206

- 3) Remove 2 coil springs ② from the platen unit (back) ①.

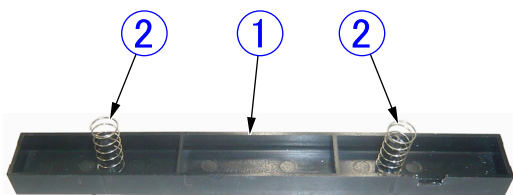


Figure 3-207

◆ Notes on assembling

Refer to the platen unit (front).

5. Back Area Holder Assembly

- 1) Remove the blind cover.
(Page 3-2)
- 2) Remove the cable holder ① (reuse type), hold the lever ② and remove the carriage assembly ③.

Note:Do not touch the contact with the ink cartridge of the carriage assembly. Pay attention to static electricity.

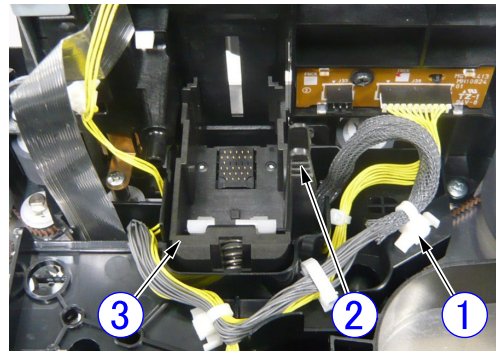


Figure 3-208

- 3) Remove 3 cables ①. Remove 2 screws ② (M3x6) and screw ③ (M4x6). Then, get the parts on the base side out of the way and remove the back area holder assembly ④.

Note: When the screw marked with A is removed, the screwdriver touches the part, so push the part slightly and bend it.

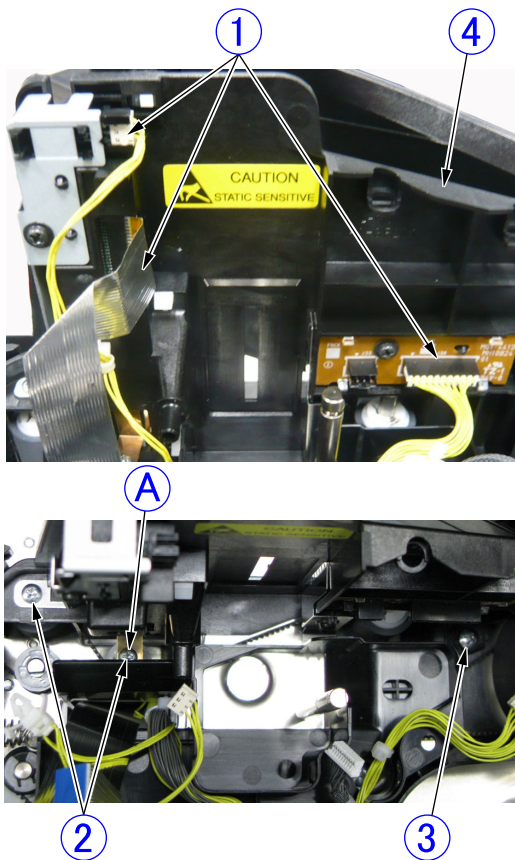


Figure 3-209

◆ **Notes on assembling**

The holder assembly must be installed in the correct position. There must be no space below it or the grounding plate must not touch the belt.

6. Front Area Assembly

- 1) Remove the pickup/eject cover assembly. [\(Page 3-3\)](#)
- 2) Remove the front right covers (white and black). [\(Page 3-2\)](#), [\(Page 3-3\)](#)
- 3) Pull the white tape ① to the front and remove the connector ② (special). Remove the cable holder ③ (reuse type), move the cable ④ out of the way of the cable guide ⑤ using a tool with a thin tip, remove it. Then, remove the stopper ring ⑥.

Note: Be sure to move the cable out of the way of the cable guide with a tool and remove it. If it is pulled by force, the cable net gets caught by the corner of the cable guide.

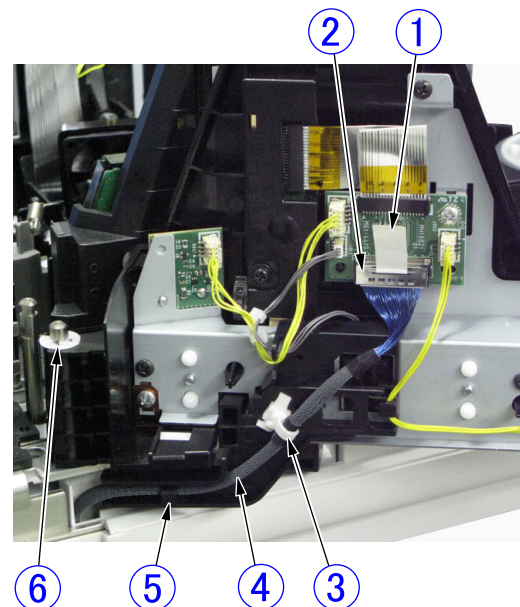


Figure 3-210

- 4) Lift the front area assembly ① slightly, rotate it and move the convex part ② for open/close control out of the way. Rotate it a little further, move the lower part out of the way of the base plate, lift the front area assembly and remove it from the shaft.

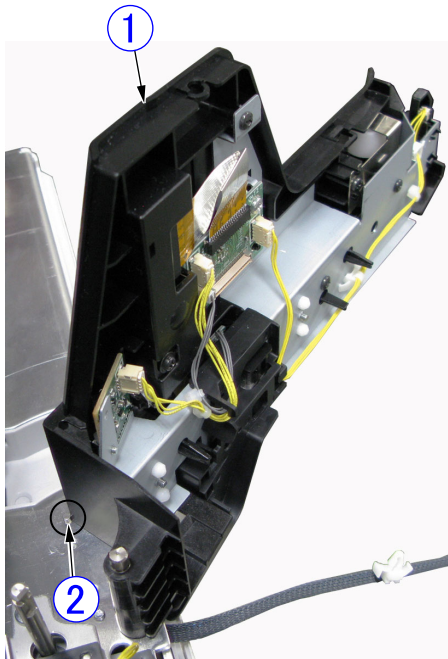


Figure 3-211

◆ **Notes on assembling**

Push in the connector (special) while aligning it correctly with the position of the connector on the PCB side. Refer to the figure below.

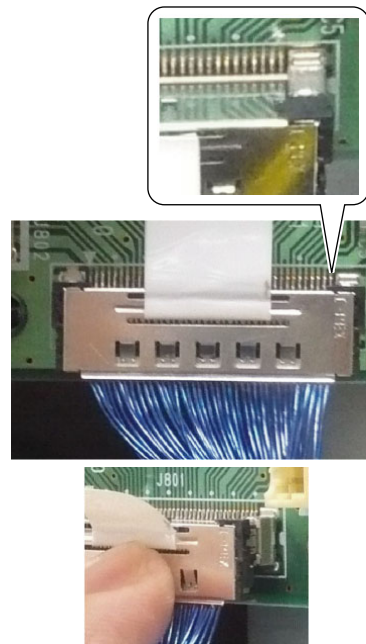


Figure 3-212

7. Magnetic Head

- 1) Remove the front area assembly.
[\(Page 3-11\)](#)
- 2) Remove the cable ① (FFC), cable ② (magnetic head) and 4 screws ③ (M3, self-tapping, black) and remove the mounting plate assembly ④.

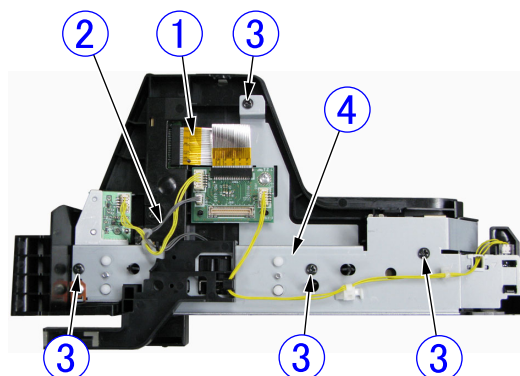


Figure 3-213

- 3) Remove the shield plate ① attached with adhesive double coated tape, remove the screw ② (M3, self-tapping, black) and remove the magnetic head ③.

Note: Since the shield plate is a soft and thin plate, it is deformed when it is removed. Refer to the “Notes on assembling”.

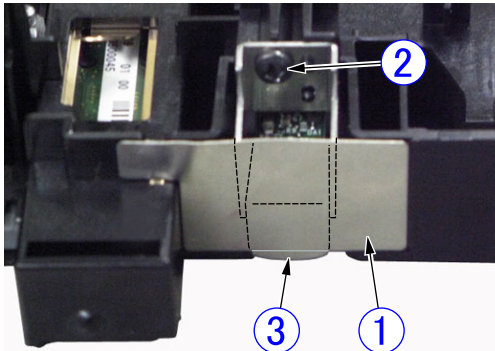


Figure 3-214

◆ Notes on assembling

If the shield plate cannot be made flat or if adhesive tape becomes weak and cannot be attached to the base side completely, replace the shield plate with a new one. If the magnetic head is replaced, have a shield plate at hand as well.

8. Cable Holder

- 1) Remove the blind cover.
(Page 3-2)
- 2) Remove the back area holder assembly.
(Page 3-10)

- 3) Remove the cable ①, coil spring ② and 2 screws ③ (M4x6). Remove the cable holder and while getting 2 cables ④ out of the way, remove the cable holder ⑤.

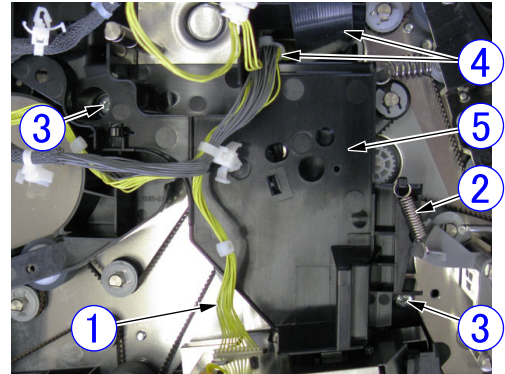


Figure 3-215

9. Front Area Holder Assembly

- 1) Remove the separation roller.
- 2) Remove the cable holder.
(Page 3-13)
- 3) Remove the screw ① (M3x6) and screw ② (M4x6). Then, lift the front area holder assembly ③, release 2 projections on the bottom, and while moving the roller out of the way, remove the front area holder assembly.

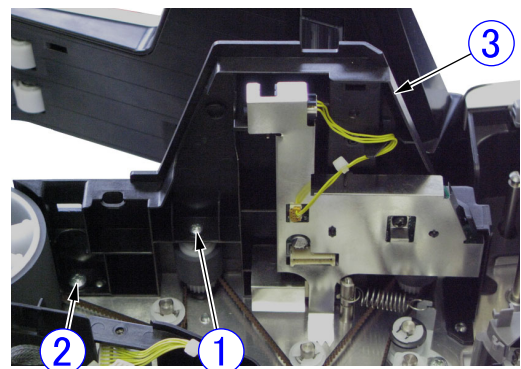


Figure 3-216

◆ **Notes on assembling**

Align the projections on the bottom with the holes in the base when assembling the front area holder assembly. The mounting feet of the front area holder assembly are below the mounting feet of the cable holder.

10. Ultrasonic Sensor PCB

- 1) Remove the front area holder assembly. [\(Page 3-13\)](#)
- 2) Remove the connector ① and screw ② (M3x8, self-tapping, black) and remove the shield plate ③.

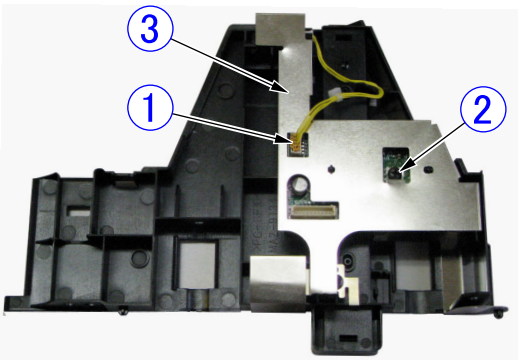


Figure 3-217

- 3) Unhook 2 pairs of the fitting parts ① and remove the ultrasonic sensor PCB ②.

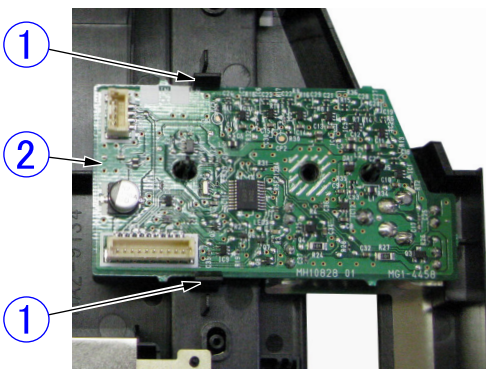


Figure 3-218

11. Front Area Large Roller

Note:The front area large roller is the same part as the back area large roller.

- 1) Remove the front area holder assembly. [\(Page 3-13\)](#)
- 2) Remove the coil spring ①, loosen the screw ② and free the belt ③. Then, remove the stopper ring ④ and remove the front area large roller ⑤.

Note:A flat washer is installed on the bearing surface on the back.

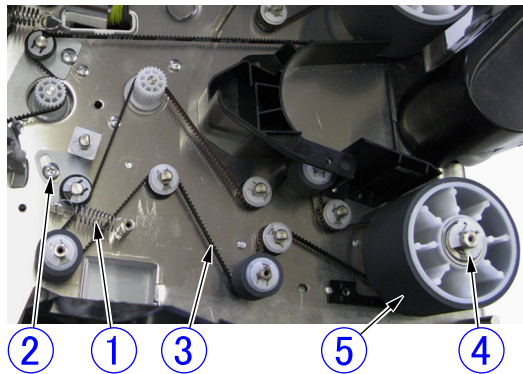


Figure 3-219

◆ **Notes on assembling**

First install the flat washer on the shaft. Connect the rollers with the belt and rotate them manually to verify that they move without problems.

Place the coil spring hook in the groove and finally secure the tensioner with a screw.

12. Back Area Large Roller

Note:The front area large roller is the same part as the back area large roller.

- 1) Remove the pickup/eject cover assembly. [\(Page 3-3\)](#)
- 2) Remove the cable holder. [\(Page 3-13\)](#)

- 3) Loosen the screw ①, remove the belt ② from the pulley ③ and remove the coil spring ④. Then, remove the stopper ring ⑤ and remove the back area large roller ⑥.

Note:The coil spring has a higher tension than the front area large roller. A flat washer is installed on the bearing surface on the back.

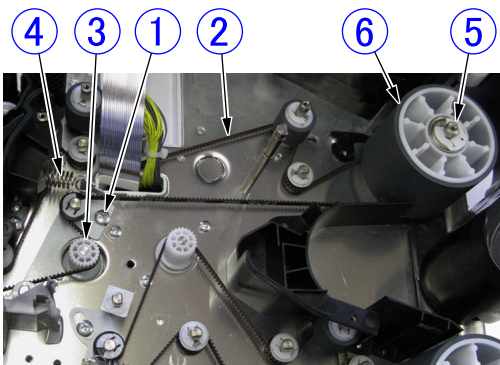


Figure 3-220

◆ **Notes on assembling**

Refer to “11. Front Area Large Roller”.

13. Drive Rollers

Note:This section describes 5 drive rollers that is connected to the front area and back area belts.

- 1) Remove the cable holder.
([Page 3-13](#))
- 2) Remove the front area holder assembly.
([Page 3-13](#))
- 3) Free the front area and back area belts.

- 4) For the roller marked with *, remove the front area and back area large rollers and then remove the M-shaped transfer guide ①.

Remove the stopper ring ② of the roller to be disassembled and remove the drive roller ③. A black flange is installed on the base side of each of 2 drive rollers marked with A and a flat washer is installed on each of 3 drive rollers marked with B.

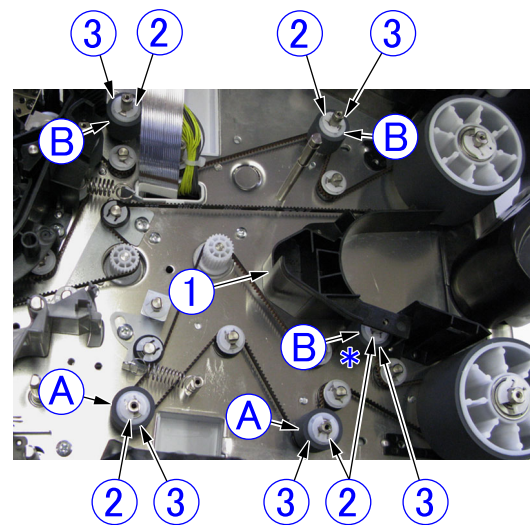


Figure 3-221

◆ **Notes on assembling**

Install the black flanges and flat washers correctly.

14. Eject Frame Assembly

Note:This section describes the procedure for 3 frame assemblies in the eject section.

- 1) Remove the pickup/eject cover assembly.
([Page 3-3](#))

- 2) Remove the screw ① (M4x6) and remove eject frame assembly 1 ②. Then, remove the screw ③ (M4x6) and remove eject frame assembly 2 ④ and flapper ⑤ together. Finally, remove 2 screws ⑥ (M4x6) and remove eject frame assembly 3 ⑦.

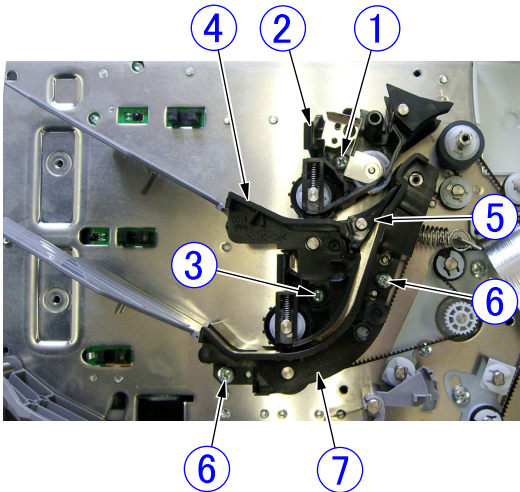


Figure 3-222

◆ **Notes on assembling**

There are 2 positioning projections on the bottom of eject frame assembly 1, 2 projections and a shaft for the paper pushing plate on eject frame assembly 2, and 3 positioning holes and a shaft for the paper pushing plate on eject frame assembly 3. Assemble these parts by aligning them with the positioning parts on the base. There must be no gap between the base and the bottom of the eject frame assemblies.

Install eject frame assembly 2 together with the flapper on the base.

15. Eject Drive Roller

Note: This section describes 3 drive rollers in the eject section.

- 1) Remove eject frame assemblies 1, 2 and 3.

[\(Page 3-15\)](#)

- 2) If drive roller 1 ① is removed, free the back area belt ② and remove the stopper ring ③. A flat washer is installed on the base side.

If drive roller 2 ④ is removed, lift it.

If drive roller 3 ⑤ is removed, free the back area belt and lift it.

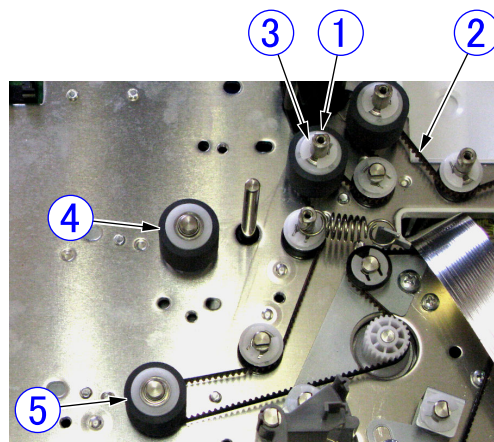


Figure 3-223

◆ **Notes on assembling**

Do not forget the flat washer and stopper ring when assembling drive roller 1.

16. Pickup Solenoid

- 1) Remove the pickup/eject cover assembly.

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

- 2) Disconnect the connector ① and remove 2 screws ② to remove the operation PCB ③.

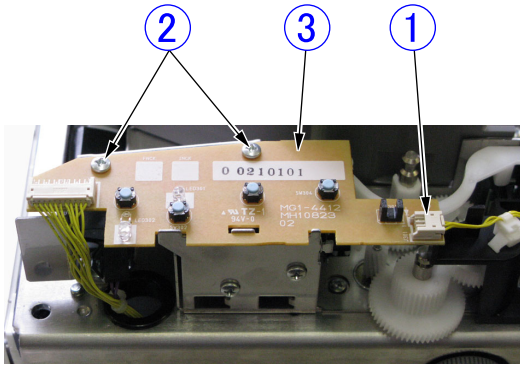


Figure 3-224

- 3) Remove the coil spring ①, connector ② and 2 screws ③ (M3x4), and remove the solenoid body ④ and magnetic core ⑤ with a lever together.

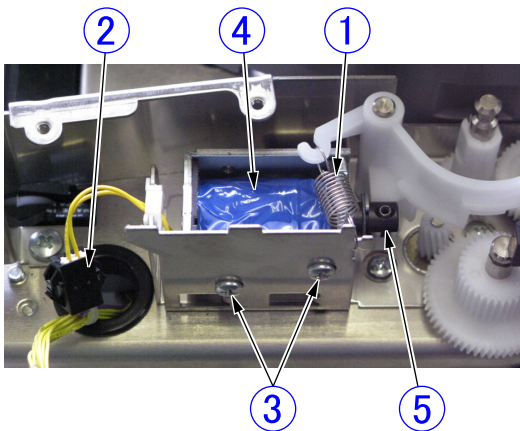


Figure 3-225

◆ Notes on assembling

Place the hole in the end of the lever on the projection of the stopper ① and fix the solenoid body loosely with 2 screws. While pushing the end of the magnetic core into the solenoid body side with a nail, slide the solenoid body and hold it with fingers so that the end of the stopper touches the inner surface of the side plate when viewed from above. Tighten the screw at the position completely and fix the solenoid body. After fixing, verify that the position is correct.

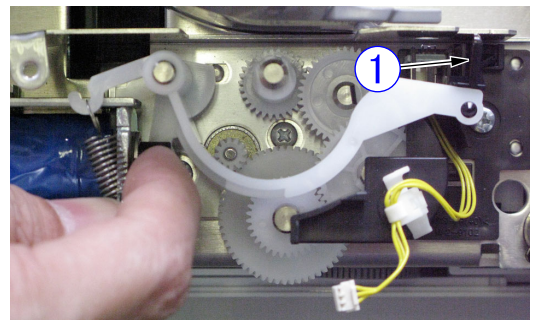


Figure 3-226

III. LOWER PART-RELATED

1. Control PCB

- 1) Remove the bottom cover assembly.
(Page 3-1)
- 2) Remove all the cables connected to the control PCB ①. Remove the connector marked with A by lifting red tape straight up, and remove the connector marked with B by releasing the lock. Remove the 10 screws ② (M3x4) and remove the control PCB.

Note: Also remove the screw on the USB connector.

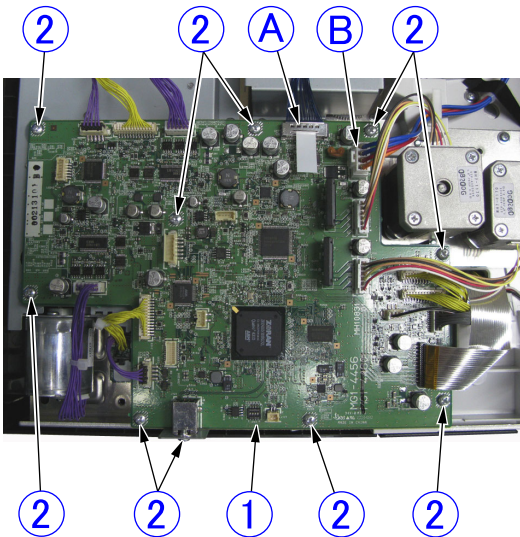


Figure 3-301

◆ Notes on assembling

Since the connector marked with A has a special shape, push it in by aligning it with the connector on the PCB side correctly.

2. Power Supply PCB

- 1) Remove the bottom cover assembly.
(Page 3-1)

- 2) Remove 2 connectors ① (with a lock) and 2 screws ② (M4, with a washer). Remove 5 screws ③ (M3, TP head) and remove the power supply PCB ④.

Note: Remove the screw below the power switch from the outside.

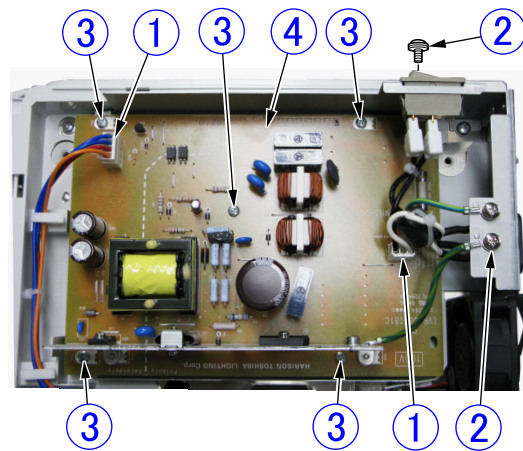


Figure 3-302

◆ Notes on assembling

Use a screw with a washer to fix the grounding wire of the power supply PCB. Attach a washer with external gear to the grounding wire of the AC inlet cable on the mounting plate side in addition to the screw with a washer.

3. Main Motor (Front Area)

Note: The connector of the main motor (front area) is different from that of the main motor (back area). A damper and a grounding plate are installed on the main motor (back area).

- 1) Remove the cable holder.
(Page 3-13)
 - 2) Free the belt (front area).
 - 3) Place the main body on its side and remove the bottom cover.
- Note:** Do not come down the main body. Remove the ink disposal tank in advance.
- 4) Remove the connector ①.

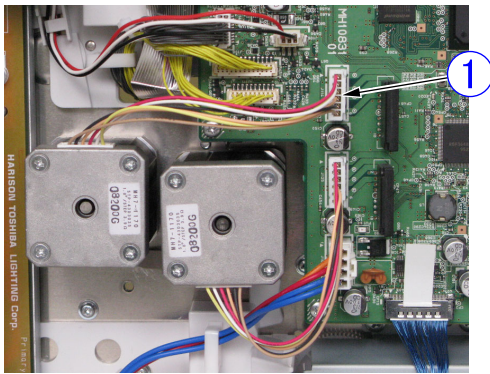


Figure 3-303

- 5) While holding the main body of the main motor with a hand, remove 2 screws ① (M3x6) and remove the main motor.

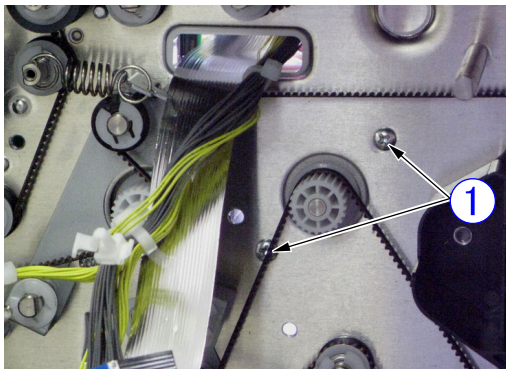


Figure 3-304

◆ Notes on assembling

After installing the belt, move it manually and verify that the rollers move without problems.

Pay attention to the cable outlet position. Connect the connector to J114 on the control PCB.

4. Main Motor (Back Area)

Note: The connector of the main motor (front area) is different from that of the main motor (back area). A damper and a grounding plate are installed on the main motor (back area).

- 1) Remove the cable holder.
- 2) Free the belt (back area).
- 3) Place the main body on its side and remove the bottom cover.

Note: Do not come down the main body. Remove the ink disposal tank in advance.

- 4) Remove the connector ①.

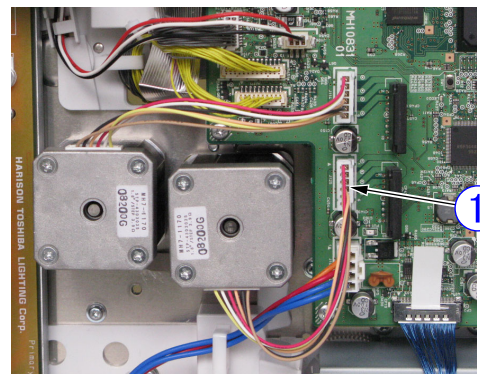


Figure 3-305

- 5) While holding the main body of the main motor with a hand, remove 2 screws ① (M3x6) and remove the main motor.

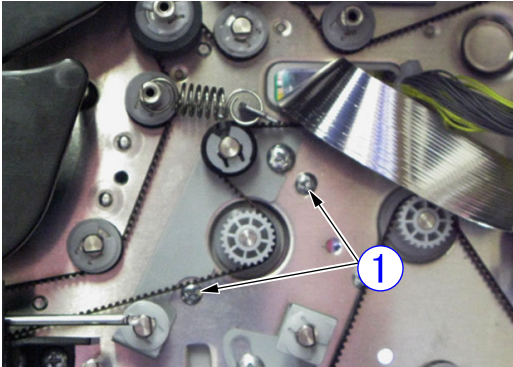


Figure 3-306

- 6) Remove 2 screws ① (M3x6) and remove the damper ② and grounding plate ③.

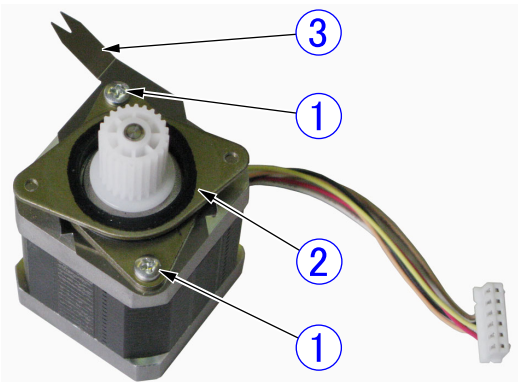


Figure 3-307

◆ **Notes on assembling**

Refer to the notes about the main motor (front area). Connect the connector to J125.

5. Jogger Unit

- 1) Remove the control PCB.
[\(Page 3-18\)](#)

- 2) Remove 3 cables ①. Remove the other cables fixed with cable holders. Remove 5 screws ② (M4x6) and remove the jogger unit.

Note: Don't forget to remove the screw (marked with *) in the hole.

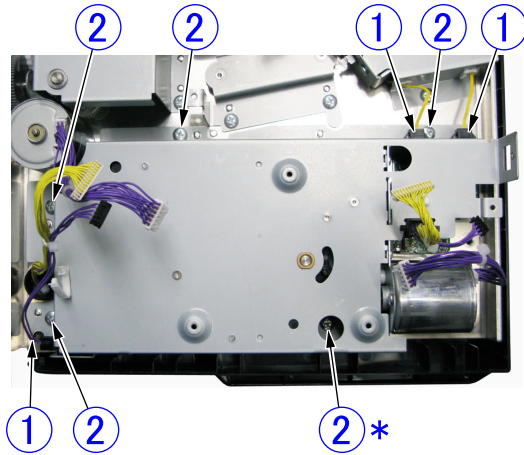


Figure 3-308

◆ **Notes on assembling**

Alignment is necessary to operate the document pusher plate of the pickup section correctly. While opening the document pusher plate at the back with a hand, install the jogger unit on the base.

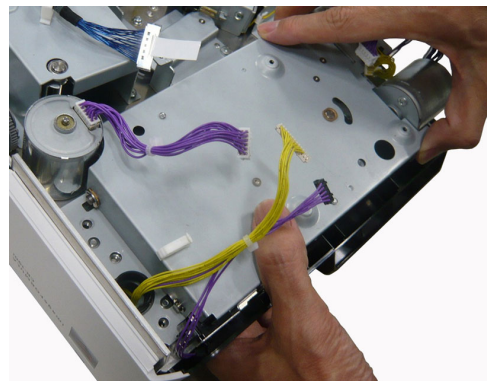


Figure 3-309

The correct stop position of the document pusher plate ① is shown below.

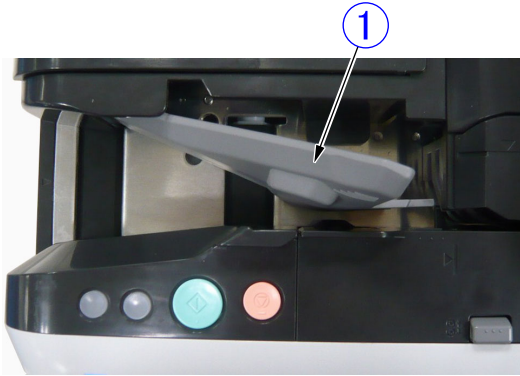


Figure 3-310

6. Sensor PCB

- 1) Remove the jogger unit.
[\(Page 3-20\)](#)
- 2) Remove 2 screws ① (M4x6) and remove the sensor PCB ②.

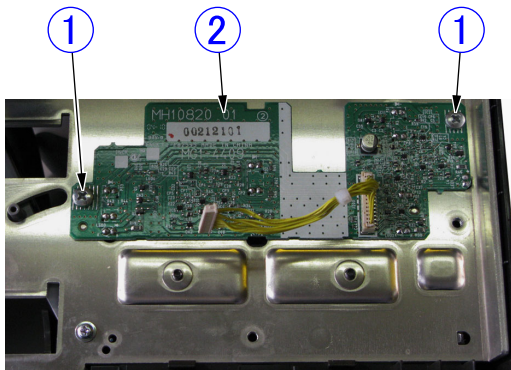


Figure 3-311

7. Jog Roller Assembly

Note: There are two types of jog roller assemblies. The longer one is called A, and the shorter one, B here.

- 1) Remove the jogger unit.
[\(Page 3-20\)](#)

- 2) Remove 2 E-rings ① (large, small). Remove 2 bearings ② and remove jog roller assembly A ③ and gear ④.

Remove the E-ring ⑤ (small), and while sliding jog roller assembly B ⑥ and shaft ⑦, remove them from the base. At the same time, remove the stopper ⑧, sensor ring ⑨, coil spring ⑩ and belt ⑪.

Note: Do not lose the E-ring. The dummy one-way built in jog roller assembly B may become detached. Insert the stopper into the projection on the base side.

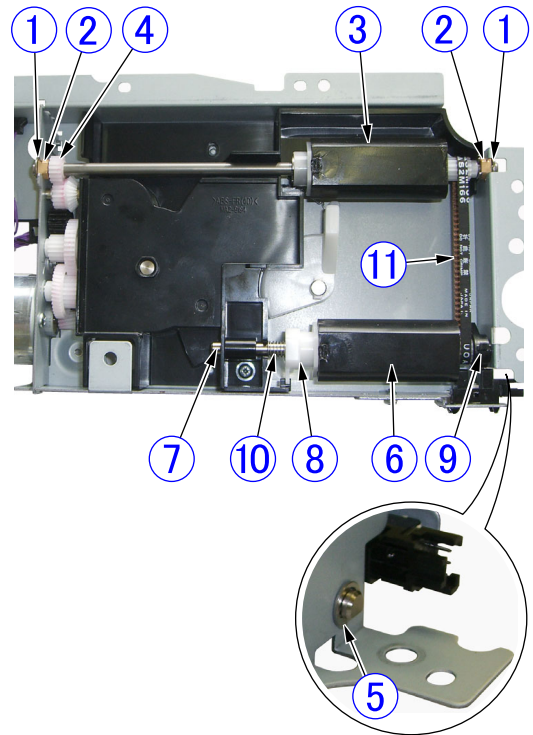


Figure 3-312

◆ **Notes on assembling**

Install jog roller assembly B and sensor ring by aligning the fitting parts.

Do not stain your fingers or other parts with grease applied to the gear.

Remove paper powder, etc on the periphery.

The cross sections of 2 rollers must be placed in the same orientation. Refer to the figure below.



Figure 3-313

◆ **Gear cover**

If the gear cover is removed, take the following precautions when installing it.

"Condition when the gear cover is removed"

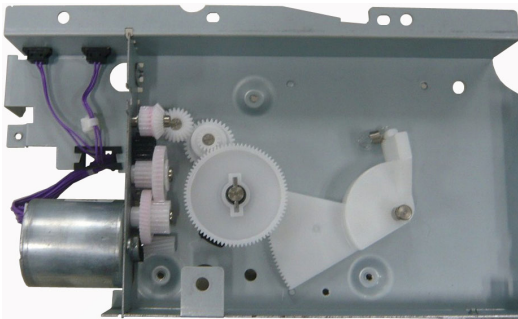


Figure 3-314

Align the projection ② of gear B at the back of gear A ① with mark Δ ③ on the base, free gear B and gear C ④, and install the gear cover.

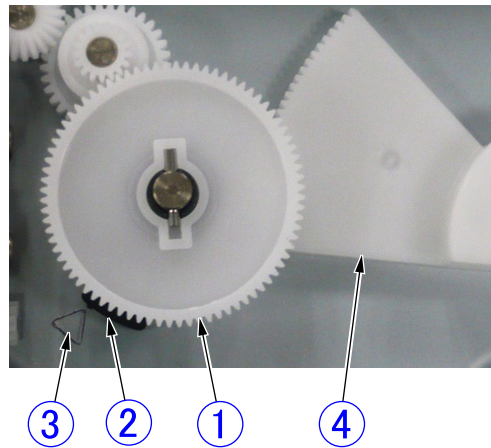


Figure 3-315

8. Jog Motor

- 1) Remove the jogger unit.
[\(Page 3-20\)](#)
- 2) Remove 2 screws ① (M3x4) and remove the jog motor assembly ②.

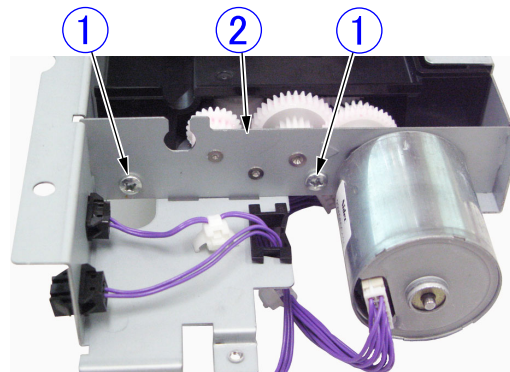


Figure 3-316

- 3) Remove the stopper ring ① and remove 2 gears ②. Remove 2 screws ③ (M3x4) and remove the jog motor ④.

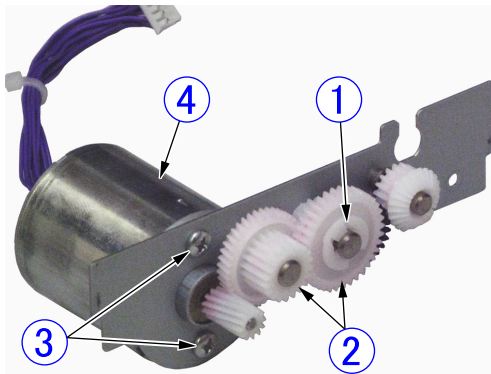


Figure 3-317

◆ Notes on assembling

The motor cable outlet must be on the side marked with ▽.

Do not stain your fingers or other parts with grease applied to the gear.

9. Cooling Fan

- 1) Remove the bottom cover assembly.
(Page 3-1)
- 2) Remove the connector ① and screw ② (M4x25, self-tapping), slide the cooling fan ③, lift and remove it because the projection on the base is inserted in the lower hole.

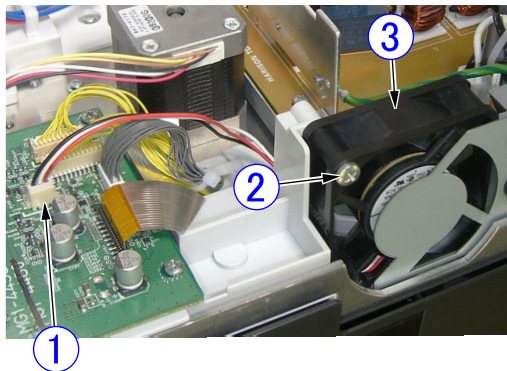


Figure 3-318

10. Flapper Solenoid

Note: There are two types of flapper solenoids. The flapper solenoid with a white lever is called A, and the flapper solenoid with a black one is called B here. Since the procedure is the same, only flapper solenoid A is shown here.

- 1) Remove the control PCB.
(Page 3-18)
- 2) Remove 2 screws ① (M4x6) and remove the flapper drive unit ②.

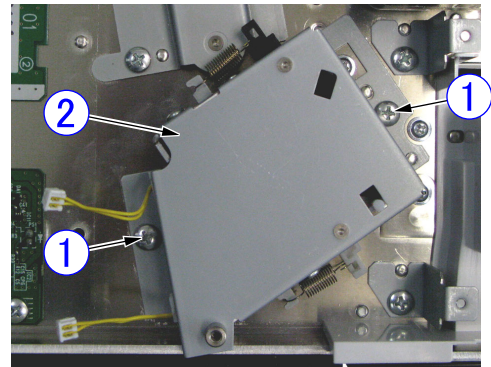


Figure 3-319

- 3) Remove the coil spring ① and 2 screws ② (M3x4). Then remove the cable from the cable holder and remove the solenoid body ③ and magnetic core ④ with a lever together.

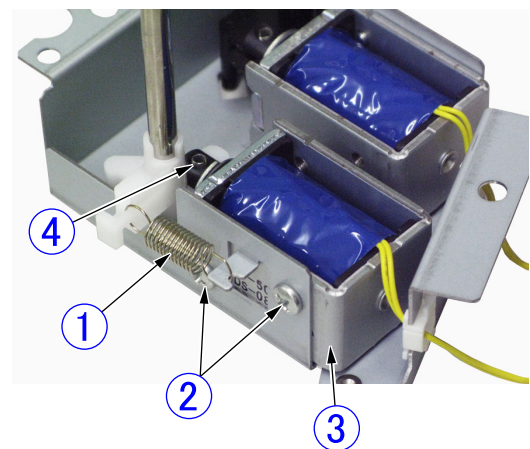


Figure 3-320

◆ **Notes on assembling**

Insert the lever into the shaft and fix the solenoid body loosely with 2 screws. While pushing the end of the magnetic core into the solenoid body side with a nail, slide the solenoid body and hold it with fingers so that the end of the stopper ① touches the inner surface of the hole ② when viewed from above. Tighten the screw at the position completely and fix the solenoid body. After fixing, verify that the position is correct.

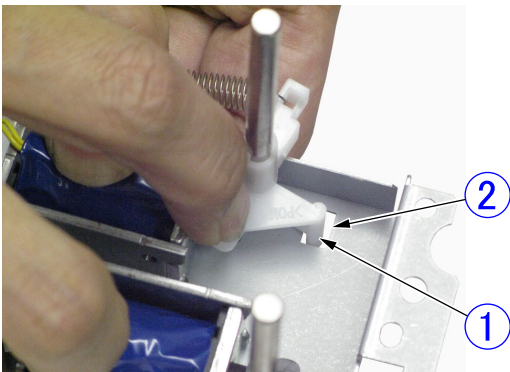


Figure 3-321

11. Pickup Drive Assembly

- 1) Remove the pickup roller, transfer roller and separation roller.
- 2) Remove the bottom cover assembly. [\(Page 3-1\)](#)

- 3) Pull red tape, and remove the connector ① (special) and coil spring ②. Remove 4 screws ③ (M4x6) and remove the pickup drive holder assembly ④.

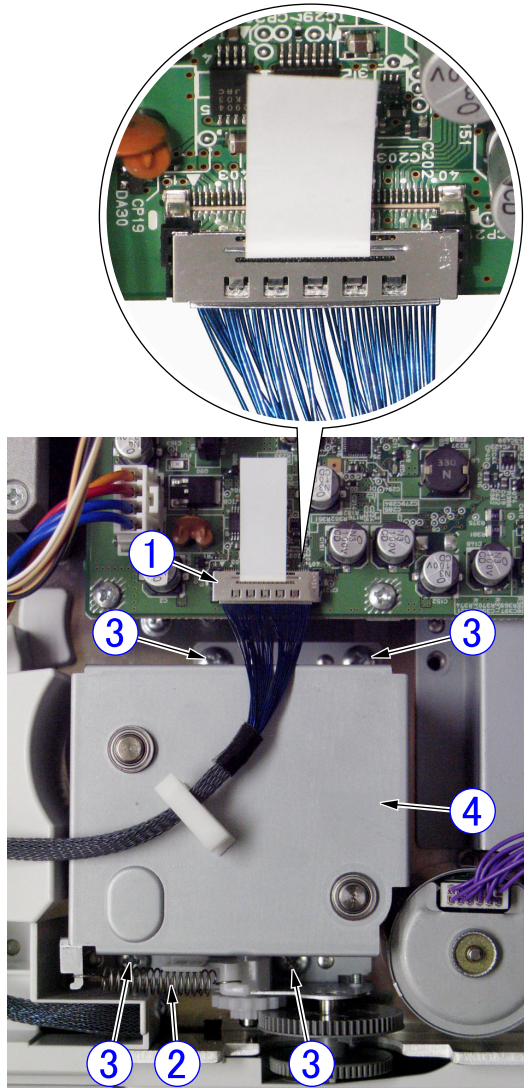


Figure 3-322

- 4) Remove the ball bearing ① and remove the separation drive shaft ②. Remove the ball bearing ③ and remove the pickup/transfer drive assembly ④.

Note:A ball bearing is also installed on the opposite side of the separation drive shaft and pickup drive shaft.

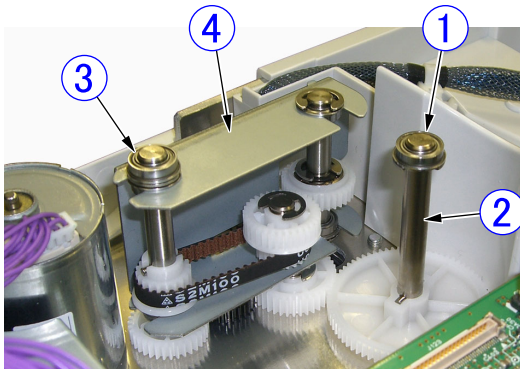


Figure 3-323

◆ **Notes on assembling**

When assembling the pickup/transfer drive assembly, insert the pickup drive shaft into the hole of the bearing on the base side while aligning the shaft with the hole.

Push in the connector (special) while aligning it correctly with the position of the connector on the PCB side.

◆ **Adjustment of the position of the separation adjustment dial**

The separation adjustment dial installed on the pickup drive holder assembly is described below.

- 1) When this dial is installed, first rotate the gear ① clockwise until it stops and the end of the shaft on the opposite side must project furthest. Then install the separation adjustment dial ② on the shaft so that mark "1" is immediately below.

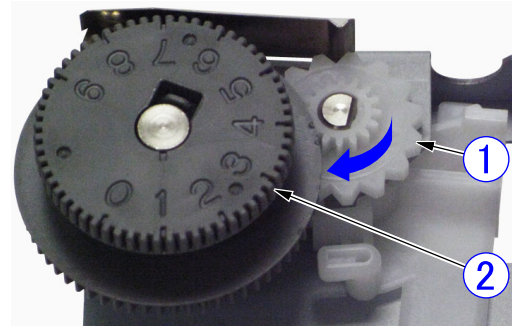


Figure 3-324

- 2) The position of the rotation stop on the back of the dial must not be immediately below before installing the bottom cover assembly. If it is mark "0", the rotation stop touches the projection on the bottom cover. It is best to set mark "7" to immediately below because the rotation stop does not hit the projection and the setting value becomes factory setting "5".

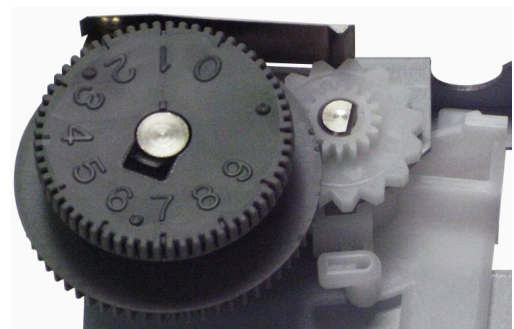


Figure 3-325

- 3) After installing all the parts, return the dial to its original position. If the original position is uncertain, first set the dial to "5". Then, perform feeding and adjust the position.

12. Eject Drive Connection Plate

Note: If this part ① is removed, it is difficult to assemble it. Normally, do not remove it. Remove the roller from above.

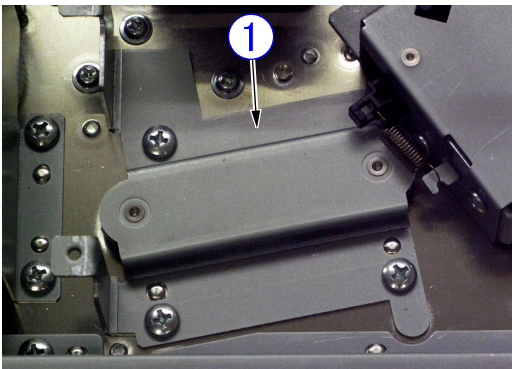


Figure 3-326

CHAPTER 4

INSTALLATION & MAINTENANCE

I. INSTALLATION	4-1	III. MAINTENANCE	4-7
II. PARTS REPLACEMENT.....	4-5		

I. INSTALLATION

1. Choosing Location

The following requirements should be met when installing this machine. The service technician should inspect the planned location before delivery.

- The power supply must be able to be connected separately from a reference voltage receptacle
 - * If a ground wire must be connected, connect it to the correct location shown below.
 - 1) Ground terminal of the receptacle
 - 2) Ground wire for which grounding work for office equipment is performed
 - Do not install this machine on a weak table or an inclined or unstable location. The weight of the main body is approx. 8.2kg.
 - The temperature should be between 10°C and 32.5°C and the relative humidity should be between 20% and 80%. However, since the performance is guaranteed at a temperature between 15°C and 27.5°C and a relative humidity between 25% and 75%, this machine should be installed in this range. If the imprinter is used, it should be used in the recommended environment for ink cartridges.
- This machine should not be installed near water faucets, boilers, humidifiers, refrigerators, etc. and should not be put in a location where the temperature or humidity changes abruptly.

- This machine should not be exposed to open flames, dust, ammonia fumes, direct sunlight, vibration, or electromagnetic wave.
- * If it has to be placed in a sunny place, the windows should be curtained to avoid direct sunlight.
- There should be an enough space around this machine for operation, maintenance and ventilation.
- * Since there are a ventilation hole and a power cord on the rear side, do not push this machine against the wall.
- * There must be sufficient space for opening the maintenance cover and pulling out the document stopper. Its dimension is shown in the figure below.

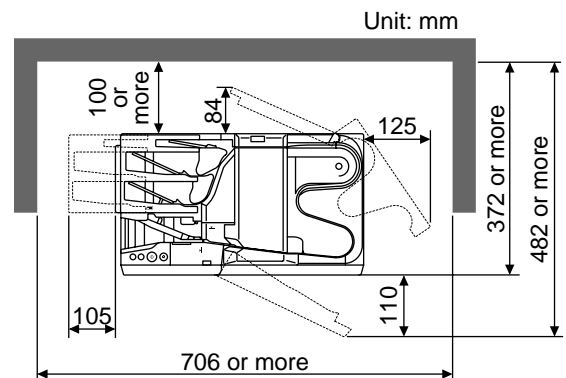


Figure 4-101

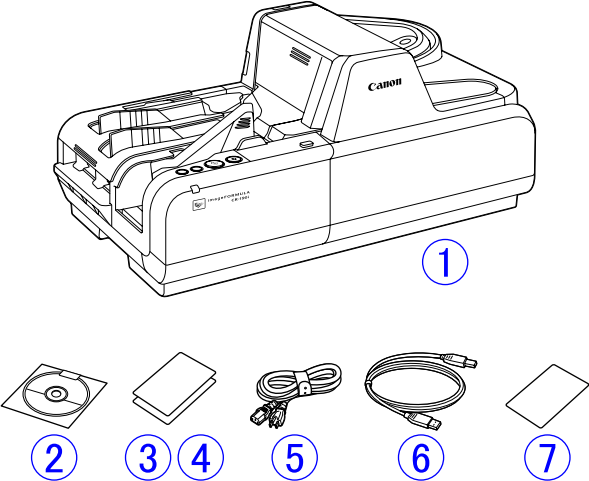
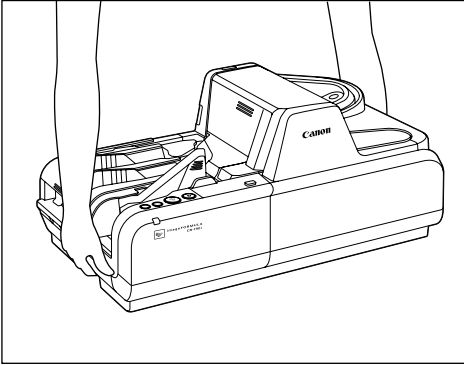
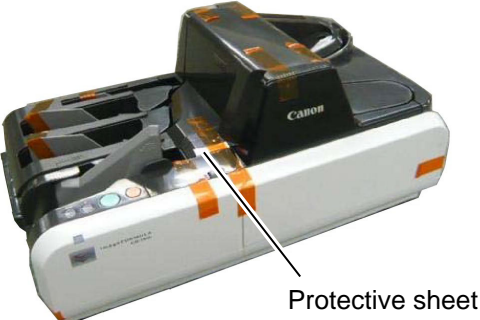
- Ensure to provide a carry-in route and a means of transporting this machine in the packing condition. The packing weight is approx. 11 kg, and the dimensions are approx. 594 (W) × 383 (D) × 329 (H) mm.

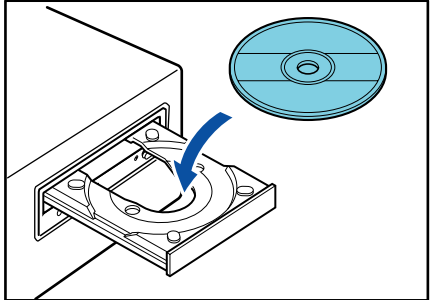
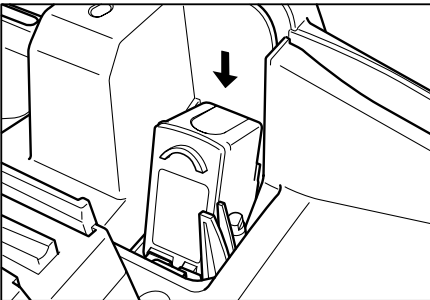
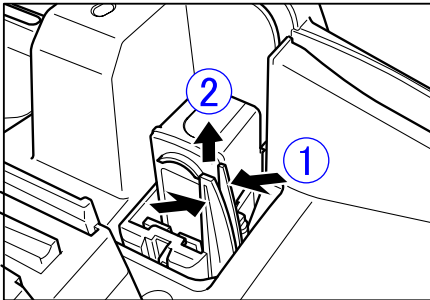
2. Installation

When metallic objects are brought from a cold room into a warm room, small drops of water may be formed on the surfaces. This phenomenon is called condensation and if the machine with condensation is used, various problems may take place. Therefore, allow this machine at least one

hour to adjust to room temperature before moving the machine from a cold room into a warm room and installing it.

The installation procedure is shown below. Refer to the "Installation Guide" supplied with the product. This guide describes precautions, software installation procedure, etc. in more details than this document.

No.	Step	Details/Remarks
1	Open the outer packaging box and take out the main body and accessories. Check that there is no problem about appearance. Check that the accessories are present. <ul style="list-style-type: none"> ① Main body ② Setup Disc ③ Installation Guide ④ Operation & Maintenance Guide ⑤ Power cord ⑥ USB cable ⑦ Warranty card (depending on models) 	
2	Place the main body at the installation location. When moving the main body, hold the right and left handles firmly.	
3	Peel off all the tape securing each part. Remove the protective sheet of the separation roller section while pressing the separation OFF button. Remove the top cover and roller cover, open the front and rear maintenance covers, and check if there is any problem inside.	

No.	Step	Details/Remarks
4	<p>Install software in the computer used for operation check.</p> <ul style="list-style-type: none"> ◆ If it has already been installed in the computer for servicing, it does not need to be installed during installation. ◆ If the service technician installs it in the user's computer, obtain the user's approval beforehand. ◆ If the user installs it, ask the user to install it according to the "Installation Guide". <p>Outline of the procedure</p> <ol style="list-style-type: none"> 1) Check the operating environment for the computer. 2) Install the "Scanning Utility" using the setup disc. 3) Connect the scanner to the computer. 4) Turn the power ON. 5) The device driver is installed automatically. 	<ul style="list-style-type: none"> ◆ Software install procedure 1) Insert the Setup Disc into the CD drive.  <ol style="list-style-type: none"> 2) Start [\\SU190i\setup.exe] on the setup disc. Operations differ according to the operating system used. 3) Complete installation according to the screen instructions. <p>Note:</p> <ol style="list-style-type: none"> 1) Do not connect the scanner to the computer before installing software. 2) Be sure to log on with administrator privileges. 3) The driver is also installed together with the "Scanning Utility".
5	<p>Set an ink cartridge.</p> <p>Since no ink cartridges are supplied with the product, have one ready in advance. Use Canon "PG-50 Black" or "PG-40 Black".</p> <p>Outline of the procedure</p> <ol style="list-style-type: none"> 1) Remove the top cover. 2) Push the ink cartridge into a specified location. 3) Adjust the printing position. <p>Note:</p> <ol style="list-style-type: none"> 1) Do not touch the contact point. 	 

No.	Step	Details/Remarks
6	Ensure that it operates correctly. Refer to the "User Manual" for details. "CHAPTER 1, GENERAL DESCRIPTION, III. User Operation" of this manual provides its overview.	

II. PARTS REPLACEMENT

1. Periodically Replaced Parts

This machine does not have any periodically replaced parts.

2. Consumable Parts

A service technician replaces parts other than those set as “consumables” in the next section.

No.	Parts name	Parts number	Expected life	Remarks
1	Pickup roller	MA2-9111	1,000,000 sheets	User-replaceable
2	Feed roller	MA2-9112	1,000,000 sheets	User-replaceable
3	Separation roller	MA2-9113	1,000,000 sheets	User-replaceable
4	Ink disposal tank	MA2-9202	When the ink cartridge is replaced	User-replaceable
5	Pickup motor	MF1-4500	6,000,000 sheets	
6	Jog motor	MF1-4500	6,000,000 sheets	If 1 batch contains 100 sheets and 1 batch takes 10 seconds, 166 hours.
7	Main motor (Front area)	MF1-4656	6,000,000 sheets	
8	Main motor (Back area)	MF1-4690	6,000,000 sheets	
9	Solenoid (Shutter)	MF1-4649	1,000,000 times	
10	Solenoid (Flapper 1)	MF1-4660	1,000,000 times	
11	Solenoid (Flapper 2)	MF1-4661	1,000,000 times	
12	Magnetic head	MF1-4658	1,000,000 sheets	
13	Jog roller (Front)	MG1-4443	25 hours	1,500,000 sheets (100 sheets x 6 seconds x 15000 times)
14	Jog roller (Rear)	MA2-9185		
15	Other rollers *Drive roller *Follower roller	MF1-4644 MF1-4645 Other	6,000,000 sheets	
16	Reading unit (Front)	MH7-7069	1,000 hours	LED life, 11,400,000 sheets (190 cpm)
17	Reading unit (Back)	MH7-7070		

Table 4-201

Note: When a part is removed, clean the area around the part. Remove paper powder, etc. If the magnetic head is replaced, also prepare for a “shield plate”. If the reading unit (back) is replaced, also prepare for an “ink guard”. Refer to "Chapter 3, DISASSEMBLY AND REASSEMBLY" for details.

3. Consumables

The list below shows the consumables specified as commercial goods. The user replaces them.

No.	Item name	Item code	Expected life	Remarks
1	Exchange roller kit	4623B001	1,000,000 sheets	Pickup roller/feed roller/separation roller, one each.
2	Ink disposal tank	4623B002	When the ink cartridge is replaced	Replace it when replacing the ink cartridge. One set of 5 boxes.
3	Ink cartridge PG-50 Black (or PG-40 Black)	0616B002 (0615B002)	116,000 sheets 3,490,000 characters	Expected life condition: PG-50 black 5400 sheets/day, 100 sheets/batch, 30 characters/sheet, small type normal.

Note: Use a "Canon ink cartridge PG-50 black or PG-40 black".

Table 4-202

III. MAINTENANCE

1. User Maintenance

A list is shown below. Refer to the “User Manual” for details.

[△: Cleaning, ●: Replace]

No.	Location/parts	Intervals		Details
		As required	Other	
1	Pickup roller	△	●	Remove the roller from the main body, wipe it with a cloth dipped into water and wrung tightly, then wipe dry. They should be replaced after an expected life of 1,000,000 sheets.
2	Feed roller	△	●	
3	Separation roller	△	●	
4	Rollers (Except No. 1-3)	△		Wipe these parts with a cloth dipped into water and wrung tightly, then wipe it with a clean dry cloth.
5	Reading glass	△		Wipe with a clean and dry cloth.
6	Appearance	△		Wipe these parts with a cloth dipped into water and wrung tightly, then wipe it with a clean dry cloth.
7	Feed path	△		Wipe these parts with a cloth dipped into water and wrung tightly, then wipe it with a clean dry cloth. Remove dust and paper powder from the pickup opening and the feed path.
8	Magnetic head	△		Wipe dry. A cleaner for audio heads may be used.
9	Ink cartridge	△	●	Clean the discharge outlet of the ink head with the supplied nozzle cleaning pad. Replace if ink runs out.
10	Ink disposal tank		●	Replace it when replacing the ink cartridge.

Table 4-301

2. Service Maintenance

There are no periodical maintenance items that are performed by the service technician, other than the replacement of “consumable parts” in the previous section.

When visiting a user, check whether the rollers and the reading glasses are dirty. If they are very dirty, advice the user to perform “user maintenance”.

CHAPTER 5

TROUBLESHOOTING

I. ERROR DISPLAY	5-1	IV. OPERATION TROUBLESHOOTING	5-22
II. SERVICE MODE	5-2	V. IMAGE TROUBLESHOOTING.....	5-26
III. LIST OF FAILURES	5-21	VI. AFTER REPLACING PARTS	5-29

I. ERROR DISPLAY

1. Main Body

The CR-190i does not have an error display area, but some errors are indicated by the power LED on the operation panel of the main body.

If the CR-190i operates normally, the power LED lights. The power LED blinks if it can not scan the document in case that an initial failure occurs on power ON or the paper jam occurs, etc.

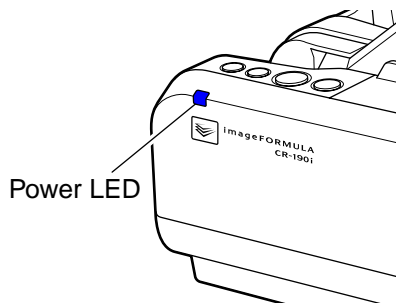


Figure 5-101

2. Computer

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

The contents of the error message differ depending on the software that is used. Most error messages are related to improper user operation and paper jams. The user shall perform the remedy according to the error message. If the user cannot solve the problem, however, the service technician should do.

The figure below shows several examples when using "Scanning Utility for CR-190i".

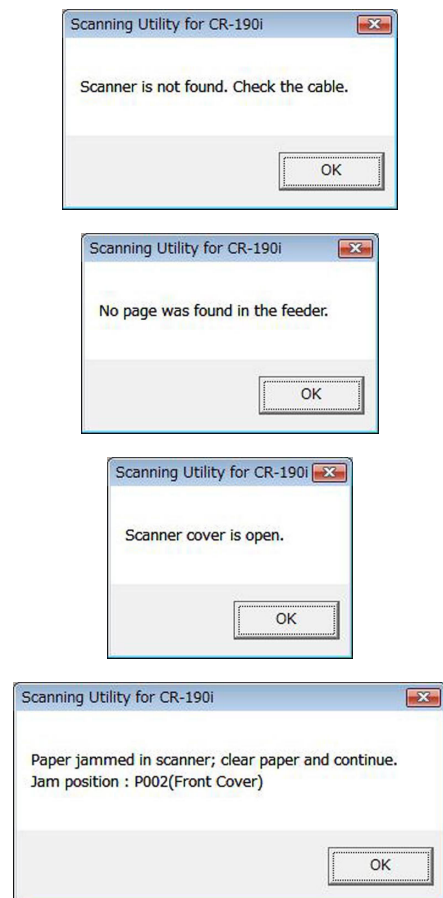


Figure 5-102

II. SERVICE MODE

A. Outline

1. Outline

The service mode of this machine can be executed by installing the service mode software (called service tool) located in the setup disc bundled with this machine or supplied for servicing on the computer for servicing. This service tool is an integrated tool that consists of a common EXE file and DLL files for each product.

The system requirements for the computer to be used are the same as those described in the "User Manual." The lower the CPU performance or memory capacity, the longer the processing time.

The initial screen is shown below.

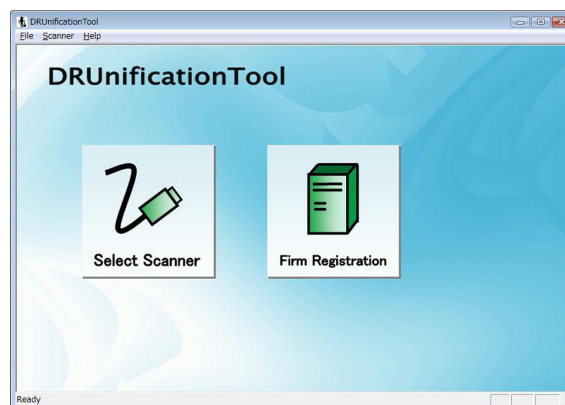


Figure 5-201

When a work button is selected on the initial screen, the corresponding screen is displayed and each service mode can be executed.

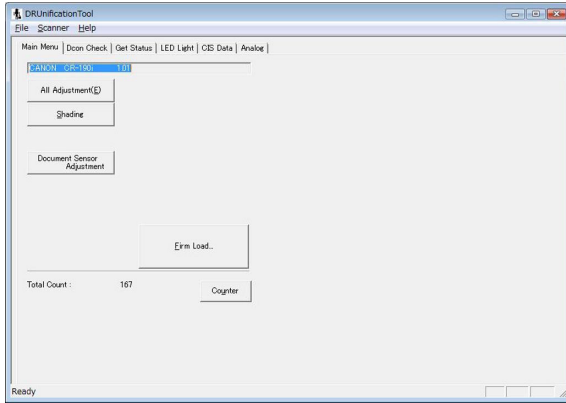
The item outline list of the service modes is shown below. Only "Select Scanner" is used for this machine.

No.	Tab display name	Functions
1	Main Menu	Perform the reading unit adjustment, install firmware, display/set the counter.
2	Dcon Check	Checking the operations of the motor, solenoid, sensor, and others.
3	Get Status	Display the error information, version, counter and other setting status.
4	LED Light	Checking the operation of the reading unit LED.
5	CIS Data	Display output waveform from the reading unit.
6	Analog	Display image sensor analog output. (However, the operation is checked in the field using "Dcon Check". This is used for analysis in design.)

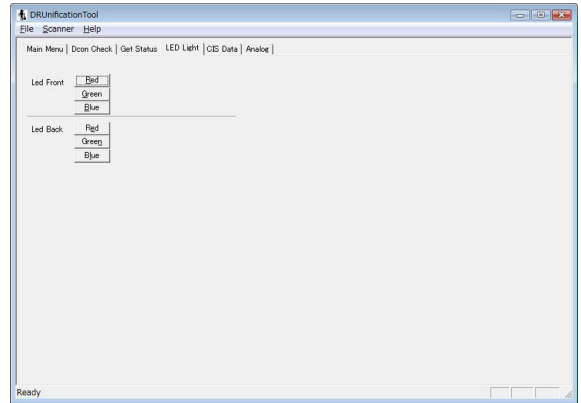
Table 5-201

Each tab screens are as follows.

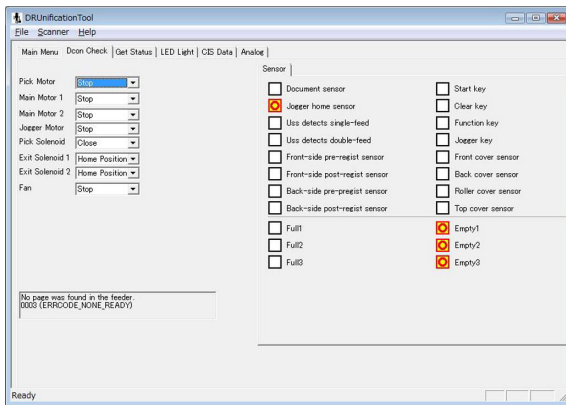
Main Menu



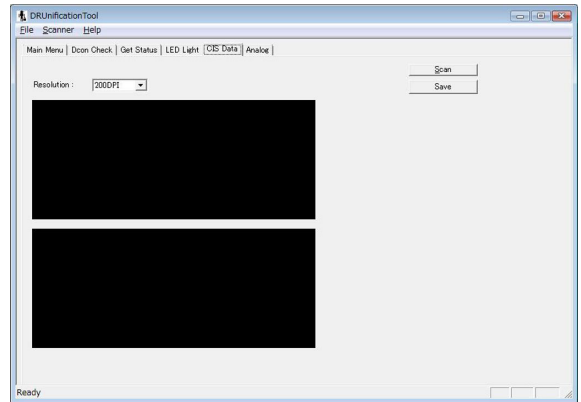
LED Light



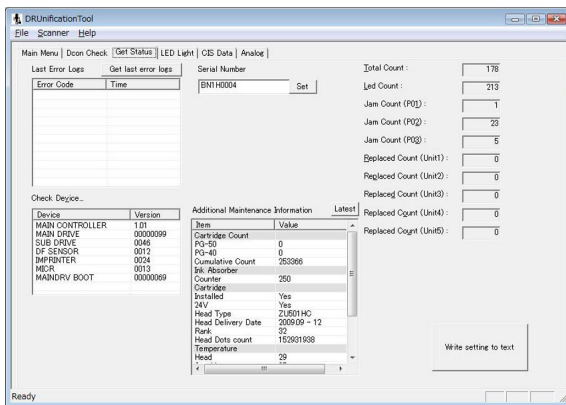
Dcon Check



CIS Data



Get Status



Analog

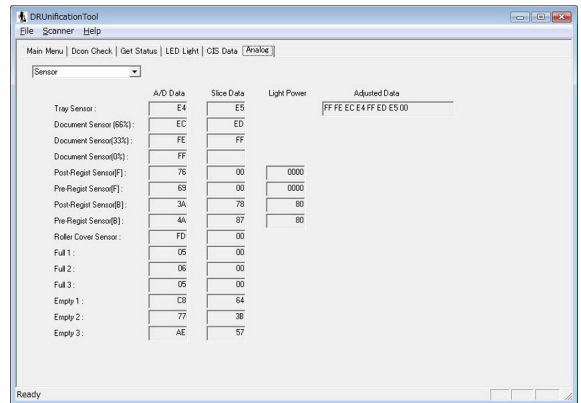


Figure 5-202

2. Installation Procedure

The procedure for installing the service tool from the setup disc is shown below. Do not install it on the user's computer.

- 1) Power ON the computer for servicing and start up the OS (Windows).
- 2) Set the setup disc that is bundled with this machine.
- 3) Copy the “¥Driver¥Tools” folder in the setup disc to a desired drive of the computer for servicing.

Note: Make sure to also install the driver for this machine in the computer for servicing. This is required as the service tool does not have a function for detecting with the scanner.

For how to install a software for the user bundled with this machine, refer to the “User Manual.”

However, for the specifications, such as the reading speed, refer to the computer system requirements described in the “User Manual.”

Note: Do not let the user know the folder name and password to be used.

3. Starting Up and Exiting Service Mode

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

- 1) Connect the computer for servicing with this machine using a USB interface cable.
- 2) Power ON this machine.
- 3) Open the installed folder and start up the “DRUnificationTool.exe” file.

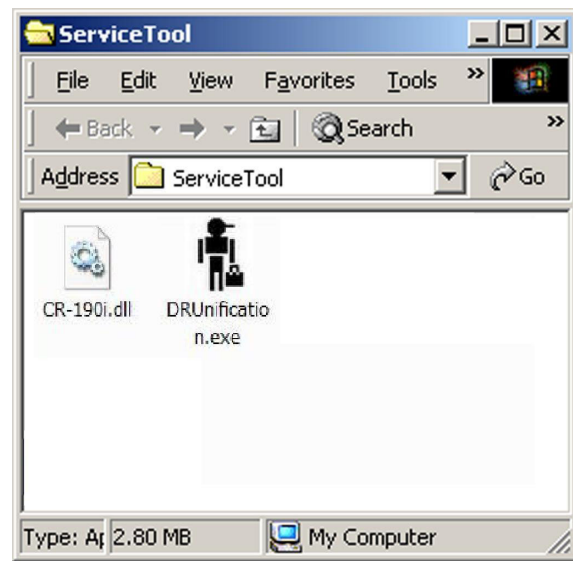


Figure 5-203

- 4) The password screen is displayed, so after inputting the 6 characters “market,” select [OK].



Figure 5-204

5) The initial screen is displayed.

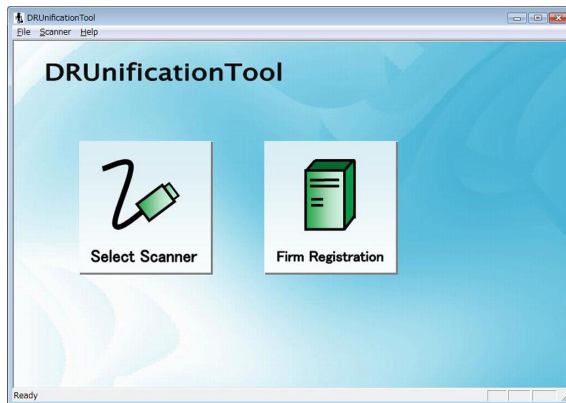


Figure 5-205

- 6) If each service mode is executed, select [Select Scanner]. "FirmRegistration" that registers firmware is not used for this machine.
- 7) When [Select Scanner] is selected, the scanner selection screen is displayed. Select the connected scanner.

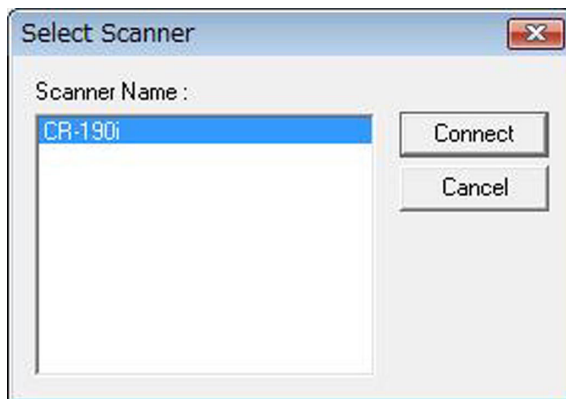


Figure 5-206

8) The Main Menu screen is displayed.

To terminate the service mode, select [ⓧ:Close] on each operation screen or select [Close Application] from [File] on the menu bar.

Reference: Folder and files

Save files required for the integrated tool in the same folder. The folder name can be changed freely, but the file name must not be changed. The files necessary for this machine are the following two types:

- DRUnificationTool.exe
Execution file (EXE file)
Used in common for all products.
- CR-190i.dll
File for each product (DLL file)

The tool can be used by saving the DLL file for another product for the integrated tool in this folder. The files shown below include a DLL for DR-9050C series and a language translation file (Japanese) "DRUnification-Tool.LOC", in addition to the file for this machine.

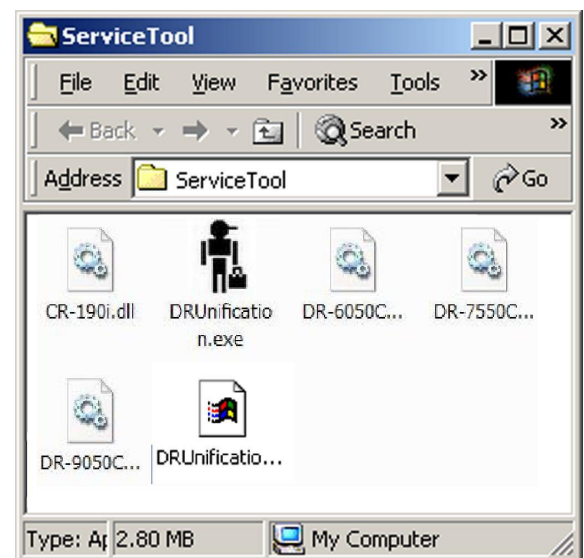


Figure 5-207

B. Main Menu

1. All Adjustment

This mode is used to adjust all image reading adjustments at the same time. Be sure to execute this mode after the control PCB that these adjustment values are saved has been replaced.

This mode consists of 2 individual adjustment items: "Shading," "Document Sensor Adjustment."

◆ Operation procedure

- 1) Open the front and rear maintenance covers.
- 2) Clean the periphery of the document sensor window and the reading glasses on both the front and back.
- 3) Set a shading sheet (service tool: TKM-0345) on the front and back image reading sections. Place the hole in the shading sheet on the projection on the reading section. Refer to the figure below.

Note: The shading sheet must not be stained or creased. It must be set straight in the correct direction.

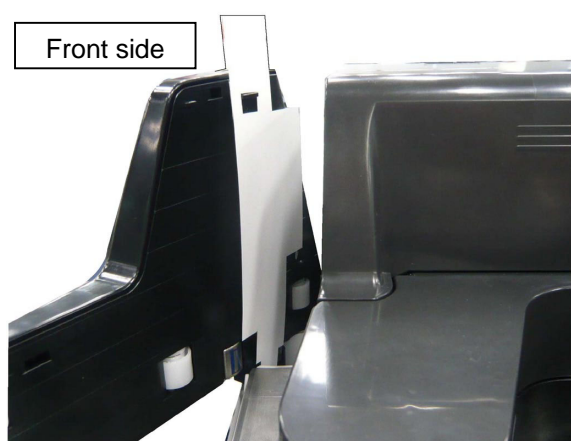


Figure 5-208

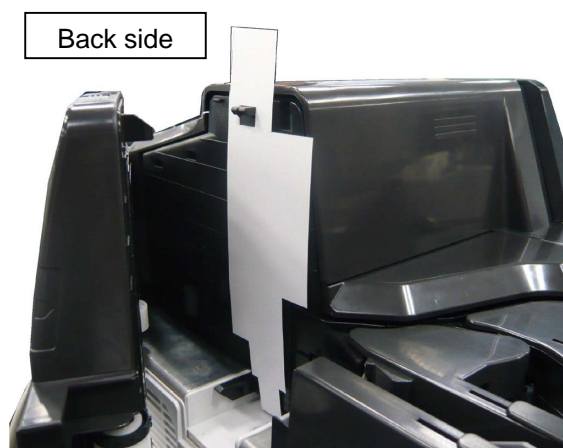


Figure 5-209

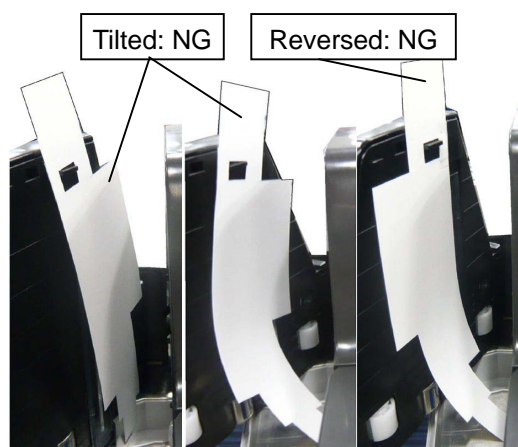


Figure 5-210

- 4) Close the front and rear maintenance covers slowly so that the shading sheets are not shifted.

- 5) Select [All Adjustment] on the Main Menu screen.

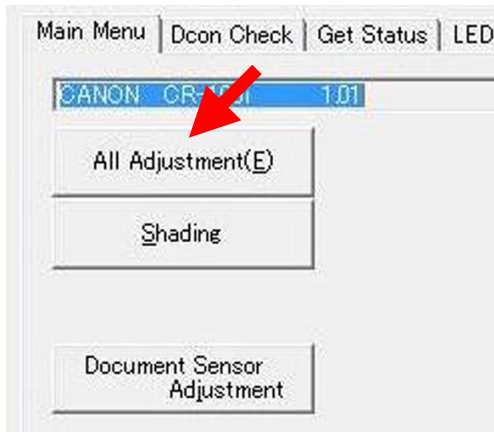


Figure 5-211

- 6) The adjustment starts automatically. The progress screen appears on the display. The display examples are shown below.

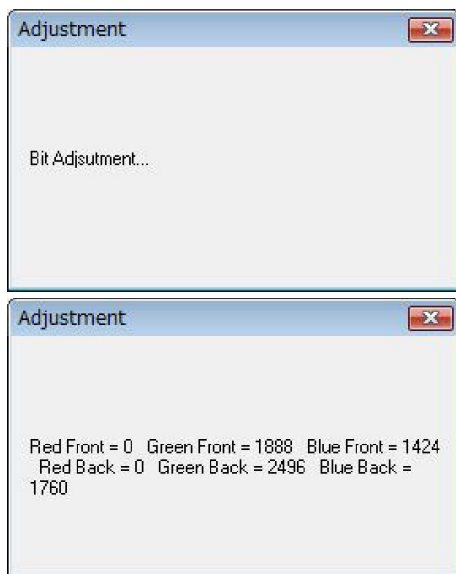


Figure 5-212

- 7) When the adjustment is finished, the progress screen disappears. It takes approx. 1 minute to finish.
- 8) Detach the shading sheets, and confirm that the image data is correct.

◆ Errors

If this mode is executed when a shading sheet tilts and blocks the registration sensor or when the cover is open, an error screen is displayed. If an anomaly occurs in the adjustment value, an error screen is displayed and adjustment is interrupted, an error screen is displayed, and adjustment is interrupted. If an error screen is displayed, select [OK] on the screen to stop adjustment. Then after checking the operation procedure, perform adjustment again. If adjustment is interrupted, the adjustment value remains the value prior to adjustment.

Sample error screens are shown below.



Figure 5-213

If the computer gets uncontrollable during use of the service mode including this tool, reset both the scanner and the computer.

◆ Shading sheet

- 1) Do not forget to set the shading sheets. If adjustment is performed without setting shading sheets, the white sheet for the background becomes a reference and a correct adjustment value cannot be obtained.

An example of each image is shown below.

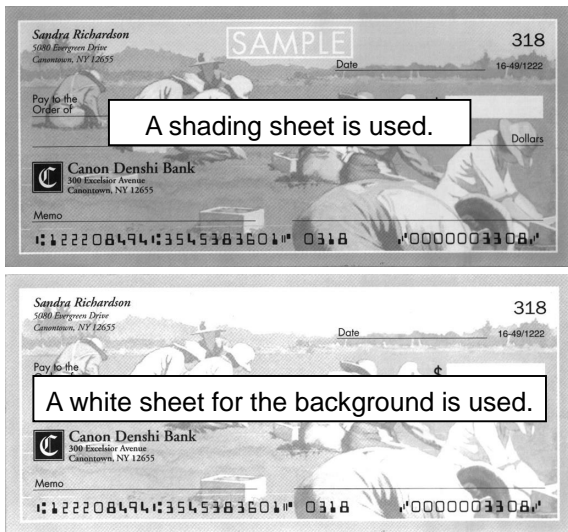


Figure 5-214

- 2) The shading sheet must not be stained or creased. An example of a shading sheet with black stains is shown below. In these parts, black becomes a white reference and white lines appear on the image.

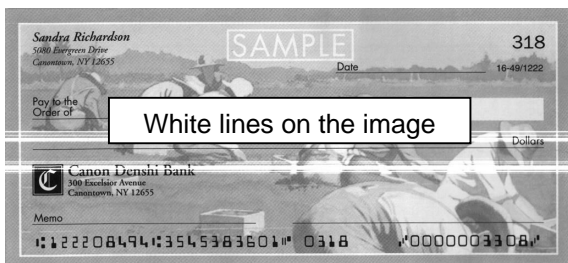


Figure 5-215

2. Shading/Document Sensor

This section describes the following individual adjustment items. If all the 2 adjustments are performed, use [All Adjustment] described in the previous section.

- [Shading]
- [Document Sensor Adjustment]

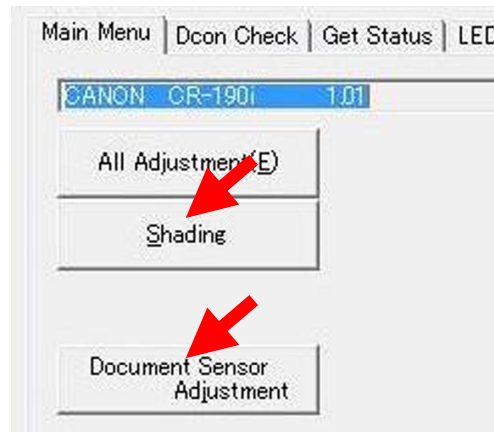


Figure 5-216

- Shading**

In this mode, the amount of light of the reading unit for each scan mode is adjusted and the shading correction value is determined. Execute this mode after the reading unit is replaced or if the quality of the read image is faulty.
- Operation procedure**

Same as the previous section, “All Adjustment”.
- Regist Adjustment**

In this mode, sensitivity of the document sensor is adjusted. Execute this mode after the document detect PCB is replaced and if the detection state of the document sensor is incorrect.

◆ Operation procedure

- 1) Clean the periphery of the document sensor window.

Note: Do not set any document.

- 2) Select "Document Sensor Adjustment".
- 3) The adjustment starts automatically and ends instantaneously.

3. Firm Load

Firmware is changed in this mode.

However, the firmware for this machine is installed on the computer at the same time when the drivers are installed on it. When the computer is connected to this machine, the versions of the firmware installed in this machine are checked. If it is older than the firmware installed on the computer, a new version of firmware is installed automatically on this machine.

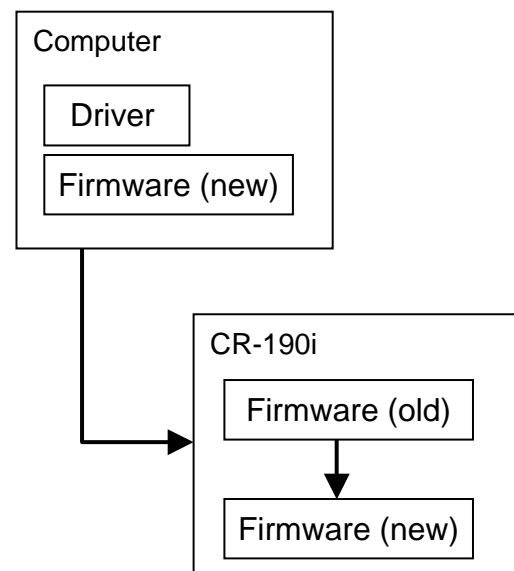


Figure 5-217

This makes it possible to reduce distribution of the firmware and the user can update the versions of the firmware.

Generally, therefore, the firmware is not changed with the service tool. However, this mode is used to install special firmware or install firmware in an emergency.

If the identification number of the version of the firmware used for these is not set to a newer one than the identification number installed on the computer, it is changed to the firmware installed on the computer when the computer is connected.

If the firmware is changed in this mode,

use the corresponding firmware.

◆ Operation Procedure

- 1) On the main menu screen, select [Firm Load].
- 2) The screen is displayed requiring the file in which software is stored to be selected.
- 3) Select and open the file.
- 4) It is loaded automatically and a progress screen is displayed.

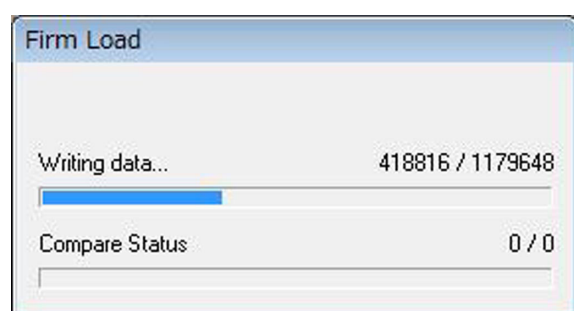


Figure 5-218

- 5) When the load is finished, the progress screen.
- 6) End the service tool and reset the power supply of this machine.
- 7) Start the service tool and verify that the number of firmware version is correct.

Note: Do not turn the power OFF during loading. Even if it is turned OFF, the firmware can be usually installed by executing this mode again. However, it is not guaranteed. The power LED may not light even when the power is turned ON.

4. Counter

This mode is used to confirm the number of sheets fed and document jams and record the number of sheets fed when replacing consumable parts. These values can be changed.

When the [Counter] is selected on the Main Menu screen, the Change Counter screen is displayed. The screen and a list of items below shows the screen and list of items.

The [Total Count] value is displayed at the lower part of the Main Menu screen.

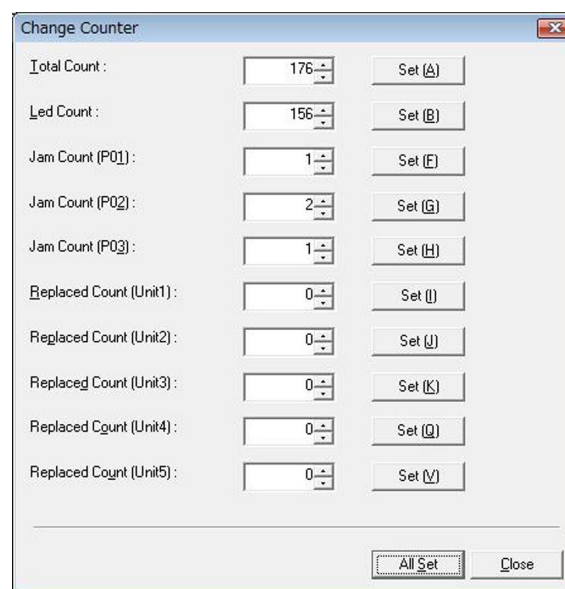


Figure 5-219

The details of each item are shown below.

Display	Details
Total Count	Total scanning count
Led Count	Total lighting time of the LEDs used on the reading unit (upper/lower) and frame detection unit The unit is "second".
Jam Count (P01)	Number of documents jams in the pickup section
Jam Count (P02)	Number of documents jams in the front area feeding section
Jam Count (P03)	Number of documents jams in the back area feeding section
Replaced Count (Unit1) (Unit2) (Unit3) (Unit4) (Unit5)	Refer to the note. An example is shown. Unit1: Pickup section roller Unit2: Jog roller Unit3: Other rollers Unit4: Magnetic head Unit5: Reading unit

Table 5-202

Note:For Replaced Count, enter total scanning count manually when the service technician replaces parts as a guide for the next replacement time. The related part is decided if necessary.

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

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

Note:Since the number of writes of [Total

Count] and [Led Count] values into memory is limited, new values are not written into memory if the number of sheets fed is 10 sheets or less. Therefore, if the power is turned OFF when the number of sheets fed is 10 or less, the original value remains. However, if an abnormality, such as a document jam, occurs, they are written into memory regardless of the number of sheets fed.

C. Dcon Check

1. Motor, Solenoid

Check the operation of the motor and solenoid. The corresponding screen and a list of items are shown below.

When conditions are selected from the pulldown box, the motor or solenoid is driven accordingly.



Figure 5-220

Display	Target name
Pick Motor	Pickup motor
Main Motor 1	Main motor (front area)
Main Motor 2	Main motor (back area)
Jogger Motor	Jog motor
Pick Solenoid	Solenoid (shutter)
Exit Solenoid 1	Solenoid (flapper 1)
Exit Solenoid 2	Solenoid (flapper 2)
Fan	Cooling fan

Table 5-203

2. Sensor, Key

Perform the operation of sensor and operation buttons check. The corresponding screen and a list of items are shown below.

When each sensor enters the detection state, the corresponding mark lights.

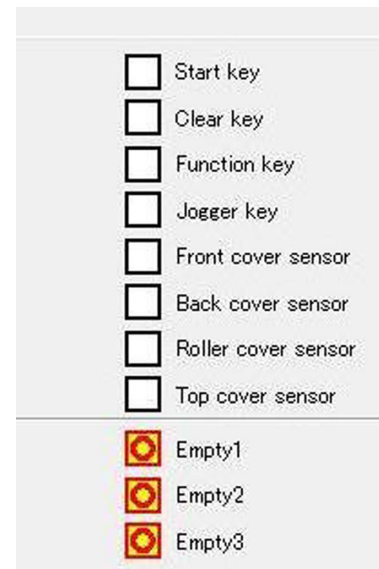
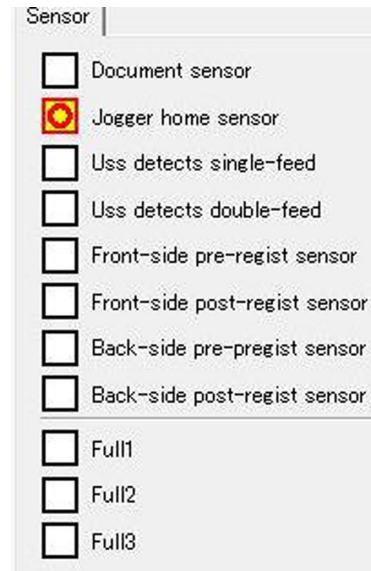


Figure 5-221

No.	Display/Target name
1	Document sensor /Document sensor
2	Jogger home sensor /Jog HP sensor
3	Uss detects single-feed /Ultrasonic sensor (detect one sheet)
4	Uss detects double-feed /Ultrasonic sensor (detect double feed)
5	Front-side pre-regist sensor /Registaration pre-sensor (fornt)
6	Front-side post-regist sensor /Registaration post-sensor (fornt)
7	Back-side pre-regist sensor /Registaration pre-sensor (back)
8	Back-side post-regist sensor /Registaration post-sensor (back)
9	Full1 /Full sensor (pocket 1)
10	Full2 /Full sensor (pocket 2)
11	Full3 /Full sensor (pocket 3)
12	Start key /START button
13	Clear key /STOP button
14	Function key /Function button
15	Jogger key /JOG button
16	Front cover sensor /Maintenance cover (front) sensor
17	Back cover sensor /Maintenance cover (back) sensor
18	Roller cover sensor /Roller cover sensor
19	Top cover sensor /Top cover sensor
20	Empty1 /Empty sensor (pocket 1)
21	Empty2 /Empty sensor (pocket 2)
22	Empty3 /Empty sensor (pocket 3)

Table 5-204

D. Get Status

1. Last Error Logs

When [Get last error logs] is selected, up to 10 recent error codes are displayed.

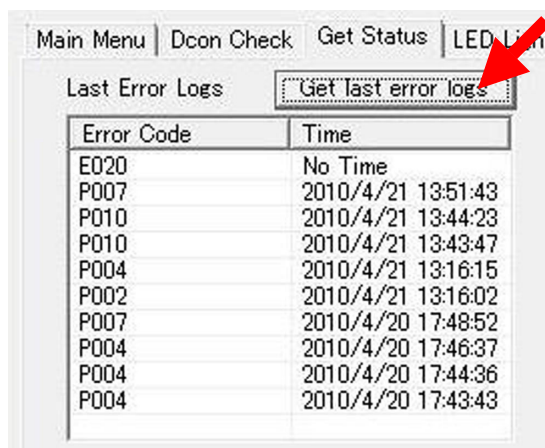


Figure 5-222

However, all errors are not displayed, only the following error codes are displayed.

“Time” is displayed only if the scanner gets time from the computer. Otherwise, “No Time” is displayed.

◆ Paper jam

Code	Failure
P001	Timing error when paper enters the registration pre-sensor (front)
P002	Timing error when paper goes out of the registration pre-sensor (front)
P004	Resident on the registration post-sensor (back).
P006	Resident on the registration pre-sensor (front).
P007	Does not reach the registration pre-sensor (back).
P010	Resident on the registration pre-sensor (back).
P020	Does not reach the registration post-sensor (back).

Table 5-205

◆ Hardware error

Code	Failure
E017	Imprinter voltage error
E020	Main motor (front area) error
E024	Main motor (back area) error
E032	A model difference
E039	Jog motor error
E040	Communication error with sub drive
E041	Communication error with main drive
E042	Communication error with imprinter
E044	Communication error with ultrasonic sensor
E045	Communication error with magnetic head
E054	CIS PCB (front) error
E055	CIS PCB (back) error
E061	Imprinter temperature error
E072	Imprinter carriage error
E086	EEPROM write error

Table 5-206

2. Check Device

The versions of software of this machine are displayed.

Device	Version
MAIN CONTROLLER	1.01
MAIN DRIVE	00000099
SUB DRIVE	0046
DF SENSOR	0012
IMPRINTER	0024
MICR	0013
MAINDRV BOOT	00000069

Figure 5-223

Display	Details
MAIN CONTROLLER	Main body firmware
MAIN DRIVE	Main drive (Main motor, etc.)
SUB DRIVE	Sub drive (Other motors, etc.)
DF SENSOR	Ultrasonic sensor
IMPRINTER	Imprinter
MICR	Magnetic head (MICR)
MAINDRV BOOT	Boot of main drive

Table 5-207

3. Serial Number

The serial number and other information are displayed.

Serial Number

XXXXX00001

Figure 5-224

Serial number data is saved on the control PCB. If this PCB is replaced, enter a number and select [Set] on the right side.

4. Additional Maintenance

Information on the imprinter is displayed.

Item	Value
Cartridge Count	
PG-50	0
PG-40	0
Cumulative Count	253366
Ink Absorber Counter	250
Cartridge Installed	Yes
24V	Yes
Head Type	ZU501HC
Head Delivery Date	2009.09 - 12
Rank	32
Head Dots count	152931938
Temperature Head	29

Figure 5-225

The displayed information is the information when the service tool starts. When “Latest” is selected, information at that time is displayed. Since there are a lot of items, display the whole using the slide bar.

Information on usage of the imprinter can be known in the field and information may be provided for consideration.

No.	Display/Target name
1	Cartridge Count PG-50 PG-40 /Number of ink cartridges used (Count up immediately after unsealing)
2	Cumulative Count /Total amount of ink used (number of dots)
3	Ink Absorber Counter /Total amount of ink ejected to the ink disposal tank
4	Cartridge Installed /Confirmation of setting of the cartridge
5	24V /Confirmation whether the cartridge is normal
6	Head Type /ZU501HC→PG-50, ZU501→PG-40
7	Head Delivery Date /Cartridge manufacture date
8	Rank /Cartridge stratification
9	Head Dots Count /Amount of ink used of the cartridge being used
10	Temperature Head /Ink cartridge temperature
11	Outside /Ambient temperature
12	Warnings Ink Limit /Whether the cartridge is empty (cannot print)
13	Ink Empty /Whether the cartridge is empty (close to limit)
14	Ink Near Empty /Whether the cartridge is nearly empty
15	Ink Remain /Residual amount of ink

Table 5-208

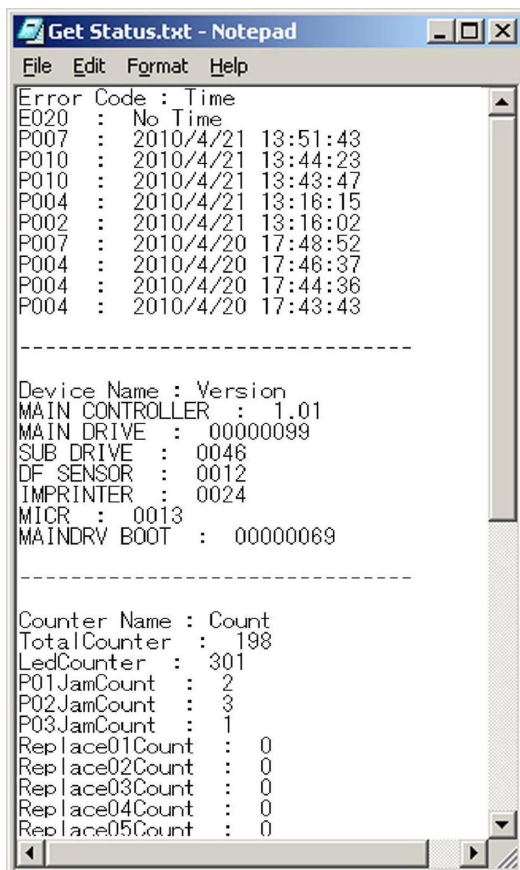
5. Write Setting

When [Write setting to text] on the lower right side is selected, displayed information can be saved in a text file. It is used if information is provided for consideration, etc..

◆ Operation procedure

- 1) Select [Get last error logs] and display the error log.
- 2) Select [Write setting to text].
- 3) The save screen is displayed. Set a save location.
- 4) The data is saved.

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



```

Get Status.txt - Notepad
File Edit Format Help
Error Code : Time
E020 : No Time
P007 : 2010/4/21 13:51:43
P010 : 2010/4/21 13:44:23
P010 : 2010/4/21 13:43:47
P004 : 2010/4/21 13:16:15
P002 : 2010/4/21 13:16:02
P007 : 2010/4/20 17:48:52
P004 : 2010/4/20 17:46:37
P004 : 2010/4/20 17:44:36
P004 : 2010/4/20 17:43:43

-----

Device Name : Version
MAIN CONTROLLER : 1.01
MAIN DRIVE : 00000099
SUB DRIVE : 0046
DF SENSOR : 0012
IMPRINTER : 0024
MICR : 0013
MAINDRV BOOT : 00000069

-----

Counter Name : Count
TotalCounter : 198
LedCounter : 301
P01JamCount : 2
P02JamCount : 3
P03JamCount : 1
Replace01Count : 0
Replace02Count : 0
Replace03Count : 0
Replace04Count : 0
Replace05Count : 0

```

Figure 5-226

E. Others

1. LED Light

Verify that LEDs of the reading unit light.

When the corresponding button on the [LED Light] screen is selected, the LED lights. When the button is pressed again, the LED turns off.

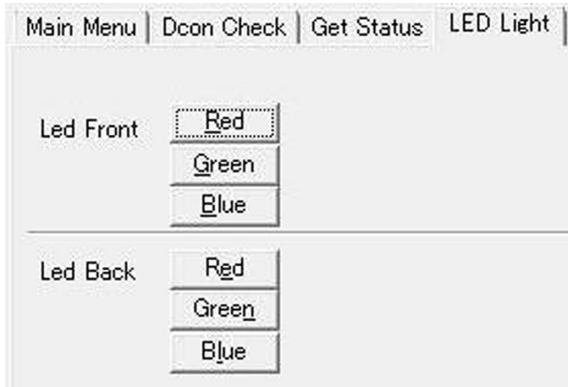


Figure 5-227

2. CIS Data

Enter line data of the reading unit and display its waveform. Failures of the reading unit can be confirmed. When “Scan” is selected on the “CIS Data” screen, waveforms are displayed. A waveform on the front side is displayed at the upper part and a waveform on the back side is displayed at the lower part.

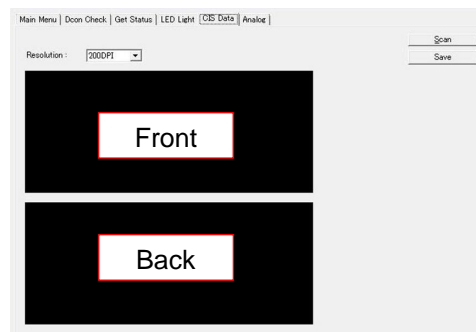


Figure 5-228

◆ Waveform 1

This is a general waveform.

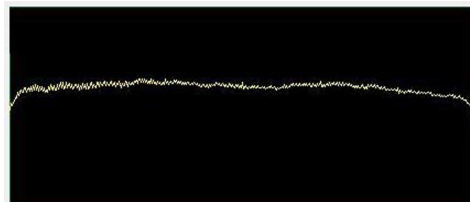


Figure 5-229

◆ Waveform 2

A waveform that is displayed when there are dark stains on the reading glass is shown below. The parts of the waveform that correspond to the stains went down.

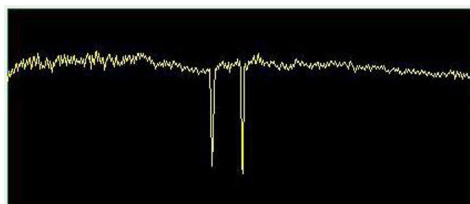


Figure 5-230

3. Analog

This mode is used to check analog data for sensors. However, the operation check of normal sensors is performed in the [Dcon Check / Sensor]. It is used if information is provided for consideration, etc..

There are five types of screens: “Sensor”, “USS”, “Imprinter”, “MICR”, and “All”. Select among them from a pulldown box. The screen that is displayed when “Sensor” is selected is shown below.

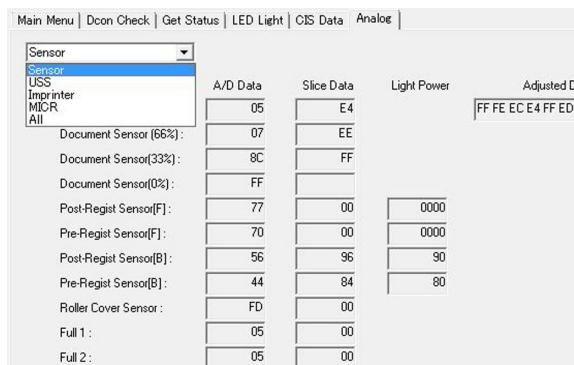


Figure 5-231

4. Application Information

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

After selecting [Help] on the menu bar on the top of screen, select [Application Information].

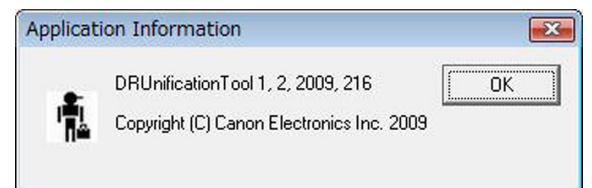
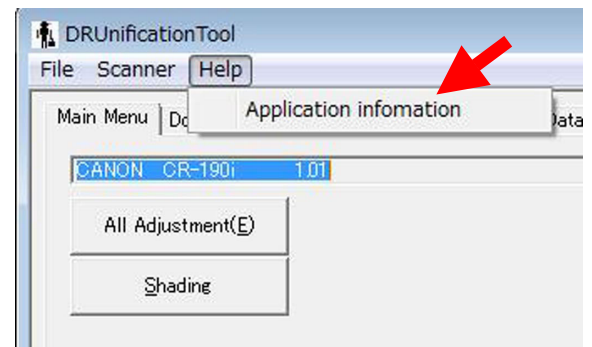


Figure 5-232

5. Simulation Mode

This mode is used if the service engineer learns about the service mode when the scanner is not connected.

◆ Operation procedure

- 1) Enter 8 characters "training" as a password.
- 2) The screen is the same as the actual one and buttons other than some ones can be operated as usual.

Note: Operations that need communication with the scanner are not carried out. Data is not displayed.

6. Mechanical Feed Mode

This mode is not the service mode to use the service tool, however, this machine also supports a mechanical feed mode to check the feed condition without using a computer. Use this mode if necessary.

This mode is the same as the operation method described in "Cleaning with the Cleaning Cards (USA only)" in the user manual.

◆ Operation procedure

- 1) While pressing the "Start" and "Stop" buttons, turn the power ON and release both buttons.

Note: When it is in the mechanical feed mode, the power indicator keeps blinking.

- 2) Set a document and press the "Start" button to start feeding.
- 3) To end the mechanical feed mode, turn the power OFF.

III. LIST OF FAILURES

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

1. Operation Failures

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

No.	Cause Failure	System/ Software	Hard- ware	Connec- tion	Dirt	Docu- ment	Setting
1	No power is supplied		X	X			
2	Scanner is not recognized	X		X			
3	Scanning does not start	X	X	X			X
4	Documents are not fed properly		X		X	X	
5	Scanning speed is low	X					X
6	MICR cannot be read correctly.		X		X	X	
7	Cannot be printed correctly.		X		X		X

Table 5-301

2. Images Failures

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

No.	Cause Failure	System/ Software	Hard- ware	Connec- tion	Dirt	Docu- ment	Setting
1	Completely black, completely white, all streaks	X	X	X	X		X
2	Too dark, too light				X		X
3	Wrong image size					X	X
4	Image skews					X	X
5	Streaks on image		X		X		
6	Text invisible					X	X

Table 5-302

IV. OPERATION TROUBLESHOOTING

When an operation failure occurs, first check for an “Error Message” displayed on this machine and computer. In addition, check the operation of the various sensors, motors using the “Service Mode.”

1. No Power Is Supplied

The power LED of this machine does not light. Initial operation is not performed when the power is turned ON.

Cause/faulty location	Step	Check item	Result	Action
Cover open	1	Is not the cover open? When the cover is open, an initial operation is not performed. /The power LED flashes.	YES	Close the cover.
AC power supply voltage	2	Is the specified voltage being supplied at the outlet?	NO	Explain to the user that the trouble is not with this machine.
Connection of power cord	3	Is the power cord connected?	NO	Connect it properly.
DC power supply	4	Dose the LED on the control PCB light when the power switch is turned ON?	YES	The power is supplied. Check the step 5.
			NO	Check the step 6 or later.
Operation PCB	5	Is the cable connected to the PCB?	YES	Replace the operation PCB.
			NO	Connect it properly.
Power switch	6	Are the cables properly connected to the power switch?	NO	Connect it properly.
Power supply PCB Control PCB	7	Are the cables properly connected to the PCB?	NO	Connect it properly.
	8	Is the problem solved when these PCBs are replaced?	YES	End.

Table 5-401

2. Scanner Is Not Recognized

Note: Install the “Scanning Utility” in the computer before connecting the scanner.

Cause/faulty location	Step	Check item	Result	Action
Power supply	1	Is the power supplied to this machine?	NO	Perform the section 1: “No Power Is Supplied”.
Connection of USB cable	2	Is the USB cable properly connected?	NO	Connect it properly.
USB conformance •Cable, Hub •Interface, Computer	3	Are cables and interfaces that conform to this machine used?	NO	Use them properly.

Table 5-402

3. Scanning Does Not Start

Note: Scanning may not start when a “cover open” or “no document” error message is displayed due to a sensor problem.

Cause/faulty location	Step	Check item	Result	Action
System	1	Is the problem solved when the scanner and computer are reset?	YES	End.
Software	2	Is the problem solved when the scanner driver and the application are reinstalled?	YES	End.
Connector connection	3	Are the motor and sensor connectors connected properly?	NO	Connect them properly.
Drive transmission system	4	Is the transmission system driven by the motor normal? Are such parts as gears and belts normal?	NO	Attach the parts properly. Replace needed parts.
Motor, solenoid	5	Is the operation normal when checking the operation in the service mode?	NO	Check the cable connections. Replace needed parts.
Sensor	6	Is the operation normal when checking the operation in the service mode?	NO	Check the attachment of the sensor, light guide and PCB. Check the cable connections for the sensor.
Relay PCB Control PCB	7	Is the problem solved when these PCBs are replaced?	YES	End.

Table 5-403

4. Documents Are Not Fed Properly

Note: If a sensor failure occurs an error message such as “paper jam” or “double feed” may be shown.

Cause/faulty location	Step	Check item	Result	Action
Document	1	Is the document within the specifications (thickness, dimensions, fold, curl, etc.)?	NO	Ask the user to use documents within the specifications.
Document setting	2	Does the document line up?	NO	Line up the documents by using the jogger.
Separation OFF setting	3	Is the separation OFF mode used for documents that cannot be fed continuously?	NO	Use separation OFF mode.
Separation roller gap adjustment	4	Is gap adjustment performed? (Do not turn the dial excessively.)	NO	Perform adjustment correctly.
Roller	5	Is the roller properly mounted?	NO	Mount it properly.
	6	Is it dirty or deformed?	NO	Clean or replace it.
Parts in feed path	7	Are all parts that the documents contact properly mounted (not loose or tilted)?	NO	Mount them properly.
	8	Is the surface in contact with the document smooth (not scratched, no burrs)?	NO	Replace faulty parts.
Drive transmission system	9	Is any abnormal noise emitted when feeding documents? Are any gears broken or is the belt loose?	YES	Mount the parts properly. Replace faulty parts.
Motor, solenoid	10	Is the operation normal when checking the operation in the service mode?	NO	Check the cable connections. Replace needed parts.
Sensor (Each sensor PCB)	11	Is the operation normal when checking the operation in the service mode?	NO	Check the attachment of the sensor, light guide and PCB. Check the cable connections for the sensor. Replace needed parts.
Relay PCB Control PCB	12	Is the problem solved when these PCBs are replaced?	YES	End.

Table 5-404

5. Scanning Speed Is Slow

Selecting higher resolutions, color setting and/or special functions may make 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 memory capacity sufficient?	NO	Add the memory capacity.
	2	Is any other application started up?	YES	Close other applications.
	3	Is the hard disk short of empty capacity?	YES	Increase empty capacity of the hard disk.
Hi-Speed USB2.0 is not supported	4	Is the USB interface supported?	NO	Use a supported computer.
	5	Is the USB cable supported?	NO	Use a included USB cable.
	6	Is the USB hub supported?	NO	Use a supported USB hub.

Table 5-405

6. MICR Cannot Be Read Correctly

Note: If the check is not fed correctly, MICR cannot be read correctly. Refer to “4. Cannot be fed correctly.”

Cause/Faulty location	Step	Check item	Result	Action
MICR character	1	Are MICR characters printed correctly?	NO	Explain to the user that the trouble is not with this machine.
Magnetic head stain	2	Is the magnetic head clean?	NO	Clean it.
Magnetic head unit	3	Is the cable connected to the PCB?	NO	Connect it properly.
	4	Is the problem solved when the magnetic head is replaced?	YES	End.

Table 5-406

7. Cannot Be Printed Correctly

Cause/Faulty location	Step	Check item	Result	Action
Print setting	1	Is the print setting properly set?	NO	Set them properly.
Ink cartridge	2	Is the nozzle clean?	NO	Clean it.
	3	Does ink remain?	NO	Replace it.

Table 5-407

V. IMAGE TROUBLESHOOTING

Note: There are times when, depending on the type of image and settings, document reproducibility becomes poor. In such case, the image may be improved by changing the settings. Confirm whether it is only one side or both sides that image trouble occurs. In the case of the one side, check an item related to the aspect.

1. Completely Black, Completely White, All Streaks

Completely Black, Completely White, or All Streaks are output.

Cause/faulty location	Step	Check item	Result	Action
"Brightness" setting	1	Is the "Brightness" setting appropriate?	NO	Change the setting. Also change "Contrast" if necessary.
System	2	Is the problem solved when the scanner power is reset and the computer is restarted?	YES	End.
Reading unit	3	Are the reading related cables connected properly?	NO	Connect them properly.
	4	Is the problem solved when the reading unit is replaced?	YES	End.
Control PCB	5	Is the problem solved when the control PCB is replaced?	YES	End.

Table 5-501

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 "128" in normal case but may be required to change according to the type of document.	NO	Change the setting.
"Contrast" setting	2	Is the "Contrast" properly set? Note: The binary mode is automatic only.	NO	Change the setting.
Shading	3	Is the problem solved when shading is performed in service mode?	YES	End.

Table 5-502

3. Wrong Image Size

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

Cause/Faulty Location	Step	Check Item	Result	Action
Setup of "Paper size"	1	Is the setup of "Paper size" correct?	NO	Change the setup.
Document setting	2	Does the document line up?	NO	Line up the documents with using the jogger.
Document size is different.	3	Was "Auto detection" set?	NO	Set it.

Table 5-503

4. Image Skews

If the document skews when fed, the scanned image also skews.

Cause/faulty location	Step	Check item	Result	Action
Document setting	1	Does the document line up?	NO	Line up the documents with using the jogger.
Document feeding	2	Is the document fed straight?	NO	Carry out check items listed in "IV. OPERATION TROUBLESHOOTING, 4. Documents Are Not Fed Properly."
"Deskew" setting	3	Is the "Deskew" set?	NO	Set the function. Slant can be corrected by image processing.

Table 5-504

5. Streaks on Image

If the reading glass surface is dirty, streaks appear on the scanned images in the feed direction. Dirt on the rollers may also be transferred to the documents.

On the other hand, white streaks appearing on the scanned images are caused by the execution of the shading correction while the reading unit is dirty.

Cause/faulty location	Step	Check item	Result	Action
Reading glasses	1	Are the reading glasses clean?	NO	Clean the reading glasses. Replace the reading unit if scratches are found.
Roller	2	Are the surfaces clean?	NO	Clean or replace the roller.
Feed path	3	Is the feed path clean?	NO	Clean the feed path.
Reading unit	4	Is the Reading unit inside clean?	NO	Clean or replace the reading unit.

Table 5-505

6. Text Invisible

When the background includes colors or patterns, text may be hidden by the background when scanning in black and white mode. There are “TFT: Fine Text Filtering” mode as well as “Gray” to solve this problem.

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

Cause/faulty location	Step	Check item	Result	Action
“Mode” setting	1	Is the problem solved when the “Gray” is set?	YES	End.
	2	Is the problem solved when the “Fine Text Filtering” is set?	YES	End.
“Brightness” setting	3	Is the problem solved when the “Brightness” setting is changed?	YES	End.

Table 5-506

VI. AFTER REPLACING PARTS

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

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

1) Control PCB

Perform "All Adjustment" in the service mode. Change the value for "Counter" and enter a serial number for "Get Status".

2) Reading unit

Perform "Shading" in the service mode.

3) Document sensor

When replacing or reassembling the Document detection PCB on which a document sensor is built, perform "Document Sensor Adjustment" in the service mode.

4) Consumable parts

When consumable parts, such as rollers, which are replaced by the service technician, are replaced, set the number of sheets fed during replacement by the "Counter" in the service mode.

5) Jog roller

The position adjustment is necessary. Refer to "CHAPTER 3 DISASSEMBLY & REASSEMBLY".

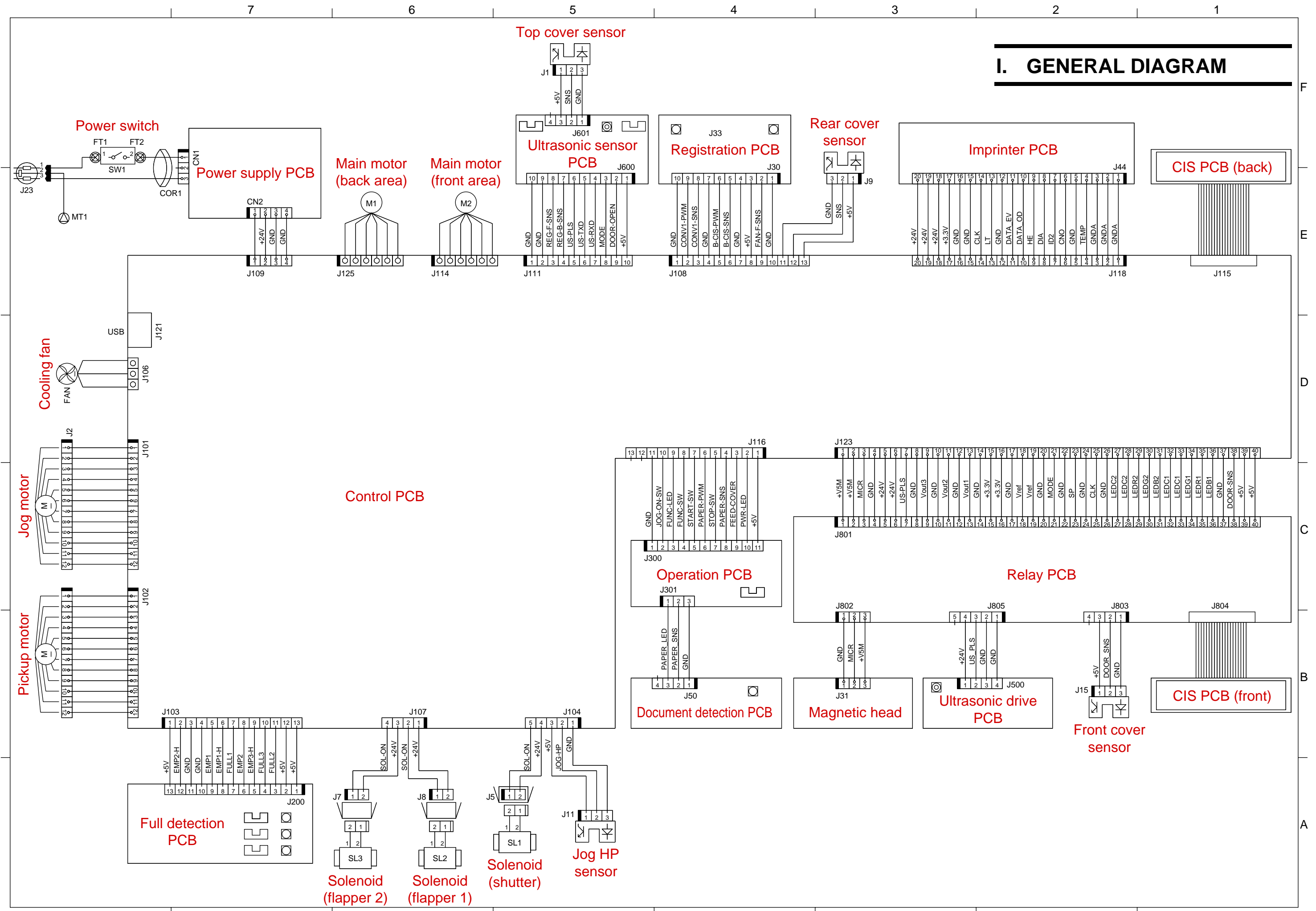
6) Separation gap adjustment dial

The position adjustment is necessary. Refer to "CHAPTER 3 DISASSEMBLY & REASSEMBLY".

APPENDIX

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



II. LIST OF SPECIAL EQUIPMENT

The list of special tools needed for service works of this machine is the following.

No.	Equipment name	Equipment number	Rank	Usage/Remarks
1	Shading sheet	TKM-0345	B	For the shading An exclusive goods for CR-190i.

Table A-201

Note: Rank notation:

A = Equipment that each service technician must carry.

B = Equipment that can be shared among a group of 5 service technicians.

C = Equipment that each workshop needs to have.

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