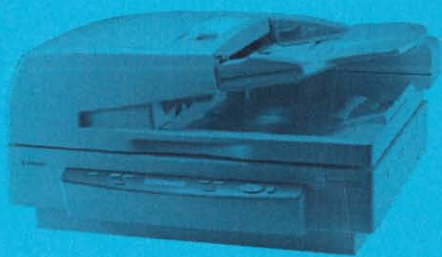
DR-7090C

SERVICE MANUAL



Canon

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REV. 0

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

PREFACE

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

Contents

Chapter 1: General description
Product specifications, name of parts, operation method

Chapter 2: Functions and operation
Description of operation of machine system and electrical system by function

Chapter 3: Disassembly and reassembly
Disassembly method, reassembly method

Chapter 4: Installation and maintenance
Installation method, maintenance method

Chapter 5: Troubleshooting
Error display and troubleshooting

Appendix: General diagrams, etc.

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

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

Quality Assurance Center
Canon Electronics Inc.

CONTENTS

CHAPTER 1 GENERAL DESCRIPTION

CHAPTER 2 FUNCTIONS & OPERATION

CHAPTER 3 DISASSEMBLY & REASSEMBLY

CHAPTER 4
INSTALLATION & MAINTENANCE

CHAPTER 5
TROUBLESHOOTING

APPENDIX

CHAPTER 1

GENERAL DESCRIPTION

I. PRODUCT OUTLINE

1. Features

1) Universal document scanner with ADF and flatbed (FB) for A3 size
   Succession product for DR-7080C

2) Hi-speed duplex scanning with 1-path duplex scanning
   CIS unit is added for backside at 1-path duplex scanning
   Same speed for B&W, Gray and Color mode
   70ppm/88ipm (200dpi/A4 size)
   *DR-7080C: 70ppm/36ipm

3) New image processing (compared with DR-7080C)
   ATE-II (from one type to two types ATE*)
   Punch hole removal
   *ATE: Advanced text enhancement

4) Using the unit from OIP group of Canon Inc.
   Common ADF and Reader, and exclusive Controller
   (iRC5185, Image reader G1, Feeder DADF-T1)

2. Specifications

1) Appearance/Installation

No.	Item	Specifications
1	Type	Desktop type flatbed scanner with ADF
2	Power rating	1) 100V model: 100VAC, 50/60Hz, 222W 2) 120V model: 110-120VAC, 60Hz, 1.8A 3) 200V model: 220-240VAC, 50/60Hz, 1.2A
3	Power Consumption	1) Maximum operation: 222W (100V), 218W (120V), 210W (200V) 2) Sleep mode: 6.2W (100V), 6.3W (120V), 6.4W (200V) 3) Power switch OFF: 0W *Conform to International Energy Star Program.
4	Operating environment	10 to 32.5°C (50 to 90.5°F), 20 to 80%RH *No condensation allowed.
5	Noise	1) Stand by: 60dB max. (T.B.D.) 2) Operating: 72dB max. (T.B.D.) *Sound power level (for A4 documents where t = 0.08 mm)
6	Dimensions	618 (W) × 602(D) × 317 (H) mm
7	Weight	41 kg (Main body only)
8	Output interface	1) USB2.0 (Hi-speed) 2) SCSI-3 (Ultra)
9	Expected product life (Internal information)	One of the following two items, whichever comes first. 1) 5 years 2) ADF mode: 4,000,000 sheets (A4-size copier paper) 3) FB mode: 200,000 scans *There are parts needed to replace.
10	Installation	By service technicians
11	Bundle software	ISIS/TWAIN driver, CapturePerfect 3.0, Job Tool
12	Consumable parts (commercial goods)	Exchange kit (Pickup/Separation rollers, Pre-separation plate, Dust-collection sheets) *Expected life 400,000 sheets.
13	Option	Stamp Unit (Solenoid)

Table 1-101

2) Documents feed: ADF

No.	Item	Specifications		
1	Document feed path	U-turn path		
2	Separation method	Double separation method (pad & slant plate)		
3	Duplex feed method	1-path/2-path *Set by user setting		
4	Document size (Paper)	1) Width	139.7 to 304.8mm	
		2) Length	128 to 432mm	
		3) Weight (Thickness)	1) Simplex monochrome document AB size: 42 to 128g/m^2 (0.05 to 0.15mm) L size: 50 to 128g/m^2 (0.07 to 0.15mm) 2) Duplex monochrome document 50 to 128g/m^2 (0.07 to 0.15mm) 3) Color document 64 to 128g/m^2 (0.08 to 0.15mm) 4) Monochrome document at mixed sizes 50 to 128g/m^2 (0.07 to 0.15mm)	
5	Long document mode	Length: 630mm max. *540mm max. at Color/600dpi *2-path scanning for duplex *Document weight is 60 to 90g/m^2. *Set the auto size, and 90 degrees orientation. *Recommended one sheet setting, and feeding function is no guarantee.		
6	Document limitation	1) Pressure-sensitive paper: Can be fed with 50 to 128g/m^2. 2) Carbon-backed paper: Cannot be fed. 3) Perforated paper for binder: Can be fed with 2/3/4 holes only. 4) File folded: Height 10mm Max. 5) Staple folded: Height 10mm Max 6) Creased paper: Can be fed, but must be straightened.		
7	Document storage (Pickup, Eject)	1) 100 sheets max. at 80g/m^2 2) 13mm height max. including curls and folded.		
8	Feeding speed	Resolution	Binary/Gray	Color
		100/150/200/240/300dpi	468mm/sec	
		400/600dpi	234mm/sec	

Table 1-102

3) Document scanning *using bundle software CapturePerfect 3.0

No.	Item	Specifications			
1	Scanning method	1) FB: Mirror moving 2) ADF: Sheet moving			
2	Type of sensor	1) CCD-ROS 2) CCD-CIS (backside at 1-path duplex scanning only) *ROS=Reduction Optical System *CIS=Contact Image Sensor			
3	Picture element	1) Density of element: 600dpi 2) Effective elements: 7200 (304.8mm) *298.2mm excepting area for optical adjustment			
4	Light source	Xenon lamp			
5	Background color	Black (FB, ADF)			
6	Memory size for Image	384MB (20% is used for image rotation.)			
7	Scanning side	Auto/FB/ADF simplex/ADF duplex/Blank skip			
8	Scanning size	1) Typical: A3/A4/A4-R/A5/A5-R, B4/B5/B5-R LDR/LGL/LTR/LTR-R 2) Auto size detection 3) Maximum size (298x432mm) 4) User setting			
9	Output mode	1) Binary (Black&White / Error diffusion / ATE / ATE-II) *ATE=Advanced Text Enhancement 2) Grayscale (8bit) 3) Color (24bit)			
10	Output resolution	100x100dpi, 150x150dpi, 200x200dpi, 240x240dpi, 300x300dpi, 400x400dpi, 600x600dpi			
11	ADF scanning speed	*A4, USB, 1-path duplex, and standard settings			
		Mode	Resolution	Simplex	Duplex
		B&W (non compress) Grayscale (JPEG)	200/300dpi	70ppm	88ipm
			400dpi	50ppm	48ipm
			600dpi	50ppm	48ipm
		Color (JPEG)	200/300dpi	70ppm	88ipm
			400dpi	50ppm	48ipm
			600dpi	24ppm	22ipm
		*The numbers above may differ depending on the computer, the function settings and other conditions.			

Table 1-103

4) Image processing/Other functions *using bundle software CapturePerfect 3.0

No.	Item	Specifications
1	Brightness adjustment	255 steps, Auto adjustment
2	Contrast adjustment	7 steps (excepting binary modes)
3	Gamma correction	Gray/R/B/G individual color, front/back side each
4	Edge emphasize	5 steps
5	Image rotation	0/90/180/270 degrees
6	Color dropout and enhancement	Available: R/G/B, front/back side each
7	Other image processing	Text orientation recognition, Border removal, Deskew, Punch hole removal
8	User menu in main body	Count only, Long document, Stand-by, 1-path duplex, SCSI speed, USB short packet, Display language, Display contrast, Total counter
9	Job function	Save as file, Print, Attach to E-mail
10	Operation panel	1) Manu key 2) Job keys 3) New file key 4) Start, Stop keys 5) Display LCD: 16 characters x 2 lines

Table 1-104

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

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 the 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) Movement
This machine weighs 41 kg. When this machine is moved, it should be lifted by two people, one on each side.

8) Notice to Cardiac Pacemaker Users
This machine emits low level magnetic flux. If you use a cardiac pacemaker and feel abnormalities, please be away from this machine and consult your doctor.

II. NAME OF PARTS

1. Feeder

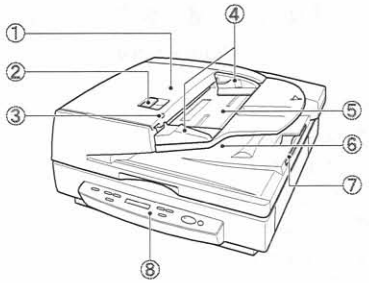


Figure 1-201

① Feeder Cover
② Opening Lever
③ Document Set Indicator
④ Slide Guide
⑤ Document Pickup Tray
⑥ Document Delivery Tray
⑦ Eject Tray Extension
⑧ Operation Panel

2. Flatbed

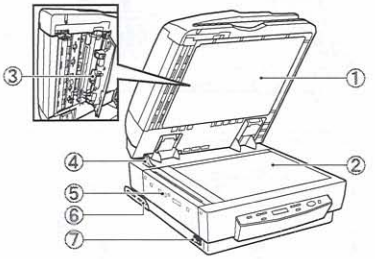


Figure 1-202

① Pressure Board (Black)
② Flatbed (Platen Glass)
③ Scanning Area Cleaning Tool
④ Opening Sensor
⑤ Air Vents
⑥ Securing Plate
⑦ Power Switch

3. Rear

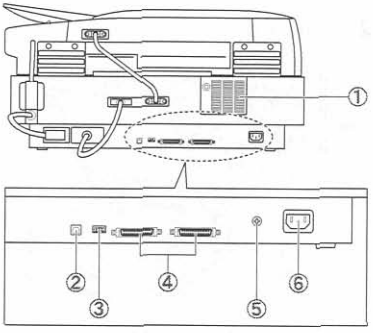


Figure 1-203

① Air Vents
② USB Connector
③ DIP Switches
④ SCSI Connectors
⑤ Grounding Terminal
⑥ Power Cord Connector

Note: Take care to ensure that the vents never become blocked. Blocked vents can lead to heat build-up inside the scanner and create the risk of failure.

4. Operation Panel

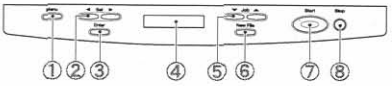


Figure 1-204

① Menu Key
② Set Keys
③ Enter Key
④ Display Panel
⑤ Job Keys
⑥ New File Key
⑦ Start Key
⑧ Stop Key

III. USER OPERATION

For details, refer to the User Manuals for this machine and for your software.

Installation should be carried out by service technicians.

1. Placing Documents

1) Feeder

Align the edges of the document stack on a flat surface, and then load the stack into the feeder with the scanning side facing upwards.

Insert the stack into the feeder as far as it will go, until the document set indicator lights.

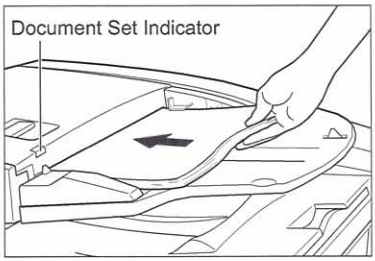


Figure 1-301

After scanning is complete, lift the document pickup tray, and then remove the document from the document delivery tray.

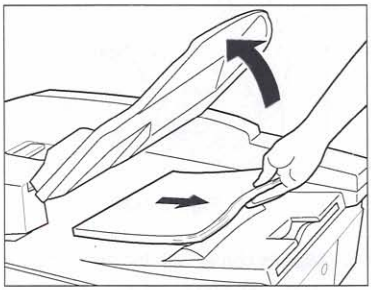


Figure 1-302

2) Flatbed (Platen Glass)

Raise the feeder.

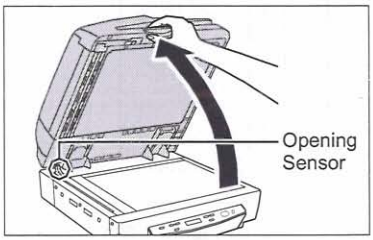


Figure 1-303

Place the document onto the flatbed (platen glass) with the scanning side facing downwards.

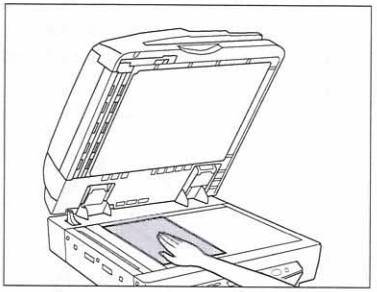


Figure 1-304

Align its corner with the arrow mark in the upper left corner of the flatbed (platen glass).

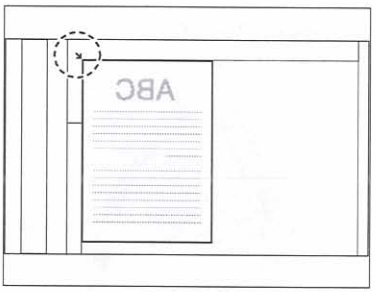


Figure 1-305

Slowly and carefully lower the feeder back down.

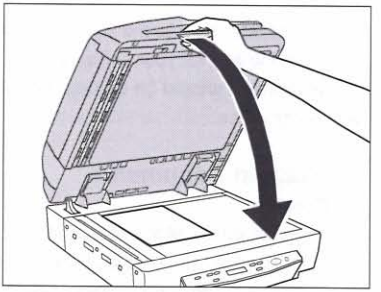


Figure 1-306

2. CapturePerfect 3.0

CapturePerfect 3.0 is an ISIS-compatible software application. The settings dialog boxes are shown below.

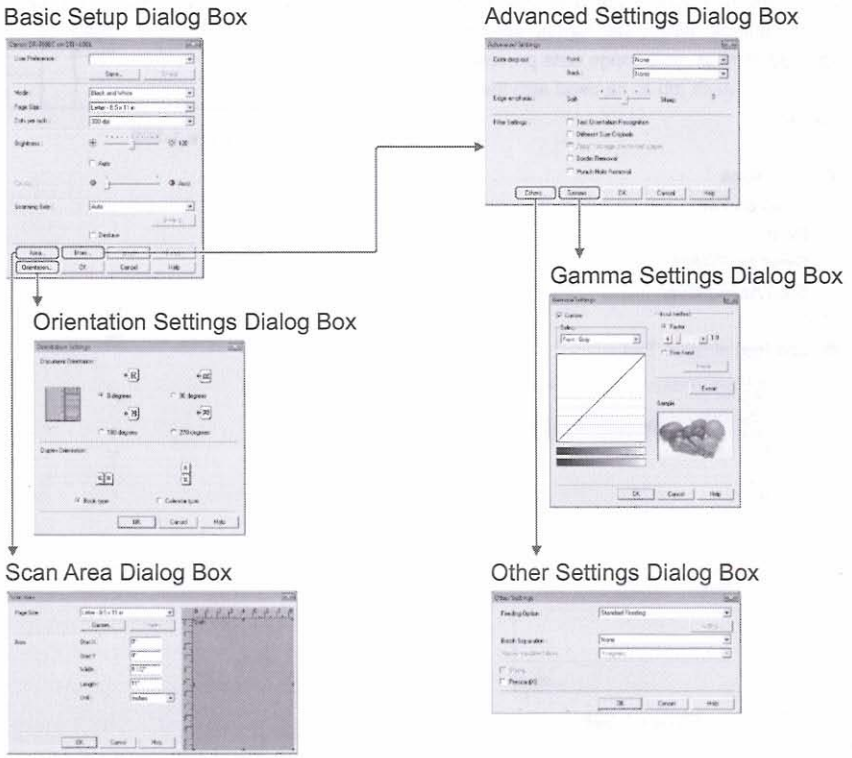


Figure 1-307

3. Job Function

The Job Function enables you to use the "Job Registration Tool" to register different jobs which can then be selected for scanning by pressing the [Job] key on the operation panel. Job registration stores scanning condition settings, image file format selection, save destination, and image data processing settings for each job to be used with the Job Function.

◆ Functions
Save as File
Print
Send by E-Mail
Start Application

◆ Job Registration Tool

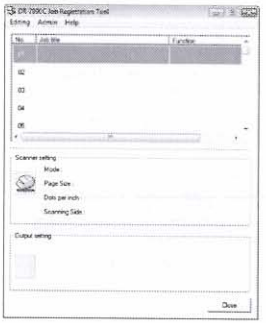


Figure 1-308

◆ Operation Panel
Press the Job [▲] and [▼] keys to select a job number (01 to 99).

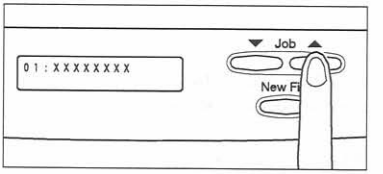


Figure 1-309

4. User Modes

1) Press [Menu] to display the user mode screens.

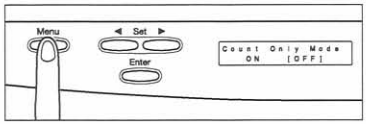


Figure 1-310

Use the [Menu] key to cycle through the user modes in the sequence shown below.

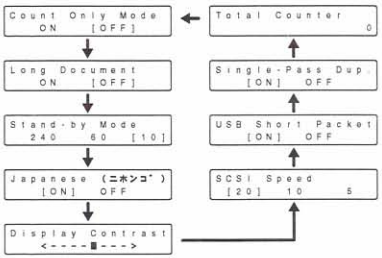


Figure 1-311

2) Use the Set [◄] and [►] keys to change the currently displayed setting.
3) Press [Enter] to register the displayed setting.
4) To exit the user mode screens, press [Stop].

5. Clearing a Paper Jam

1) Remove all document pages from the document pickup tray and the document delivery tray.
2) Open the feeder cover.

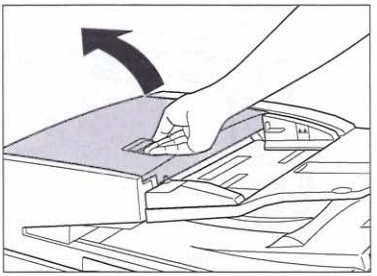


Figure 1-312

3) Confirm the location of the paper jam.

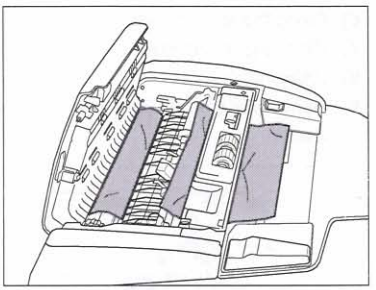


Figure 1-313

4) If the document is jammed under the feeder guide, grasp the tab inside the scanner to open the feeder guide.

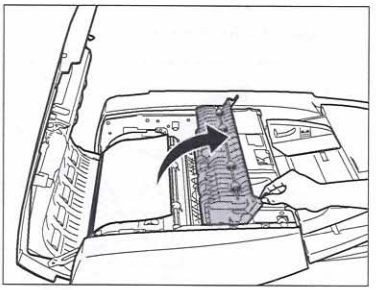


Figure 1-314

5) Rotate the dial on your side of the scanner to remove any paper jammed inside the feeder.
6) Close the feeder guide.
7) Close the feeder cover.
8) Raise the feeder.
9) Remove any paper jammed inside the feeder.

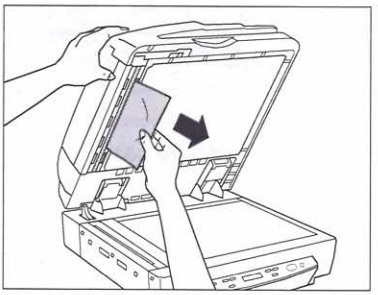


Figure 1-315

10) Slowly and carefully lower the feeder back down.

CHAPTER 2

FUNCTIONS & OPERATION

I. OUTLINE

1. Overall Configuration

Figure 2-101 shows the overall configuration.

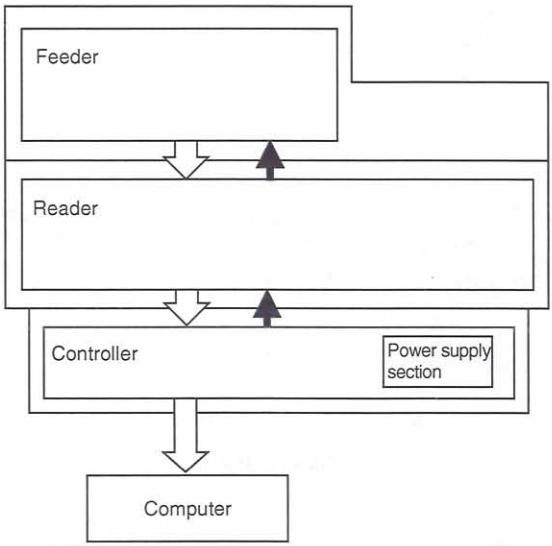


Figure 2-101

1) Feeder
The feeder picks up and delivers documents. It also includes a built-in CIS unit for scanning the back of the document during 1-path duplex scanning.

2) Reader
The reader scans image data with a CCD unit and interfaces with the feeder.

3) Controller
The controller processes the image and performs the interface with the computer. However, image processing can also be performed from the computer.
The controller is also provided with a power supply block.

2. Feeder Construction

The figure below shows a cross-section through the feeder. The machine includes components that feed the document through the scanner as well as a CIS unit (reading unit) for scanning the back of the document during 1-path duplex scanning.

Platen rollers 1 and 2 are black.

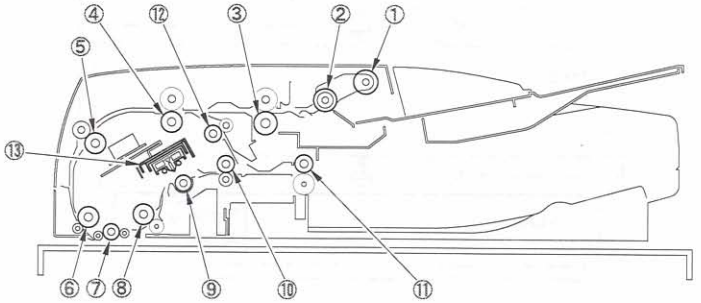


Figure 2-102

① Pickup roller
② Separation roller
③ No. 1 registration roller
④ No. 2 registration roller
⑤ Feed roller
⑥ Read roller 1
⑦ Platen roller 1
⑧ Read roller 2
⑨ Platen roller 2
⑩ Read roller 3
⑪ Delivery roller
⑫ Reversing roller
⑬ CIS unit

3. Reader Construction

The figure below shows the main reader components.

Parts	Symbol	Functions/Specifications
Scanning lamp	LA1	Xenon tube: Illumination at 77,500 lx
Scanner motor	M501	2-phase pulse motor: Pulse control
Reader fan	FM501	Cooling of the reader
Scanner HP sensor	PS501	Detection of the optical home position
ADF opening sensor 1	PS502	Detects the state (open/closed) of the ADF; at 5°
ADF opening sensor 2	PS503	Detects the state (open/closed) of the ADF (detects timing of size detection at 25°)
Document size sensor (AB-size group)	CF1	Detection of the size in a sub scanning direction (AB-size group)
Document size sensor (INCH-size group)	CF2	Detection of the size in a sub scanning direction (INCH-size group)
Mirror	---	Mirrors 1, 2, and 3
Reader controller PCB	PCBR1	Control of the entire reader, Digital image processing
Interface PCB	PCBR2	Control of the motors/fans, Connection between the controller/ADF
Inverter PCB	PCBR3	Driving of the scanning lamp
CCD/AP PCB (CCD unit)	PCBR4	Image scanning, Analog image processing
Memory PCB	PCBR5	Sending/receiving of data between the main controller/reader controller and ADF

Table 2-101

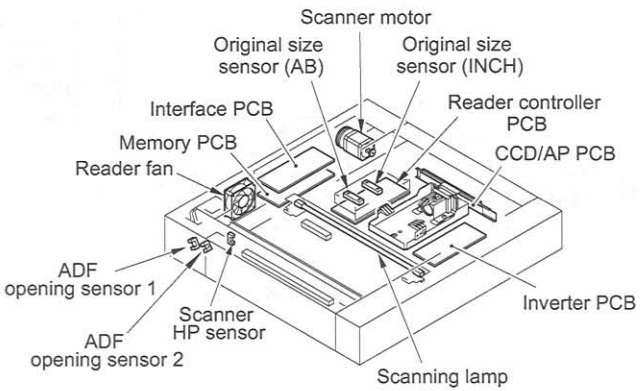


Figure 2-103

4. Electric Circuit

The block diagram in the figure below provides an overview of the electrical circuits in this machine.

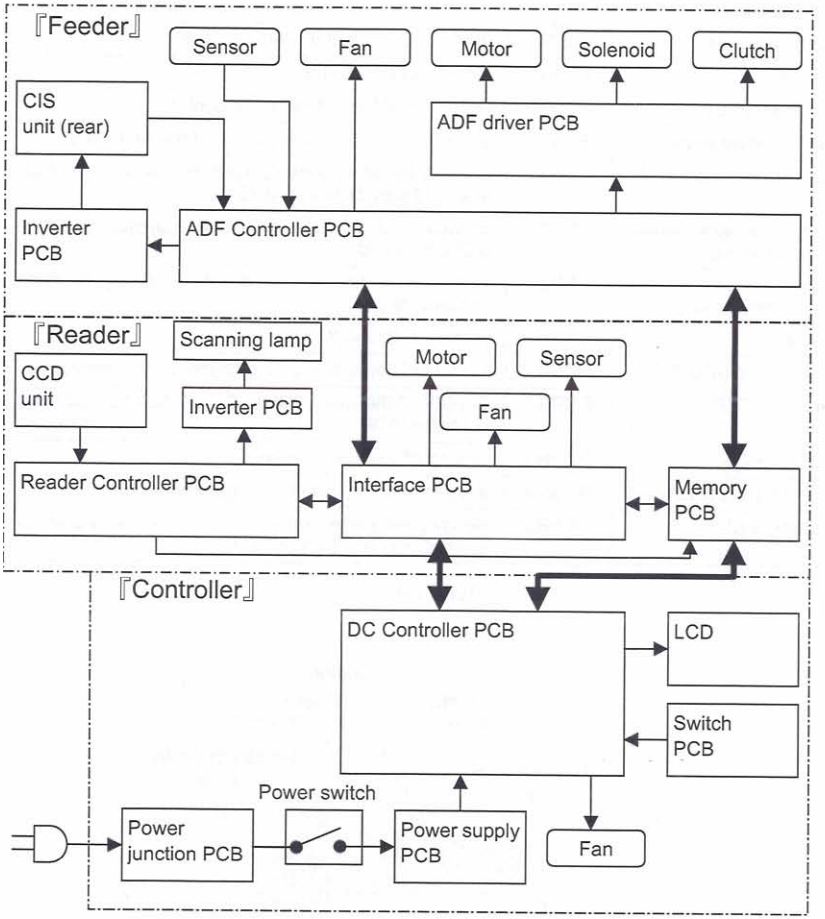


Figure 2-104

II. FEEDER

1. Basic Sequence of Operation

1) Routes of drive

The feeder includes 6 motors, 1 clutch and 1 solenoid.

Name	Symbol	Roll
Pickup motor	M1	Execute pick up/feeding of a document.
Read motor	M2	Execute feeding of a document.
Delivery reversing motor	M3	Execute delivery or reversing of a document.
Separation motor	M4	Execute pressuring or separating the read roll 1.
No.2 registration motor	M5	Execute feeding of a document.
CIS glass motor	M6	Execute moving the CIS glass
Pickup clutch	CL1	Transfer the drive of the pickup motor (M1) to the pickup roller and separation roller.
Unlock solenoid	SL2	Execute pressuring or separating at the lower feed roller.

Table 2-201

The following is a drive diagram of the feeder.

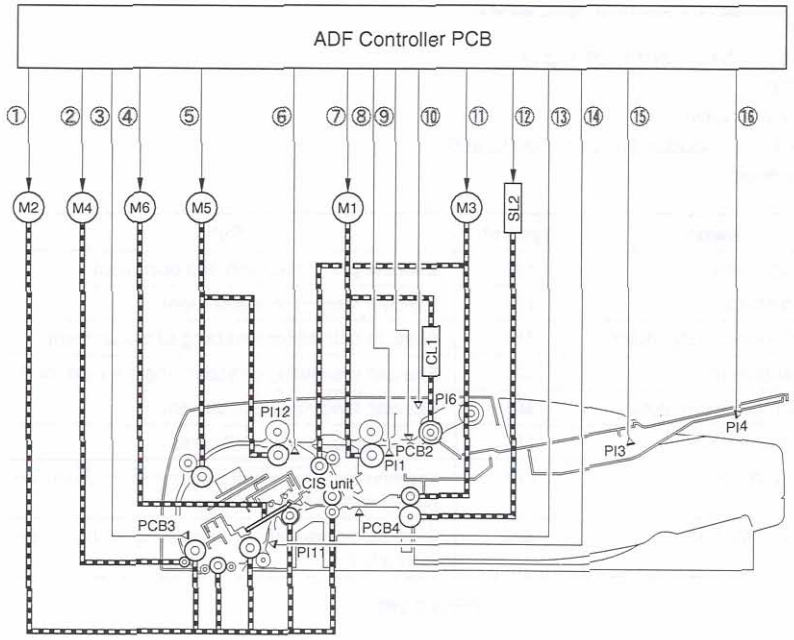


Figure 2-201

① Read motor drive signal
② Separation motor drive signal
③ Read sensor signal (READ_S)
④ CIS glass motor drive signal
⑤ No.2 registration motor drive signal
⑥ No.2 registration sensor signal (2RES_S)
⑦ Pickup motor drive signal
⑧ Registration sensor signal (RES_S)
⑨ Post-separation sensor signal (BNG_S)
⑩ Feeder cover sensor signal (Cover_SH)
⑪ Delivery reversing motor drive signal
⑫ Unlock solenoid drive signal (R_SOL)
⑬ Delivery reversing sensor signal (HH_S)
⑭ No.2 read sensor signal (2R_S)
⑮ A4/LTR sensor signal (A4LT_S)
⑯ LGL sensor signal (LG_S)

2) Overview of operation modes

The feeder has the 2 operation modes described below. The operation mode is chosen based on the selected scanning mode.

The following table shows these operation modes, outlines of the modes, and corresponding scanning modes:

No.	Operation mode	Outline of operation	Corresponding scanning mode
1	Normal rotation pickup/ delivery • simplex mode • 1-path duplex mode	Picks up a document, and delivers it after it has been scanned	Simplex scanning 1-path duplex scanning
2	Normal rotation pickup/ reversal delivery • 2-path duplex mode	Picks up a document, and reverses and delivers it after it has been scanned.	2-path duplex scanning

Table 2-202

2. Duplex Scanning

1) Overview

In this machine, the feeder is equipped with a CIS unit. This provides both-sided scanning capability, allowing users to select both-sided simultaneous reading in addition to the reversal both-sided reading mode available on previous models. The mode is selected from the operation panel on the scanner.

In this document, reversal both-sided scanning is referred to as "2-path duplex scanning", and both-sided simultaneous scanning is referred to as "1-path duplex scanning".

2-path duplex scanning is a scanning mode in which the document in the feeder is inverted so that both sides pass over the CCD unit built into the reader.

In the new 1-path duplex scanning mode, the document only passes through the feeder once. The front of the document is scanned by the CCD unit while the back is simultaneously scanned by the CIS unit. This allows for faster scanning than 2-path duplex scanning mode. However, because different scanning units are used, there may be some differences in the image quality between the front and back scans. The default setting is 1-path duplex scanning.

The following is the sequence of each scannings method.

Scannings	Sequences
2-path duplex	①→②→③→②→④
1-path duplex	①→②→④

Table 2-203

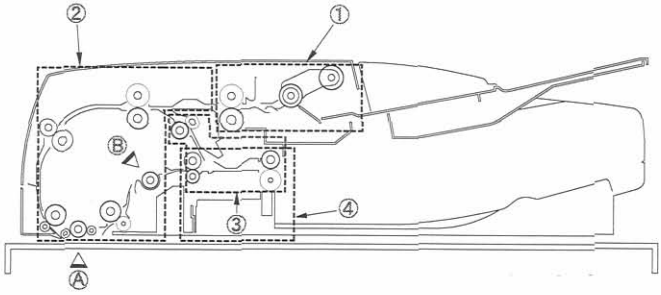


Figure 2-202

Ⓐ CCD unit (front-side scanning)
Ⓑ CIS unit (back-side scanning)

① Pickup
② Feeding
③ Reversing
④ Delivery

2) Document Path

The figure below shows the 2 document paths.

◆ 1-path duplex scanning

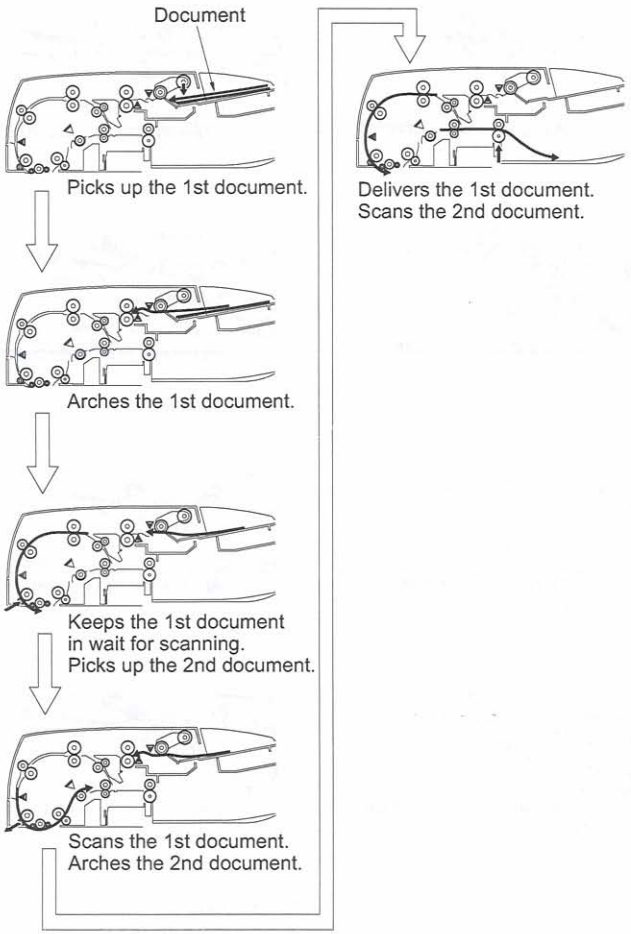


Figure 2-203

◆ 2-path duplex scanning
(small-size mode)

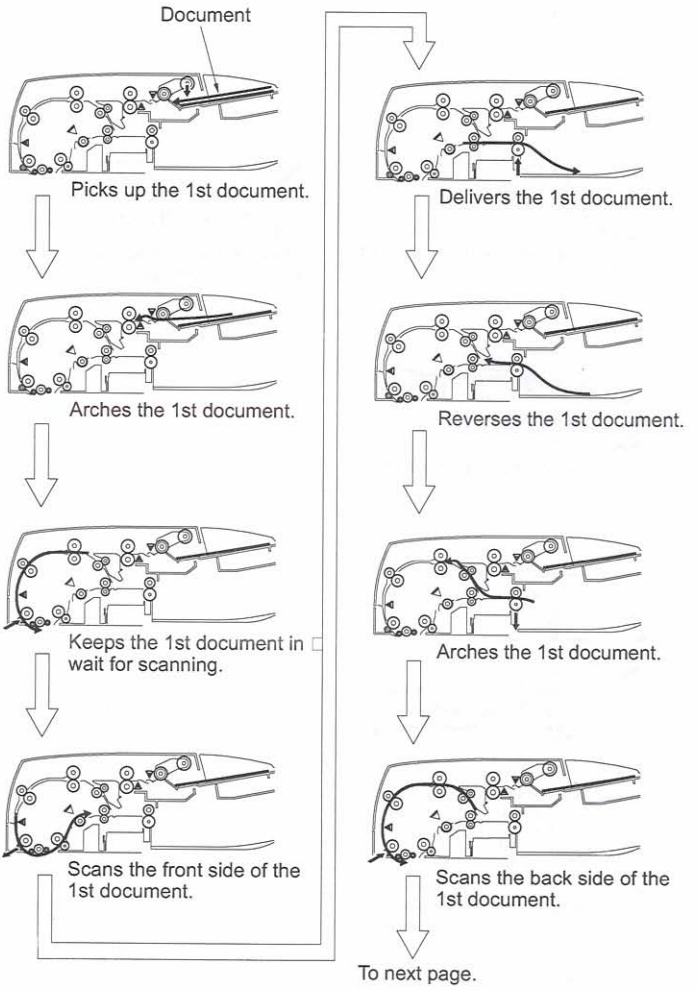


Figure 2-204

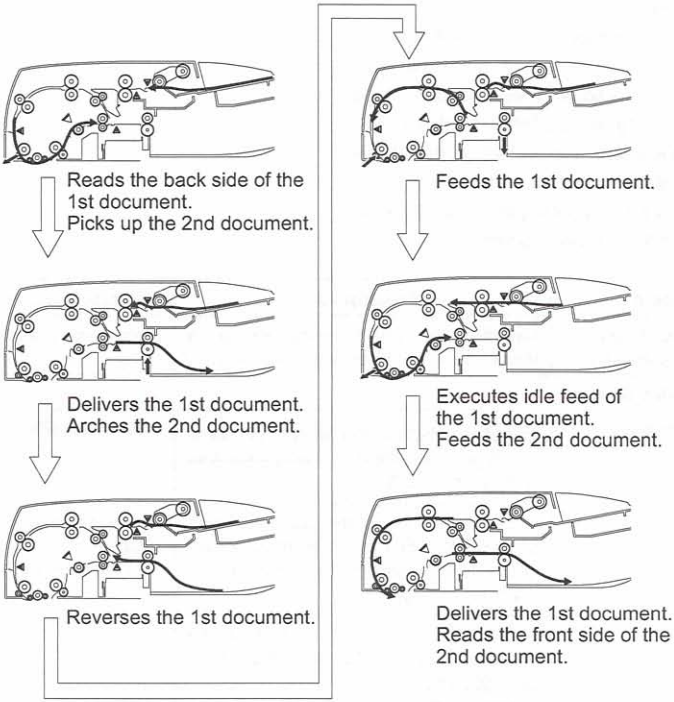


Figure 2-205

Note: 2-path duplex mode can be further divided into the 3 operation modes described below. The document path differs slightly in each mode.

- Small-size mode
  For small documents
  A4/A4R/A5/A5R/B5/B5R/LTR/LTRR
- Large-size mode
  For large documents
  A3/B4/LDR/LGL
- Fast 2-path duplex mode
  When the document size is A4/LTR and the resolution is 400/600 dpi

3. Detecting the Documents

1) Overview

The feeder provides presence/absence of document detection and document size detection functions. Their details and the sensors they use are listed in Table 2-204. The document size detection during different size documents, automatic size defection, and long document mode is special. Refer to the relevant sections.

Item	Description	Sensor used (notation)
Presence/absence of document detection	Identifies the presence/absence of a document in the document pickup tray	Document set sensor (PI5)
Document size detection		
Feed direction	Identifies whether the length of documents placed in the document pickup tray is longer than LGL.	LGL sensor (PI4)
	Identifies the state of the post-separation sensor (ON/OFF) after the read sensor goes ON to identify the document as being small or large.	Post-separation sensor (PCB2) Read sensor (PCB3)
	Detects the time from post-separation sensor OFF until read sensor ON (A4/LTR identification).	
Width direction	Detects the width of the document placed in the document pickup tray	Document width volume (VR)
	Identification between A4R and LTRR	A4/LTR sensor (PI3)

Table 2-204

2) Detecting the presence/absence of a document

The machine uses the document set sensor (PI5) to detect the presence/absence of a document in the document pickup tray.

When a document is placed on the tray, the detection lever operates in conjunction with the light-blocking plate, during which the light-blocking plate blocks the light of the photo interrupter.

As a result, the document set sensor (PI5) generates the document detection signal (EMP_S), which will cause the ADF controller PCB to turn on the document set LED.

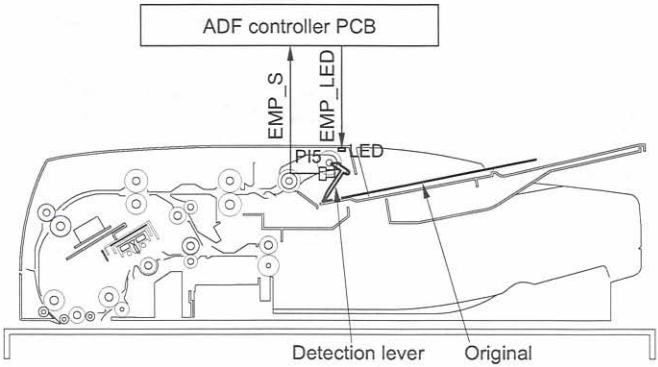


Figure 2-206

3) Document size detection

◆ Feed direction (length)

The machine determines the document size in the feed direction from the ON/OFF signals detected from the LGL sensor (PI4) in the document pickup tray. It can also determine the length based on the time lag between the ON signal from the read sensor (PCB3) in the document pickup tray and the ON/OFF signal detection from the post-separation sensor (PCB2), or between the OFF signal from the post-separation sensor and the read sensor ON signal.

However, if automatic size detection is selected, the machine uses the length data calculated from the read sensor ON/OFF signals.

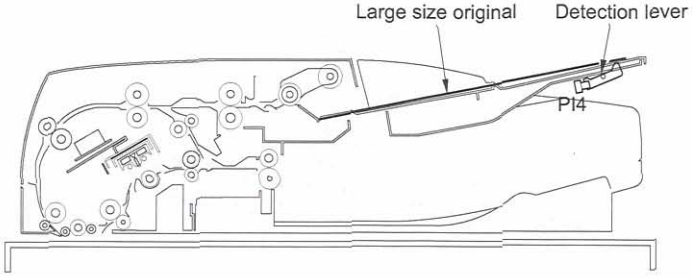


Figure 2-207

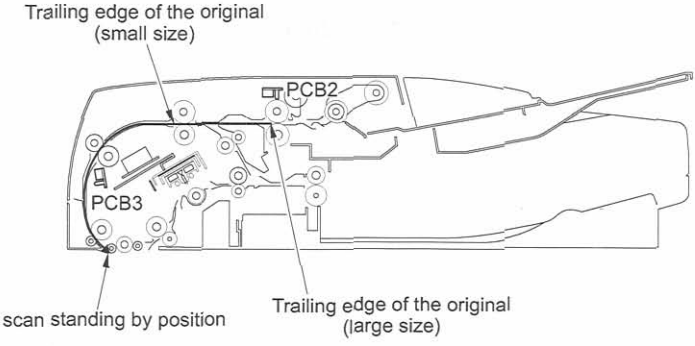


Figure 2-208

◆ Width direction

The width direction of a document is detected using the document width volume (VR) found inside the document pickup tray. The volume operates in conjunction with the slide guides, its resistance changing (analog) as the guides are moved. The ADF controller PCB reads these changes in resistance as the document size signal (WIDTH), and recognizes them as specific widths.

To make sure that the document width of A4R and LTRR can be correctly detected, a special A4/LTR sensor (PI3) is used inside the document pickup tray; the sensor goes "1" (A4R signal) when the width of the document is 197 mm or more and less than 214 mm. The A4R document width is 210 mm.

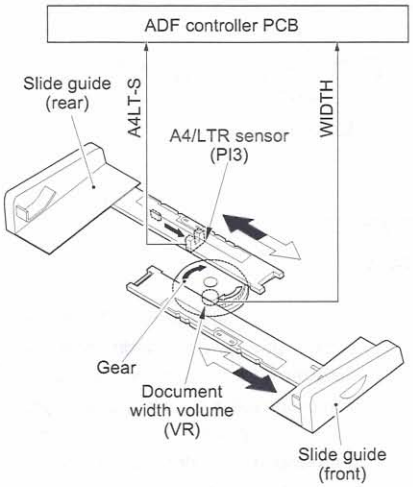


Figure 2-209

The track of the slide guides is given a groove so that the guides may stop at specific default sizes. Some sizes, however, are extremely close to each other, possibly causing the slide guides to stop at the wrong point. To make sure that the slide guide stops at the correct stops, the slide guides are provided with a positioning parts ①, which restricts the stops as follows:

The front marking is set to A4 and there are two grooves at the factory setting.

Marking on slide guides positioning parts (front)	Slide guide stop position	
	1 groove	2 grooves
A4R	A4R	A4R LTRR
INCH	LTRR	A4R LTRR

Table 2-205

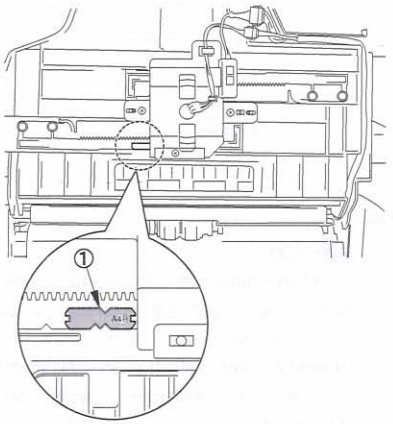


Figure 2-210

◆ Different size documents mode

If the document width is different, the machine determines the size based on the detected document width volume (VR) and the size sensors (PI7-10).

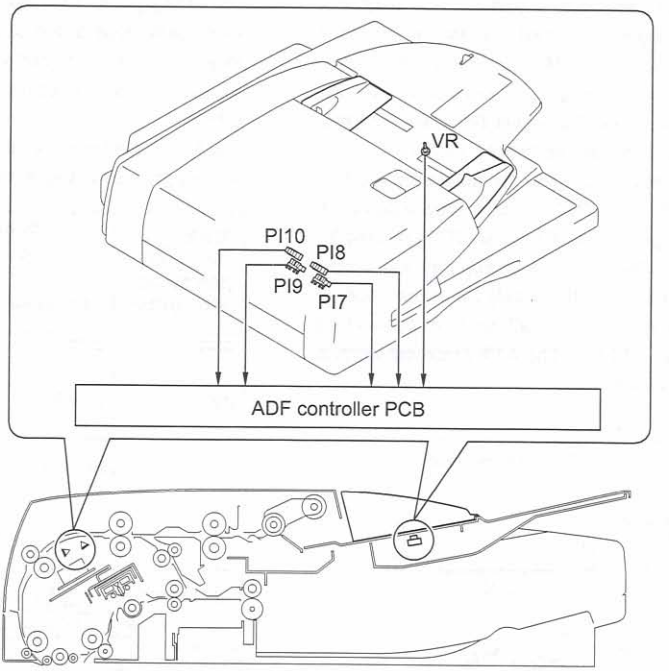


Figure 2-211

◆ Long document mode, automatic size detection

To scan document images that exceed 432 mm in length, it is necessary to set both the long document mode and automatic size detection to ON. In the case of automatic size detection, the document size in the feed direction is detected from read sensor ON until read sensor OFF, and the width direction is detected during image processing.

The platen roller is black to enable image processing in width direction so that the background of documents may be scanned as black.

4. Picking Up

The pickup unit consists of a pickup roller and a separation roller. When the document pickup signal arrives, the pickup clutch (CL1) goes ON, the pickup motor (M1) starts to rotate in reverse to move down the pickup unit, and the pickup roller and the separation roller start to rotate to pick up a document. The separation pad and the separation plate are used to make sure that no more than one document is picked up and fed at time of pickup.

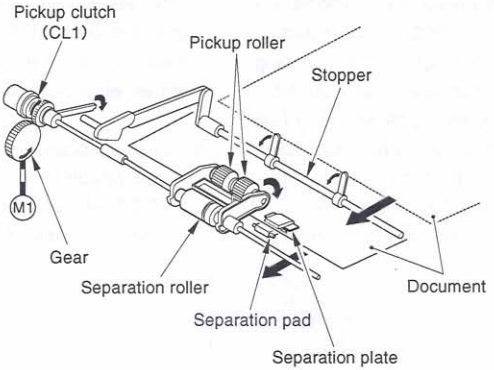


Figure 2-212

5. CIS Unit

1) Overview

The CIS (Contact Image Sensor) unit is a reading unit built into the feeder so as to make the "1-path duplex scanning" mode possible.

The reader in this machine incorporates a reading unit (CCD-ROS) with reduction optics that use a CCD as the scanning element. Previous machines only used this unit for scanning, so duplex scanning had to be accomplished by turning the document over to scan the back, thereby slowing down the scanning process. To overcome this problem, we have incorporated a reading unit (CCD-CIS) with one-to-one optics that use a CCD in the feeder's feed path. This unit scans the back of the document while the other unit is scanning the front.

Conventional DR-series models used a CIS unit with a CMOS sensor as the scanning element, but the unit used in this machine, like the CCD-ROS unit in the reader, employs a CCD.

Note: In this document, the CCD-ROS unit in the reader is referred to simply as the CCD unit, while the CCD-CIS unit in the feeder is referred to as the CIS unit.

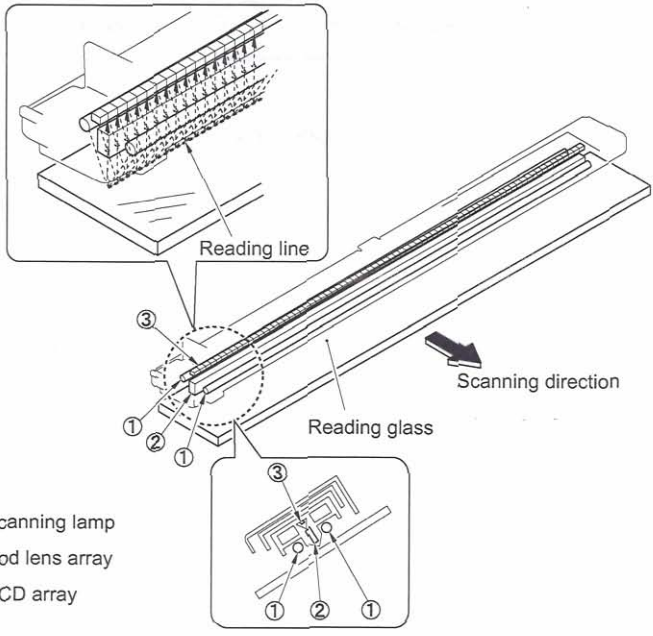


Figure 2-213

2) Internal analog processing

The CIS unit carries out analog image processing in the sequence shown below.

Light reflected from the document is focused by the rod lens array onto the CCD array, which converts the light to electrical signals for output.

The CCD array is made up of a total of 16 channels (units).

Each channel has its own output correction table and corrects the gain and offset of the input luminance signals on the PCB in the CIS unit before sending the resulting image signals to the ADF controller PCB.

3) Shading Correction

The underside of the CIS unit is fitted with a glass plate (reading glass). A standard white plate for use in shading correction is attached to this glass.

The CIS glass movement is driven by the CIS glass motor (M6). In this way, the correction values are determined internally in the ADF controller PCB using the reflection data from the position of the standard white plate.

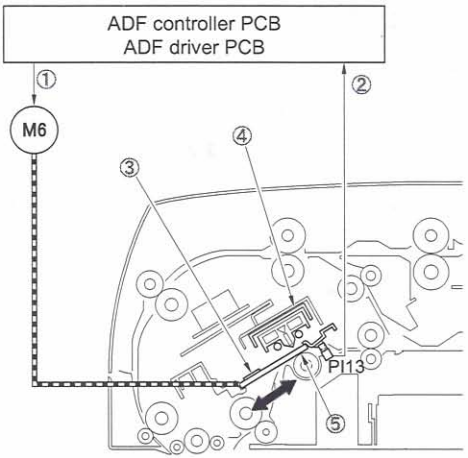


Figure 2-214

① CIS glass motor drive signal
② CIS glass HP detection signal
③ Standard white plate
④ CIS unit
⑤ Reading glass
PI13: CIS glass HP sensor
M6: CIS glass motor

6. Detecting Jams

This machine uses the sensors shown in the figure below to detect document jams. The timing of checks for document jam detection are pre-stored in the CPU on the ADF controller PCB. The machine determines whether a jam has occurred based on whether or not a document is detected by the sensor at the corresponding time.

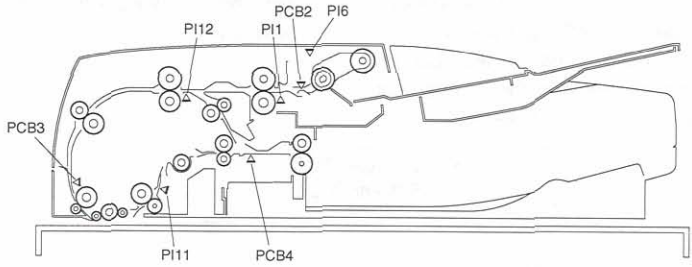


Figure 2-215

PI1: Registration sensor
PI6: Feeder cover sensor
PI11: No.2 read sensor
PI12: No.2 registration sensor
PCB2: Post-separation sensor
PCB3: Read sensor
PCB4: Delivery reversing sensor

III. READER

1. Basic Operation

1) Scanner drive

The scanning drive in the reader is driven by the scanner motor. The figures below show a cross-section through the scanner drive unit and an angled view of the unit.

The document image illuminated by the scanning lamp is reflected into the CCD unit via the No.1, No.2 and No.3 mirrors. To ensure that the light path length is correct, the positions of the No.1 and No.2 mirror bases are controlled by the scanner motor.

In scanning modes where the feeder is used to feed the document, the No.1 and No.2 mirror bases are locked in place in line with the ADF read position shown in the cross-section.

In scanning modes where the document is fixed in place on the reader's flatbed platen, the image is scanned by moving the No.1 and No.2 mirror bases.

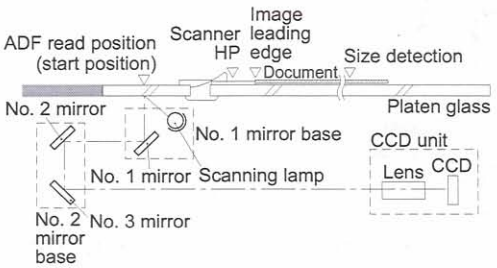


Figure 2-301

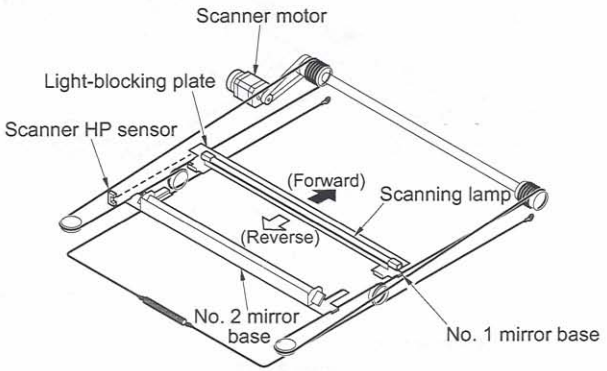


Figure 2-302

2) Construction of the control system
The figure below shows the configuration of the reader's control system.

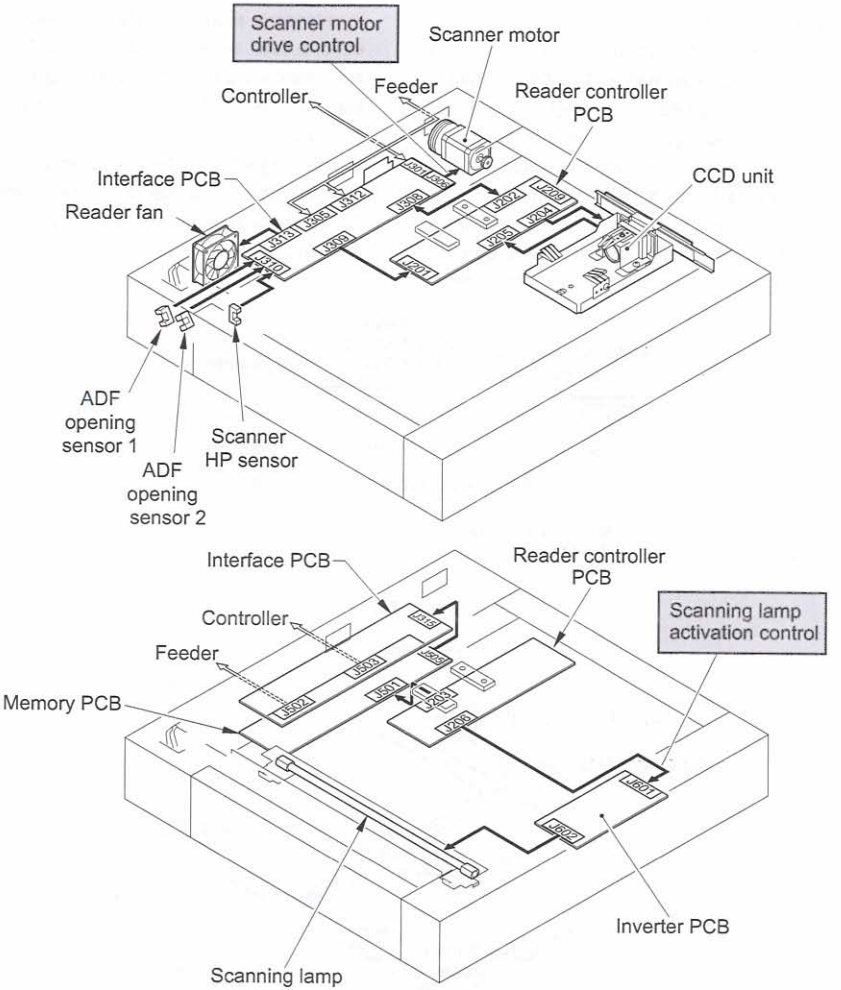


Figure 2-303

2. Basic Sequence of Operation

1) Basic sequence of operation at power-on

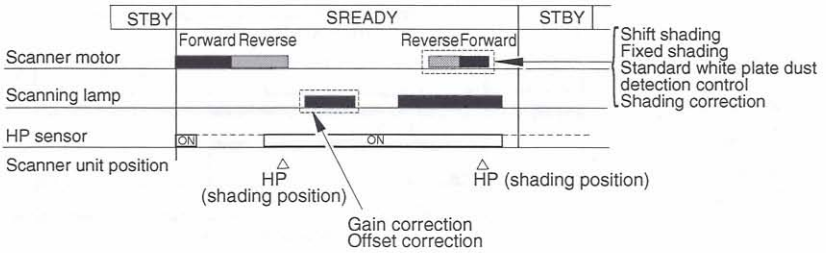


Figure 2-304

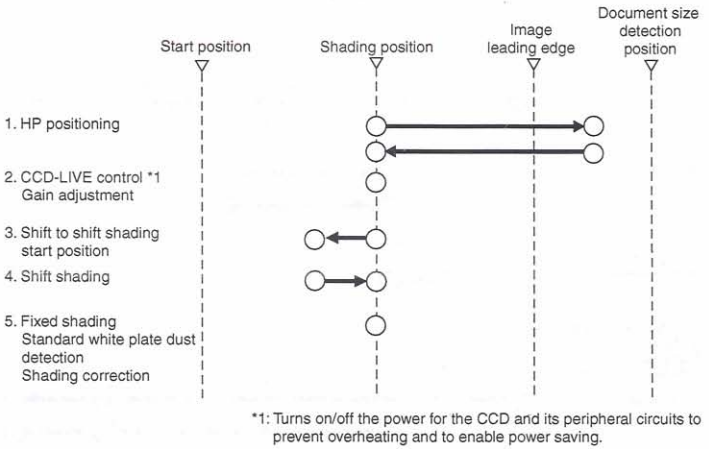


Figure 2-305

2) Basic sequence of scanning

◆ FB mode

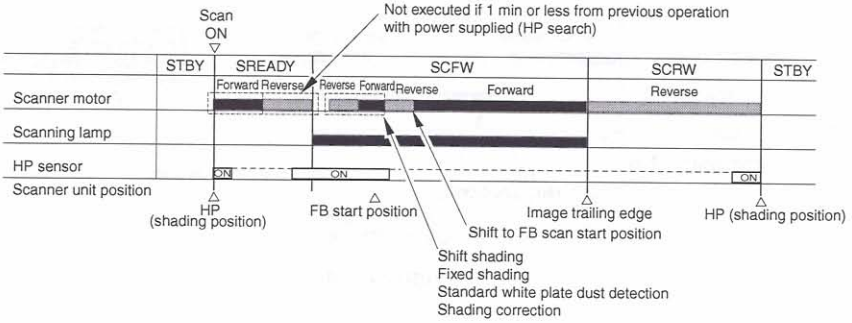


Figure 2-306

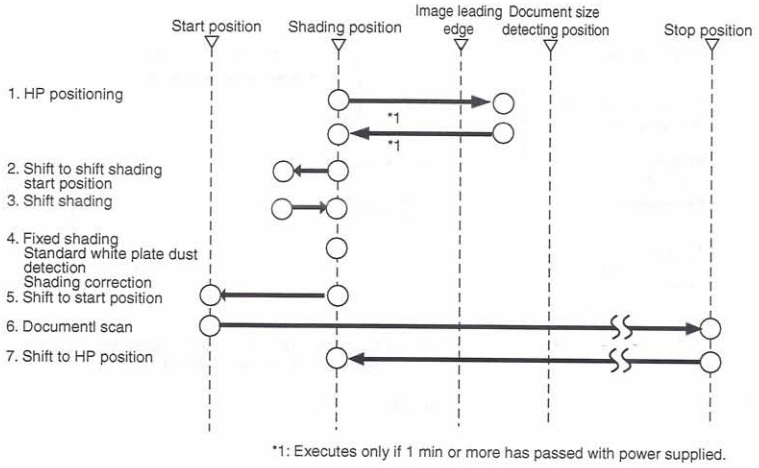


Figure 2-307

◆ ADF mode; 1 document

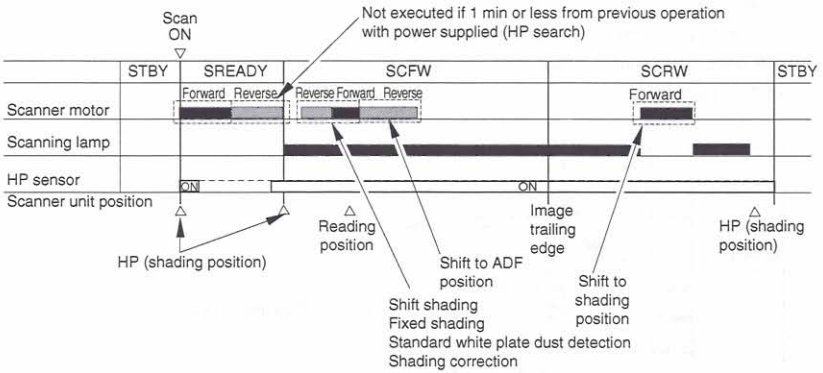
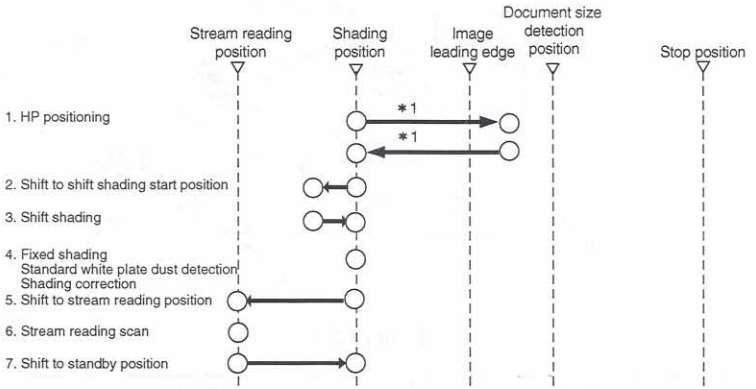


Figure 2-308



*1: Executes only if 1 min or more has passed with power supplied from the previous operation.

Figure 2-309

3. Drive of the Scanner

1) Overview

The following shows the arrangement of the components associated with the drive of the scanner:

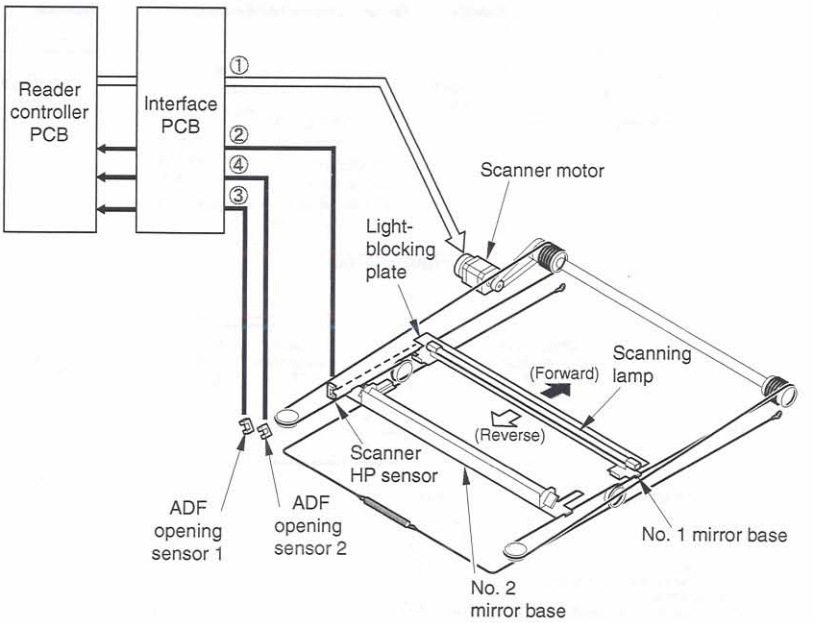


Figure 2-310

No.	Signal	Function
①	Scanner motor drive signal	Controls the activation/deactivation of the motor and the direction and speed of the motor.
②	Scanner HP sensor detection signal	Used in reference to the detection of the No. 1 mirror base at its home position.
③	ADF opening sensor 1 detection signal	Used in reference to the detection of the state (open/closed) of the ADF. (5°)
④	ADF opening sensor 2 detection signal	Used in reference to the detection of the state (open/closed) of the ADF. (25°)

Table 2-301

2) Controlling the scanner motor

The following shows the construction of the scanner motor control.

The motor driver on the interface PCB controls the rotation (activation/deactivation) of the scanner motor and its direction and speed of rotation according to the signals from the CPU.

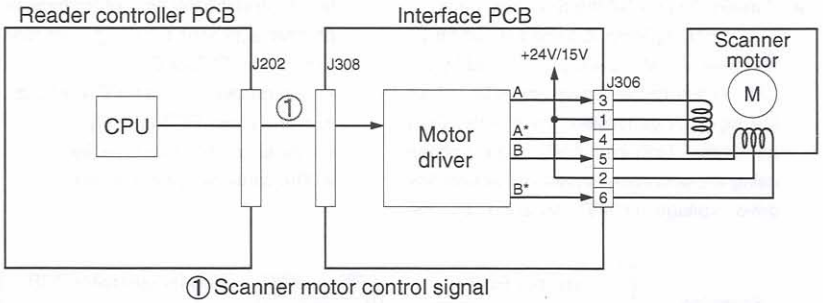
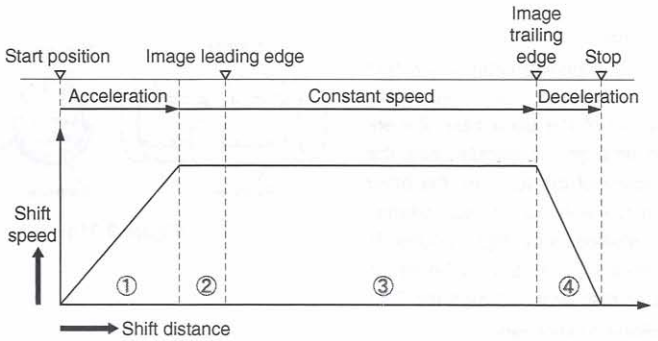


Figure 2-311

The forward operation of the No. 1 mirror base unit during scanning in the FB mode is shown below.

When the resolution is 300 dpi or lower, the scan speed is 468 mm/sec, and in the case of 400/600 dpi, it is 234 mm/sec.

After an image scan, the No. 1 mirror base is moved in reverse to shading position at 234 mm/sec regardless of the selected resolution.



① Acceleration Area : Accelerates the scanner to the speed corresponding to the resolution.
② Preparatory Area : Serves as a margin for speed stabilization.
③ Image Read Area: Reads the image at a specific speed.
④ Deceleration Area : Decelerates and stops as soon as reaching the original trailing edge.

Figure 2-312

4. Scanning Lamp

1) Overview

The controlled items and control system configuration related to the scanning lamp are indicated as follows:

◆ Turning On and Off the Scanning Lamp

The scanning lamp is turned on or off by the drive signal (XE-ON) generated by the CPU of the reader controller PCB. When the signal is generated, the inverter PCB generates high-frequency high voltage using the activation control circuit from the drive voltage (+24V) supplied by the reader controller PCB, thus turning on the scanning lamp.

◆ Detection Error Activation

The machine detects a fault in the intensity of the lamp as an activation error caused by a fault in the intensity of the lamp at time of initial activation (shading correction).

Error code: E2250001

- The reader controller PCB is faulty.
- The inverter PCB is faulty.
- The scanning lamp is faulty.
- The cable has poor contact.

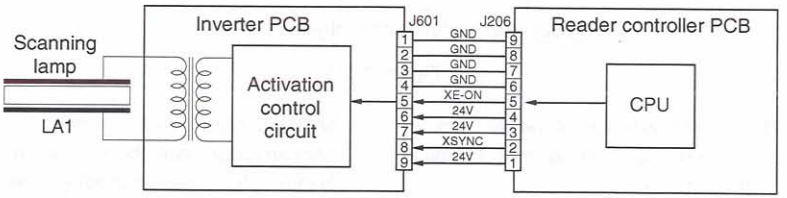


Figure 2-313

2) Scanning Lamp

The machine's scanning lamp is a xenon lamp, which uses xenon gas sealed inside. On the outside of the glass tube, 2 electrodes are arranged in parallel with the tube; the inside of the tube, on the other hand, is coated with fluorescent material. When a high-frequency high voltage is applied to the electrodes, the gas inside the tube starts to discharge, causing the fluorescent material to emit light.

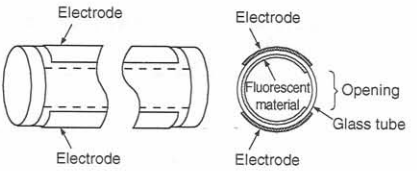


Figure 2-314

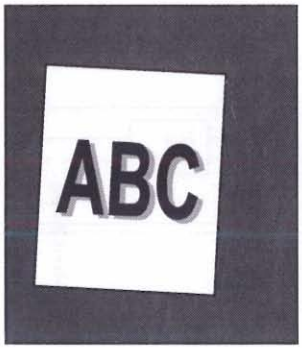
5. Document Size Detection

The scan area is selected by software. When either "Standard Size" or "Specify Area" is selected, regardless of the size and position of the set document, the software's selections are used.

When "Automatic Detection" is selected, the size of the document is detected by processing the scanned image data.

The pressure board and platen roller are black. Since the background of documents can be scanned as black, automatic detection by image processing is possible.

- In case the background is black



- In case the background is white

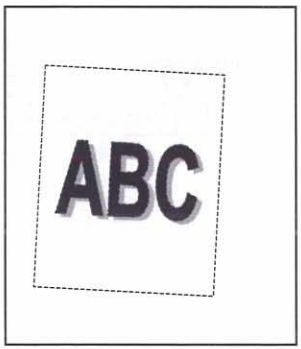


Figure 2-315

6. Standard white plate Dust Detection

1) Overview

The machine uses a fan to cool the inside of the reader unit to prevent overheating otherwise caused by the xenon lamp in the ADF mode. The fact, however, can cause stray dust inside the reader unit to collect on the standard white plate that is attached on the rear side of the platen glass, showing up as lines in output images.

2) Timing of control

Dust detection and correction for the standard white plate is carried out when the machine is turned on and at the start of each job.

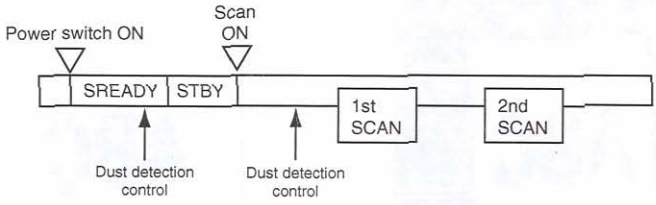


Figure 2-316

3) Particulars of control

◆ Standard white plate Dust Detection

The machine compares the shading coefficient obtained from shift shading and the shading coefficient obtained from fixed shading to identify the presence/absence of dust and, if any, coordinates and width of the area.

◆ Standard white plate Dust Correction

If the machine detects dust as a result of standard white plate dust detection, it corrects the shading coefficient of the area using the shading coefficient of both sides so as to decrease the effects of the presence of dust. It executes shading correction using the coefficient it obtains after correction.

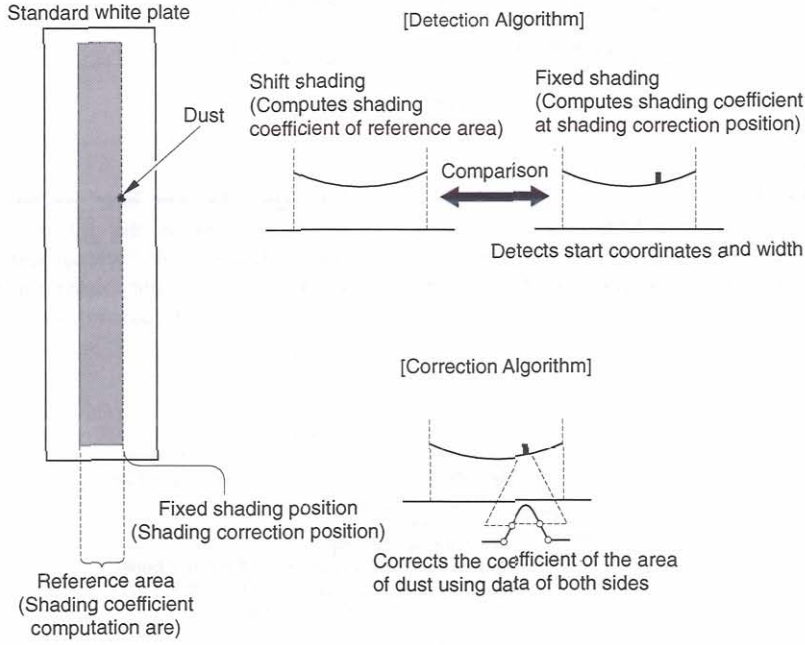


Figure 2-317

7. Image Reading

1) Outline

Image reading by the reader is done using the CCD in the CCD unit.

The image data read in from the CCD undergoes initial processing in the CCD/AP PCB on which the CCD is mounted before being forwarded to the reader controller PCB. It is then sent to the controller via the memory PCB.

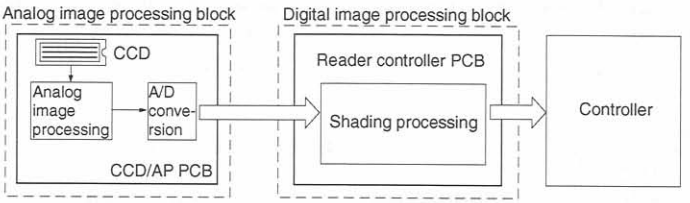


Figure 2-318

2) CCD

The machine's CCD is a linear image sensor consisting of 3 lines (R, G, B, 1 line each), each line composed of 7350 photo cells.

The signal that has been put through photo-conversion in the light-receiving segment is divided into 2 analog signals of 2 channels for output: even-numbered pixels (EVEN) and odd-numbered pixels (ODD).

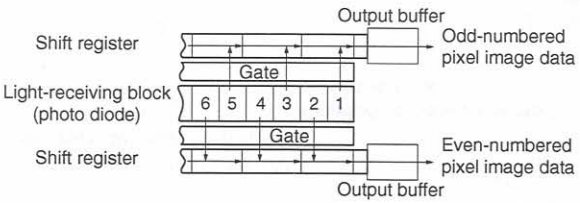


Figure 2-319

3) Image data processing

Following the execution of offset adjustment, gain adjustment, and A/D conversion by the CCD/AP PCB, shading correction is performed by the reader controller PCB.

Figure 2-320 shows the block diagram of the image processing performed by the CCD/AP PCB, and Figure 2-321 shows the block diagram of the image processing performed by the reader controller PCB.

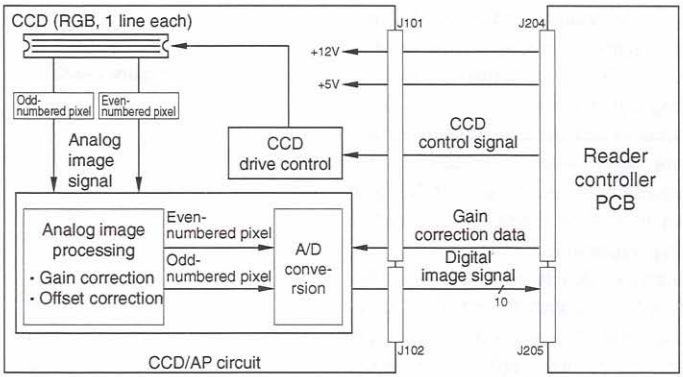


Figure 2-320

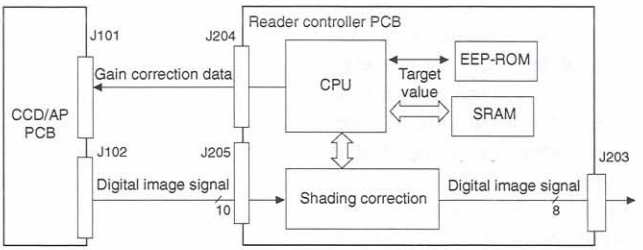


Figure 2-321

4) Shading correction

The CCD output is not constant even when the document density is the same, due to variations in the sensitivity of the CCD's pixels and the light intensity of the scanning lamp. The processing performed to compensate these aspects is called shading correction. Shading correction is performed for digital signals following A/D conversion. This processing is performed every time scanning is performed.

The target values used in shading correction are determined by calculating the characteristic values for each CCD unit entered in service mode. This is called "shading adjustment".

The machine directs the light from the scanning lamp against the standard white plate each time it scans a document, and converts the reflected light into a digital signal by the analog image processing block on the CCD/AP PCB. The result (i.e., a digital signal representing the intensity of the reflected light) is sent to the shading correction circuit of the reader controller PCB as a shading coefficient of the individual pixels of the CCD. The shading correction circuit in turn compares the coefficient against the target value it holds, and offers the difference as the shading correction value.

The machine uses the shading correction value to correct the variation that may exist among the individual pixels of the CCD, thereby keeping the image density to a specific level at all times.

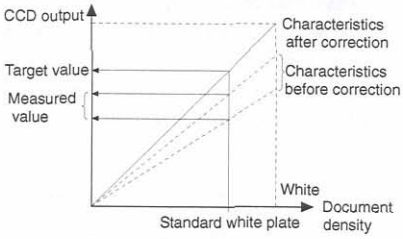


Figure 2-322

IV. CONTROLLER

1. Outline

The main functions of the controller are image processing, interfacing with the computer and overall control.

However, image processing can also be performed with the first-stage feeder, reader, or the computer following output.

Moreover, a power supply block is provided in the controller. This power supply block converts the AC power supply input from external and supplies the appropriate power to the reader and feeder.

Figure 2-401 shows the block diagram of the controller.

The feeder and reader used in the machine are the same as those employed in copiers, but the controller is a dedicated controller specifically designed for this machine.

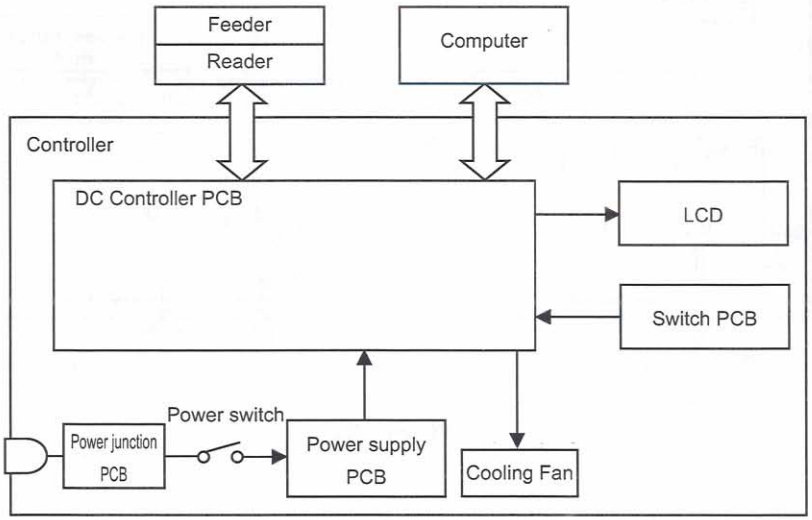


Figure 2-401

2. DC Controller PCB

Figure 2-402 shows the block diagram of the DC controller PCB, and Table 2-401 lists the functions of the ICs in the block diagram.

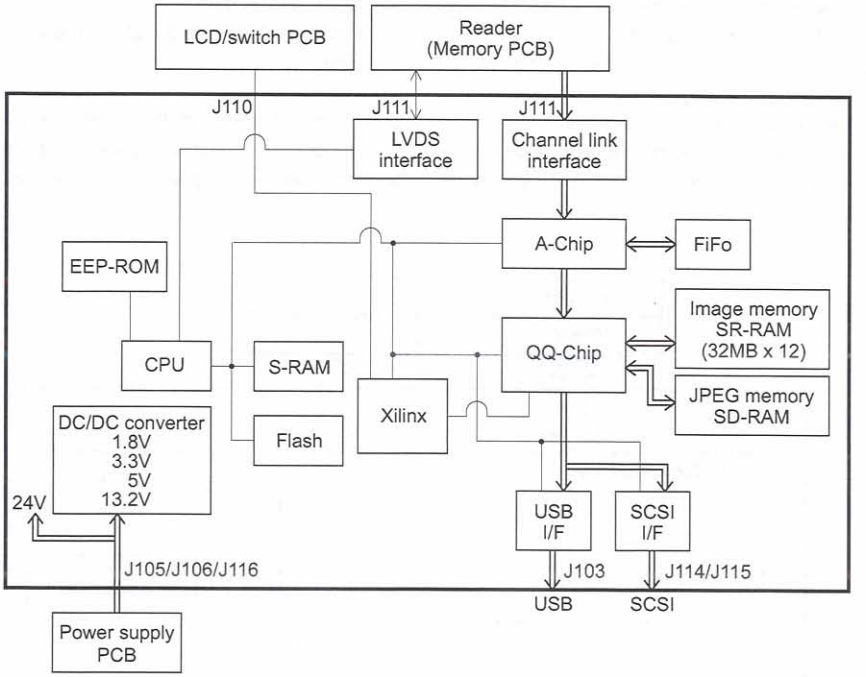


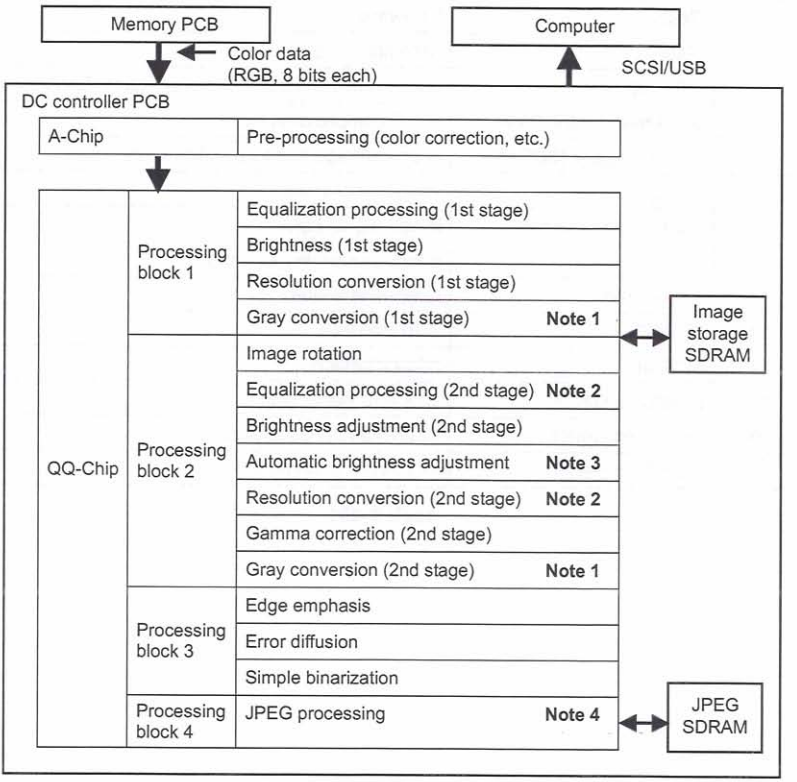
Figure 2-402

No.	Name	Function
1	CPU	Controller control
2	S-RAM	For CPU work
3	EEP-ROM	Log record parameters
4	Flash	Firmware
5	Xilinx	DMA control, etc.
6	QQ-Chip	Image processing, JPEG compression, DMA transfer
7	JPEG memory (SDRAM)	JPEG compression memory
8	Image memory (SDRAM)	Image storage memory (32MB x 12)
9	A-Chip	Image processing
10	Channel link interface	Image signal input
11	FiFo	Image processing memory
12	LVDS interface	Command/status
13	USB I/F	USB interface
14	SCSI I/F	SCSI interface
15	DC-DC converter	+1.8VDC generation
16	DC-DC converter	+3.3V/+5VDC generation
17	DC-DC converter	+13.2VDC generation

Table 2-401

3. Image Processing

Figure 2-403 shows the block diagram of the image processing performed by the DC controller PCB.



Note 1: If the output mode is other than color, the color data is converted to the grayscale data.

Note 2: This processing is performed when resolution conversion is requested by the MultiStream function.

Note 3: This processing is performed when automatic brightness is selected for the simple binarization (black & white) output mode.

Note 4: This processing is performed when a JPEG format is requested at the color or grayscale mode.

Figure 2-403

The main image processing of the controller is performed by the IC101 (QQ-chip) on the DC controller PCB.

The document is read by the CCD in the feeder and reader, and after the basic processing has been performed, the data is input to the DC controller PCB as main-scan 600 dpi color data (RGB, 8 bits each).

The image data is first input to the A-chip, and after undergoing basic adjustments such as color correction, it is input to the QQ-chip.

The QQ-chip supports the MultiStream function. Use of the MultiStream function requires application software that supports this function. CapturePerfect 3.0, which is bundled in this machine, supports this function.

Therefore, two image processing blocks that can perform brightness adjustment and resolution conversion in the QQ-chip are provided to achieve higher processing speed. Processing block 1, which is the first stage, performs processing using conditions involving a small data amount within the range covering the requested output conditions. For example, if the requested resolutions are 100 dpi and 300 dpi, the resolution is converted from 600 dpi to 300 dip.

Averaging, which is the pre-processing done before resolution conversion, is also called "smoothing". It helps minimize the moire effect during conversion to a low resolution. Averaging can be performed for all output modes (binary, grayscale, color).

The image data processed in processing block 1 is stored in image storage SDRAM.

Processing block 2 performs image processing according to the various requested output conditions based on the data stored in image processing SDRAM. The data is then output to processing block 3.

Following edge emphasis, processing block 3 performs error diffusion or simple binarization according to the requested output mode. The data whose image processing has been completed is output to the computer via the SCSI or USB interface.

However, if the file format request is JPEG, the data is sent to processing block 4 following edge emphasis. Once JPEG processing has been performed in processing block 4, the data is sent to the computer via the SCSI or USB interface.

When JPEG processing is performed in the machine, the data amount is reduced, so the time required for transfer to the computer is shorter, and thus a larger number of sheets can be scanned in a given time, compared to when JPEG processing is performed in the computer.

Other image processing is carried out on the computer. The newly added "ATE-II" and "Punch hole removal" functions are also carried out on the computer.

V. POWER SUPPLY

1. Power Supply

1) Outline

The power supply PCB of this machine is capable of handling power input of 100 to 240 VAC.

The figure below shows a block diagram of the power supply PCB.

AC power is supplied to the power supply PCB by turning on the power switch.

A power junction PCB has been added to reduce noise from the power terminals.

The 100 to 240 VAC power is converted by a rectifying bridge to unsmoothed 100 to 240 VUN and sent to the booster assembly.

At the booster assembly, the power is temporarily raised to 380VDC and then converted to 24VDC.

A fuse is used in the power supply PCB to protect against over-current situations.

24VDC is output from the power supply PCB to the DC controller PCB. The necessary voltage is generated by each regulator on the DC controller PCB.

24V and 13V are supplied to the reader and feeder from a DC controller PCB. The required voltage is generated within the reader and feeder.

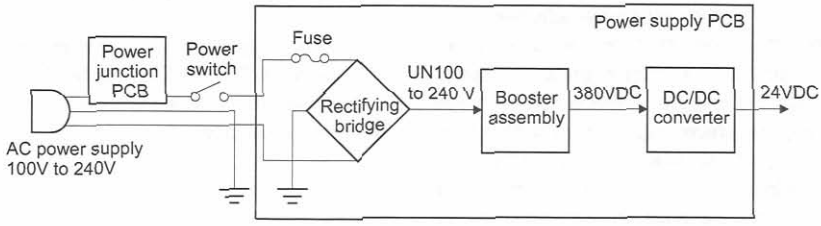


Figure 2-501

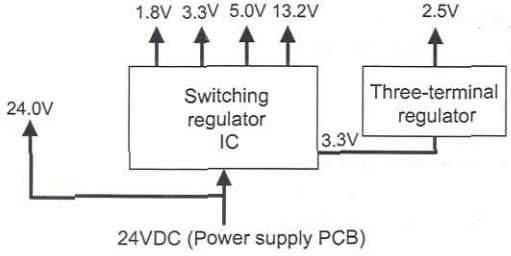


Figure 2-502

2) Protection function

The power supply PCB is a switching regulator type.

If the load is shorted and there is an over-current situation, the protection function is activated and the output is stopped.

Once the output stops, it can be automatically restored by turning the power switch off, eliminating the cause of the short circuit, discharging the capacitor (for about 10 minutes) and then turning on the power switch.

A fuse is used for protection on each PCB.

If an excessive current flows into the DC/DC converter, the fuse blows and stops the power supply to the PCB.

Note, however, that this machine supplies power to each motor even when the feeder cover is open.

3) Power saving mode

This machine will shift into the power saving mode if no key or pickup operation takes place for 10 minutes or more, when the power is on. In the power saving mode, power consumption is minimized and the electrical circuits enter the "sleep" state. The CPUs, however, do not shift into power saving mode.

The machine shifts back to the ready mode when any communication is carried out on the computer side or when any key on the operation panel is pressed.

The settings for power saving mode (sleep mode) can be changed in user mode.

VI. OPTION

1. Stamp

This option is used to stamp documents scanned with the feeder as "scanned". A red-ink stamper is fitted to the tip of the stamp solenoid.

Feeding stops 100 ms after the trailing edge of the document clears the platen roller 2. During this time, the stamp solenoid (SL1) is switched ON and the document is stamped.

In the case of the 2-path duplex mode, both sides of the document are stamped.

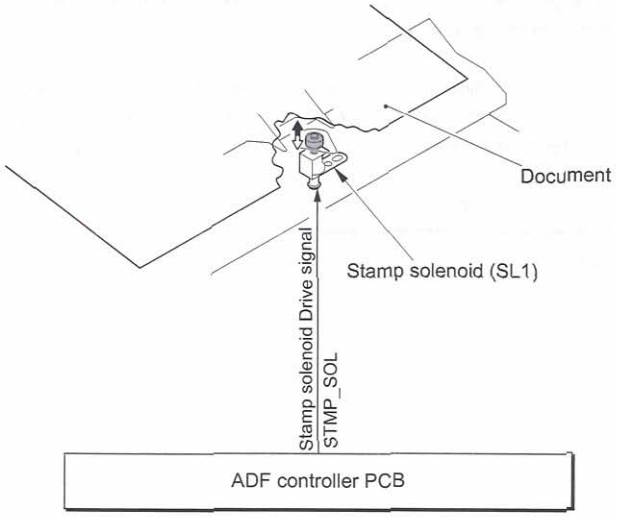


Figure 2-601

Figure 2-602 shows the stamping location.

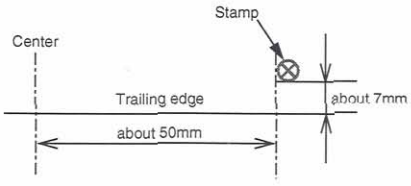


Figure 2-602

After the stamper is replaced with a new one, approximately 7,000 documents can be stamped.

When installing a stamp, be sure to valid Feeder > OPTION > STAMP-SW for the service mode, in order to make the machine recognize the stamp.

Refer to "CHAPTER 4 INSTALLATION & MAINTENANCE" for installation of the stamp solenoid.

VII. ELECTRICAL PARTS LAYOUT

1. Feeder

1) Sensors

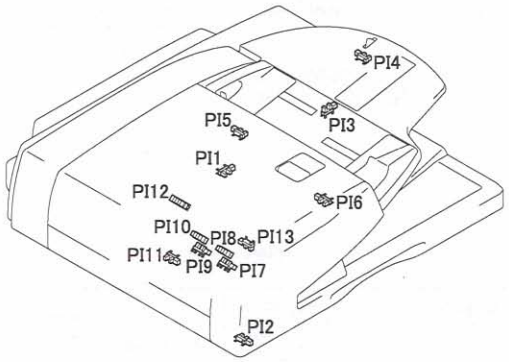


Figure 2-701

Category	Symbol	Name
Sensor	PI1	Registration sensor
	PI2	Separation HP sensor
	PI3	A4/LTR sensor
	PI4	LGL sensor
	PI5	Document set sensor
	PI6	Feeder cover sensor
	PI7	Size sensor 1
	PI8	Size sensor 2
	PI9	Size sensor 3
	PI10	Size sensor 4
	PI11	No.2 read sensor
	PI12	No.2 registration sensor
	PI13	CIS glass HP sensor

Table 2-701

2) PCB

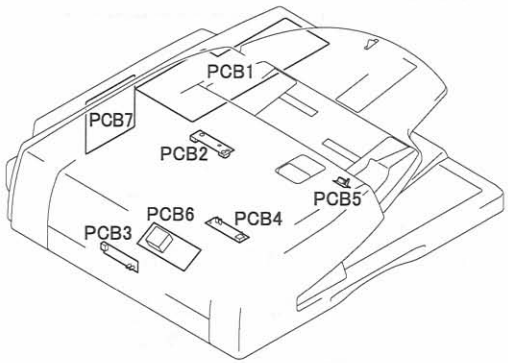


Figure 2-702

Category	Symbol	Name
PCB	PCB1	ADF controller PCB
	PCB2	Post-separation sensor PCB
	PCB3	Read sensor PCB
	PCB4	Delivery reversing sensor PCB
	PCB5	Document set LED PCB
	PCB6	Inverter PCB
	PCB7	ADF driver PCB

Table 2-702

3) Motor, solenoid, others

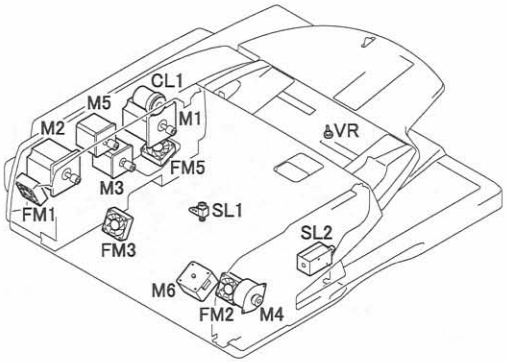


Figure 2-703

Category	Symbol	Name
Motor	M1	Pickup motor
	M2	Read motor
	M3	Delivery reversing motor
	M4	Separation motor
	M5	No.2 registration motor
	M6	CIS glass motor
Clutch	CL1	Pickup clutch
Solenoid	SL1	Stamp solenoid (option)
	SL2	Unlock solenoid
Fan	FM1	Read motor fan
	FM2	CIS unit fan (front)
	FM3	CIS unit fan (rear)
	FM5	Delivery/registration motor fan
Volume	VR	Document width volume

Table 2-703

2. Reader

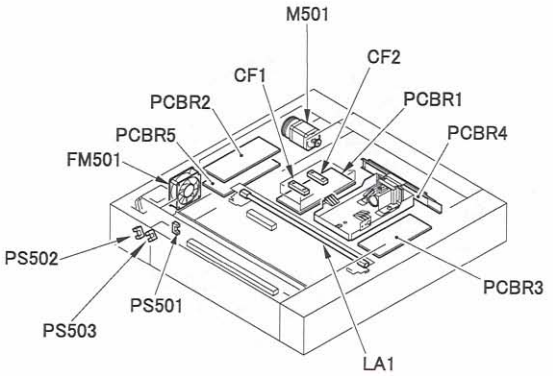


Figure 2-704

Category	Symbol	Name
Sensor	PS501	Optical HP sensor
	PS502	ADF opening sensor 1
	PS503	ADF opening sensor 2
	CF1	Document size sensor (AB-size group)
	CF2	Document size sensor (INCH-size group)
Lamp	LA1	Scanning lamp
Motor	M501	Scanner motor
Fan	FM501	Reader fan
PCB	PCBR1	Reader controller PCB
	PCBR2	Interface PCB
	PCBR3	Inverter PCB
	PCBR4	CCD/AP PCB
	PCBR5	Memory PCB

Table 2-704

3. Controller

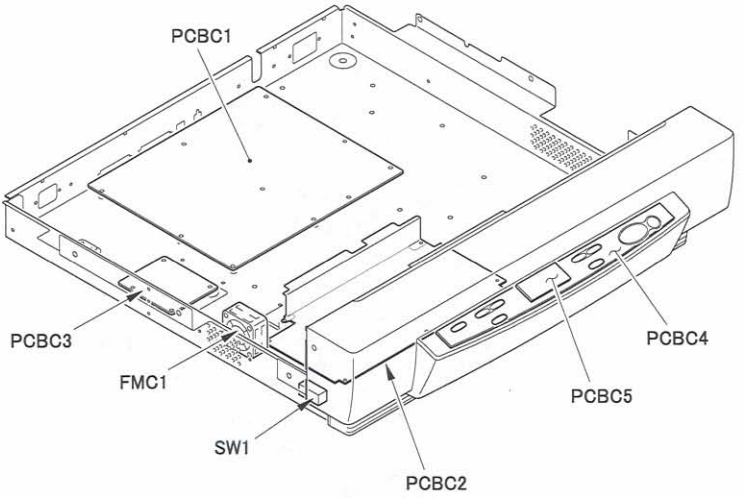


Figure 2-705

Category	Symbol	Name
Switch	SW1	Power switch
Fan	FMC1	Cooling fan
PCB	PCBC1	DC controller PCB
	PCBC2	Power supply PCB
	PCBC3	Power junction PCB
	PCBC4	Switch PCB
	PCBC5	LCD

Table 2-705

4. Connector

1) Feeder

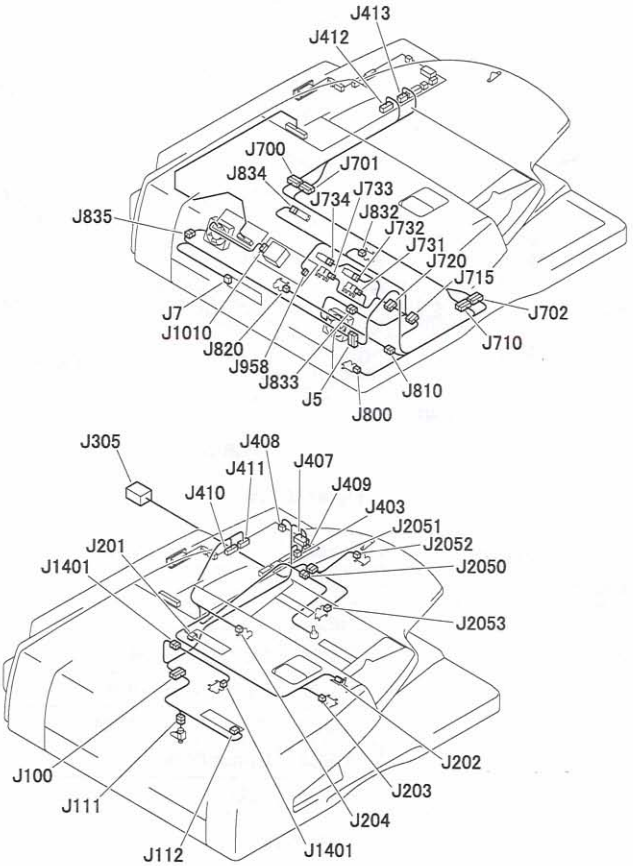


Figure 2-706

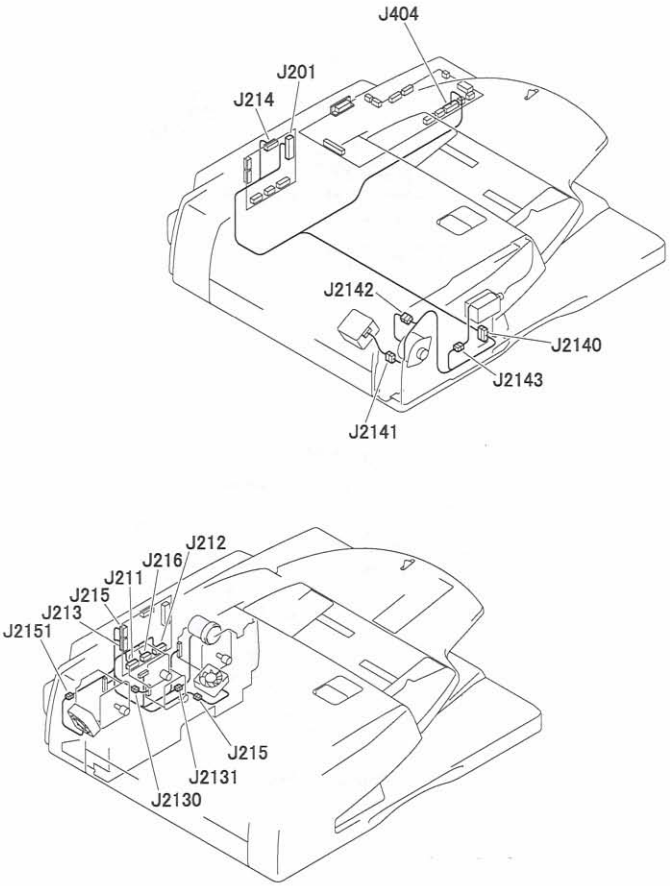


Figure 2-707

2) Reader

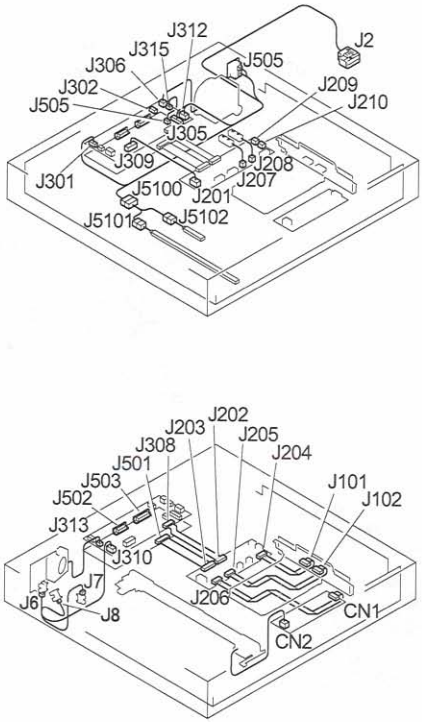


Figure 2-708

VIII. PARTS LAYOUT ON EACH PCB

1. DC Controller PCB

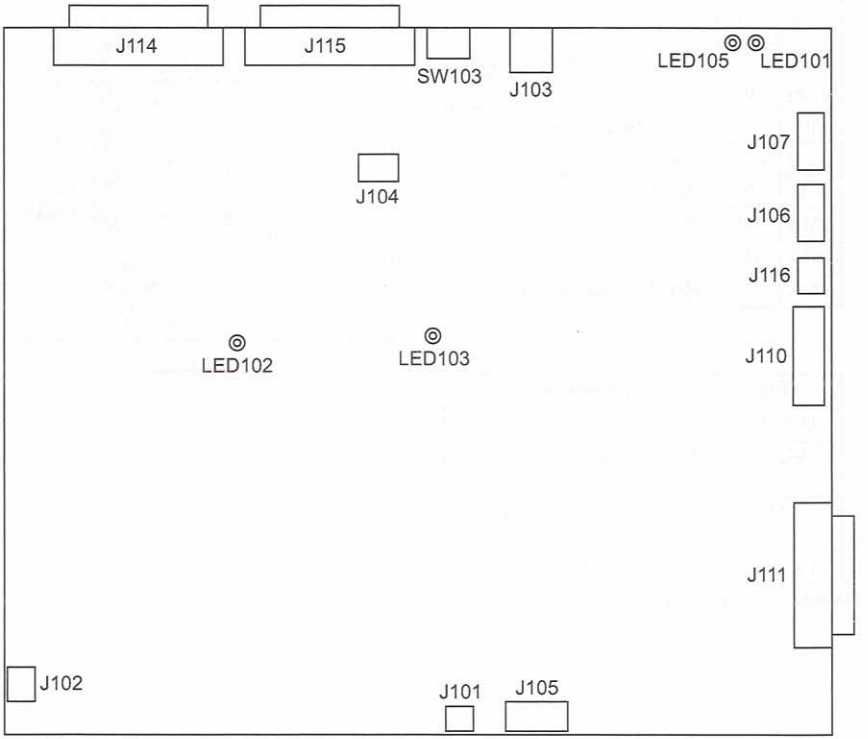


Figure 2-801

Note: The output voltage from the connector connected to J107 can be used to check the operation of the DC controller PCB and power supply PCB. Refer to the "CHAPTER 5 V. OPERATION TROUBLESHOOTING" for details.

Connector		Description
J101	2P	Power supply standby signal
J102	3P	Cooling fan
J103	4P	USB I/F
J104	4P	(For factory/design)
J105	4P	24VDC power supply input
J106	4P	24VDC power supply input
J107	4P	DC power supply output
J110	32P	Operation panel
J111	36P	Image data (reader)
J114	50P	SCSI I/F
J115	50P	SCSI I/F
J116	2P	24VDC power supply input

Table 2-801

LED	Description
LED101	24VDC supply: Lit
LED102	CPU (SH1) normal operation: Flashing
LED103	IC (XILINX) normal operation: Flashing
LED105	13.2VDC supply: Lit

Note: The LED is dark even when lit.

Table 2-802

Switch	Description
SW103	• For SCSI setting 1 to 3: SCSI ID setting 4: Terminator setting At shipping SCSI ID: 2 Terminator: ON 1 2 3 ID0 OFF OFF OFF ID1 ON OFF OFF ID2 OFF ON OFF ID3 ON ON OFF ID4 OFF OFF ON ID5 ON OFF ON ID6 OFF ON ON ID7 ON ON ON 

Table 2-803

2. Power Supply PCB

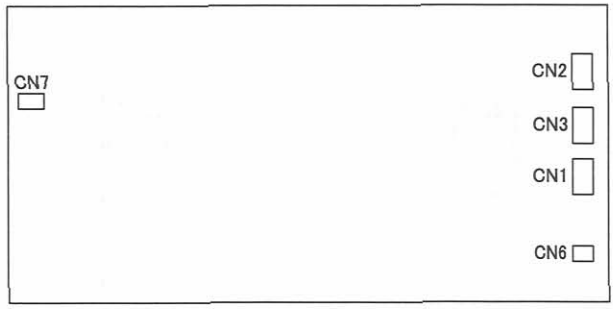


Figure 2-802

Connector		Description
CN1	4P	24DVC power supply output
CN2	2P	24DVC power supply output
CN3	4P	24DVC power supply output
CN6	3P	Power supply standby signal
CN7	3P	AC power supply input

Table 2-804

3. Power Junction PCB

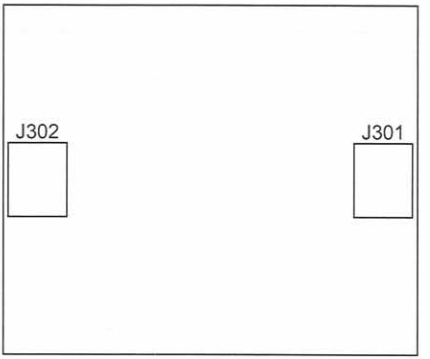


Figure 2-803

Connector		Description
J301	2P	AC power supply input
J302	2P	AC power supply output

Table 2-805

4. ADF Controller PCB

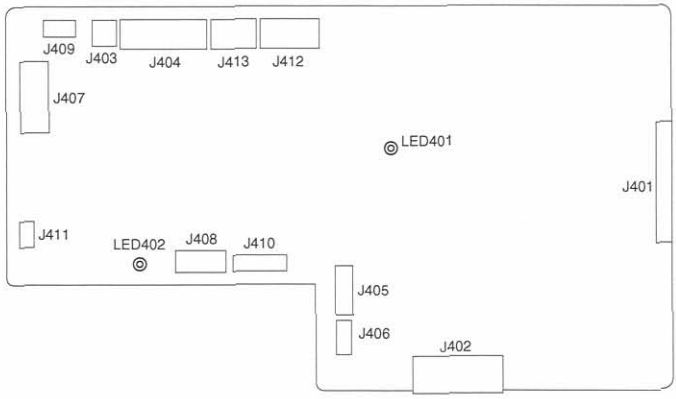


Figure 2-804

CHAPTER 3

DISASSEMBLY & REASSEMBLY

I. MAIN UNIT

⚠
When disassembling the main unit a preparation should be made to determine locations of units after disassembly. Since each of the units is heavy, it should be handled carefully to prevent damage and accidents. The feeder weighs approximately 20 kg, the reader, approximately 15 kg, and the controller, approximately 6 kg.

⚠
Removal of the feeder and reader should be carried out by 2 people. Combined removal of both feeder and reader must always be carried out by 2 people.

⚠
Take care not to damage the platen glass. It is recommended that you place a protective sheet over the platen glass during the procedure.

⚠
Pressing firmly when the feeder is fully open increases the likelihood of uplift in the front of the main unit. Take care not to press firmly, or ensure that the securing plate is not removed. Take particular care if the feeder is fully opened at 90°.

1. Feeder

1) Disconnect the communications cable [1] (locking) and ADF communications cable [2] (with locking screws).

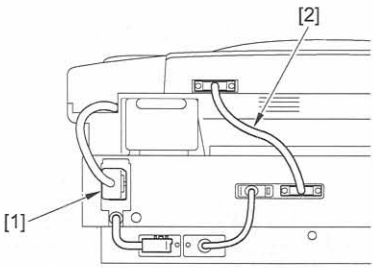


Figure 3-101

2) Turn up the rubber cover [1] and remove the angle guide plate [2].
   - 2 bind screws [3]

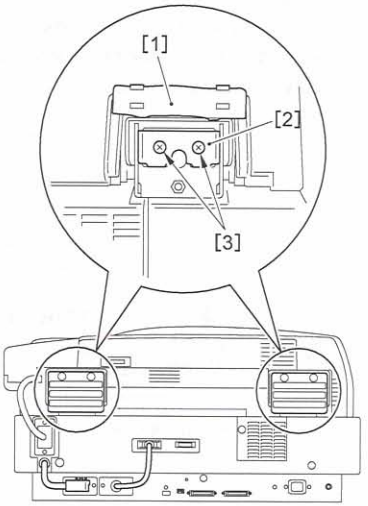


Figure 3-102

3) Move the feeder in the direction of arrow [A], release it from the stopper and then pull it up in the direction of arrow [B].
   - 3 rollet screws [1]

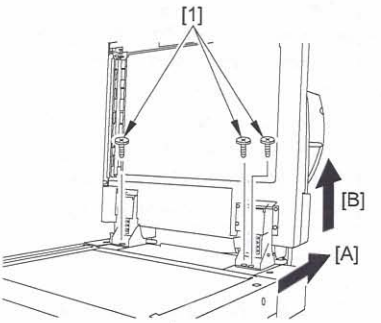


Figure 3-103

⚠

If the failures such as the image right angle and so on occur after installing the feeder, adjust the position of feeder. Refer to the "CHAPTER 5 III. FEEDER ADJUSTMENT" for details.

2. Reader

1) Remove the feeder.
2) Remove the 2 cables (locking) [1].

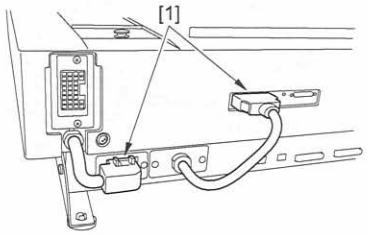


Figure 3-104

3) Remove the screws [2] holding the operation panel assembly [1] (1 each on the left and right).

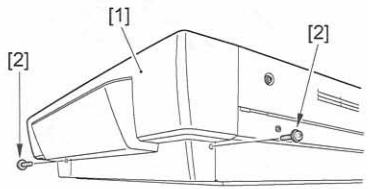


Figure 3-105

4) Remove the 2 fitting parts [1] (marked with △) using a tool with a flat and thin tip, and detach the operation panel assembly [2].
Disconnect the connector [3] that connects the operation panel assembly and controller.

⚠
Take care to prevent damage to the platen glass.
When the operation panel is installed, the connector may become loose. Push the connector in fully and do not pull on the cable.

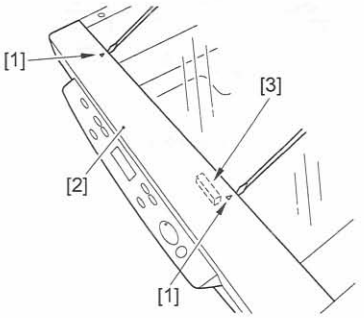


Figure 3-106

5) Remove the screws [1] (2 each on the left and right), and remove the left and right covers [2].

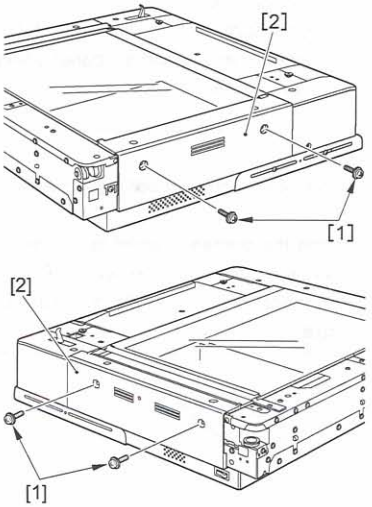


Figure 3-107

6) Remove the 11 screws [1] (3 in left, 4 in right, and 4 in front).

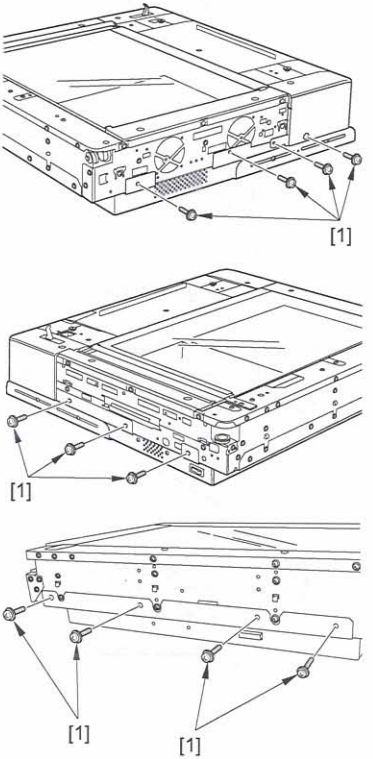


Figure 3-108

⚠

During assembly, secure the front first. Also, if the reader receiving plate is distorted at the front, press down on the receiving plate, align the screw holes in the receiving plate with the screw holes and fasten the screws. If the reader receiving plate is distorted, it may touch against the operation panel assembly.

7) Slide reader [1] 50 to 60 mm to the rear. Note that the reader cannot be slid any further due to the embossing on the right side.

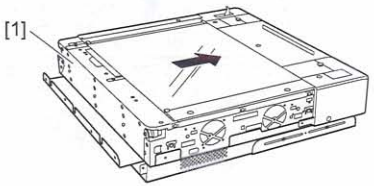


Figure 3-109

8) If working alone, remove the reader [1] by gripping the retaining sections on a diagonal (A1 + B2 or A2 + B1) and lifting the reader up. If working with another person, each person should grip the front and back retaining sections (A1 + A2, B3 + B4) with both hands and lift the reader [1] up to remove it.

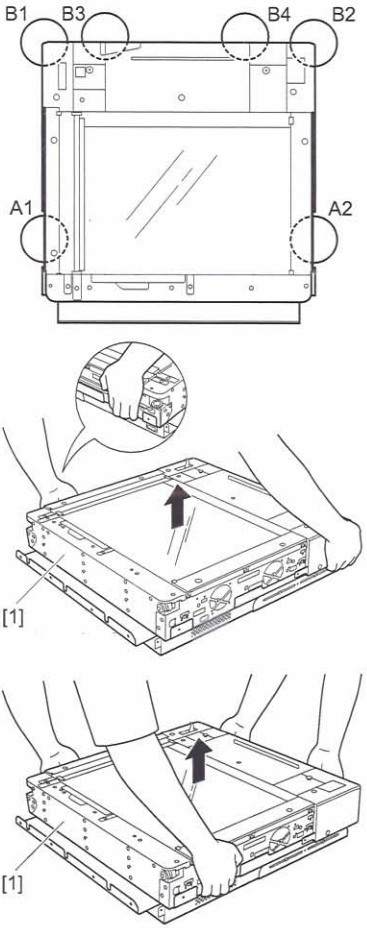


Figure 3-110

⚠

Take care when lifting, carrying and lowering the reader. Take particular care to avoid injuries caused by trapped fingers. This work should be carried out by 2 people.

3. Controller

⚠

Because the controller is mounted on the reader, the controller can be removed if the reader has been removed. If this task is carried out by 2 people, the feeder can be removed while it is still attached to the reader. Refer to the section on the reader for the removal procedure.
However, if working alone, remove the feeder before removing the reader.

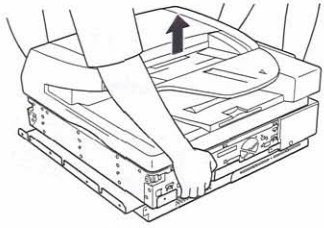


Figure 3-111

II. FEEDER

⚠
Take care not to damage the platen glass. It is recommended that you place a protective sheet over the platen glass during the procedure to prevent any removed screws from dropping into the feeder.

A. External Covers

1. Front Cover

1) Open the feeder cover [1] in the direction of the arrow.

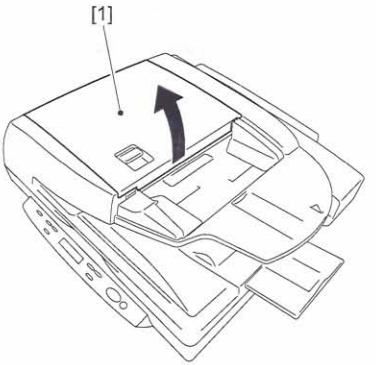


Figure 3-2A01

2) Remove 2 TP screws [1].

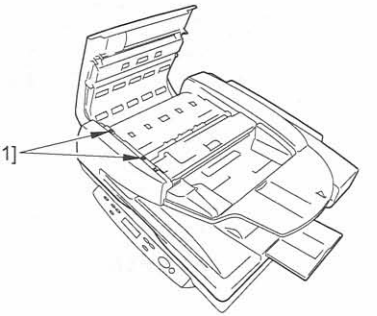


Figure 3-2A02

3) Open the feeder [1] in the direction of the arrow.

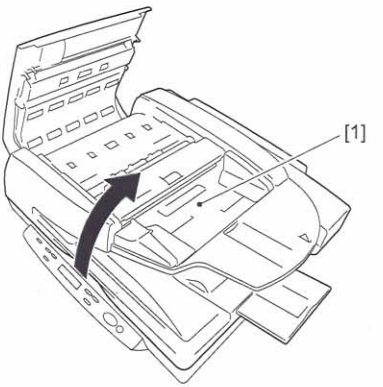


Figure 3-2A03

4) Detach the front cover [1].
   - 1 self-tapping screw [2]
   - 1 TP screw [3]

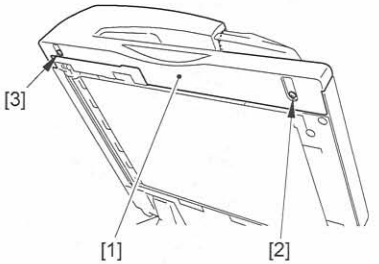


Figure 3-2A04

2. Rear Cover

1) Open the feeder cover [1] and the document delivery tray [2].
2) Disengage the projections on the connector and detach the rear cover [3].
   - 4 TP screws [4]

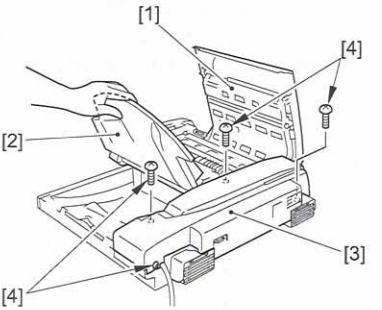


Figure 3-2A05

3. Rear Lower Cover

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover [1].
   - 2 bind screws [2]

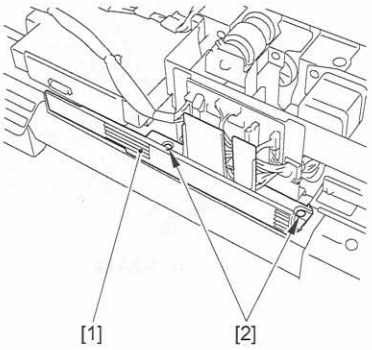


Figure 3-2A06

4. Lower Left Cover

1) Detach the front cover. (Page 3-7)
2) Open the feeder in the direction of the arrow and detach the lower left cover [1].
   - 2 TP screws [2]

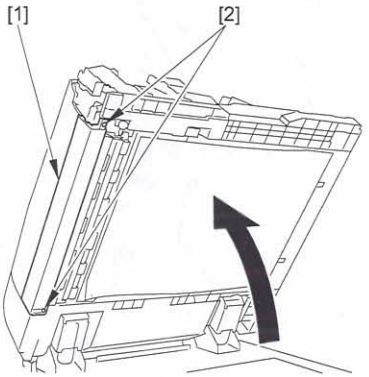


Figure 3-2A07

5. Feeder Cover

1) Detach the front cover. (Page 3-7)
2) Open the feeder cover [1] in the direction of the arrow and remove 1 E-ring [2].

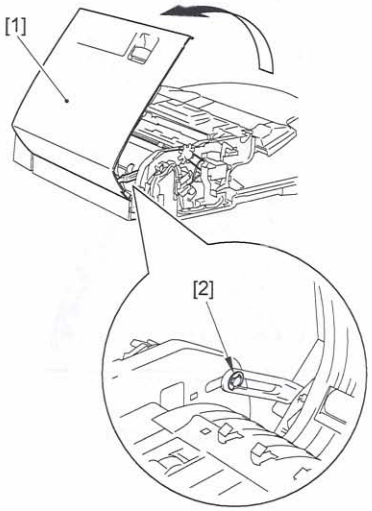


Figure 3-2A08

3) Remove 1 positioning pin [1].
   - 1 bind screw [2]

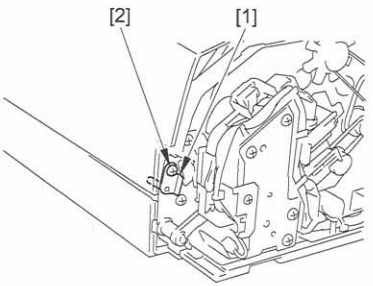


Figure 3-2A09

4) Detach the feeder cover [1] in the direction of the arrow.

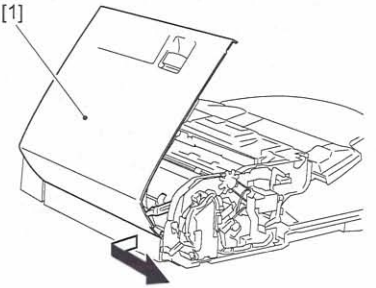


Figure 3-2A10

6. Feeder Inside Cover

1) Detach the front cover. (Page 3-7)
2) Detach the feeder cover. (Page 3-10)
3) Detach the feeder inside cover [1].
   - 4 self-tapping screws [2]

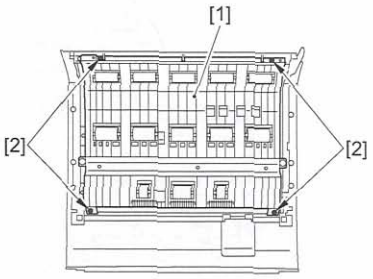


Figure 3-2A11

7. Inside Cover

1) Open the feeder cover.
2) Detach the inside cover [1].
   - 2 TP screws [2]

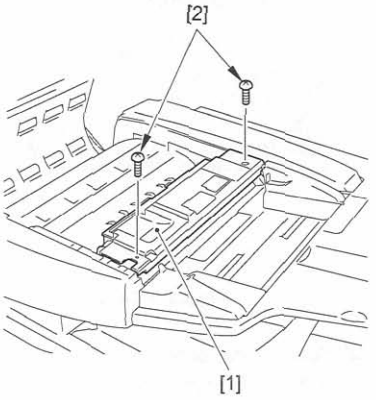


Figure 3-2A12

8. Read Guide

1) Detach the front cover. (Page 3-7)
2) Detach the feeder cover. (Page 3-10)
3) Open the opening guide [1] in the direction of the arrow.

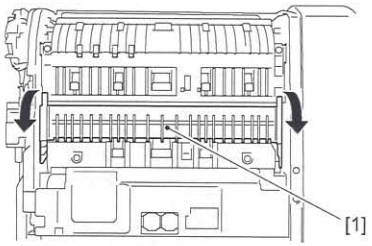


Figure 3-2A13

4) Remove the feeder guide [1].
   - 3 stepped screws [2]
   - 1 bind screw [3]

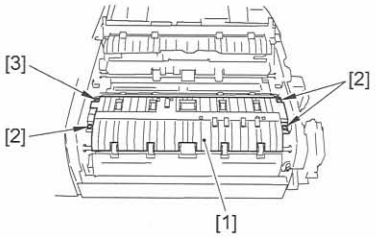


Figure 3-2A14

5) Remove the harness from the edge saddle [1] and remove the read guide [2].
   - 2 TP screws [3]
   - 2 connectors [4]

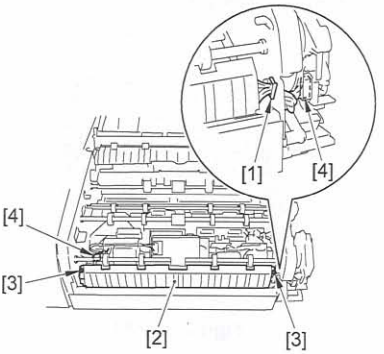


Figure 3-2A15

9. Harness Guide (front)

1) Detach the front cover. (Page 3-7)
2) Remove the harness guide (front) [1].
   - 2 TP screws [2]
   - 10 connectors [3]

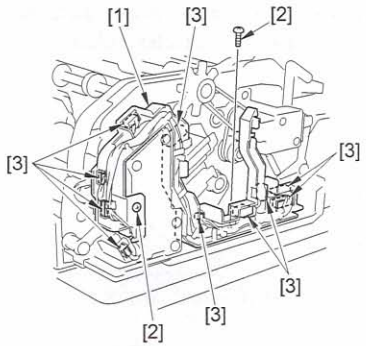


Figure 3-2A16

10. Harness Guide (rear)

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Detach the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear) [1].
   - 2 TP screws [2]

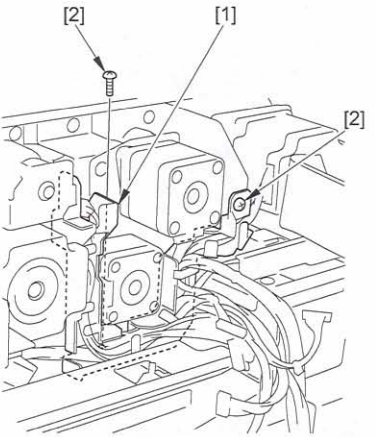


Figure 3-2A17

11. CIS glass

1) Detach the front cover. (Page 3-7)
2) Pull the lever [1], and open the black sheet support plate (external) [2] in the direction of the arrow.

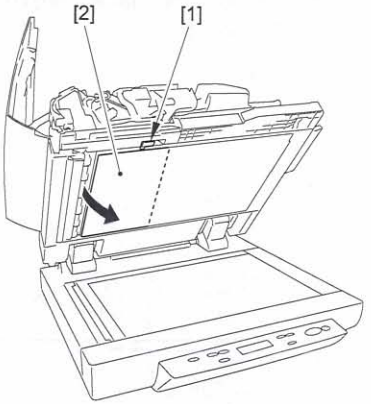


Figure 3-2A18

3) Pull the lever, and open the inner cover [1] in the direction of the arrow.

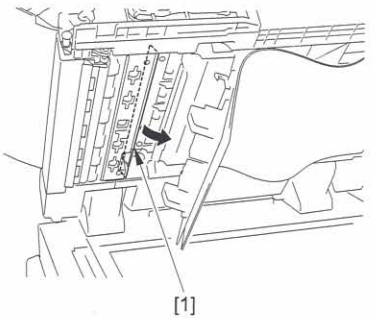


Figure 3-2A19

⚠

Be careful that the opening/closing area [1] of the black sheet support plate (external) is not contact with the platen glass [2].

The surface of the platen glass may be damaged in the situation below.

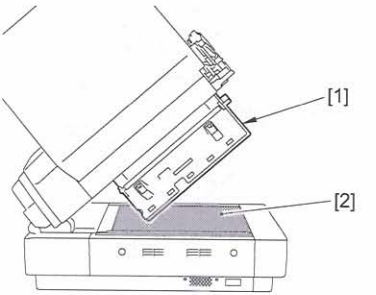


Figure 3-2A20

4) Slide the CIS glass [2] in the direction [A].
5) Remove the guide [1] in the direction of the arrow [B], and pull out the CIS glass [2] in the direction of the arrow [C].

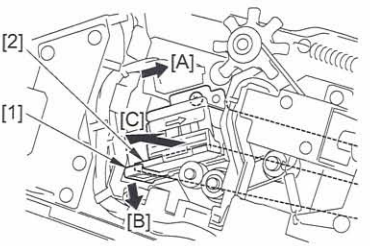


Figure 3-2A21

⚠

Do not touch the glass surface when attaching/detaching the CIS glass.

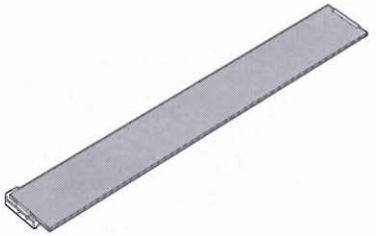


Figure 3-2A22

Replace the CIS unit simultaneously with the CIS glass. Enter each correction value of the included service parts by the service mode.
Refer to the "Service Mode" and "After Replacing Parts" sections for details.

B. Drive System

1. Motor Cover Plate

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove ADF driver PCB unit (including mounting plate) [1].
   - 7 connects [2]
   - 3 bind screws [3]

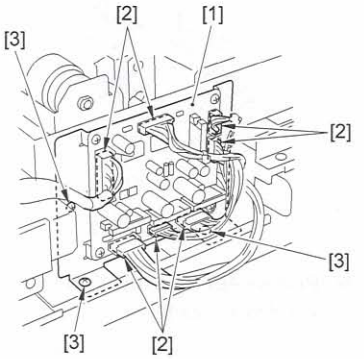


Figure 3-2B01

4) Remove the harness from 4 wire saddle [1] and 2 edge saddle [2], and 3 connectors [3].

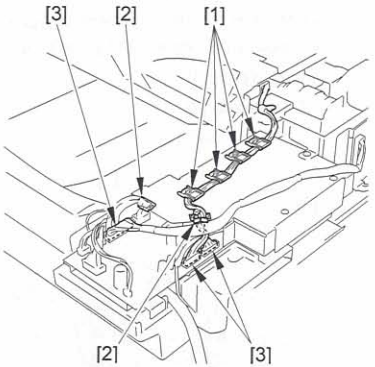


Figure 3-2B02

5) Remove ADF controller PCB cover [1].
- 6 bind screws [2]

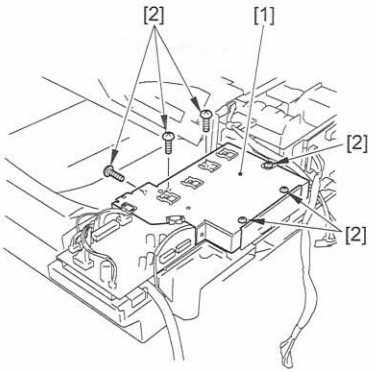


Figure 3-2B03

6) Remove the flat cable [1] and open the motor cover plate [2] (with the flat cable attached) in the direction of the arrow.

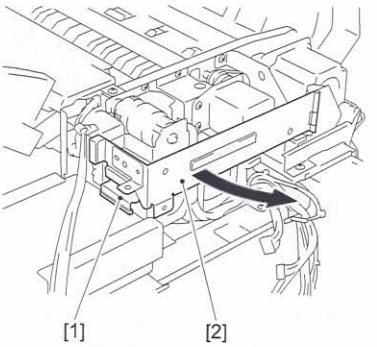


Figure 3-2B04

2. Motor Unit

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear). (Page 3-13)
5) Remove the motor unit [1].
   - 3 bind screws [2]

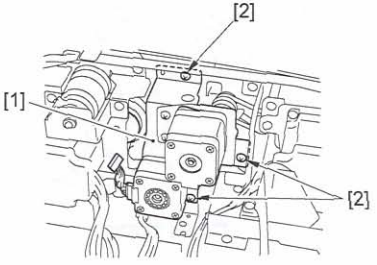


Figure 3-2B05

⚠
When installing the motor unit, check that the pickup roller unit shaft [2] is fitted into the joint [1] at the front end.

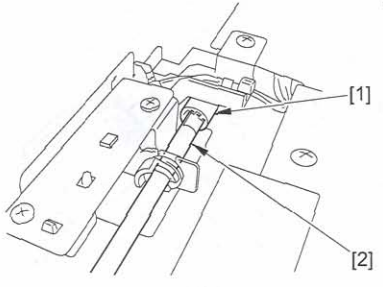


Figure 3-2B06

3. Pickup Motor

1) Remove the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear). (Page 3-13)
5) Remove the pickup motor [1].
   - 2 bind screws [2]

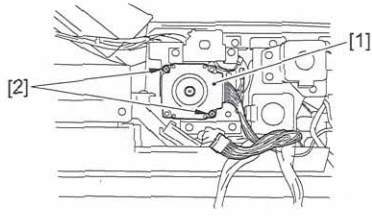


Figure 3-2B07

⚠
When installing the pickup motor, ensure that the teeth on the belt [2] engage the motor pulley [1].

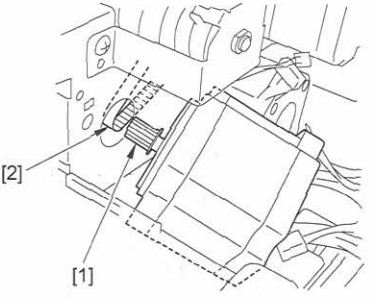


Figure 3-2B08

⚠
The cable of pickup motor is connected to J211 on the ADF driver PCB.

4. Read Motor

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the read motor fan unit [1].
   - 1 bind screw [2]

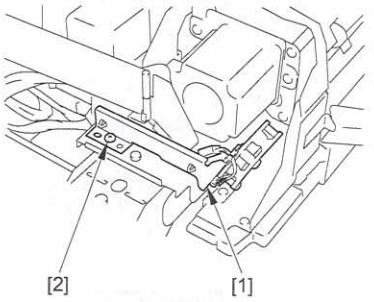


Figure 3-2B09

5) Remove the read motor unit (including mounting plate) [1].
   - 3 bind screws [2]
   - 1 connector [3]

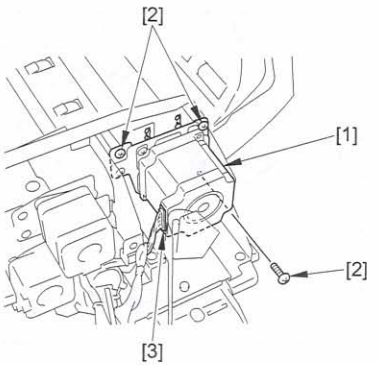


Figure 3-2B10

⚠

Use the procedure above when detaching the read motor unit.
Use the procedure below when detaching the read motor.

6) Remove the read motor [1].
   - 2 bind screws [2]

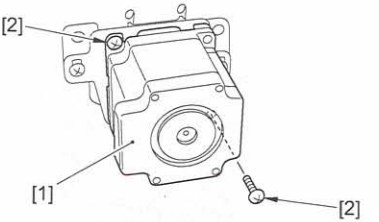


Figure 3-2B11

⚠

When mounting the read motor unit, make the belt [2] teeth engage in the pulley [1] at the motor end.

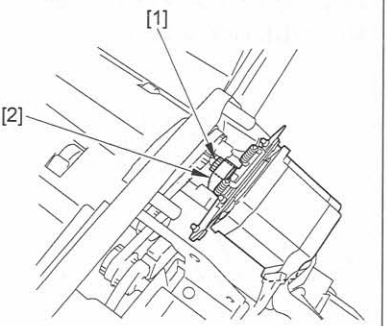


Figure 3-2B12

The cable of read motor is connected to J212 on the ADF driver PCB.

5. Delivery Reversing Motor

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear). (Page 3-13)
5) Remove the motor unit.
6) Remove the delivery reversing motor [1].
   - 2 bind screws [2]

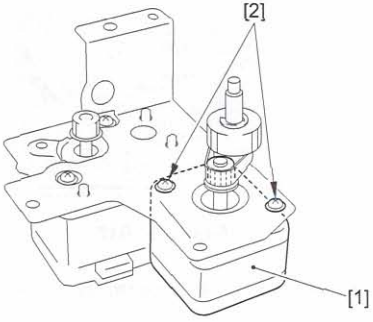


Figure 3-2B13

⚠

When mounting the motor unit after the delivery reversing motor mounted, make the belt [2] teeth engage in the pulley [1] at the end of the No.2 registration motor.

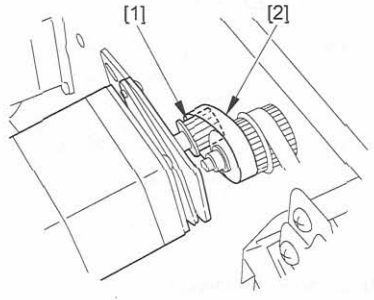


Figure 3-2B14

6. Separation Motor

1) Detach the front cover. (Page 3-7)
2) Detach the harness guide (front). (Page 3-13)
3) Remove the separation motor unit [1].
   - 3 bind screws [2]

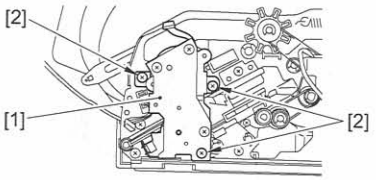


Figure 3-2B15

4) Remove the separation motor [1].
   - 2 bind screws [2]

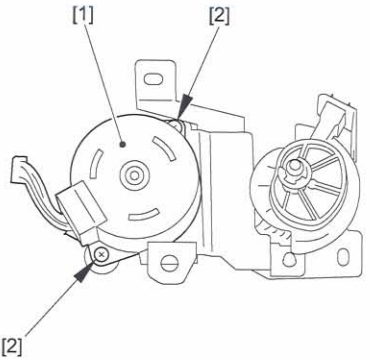


Figure 3-2B16

7. No.2 Registration Motor

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear). (Page 3-13)
5) Remove the No.2 registration motor unit (including mounting plate) [1].
   - 3 bind screws [2]

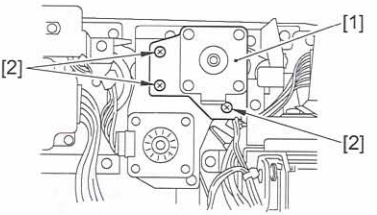


Figure 3-2B17

6) Remove the No.2 registration motor [1].
   - 2 bind screws [2]

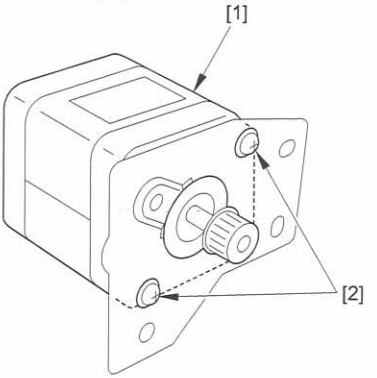


Figure 3-2B18

⚠

When mounting the No.2 registration motor, make the belt [2] teeth engage in the pulley [1] at the motor end.

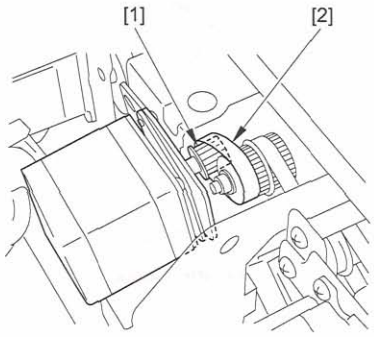


Figure 3-2B19

8. CIS Glass Motor

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Remove the read guide. (Page 3-12)
4) Remove the size sensor unit [1].
   - 1 connector [2]
   - 1 bind screw [3]

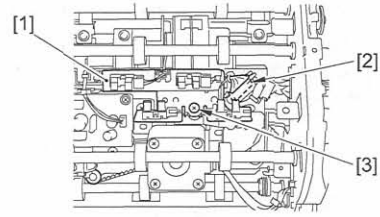


Figure 3-2B20

5) Remove the CIS glass motor unit (including mounting plate) [1].
   - 1 connector [2]
   - 3 TP screws [3]

⚠
Be careful not to lose the tension attached to the spring [4] on the plate of the CIS glass motor unit. When mounting the unit, be sure the belt engaged in the pulley at the motor end.

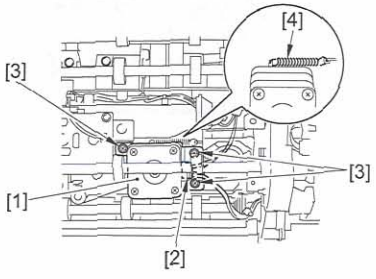


Figure 3-2B21

6) Remove the CIS glass motor [1].
   - 2 TP screws [2]

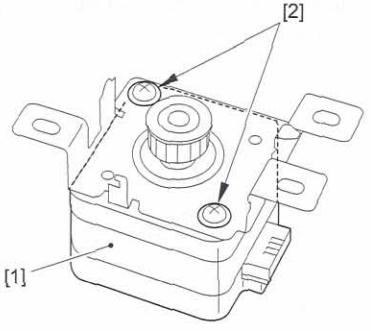


Figure 3-2B22

C. Document Feeding System

1. Pickup Roller Unit

1) Detach the inside cover. (Page 3-11)
2) Remove the pickup roller unit [1].
   - 2 resin stop ring [2]
   - 2 bushings [3]

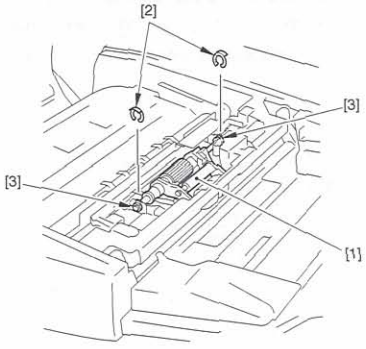


Figure 3-2C01

2. Pickup Roller/Separation Roller

1) Detach the inside cover. (Page 3-11)
2) Remove the pickup roller unit. (Page 3-23)
3) Remove the pickup roller support mount [1].
   - 3 resin stop rings [2]

> ⚠
> Be careful not to lose the dowel pins [3] when dismounting the pickup roller support mount.

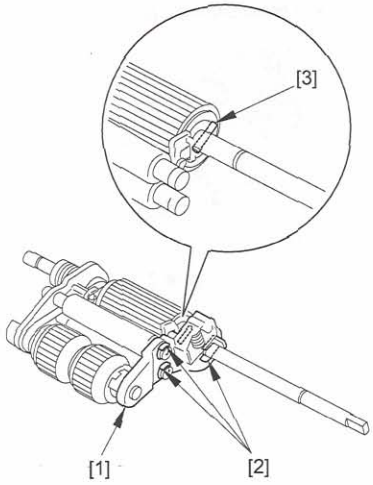


Figure 3-2C02

4) Remove the separation roller [1].

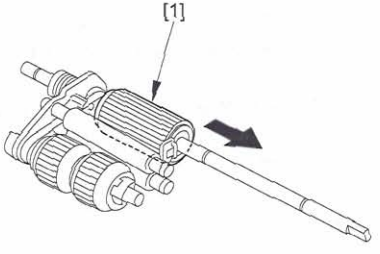


Figure 3-2C03

5) Remove the pickup roller [1].
   - 1 resin stop ring [2]

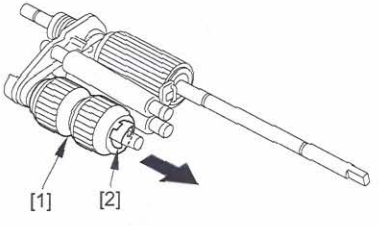


Figure 3-2C04

⚠

Do not reverse the mounting direction of the pickup roller/separation roller.
The end with the bearing should be mounted on the side [A] in the figure.
The wider end of sheet [2] should be mounted to the pickup roller side to avoid the separation guide [1] easily fallen off from the pickup roller support mount.

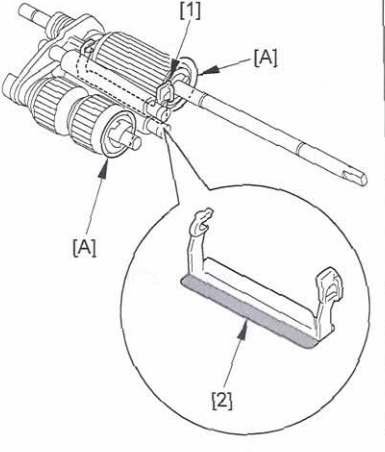


Figure 3-2C05

3. Separation Plate/Separation Pad

1) Detach the inside cover. (Page 3-11)
2) Remove the pickup roller unit. (Page 3-23)
3) Remove the separation plate/separation pad [1].
   - 2 bind screws [2] (with washers)

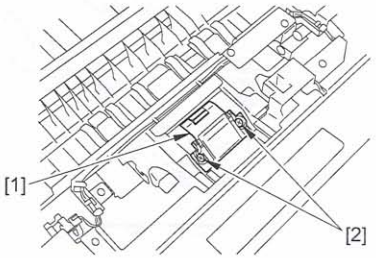


Figure 3-2C06

4) Remove the separation plate [1] and separation pad [2].

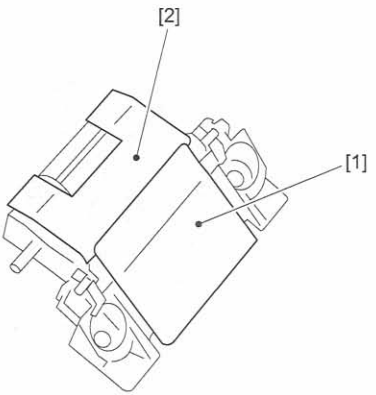


Figure 3-2C07

Reference : Adjusting the Separation Pressure

This adjustment is required when double feeding and the likes occur.

Pressure adjusting roll	Separation pressure
Side A	low
Side B	high

Table 3-2C01

1) Reverse the face of the pressure adjusting roller [1] (from face A to face B) and reattach to the spring.

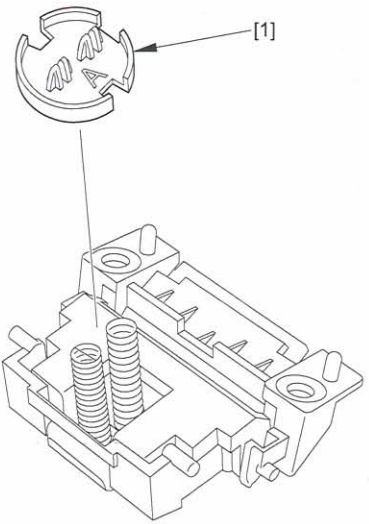


Figure 3-2C08

⚠

The springs should be fit in the correct positions.

The folded spring [1] should be mounted on the downstream of the feeding direction.

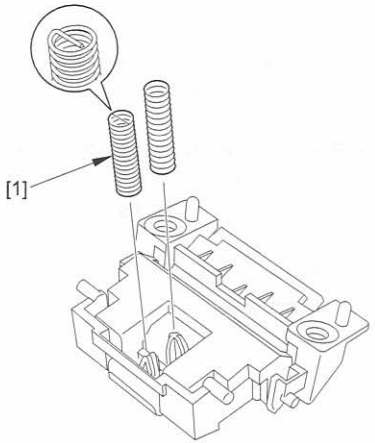


Figure 3-2C09

4. No.1 Registration Roll

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Detach the feeder inside cover. (Page 3-11)
4) Remove the shaft retainer [1].
   - 1 self-tapping screw [2]

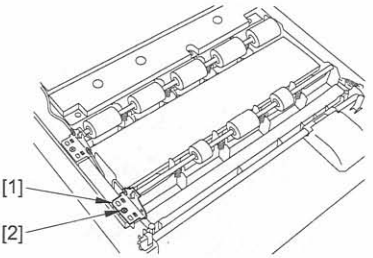


Figure 3-2C10

5) Remove the 1 No.1 registration roll (large) [1] and 2 No.1 registration rolls (small) [2].
   - 2 E-rings for each [3]

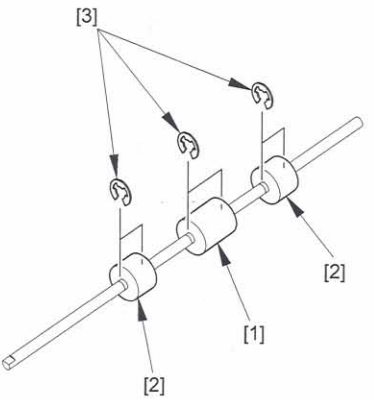


Figure 3-2C11

5. No.1 Registration Roller

1) Detach the front cover. (Page 3-7)
2) Detach the rear cover. (Page 3-8)
3) Detach the rear lower cover. (Page 3-9)
4) Remove the motor cover plate. (Page 3-15)
5) Remove the harness guide (rear). (Page 3-13)
6) Detach the motor unit. (Page 3-17)
7) Detach the opening guide. (Page 3-39)
8) Pull out the No.1 registration roller [1] in the direction of the arrow (first [A] and then [B]).
   - 2 E-rings [2]
   - 1 gear [3]
   - 2 bushings [4]

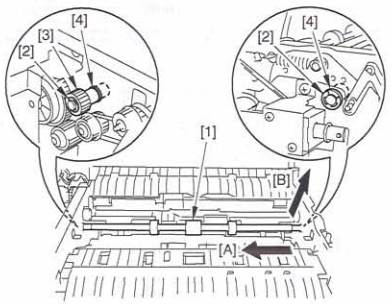


Figure 3-2C12

6. No.2 Registration Roll

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Detach the feeder inside cover. (Page 3-11)
4) Remove the shaft retainer [1].
   - 1 self-tapping screw [2]

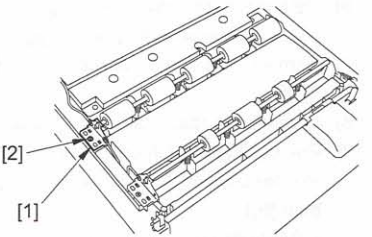


Figure 3-2C13

5) Remove the 5 No.2 registration rolls [1].
   - 2 E-rings for each [2]

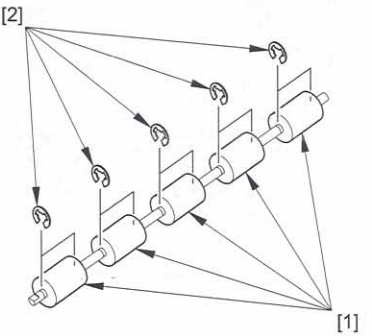


Figure 3-2C14

7. No.2 Registration Roller

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Detach the harness guide (front). (Page 3-13)
4) Remove the separation motor. (Page 3-20)
5) Detach the rear cover. (Page 3-8)
6) Detach the rear lower cover. (Page 3-9)
7) Remove the motor cover plate. (Page 3-15)
8) Remove the read motor unit. (Page 3-18)
9) Pull out the No.2 registration roller [1] in the direction of the arrow (first [A] and then [B]).
   - 2 E-rings [2]
   - 2 bushings [3]
   - 1 gear [4]

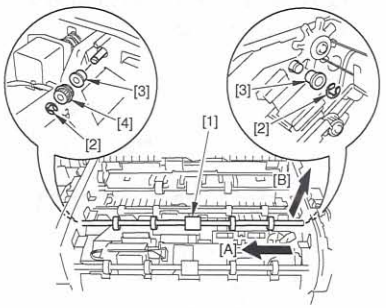


Figure 3-2C15

8. Read Roller 1

1) Detach the front cover. (Page 3-7)
2) Detach the lower left cover. (Page 3-9)
3) Detach the rear cover. (Page 3-8)
4) Detach the rear lower cover. (Page 3-9)
5) Remove the feeder cover. (Page 3-10)
6) Remove the read guide. (Page 3-12)
7) Detach the harness guide (front). (Page 3-13)
8) Remove the separation motor. (Page 3-20)
9) Remove the motor cover plate. (Page 3-15)
10) Remove the read motor. (Page 3-18)
11) Detach the platen roll (rear) unit. (Page 3-34)
12) Detach the platen roller 1. (Page 3-30)
13) Detach the platen roll (front) unit. (Page 3-32)
14) Remove the plate with bushing [1], remove the spring [2] and remove the read roller 1 [3].

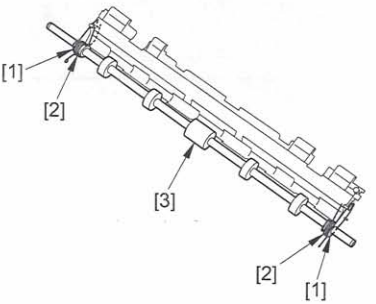


Figure 3-2C16

9. Read Roller 3

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Detach the harness guide (front). (Page 3-13)
4) Detach the unlock solenoid unit. (Page 3-49)
5) Detach the rear cover. (Page 3-8)
6) Detach the rear lower cover. (Page 3-9)
7) Remove the motor cover plate. (Page 3-15)
8) Remove the harness guide (rear). (Page 3-13)
9) Detach the motor unit. (Page 3-17)
10) Detach the opening guide. (Page 3-39)
11) Move the busing [2] to the direction of the arrow.
    - 2 E-rings [1]

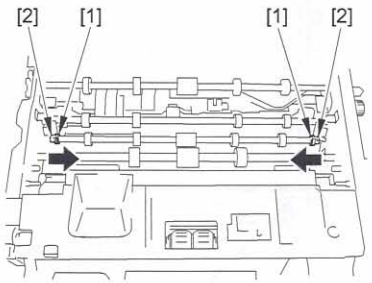
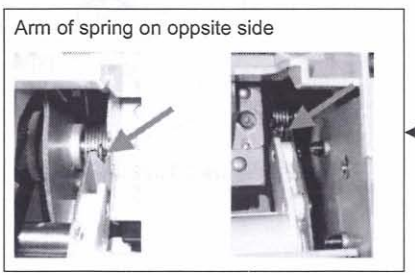


Figure 3-2C17



12) Release the spring pressure [1].

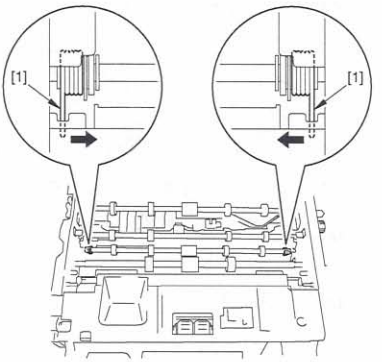


Figure 3-2C18

⚠

The arm of spring on opposite side is placed in the mounting plate of platen roller 2. This arm should be assembled first during reassembling.

13) Remove the 2 front belts [1], the E-ring [2], the pulley [3] and the bushing [4].

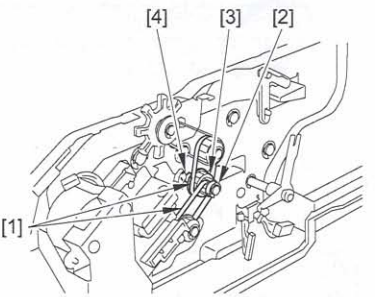


Figure 3-2C19

14) Remove the back belt [1], the E-ring [2], the pulley [3] and the bushing [4].

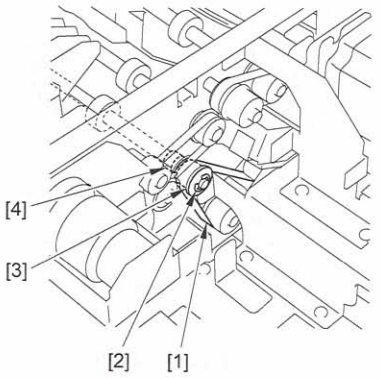


Figure 3-2C20

15) Pull out the read roller 3 [1] while sliding it in the direction of the arrow (first [A] and then [B]).

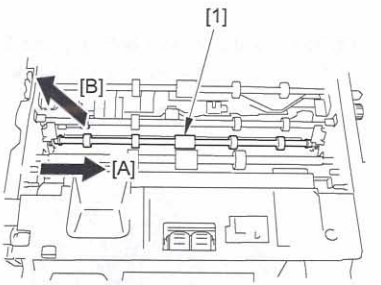


Figure 3-2C21

⚠
The working on lower side of feeder's bottom becomes easier, if you removed the angle guide plate to open 90 degrees.

10. Platen Roller 1

1) Detach the platen roll (rear) unit. (Page 3-34)
2) Remove the platen roller 1 [1].
   - 1 belt [2]
   - 2 resin stop rings [3]
   - 2 bushings [4]

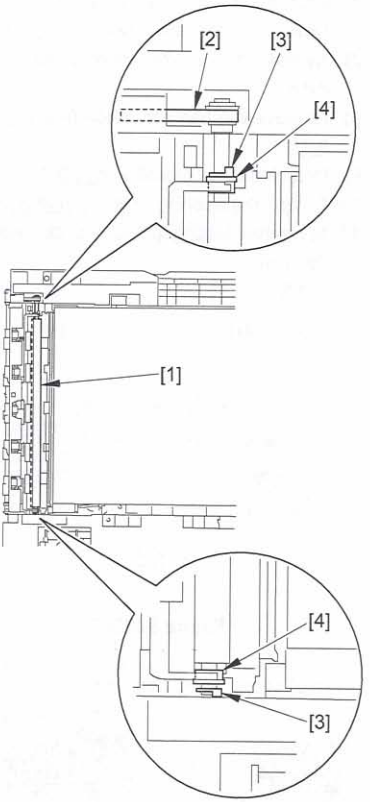


Figure 3-2C22

11. Platen Roller 2

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Detach the harness guide (front). (Page 3-13)
4) Detach the unlock solenoid unit. (Page 3-49)
5) Detach the rear cover. (Page 3-8)
6) Detach the rear lower cover. (Page 3-9)
7) Remove the motor cover plate. (Page 3-15)
8) Remove the harness guide (rear). (Page 3-13)
9) Detach the motor unit. (Page 3-17)
10) Detach the opening guide. (Page 3-39)
11) Detach the read roller 3. (Page 3-29)
12) Detach the front attached plate [1].
    - 1 resin stop ring [2]
    - 1 gear [3]
    - 1 collar [4]
    - 1 bushing [5]
    - 2 bind screws [6]
    - 1 E-ring
      (placed between bushing and color)

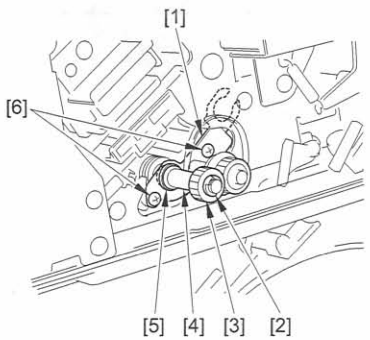


Figure 3-2C23

13) Remove the platen roller 2 [1].
    - 1 E-ring [2]
    - 1 bushing [3]
    - 2 bearing [4]

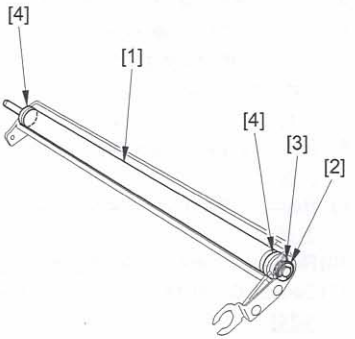


Figure 3-2C24

⚠
The working on lower side of feeder's bottom becomes easier, if you removed the angle guide plate to open 90 degrees.

12. Platen Roll (front)

1) Detach the front cover. (Page 3-7)
2) Detach the lower left cover. (Page 3-9)
3) Detach the rear cover. (Page 3-8)
4) Detach the rear lower cover. (Page 3-9)
5) Remove the feeder cover. (Page 3-10)
6) Remove the read guide. (Page 3-12)
7) Detach the harness guide (front). (Page 3-13)
8) Remove the separation motor. (Page 3-20)
9) Remove the motor cover plate. (Page 3-15)
10) Remove the read motor. (Page 3-18)
11) Detach the platen roll (rear) unit. (Page 3-34)
12) Detach the platen roller 1. (Page 3-30)
13) Remove the front and back E-rings [1] from inside.

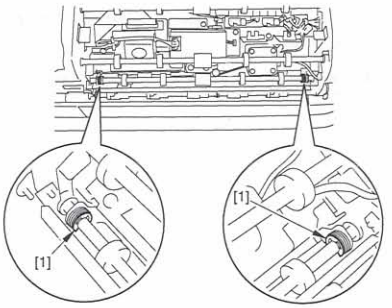


Figure 3-2C25

14) Move the spring [1] to the direction of the arrow to release the pressure.

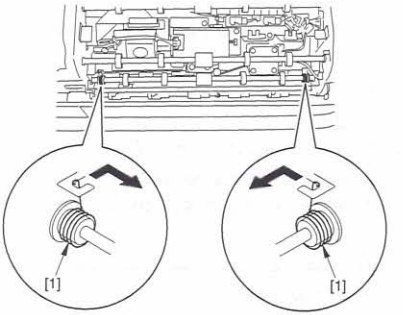


Figure 3-2C26

15) Remove the front belt [1], 2 E-rings [2], the pulley [3] and the bushing [4].

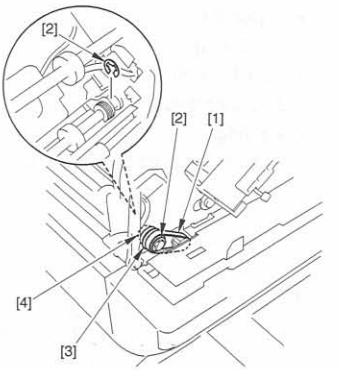


Figure 3-2C27

16) Remove the back 2 E-rings [1], the pulley [2] and the bearing [3].

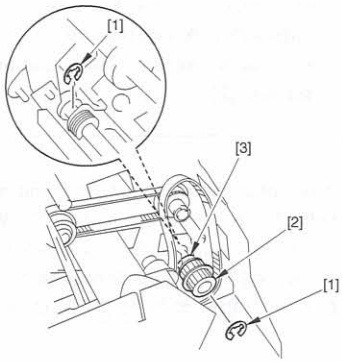


Figure 3-2C28

17) Open the feeder and remove the plate [1] holding platen roll (front) unit.
- 1 TP screw [2]

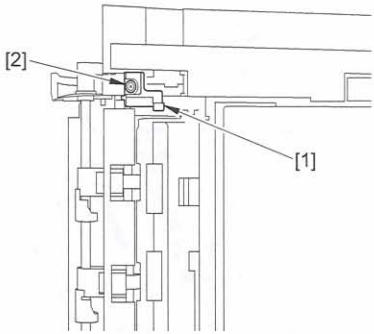


Figure 3-2C29

18) Remove the platen roll (front) unit [1].

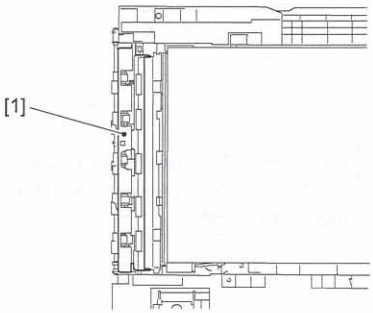


Figure 3-2C30

⚠

Use the procedure above when removing the platen roll (front) unit.
Use the procedure below when removing the rolls.

19) Pull out the roll shaft [1] to the direction of the arrow and remove 3 platen rolls (front) large [2], 4 platen rolls (front) small [3].

⚠
Be careful not to lose the roll when pulling out the roll shaft, because the roll is not fixed to the shaft.

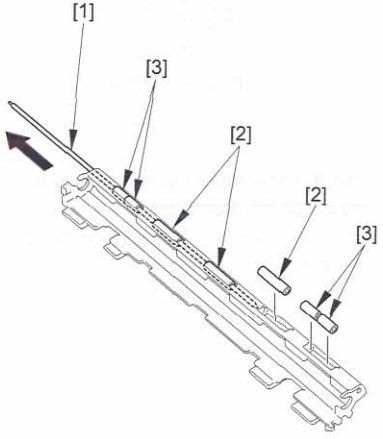


Figure 3-2C31

13. Platen Roll (rear)

1) Open the feeder and remove the platen roll (rear) unit [1] in the direction of the arrows (first [A] and then [B]).
   - 1 bind screw (M3 self-tapping screws) [2]

⚠
The rear of the platen roll (rear) unit is also held by a projecting latch [3]. When removing the unit, shift it in the direction of the arrow [A] and then disengage the latch by rotating the unit in the [B] direction.

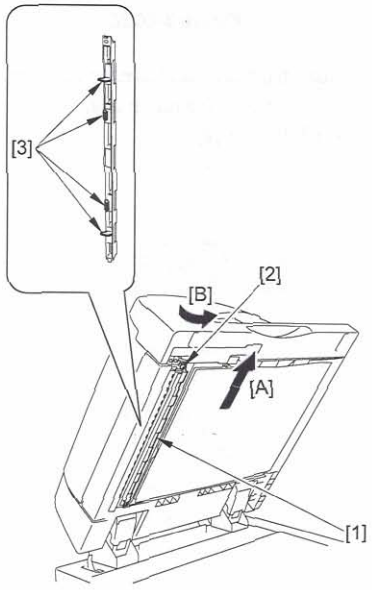


Figure 3-2C32

2) Remove the E-ring [1], pull out the shaft [2] to the direction of the arrow and remove the platen roll (rear) [3].

⚠
Be careful not to lose the roll when pulling out the shaft.

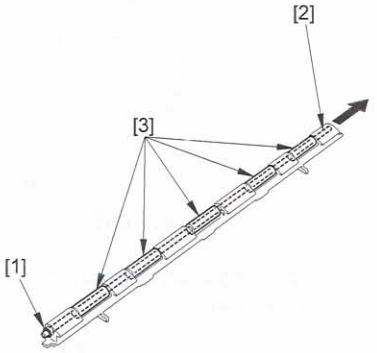


Figure 3-2C33

⚠
When installing the platen roll (rear), push it into the host machine to engage the projecting latch at the rear and then slide the roll into place.

14.Reversing Roller

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear). (Page 3-13)
5) Detach the motor unit. (Page 3-17)
6) Detach the opening guide. (Page 3-39)
7) Remove the reversing guide plate [1].
   - 2 bind screws [2]

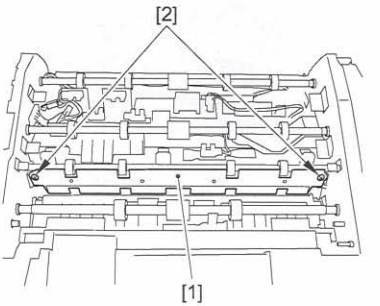


Figure 3-2C34

8) Remove the reversing roller [1].
   - 2 E-rings [2]
   - 2 bushings [3]
   - 1 pulley [4]

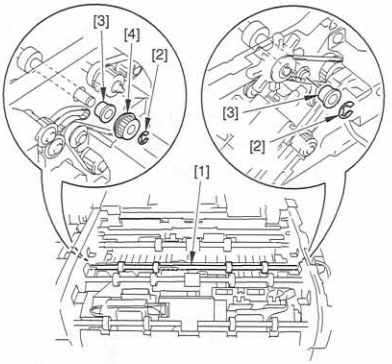


Figure 3-2C35

15.Reversing Roller Roll

1) Open the feeder cover [1] and the opening guide [2].

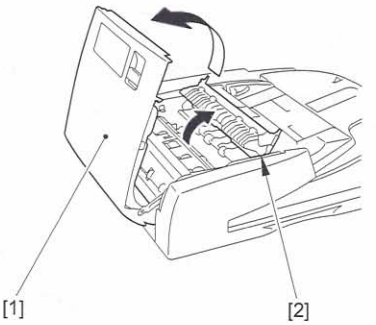


Figure 3-2C36

2) Remove the reversing roller roll [1].
   - 1 E-ring [2]

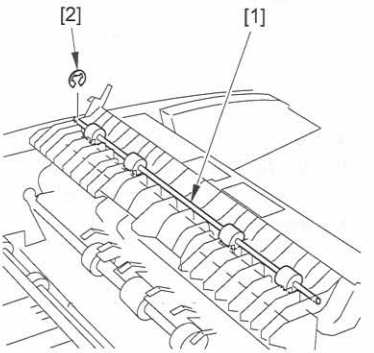


Figure 3-2C37

16. Delivery Roller

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear). (Page 3-13)
5) Remove the harness from 2 wire saddles [1] and remove the harness clamp [2].
   - 1 bind screw [3]

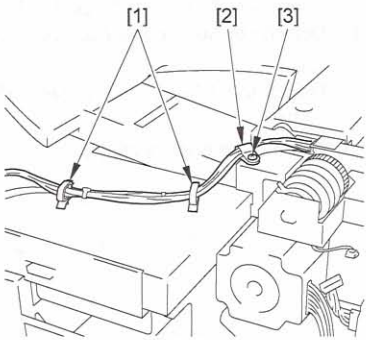


Figure 3-2C38

6) Remove the pick up motor unit [1].
   - 4 bind screws [2]

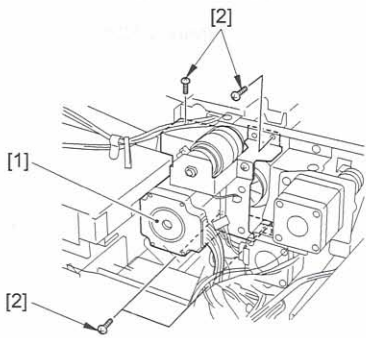
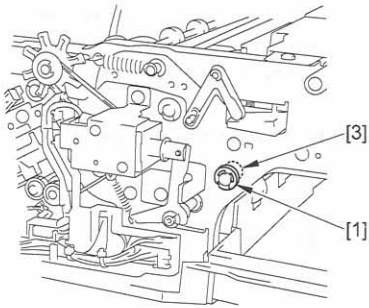


Figure 3-2C39

7) Remove 2 E-rings [1], 1 gear [2] and 2 bushings [3].



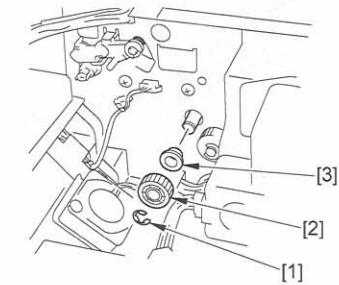


Figure 3-2C40

8) Remove the delivery roller unit [1] in the direction of the arrow (first [A] and then [B]).

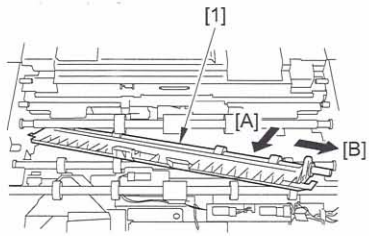


Figure 3-2C41

⚠
Use the procedure above when removing the delivery roller unit.
Use the procedure below when removing the delivery roller.

9) Remove the delivery roller [1].
   - 2 E-rings [2]
   - 2 Bushings [3]

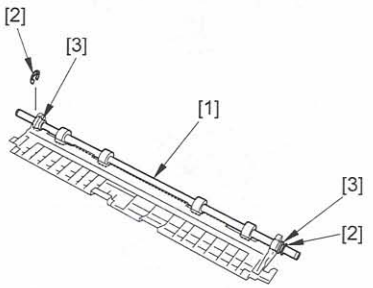


Figure 3-2C42

17. Delivery Roll

1) Detach the front cover. (Page 3-7)
2) Detach the rear cover. (Page 3-8)
3) Detach the rear lower cover. (Page 3-9)
4) Remove the motor cover plate. (Page 3-15)
5) Remove the harness guide (rear). (Page 3-13)
6) Detach the delivery roller unit. (Page 3-37)
7) Detach the motor unit. (Page 3-17)
8) Detach the No.1 registration roller. (Page 3-27)
9) Detach the delivery feeding guide. (Page 3-39)
10) Remove the delivery roll [1].

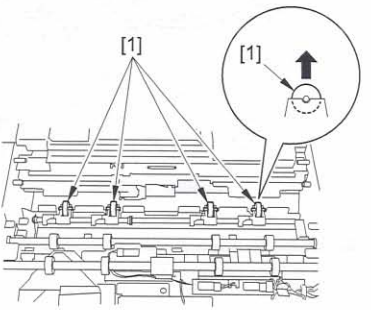


Figure 3-2C43

18.Delivery Feeding Guide

1) Detach the front cover. (Page 3-7)
2) Detach the rear cover. (Page 3-8)
3) Detach the rear lower cover. (Page 3-9)
4) Remove the motor cover plate. (Page 3-15)
5) Remove the harness guide (rear). (Page 3-13)
6) Detach the delivery roller unit. (Page 3-37)
7) Detach the motor unit. (Page 3-17)
8) Detach the No.1 registration roller. (Page 3-27)
9) Remove the delivery feeding guide [1].
   - 1 stepped screw [2]
   - 1 TP screw [3]
   - 1 connector [4]

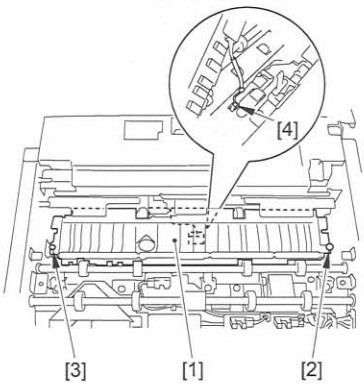


Figure 3-2C44

19.Opening Guide

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear). (Page 3-13)
5) Detach the motor unit. (Page 3-17)
6) Remove the 2 feeder guides [1].
   - 1 stepped screw [2]
   - 1 TP screw [3]

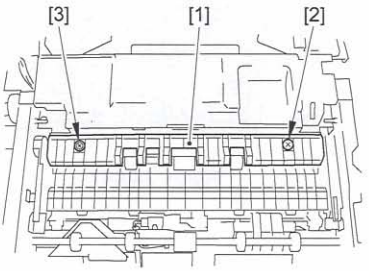


Figure 3-2C45

7) Remove the opening guide [1] from [A] to [B] in order.

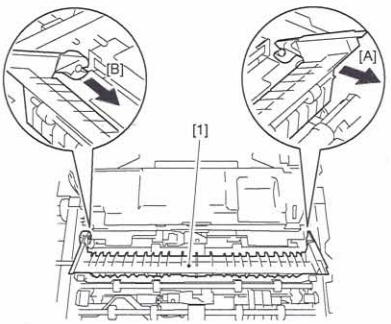


Figure 3-2C46

20. Dust-Collection Sheet

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Detach the feeder inside cover. (Page 3-11)
4) Remove the dust-collection sheet [A][B][D][E] and stick it to the same place.

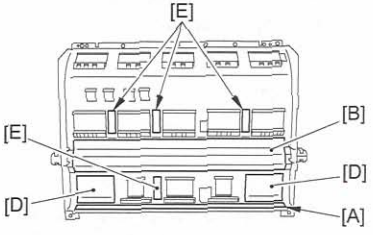


Figure 3-2C47

D. Control System

1. CIS Unit

1) Detach the front cover. (Page 3-7)
2) Detach the CIS glass. (Page 3-14)
3) Detach the CIS unit fan (rear). (Page 3-44)
4) Before removing this unit, first push the cable [1] removed in step 3 into the body of the host machine [2].

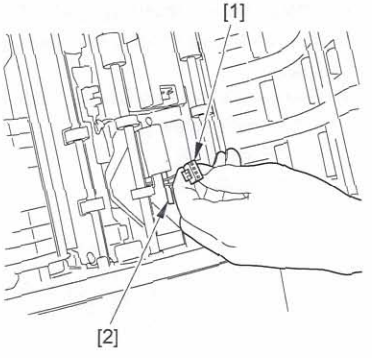


Figure 3-2D01

5) Free the full-flat cable [1].
   - 1 ferrite core [2]

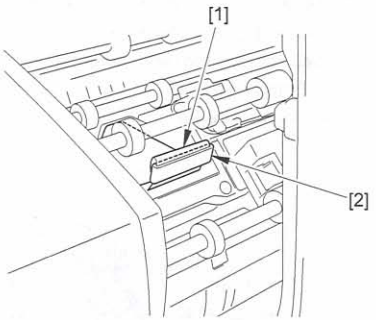


Figure 3-2D02

6) Remove the CIS main unit [1].
   - 1 bind screw [2]

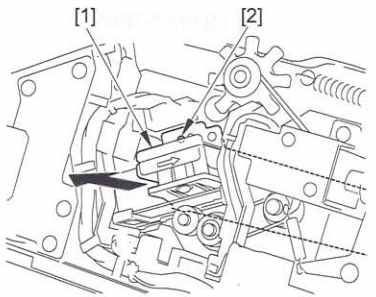


Figure 3-2D03

⚠

Do not touch the lens [1] of this unit by hands.

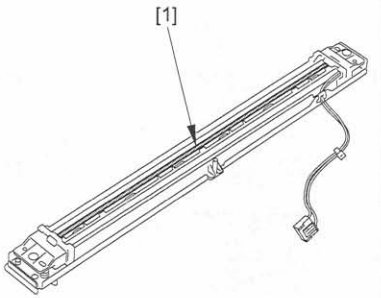


Figure 3-2D04

7) Remove the 1 edge saddle [1].
8) Remove the CIS unit [2].
   - 2 TP screws [3]

⚠

4 coil springs [4] are fitted between the CIS unit and the mounting plate. Also, if you removed the 2 plastic stopper guides [5], ensure that they are reinstalled in their original locations.

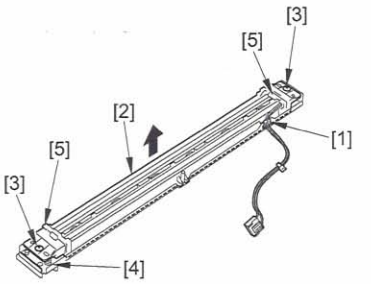


Figure 3-2D05

⚠

1. This unit is easier to install after pulling out the connector [1] of the cable from the opening [2].

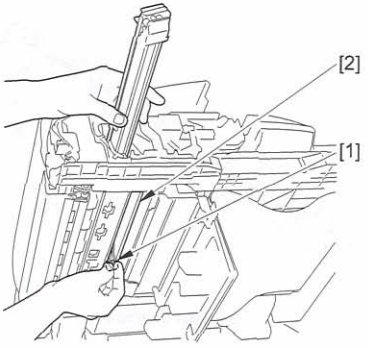


Figure 3-2D06

2. Replace the CIS glass simultaneously with the CIS unit. Enter each correction value of the included service parts by the service mode. Refer to the "Service Mode" and "After Replacing Parts" sections for details.

2. Read Motor Fan

1) Detach the rear cover. (Page 3-8)
2) Remove the harness from the wire saddle [2] and the edge saddle [3] and then remove the read motor fan [1].
   - 2 bind screw [4]
   - 1 connector [5]

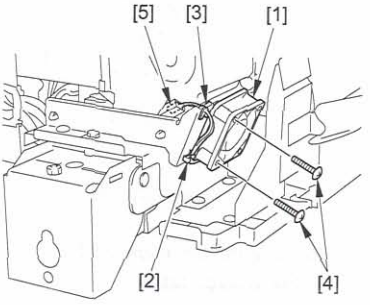


Figure 3-2D07

3. CIS Unit Fan (front)

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Remove the read guide. (Page 3-12)
4) Remove the No.2 read sensor cover [1].
   - 2 self-tapping screws [2]

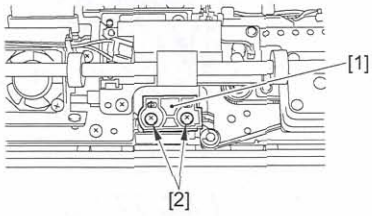


Figure 3-2D08

5) Move the fan motor mount [1] to the direction of the arrow.
   - 3 bind screws [2]

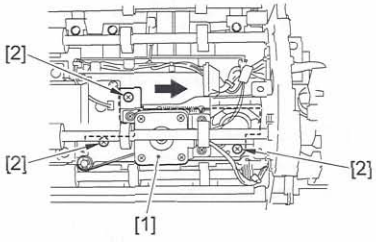


Figure 3-2D09

6) Remove the CIS unit fan (front) [1].
   - 1 connector [2]
   - 2 bind screws [3]

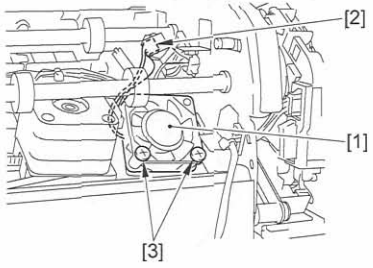


Figure 3-2D10

4. CIS Unit Fan (rear)

1) Detach the front cover. (Page 3-7)
2) Open the feeder cover [1] and the opening guide [2].

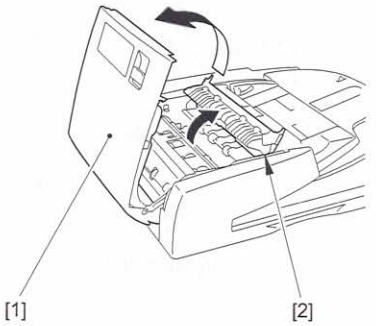


Figure 3-2D11

3) Remove the feeder guide [1].
   - 3 stepped screw [2]
   - 1 bind screw [3]

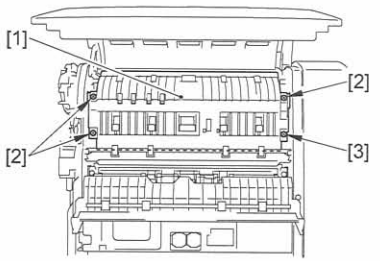


Figure 3-2D12

4) Disconnect the connector [1] of the CIS unit and remove the 3 edge saddles [2].

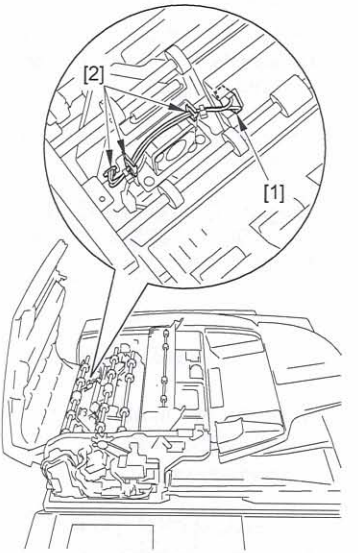


Figure 3-2D13

5) Remove the CIS unit fan (rear) [1].
   - 2 bind screws [2]
   - 1 connector [3]

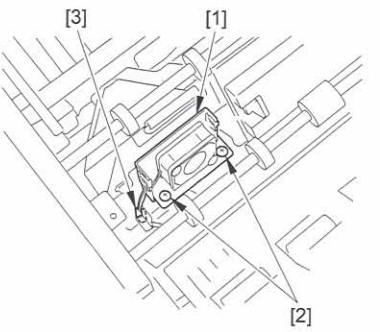


Figure 3-2D14

5. Delivery/Registration Motor Fan

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the harness guide (rear). (Page 3-13)
5) Remove the pickup motor. (Page 3-17)
6) Remove the delivery/registration motor fan [1].
   - 1 connector [2]
   - 2 bind screws [3]

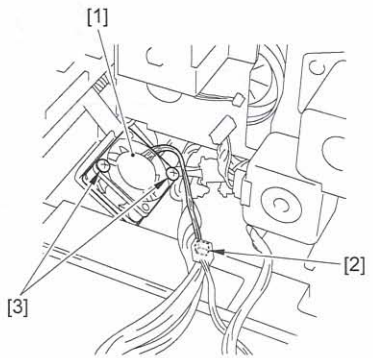


Figure 3-2D15

6. ADF Controller PCB

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the motor cover plate. (Page 3-15)
4) Remove the ADF controller PCB [1] and the connector mounting plate [6].
   - 9 bind screws [2]
   - 9 connectors [3]
   - 1 flat cable [4]
   - 2 connector screws [5]

> ⚠
> The connector for DC power (J403, blue) is locking.

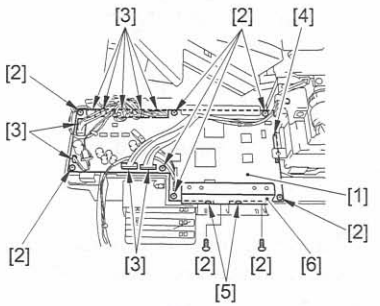


Figure 3-2D16

> ⚠
> After replacing this PCB, switch to service mode and enter the adjustment values listed on the service label. Refer to the "Service Mode" and "After Replacing Parts" sections for details.

7. ADF Driver PCB

1) Detach the rear cover. (Page 3-8)
2) Detach the rear lower cover. (Page 3-9)
3) Remove the ADF driver PCB (including mounting plate) [1].
   - 7 connectors [2]
   - 3 bind screws [3]

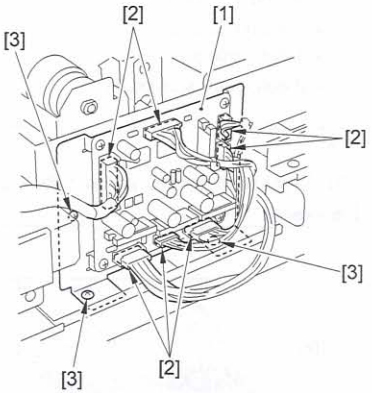
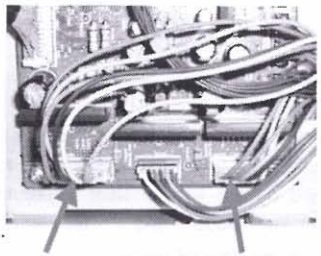


Figure 3-2D17

⚠

The pickup motor is connected to J211, the read motor is connected to J212.



8. Document Width Volume

1) Detach the inside cover. (Page 3-11)

⚠

Removing the inside cover allows you to open the document pickup tray further.

2) Shift up the document pickup tray and detach the document pickup tray cover [2].
   - 3 M3 self-tapping screws [1]

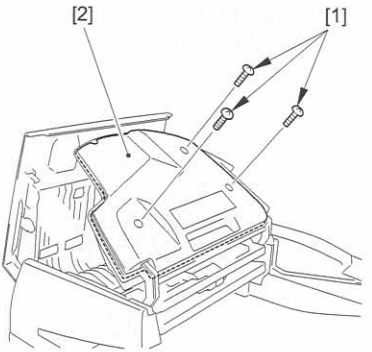


Figure 3-2D18

3) Detach the document width volume [3].
   - 3 connectors [1]
   - 2 M3 self-tapping screws [2]

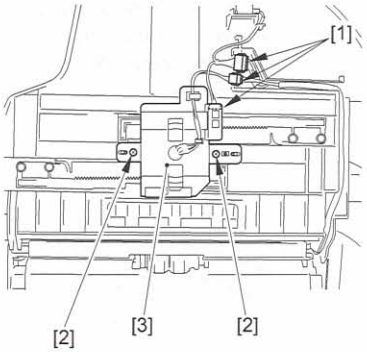


Figure 3-2D19

⚠

When installing the document width volume, use the procedure below.

1) Open the slide guides [1] completely.
2) Turn the gear [2] fully counterclockwise, and mount it so that the arrows [3] match.

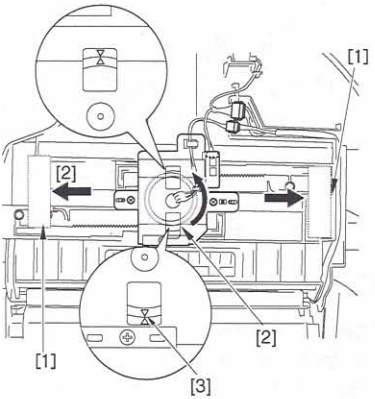


Figure 3-2D20

3) When replacing the document width volume, always adjust the position of the slide guides.
   Refer to the "Service Mode" and "After Replacing Parts" sections for details.

9. Post-separation Sensor

1) Detach the inside cover. (Page 3-11)
2) Remove the post-separation sensor [1].
   - 2 bind screws [2]
   - 1 connector [3]

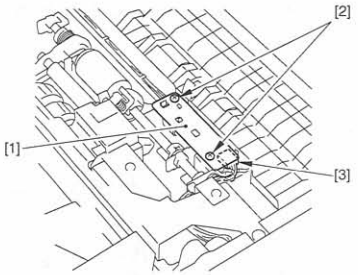


Figure 3-2D21

⚠
Sensor adjustment must be done after replacing the sensor plate.
Refer to the "Service Mode" and "After Replacing Parts" sections for details.

10. Read Sensor

1) Detach the front cover. (Page 3-7)
2) Remove the feeder cover. (Page 3-10)
3) Remove the read guide. (Page 3-12)
4) Remove the read sensor [1].
   - 2 self-tapping screws [2]
   - 1 connector [3]

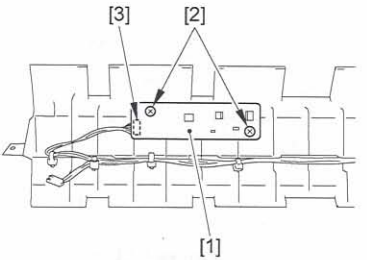


Figure 3-2D22

⚠
Sensor adjustment must be done after replacing the sensor plate.
Refer to the "Service Mode" and "After Replacing Parts" sections for details.

11. Delivery Reversing Sensor

1) Detach the front cover. (Page 3-7)
2) Detach the rear cover. (Page 3-8)
3) Detach the rear lower cover. (Page 3-9)
4) Remove the motor cover plate. (Page 3-15)
5) Remove the harness guide (rear). (Page 3-13)
6) Detach the delivery roller unit. (Page 3-37)
7) Detach the motor unit. (Page 3-17)
8) Detach the No.1 registration roller. (Page 3-27)
9) Detach the delivery feeding guide. (Page 3-39)
10) Remove the delivery reversing sensor [1].
    - 2 self-tapping screws [2]

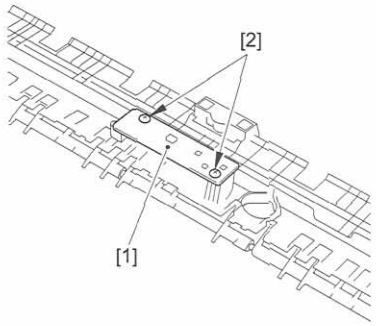


Figure 3-2D23

⚠
Sensor adjustment must be done after replacing the sensor plate.
Refer to the "Service Mode" and "After Replacing Parts" sections for details.

12. Unlock Solenoid

1) Detach the front cover. (Page 3-7)
2) Remove the harness from the harness guide and remove the unlock solenoid unit (including mounting plate) [1].
    - 1 connector [2]
    - 1 E-ring [3]
    - 2 bind screws [4]

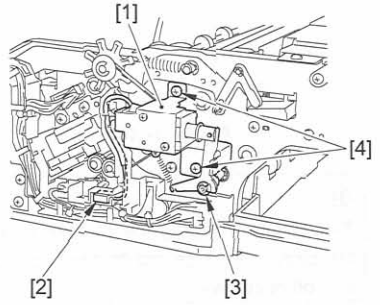


Figure 3-2D24

⚠
Be careful not to lose the spring [1] hooked onto the attached plate when removing the unlock solenoid unit.

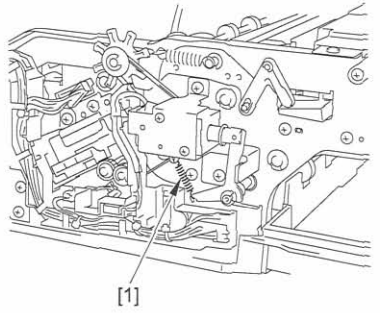


Figure 3-2D25

3) Remove the unlock solenoid [1].
   - 2 bind screws [2]

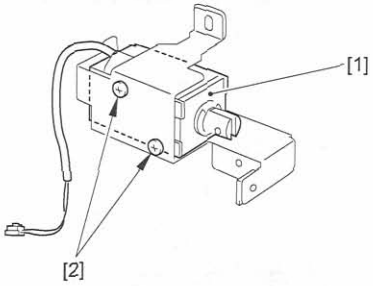


Figure 3-2D26

> ⚠
> The screws securing the mounting plate are pink. Take care not to confuse them with other screws.

III. READER

A. Exterior

1. Platen Glass

1) Remove the 2 screws [1], detach the right glass retainer [2] and remove the platen glass [3].

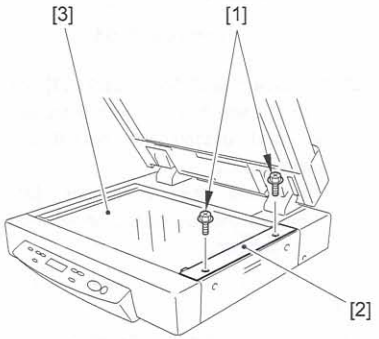


Figure 3-3A01

⚠
When removing the platen glass, take care not to touch the white plate attached to its back. (soiling can cause lines in the image)
Clean off any soiling that does occur.

2. ADF Reading Glass

1) Remove the 2 screws [1], and detach the glass retainer [2].

⚠
Flat springs [3] are fitted to the rear side of the screw-locked section (at the back).
Note that these may catch on other items during disassembly/assembly.

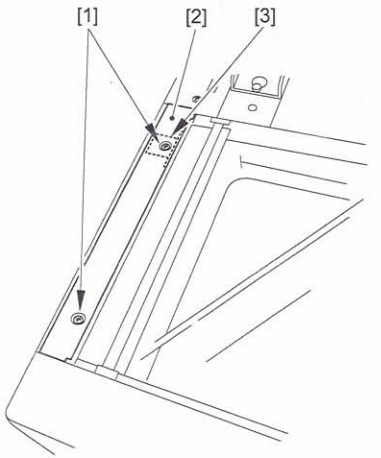


Figure 3-3A02

2) Pull out the ADF reading glass [1].

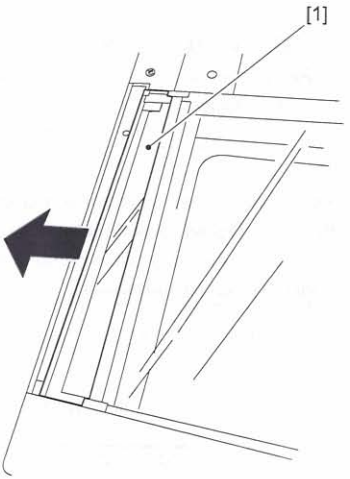


Figure 3-3A03

3. Operation Panel Assembly

1) Remove the 2 screws [1] (1 each on the left and right).

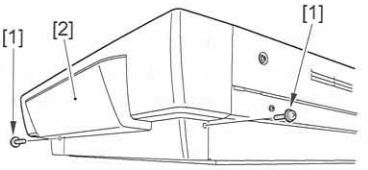


Figure 3-3A04

2) Remove the 2 fitting parts [1] (marked with △) using a tool with a flat and thin tip, and detach the operation panel assembly [2].
Disconnect the connector [3] that connects the operation panel assembly and controller.

> ⚠
> Take care to prevent damage to the platen glass.

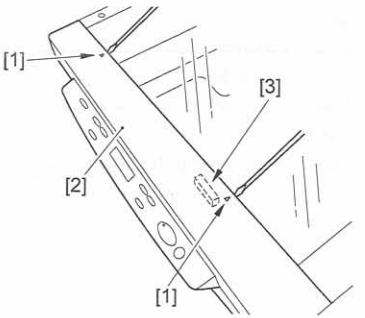


Figure 3-3A05

> ⚠
> When the operation panel is installed, the connector may become loose. Push the connector in fully and do not pull on the cable.

4. Reader Left/Right Covers

1) Remove the 2 screws [1], and detach the reader right cover [2].

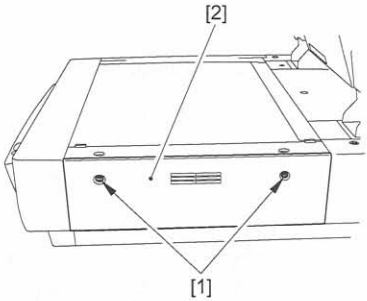


Figure 3-3A06

2) Remove the 2 screws [1], and detach the reader left cover [2].

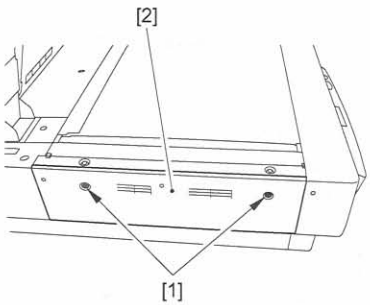


Figure 3-3A07

5. Reader Rear Cover

1) Disconnect the 4 connectors [1] and remove the 2 screws [2].

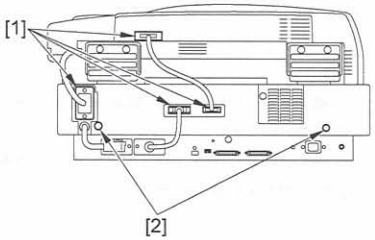


Figure 3-3A08

2) Remove the reader right cover. (Page 3-53)
3) Remove the screw [1].

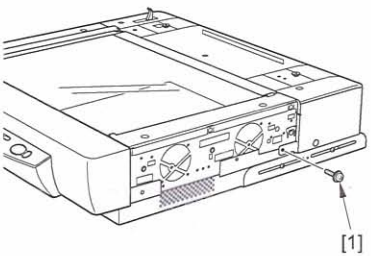


Figure 3-3A09

4) Flip open the rubber covers [1] of the left and right hinge parts, remove the screws [2] (2 each on the left and right), and detach the 2 angle guide plates [3].

⚠
This step makes it easier to remove the screws in step 5 below using an ordinary screwdriver. This step can be omitted if you have a short screwdriver.

⚠
Removing the angle guide plates allows the feeder to be opened to a wider angle. Note that opening the feeder in this way makes the unit more likely to tip over backwards.

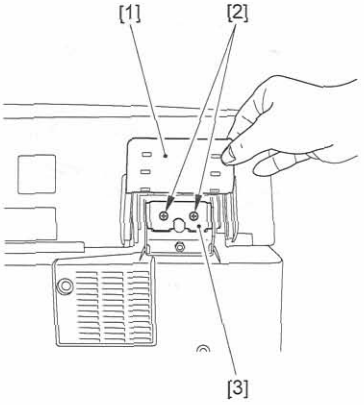


Figure 3-3A10

5) Remove the 3 screws [1], and slide the reader rear cover [2] toward the rear to detach.

⚠
Take care not to damage the ADF opening sensor arm [3].

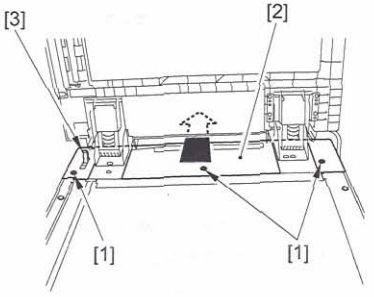


Figure 3-3A11

⚠
When installing the reader rear cover, insert the sheet [1] pasted to the cover under the platen glass.

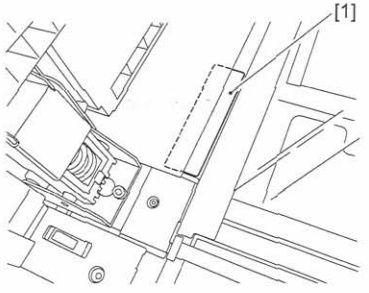


Figure 3-3A12

B. Drive/Control System

1. CCD Unit Cover

1) Remove the platen glass. (Page 3-51)
2) Remove the CCD unit cover [2].
   - 9 screws [1]

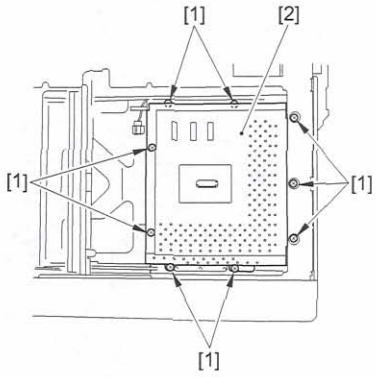


Figure 3-3B01

2. Scanning Lamp

1) Remove the platen glass. (Page 3-51)
2) Remove the operation panel assembly and reader rear cover. (Page 3-52, 3-53)
3) Remove the CCD unit cover. (Page 3-55)
4) Remove the cable [2] from the cable guide [3].
   - 1 connector (locking) [1]

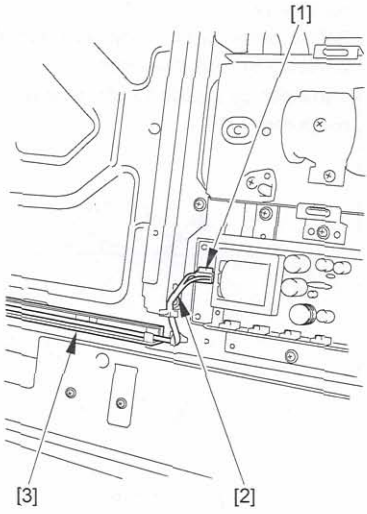


Figure 3-3B02

5) Move the No. 1 mirror base [1] to the right to match it against the cut-off [2] of the frame.
Remove the dustproof sheet [3].

⚠
When moving the No. 1 mirror base, be sure to hold it by the cut-up tab [A] of the mirror stay.
Before removing the dustproof sheet, it is advisable to mark the position of the sheet with a pen as a guide for when the sheet is re-applied.

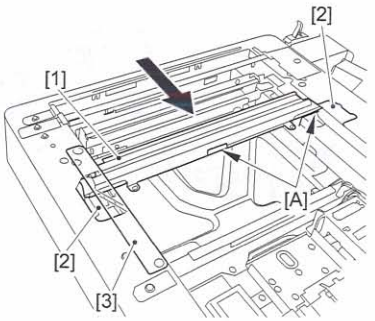


Figure 3-3B03

6) Remove the scanning lamp [2].
- 2 screws with washers [1]

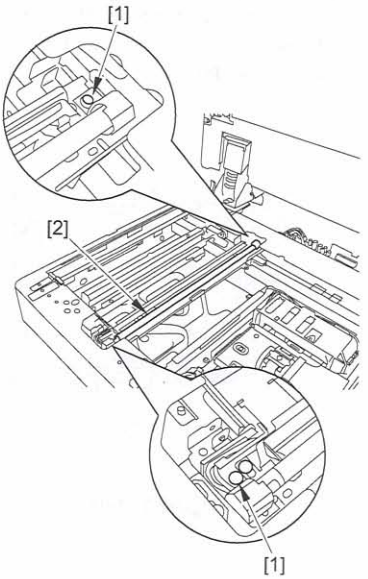


Figure 3-3B04

3. Reader Controller PCB

1) Remove the platen glass. (Page 3-51)
2) Remove the CCD unit cover. (Page 3-55)
3) Remove the size sensor unit [2] (including cover).
   - 3 screws [1]

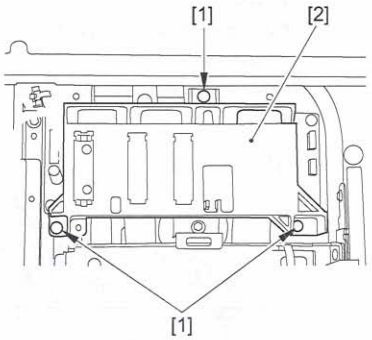


Figure 3-3B05

4) Remove the size sensor unit [2] (including cover).
   - 1 connector [1]

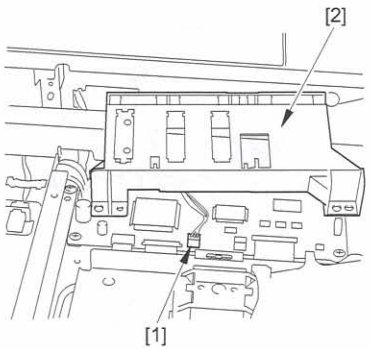


Figure 3-3B06

5) Remove the reader controller PCB [4].
   - 5 flat cables [1]
     * The 4 marked cables are equipped with lock levers.
   - 1 connector (locking) [2]
   - 4 bind screws [3]

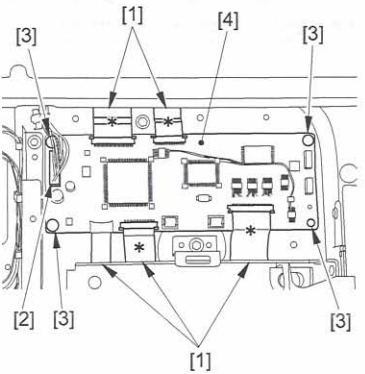


Figure 3-3B07

⚠

Slide the locking lever [1] in the direction of the arrow; then, disconnect the flat cable.

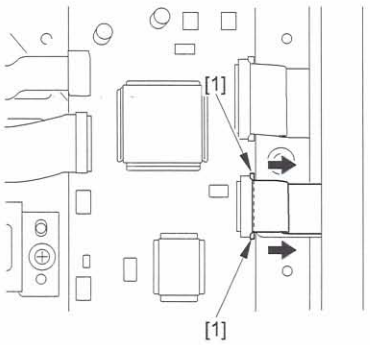


Figure 3-3B08

After replacing this PCB, switch to service mode, clear the RAM and enter the adjustment values.
Refer to the "After Replacing Parts" and "Service Mode" sections for details.
Because the RAM on this PCB holds feeder-related data, correction values for the feeder must also be entered.

4. Interface PCB

1) Remove the reader rear cover. (Page 3-53)
2) Remove the interface PCB mount [4].
   - 8 connectors [1]
     * The 4 marked connectors are locking.
   - 1 flat cable with lock lever [2]
   - 9 screws [3]
     (6 RS tightening screws, 3 M3 bind screws)

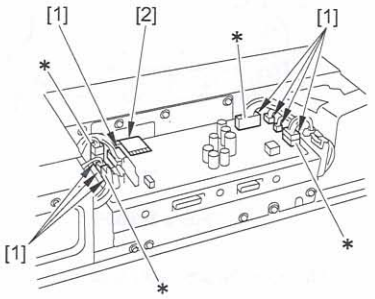


Figure 3-3B09

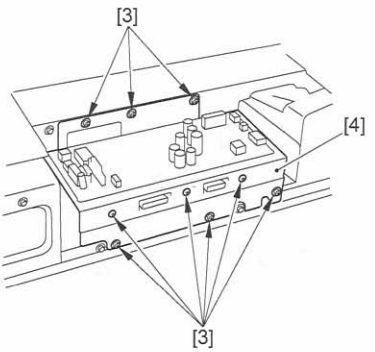


Figure 3-3B10

⚠

Slide the lock lever [1] to the direction shown by an arrow and unlock it. Then, remove the flat cable [2].

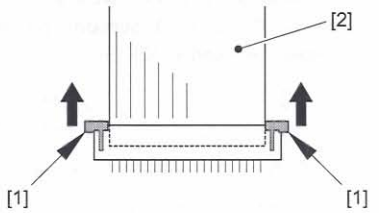


Figure 3-3B11

3) Remove the interface PCB [2].
   - 6 bind screws [1]

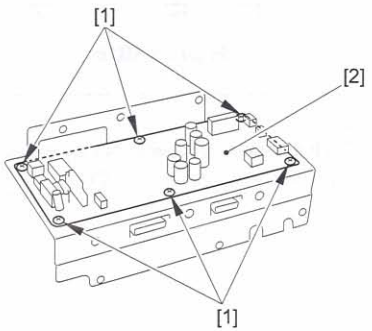


Figure 3-3B12

5. Memory PCB

1) Remove the reader rear cover. (Page 3-53)
2) Remove the interface PCB mount (Page 3-58)
3) Remove the connecter [1] and the flat cable (locking) [2].

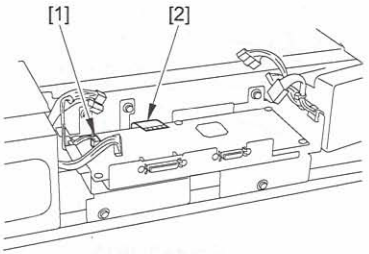


Figure 3-3B13

4) Remove the memory PCB mount [2].
   - 5 screws [1]

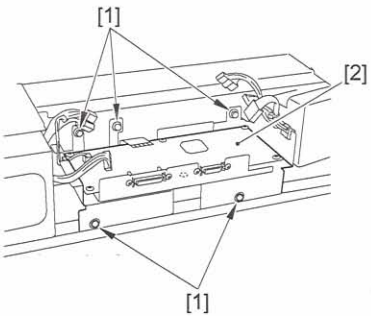


Figure 3-3B14

5) Remove the memory PCB [2].
   - 6 M4 screws [1]
   - 2 M2.6 bind screws [3]
   - 2 connector locking screws [4]

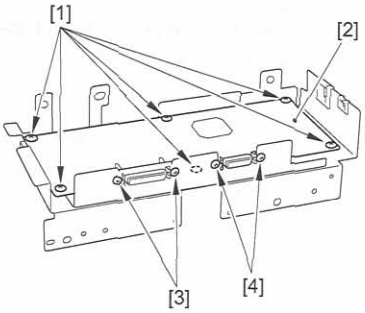


Figure 3-3B15

6. Inverter PCB

1) Remove the platen glass. (Page 3-51)
2) Remove the CCD unit cover. (Page 3-55)
3) Remove the connector (locking) [1], the flat cable [2] and the screw [3]. Then release the 2 PCB supports [4] and remove the inverter PCB [5].

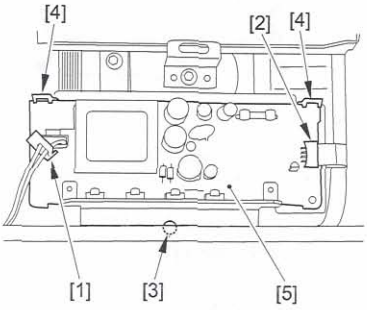


Figure 3-3B16

⚠
During assembly, check that an insulating sheet is placed under the PCB.

7. CCD Unit

1) Remove the platen glass. (Page 3-51)
2) Remove the CCD unit cover. (Page 3-55)
3) Remove the size sensor unit [2] (including cover).
   - 3 screws [1]

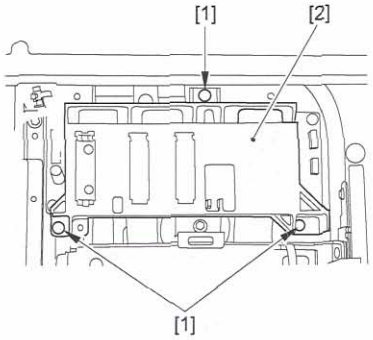


Figure 3-3B17

4) Remove the size sensor unit [2] (including cover).
   - 1 connector [1]

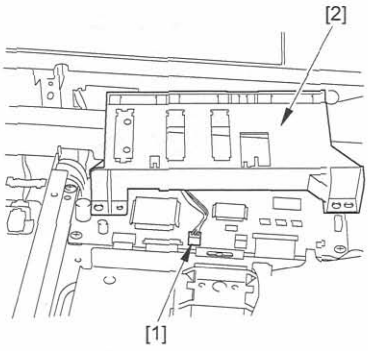


Figure 3-3B18

5) Remove the CCD unit [4].
   - 2 flat cables (with lock lever) [1] from the reader controller PCB
   - 2 screws [2]
   - 2 leaf springs [3]

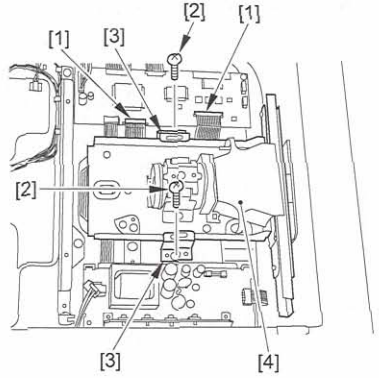


Figure 3-3B19

> ⚠
> Because the CCD unit is adjusted at the factory, its component parts should not be disassembled on the market.

⚠

When replacing the CCD unit, enter the adjustment values listed on the service label supplied with the CCD unit.
Refer to the "Service Mode" and "After Replacing Parts" sections for details.

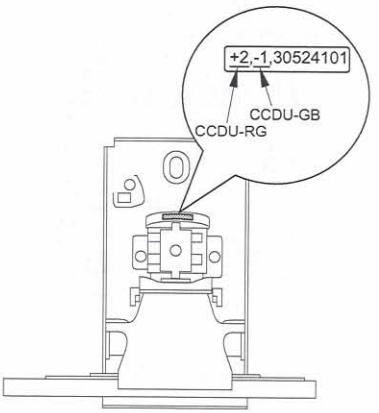


Figure 3-3B20

8. Scanner Motor

1) Remove the reader rear cover. (Page 3-53)
2) Remove the cover [2].
   - 4 screws [1]

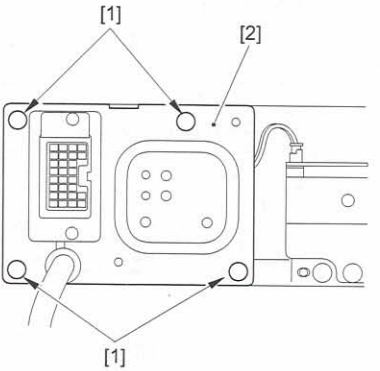


Figure 3-3B21

3) Remove the 2 harness retainers [2] from the back of the cover [1] to remove the cover.

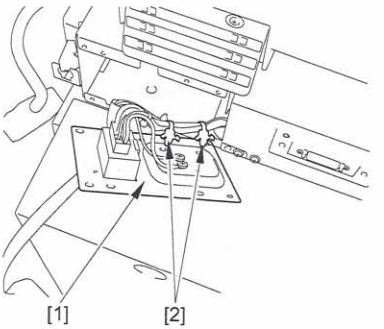


Figure 3-3B22

4) Remove the 3 screws [1] and the 2 springs [2] and then remove the scanner motor [3] by sliding it in the direction of the arrow.

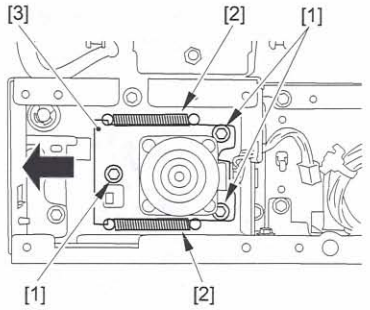


Figure 3-3B23

5) Remove the scanner motor [2].
   - 1 connector [1]

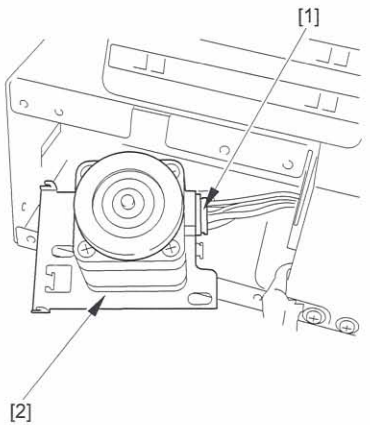


Figure 3-3B24

⚠

When installing the scanner motor, be sure to run the timing belt [3] over the scanner pulley [1] and motor shaft [2]. If necessary, remove the platen glass.

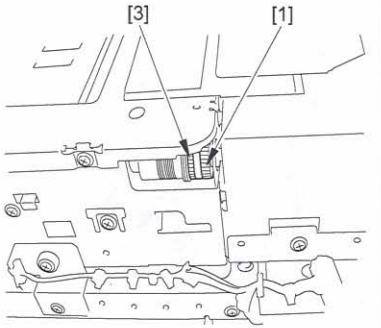


Figure 3-3B25

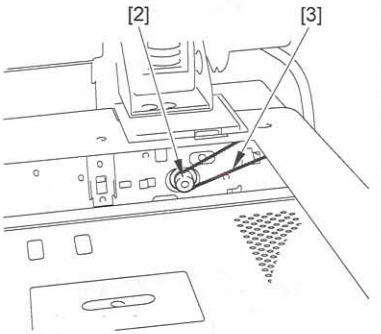


Figure 3-3B26

⚠

Use the spring to adjust the belt tension. Apply the spring and then lock it in place with the screw.

9. ADF Opening Sensor

1) Remove the reader rear cover. (Page 3-53)
2) Disconnect the 2 connectors [1].

Figure 3-3B27

3) Remove the ADF opening sensor cover [2].
   - 4 screws [1]

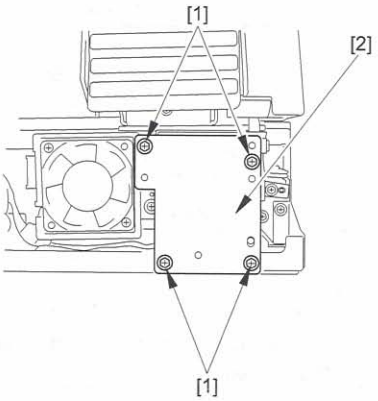


Figure 3-3B28

4) Remove the hook [1], and remove the ADF opening sensor (1, 2).

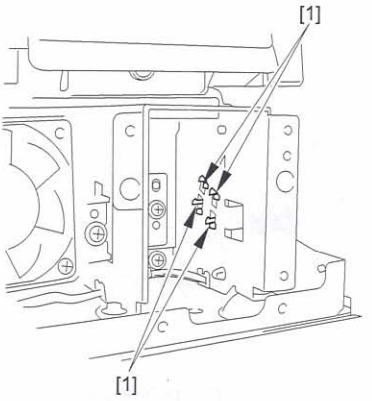


Figure 3-3B29

10. Mirror Base HP Sensor

1) Remove the reader rear cover. (Page 3-53)
2) Remove the ADF opening sensor cover [2].
   - 4 screws [1]

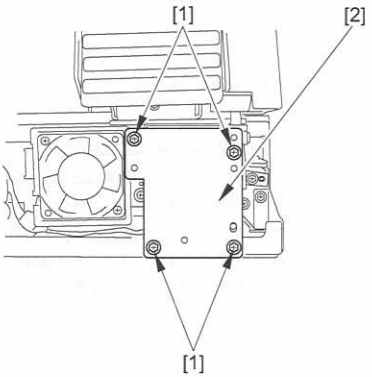


Figure 3-3B30

3) Remove the sensor mounting plate [2].
   - 1 screw [1]

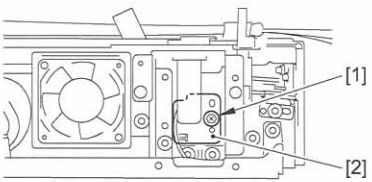


Figure 3-3B31

4) Remove the mirror base HP sensor [1].
   - 1 connector [1]

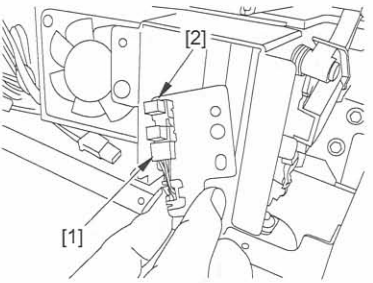


Figure 3-3B32

11. Cooling Fan

1) Remove the reader rear cover. (Page 3-53)
2) Remove the cooling fan [3].
   - 1 connector [1]
   - 2 screws (M3 x 35) [2]

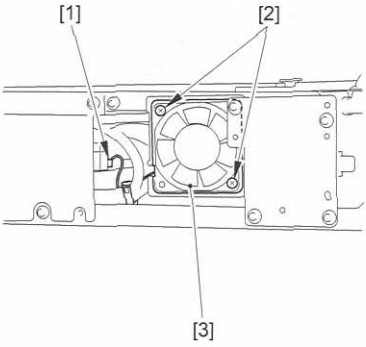


Figure 3-3B33

12. Scanner Drive Cable

⚠

Since this is a complicated disassembly, do it only when required.
A special tool is required for assembly. Prepare the following tool before disassembly:
- Mirror positioning tool (front, rear) FY9-3046-000

1) Remove the feeder. (Page 3-1)
2) Remove the platen glass. (Page 3-51)
3) Remove the operation panel assembly and reader cover. (Page 3-52, 3-53)
4) Remove the 2 screws [1], and detach the reading glass left retainer [2].

⚠

Take care so that the leaf spring will not come off when removing the reading glass left retainer.

5) Remove the reading glass [3].

6) Remove the 2 screws [4], and detach the right glass retainer [5].

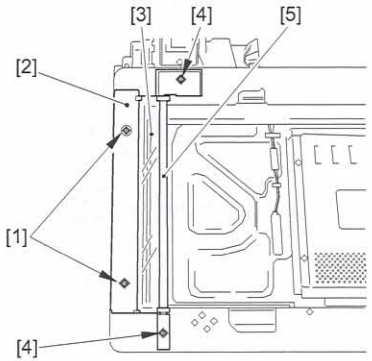


Figure 3-3B34

7) Remove the screw [1], and detach the ADF right screw cover [2].

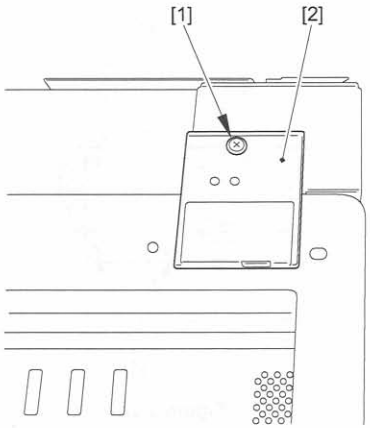


Figure 3-3B35

8) Remove the screw [1], and detach the ADF left screw cover [2].

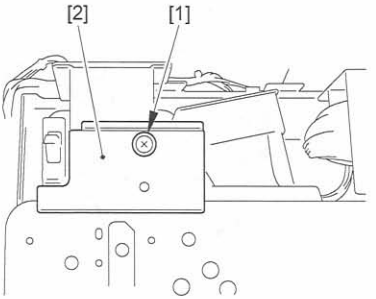


Figure 3-3B36

9) Remove the interface PCB mount. (Page 3-58)

10) Remove the connecter [1] and the flat cable [2].

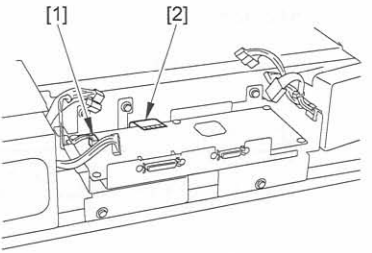


Figure 3-3B37

11) Remove the memory PCB mount [2].
- 5 screws [1]

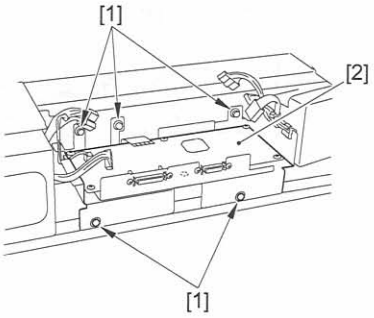


Figure 3-3B38

12) Disconnect the connector [1], and open the 3 wire saddles [2].
And remove the 4 screws [3], and detach the motor cover [4] together with the harness.

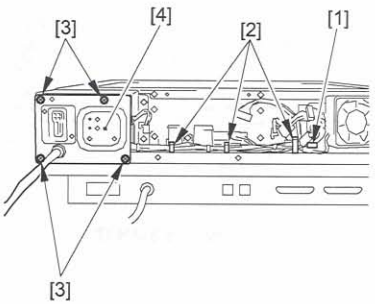


Figure 3-3B39

13) Free the harness from the wire saddle [1], and remove the 6 screws [2]; then, detach the motor frame [3].

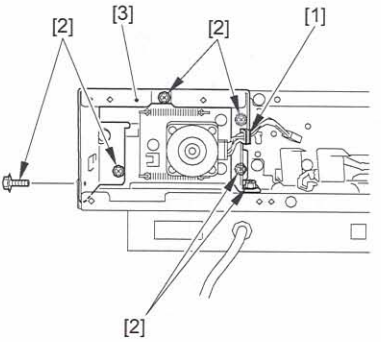


Figure 3-3B40

14) Remove the 4 screws [1], and detach the ADF opening sensor cover [2].

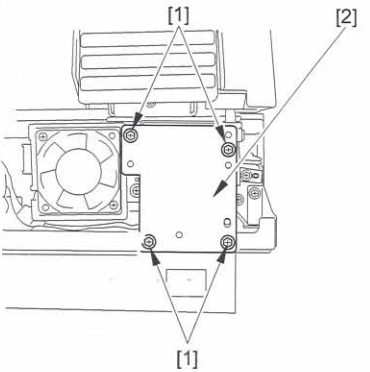


Figure 3-3B41

15) Disconnect the 2 connectors [1], and detach the snap-open band [2]; then, free the harness from the wire saddle [3].

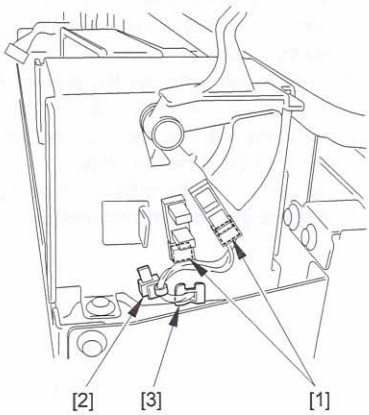


Figure 3-3B42

16) Free the harness from the wire saddle [1], and remove the 6 screws [2]; then, detach the ADF opening sensor base [3].

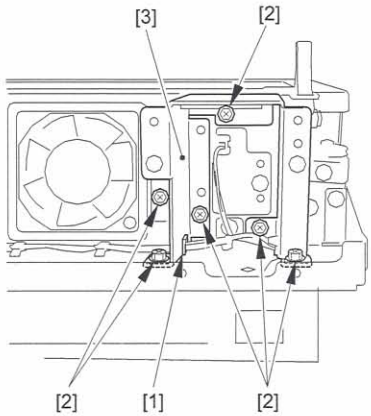


Figure 3-3B43

17) Remove the 24 screws [1], and detach the reader upper frame [2].

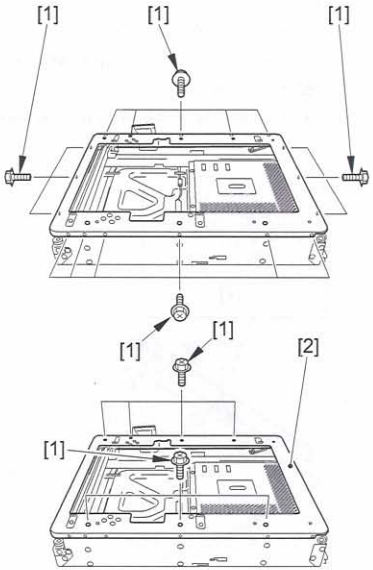


Figure 3-3B44

18) Remove the 2 cable fixing screws [2] of the No. 1 mirror base [1].
Remove the spring [3] used to hold the cable in place. Free the 2 hooks [4] of the cable from the right side of the reader frame.
Then, free the cable from the pulleys.

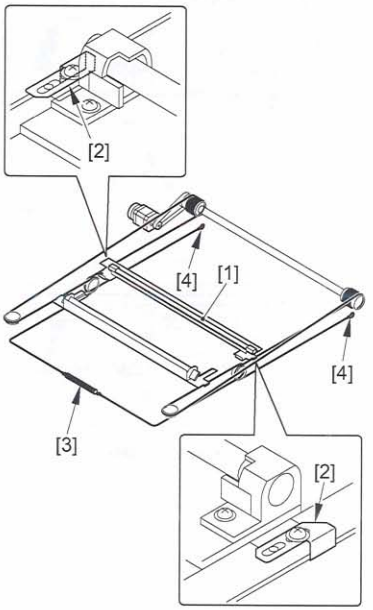


Figure 3-3B45

◆ Attaching the Scanner Drive Cable

1) Attach the ball of the cable in the hole of the drive pulley [1], and wind the cable (4 times inside, 5 times outside); then, attach it using tape or the like. At this time, be sure that the cable fixing [2] is on the inside.
2) Engage the cable on the pulleys; then, engage one end of the cable on the hook [3] of the left side and the other end on the hook [4] of the right side.
3) Temporarily fix the cable fixing plate [2] in place to the No. 1 mirror base [5].

4) Attach the reader upper frame.

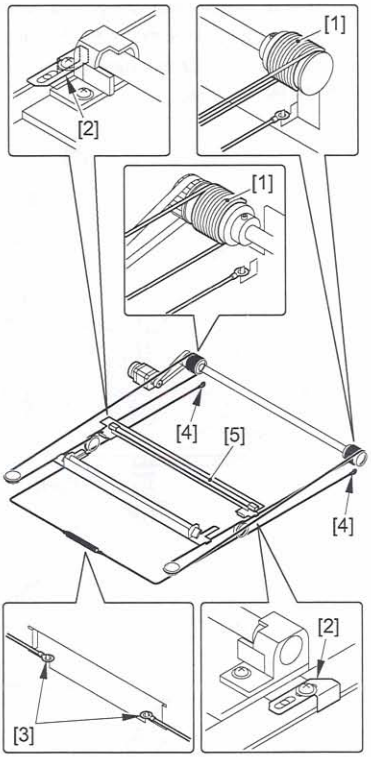


Figure 3-3B46

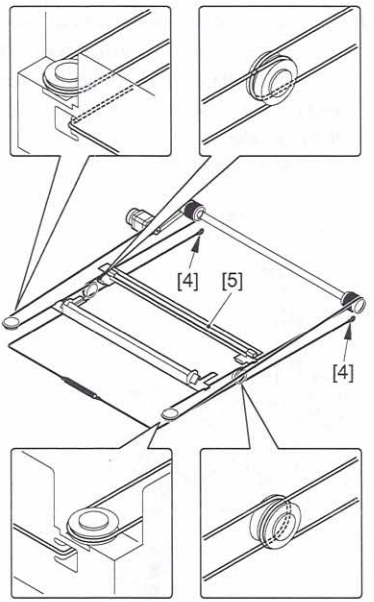


Figure 3-3B47

5) Change the status of the pins at the rear of the mirror positioning tool (FY9-3046-000) from the initial status into the way that the tool may be used for the machine.
* [C]; Pin included

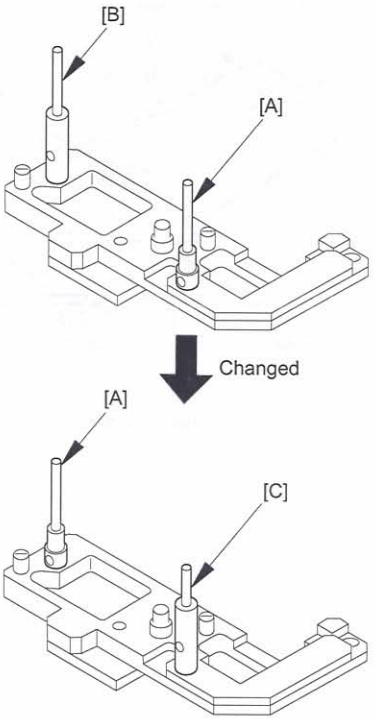


Figure 3-3B48

6) Change the status of the pins at the front of the mirror positioning tool from the initial status into the way that the tool may be used for the machine.
* [C]; Pin included.

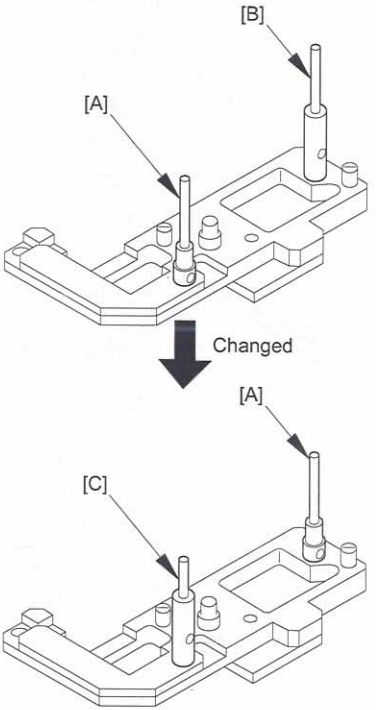


Figure 3-3B49

7) Insert the pins of the mirror positioning tool (front [2]; rear [3]) of the mirror positioning tool into the holes [1] of the No. 1 mirror base, No. 2 mirror base, and rail.

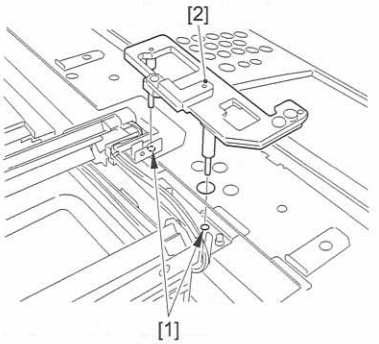


Figure 3-3B50

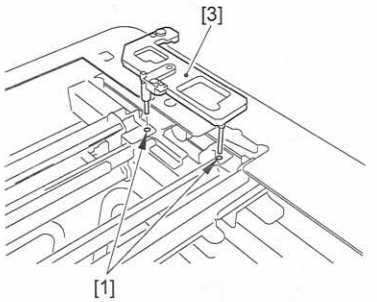


Figure 3-3B51

8) Fix the trailing rear edge of the wire, which was temporarily tightened to the hook of the reader flame, with the screw.
9) Tighten the screws of front/rear side of the wire fixing plate.
10) Remove the mirror positioning tool (front, rear).
11) Put back the parts by reversing the steps used to remove them.

IV. CONTROLLER

1. DC Controller PCB

1) Remove the controller.
2) Remove all the connectors (8 places) connected to the DC controller PCB [1]. Remove the 11 screws (M3 x 6) [2], the 4 screws (M2.5 x 4) [3], and then remove the DC controller PCB.

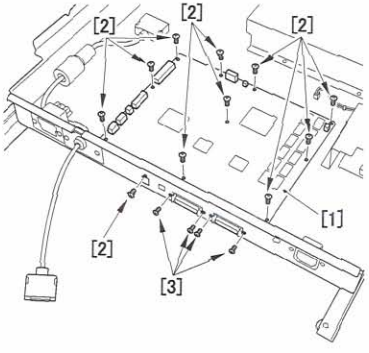


Figure 3-401

⚠
Be careful not to get any screws caught between the PCB and the base plate.

2. Power Supply PCB

1) Remove the controller.
2) Remove the 4 screws [1] (M3 x 5, round-tipped) and then peel off the protective sheet [2].

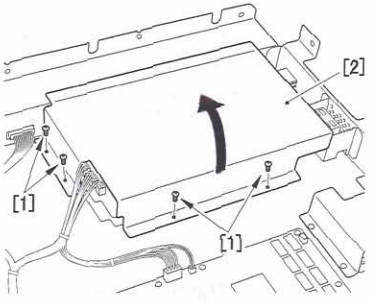


Figure 3-402

3) Remove all the connectors (5 places) connected to the power supply PCB [1]. Remove the 6 screws [2] and then remove the power supply PCB.

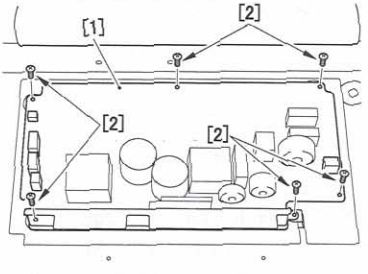


Figure 3-403

⚠

Be careful not to get any screws caught between the PCB and the base plate (insulating sheet).

The DC power supply connectors CN1 and CN3 have the same shape and the same output. Connecting them in reverse will have no adverse effects.

3. Power Junction PCB

1) Remove the controller.
2) Remove the 2 connectors [1] (locking) and the screw [2] (M3 x 5, round-tipped).

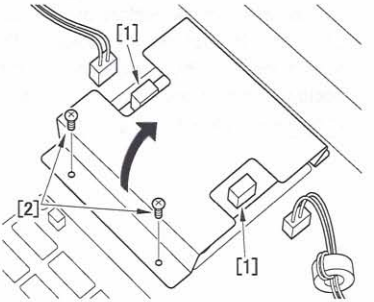


Figure 3-404

3) Peel off the protective sheet [1], remove the 4 screws [2] (M3 x 6) and then remove the power junction PCB [3].

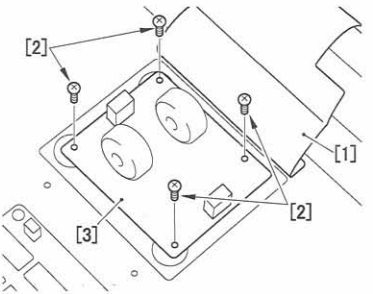


Figure 3-405

⚠

During assembly, take care not to trap items such as screws between the PCB and the bottom plate (insulating sheet).
Ensure that the connectors are positioned correctly in terms of their IN/OUT orientation. If the locations of the 4 securing screws are correctly aligned, the connectors are oriented correctly.

4. Cooling Fan

1) Remove the controller.
2) Remove the 2 protective sheet screws [1] (M3 x 5, round-tipped), the connector [2] and the cable retainer [3].

⚠

To remove the cable retainer, disengage the catch on the back.

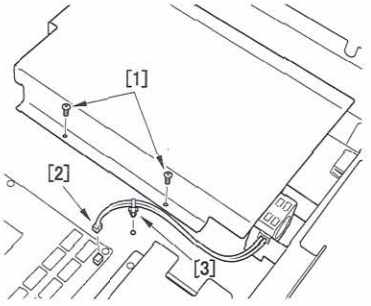


Figure 3-406

3) Remove the 2 screws (M3 x 6) [1] and then remove the cooling fan (including mounting plate).

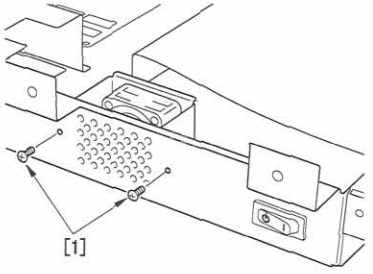


Figure 3-407

4) Remove the 2 screws [1], then remove the cooling fan [2].

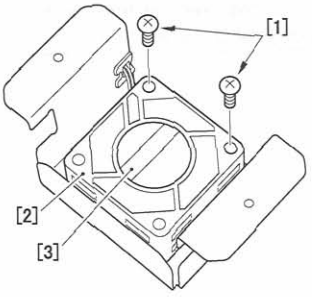


Figure 3-408

⚠
During assembly, ensure that the label [3] is on the front side, as shown in the figure above. The air flow direction is outwards from the machine.

5. Operation Panel Cover/Panel Case Unit

1) Remove the operation panel assembly. Refer to the "Reader" section for details.
2) Remove the 4 screws [1] (M3 x 8, self-tapping screws), and then separate the operation panel cover [2] and the panel case unit [3].

⚠
Because the keytops are inserted into holes on the facing side, rotate the underside of the panel case unit while removing it.

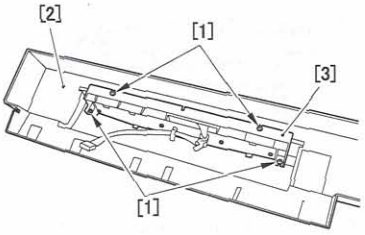


Figure 3-409

6. Switch PCB/LCD Unit

1) Remove the operation panel assembly. Refer to the "Reader" section for details.
2) Remove the panel case unit.
3) Remove the 4 screws [1] (M3 x 8, self-tapping). Then remove the 3 catches [3] while disengaging the 2 hooks [2] to remove the assembly [4].

⚠
Be careful not to lose the key tops embedded in the panel case.

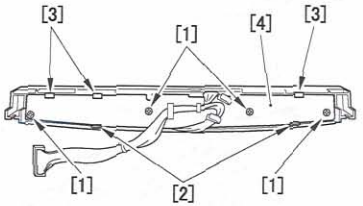


Figure 3-410

4) After removing the cable from the cable clamp, unplug the connector [1] and separate the switch PCB [2] from the LCD unit [3].

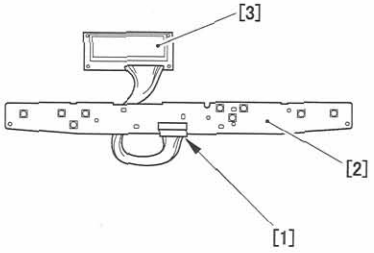


Figure 3-411

⚠
During assembly, fit the LCD unit into the designated holes in the panel case and then install the switch PCB.

CHAPTER 4

INSTALLATION & MAINTENANCE

I. SELECTION OF LOCATION

The installation location of this machine should meet the following requirements.

The proposed installation location must be inspected before the machine is installed.

■ The machine must be plugged directly into an exclusive power outlet that supplies the rated voltage. A grounding plug must be used.

Ground Items
1) Power outlet ground terminal
2) Lead that has been grounded for office equipment

■ Do not install this machine on a weak table, a tilted or unstable surface. The main body weighs approx. 41 kg.

■ The theoretical temperature is between 15 to 30°C, and theoretical relative humidity between 25 to 80% RH. However, the temperature should be between 15 to 27.5°C, and relative humidity between 25 to 75% RH to guarantee performance.
In particular, the machine should not be installed in locations subject to variations in humidity or temperature, such as close to water faucets, hot-water heaters, humidifiers or refrigerators.

■ The machine should not be exposed to open flame, dust, ammonia or other corrosive gases, direct sunlight, intensive vibration or near machinery that generates electromagnetic waves.

* At the places where installation of this machine in the direct sunlight is unavoidable, a heavy curtain should be installed on the windows to protect this machine.

■ Maintain sufficient space around this machine during operation and maintenance, and to allow ventilation.

* The rear panel has a power cord and ventilation holes, therefore do not press it against a wall.

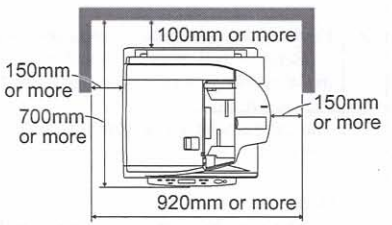


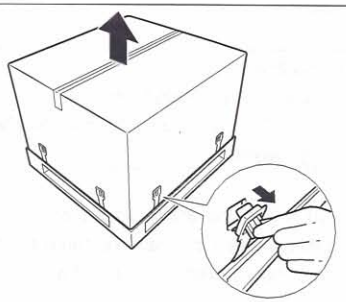
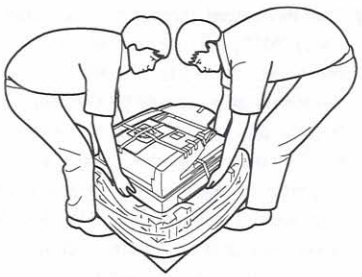
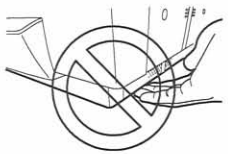
Figure 4-101

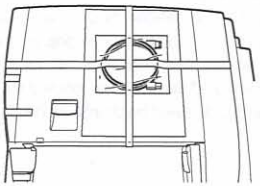
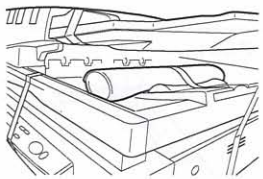
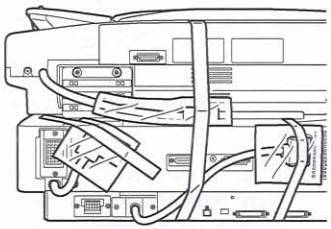
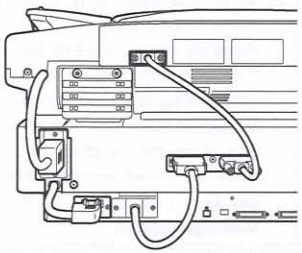
■ Ensure that you have a clear path for bringing in the packaged machine and that you have the necessary tools (trolley, etc.). When packaged (including palette), the machine weighs approximately 56 kg and measures approximately 790 x 760 x 590 mm (W x D x H).

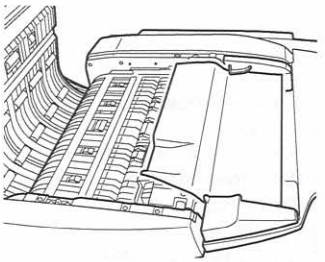
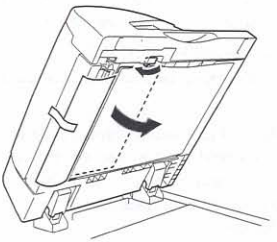
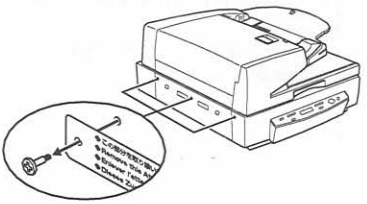
II. UNPACKING AND INSTALLATION

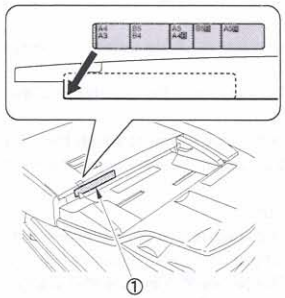
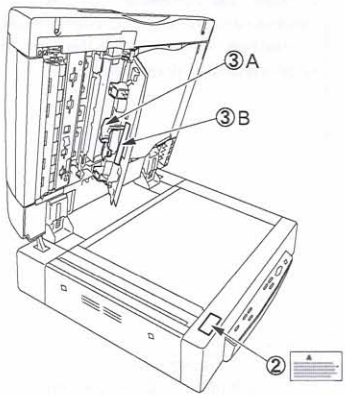
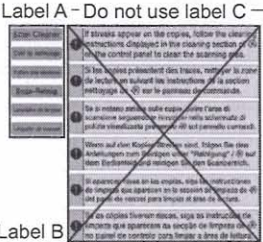
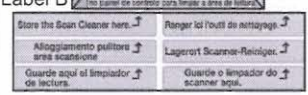
Water droplets sometimes form on the surface of metal parts when the machine is brought into a warm place from a cold place. This phenomenon is called "condensation." Using the machine when condensation has occurred might cause machine trouble.

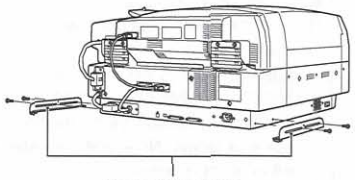
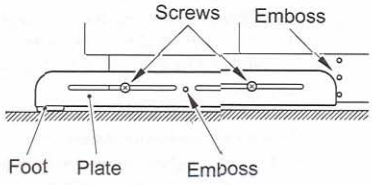
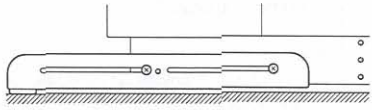
At least one hour should be allowed for this machine to warm up to room temperature before the shipping container is opened after it has been moved to a warm place from a cold place.

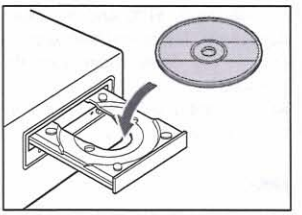
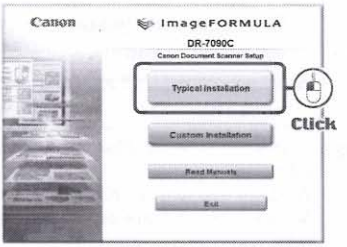
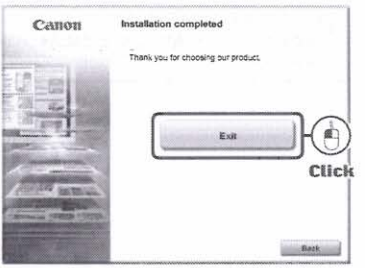
No.	Procedure	Reference Figure, etc.
1	Remove the box joints (8) and lift off the outer carton. When packaged (including palette), the machine weighs approximately 56 kg and measures approximately 790 x 760 x 590 mm (W x D x H). **Note:** 1) Do not open the top of the outer carton. Simply lift the entire carton off.	
2	Remove the upper pads (2) and open the plastic packaging. Two people should then lift the machine out of the packaging and move it to the installation site. The accessories are secured to the machine with tape. **Note:** 1) The main body of the machine weighs approximately 41 kg and must be carried by two people. Note also that the weight is not uniformly distributed. The left side and rear of the machine are heavier. 2) As a safety measure, the people carrying the machine should use both hands, one on each side of a corner with their fingers on the underside of the reader. Do not place your fingers under the controller as this will cause your fingers to be trapped when you put the machine down in the installation site. 3) Ensure that the installation site is clear beforehand.	 * Do not place your fingers under the controller as this will cause your fingers to be trapped. 

No.	Procedure	Reference Figure, etc.
3	Remove the accessories taped to the top of the feeder cover and the underside of the document pickup tray. ① USB cable ② Document size label (for users with disabilities) ③ Cleaning labels (1 set, 120 V, 220-240 V machines) ④ Cleaning paper (15 sheets) ⑤ Cleaning cloth ⑥ User Manual ⑦ Quick Start Guide ⑧ DR-7090C Setup Disk ⑨ Power cord ⑩ Grounding wire (100 V machines) ⑪ ADF communications cable ⑫ Securing plate (1 set) ⑬ Warranty, etc. (varies according to model)	* Feeder cover top  * Document pickup tray underside 
4	Peel off all the tape holding the covers in place. Then peel off the tape on the back of the machine and remove the cables (3). Plug the designated connectors into each of the sockets (locking). Plug the communications cable provided into the designated sockets also. The connectors on each end of this cable are identical and secured by screws. Refer to the figure on the right for the correct connection locations.	* Before tape removal  * After cable connection 

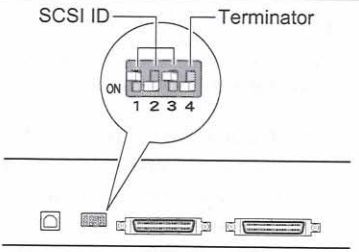
No.	Procedure	Reference Figure, etc.
5	Open the feeder cover and remove the protective paper. Open the feeder and remove the protective pads (2) and protective paper from the platen. The pull the release lever to open the black sheet and remove the protective paper. (Push the black sheet back into its original position.)	* Inside the feeder cover 
	* Platen 	* Feeder 
6	Remove the screws (3) for transportation. **Note:** 1) If you turn the machine on without removing these screws, "Call for Service E202001" appears on the operation panel display (mirror base HP error). Turn the machine off and remove the screws. 2) When this machine is shipped, the mirror bases must be locked using these screws. Keep the screws in a safe place. 3) A special procedure is required to move the mirror bases to the locations where they can be locked using the screws for transportation. Turn the machine on while holding down the "Enter" and "New File" keys. Keep the keys held down until the "Power off" message appears.	

No.	Procedure	Reference Figure, etc.
7	Attach labels as required. ① Document size label (for users with disabilities) Attach a label to the front as well so that a person in a wheelchair can adjust document size position easily. Select the best one of 4 types of labels. Note that this label can be left off if not required. ② Cleaning caution label (120 V, 220-240 V machines) Caution labels associated with glass staining in ADF mode. There are six kinds of labels. Select the one on which the language appropriate for the region is displayed. ③ Cleaning tool label A/B (120 V, 220-240 V machines) Label for the tool used to clean the reading glass inside the feeder. As with the cleaning caution label, select the label in the language appropriate for the region. Attach label A to the cleaning tool itself and attach label B to the storage location for the cleaning tool. Do not use label C. **Note:** 1) On 100 V machines and models for China and Korea, labels in the appropriate languages are attached at shipment.	 ①  ③A ③B ② Label A - Do not use label C  Label B  Store the Scan Cleaner here. Ranger ici l'outil de nettoyage. Alloggiamento pulitore area scanner. Lagerort Scanner-Reiniger. Guarde aquí el limpiador de lectura. Guarde o limpador do scanner aqui.

No.	Procedure	Reference Figure, etc.
8	Install the back ends of the left and right securing plates. Secure the plates with the screws supplied (2 x 2). Take care with the orientation of the left and right plates. Adjust the extent to which the plates project as appropriate for the installation location. **Note:** The securing plates prevent the front of the machine from lifting up when the feeder is open. The plates also ensure that a gap is maintained between the connectors on the back of the machine and the wall to prevent damage to the connectors. Always attach the securing plates when installing the machine.	 Securing plates ◆ Projection length: Minimum  ◆ Projection length: Maximum 
9	Connect the power cord. In the case of the 100 V model, connect also the grounding cord. Turn the machine on and check that "Ready" appears on the operation panel display. After checking the message, turn the machine off.	

No.	Procedure	Reference Figure, etc.
10	Install software in the computer used for operation check as required. Details of the procedure from this point on are provided in the User Manual. ◆ 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 ap-proval beforehand. ◆ If the user installs it, ask the user to install it according to the "Easy Start Guide". **Note:** 1) Ensure that the type of the operating system of the computer is correct. 2) Do not connect the scanner to the computer before installing software. 3) Be sure to log on with administrator privileges.	1) Insert the DR-7090C Setup Disc into the CD drive.  2) The setup menu starts. Click [Typical Installation] or [Custom Installation].  3) Later on, perform operation according screen instructions. 4) When all installation is completed, the installation completion screen is displayed. Click [Exit]. 

<table>
<tr><th>No.</th><th>Procedure</th><th>Reference Figure, etc.</th></tr>
<tr><td>11</td><td>Connect the computer to this machine using an SCSI cable or a USB cable. If the computer is connected to this machine using an SCSI cable, change the SCSI ID and terminator settings as necessary. If this machine is connected to the end of the daisy chain, turn the terminator (SW4) ON.
At shipment, the SCSI ID is set to "2" and the terminator is "ON".

Note:
1) A SCSI cable is not provided with the machine.
Provide a SCSI cable suitable for connectors on the SCSI card and this machine. Use a 50-pin half-pitch (pin-type) connector to connect to this machine.
2) Do not connect USB and SCSI cables at the same time.</td><td> 

<table>
<tr><th>SCSI ID</th><th>SW1</th><th>SW2</th><th>SW3</th></tr>
<tr><td>0</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
<tr><td>1</td><td>ON</td><td>OFF</td><td>OFF</td></tr>
<tr><td>2</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>3</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>4</td><td>OFF</td><td>OFF</td><td>ON</td></tr>
<tr><td>5</td><td>ON</td><td>OFF</td><td>ON</td></tr>
<tr><td>6</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>7</td><td>ON</td><td>ON</td><td>ON</td></tr>
</table></td></tr>
<tr><td>12</td><td>After turning this machine ON, turn the computer ON.
Windows recognizes this machine as new hardware and automatically installs the software.

Note:
1) If you are using a SCSI connection, always turn this machine on first.</td><td></td></tr>
<tr><td>13</td><td>Check if this machine operates normally. Then, check the scanned image.
Refer to the User Manual for details on using the machine.</td><td></td></tr>
</table>

III. STAMP UNIT INSTALLATION PROCEDURE

1) Remove all the components from the container and check that none are missing.

> ⚠
> The relay connector [4] is not used with this machine.
> An "Installation Guide" is also included with the components.

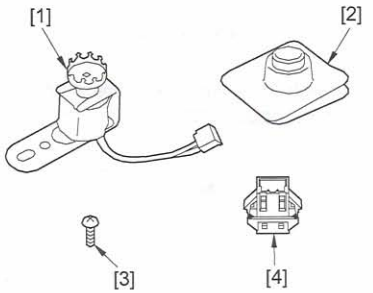


Figure 4-301

[1]	Stamp Solenoid	1 pc.
[2]	Stamp Ink Cartridge	1 pc.
[3]	Screw (binding; M3 x 6)	1 pc.
[4]	Relay connector	1 pc.

2) Open the feeder [1] in the direction of the arrow.

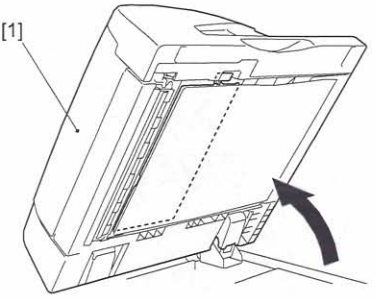


Figure 4-302

3) Shift the release lever [1] to open the black sheet [2] in the direction of the arrow [A].

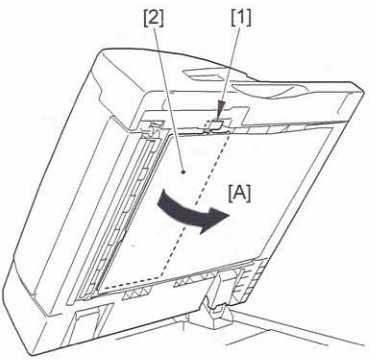


Figure 4-303

4) Remove the resin stop ring [1] to detach the sheet support plate (external) [2] in the direction of the arrow.

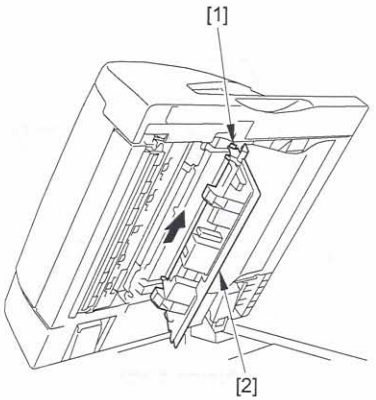


Figure 4-304

⚠

Do not bend the black sheet [1].
Ensure that the sheet support plate (external) does not touch the platen glass. It is recommended that you place a protective sheet over the platen glass.

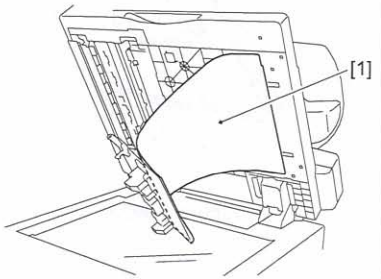


Figure 4-305

5) Detach the sheet support plate (inside) [1].
- 3 self-tapping screws [2]

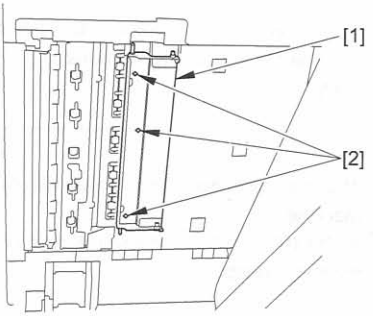


Figure 4-306

6) Attach the stamp ink cartridge [2] to the stamp solenoid [1].

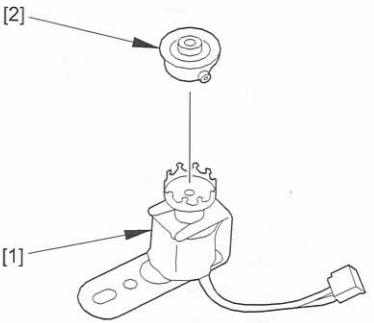


Figure 4-307

7) Connect the stamp solenoid [1] to the connector [2], and attach it.
   - Positioning boss [3]
   - 1 bind screw (M3 x 6) [4]

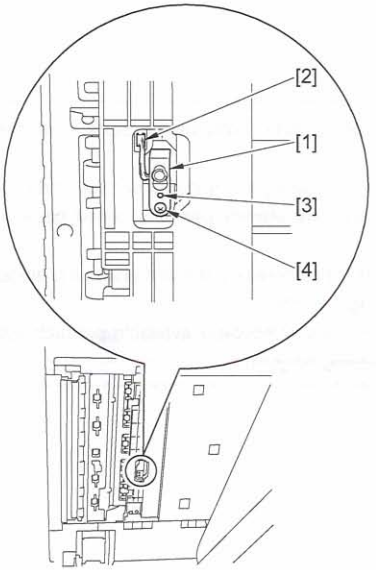


Figure 4-308

8) By reversing the steps to remove, attach the followings:
   - Sheet support plate (inside)
   - Black sheet
   - Resin stop ring
   - Close the feeder.
9) Enter the service mode and enable "Feeder > OPTION > STAMP-SW".
10) Load suitable paper into the feeder and check that the unit operates normally. The [Stamp] option in the driver settings screen must be enabled.

IV. REPLACED PARTS

1. Periodically Replaced Parts

There are no parts that must be replaced periodically. However, there are consumable parts and consumables.

Reference: Differences between periodically replaced parts, consumable parts, and consumables.

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

2. Consumable Parts and Consumables

Consumable parts and consumables are listed below.

Have a service technician perform replacements of all parts except "stamp cartridge".

No.	Part Name	Part No.	Q'ty	Replacement Cycle	Remark
1	Pickup roller	MA2-7046	1	400,000 sheets	Unique parts, **Note 1**
2	Separation roller	MA2-7047	1	400,000 sheets	Unique parts, **Note 1**
3	Separation plate	MF1-4291	1	400,000 sheets	Unique parts, **Note 1**
4	Separation pad	MF1-4292	1	400,000 sheets	Unique parts, **Note 1**
5	Dust-collection sheet A	MA2-7048	1	400,000 sheets	Unique parts, **Note 1**
6	Dust-collection sheet B	MA2-7049	1	400,000 sheets	Unique parts, **Note 1**
7	Dust-collection sheet D	MA2-7051	2	400,000 sheets	Unique parts, **Note 1**
8	Dust-collection sheet E	MA2-7052	4	400,000 sheets	Unique parts, **Note 1**
9	Stamp solenoid	**Note 2**	1	300,000 stamps	Option
10	Stamp ink cartridge	**Note 3**	1	7,000 stamps	Option

Table 4-401

Note 1: For the parts No. 1 to 8 with replacement cycles of 400,000 documents, "Exchange Kit" are also available instead of service parts. Their product code is "3504B001xx".

Note 2: The product name is "Stamp unit B1". The code is "1858B001xx". The stamp unit has a stamp ink cartridge.

Note 3: The product name is "Stamp ink cartridge C1". The code is "1857B001xx".

V. MAINTENANCE

1. User Maintenance

A table is shown below. Refer to the User Manual for details.

[△: Cleaning, ●: Replace]

Unit name	Location/Parts	Intervals		Method/Remarks
		As necessary	Others	
Whole	Exterior	△		Wipe with cloth slightly moistened with water, then wipe dry.
Feeder	Black pressure board	△		
	No.1 registration roller No.2 registration roller Feed roller	△		
	Driven roller (roll) inside the feeder cover	△		
	Reversing roller Reversing roller roll	△		
	Platen roller 1 Platen roller 2	△		
	Backside reading glass	△		Clean with the tool for this purpose.
Reader	Platen glass	△		Wipe with cloth slightly moistened with water, then wipe dry.
	ADF reading glass	△		
Stamp	Ink cartridge		●	Replacement cycle is 7,000 stampings.

Table 4-501

Note 1: A cleaning cloth and a cleaning paper are supplied with the machine for cleaning purpose.

Note 2: Dust collected on the connected part between the power plug and outlet could cause a fire or electric shocks. To prevent this, clean it regularly.

2. Service Maintenance

Table 4-502 gives a user maintenance list. The maintenance intervals are replacement cycles of consumable parts.

If paper dust or dirt attach to rollers or scrapers, black lines may appear on images. Therefore, clean rollers and scrapers carefully.

Note: Use only specified solvents/oils.

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

Unit name	Location/Parts	Intervals		Method/Remarks
		0.4 million	Others	
Feeder	Pickup roller	●		If replacement is unnecessary, clean as follows: wipe with cloth slightly moistened with water, then wipe dry.
	Separation roller	●		
	Separation plate	●		
	Separation pad	●		
	Dust-collection sheet A/B/D/E	●		Wipe with cloth slightly moistened with water, then wipe dry. Clean also the backside of the "backside reading glass".
	No.1 registration roller	△		
	No.2 registration roller	△		
	Feed roller	△		
	Read roller 1	△		
	Platen roller 1	△		
	Read roller 2	△		
	Platen roller 2	△		
	Read roller 3	△		
	Delivery roller	△		
	Reversing roller	△		
	Each driven roller (roll)	△		
	Each document feeding surface	△		

Table 4-502a

Unit name	Location/Parts	Intervals		Method/Remarks
		0.4 million	Others	
Feeder	Each scraper	△		Wipe with cloth slightly moistened with water, then wipe dry. Clean also the backside of the "backside reading glass".
	Black pressure board	△		
	Backside reading glass	△		
	Delivery reversing sensor	△		Clean the detection part and prism with an air blower.
	Read sensor	△		
	Post-separation sensor	△		
	Feeder height	□		Check and adjust if necessary. See the "FEEDER ADJUSTMENT" for details.
Reader	Platen glass	△		Wipe with cloth slightly moistened with water, then wipe dry. Clean the back side if necessary.
	ADF reading glass	△		
Stamp	Stamp solenoid		●	Replacement cycle is 300,000 stampings.

Table 4-502b

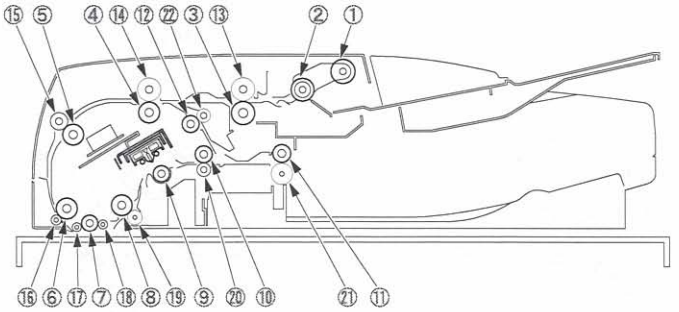
Note 1: If stain is not removed, lens-cleaning paper moistened with alcohol may be used.

Note 2: If parts are very dirty, "User Maintenance" should be instructed.

Note 3: When cleaning the delivery roller and rolls, be careful not to let the static charge eliminator get caught.

3. Layout Plan

1) Rollers



① Pickup roller
② Separation roller
③ No.1 registration roller
④ No.2 registration roller
⑤ Feed roller
⑥ Read roller 1
⑦ Platen roller 1
⑧ Read roller 2
⑨ Platen roller 2
⑩ Read roller 3
⑪ Delivery roller
⑫ Reversing roller
⑬ No.1 registration roll
⑭ No.2 registration roll
⑮ Feed roll
⑯ Read roll 1
⑰ Platen roll (front)
⑱ Platen roll (rear)
⑲ Read roll 2
⑳ Read roll 3
㉑ Delivery roll
㉒ Reversing roller roll

Figure 4-501

2) Sensors

◆ Delivery reversing sensor
Open the reversal flapper and clean the prism [1].

Figure 4-502

◆ Post-separation sensor
Remove the inside cover and the post-separation sensor PCB. Then, clean the sensor hole [1] and prism [2].

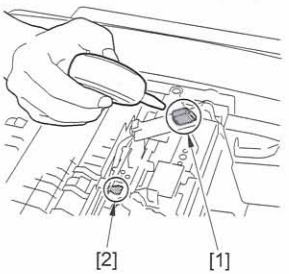


Figure 4-503

◆ Read sensor
Remove the read guide and clean the sensor hole [1]. Then, remove the read sensor PCB and clean the sensor hole [2] and sensor [3].

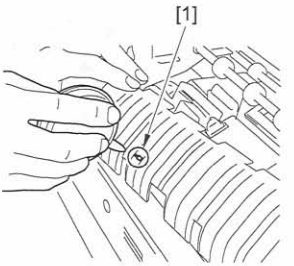


Figure 4-504

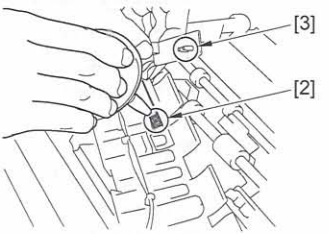


Figure 4-505

CHAPTER 5

TROUBLESHOOTING

I. ERROR DISPLAY

1. Operation Panel Display

When an error occurs in the machine, an error message is displayed in the operation panel display. Refer to Table 5-101.

Users are to implement actions for all error messages other than service calls. However, if a user implemented action does not handle the problem, a service technician is to service this machine.

No.	Display	Cause → Action
1	Cover Open C001	The feeder is open. → Close the feeder.
2	Cover Open C002	The feeder cover is open. → Close the feeder cover.
3	Misfeed A001	Pickup error → Check the document and try again. If the document does not go through the ADF, scan it using the FB.
4	Jam Pxxx	Jam → Handle the jam and remove the document. Note: "XXXX" indicates the type of jam. For details, refer to Table 5-102.
5	Send failed.	Transmission error in job function → Check the settings with a job registration tool and try again.
6	Detect Mix Doc. J030	Different size documents have been detected. → After checking the size of the delivered document, set the different size documents mode to ON and perform the operation again.
7	Call for Service Exxxxxxx	An anomaly occurred inside the main unit (service call). → Reset the machine. If the error is still displayed, switch the power OFF. → A service technician should take measures. For details, refer to Table 5-103.
8	Wait... Display does not change from above message to "Ready".	An anomaly occurred inside the main unit. → Same action as the above service call. → If the cable on the back is disconnected, connect it.

Table 5-101

Code	Cause
P001	Document is not reached to post-separation sensor
P002	Document is stagnated in post-separation sensor
P003	Document is not reached to registration sensor
P004	Document is stagnated in registration sensor
P005	Document is not reached to read sensor
P006	Document is stagnated in read sensor
P007	Document is not reached to delivery sensor
P008	Document is stagnated in delivery sensor
P009	Document is not reached to No.2 registration sensor
P016	Document is stagnated in No.2 registration sensor
P017	Document is not reached to No.2 read sensor
P018	Document is stagnated in No.2 read sensor
P066	1st document is stagnated in post-separation sensor
P067	1st document is not reached to registration sensor
P068	1st document is stagnated in registration sensor
P069	1st document is not reached to read sensor
P070	1st document is stagnated in read sensor
P071	1st document is not reached to delivery sensor
P072	1st document is stagnated in delivery sensor
P073	1st document is not reached to No.2 registration sensor
P080	1st document is stagnated in No.2 registration sensor
P081	1st document is not reached to No.2 read sensor
P082	1st document is stagnated in No. 2 read sensor
P113	Timing anomaly
P115	Separation sensor anomaly
P144	Feeder open (working)
P145	Feeder open (standby)
P146	Feeder cover open (working)
P147	Feeder cover open (standby)
P148	Initial stagnation
P149	Paper feed malfunction

Table 5-102

Code	Cause	Problem location
E2020001	Reader's scanner HP sensor detects positioning forward error	Scanner motor, scanner HP sensor related
E2020002	Reader's scanner HP sensor detects positioning backward error	
E2020101	Feeder CIS glass HP sensor detects positioning forward error	CIS glass motor, CIS glass HP sensor, glass movement guide related
E2020102	Feeder CIS glass HP sensor detects positioning backward error	
E2250001	Reader light intensity below reference level	Scanning lamp, white plate (platen glass) related
E2250101	Feeder light intensity below reference level	CIS unit, white plate (CIS glass) related
E2270001	24V port OFF at power ON (reader)	Reader controller PCB 24 VDC power supply related
E2270002	24V port OFF at operation start (reader)	
E2270003	24V port OFF at operation end (reader)	
E2270004	24V port OFF during motor driving (reader)	
E2270101	24V port OFF at power ON (feeder)	ADF controller PCB 24 VDC power supply related
E2270102	24V port OFF at operation start (feeder)	
E2270103	24V port OFF at operation end (feeder)	
E2480001	Error at reader EEPROM power ON	Reader controller PCB related
E2480002	Error during reader EEPROM write	
E2480003	Error during reader EEPROM read	
E2480101	Error at feeder EEPROM power ON	ADF controller PCB related
E2480102	Error during feeder EEPROM write	
E2480103	Error during feeder EEPROM read	
E3000000	Controller cooling fan error	Cooling fan related
E4000001	Feeder communication check-sum error	Feeder, reader and controller connection related, ADF controller PCB related
E4000002	Feeder communication status error	
E4000003	Feeder communication receive interrupt error	
E4000100	Communication error between feeder and reader	
E4130001	Separation HP sensor open error	Separation motor, separation HP sensor related
E4130002	Separation HP sensor close error	
E4230001	Reader SDRAM access error	Memory PCB related
E4230002	Reader SDRAM verify error	
E4230003	Reader SDRAM capacity shortage	
E4900001	Feeder wrong model	ADF controller PCB related
E7430000	DDI communication error	Reader and controller connection related
E8600000	Controller EEPROM error	DC controller PCB related

Table 5-103

2. Feeder

If a document jam occurs, the document set indicator of the feeder flashes. In this case, remove the jammed document.

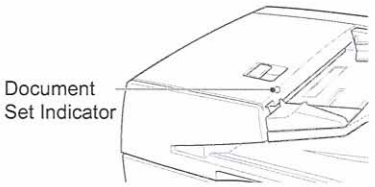


Figure 5-101

3. Computer

Error messages are displayed on the display connected to a computer. Contents of messages differ from one software to another.

Many of them indicate problems caused by user's operation failure or document jam which users are supposed to deal with. The user resolves errors by following the error messages.

An example of an error message when CapturePerfect 3.0 or the Job function is used is indicated below.

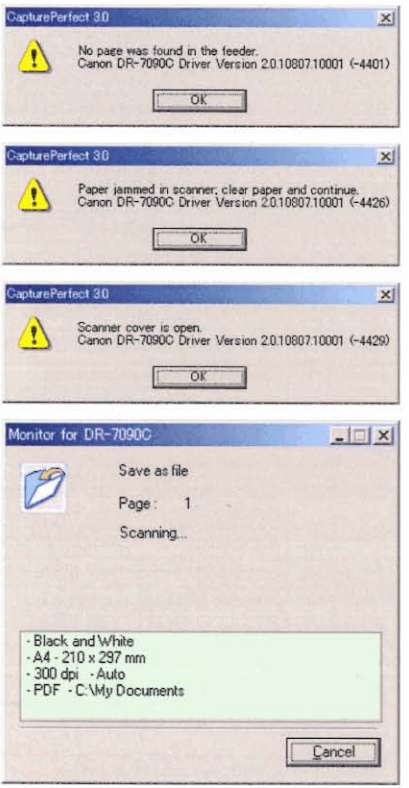


Figure 5-102

II. SERVICE MODE

1. Outline

The service mode of this machine can be executed by installing the service mode software on the computer for service. The service mode software is located in the setup disk provided with the machine.

The system conditions 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, but the service mode can still be used.

Figure 5-201 shows the service screen.

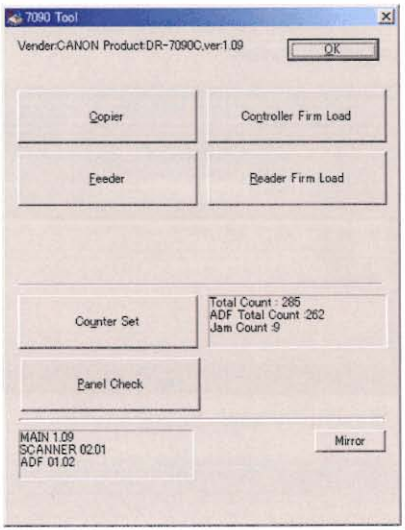


Figure 5-201

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

1) Copier
   Service mode related to reader

2) Feeder
   Service mode related to feeder

3) Counter Set
   Counter change

4) Panel Check
   Operation panel check

5) Controller Firm Load
   Controller firmware change

6) Reader Firm Load
   Reader firmware change

7) Mirror
   To move the mirror unit to a fixed position for transport.

In addition to the above buttons, counters and the version information are also displayed.

2. How to Install

Procedure to install service software: Never install it in the user's computer.

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

Note: Make sure to also install the driver for the machine in the computer for service use. This is necessary since some of the driver functions are used.
Please refer to the User Manual on installation of packaged software. However, when checking a specification such as the number of scanned document, the system requirements for a computer described in the User Manual should be satisfied.

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

3. Starting Up and Exiting Service Mode

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

1) Connect the computer with the machine using a SCSI cable or a USB cable.
2) After powering ON the machine, power ON the computer.
3) Check if the operation panel of the machine has changed to "Ready".
4) Open the installed "Tools" folder and start up the "7090Tool.exe" file. (See Figure 5-202.)
5) When the password screen appears, enter the 6-letter word "market" and then click [OK]. (See Figure 5-203.)
6) The service screen is displayed.

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

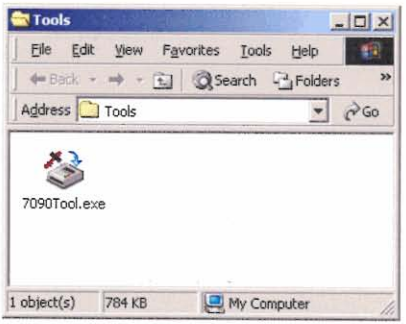


Figure 5-202

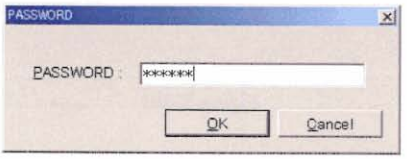


Figure 5-203

4. Notes on Operating

This section provides some basic points to note when operating the service mode. Refer to the descriptions of the respective topics for specific operation procedures.

1) Sleep mode
The service mode should not be used while the machine is already in Sleep mode. If this occurs, the computer may hang or the "Wait..." message may be remain displayed on the machine's operation panel. In this event, reset the machine and computer and then launch service mode.

2) Time before the screen is displayed
It may take time before the [Copier] or [Feeder] operation screen is displayed, in order to obtain the necessary data from the main body. In particular, it may take about 10 seconds before the [Copier>Adjust] screen is displayed, because the amount of data is large. After obtaining the data, the time before the screen is displayed becomes shorter.

3) Structure of [Copier] and [Feeder]
Since these modes are composed of many items, the operation screen is provided with tabs to classify items by type. Moreover, the [Copier>Adjust] screen that especially has many items is provided with pull-down menus for sub-classification. The structure is shown below. The codes for major and middle items are also shown. These codes may be used when displaying a service mode in this manual.

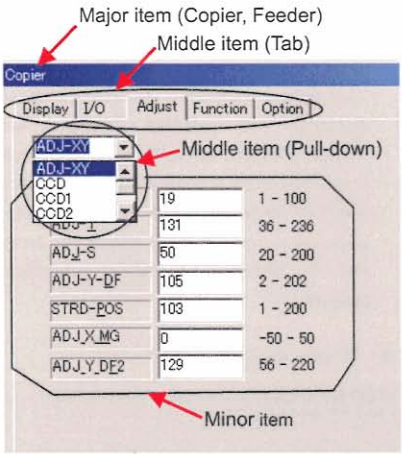


Figure 5-204

Major item	Middle item	Outline	Code
Copier		Reader related	C
Feeder		Feeder related	F
	Display	Displays the state	D
	I/O	Displays the I/O	I/O
	Adjust	Adjustment	A
	Function	Operation/ inspection	F
	Option	Specification setting	O

Table 5-201

Note 1: Example for displaying codes
[Feeder>Function>SENS-INT]
→→ [F>F>SENS-INT]

Note 2: For all of "CCD, CCD1, CCD2 and CCD3" in the middle item (pull-down), the code is displayed as [CCD]. An example is shown below:
[Copier>Adjust>CCD2>MTF-M1]
→→ [C>A>CCD>MTF-M1]

4) Data transmission on [Adjust]

There are two ways to transmit the inputted data. On [Copier>Adjust], select the [OK] button once after you have finished inputting all related items. On [Feeder>Adjust], select the [SEND] button provided on the screen. This is to prevent you from forgetting to transmit some data, because [Copier>Adjust] has many items and is divided into plural operation screens.

◆ [Copier>Adjust]

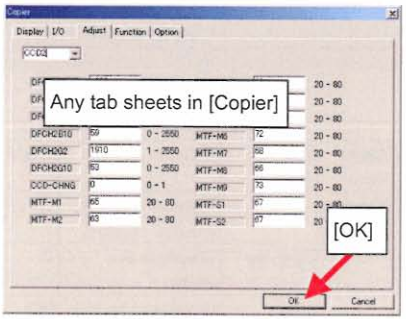


Figure 5-205

When the transmission is finished, the [Success] screen will appear.

Figure 5-206

If the inputted data exceeds the adjustment range, the [Error] screen will appear. The item in question is displayed on the screen. Since the data is not updated, input and transmit the correct data again.

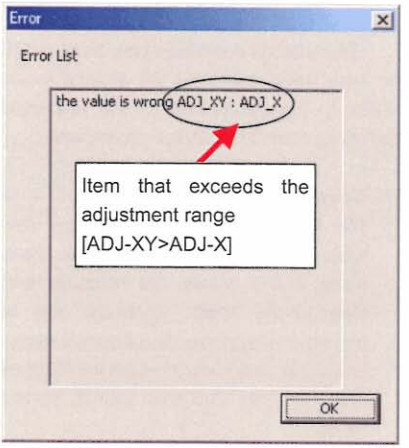


Figure 5-207

◆ [Feeder>Adjust]

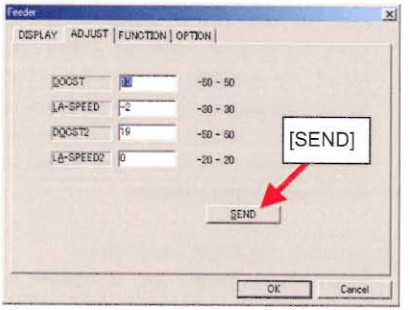


Figure 5-208

When the transmission is finished, the [Success] screen will appear.

Figure 5-209

If the inputted data exceeds the adjustment range, the [Failed] screen will appear. Since the data is not updated, input and transmit the correct data again.

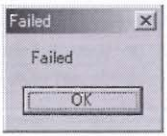


Figure 5-210

Note: In either case, check the inputted data after resetting the power of the main body. After exiting the service mode, reset the power of the main body and check the image.

5. Service Mode List

There is a large number of service mode items related to the reader and feeder, as listed below.

For more details about the contents, operation method, etc., refer to the relevant sections.

Configuration/Name	Description
Copier	Service mode related to reader
Display	Control display mode
CCD	Display of measurement values related to CCD
TARGET-B	BLUE shading target value (4-digit display in decimal)
TARGET-G	GREEN shading target value (4-digit display in decimal)
TARGET-R	RED shading target value (4-digit display in decimal)
GAIN-OB	Gain level value of blue odd bits of CCD (for black and white)
GAIN-OG	Gain level value of green odd bits of CCD (for black and white)
GAIN-OR	Gain level value of red odd bits of CCD (for black and white)
GAIN-EB	Gain level value of blue even bits of CCD (for black and white)
GAIN-EG	Gain level value of green even bits of CCD (for black and white)
GAIN-ER	Gain level value of red even bits of CCD (for black and white)
I/O	PCB I/O port (motor, sensor, etc.) display mode
R-CON	I/O port of reader controller PCB
Port01	Port 1, 8 bits
Port02	Port 2, 8 bits
Port03	Port 3, 8 bits
Port04	Port 4, 8 bits
Port05	Port 5, 8 bits
Port06	Port 6, 8 bits
Port07	Port 7, 8 bits
Port08	Port 8, 8 bits
Port09	Port 9, 8 bits
FEEDER	I/O port of ADF controller PCB
Port01	Port 1, 8 bits
Port02	Port 2, 8 bits
Port03	Port 3, 8 bits
Port04	Port 4, 8 bits
Port05	Port 5, 8 bits
Port06	Port 6, 8 bits
Port07	Port 7, 8 bits
Port08	Port 8, 8 bits
Port09	Port 9, 8 bits
Port10	Port 10, 8 bits
Port11	Port 11, 8 bits
Port12	Port 12, 8 bits

Table 5-202a

Configuration/Name			Description
Adjust			Adjustment mode (Changes are enabled by power RESET of machine.)
	ADJ-XY		Image reading start position adjustment and resetting
		ADJ-X	Image reading start position adjustment (X = sub-scan direction) during the FB mode Perform setting again after replacing reader controller PCB. Adjustment range: 1 to 100 (Default: 18), 0.1 mm displacement when value is changed by 1.
		ADJ-Y	Image reading start position adjustment (Y = main-scan direction) during the FB mode Perform setting again after replacing reader controller PCB. Adjustment range: 36 to 236 (Default: 136), 0.1 mm displacement when value is changed by 1.
		ADJ-S	Shading position manual adjustment Note: No adjustment in market required. Adjustment range: 20 to 200 (Default: 50)
		ADJ-Y-DF	Image reading start position adjustment (Y = main-scan direction) during the ADF mode Perform setting again after replacing reader controller PCB. Adjustment range: 2 to 202 (Default: 102), 0.1 mm displacement when value is changed by 1.
		STRD-POS	Image reading start position adjustment (X = sub-scan direction) during the ADF mode Perform setting again after replacing reader controller PCB. Adjustment range: 1 to 200 (Default: 100), 0.1 mm displacement when value is changed by 1.
		ADJ-X-MG	Fine adjustment of sub-scan magnification during the FB mode Note: No adjustment in market required. Adjustment range: -50 to 50 (Default: 0), image size is increased when value is increased.
		ADJ-Y-DF2	Backside main scan position adjustment during 1-path duplex scanning Perform setting again after replacing ADF controller PCB. Setting range: 56 to 220 (Default: 120), 0.1 mm displacement when value is changed by 1.
	CCD		CCD, shading related adjustment and resetting
		W-PLT-X W-PLT-Y W-PLT-Z	White level data of white plate Perform setting again after replacing platen glass, reader controller PCB. Setting range: 1 to 9999 (Default: X=8271, Y=8753, Z=9413)
		CCDU-RG CCDU-GB	Color shift correction value in sub-scan direction between CCD unit dependent RG/GB Perform setting again after replacing the CCD unit, reader controller PCB. Setting range: -9 to 9 (Default: 0)
		FCCDU-RG FCCDU-GB	Color shift correction value in sub-scan direction between CCD unit dependent RG/GB at plant shipment Perform setting again after replacing reader controller PCB. Setting range: -9 to 9 (Default: 0)
		50-RG 50-GB	Color shift (RG/GB) offset value during FB mode/50% scanning Perform setting again after replacing reader controller PCB. Setting range: -256 to 256 (Default: 0)

Table 5-202b

Configuration/Name	Description
50DF-RG 50DF-GB	Color shift (RG/GB) offset value during ADF mode/50% scanning Perform setting again after replacing reader controller PCB. Setting range: -256 to 256 (Default: 0)
100-RG 100-GB	Color shift (RG/GB) offset value during FB mode/100% scanning Perform setting again after replacing reader controller PCB. Setting range: -256 to 256 (Default: 0)
100DF-RG 100DF-GB	Color shift (RG/GB) offset value during ADF mode/100% scanning Perform setting again after replacing reader controller PCB. Setting range: -256 to 256 (Default: 0)
DFTAR-R DFTAR-G DFTAR-B	Red/Green/Blue shading target value during the ADF mode Perform setting again after replacing reader controller PCB. Setting range: 1 to 2047 (Default: R=1159, G=1189, B=1209)
CCD1	continued from CCD above
MTF2-M1 to MFT2-M9	Main-scan direction MTF set value of CCD unit Perform setting again after replacing reader controller PCB. Setting range: 20 to 85% (Default: 50) M1: Front R, M2: Center R, M3: Rear R M4: Front G, M5: Center G, M6: Rear G M7: Front B, M8: Center B, M9: Rear B
MTF2-S1 to MFT2-S9	Sub-scan direction MTF set value of CCD unit scanning Perform setting again after replacing reader controller PCB. Setting range: 20 to 85% (Default: 50) S1 : Front R, S2 : Center R, S3 : Rear R S4 : Front G, S5 : Center G, S6 : Rear G S7 : Front B, S8 : Center B, S9 : Rear B
CCD2	continued from CCD1 above
DFCH2R2 DFCH2R10 DFCH2B2 DFCH2B10 DFCH2G2 DFCH2G10	Linearity characteristics data of CCD unit Set values to reduce difference between front and back sides during 1-path duplex scanning. Perform setting again after replacing CCD unit or reader controller PCB. Setting range: DFCH2R2/B2/G2=1 to 2550 (Default: 200) Setting range: DFCH2R10/B10/G10=1 to 2550 (Default: 10)
CCD-CHNG	Whether CCD unit has been replaced or not Set to '1' when replacing the CCD unit. Setting range: 0, 1 (Default: 0)
MTF-M1 to MFT-M9	Main scan direction MTF set value of CIS unit Perform setting again after replacing CIS unit or ADF controller PCB. Setting range: 20 to 85% (Default: 50) M1 : Front R, M2 : Center R, M3 : Rear R M4 : Front G, M5 : Center G, M6 : Rear G M7 : Front B, M8 : Center B, M9 : Rear B
MTF-S1 MTF-S2	Sub-scan direction MTF set value of CIS unit scanning Perform setting again after replacing CIS unit or ADF controller PCB. Setting range: 20 to 85% (Default: 50) S1 : Front R, S2 : Center R

Table 5-202c

Configuration/Name			Description
	CCD3		continued from CCD2 above
		MTF-S3 to MFT-S9	Sub-scan direction MTF set value of CIS unit scanning Perform setting again after replacing CIS unit or ADF controller PCB. Setting range: 20 to 85% (Default: 50) S3 : Rear R S4 : Front G, S5 : Center G, S6 : Rear G S7 : Front B, S8 : Center B, S9 : Rear B
		DFCH-R2 DFCH-R10 DFCH-B2 DFCH-B10 DFCH-G2 DFCH-G10	Linearity characteristics data of CIS unit Set values to reduce difference between front and back sides during 1-path duplex scanning. Perform setting again after replacing CIS unit or ADF controller PCB. Setting range: DFCH-R2/B2/G2=1 to 2550 (Default: 200) Setting range: DFCH-R10/B10/G10=1 to 2550 (Default: 10)
		CISU-RG	Color shift correction value in sub-scan direction between CIS unit dependent RG Perform setting again after replacing CIS unit or ADF controller PCB. Setting range: -150 to 150 (Default: 0)
	PASCAL		Automatic gradation correction control adjustment and resetting
		OFST-P-Y OFST-P-M OFST-P-C OFST-P-K	Offset value settings for each color during automatic gradation correction Perform setting again after replacing reader controller PCB. Note: Adjustments other than above resetting not required in market. Adjustment range: -128 to 128 (Default: 0)
Function			Operation/inspection mode
	INSTALL		Operation/testing during installation
		STRD-POS	Automatic CCD read position detection in ADF mode Execute after replacing reader controller PCB.
	CCD		CCD/shading related automatic adjustment
		DF-WLVL1	White level adjustment during the FB mode Scan white paper on the platen glass and adjust white level. Execute after replacing reader controller PCB.
		DF-WLVL2	White level adjustment during the ADF mode Scan white paper set on the document pickup tray and adjust white level. Execute after replacing reader controller PCB.
		DF-LNR	Calculating the linearity characteristics for 1-path duplex scanning Set Copier > Adjust > CCD > DFCH-xx and DFCH2xx, and then execute this procedure to calculate the linearity characteristics with those settings.
		MTF-CLC	Using MTF values to calculate the actual MTF filter coefficient to be set Set Copier > Adjust > CCDx > MTF-M1 to M9/S1 to S9 and MTF2-M1 to M9/S1 to S9 and then execute this procedure to calculate the coefficient for those settings.

Table 5-202d

Configuration/Name			Description
	CLEAR		Data initialization (Changes are enabled by power RESET of machine.)
		R-CON	Clearing the reader controller PCB RAM Execute after replacing reader controller PCB.
		OPTION	Initializing option backup data Note: This function need not be executed for this machine.
		DF-CON	Initializing the ADF controller PCB backup data (EEPROM) Note: This function need not be executed for this machine.
	MISC-R		Service mode related to other readers
		SCANLAMP	Scanning lamp lighting check When this function is executed, the scanning lamp lights for 3 seconds.
Option			Specification setting mode (Changes are enabled by power RESET of machine.)
	BODY		Settings related to selection of specifications related to machine (Note: This function need not be executed for this machine.)
		SENS-CNF	Selection of location of document size sensor AB system/Inch system (Default: AB system)
		MODELSZ2	Global support through document size detection during FB mode (AB/INCH mixed detection) None/Detect (Default: None)
		SZDT-SW	Switching from CCD detection to photo size detection during document size detection in the FB mode. None/Detect (Default: None)
		SPECK-SW	Dust detection timing switch None/Detect (Default: None)
		KSIZE-SW	Switching to Chinese paper (K-size) compatibility None/Detect (Default: None)
		CCD-LUT2	Selecting whether to use adjustments for join correction control. None/Detect (Default: Detect = use as default value)
		DFDST-L1	Adjustment of dust detection level when using ADF (sheet-to-sheet correction) Setting range: 0 to 255 (Default: 0)
		DFDST-L2	Adjustment of dust detection level when using ADF (detection after job) Setting range: 0 to 255 (Default: 0)
		MXSPDSEL	Selecting the feed mode when mixed widths are loaded None/Detect (Default: None (faster))
		DRY-CISU	Switching to glass drying mode on the CIS unit when condensation occurs None/Detect (Default: None (normal mode))
	USER		Selecting specifications for user modes(Note: This function need not be executed for this machine.)
		SIZE-DET	Selection of the document size detection function during the FB mode None/Detect (Default: None)

Table 5-202e

Configuration/Name			Description
Feeder			Service mode related to feeder
	Display		Control display mode
		TRY-WIDE	Amount of slide guide opening (Unit: 0.1 mm) Displays the distance between slides detecting the document width of the document pickup tray.
		SPSN-LMN	Post-separation sensor light emission intensity Displays the light emission voltage of the post-separation sensor.
		SPSN-RCV	Post-separation sensor light receiving intensity Displays the light receiving voltage of the post-separation sensor.
		RDSN-LMN	Read sensor light emission intensity Displays the light emission voltage of the read sensor.
		RDSN-RCV	Read sensor light receiving intensity Displays the light receiving voltage of the read sensor.
		DRSN-LMN	Delivery reversing sensor light emission intensity Displays the light emission voltage of the delivery reversing sensor.
		DRSN-RCV	Delivery reversing sensor light receiving intensity Displays the light receiving voltage of the delivery reversing sensor.
	ADJUST		adjustment and resetting mode
		DOCST	Document stop position adjustment during the ADF mode (leading edge registration adjustment) The image reading timing is delayed when a larger value is set. (leading edge margin is smaller.) Perform setting again after replacing reader controller PCB. Adjustment range: -50 to 50 (Unit: 0.1 mm)
		LA-SPEED	Document feed speed adjustment during the ADF mode (magnification adjustment) The speed slows down when a larger value is set. (The image becomes smaller.) Perform setting again after replacing reader controller PCB. Adjustment range: -30 to 30 (Unit: 0.1%)
		DOCST2	Adjusting the back leading edge detection timing during 1-path duplex scanning Raising the setting increases the size of the leading edge margin. Perform setting again after replacing ADF controller PCB. Adjustment range: -50 to 50 (Unit: 0.1mm)
		LA-SPEED2	Adjusting the back sub-scanning magnification during 1-path duplex scanning Raising the setting increases the length of the sub-scanning signal (extends the image). Perform setting again after replacing ADF controller PCB. Adjustment range: -20 to 20 (Unit: 0.1%)
	FUNCTION		Operation/inspection mode
		SENS-INT	Adjustment of sensitivity of various feeder sensors (post-separation, read, delivery reversing sensors) Execute after replacing various sensors, and reader controller PCB.
		MTR-ON	Motor operation check Operates the selected motor. Motor selection is done with [MTR-CHK].

Table 5-202f

Configuration/Name	Description
MTR-CHK	Motor selection 0: Pickup motor 1: Read motor 2: Delivery reversing motor 3: Separation motor 4: No.2 Registration motor 5: CIS glass motor
SL-ON	Solenoid operation check Operates the selected solenoid. Solenoid selection is done with [SL-CHK].
SL-CHK	Solenoid selection 0: Unlock solenoid 1: Stamp solenoid
FEED-ON	Feed operation check Executes the selected feed mode. Feed mode selection is done with [FEED-CHK].
FEED-CHK	Feed mode selection 0: Simplex feed 1: Duplex feed 2: Simplex feed with stamp 3: Duplex feed with stamp
FAN-ON	Fan operation check Operates the selected fan. Fan selection is done with [FAN-CHK].
FAN-CHK	Fan selection 0: Cooling fan of feeder 1: Cooling fan of CIS
CL-ON	Clutch operation check Operates the selected clutch. Clutch selection is done with [CL-CHK].
CL-CHK	Clutch selection 0: Pickup clutch
TRY-A4	Automatic adjustment of paper width detection reference point 1 in document pickup tray (A4) Records a value when A4 paper is set in document pickup tray. Then, following execution of this item, execute TRY-A5R. Execute after replacing reader controller PCB or document width volume.
TRY-A5R	Automatic adjustment of paper width detection reference point 2 in document pickup tray (A5R) Records a value when A5R paper is set in document pickup tray. Execute after replacing reader controller PCB or document width volume.
TRY-LTR	Automatic adjustment of paper width detection reference point 1 in document pickup tray (LTR) Records a value when LTR paper is set in document pickup tray. Then, following execution of this item, execute TRY-LTRR. Execute after replacing reader controller PCB or document width volume.

Table 5-202g

Configuration/Name			Description
		TRY-LTRR	Automatic adjustment of paper width detection reference point 2 in document pickup tray (LTRR) Records a value when LTRR paper is set in document pickup tray. Execute after replacing reader controller PCB or document width volume.
		ROLL-CLN	Roller cleaning mode This mode automatically drives the drive rollers with motors. When cleaning the rollers, use this mode instead of turning the rollers by hand. However, the pickup, separation rollers are not rotated in this mode.
	OPTION		Specification setting mode
		LS-DBL	ON/OFF switch for high-speed duplex mode (2-path duplex) The OFF mode is provided to support users who use a document not suitable for the high-speed duplex mode. ON/OFF (Default: ON)
		STAMP-SW	Stamp option installation setting Set when stamp solenoid is attached as option. None/Stamp (Default: None)

Table 5-202h

6. Copier

1) Screen

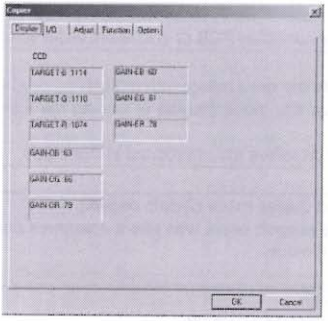


Figure 5-211a

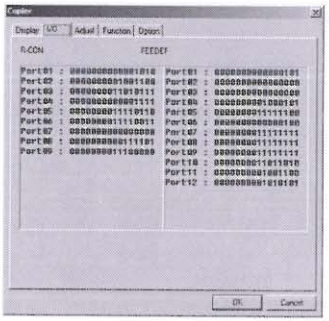


Figure 5-211b

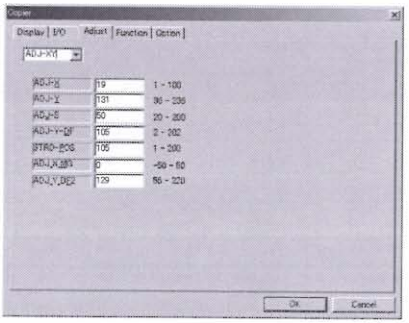
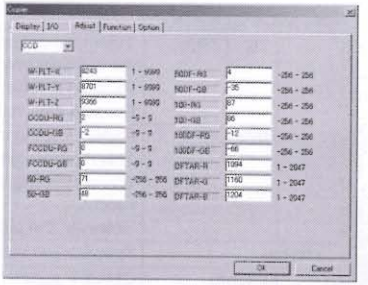
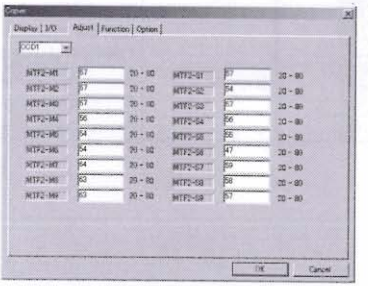
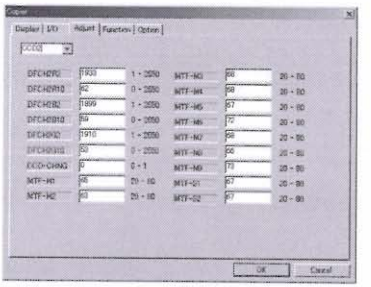


Figure 5-211c







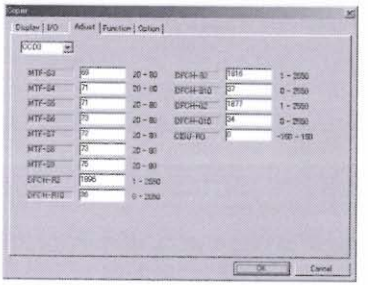


Figure 5-211d

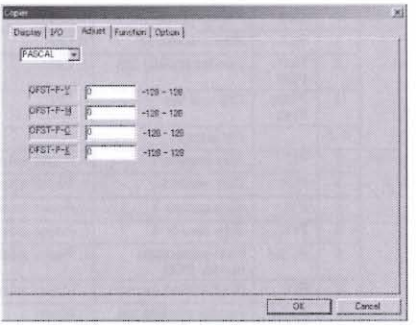


Figure 5-211e

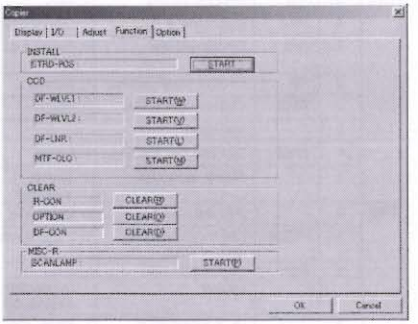


Figure 5-211f

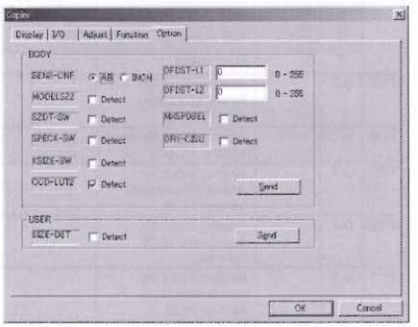


Figure 5-211g

2) Copier>I/O

This operation indicates the I/O port statuses of the reader controller PCB and ADF controller PCB.

"R-CON" indicates the reader controller PCB and "FEEDER" indicates the ADF controller PCB.

While this information is essentially for factory/design use, it is shown here to provide a clearer understanding of the sensor operation status.

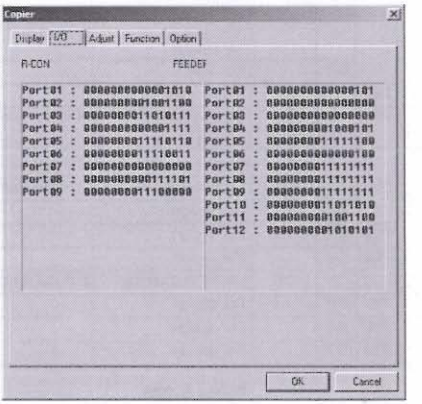
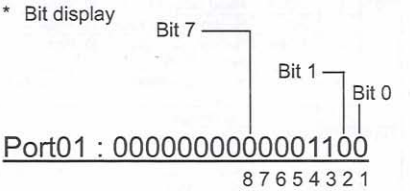


Figure 5-212

* Bit display



* R-CON

Port	Bit	Symbol	Item	Remarks
P01	0	M3	Delivery reversing motor CLK	
	1-3		For design	
	4	M1	ADF pickup motor CLK	
	5	FM1	Reader fan power	1: ON
	6	M2	ADF read motor CLK	
	7	CFx	Document size sensor	1: ON
P02	0	M5	No.2 registration motor CLK	
	1		24V power monitoring	0: Normal
	2	PI6	Feeder cover sensor	1: Closed
	3	PS502	ADF opening sensor 1	1: Closed
	4	M1	Reader scanner motor CLK	
	5		13V power monitoring	0: Normal
	6-7		For design	
P03	0-7		For design	
P04	0	PI7	Size sensor 1	0: Paper exists
	1	PI8	Size sensor 2	0: Paper exists
	2	PI9	Size sensor 3	0: Paper exists
	3	PI10	Size sensor 4	0: Paper exists
	4-7		For design	
P05	0-7		For design	
P06	0-6		For design	
	7	PI11	No.2 Read sensor	0: Paper exists
P07	0-7		For design	
P08	0-7		For design	
P09	0-7		For design	

Table 5-203

* FEEDER

Port	Bit	Symbol	Item	Remarks
P01	0	PCB3	Read sensor PCB	0: Paper exists
	1	PI1	Registration sensor	1: Paper exists
	2	PCB4	Delivery reversing sensor PCB	0: Paper exists
	3	PI12	No.2 registration sensor	1: Paper exists
	4-7		For design	
P02	0	M3	Delivery reversing motor CUT	0: Delivery direction
	1	M3	Delivery reversing motor CWB	1: At operation
	2	M1	Pickup motor CUT	0: Delivery direction
	3	M1	Pickup motor CWB	1: At operation
	4	M5	No.2 registration motor CUT	1: At operation
	5	M5	No.2 registration motor CWB	0: Delivery direction
	6		For design	
	7	M2	Read motor MODE	1: At operation
P03	0	CL1	Pickup clutch	1: ON
	1	SL1	Stamp solenoid	1: ON
	2	FM1/ FM5	Feeder cooling fan	1: ON
	3	FM2/ FM3	CIS unit fan	1: ON
	4-7		For design	
P04	0	PI7	Size sensor 1	0: Paper exists
	1	PI8	Size sensor 2	1: Paper exists
	2	PI9	Size sensor 3	0: Paper exists
	3	PI10	Size sensor 4	1: Paper exists
	4	PCB2	Post-separation sensor PCB	1: Paper exists
	5	PI1	Registration sensor	1: Paper exists
	6	FM1/ FM5	Feeder cooling fan alarm	1: Alarm
	7		For design	
P05	0	PI3	A4/LTR sensor	1: A4R
	1	PI4	LGL sensor	1: LGL (Large)
	2	PI5	Document set sensor	0: Paper exists
	3	PI6	Feeder cover sensor	1: Closed
	4	FM3	CIS unit fan alarm	1: Alarm
	5		Not used	
	6	FM2	CIS unit fan alarm	1: Alarm
	7		Stamp detection	0: Stamp attached
P06	0		24V detection	0: Detection
	1	PCB4	Delivery reversing sensor PCB	1: Paper exists
	2	PI2	Separation HP sensor	1: ON (protection against light)
	3	PI12	No.2 registration sensor	1: Paper exists
	4	PCB3	Read sensor PCB	1: Paper exists
	5	PI11	No.2 read sensor	1: Paper exists
	6	PI13	CIS glass HP sensor	1: HP
	7		For design	
P07	0-7		Analog input for Post-separation sensor PCB	
P08	0-7		Analog input for read sensor PCB	
P09	0-7		Analog input for delivery reversing sensor PCB	
P10	0-7		Analog input for document width volume	
P11	0-7		Analog input for post-separation sensor PCB	
P12	0-7		Analog input for read sensor PCB	

Table 5-204

3) Copier>Adjust>ADJ-XY
This mode adjusts the image reading start position. The machine having been adjusted at factory, it can basically be used as is in the market, but if the reader controller PCB or ADF controller PCB is replaced, the machine must be reset to the factory setting values.
Moreover, this adjustment is used if for some reason, such as following disassembly and assembly, scanned images have defects, or if fine adjustments are required.
However, keep the value of "ADJ-S" and "ADJ-X-MG" the same as the factory setting value and do not adjust it in the market.

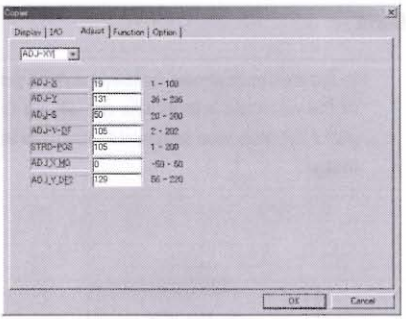


Figure 5-213

- ADJ-X: Adjustment of sub-scan direction start position in FB mode (X direction)
- ADJ-Y: Adjustment of main scan direction start position in FB mode (Y direction)
- ADJ-Y-DF: Adjustment of main scan direction start position in ADF mode (Y direction)
- STRD-POS: Adjustment of sub-scan direction start position in ADF mode (X direction)
- XDJ-Y-DF2: Backside main scan position adjustment during 1-path duplex scanning (Y direction)

◆ Operation Procedure

a) Change the value according to the image.
Changing the value by 1 results in movement of 0.1 mm.
b) Click the [OK] button.
c) When transmission of the input data has been completed, the [Success] screen is displayed. Click the [OK] button.

Figure 5-214

d) End the service mode.
e) Execute power supply reset. If power supply reset is not executed, some items will not be enabled.
f) Check the image after changes have been made.

◆ Direction in FB mode

Document set status ⟶ Scanned image

Left rear of platen glass = origin

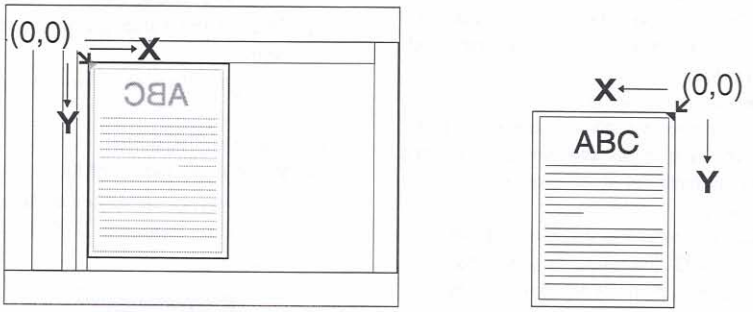


Figure 5-215

When the [ADJ-X] value is reduced, the read start position in the X direction enters the minus side, and when the [ADJ-X] value is increased, it enters the plus side.

In the example shown below, the right side of the scanned image was cut off, so the [ADJ-X] value was reduced to improve the image.

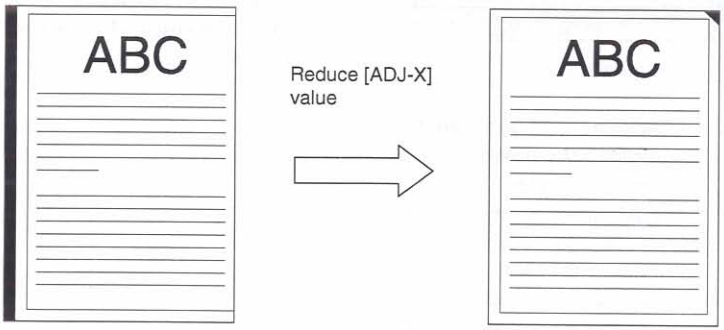


Figure 5-216

When the [ADJ-Y] value is reduced, the read start position in the Y direction enters the minus side, and when the [ADJ-Y] value is increased, it enters the plus side.

In the example shown below, the top side of the scanned image was cut off, so the [ADJ-Y] value was reduced to improve the image.

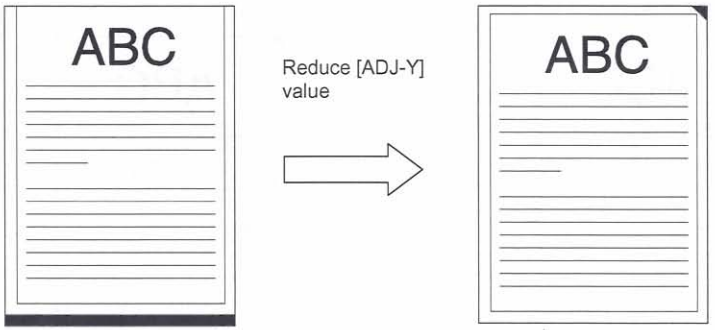


Figure 5-217

◆ Direction in ADF mode
Document scan status ——————▶ Scanned image
Center rear of ADF reading glass = origin

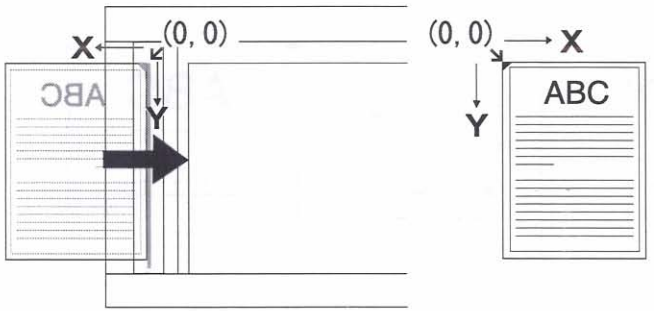


Figure 5-218

When the [STRD-POS] value is reduced, the read start position in the X direction enters the plus side, and then the [STRD-POS] value is increased, it enters the minus side.

In the example shown below, the right side of the scanned image was cut off, so the [STRD-POS] value was reduced to improve the image.

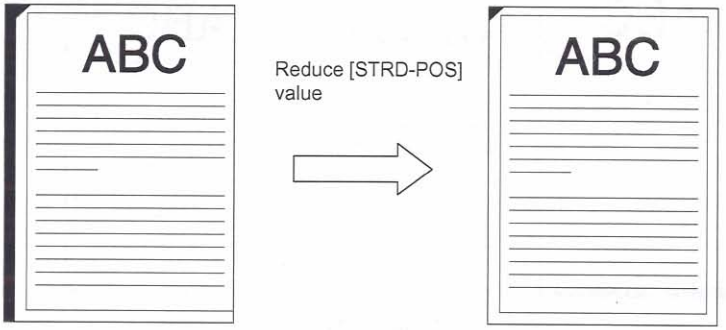


Figure 5-219

When the [ADJ-Y-DF] value is reduced, the read start position in the Y direction enters the plus side, and when the [ADJ-Y-DF] value is increased, it enters the minus side.

In the example shown below, the top side of the scanned image was cut off, so the [ADJ-Y-DF] value was increased to improve the image.

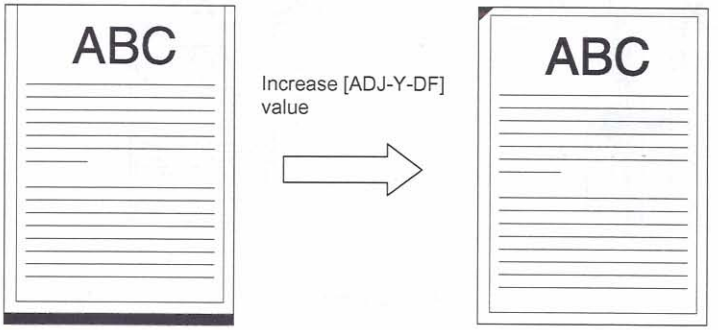


Figure 5-220

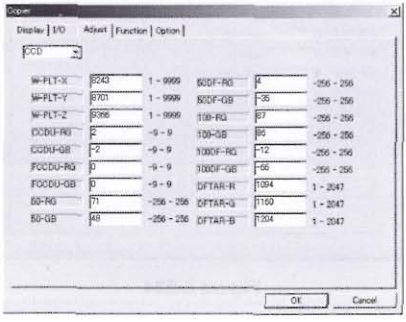
4) Copier>Adjust>CCD

This mode adjusts the CCD and CIS unit-related data values. However, all the values should remain the factory setting values, and if related parts are replaced in the market, the values should be adjusted again to the factory setting values. For details, refer to "AFTER REPLACING PARTS".

Note: The results of executing [C>F> CCD>DF-WLVL1/2] are displayed for the [DFTAR-R], [DFTAR-G], and [DFTAR-B] values.

If image anomalies occur for these values, set the factory setting values. For details, refer to [Copier>Function> CCD].

Since there are many minor items under [Copier>Adjust>CCD], they are divided and located in four screens: [CCD, CCD1, CCD2 and CCD3]. Select one from the pull-down menu. However, the code is displayed as CCD for all of them.



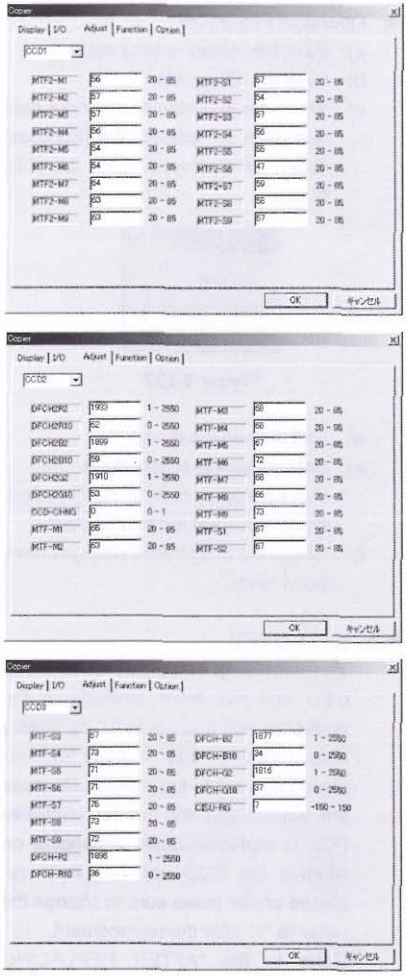


Figure 5-221

◆ Operation Procedure

a) Input the factory setting value.
b) Click the [OK] button.
c) When transmission of the input data has been completed, the [Success] screen is displayed. Click the [OK] button.

Figure 5-222

d) End the service mode.
e) Execute power supply reset.
If power supply reset is not executed, some items will not be enabled.
f) Check the image after changes have been made.

Note:[CCD-CHNG]

This item is set to indicate whether the CCD unit has been replaced in the market or not. It is set to "0" by factory default. Change it to "1" if you have replaced the unit in the market. Because the action after the reader controller PCB is replaced varies depending on whether the CCD unit has been replaced or not, make sure to change the value to "1" after the replacement.
Refer to the "AFTER REPLACING PARTS" section for details.

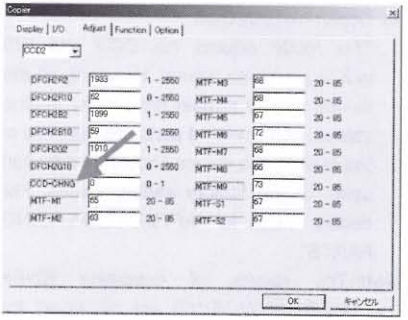


Figure 5-223

5) Copier>Adjust>PASCAL

This mode adjusts the data values related to automatic gradation correction. However, leave all the values at their factory setting, and if the reader controller PCB is replaced in the market, set the values back to the factory setting values. For details, refer to "AFTER REPLACING PARTS".
The operation procedure is the same as [Copier>Adjust>CCD].

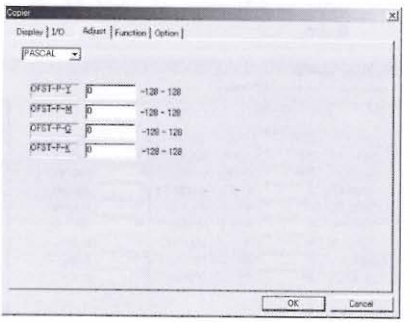


Figure 5-224

- OFST-P-Y/M/C/K
Setting of offset value for each location during automatic gradation correction

6) Copier>Function>INSTALL
Make the settings at installation including options and perform operation check. However, perform only the automatic detection of the CCD read position in the ADF mode on this machine.
Execute this when you have finished the adjustments after replacing the reader controller PCB, or removing and reinstalling or replacing the feeder.

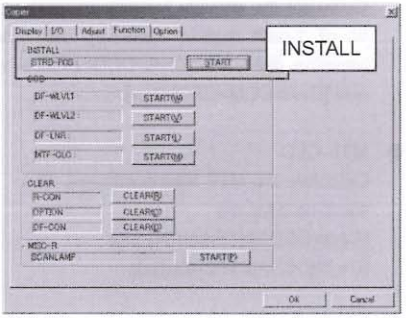


Figure 5-225

- STRD-POS: Automatic detection of the CCD read position in the ADF mode

◆ Operation Procedure
Refer to "Section 15. Read Position Detection in III. FEEDER ADJUSTMENT" for the method of preparation.
When you select the [START] button after the preparation is completed, the detection is performed automatically. When it is finished in approximately 5 seconds, the [Success] screen will appear.
If the detection cannot be done because, for example, the method of preparation is incorrect, the [Failed] screen will appear.

7) C>F>CCD> DF-WLVL1/2
This mode automatically adjusts the CCD's white level.
Execute this mode after replacing the reader controller PCB.
Both [DF-WLVL1] and [DF-WLVL2] must be executed.

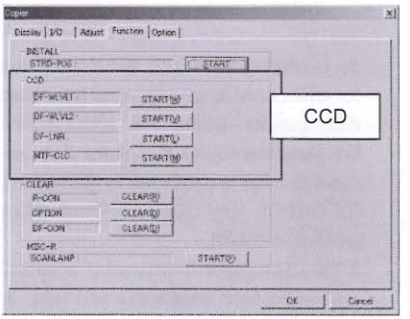


Figure 5-226

◆ Operation Procedure
a) Clean the platen glass and the rollers.
b) Set a blank A4 or LTR sized sheet of copy paper on the platen glass and click the [START] button of [DF-WLVL1].
Note: Execute [DF-WLVL1] first.
c) Scanning is automatically performed. When completed, the [Success] screen is displayed, so click the [OK] button.

Figure 5-227

d) Set the same copy paper in the document pickup tray and click the [START] button of [DF-WLVL2].
e) Duplex scanning is automatically executed. When completed, the [Success] screen is displayed. Click the [OK] button.
f) End the service mode and check the image.

By executing this mode, the target value for white level is calculated at the actual read position taking into consideration the transparency of the glass. The calculated value is displayed in [DFTAR-R], [DFTAR-G], and [DFTAR-B] of [Copier>Adjust>CCD].
If the copy paper that is used is soiled, anomalies such as streaks and color irregularities may occur in the image after this mode is executed. In this case, after cleaning this machine, execute this mode again using clean copy paper. If the problem persists, input the factory setting values in [DFTAR-R], [DFTAR-G], and [DFTAR-B].
The standard white plate data that serves as the reference for white level adjustment is measured for every platen glass and is input to [W-PLT-X], [W-PLT-Y], and [W-PLT-Z] of [Copier>Adjust>CCD]. This value is described on the platen glass and service label.

8) C>F>DF-LNR/MTF-CLC
After the data regarding the CCD and CIS units is inputted, calculate the actual adjustment values based on the data.
In the market, execute this if a related component has been replaced. Refer to the "AFTER REPLACING PARTS" section for details.

◆ DF-LNR
Calculate the density linearity characteristic of 1-path duplex scanning, etc. The baseline data are [C>A>CCD>DFCH-xx] and [C>A>CCD>CFCH2xx].

◆ MTF-CLC
Calculate the MTF filter coefficient. The baseline data are
[C>A>CCD>MTF-Mx/Sx] and
[C>A>CCD>MTF2-Mx/Sx].

◆ Operation Procedure
After inputting each baseline data, select the [START] button. The calculation will be executed immediately and the [Success] screen will appear.

9) Copier>Function>CLEAR
[R-CON] performs RAM clear for the reader controller PCB. Execute this mode in the market after replacing the reader controller PCB. Since related items need to be reset after this mode is executed, be careful not to perform this mode by mistake. For details, refer to "AFTER REPLACING PARTS".

[OPTION] and [DF-CON] modes need not be performed for this machine.

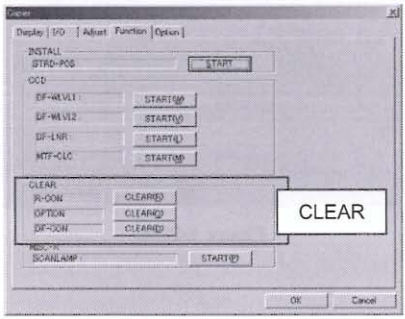


Figure 5-228

◆ Operation Procedure

a) Click the [CLEAR] button.

b) The [Confirm] screen is displayed, so click the [Yes] button.

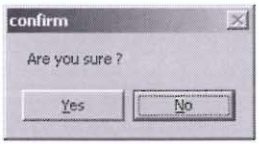


Figure 5-229

c) When RAM clear is completed, the [Success] screen is displayed. Click the [OK] button.

Figure 5-230

d) End the service mode.

e) Execute power supply reset.

f) Enter the service mode again and set again related items.

10) Copier>Function>MISC-R

[SCANLAMP] lights the scanning lamp. The scanning lamp lights approx. 3 seconds after [SCANLAMP] is executed. [SCAN LAMP] is not used only to check lighting, but also during feeder height adjustment.

◆ Operation Procedure

a) Click the [START] button. The lamp lights.

b) While the lamp is lit, the [Wait] screen is displayed.

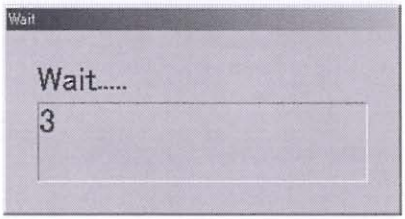


Figure 5-231

c) The lamp goes out after approx. 3 seconds, and the [Success] screen is displayed. Click the [OK] button.

Figure 5-232

d) End the service mode.

7. Feeder

1) Operation screen

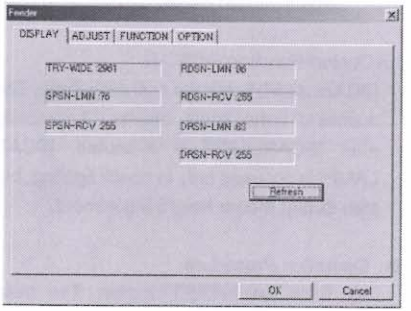


Figure 5-233a

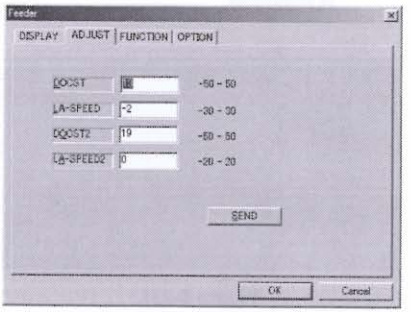


Figure 5-233b

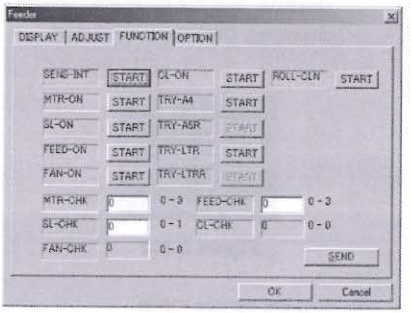


Figure 5-233c

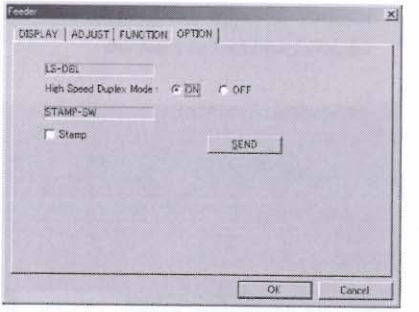


Figure 5-233d

2) Feeder>DISPLAY

This mode displays the slide guide and sensors (post-separation, read, delivery reversing) status. Each status is displayed when [Feeder] is selected. Also, each status is displayed when the [Refresh] button is clicked. When the [Refresh] button is clicked after the amount of opening of the slide guide is changed or the relevant sensor detection status is changed, that change can be checked with data.

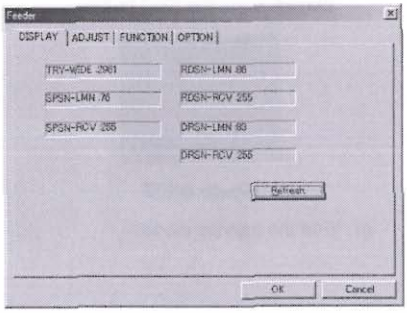


Figure 5-234

- TRY-WIDE: Slide guide opening amount (Unit: 0.1 mm)
- SPSN-LMN: Post-separation sensor light-emission voltage
- SPSN-RCV: Post-separation sensor light-reception voltage
- RDSN-LMN: Read sensor light-emission voltage
- RDSN-RCV: Read sensor light-reception voltage
- DRSN-LMN: Delivery reversing sensor light-emission voltage
- DRSN-RCV: Delivery reversing sensor light-reception voltage

3) Feeder>ADJUST

This mode performs adjustments related to document feeding. The machine having been adjusted at factory, it can basically be used as is in the market, but if the reader controller PCB or ADF controller PCB is replaced, the machine must be reset to the factory setting values.

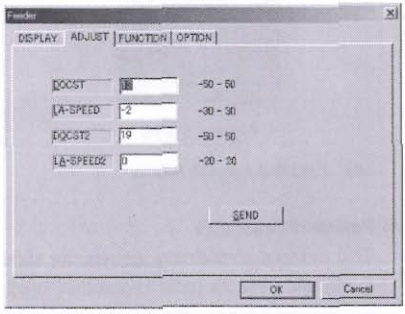


Figure 5-235

- DOCST: Adjustment of document stop position in ADF mode (leading edge registration adjustment)
- LA-SPEED: Adjustment of document feed speed in ADF mode (magnification adjustment)
- DOCST2: Adjusting the back leading edge detection timing during 1-path duplex scanning (leading edge registration adjustment)
- LA-SPEED2: Adjusting the back sub-scanning magnification during 1-path duplex scanning (magnification adjustment)

◆ Operation Procedure

a) Input the value.

b) Click the [SEND] button.

c) When transmission of the input data has been completed, the [Success] screen is displayed. Click the [OK] button.

Figure 5-236

d) End the service mode.

4) Feeder>FUNCTION

This mode automatically adjusts the slide guide and sensors (post-separation, read, delivery reversing), checks the operation of the motor, etc., and executes the roller cleaning mode. For the respective details, refer to the relevant sections.

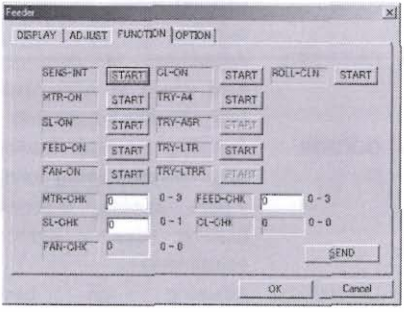


Figure 5-237

5) Feeder>FUNCTION>SENS-INT

This mode adjusts the sensitivity of sensors (post-separation, read, delivery reversing). Execute this mode after replacing sensors PCBs and the reader controller PCB.

◆ Operation Procedure

a) When the [START] button is clicked, the mode is automatically executed.

Note: Be sure to close the feeder cover.

b) When execution of the mode is completed, the [Success] screen is displayed. Click the [OK] button.

Figure 5-238

c) End the service mode.

6) Feeder>FUNCTION>MTR-ON

How to check the various operations, including those of the motor and other driving parts, is explained here.

The following table lists the mode names and the targets they cover.

No.	Mode Name	Target
1	MTR-ON MTR-CHK	0: Pickup motor 1: Read motor 2: Delivery reversing motor 3: Separation motor
2	SL-ON SL-CHK	0: Unlock solenoid 1: Stamp solenoid
3	FEED-ON FEED-CHK	0: Simplex feed 1: 2-path duplex feed 2. Simplex feed, stamp 3. 2-path duplex feed, stamp
4	FAN-ON FAN-CHK	0: Cooling fan of feeder
5	CL-ON CL-CHK	0: Pickup clutch

Table 5-205

Each mode is used by setting [ON] and [CHK] for that mode.

The motor operation procedures are indicated below. Refer to these procedures for the solenoid, fan, and clutch operation procedures.

◆ Motor Operation Procedure

a) Input the target number in [MTR-CHK] and then click the [SEND] button.

b) When transmission of the input data has been completed, the [Success] screen is displayed. Click the [OK] button.

c) When the [START] button to the right of [MTR-ON] is clicked, the corresponding motor operates. At the same time, the button display changes to [STOP].

d) When the [STOP] button is clicked, the operation stops. At the same time, the button display changes to [START].

Note: The operation stops automatically approx. 5 seconds after the [START] button is selected. In this case, the button display remains [STOP].

e) End the service mode.

◆ Feed Operation Procedure

a) Set the documents to be fed in the document pickup tray.

b) Input the target number in [FEED-CHK] and then click the [SEND] button.

c) When transmission of the input data has been completed, the [Success] screen is displayed. Click the [OK] button.

d) Click the [START] button to the right of [FEED-ON] to start the targeted feed operation.

e) The feed operation ends when no more of the set documents are left.

f) End the service mode.

Note: Even if [Feeder>OPTION>STAMP-SW] is OFF, the stamp operation is executed as long as the stamp solenoid it attached.

7) Feeder>FUNCTION>TRY-A4/LTR
This section describes automatic adjustment of the slide guide including [TRY-A4].
Execute automatic adjustment of the slide guide after replacing the reader controller PCB. At this time, either the combination of [TRY-A4] and [TRY-A5R], or [TRY-LTR] and [TRY-LTRR], can be executed.

The operation procedure for the [TRY-A4] and [TRY-A5R] combination is described below. Use this as reference for the operation procedure for the [TRY-LTR] and [TRY-LTRR] combination.

◆ Operation Procedure
a) Adjust the slide guide to A4 size.
b) When the [START] button to the right of [TRY-A4] is clicked, the opening amount data for the slide guide is transmitted.
Note: Execute [TRY-A4] first.
c) When transmission has been completed, the [Success] screen with instructions for the next step is displayed. Click the [OK] button.

Figure 5-239

d) Adjust the slide guide to A5R size.
e) When the [START] button to the right of [TRY-A5R] is clicked, the opening amount data for the slide guide is transmitted.
f) When transmission has been completed, the normal [Success] screen is displayed. Click the [OK] button.

Figure 5-240

g) Check the opening amount value for the slide guide in [Feeder> DISPLAY>TRY-WIDE].
h) End the service mode.

8) Feeder>FUNCTION>ROLL-CLN
This is a convenient mode for cleaning rollers. Executing this mode causes the rollers to rotate.
However, the pickup, separation, and reversing rollers do not rotate due to the structure of the transmission system and to avoid pinching of hands.

◆ Operation Procedure
a) When the [START] button to the right of [ROLL-CLN] is clicked, the drive rollers rotate. At the same time, the button display changes to [STOP].
b) Clean the rollers while they are rotating.
c) Click the [STOP] button to stop the rollers.
Note: The rollers also stop rotating when the feeder cover is opened or closed, and upon feeder open/close detection.
d) End the service mode.

9) Feeder>OPTION
This mode executes the high-speed duplex mode (2-path duplex) and stamp settings.

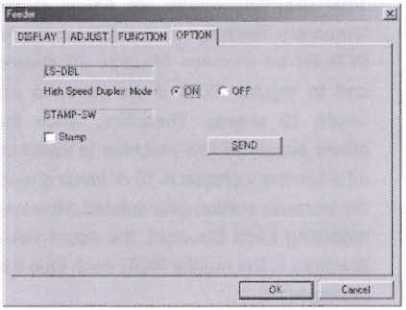


Figure 5-241

- [LS-DBL]:Setting of high-speed duplex mode
  This is the high-speed duplex mode for 2-path duplex scanning. This setting is [ON] at factory. Normally the [ON] setting is good, but when using documents for which feed problems often occur in the high-speed duplex mode, select the [OFF] setting.
- [STAMP-SW]: Setting of stamp
  This setting is [OFF] at factory. Set this setting to [ON] after the optional stamp solenoid has been installed.

◆ High-Speed Duplex Mode Operation Procedure

a) Click the radio buttons corresponding to the desired settings.
"ON" : ◉ ON ○ OFF
"OFF": ○ ON ◉ OFF
b) Click the [Send] button.
c) When transmission of the data has completed, the [Success] screen is displayed. Click the [OK] button.
d) End the service mode.

◆ Stamp Operation Procedure

a) To change the setting, click the checkbox to the left of [Stamp].
"ON" : ☑ Stamp
"OFF" : ☐ Stamp
b) Click the [Send] button.
c) When transmission of the data has been completed, the [Success] screen is displayed. Click the [OK] button.
d) End the service mode.
e) Execute power supply reset.
Note: If power supply reset is not executed, the settings will not be enabled.
f) Check that the operation is performed as set.

8. Counter Set

1) Outline

Counter Set is used to change the values of the various counters. These values are used for counter display such as the service mode screen.

These data are saved to the DC controller PCB. Therefore, as these values are changed when the DC controller PCB is replaced, it is necessary to restore the pre-replacement values following DC controller PCB replacement. However, if the pre-replacement values are not known, estimated values can be used.

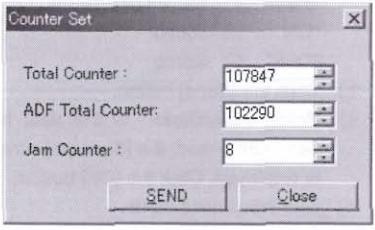


Figure 5-242

- Total Counter
  Total number of scanned sheets for both ADF and FB
- ADF Total Counter
  Total number of scanned (= fed) sheets for ADF
- Jam Counter
  Total number of document jam error occurrences

However, since the [ADF Total Counter] value is expressed as number of sheets, in the case of duplex scan, the counter is incremented by "1" each time both the front and back sides of a sheet are scanned.

The first document scan (front side in the case of 2-path duplex scan) at the time of document jam error is not added to the [Jam Counter] value.

Moreover, the [Total Counter] and [ADF Total Counter] values are saved in the temporary memory of the DC controller PCB for an increase of up to 10 sheets, and to regular ROM if the increase exceeds 10 sheets. Therefore, when the power supply of this machine is switched off when the increase is 10 or fewer sheets, the increase portion gets deleted. However, regarding [Jam Counter], the count value is written to the regular ROM each time it is incremented.

2) Usage Method

The operation procedure is as follows.

a) Input the new value in the box to the right of the desired item.
b) When input of all the items has been completed, click the [SEND] button.
c) When transmission of the data has been completed, the [Success] screen is displayed. Click the [OK] button.
d) End the service mode.

9. Panel Check

1) Outline

Panel Check is used to check the operation panel keys, LEDs, and the LCD panel operation.

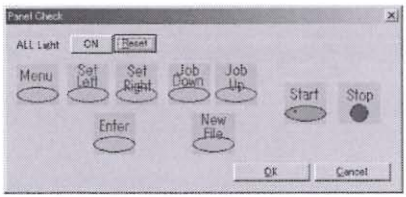


Figure 5-243

2) Usage Method

- Keys
  When an operation panel key is pressed, the corresponding mark lights. The Start and Stop keys are lighted in the above illustration.
- LED, LCD
  When the [ON] button at the right side of [ALL Lights] is clicked, all the LEDs and LCDs lights up. LEDs are provided for the Start key and New File key. When the [ON] button is clicked, the button display changes to [OFF]. When the [OFF] button is clicked, all the LEDs go out. When the [Reset] button is clicked, normal display is returned.

10. Firm Load

"Controller Firm Load" and "Scanner Firm Load" are used when changing the respective firmware.

For details, refer to the service information issued when changing the firmware. Do not use this mode by mistake.

◆ Outline of operation procedure

1) Select the [Firm Load] to be changed.
2) The screen for selecting the file where the firmware is saved is displayed.
3) Specify and open the file.
4) The firmware is loaded to the machine.
5) The [Wait] screen is displayed while the operation is in progress. An example is shown below.
   Do not perform any other operation while the operation is in progress. Never turn off the computer or the main body.

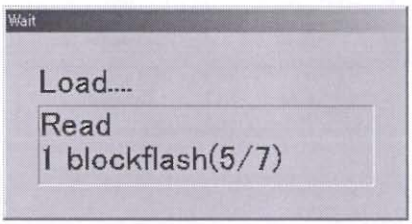


Figure 5-244

6) When finished, the [Success] screen will appear. Then, select the [OK] button.

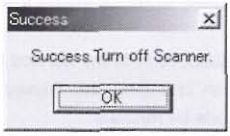


Figure 5-245

7) Exit the service mode.
8) Reset the power of the main body.
9) Check that the version has been updated on the service screen.
"MAIN" and "SCANNER" in the lower left of the screen indicate the firmware version numbers of the DC controller PCB and reader controller PCB, respectively.

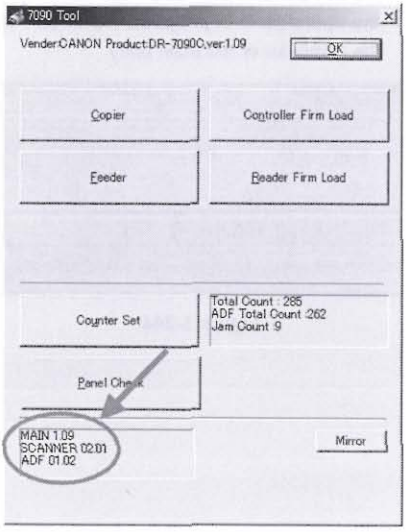


Figure 5-246

Note: Version up of the firmware of the ADF controller PCB cannot be performed in this service mode. Refer to the service information that will be issued when necessity arises.
The version number is indicated next to "ADF" in the previous diagram.

11. Mirror

This mode is used to move the mirror unit to a fixed position for transport.

The mirror unit must be fixed with the special screws (3) if the machine needs to be transported (by car, plane, etc.) after it has been installed. Refer to "Section II. UNPACKING AND INSTALLATION" of CHAPTER 4 for how to secure screws. How to move to the fixed position without using the service mode is also described.

◆ Operation Procedure

1) Click the [Mirror] button.
2) After the mirror unit has been fixed, the [Success] screen is displayed. Click the [OK] button.

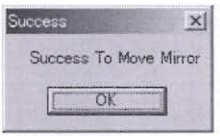


Figure 5-247

3) End the service mode.
4) Fix the mirror unit with the special screws (3).
5) Switch OFF the power supply.

Note: The machine cannot function when the mirror unit is in a fixed position. After executing this mode, execute power supply reset before using the machine.

12.Service Label

In order to allow re-input the required adjustment values after replacing a part, a "service label" containing the factory setting values is pasted on the rear side of the document pickup tray or feeder cover.

The various items of the service label indicate the service mode item names. The corresponding factory setting values are indicated in the "Fact." column.

When platen glass, CCD unit and CIS unit are replaced in the market, change the corresponding value.

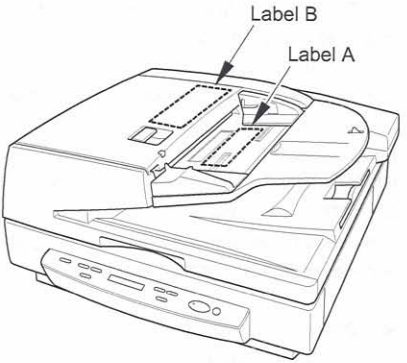


Figure 5-248

◆ Label A

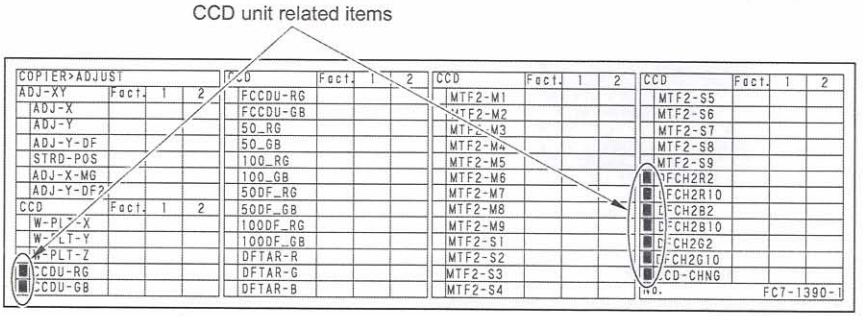


Figure 5-249

◆ Label B

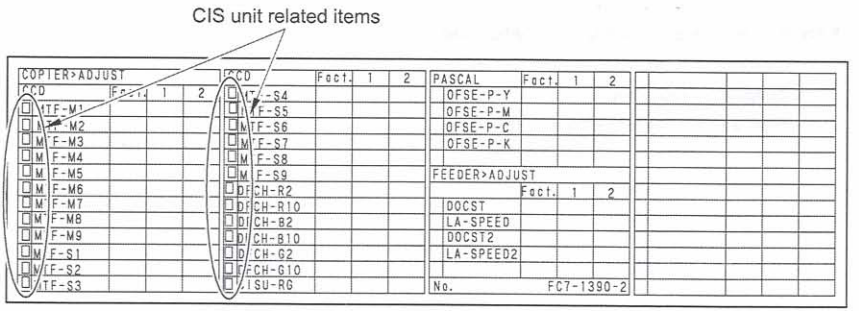


Figure 5-250

III. FEEDER ADJUSTMENT

1. Outline

The feeder adjustment procedure must be performed after removing and reinstalling the feeder, after replacing the feeder, or when a feed problem or image problem has occurred.

The adjustment consists of the sequence described below. Items that are not a problem can be skipped.

Regarding items that use the service mode, refer to "SERVICE MODE". Moreover, if the factory setting values printed on the service label are changed at the time of adjustment, write down the new values on the label.

① Angle guide release (angle of opening at 90°)
② Tray width adjustment*1
③ Sensor output*1
④ Tilt correction
⑤ Height adjustment
⑥ Right angle adjustment
⑦ Skew adjustment
⑧ Angle guide (angle of opening at 70°)
⑨ Magnification adjustment*1
⑩ Horizontal registration adjustment*1
⑪ Leading edge registration adjustment*1
⑫ White level adjustment*1
⑬ Hinge pressure adjustment
⑭ Read position adjustment*1

***1:** Service mode is used for these adjustments.

2. Angle Guide Release (angle of opening at 90°)

Carry out this step for adjustments that require the feeder to be opened at a 90° angle.

1) Flip over the rubber cover ①, remove the 2 mounting screws ②, and detach the angle guide plate ③.

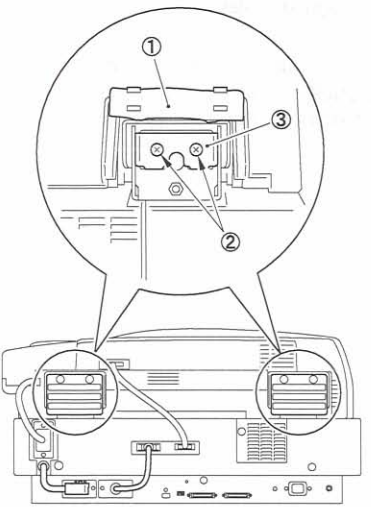


Figure 5-301

3. Tray Width Adjustment

Adjust the tray width if there are feed mode related problems.

In this machine, the slide guide opening amount data is used to determine the feed mode, but it is not used to determine the size of scanned images.

For example, in the case of a document size of A4 or LTR, and scanning performed under conditions that enable the high-speed duplex mode, the tray width adjustment must be performed if performing feed in the low-speed duplex mode.

Execute the service mode [Feeder> FUNCTION>TRY-A4, TRY-A5R] or [Feeder> FUNCTION>TRY-LTR, TRY-LTRR].

4. Sensor Output Adjustment

Perform this adjustment after replacing the post-separation sensors, read sensors, and delivery reversing sensors PCB.

Note: Also perform this adjustment after replacing a reader controller PCB that contained data.

◆ Adjustment Procedure

1) Clean the sensors and the corresponding prisms.
2) Check that there is no document inside the feeder.
3) Execute the service mode [Feeder> FUNCTION>SENS-INT].

5. Tilt Correction

Carry out this adjustment if the position is not aligned with the line marking, as shown in the figure below.

1) Release the angle guide (angle of opening at 90°).
2) Loosen the nut ① behind the left hinge, turn the hex socket head bolt ②, moving the fixing member ③ until the line marking ④.

   Rotate bolt clockwise to move member forward.

   Rotate bolt counterclockwise to move member backward.

   Then, tighten the nut and fix it.

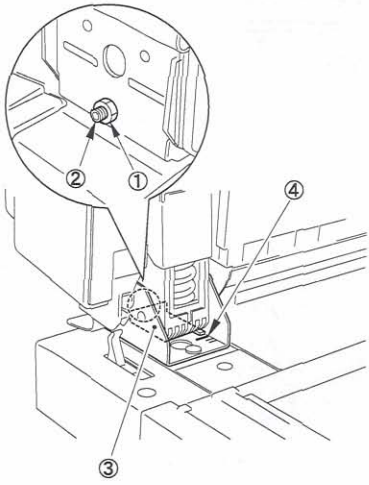


Figure 5-302

6. Height Adjustment

1) Check if the height adjusting blocks ① at the front left and rear are in contact with the reading glass ② when the feeder is closed.

Note: Contact check is done either by performing actual scanning, or by lighting the scanning lamp with service mode [Copier>FUNCTION>MISC-R> SCANLAMP].

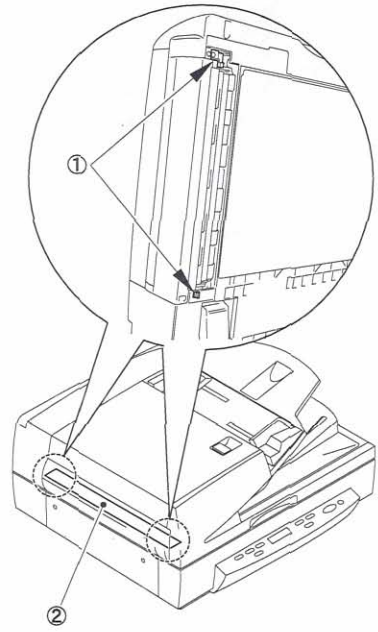


Figure 5-303

[When not contacted]

If the height adjusting blocks at the front left and rear are not in contact with the reading glass, adjust them by turning the fixing screw ① at the top of the left hinge.

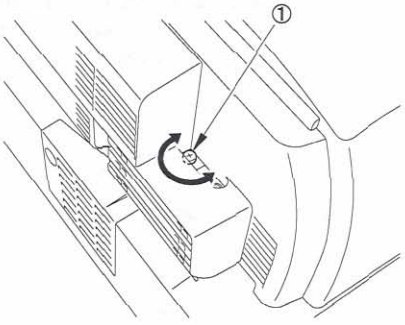


Figure 5-304

7. Right Angle Adjustment

This adjustment is performed to adjust the right angle of the scanner system of the reader and feeder and the feeder's document feed direction.

If the feeder is installed skewed relative to the scanner optics, angles in scanned images will not appear as a perfect right angle. An extreme example is shown below.

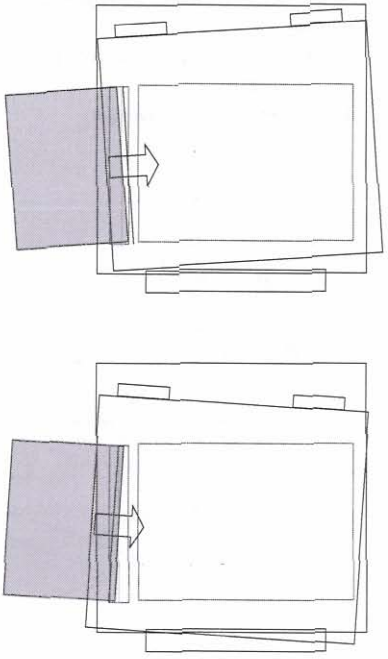


Figure 5-305

◆ Test chart

Use a test chart with an A4 or LTR size frame as the test chart. No settings are provided for service tools, so create your own.

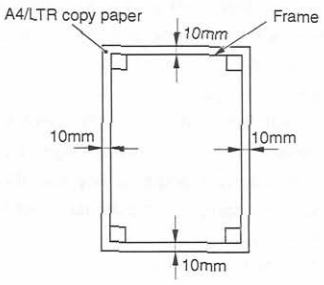


Figure 5-306

◆ *Front-side (CCD unit)*

1) Set the test chart on the document pickup tray with the front side facing upwards and *scan the image on the front. Ensure that* the slide guides are correctly aligned.

2) Check the right angle of leading edge A of the image. If adjustments are necessary, perform adjustments from step 3.

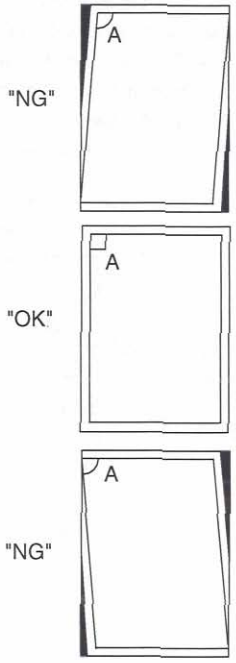


Figure 5-307

3) Release the angle guide (angle of opening at 90°).
4) Loosen the 2 knurling screws ① at the front of the right hinge unit.
   Next, flip over the rubber cover ② at the rear of the right hinge unit and loosen the fixing nut ③, then turn the hex socket head bolt ④ to make adjustment.
   If A < 90°, turn clockwise.
   If A > 90°, turn counterclockwise.

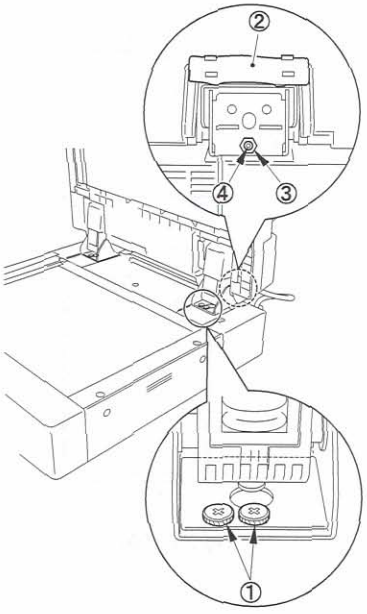


Figure 5-308

5) After performing the adjustment, fix the hex socket head bolt by tightening the fixing nut. Then tighten the 2 knurling screws.
6) Scan the test chart again and check that part A is at a right angle. If not, do the same actions from the step 4.

◆ Back-side (CIS unit)

1) Set the test chart on the document pickup tray with the back side facing upwards, select duplex scanning and scan the image on the back.
2) As with the front (CCD unit), check that the angle at A on the leading edge of the image is a right angle. If any adjustment is needed, carry out the adjustments in step 3 onwards.
3) Detach the front cover.
4) Mark the graduation ① to indicate the pre-adjustment position. Then loosen the adjusting screw ②.

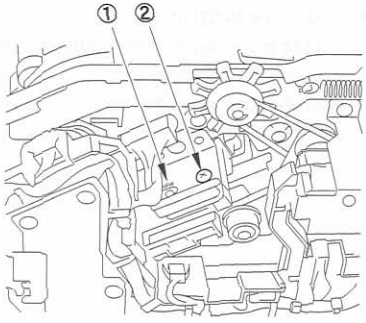


Figure 5-309

5) Adjust the position of the CIS unit to correct the squareness.
   * If A < 90°, shift the CIS unit to the right (as indicated by the black arrow).
   * If A > 90°, shift the CIS unit to the left (as indicated by the white arrow).

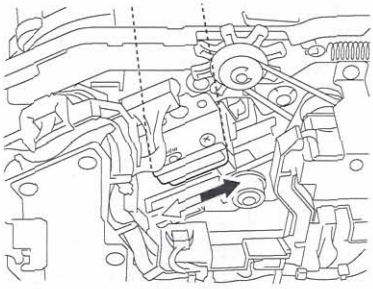


Figure 5-310

6) Tighten the adjusting screw.
7) Scan the test chart again and check that part A is at a right angle. If not, do the same actions from the step 4.

8. Skew Adjustment

If the image is skewed as shown below even when right angle adjustment is performed, perform skew adjustment. And if the skewed image is caused by the skew failure not right angle failure, make a skew adjustment.

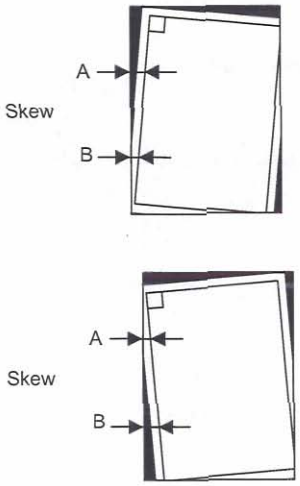


Figure 5-311

◆ Adjustment Procedure

1) Open the feeder cover.
2) Remove the screw ① of the No. 1 registration roll follower from the positioning hole, and gently tighten the screw through the adjustment slotted hole so that the stopper plate ③ can move along the adjustment slotted hole ②.

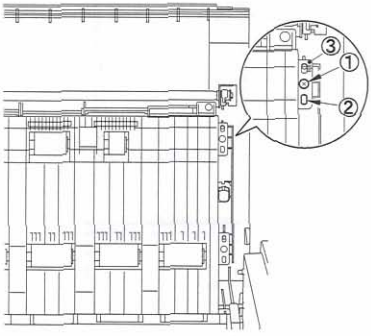


Figure 5-312

3) If A > B, move the stopper plate downward and then tighten the screw.
   If A < B, move the stopper plate upward and then tighten the screw.

Note: Be careful not to move the stopper plate too far so that the registration rolls come against the edge of the cover opening, as this will prevent the registration rolls from turning freely.

4) Scan again the test chart and check that the adjustment has been properly made.

Note: If adjusting the No.1 registration roll does not correct the error, use the same procedure to adjust the No.2 registration roll.

9. Angle Guide (angle of opening at 70°)

Set the feeder opening angle to 70° before performing the following adjustments.

1) Flip over the rubber cover ① and attach the angle guide plate ③ with the 2 screws ②.

Note: Check that the feeder opening angle is approximately 70°.

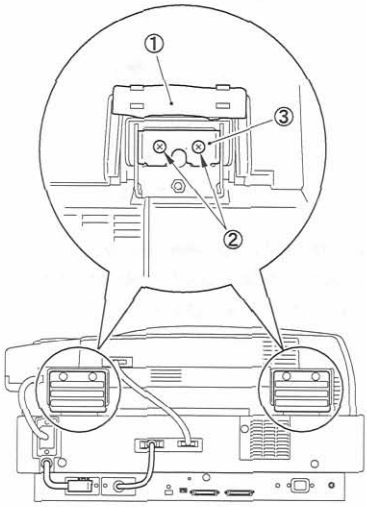


Figure 5-313

10.Magnification Adjustment

This adjusts the length of the image in the feed direction.

◆ Front-side (CCD unit)

1) Prepare a test chart. (charts showing frames)
2) Set the test chart on the platen glass and scan the image. Use this image as the FB image.
3) Set the same test chart correctly on the document pickup tray with the front side facing upwards and scan the image on the front. Use this as the ADF image.
4) Compare the lengths in the feed direction of the FB image and the ADF image, and if dimension A is approximately 1 mm or more, proceed to step 5.

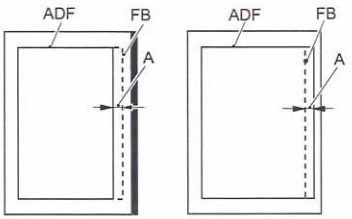


Figure 5-314a

5) Select service mode [Feeder>ADJUST> LA-SPEED] and perform adjustment by changing the value.
   If ADF image is too short → Decrease the value (slows the feed speed).
   If ADF image is too long → Increase the value (speeds the feed speed).
   [Unit: 0.1%]
   <<Adjustment range: -30 to 30: -3 to +3%>>
6) Scan the test chart again and check that the image has been properly adjusted.
7) The adjustment of front has an effect on the image of back. Check the image of back after adjustment of front.

◆ Back-side (CIS unit)

1) Using the "Front" procedure described above as a reference, scan the ADF image for the back and the FB image. Then compare the lengths of the FB image and ADF image. If dimension [A] is approximately 1 mm or more, proceed to step 2. Dimension [A] is on the left side.

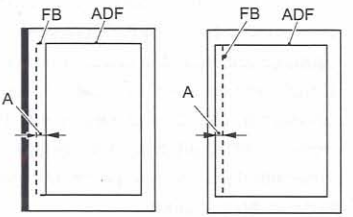


Figure 5-314b

2) Select service mode [Feeder>ADJUST> LA-SPEED2] and perform adjustment by changing value.
   The feed speed is adjusted for the front, and the signal of writing in memory is adjusted for the back. Therefore, the adjustment of back has not an effect on the image of front.
   ADF image too short → Decrease the value
   ADF image too long → Increase the value
   [Unit: 0.1%]
   <<Adjustment range: -20 to 20: -2% to 2%>>
3) Scan the test chart again and check that the image has been properly adjusted.

11. Horizontal Registration Adjustment

Perform adjustment in the service mode. If the adjustment was unsuccessful, adjust the position of the slide guide.

◆ Front-side (CCD unit)

1) Prepare a test chart (charts showing frames).
2) Set the test chart correctly on the document pickup tray with the front side facing upwards and scan the image on the front.
3) Check the position of top side of the image obtained in step 2. If dimension [A] differs from the test chart dimension by more than approximately 1.8 mm, proceed to step 4 to make an adjustment.

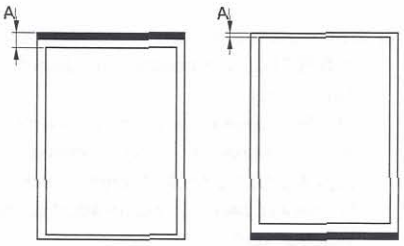


Figure 5-315

4) Select service mode [Copier>Adjust >ADJ-XY>ADJ-Y-DF] and perform adjustment by changing the value. Increasing the value increases dimension [A].
   [Unit: 0.1 mm]
   <<Adjustment range: 36 to 236>>
5) Scan the test chart again and check that the image has been properly adjusted.

◆ Back-side (CIS unit)

1) Using the "Front" procedure described above as a reference, scan the image on the back.
   And if dimension [A] is approximately 1.8 mm or more different, proceed to step 2.
2) Select service mode [Copier>Adjust> ADJ-XY>ADJ-Y-DF2] and perform adjustment by changing value.
   Increasing the value decreases dimension [A].
   [Unit: 0.1mm]
   <<Adjustment range: 56 to 220>>
3) Scan the test chart again and check that the image has been properly adjusted.

◆ Slide guide position adjustment

1) Open the feeder cover and remove the internal cover.
2) Remove the three fixing screws ① and remove the cover ②.

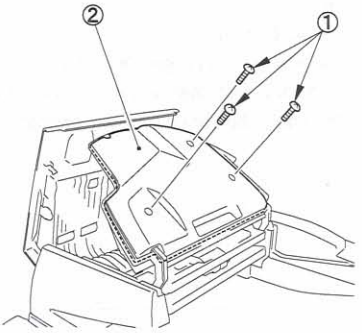


Figure 5-316

3) Loosen the screw ①, remove the screws ② from the positioning hole ③, and gently tighten the screw through the adjustment slotted hole so that the volume unit ④ can move along the adjustment slotted hole.

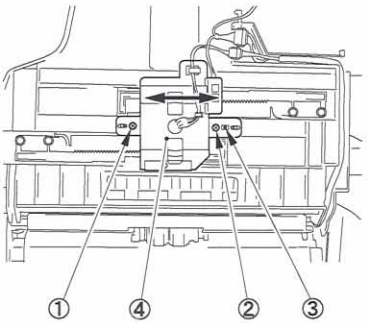


Figure 5-317

4) If image dimension [A] is too large, move the volume unit to the left. If it is too small, move it to the right.
5) Tighten the loosened screw ① and the screw ② attached to the adjustment slotted hole ③.
6) Return the removed cover to its original position.
7) Scan the test chart again and check that the image has been properly adjusted.

12. Leading Edge Registration Adjustment

◆ Front-side (CCD unit)

1) Prepare a test chart (charts showing frames).
2) Set the test chart correctly on the document pickup tray with the front side facing upwards and scan the image on the front.
3) Check the position of the left side of the image obtained in step 2. If Dimension [A] differs from the test chart dimension by more than approximately 1.8 mm, proceed to step 4 to make an adjustment.

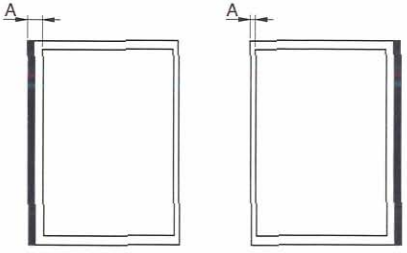


Figure 5-318

4) Select service mode [Feeder>ADJUST> DOCST] and perform adjustment by changing the value.
   Increasing the value reduces the margin of dimension [A].
   [Unit: 0.1 mm]
   <<Adjustment range: -50 to +50: -5 to +5 mm>>
5) Scan the test chart again and check that the image has been properly adjusted.

◆ Back-side (CIS unit)

1) Using the "Front" procedure described above as a reference, scan the image on the back.
   And if dimension [A] is approximately 1.8 mm or more different, proceed to step 2.
2) Select service mode [Feeder>ADJUST> DOCST2] and perform adjustment by changing value.
   Increasing the value increases dimension [A].
   [Unit: 0.1mm]
   <<Adjustment range: -50 to 50>>
3) Scan the test chart again and check that the image has been properly adjusted.

13. White Level Adjustment

Perform this adjustment if you perform any of the adjustments described above.

Execute service mode [C>F>CCD> DF-WLVL1/2]. For details, refer to the section on service mode.

Note: Execute [DF-WLVL1] for FB first.

14. Hinge Pressure Adjustment

This adjustment is executed in case of a change request from the user regarding closing (position and speed) of the feeder under its own weight.

The feeder is designed to slowly close under its own weight between 10 and 20 cm as shown in the following figure. However, the closing performance of the feeder will change over time. This adjustment adjusts the closing performance of the feeder by adjusting the hinge pressure as needed.

* To lower the closing start position or reduce the closing speed, turn clockwise with an hex wrench.
* To increase the closing start position or increase the closing speed, turn counter-clockwise with an hex wrench.

Note: Use an hex wrench with face-to-face dimensions of 8 mm. If a commercially available hex wrench cannot be procured, purchase service tool CK-0540.

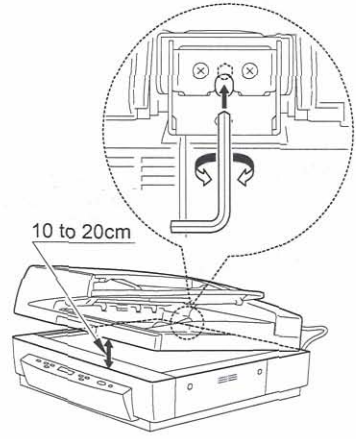


Figure 5-319

15. Read Position Detection

After finishing all adjustments above, perform this adjustment.

◆ Adjustment sheet

Use general copy paper (blank) used by the user to create a read position adjustment sheet ① in the following steps.

1) Make a sheet of paper with the width of 40mm or wider and height of 50mm or higher.
2) Draw a straight line at the position more than 15mm away from the right edge of the paper with a (black) pencil.
   Right angle accuracy: Not required (Right angle accuracy does not affect the adjustment accuracy.)
3) Draw a straight line at the position 14 mm away in the left direction from the line in the previous section (tolerance: ±0.3 mm) using a pencil (black).

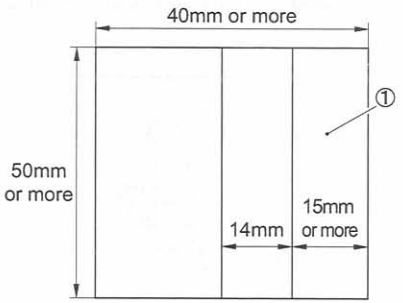


Figure 5-320

◆ Adjustment procedure

1) Align the line ① with the edge of the white film as shown below, and secure the film with cellophane tape ② at one location.
   Accuracy of securing the adjustment sheet: ±0.3 mm
2) Close the feeder.

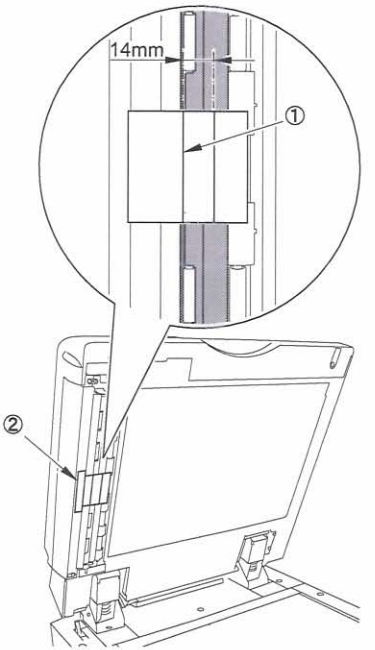


Figure 5-321

3) Execute "Copier>FUNCTION>INSTALL> STPD-POS".
4) The adjustment is automatically performed and completed.
5) After the adjustment is completed, peel off the adjustment sheet.

IV. AFTER REPLACING PARTS

1. Outline

Feed and image checks must be performed after replacing parts.

The parts used in this machine include parts that require the execution of adjustments and settings following replacement.

If the entire feeder is removed and reinstalled or replaced, refer to the "FEEDER ADJUSTMENT" section.

For position adjustments following replacement of the scanner drive cable, refer to "CHAPTER 3 DISSASSEMBLY & REASSEMBLY".

Other parts to be serviced and the outline of the respective services are described below. See their respective sections for details.

1) Reader controller PCB
- Version up
- RAM clear
- Input adjustment values (13 items)
- Adjustments (6 items)

2) ADF controller PCB
- Input adjustment values (7 items)
- Adjustments (2 items)

Note: Version up of the ADF controller PCB cannot be performed in this service mode.

3) DC controller PCB
- Version up
- Input the counter
- User settings (SCSI setting, user mode)

4) CCD unit
- Input adjustment values (2 items)
- Adjustment (1 item)
- Change the service label

5) CIS unit
- Input adjustment values (4 items)
- Adjustments (2 items)
- Change the service label

6) Sensor PCB
- Adjust the sensor output

7) Document width volume
- Adjust the tray width

8) Platen glass
- Input an adjustment value (1 item)
- Change the service label

2. Reader Controller PCB

1) Version upgrade

First, check the reader firmware version in the service screen.

Look at the location where [SCANNER] is displayed.

If necessary, replace the firmware with the latest firmware corresponding to the unit. Use service mode [Reader Firm Load] to perform this change. For details, refer to the related service information.

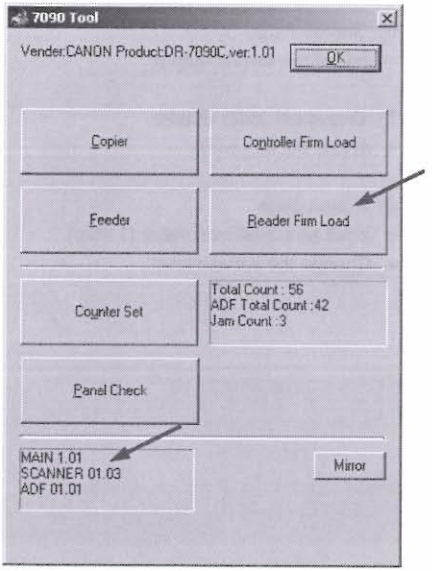


Figure 5-401

2) RAM clear

Execute service mode [C>F>CLEAR> R-CON].

Upon completion, execute power supply reset.

3) Inputting adjustment values and performing adjustments

After performing a RAM clear, input the values indicated on the service label in the service mode. Also, perform the required adjustments. The items are described below.

No.	Item Service mode (Code)
1	CCD main-scan MTF **Note1** C>A>CCD>MTF2-M1 to M9
2	CCD sub-scan MTF **Note1** C>A>CCD>MTF2-S1 to S9
3	MTF calculation **Note1** C>F>CCD>MTF-CLC
4	CCD color shift at plant shipment **Note1** C>A>CCD>FCCDU-RG/RB
5	FB read position C>A>ADJ-XY>ADJ-X/Y
6	ADF read position (main-scan) C>A>ADJ-XY>ADJ-Y-DF
7	ADF read position (sub-scan) C>A>ADJ-XY>STRD-POS
8	Standard white level **Note2** C>A>CCD>W-PLTX/Y/Z
9	Color shift in CCD sub-scan C>A>CCD>CCDU-RG/RB
10	ADF shading target C>A>CCD>DFTAR-R/G/B
11	CCD density linearity C>A>CCD>DFCH2Rx/Bx/Gx
12	Automatic gradation correction target C>A>PASCAL>OFST-P-x
13	Linearity density calculation C>F>CCD>DF-LNR
14	Leading edge registration (CCD) F>A>DOCST
15	Sub-scanning magnification (CCD) F>A>LA-SPEED
16	Sensor output F>F>SENS-INT
17	Tray width F>F>TRAY-A4/A5R or F>F>TRAY-LTR/LTRR
18	White level **Note2** C>F>CCD>DF-WLVL1/2
19	ADF read position detection C>F>INSTALL>STRD-POS

Table 5-401

Note 1: Do not perform adjustment for items No. 1 to 4 if the CCD unit has already been replaced. Check the value of the service mode [C>A>CCD>CCD-CHNG] and perform adjustment from item No. 5 if the value is "1".

Note 2: Make sure to perform No. 8 "Standard white level" before No. 18 "White level".

3. ADF Controller PCB

Input the values indicated on the service label in the service mode. Also, perform the required adjustments. The items are described below.

No.	Item Service mode (Code)
1	CIS read position (main-scan) C>A>ADJ-XY>ADJ-Y-DF2
2	CIS main-scan MTF C>A>CCD>MTF-M1 to M9
3	CIS sub-scan MTF C>A>CCD>MTF-S1 to S9
4	CIS density linearity C>A>CCD>DFCH-Rx/Bx/Gx
5	Color shift in CIS sub-scan C>A>CCD>CISU-RG
6	Leading edge registration (CIS) F>A>DOCST2
7	Sub-scanning magnification (CIS) F>A>LA-SPEED2
8	MTF calculation C>F>CCD>MTF-CLC
9	Linearity density calculation C>F>CCD>DF-LNR

Table 5-402

4. DC Controller PCB

1) Version upgrade
First, check the controller firmware version in the service screen.
Look at the location where [MAIN] is displayed.
If necessary, replace the firmware with the latest firmware corresponding to the unit. Use service mode [Controller Firm Load] to perform this change.

2) SCSI setting
Make the setting of the SCSI setting switch (SW103) on the DC controller PCB the same as the setting prior to replacement. If the pre-replacement setting is not known, ask to the user.

3) Counter
Re-input the counter value in service mode [Counter Set].

4) User mode
Make the user mode settings on the operation panel of the unit the same as the settings prior to replacement. If the pre-replacement settings are not known, ask to the user.

5. CCD Unit

Input the numerical value on the service label supplied with the CCD unit as shown in the table below in the service mode. Then, perform adjustments and settings. Also, make sure to change the service label.

No.	Item Service mode (Code)
1	Color shift in CCD sub-scan C>A>CCD>CCDU-RG/RB
2	CCD density linearity C>A>CCD>DFCH2Rx/Bx/Gx
3	Linearity density calculation C>F>CCD>DF-LNR
4	CCD replacement C>A>CCD>CCD-CHNG → [1]

Table 5-403

Note: The value of the service mode [Color shift in CCD sub-scan] is also displayed at the location in the CCD unit as shown below.

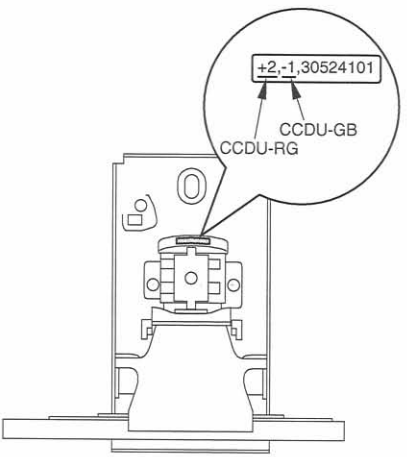


Figure 5-402

6. CIS Unit

Input the numerical value on the service label supplied with the CIS unit as shown in the table below in the service mode. Then, perform adjustments and settings. Also, make sure to change the service label.

No.	Item Service mode (Code)
1	CIS main-scan MTF C>A>CCD>MTF-M1 to M9
2	CIS sub-scan MTF C>A>CCD>MTF-S1 to S9
3	CIS density linearity C>A>CCD>DFCH-Rx/Bx/Gx
4	Color shift in CIS sub-scan C>A>CCD>CISU-RG
5	MTF calculation C>F>CCD>MTF-CLC
6	Linearity density calculation C>F>CCD>DF-LNR

Table 5-404

7. Other Parts

1) Sensors
After replacing the post-separation sensors, read sensors, or delivery reversing sensors PCBs, and execute service mode [Sensor output: F>F>SENS-INT].

2) Document width volume
Execute the service mode [Tray width].
Use [F>F>TRY-A4/A5R] or [F>F>TRY-LTR/LTRR] if the paper size used is in the AB system or inch system, respectively.

3) Platen glass
Input the values indicated on the label attached to the platen glass in service mode [Standard white level: C>A>CCD>W-PLT-X/Y/Z]. Be sure to also change the service label values.

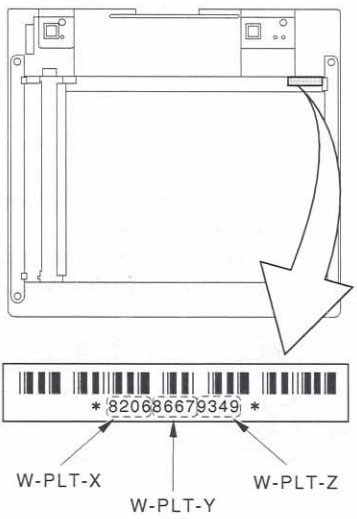


Figure 5-403

V. OPERATION TROUBLESHOOTING

If a problem occurs, check the operation panel display of the machine and the screen display of the computer.

1. AC Power Does Not Come On

Nothing is displayed on the operation panel of the machine.

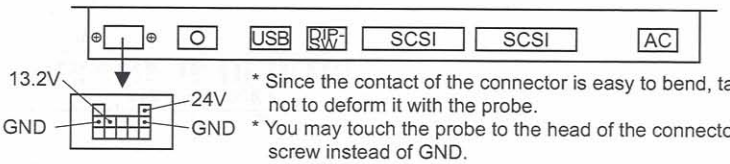
Cause/Fault Location	Step	Check Item	Result	Action
Power cord connection	1	Is power cord correctly connected?	NO	Correctly connect power cord.
Power switch ON	2	Is power switch ON?	NO	Set power switch to ON.
Connector connection (Operation panel)	3	Is connector on operation panel properly connected?	NO	Properly connect connector.
AC power supply voltage	4	Is the proper voltage supplied to the outlet?	NO	Explain to user that a problem is not with this machine.
Connector connection (DC power supply)	5	Is connector on PCB properly connected?	NO	Properly connect connector.
Power supply PCB	6	Does LED light on DC controller PCB?	NO	Replace power supply PCB.
DC controller PCB	7	Is problem solved when DC controller PCB replaced?	YES	End.

Table 5-501

Reference: Operation check of the power supply PCB and DC controller PCB

The following describes a method to determine if these PCBs operate correctly by using a voltmeter to measure the output voltages of a connector, without removing the feeder and reader.

Use the DC voltage output connector that is connected to the DC controller PCB (J107) at the far left in the lower part of the rear of the unit as shown below.



* Since the contact of the connector is easy to bend, take care not to deform it with the probe.
* You may touch the probe to the head of the connector securing screw instead of GND.

Figure 5-501

2. Scanner is Not Recognized

The error message "Can't locate device; Check the cable and power supply." is displayed on the display connected to the computer.

Cause/Fault Location	Step	Check Item	Result	Action
I/F cable connection	1	Is I/F cable correctly connected?	NO	Connect I/F cable correctly.
Power supply	2	Is this machine powered on? Is the order of turning power ON correct?	NO	Power ON again the machine and computer, starting with the machine.
I/F card (If an I/F card is used)	3	Are specifications of I/F card suitable?	NO	Use I/F card with suitable specifications.
	4	Is the I/F card installed correctly? Is the I/F card recognized by the computer?	NO	Install the I/F card correctly.
SCSI ID (In case of SCSI connection)	5	Is SCSI ID setting appropriate?	NO	Perform correct setting.

Table 5-502

3. Scanning Does Not Start

Check the error code that is displayed on the operation panel.

See "ERROR DISPLAY" for details.

Cause/Fault Location	Step	Check Item	Result	Action
DC power supply	1	Does LED402 light on ADF controller PCB?	YES	Check the connection between the ADF controller PCB (J404) and the ADF driver PCB (J201).
			NO	Refer to the section "1. AC power does not come on".
Connector connection (Motors)	2	Are connectors of motors, solenoids and clutches connected correctly?	NO	Connect connectors correctly.
Drive transmission system	3	Is motor transmission system connected correctly?	NO	Connect motor transmission system correctly.
	4	Are gears, belt and other parts normal?	NO	Replace defective parts.
ADF driver PCB	5	Is problem solved when the ADF driver PCB is replaced?	YES	End.
Scanner motor	6	Is problem solved when scanner motor is replaced?	NO	Check scanner HP sensor operation.
Feed related motor	7	Is problem solved when feed related motor is replaced?	NO	Check feed related sensor operation.
Scanning lamp	8	Is connector connected correctly?	NO	Connect connector correctly.
	9	Is problem solved when scanning lamp is replaced?	YES	End.
Reader controller PCB	10	Is problem solved when reader controller PCB is replaced?	YES	End.
DC controller PCB	11	Is problem solved when DC controller PCB is replaced?	YES	End.

Table 5-503

4. Paper Does Not Feed Correctly

Cause/Fault Location	Step	Check Item	Result	Action
Document	1	Do documents match specifications? (thickness, size, crease, curls, etc.)	NO	Use documents that match specifications or scan in FB mode.
Rollers	2	Are rollers clean? (Stain, wear)	NO	Clean or replace rollers.
Separation pad	3	Is separation pad clean? (Stain, wear)	NO	Clean or replace separation pad.
Scraper	4	Is scraper clean? (Dirt, deformation)	NO	Clean or replace scraper.
Feed guide	5	Is feed guide installed correctly?	NO	Install feed guide correctly.
	6	Is the surface that touches documents clean?	NO	Clean or replace feed guide.
Drive transmission system	7	Are gears broken or belt loose?	YES	Perform assembly adjustment or replace defective parts.

Table 5-504

VI. IMAGE TROUBLESHOOTING

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

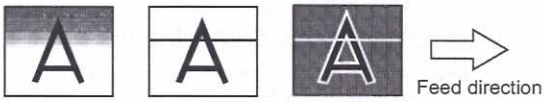
Note: If only the image on the back side is bad in 1-path duplex scanning, the cause is in the CIS unit inside the feeder or a part related to it. Check the CIS unit and the connection of the related connectors.

1. Completely Black, Completely White, or Streaks All Over

Cause/Fault Location	Step	Check Item	Result	Action
Reading surface setting (Completely black)	1	Are documents set on document pickup tray and is reading side set to "flat bed"?	YES	Change the setting.
"Brightness" setting	2	Is "Brightness" setting good?	NO	Change the setting. Also change the "Contrast" setting if necessary.
Connector connection (Images)	3	Are reader and controller connected correctly?	NO	Connect reader and controller correctly
Platen glass (Standard white plate)	4	Is standard white plate on the back of the platen glass clean?	NO	Clean standard white plate. Take special care after disassembly or parts replacement.
CCD unit connection	5	Is flat cable correctly connected?	NO	Correctly connect cable.
CCD adjustment value	6	Is [Copier>Adjust>CCD]-related setting the same as the service label value?	NO	Change it to the service label value.
CCD unit	7	Is problem solved when CCD unit is replaced?	YES	End.
Reader controller PCB	8	Is problem solved when reader controller PCB is replaced?	YES	End.
DC controller PCB	9	Is problem solved when DC controller PCB is replaced?	YES	End.

Table 5-601

2. Streaks on Image



Cause/Fault Location	Step	Check Item	Result	Action
Platen glass (FB mode)	1	Is platen glass clean? (Stain, damage)	NO	Clean or replace platen glass. Also clean the back if necessary.
ADF reading glass (ADF mode)	2	Is ADF reading glass clean? (Stain, damage)	NO	Clean or replace platen glass. Also clean the back if necessary.
CIS reading glass	3	Is CIS reading glass clean? (Stain, damage)	NO	Clean or replace platen glass. Also clean the back if necessary.
Roller Scraper	4	Is roller or scraper clean? (Stain, wear)	NO	Clean or replace roller.
White level adjustment	5	Is problem solved when service mode is executed? [C>F>CCD>DF-WLVL1/2]	YES	End. See the "Service Mode" section for details.
CCD unit	6	Is problem solved when CCD unit is replaced?	YES	End.
CIS unit	7	Is problem solved when CIS unit is replaced?	YES	End.

Table 5-602

3. Wrong Image Size

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

Note: Set the paper size to "auto detection" when scanning groups of different size documents.

Cause/Fault Location	Step	Check Item	Result	Action
Setup of "paper size"	1	Is the setup of "paper size" correct?	NO	Change the setup.
Setting documents	2	Was the document set in the correct position?	NO	Set the document in the correct position.
Setup of "auto detection" for the paper size	3	Was "auto detection" set?	NO	Set it.

Table 5-603

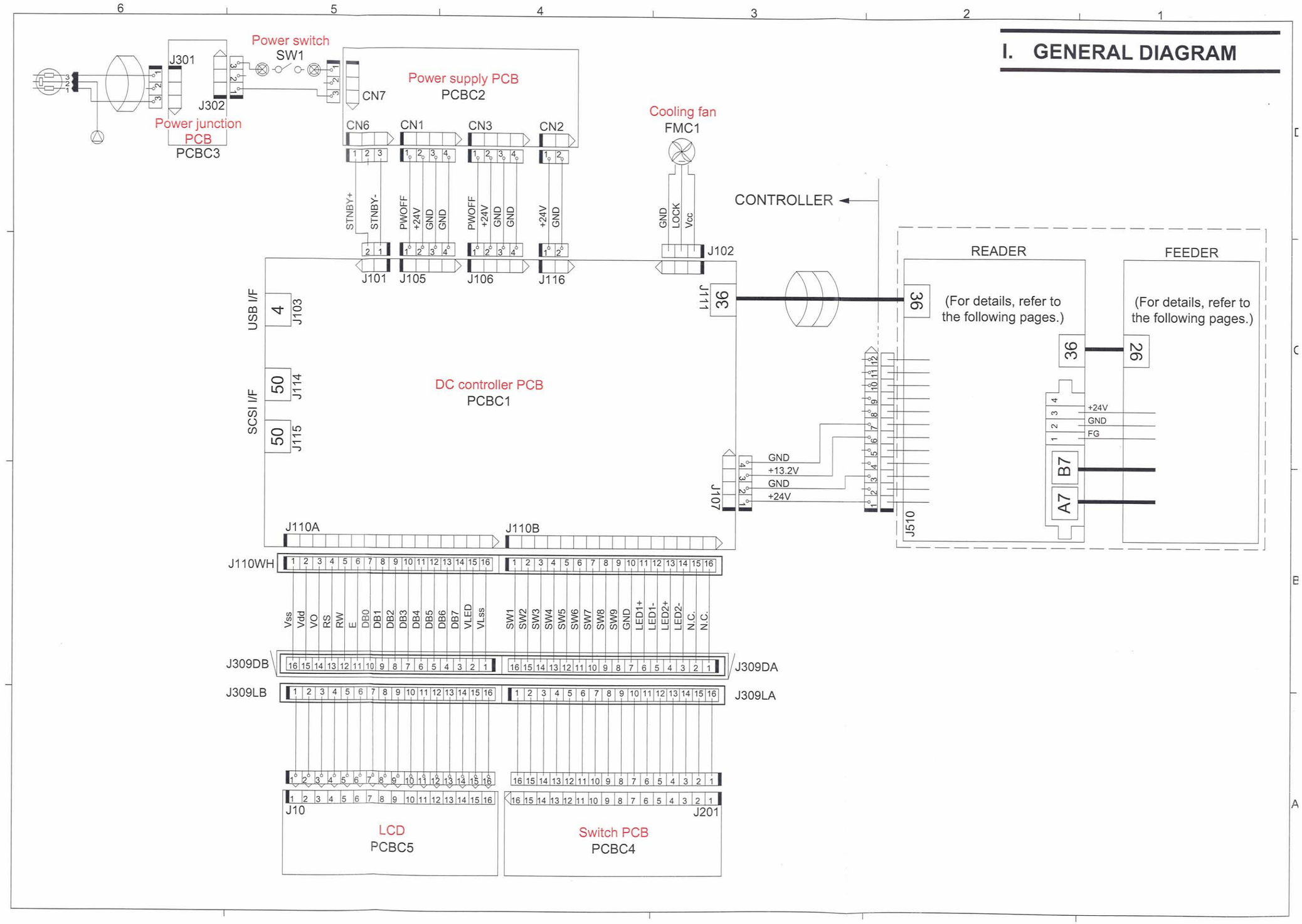
4. Image Slanted

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

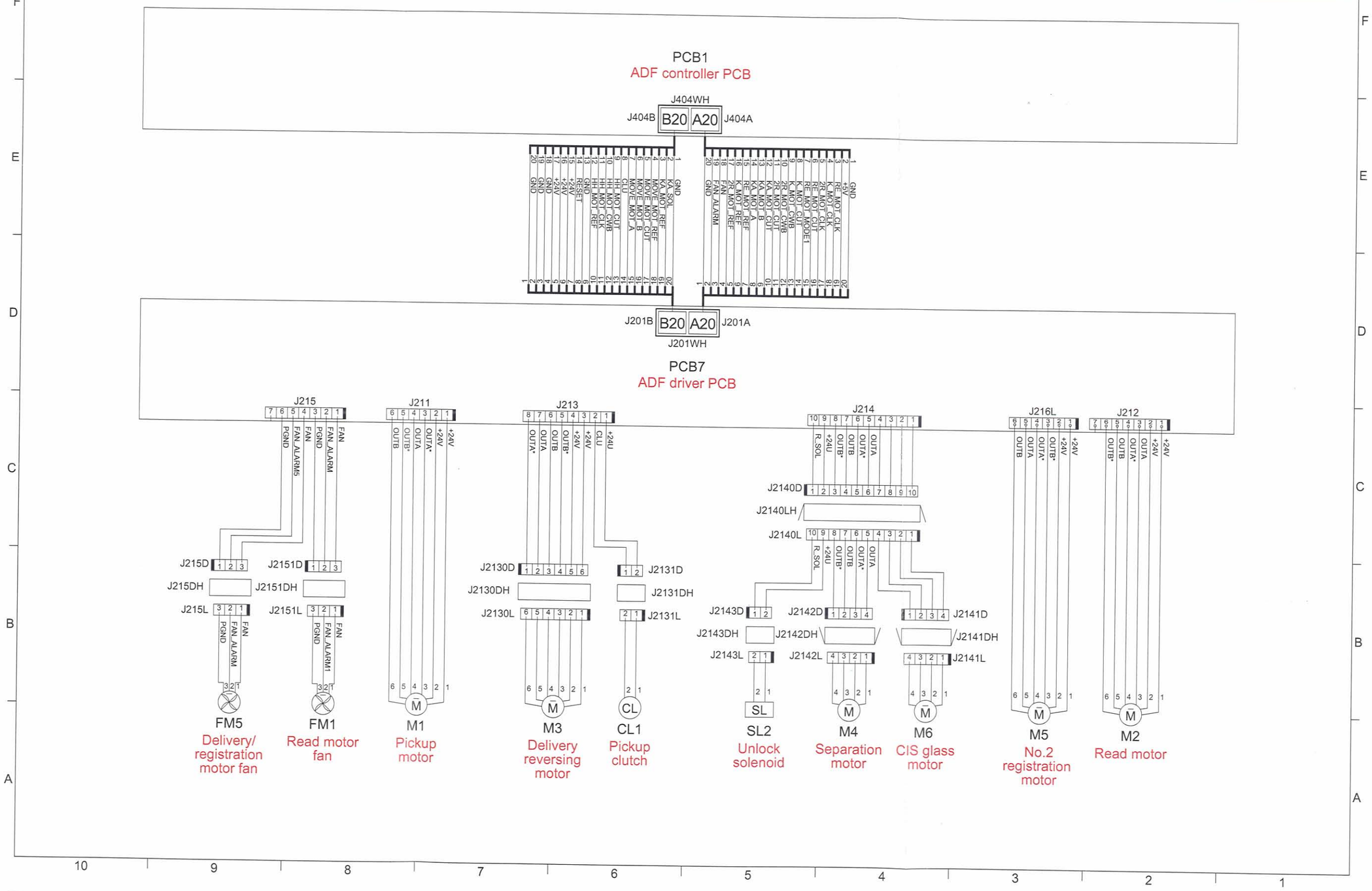
Cause/Fault Location	Step	Check Item	Result	Action
Setting documents	1	Is the document set properly?	NO	Set properly.
	2	Are the slide guides adjusted to fit the document width?	NO	Correct the position.
Setup of "skew correction"	3	Was "skew correction" set?	NO	Set it. You can correct the slant of an image using image processing.
Feeding documents	4	Are documents fed straight?	NO	Check the mounting of the roller.

Table 5-604

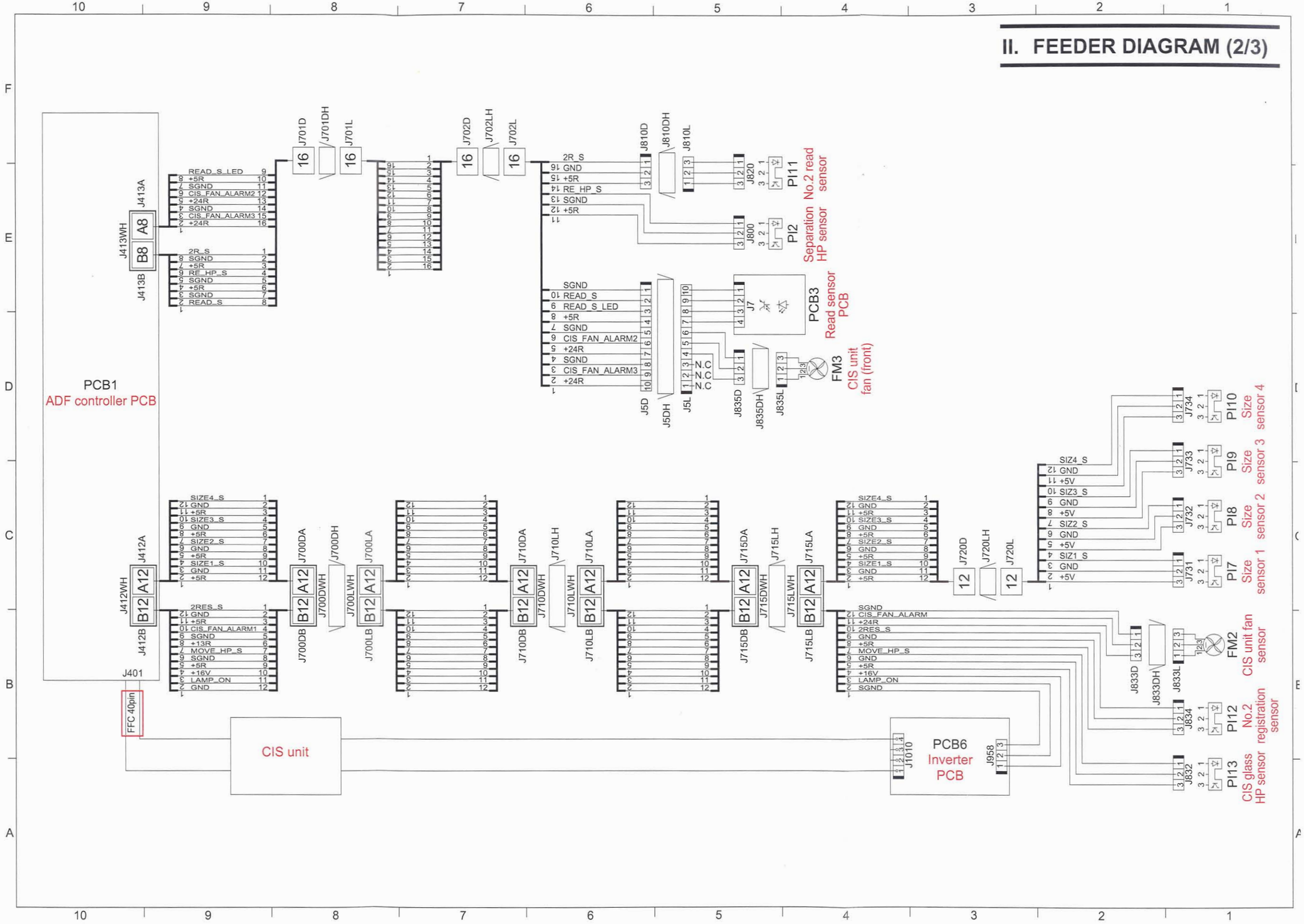
I. GENERAL DIAGRAM



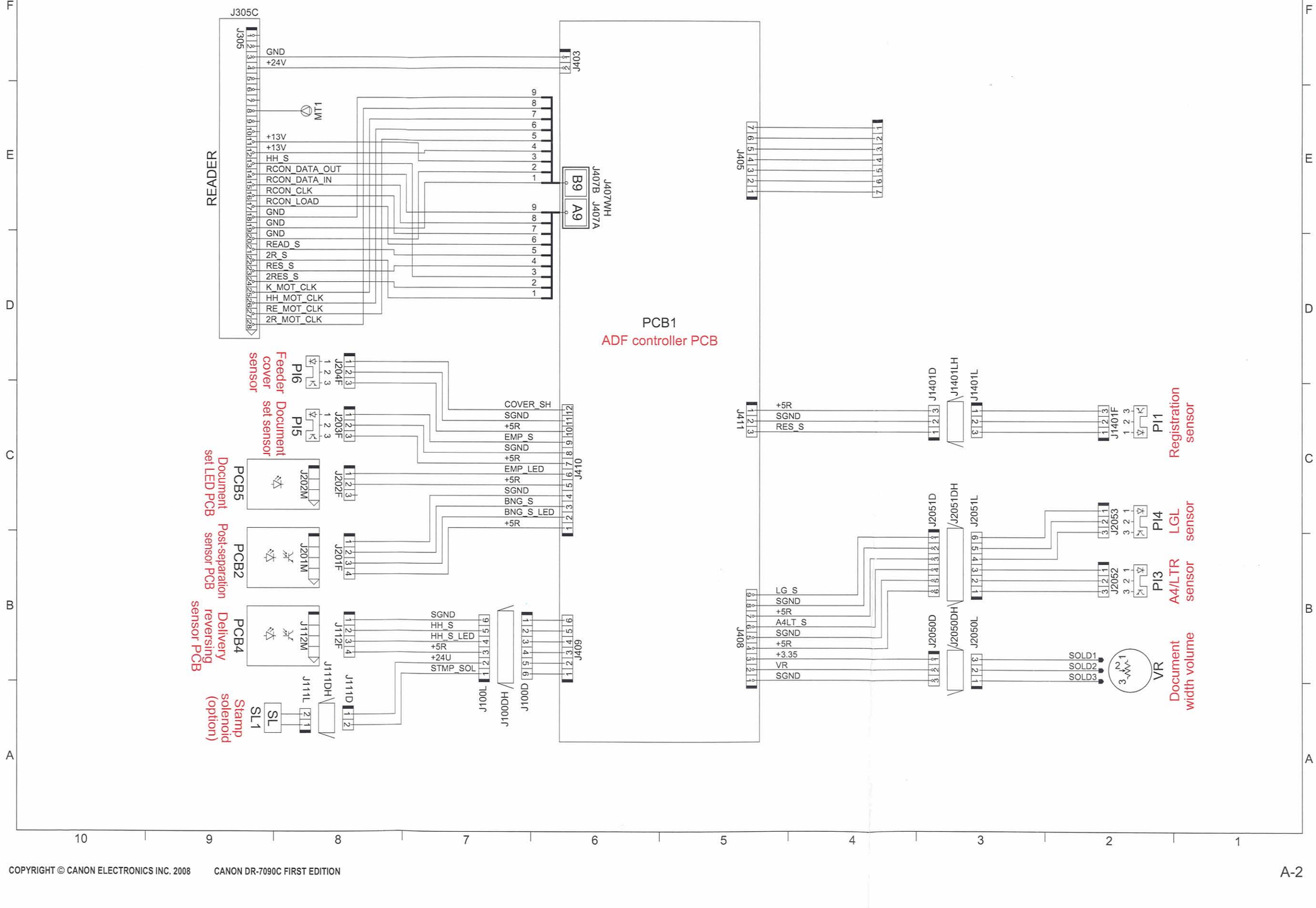
II. FEEDER DIAGRAM (3/3)



II. FEEDER DIAGRAM (2/3)

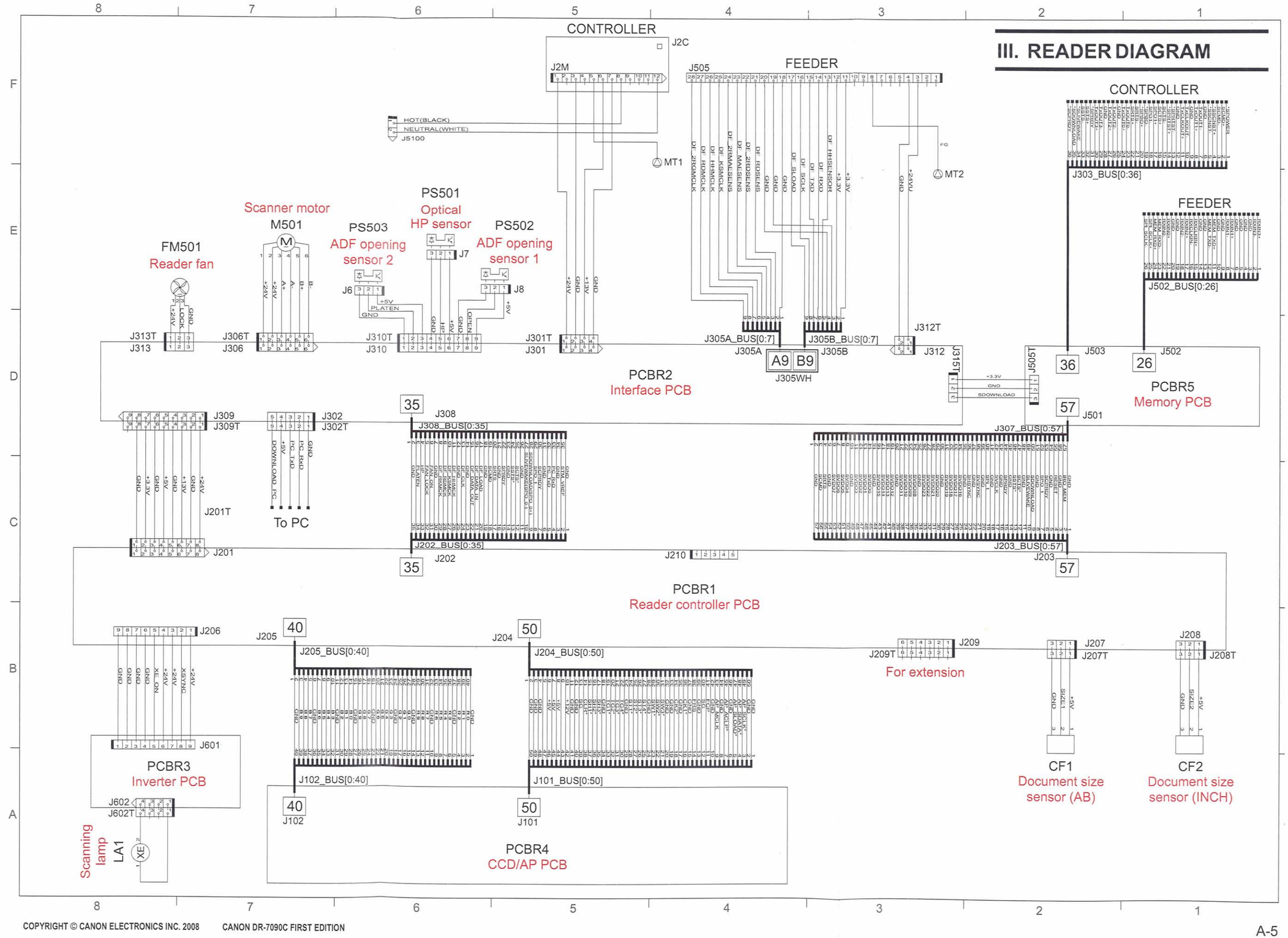


II. FEEDER DIAGRAM (1/3)



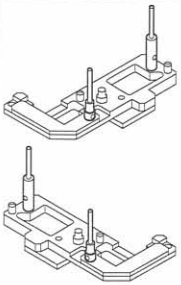
 CANON DR-7090C FIRST EDITION

III. READER DIAGRAM



IV. SPECIAL TOOLS LIST

The special tools required for performing the services of this machine are listed below.

No.	Tool Name	Tool No.	Shape	Rank	Use/Remark
1	Mirror positioning tool (front/rear)	FY9-3047-000		C	Used for adjusting the position of the 1st and 2nd mirror bases during scanner drive wire installation.

References: Rank symbols

A = Tool one of which is owned by each service technician

B = Tool one of which can be owned by a group of approx. 5 persons

C = Tool one of which can be owned by each workshop