Service Manual

Feeder
DADF-P1

Canon

Sep 14 2005

Application

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Caution

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

Symbols Used

This documentation uses the following symbols to indicate special information:

Symbol	Description
	Indicates an item of a non-specific nature, possibly classified as Note, Caution, or Warning.
	Indicates an item requiring care to avoid electric shocks.
	Indicates an item requiring care to avoid combustion (fire).
	Indicates an item prohibiting disassembly to avoid electric shocks or problems.
	Indicates an item requiring disconnection of the power plug from the electric outlet.
 Memo	Indicates an item intended to provide notes assisting the understanding of the topic in question.
 REF.	Indicates an item of reference assisting the understanding of the topic in question.
	Provides a description of a service mode.
	Provides a description of the nature of an error indication.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.
   In the diagrams, ▭▮▮▮▭ represents the path of mechanical drive; where a signal name accompanies the symbol , the arrow ⟶ indicates the direction of the electric signal.
   The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.
2. In the digital circuits, '1'is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low".(The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.
   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.
All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine."

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Chapter 1 Specifications

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1.1 Product Specifications

1.1.1 Specifications

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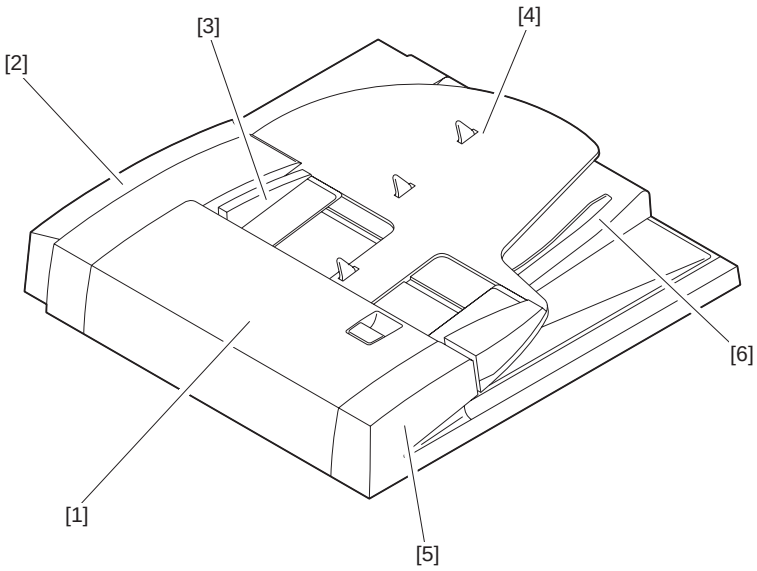
Item		Specification	Remarks
Document pickup method		Automatic pickup and delivery	
Document loading direction		Face-up	
Document loading position		Aligned to center	
Document separation method		Upper separation	
Document weight		Continuous feed: 52-105 g/m2 or less	Document longer than 432 mm: 60-90 g/m2 (single-sided, single feed)
		Single feed: Less than 37-52 g/m2, 105-128 g/m2 or less	
Document size		AB type: B6/A5/A5R/B5R/A4/A4R/B4/A3	SMT, B6: Landscape orientation only
		Inch type: STMT/LTR/LTRR/LGN/11 x 17	
		Document width: 148-297 mm	
		Document length (longitudinal) 128-432 <<1000>> mm	The document with the length indicated in << >> must be held by the operator.
Document tray capacity		S-size: 50 sheets (S-size: A4, A4R, B5, B5R, A5, A5R, B6, LTR, LTRR, STMT)	(80 g/m2 paper)
		L-size: 25 sheets (L-size: A3, 11 x 17, B4, LGL)	
		Document heavier than 80 g/m2: Weight equivalent	
		Folded document: 10 mm or less in height	
Document read method		Stream reading	
Document processing mode		- Single-sided document processing - Double-sided document processing	
Document size recognition		Detected by photo interrupter on pickup tray	Longitudinal: Two photo interrupters Lateral: Two photo interrupters
Jam recovery function		Not supported	
Completion stamp function		Supported	
Mixed document function		Same types of paper can be mixed.	Mixing of same type of paper: 52-105 g/m2 or less (equivalent to that in continuous feed mode) Mixing of different types of paper: 64-81.4 g/m2
		Different types of paper can be mixed.	
		Examples of mixing of different types of paper	
		AB type: A3/B4, A4/B5, B4/A4R, B5/A5	
Book document		Ready (The thickness of the book document must not exceed 50 mm.)	
Document feed speed		100% read: 118 mm/s	Speed range: 26.22 to 236 mm/s
Document processing speed (A4, LTR)		Single-sided: 20 ipm	Document processing speed can be varied.
Power supply		Power system: 24 VDC ±5% Logic system: 13 VDC ±3%	Supplied from host machine
Weight		Approx. 7.0 kg	
Dimensions		565 (W) x 489.4 (D) x 122 (H) mm	
Operating environment	Temperature range	Same as that of host machine.	
	Humidity range	Same as that of host machine.	

1.2 Names of Parts

1.2.1 External View

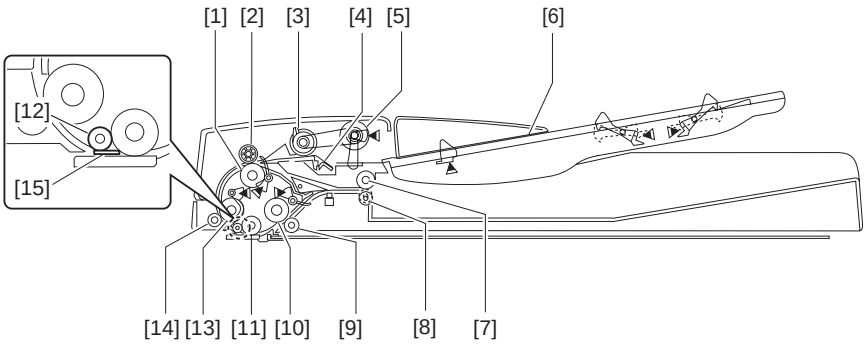


F-1-1

T-1-2

[1] Feeder cover	[4] Document pickup tray
[2] Rear cover	[5] Front cover
[3] Slide guide	[6] Document delivery tray

1.2.2 Cross-section



F-1-2

[1] Lower registration roller
[2] Upper registration roller
[3] Separation roller
[4] Separation pad
[5] Pickup roller
[6] Document supply tray
[7] Upper delivery reversal roller
[8] Lower delivery reversal roller
[9] Read roller 2 (lower)
[10] Read roller 2 (upper)
[11] Platen roller
[12] Read roller
[13] Read roller 1 (upper)
[14] Read roller 1 (lower)
[15] White sheet

Chapter 2 Functions

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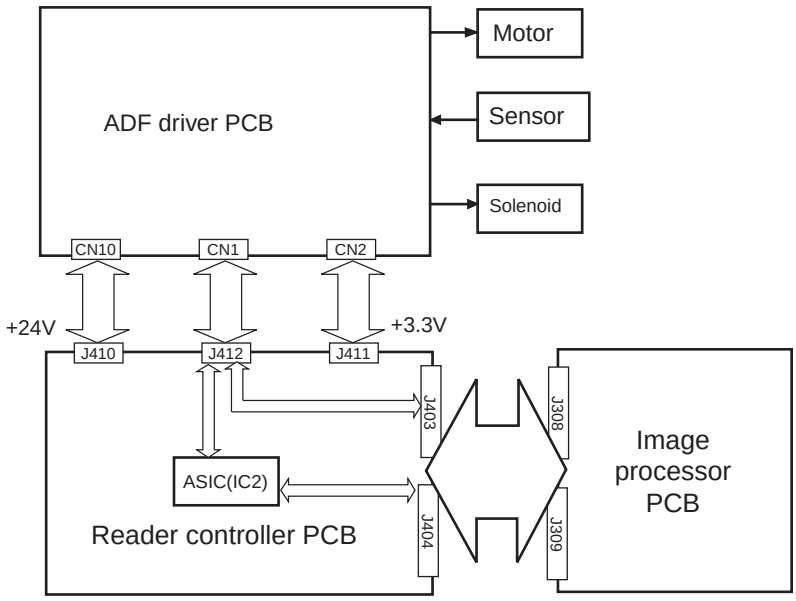
2.1 Basic Construction

2.1.1 Outline of Electric Circuit

Electric circuits of this machine are controlled by the reader controller PCB and image processor PCB. The ASICs on the reader controller PCB and image processor PCB detect the signals received from the host machine to output the signals that drive DC loads such as motors and solenoids at the predetermined timings. The reader controller PCB and image processor PCB do not have a memory area; data (service mode, etc.) is stored in the image processor PCB.



F-2-1

2.2 Basic Operation

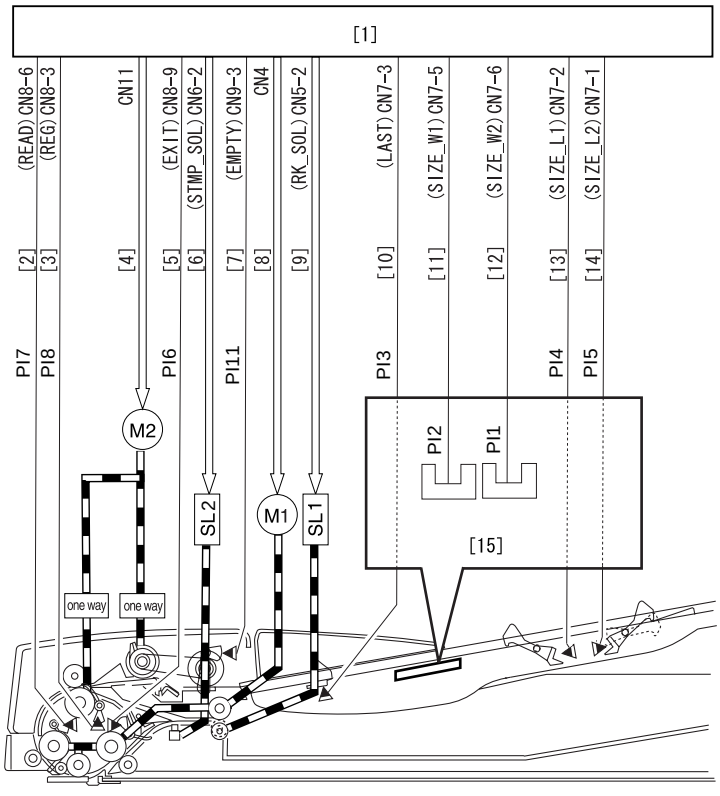
2.2.1 Drive Mechanism and Signals

This machine is a document feeder exclusively for stream reading.
This machine uses two motors to pick up and feed document paper.

T-2-1

Name (symbol)	Function
Feed motor (M1)	Feeds documents.
Pickup motor (M2)	Separates and feeds documents.

The drive mechanism and signals are shown below.



F-2-2

[1] ADF driver PCB
[2] Document detection signal
[3] Document detection signal
[4] Pickup motor drive signal
[5] Document placement signal
[6] Stamp solenoid drive signal
[7] Document placement signal
[8] Feed motor drive signal
[9] Roller release solenoid drive signal
[10] Last document detection signal
[11] Paper size (width) identification signal 1
[12] Paper size (width) identification signal 2
[13] Paper size (length) identification signal 1
[14] Paper size (length) identification signal 2
[15] Relay PCB

2.2.2 Outline of Operation Mode

This machine has four operation modes. This machine operates in the operation mode specified by the host machine to perform printing. Operation mode names, brief outline of operations, and associated print modes are given in the following table:

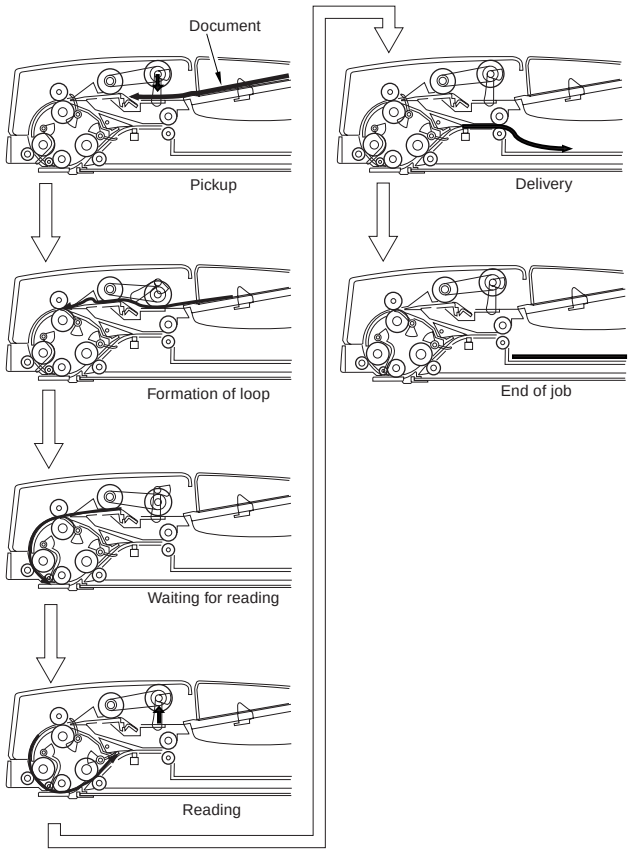
T-2-2

Operation mode name	Outline of operation	Associated print mode
[1] Forward pickup/delivery	Picks up, reads, and then delivers an document.	Single-sided document > Simplex printing Single-sided document > Duplex printing (This operation is performed for documents with the same width/different width.)
[2] Forward feed/reversal delivery	Picks up, reads, reverses, and delivers an document.	Double-sided document > Duplex printing Double-sided document > Simplex printing (This operation is performed for documents with the same width/different width.)

2.2.3 Forward Pickup/Delivery (Single-sided document > Simplex Printing) Operation

The document flows as shown below.

MEMO:
This operation is performed for all single-sided documents irrespective of whether document widths are the same or different.



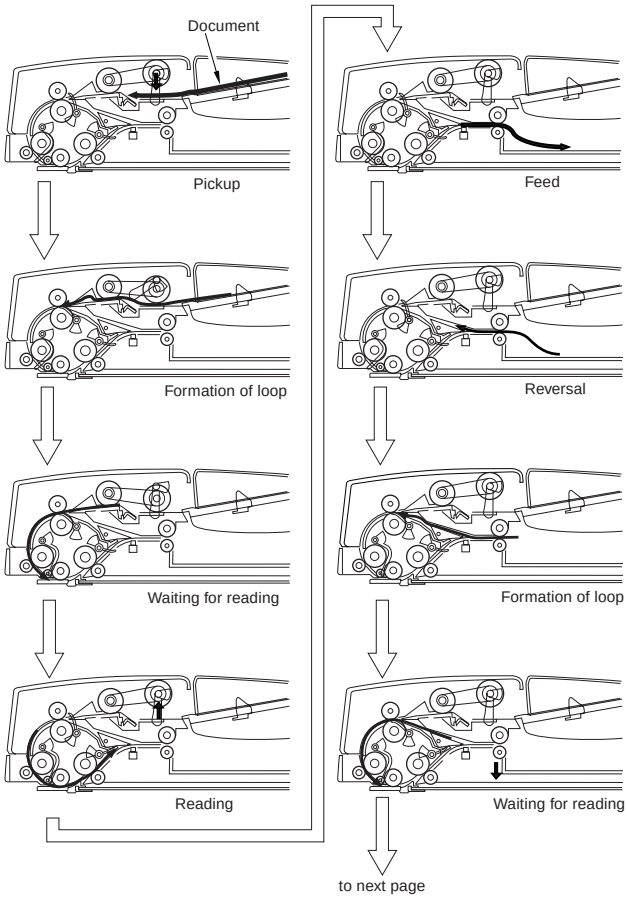
F-2-3

2.2.4 Forward Pickup/Reversal Delivery (Double-sided document > Duplex printing) Operation

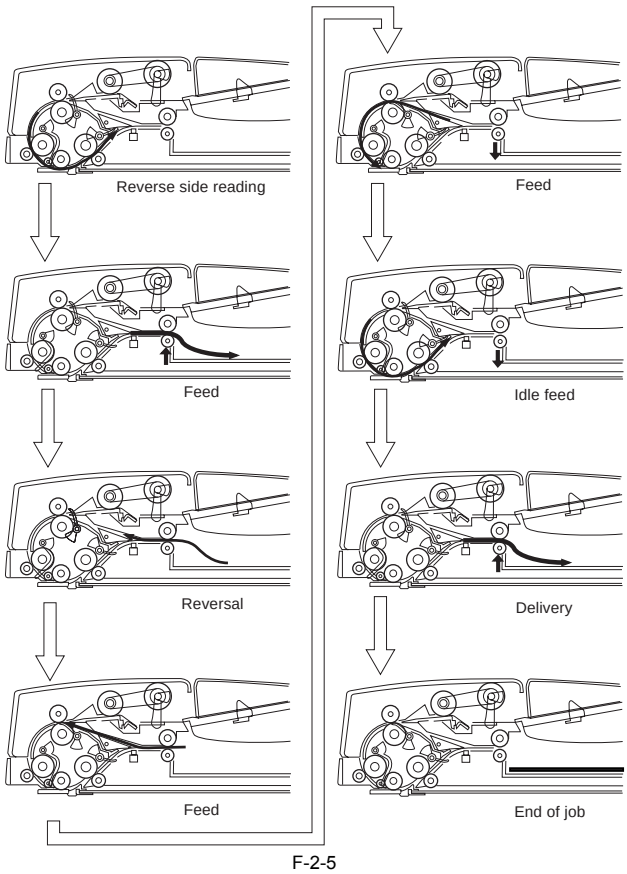
The document flow is shown below.

MEMO:

This operation is performed for all double-sided documents irrespective of whether document widths are the same or different.



F-2-4



F-2-5

2.3 Document Detection

2.3.1 Outline

This machine detects an document using either one of the two methods depending on the print mode.
- Normal print mode (other than mixed size print mode and banner paper mode)
- Mixed size print mode and banner paper mode

a. Normal print mode (other than mixed size print mode and banner paper mode)
In the normal print mode, the following four document detection functions are used:

T-2-3

Function	Description	Sensor used (symbol)
Document presence/ absence detection	Detects whether there is an document on the document pickup tray.	Document set sensor (PI11)
Last document detection	Detects whether the document being picked up is the last one.	Last document detection sensor (PI3)
Initial document size detection		
- Longitudinal direction	Detects the length of the document placed on the document pickup tray.	Document length sensor 1/2 (PI4/ PI5)
- Lateral direction	Detects the width of the document placed on the document pickup tray.	Document width sensor 1/2 (PI2/ PI1)

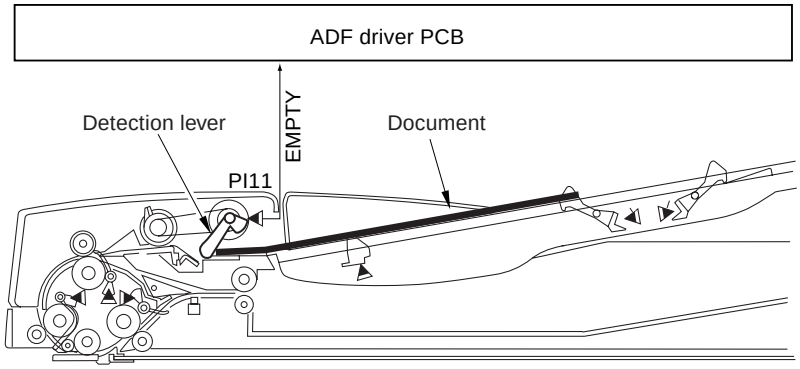
b. Mixed size print mode and banner paper mode
In the mixed size print mode and banner paper mode, the following three document detection functions are used:

T-2-4

Function	Description	Sensor used (symbol)
Document presence/ absence detection	Detects whether there is a document on the document pickup tray.	Document set sensor (PI11)
Last document detection	Detects whether the document being picked up is the last one.	Last document detection sensor (PI3)
Document length detection	Detects the document length according to the distance from the position where the read sensor (PI7) turns on to the position where the read sensor (I7) turns off.	Read sensor (PI7)

2.3.2 Document Presence/Absence Detection

The Document set sensor (PI11) detects presence/absence of a document on the document tray.
When a document is placed on the document tray, the detection lever moves the light shielding plate to allow light to pass thorough the photo interrupter. Thus, the Document set sensor (PI11) generates an document detection signal (EMPTY) to notify the host machine that an document is placed on the document tray via the ADF drive PCB.



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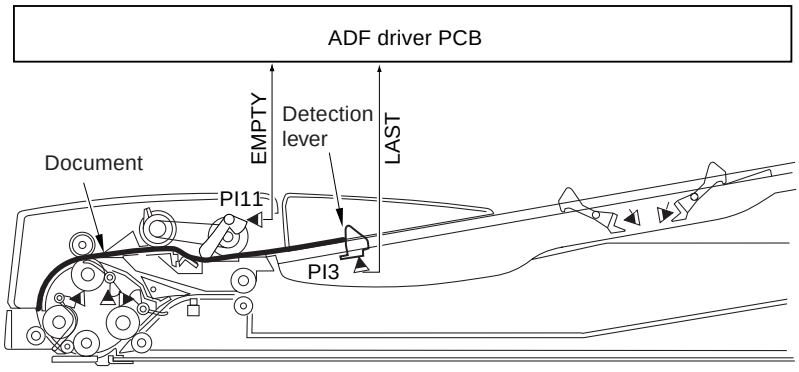
2.3.3 Detection of Last Document

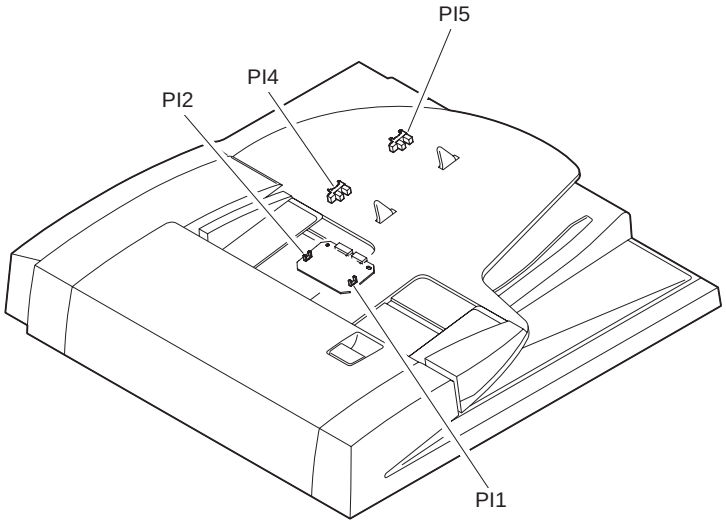
The last document detection sensor (PI3) and Document set sensor (PI11) detect whether the document being picked up is the last one.
When the trailing edge of the last document has moved past the last document detection lever, the detection lever moves the light shielding plate to allow light pass through the photo interrupter. Thus, the last document detection sensor (PI3) generates a last document detection signal (LAST). When the last document has moved past the document sensor (PI11), an document absence signal (EMPTY) is generated to notify the host machine that an document being picked up is the last one via the ADF drive PCB.



F-2-7

2.3.4 Initial Document Size Detection

The document length sensor 1 (PI4) and document length detection sensor 2 (PI5) detect the longitudinal size of the document placed on the document tray, and the document width sensor 1 (PI2) and document width sensor 2 (PI1) detect the lateral size of the document.
When an document is placed on the document tray, detection levers of the two document length sensors move the light shielding plate to allow light pass through the photo interrupter.
If the slide guide is adjusted to the document size, the two document width sensors mounted inside the document tray are shielded by the light shielding plate mounted at the bottom of the slide guide.
Document sizes are determined by the combination of the ON/OFF states of document length sensors and the combination of ON/OFF states of document width sensors.



F-2-8

The following tables show the relationships among document width sensors, document length sensors, and document sizes.
1. AB type

T-2-5

		Sensor name			
		Document width sensor 1	**Document width sensor 2**	**Document length sensor 1**	**Document length sensor 2**
Size	A3	ON	ON	ON	ON
	B4	OFF	ON	ON	ON
	A4R	OFF	OFF	ON	OFF
	B5R	ON	OFF	ON	OFF
	A4	ON	ON	OFF	OFF
	A5R	ON	OFF	OFF	OFF
	B5	OFF	ON	OFF	OFF
	A5	OFF	OFF	OFF	OFF
	B6	ON	OFF	OFF	OFF

2. Inch type

T-2-6

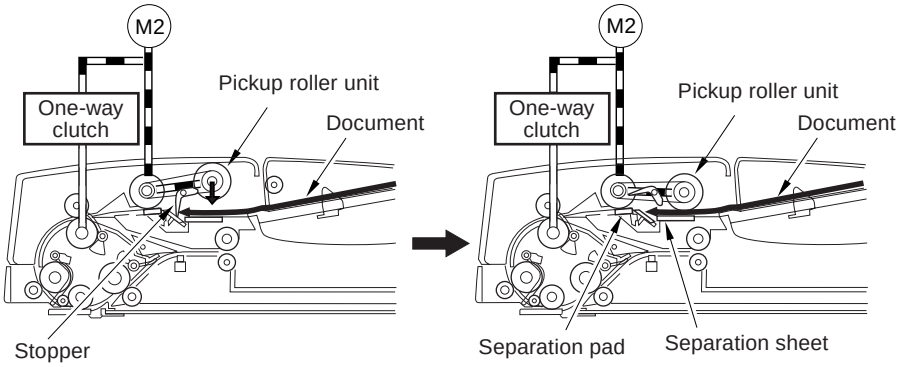
		Sensor name			
		Document width sensor 1	Document width sensor 2	Document length sensor 1	Document length sensor 2
Size	11 x 17	-	ON	ON	ON
	LGL	-	OFF	ON	ON
	LTRR	-	OFF	ON	OFF
	LTR	-	ON	OFF	OFF
	STMT	-	OFF	OFF	OFF

2.4 Document Pickup/Separation

2.4.1 Basic Pickup Operation

With an document placed on the document tray, pressing the print start key will picks up the document in the following manner.

a. Pickup operation
When the pickup motor (M2) turns in reverse direction, the pickup roller unit lowers to rotate the pickup rollers, thus feeding the document. The stopper rises in conjunction with the pickup roller unit. The separation sheet and pad are used to prevent multiple sheets from being fed together.



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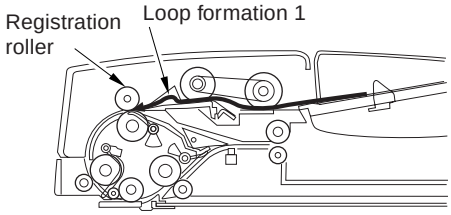
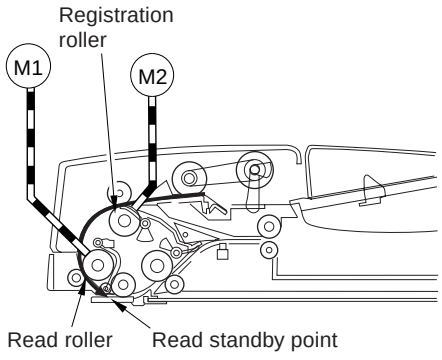
b. Formation of loop
While the pickup motor (M2) is turning in the reverse direction, the document is fed against the registration roller that is stopped by the idling one-way clutch to form a loop, thus preventing the document from skewing.



F-2-10

c. Feed
The pickup motor (M2) and feed motor (M1) turns in the forward direction to raise the paper pickup roller unit, feeding the document to the read standby point with the registration roller and read roller. When the document reaches the read standby point, the pickup motor (M2) and feed motor (M1) stops.



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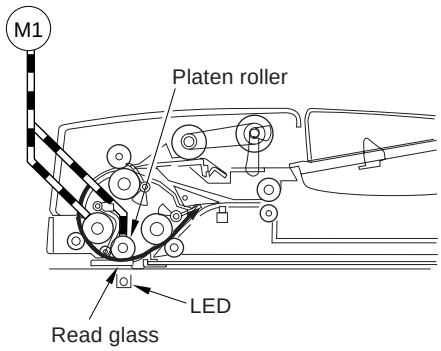
d. Stream reading
When the leading edge of the document reaches the read standby point, an image leading edge signal is sent to the host machine to start stream reading. Stream reading is a scan mode in which the document is moved on the optical system's glass using the platen roller.
The read image is stored in the memory of the host machine.



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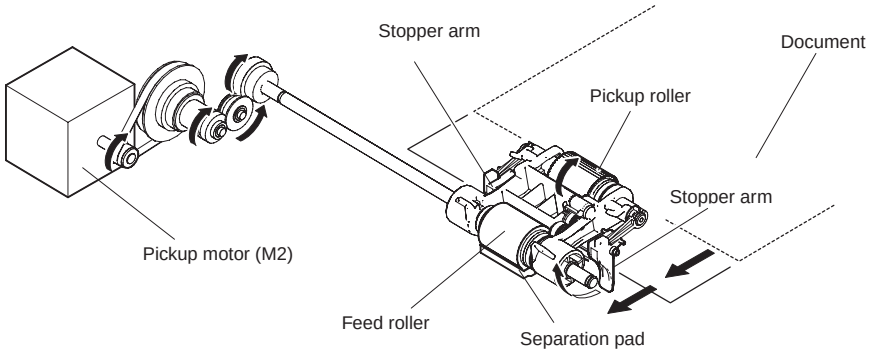
2.4.2 Pickup Unit and Stopper

The pickup unit consists of a pickup roller and separation roller. When the print start key is pressed or an document pickup signal is input, the pickup motor (M2) turns in the reverse direction to lower the pickup unit, turning the pickup roller and separation roller to feed the document. The stopper rises in conjunction with the pickup unit. When the document is picked up, the separation pad and separation plate prevent multiple sheets from being fed together.
When the document is looped at the registration roller, the pickup motor turns in the forward direction to raise the pickup unit, feeding the document with the registration roller. At this time, the separation roller drive shaft driven via the spring one-way clutch stops at the upper limit of the pickup unit and the friction against the document forces the separation roller to rotate with the aid of the one-way clutch.



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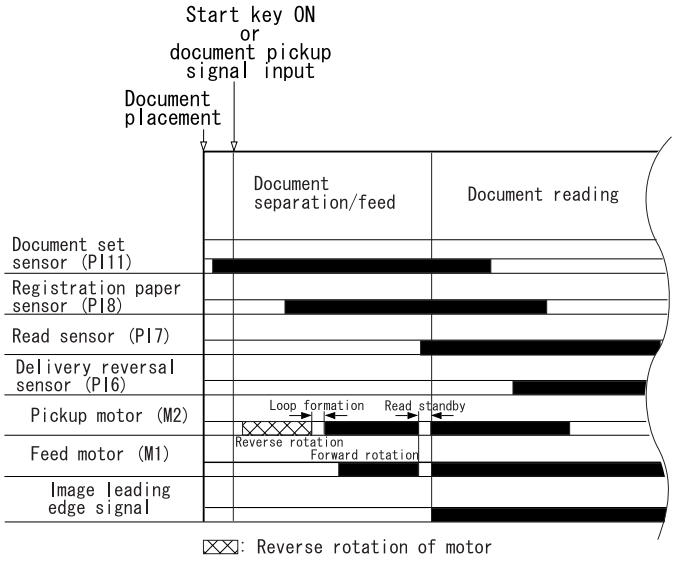
2.4.3 Pickup Timing



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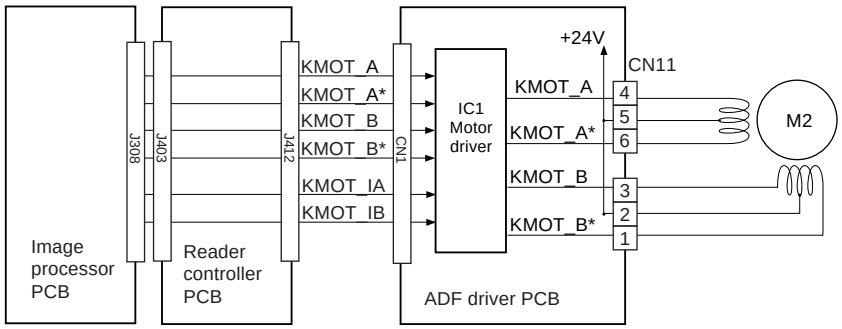
2.4.4 Pickup Motor (M2) Control

The pickup motor (M2) control circuit diagram is shown below. A 2-phase stepping motor is used to feed documents. This circuit mainly performs the following types of control:
- Motor ON/OFF control
- Motor rotation direction control
- Motor speed control



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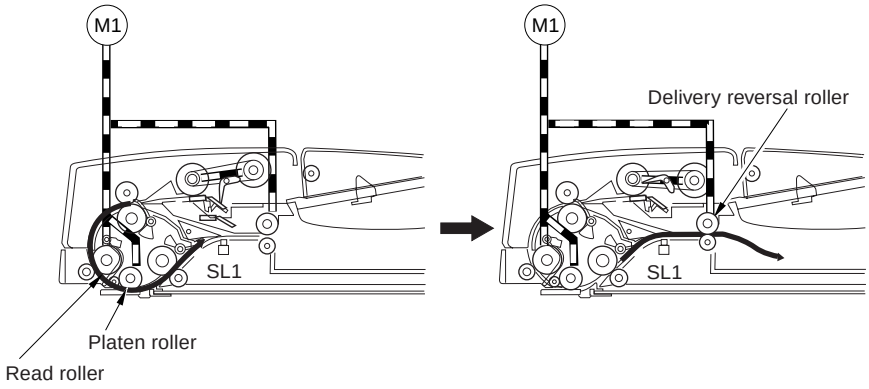
The pickup motor of the ADF is controlled by the image processor PCB. The image processor PCB outputs drive pulses to the pickup motor according to the selected print mode (magnification, operation mode, timing, etc.).
The pickup motor is a stepping motor. Its rotation direction and speed are controlled by changing the order of output pulses (KMOT_A, KMOT_A*, KMOT_B, and KMOT_B*) and frequency.

2.5 Document Reversing

2.5.1 Basic Operation

There are two types of document reversal operation: one that is performed from the top to the reverse side of the document and the other that is performed from the reverse side to the top of the document. Since the basic operation methods are identical, only the reversal operation performed from the reverse side to the top is discussed below.

a. Top side pickup
The feed motor (M1) drives the read roller and platen roller to scan the surface of the document. After completion of reading, the delivery reversal roller feeds the document to the delivery unit.



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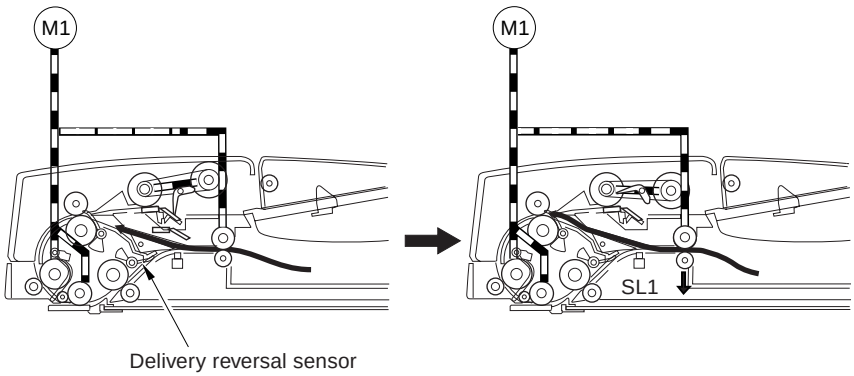
b. Reversal/feed 1
When the trailing edge of the fed document moves past the delivery reversal sensor (PI6), the feed motor (M1) stops. Immediately after this, the feed motor start turning in the reverse direction to feed the document to the registration roller, then stops. At this time, the roller release solenoid (SL1) turns on to release the pressure of the delivery reversal roller.



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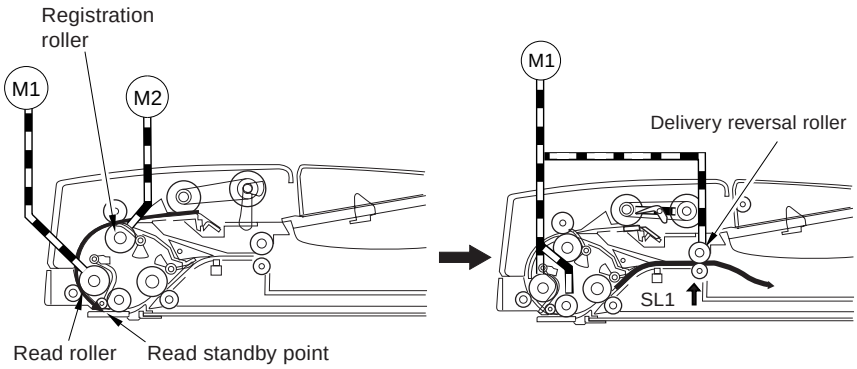
c. Reversal/feed 2
The feed motor (M1) turns to feed the document to the read standby point and stops.
Thus, the document has been reversed. Next, the document is picked up again and read, turning off the roller separation solenoid. After this, the document is reversed again, fed, and delivered.



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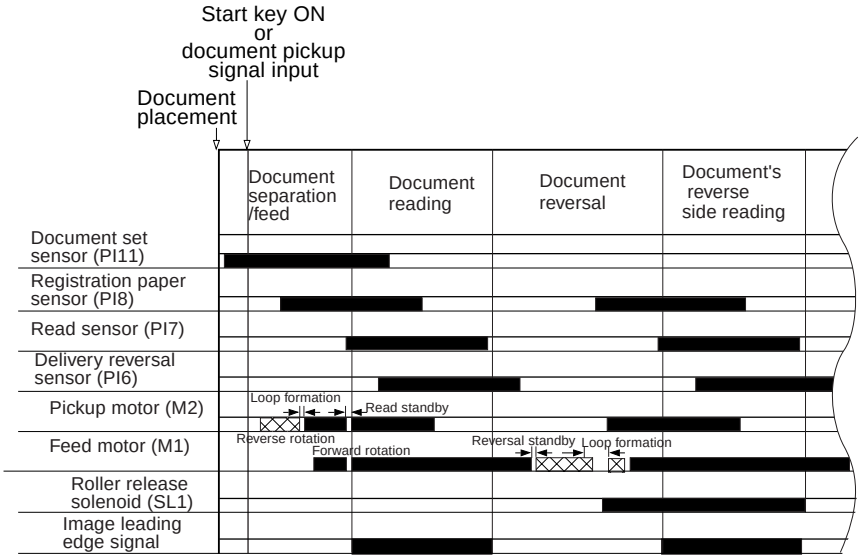
2.5.2 Operation Sequence



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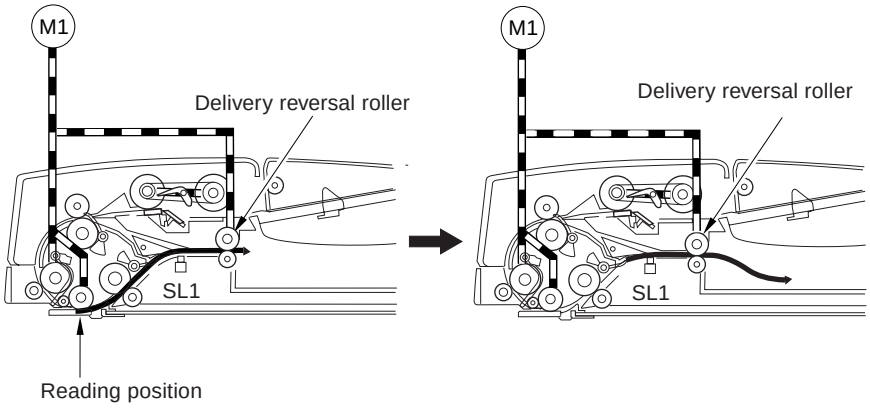
2.6 Document Feeding/Delivery

2.6.1 Basic Operation

After stream reading on the document glass, the document is delivered to the document delivery unit as discussed below.

a. Document feed/delivery
After moving past the reading position, the document is fed by the delivery reversal roller driven by the feed motor (M1) turning in the forward direction. The deliver reversal motor is normally pressurized; the roller release solenoid turns on only when the document is reversed for duplex printing.



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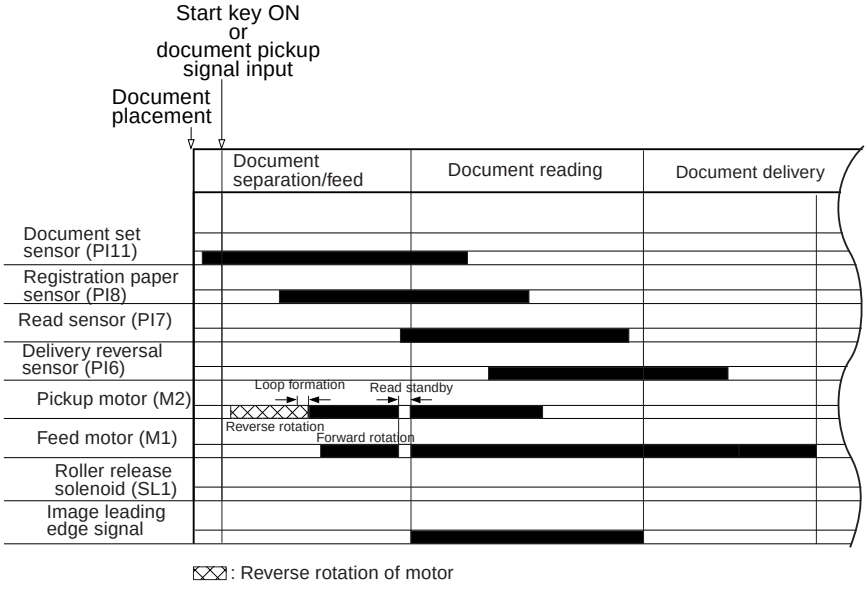
2.6.2 Operation Sequence

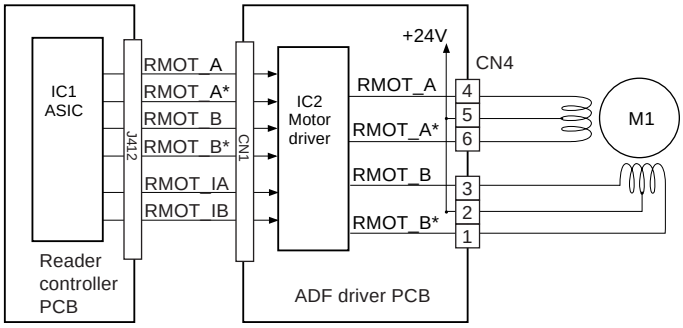


F-2-21

2.6.3 Feed Motor (M1) Control

The feed motor (M1) control circuit diagram is shown below. The feed motor (M1) is a 2-phase stepping motor. This circuit mainly performs the following types of control:

- Motor ON/OFF control
- Motor rotation direction control
- Motor speed control



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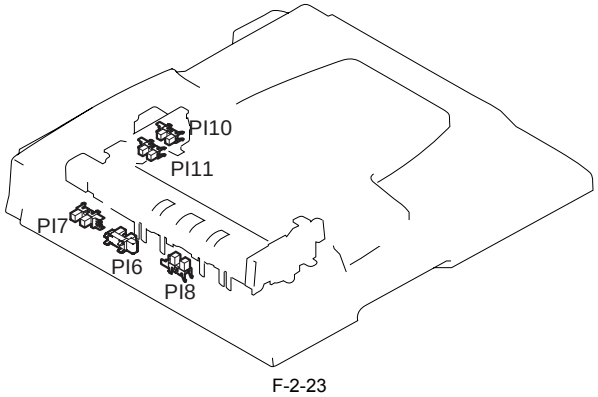
The feed motor of the ADF is controlled by the ASIC (IC1) on the reader controller PCB. The ASIC (IC1) on the reader controller PCB outputs drive pulses to the feed motor according to the selected print mode (magnification, operation mode, timing, etc.).
The feed motor is a stepping motor. Its rotation direction and speed are controlled by changing the order of output pulses (RMOT_A, RMOT_A*, RMOT_B, and RMOT_B*) and frequency.

2.7 Detecting Jams

2.7.1 Jam

This machine detects a jam using the sensors shown below. Document jam check timings are stored in the ROM on the image processor PCB to check whether a jam has occurred according to presence/absence of the document at the relevant sensor position.
When a jam occurs, the host machine stores its code.
Jam codes can be checked by outputting a jam error log report in the service mode of the host machine.



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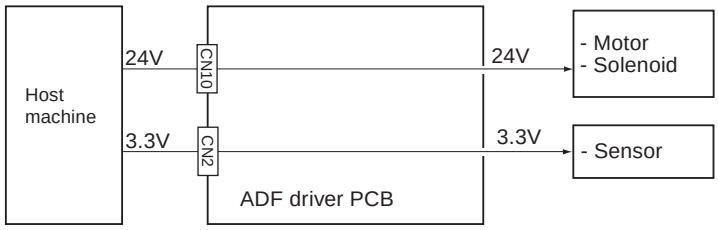
PI6: Delivery reversal sensor
PI7: Read sensor
PI8: Registration paper sensor
PI10: Cover open/close sensor
PI11: Document set sensor

2.8 Power Supply

2.8.1 Power Supply

The power supply lines are shown below.
This machine is powered via two power supply lines (24 V and 3.3 V) from the host machine.



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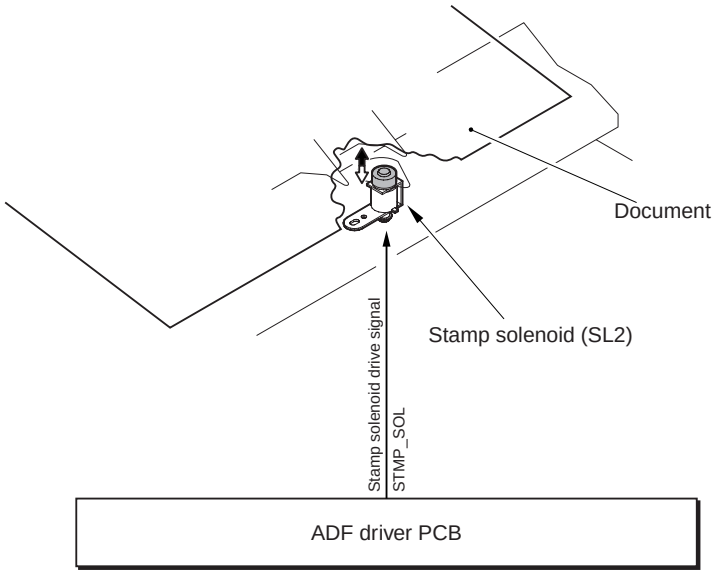
2.9 Stamp Operation

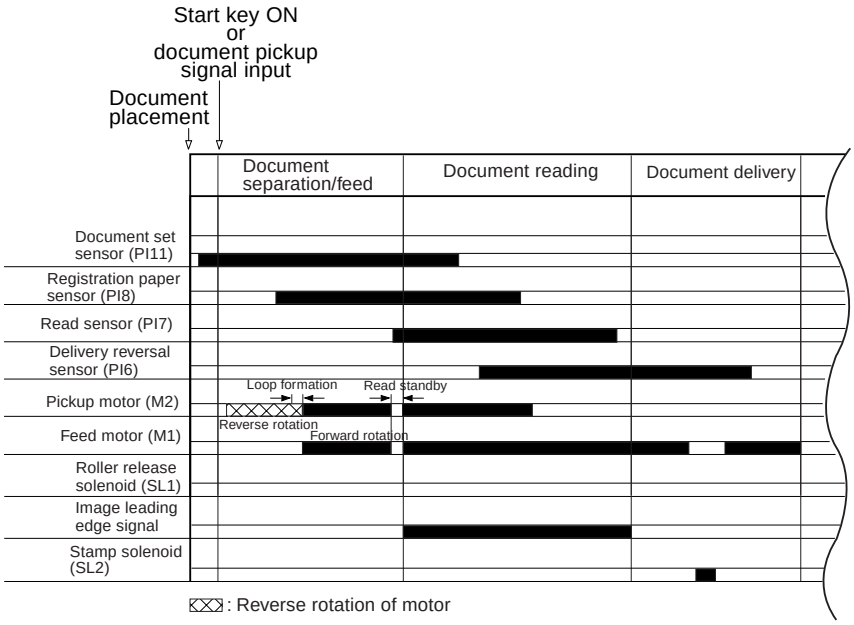
2.9.1 Outline

If the stamp function is selected in the FAX mode of the host machine, the stamp solenoid drive signal (STMP_SOL) from the ADF driver PCB drives the stamp solenoid (SL2) to affix a stamp indicating that the document has been read or sent.



F-2-25

In the stamp mode, the feed speed is set to 118 mm/s after completion of document reading. The document stops when it has been fed 21.45 mm since detection of tuning off of the delivery reversal sensor, where the stamp is printed. The solenoid drive time is 50 ms, and the stamp is affixed at the position which is about 10 mm away from the trailing edge of paper.



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MEMO:
Fresh out of the package, the stamp cartridge is good for about 7,000 documents.

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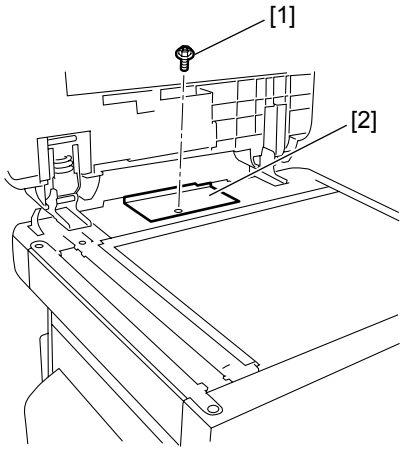
3.1 Removing from the Host Machine

3.1.1 Feeder

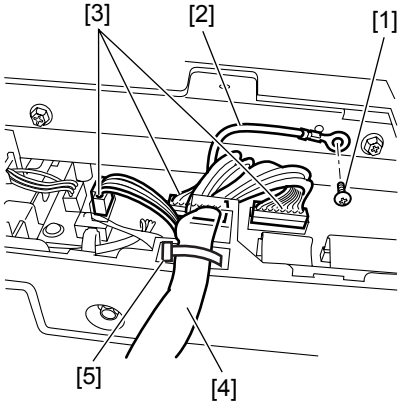
3.1.1.1 Removing from the Host Machine

1) Turn off the main power switch of the host machine.
2) Open the DADF.
3) Remove the screw [1], and then detach the small cover [2].



F-3-1

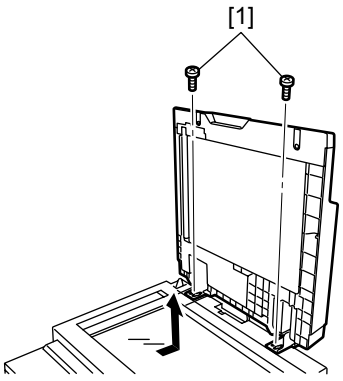
4) Remove the screw [1], and then disconnect the ground cable [2].
5) Disconnect the three connectors [3], and then disconnect the ADF harness [4].



F-3-2

When installing, attach the ADF harness [4] so that the cable tie [5] fits in the groove of the reader rear cover.

6) Remove the two stepped screws [1], slide the ADF [2] toward the rear, and lift it to detach.



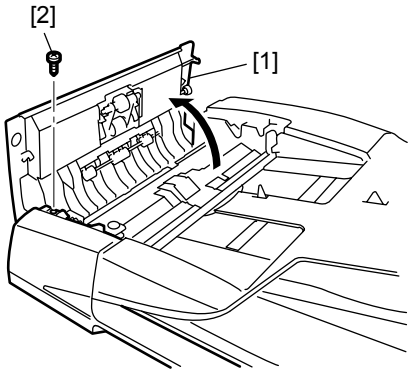
F-3-3

3.2 External Covers

3.2.1 Front Cover

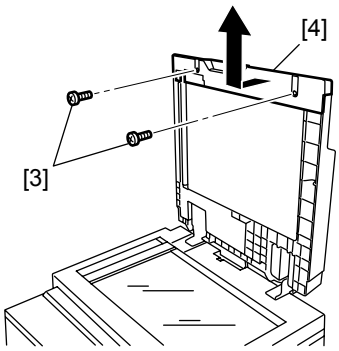
3.2.1.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-4

2) Remove the two screws [3], and then detach the front cover [4].

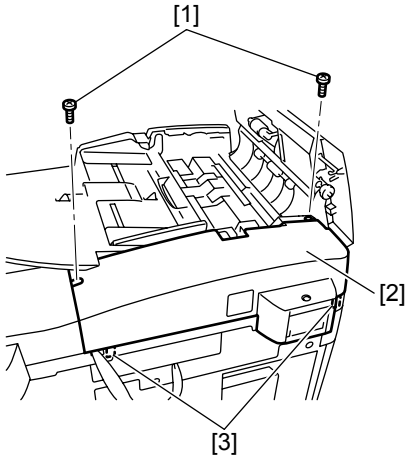


F-3-5

3.2.2 Rear Cover

3.2.2.1 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].



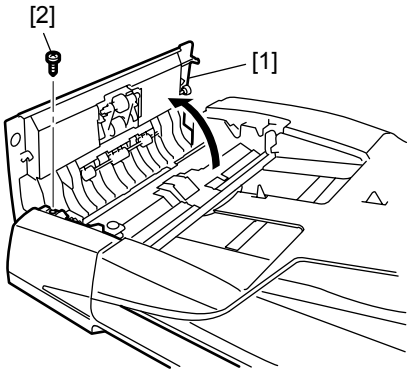
F-3-6

Remove the rear cover with the two claws [3] released.

3.2.3 Feeder Cover

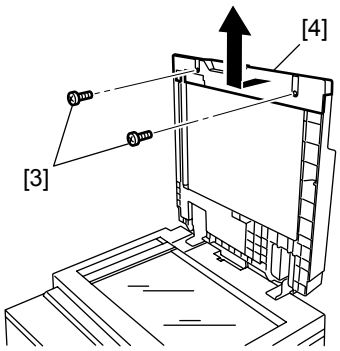
3.2.3.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-7

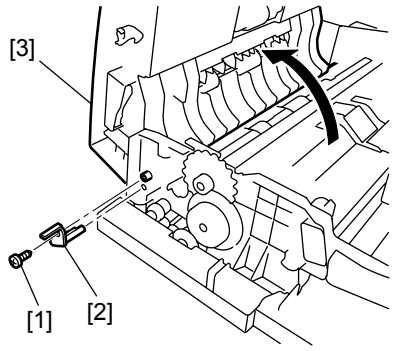
2) Remove the two screws [3], and then detach the front cover [4].



F-3-8

3.2.3.2 Removing the Feeder Cover

1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



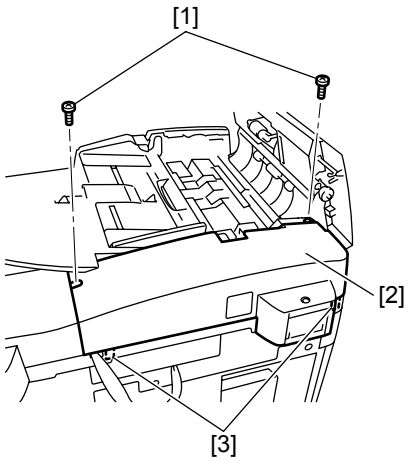
F-3-9

3.3 Drive System

3.3.1 Pickup Motor

3.3.1.1 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

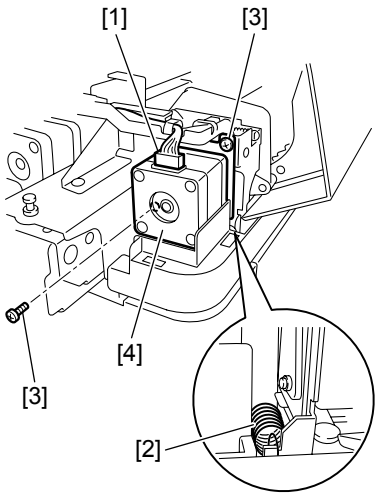


F-3-10

⚠ Remove the rear cover with the two claws [3] released.

3.3.1.2 Removing the Pickup Motor

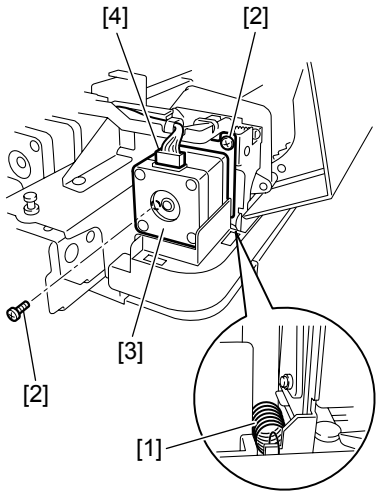
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-11

3.3.1.3 Installing the Pickup Motor

1) Attach the tension spring [1] to the adjusting plate and motor base, and then install the motor in such a manner that the motor pulley and the timing belt are engaged.
2) Install the pickup motor [3] together with the adjusting plate using two screws [2].
3) Connect the connector [4].

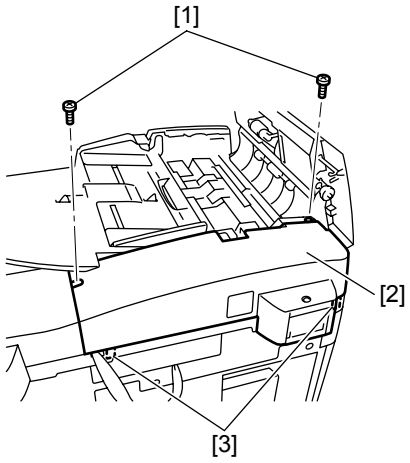


F-3-12

3.3.2 Feed Motor

3.3.2.1 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

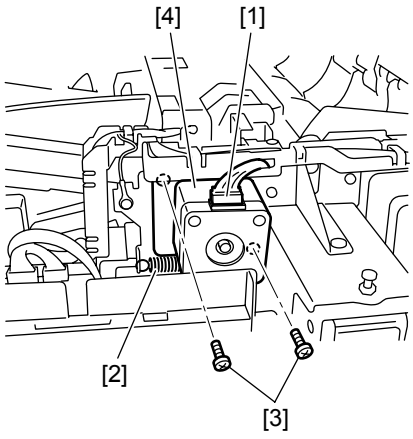


F-3-13

⚠Remove the rear cover with the two claws [3] released.

3.3.2.2 Removing the Feed Motor

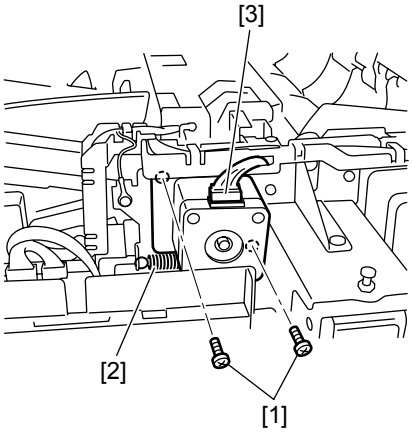
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-14

3.3.2.3 Installing the Feed Motor

1) Install the feed motor in such a manner that the motor pulley is engaged with the timing belt, and then tighten two screws [1] temporarily.
2) Attach the tension spring [2] to the adjusting plate and motor base, and then securely tighten the screws tightened temporarily in step 1.
3) Connect the connector [3].

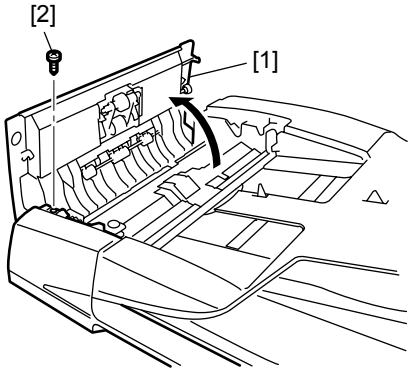


F-3-15

3.3.3 Timing Belt/Pulley

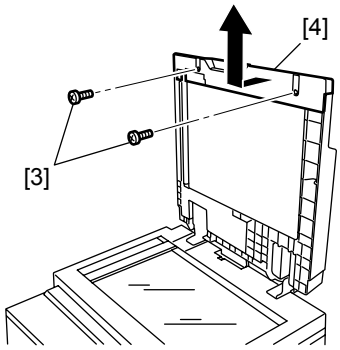
3.3.3.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-16

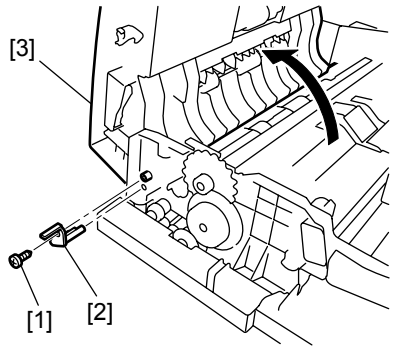
2) Remove the two screws [3], and then detach the front cover [4].



F-3-17

3.3.3.2 Removing the Feeder Cover

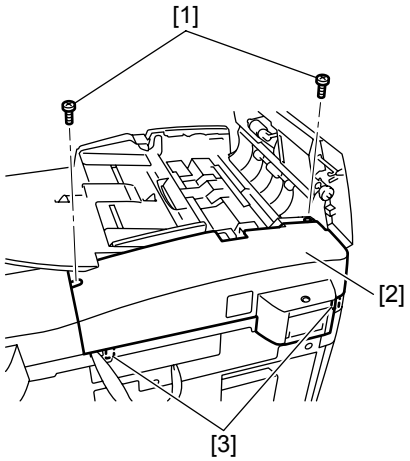
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-18

3.3.3.3 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

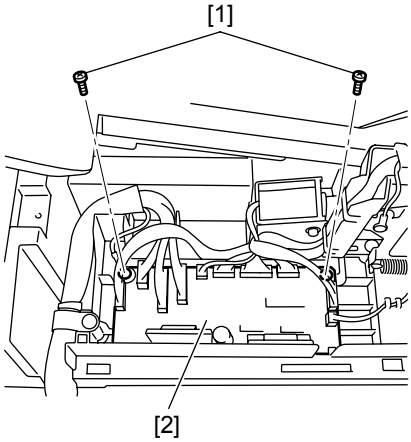


F-3-19

⚠Remove the rear cover with the two claws [3] released.

3.3.3.4 Removing the ADF Driver PCB

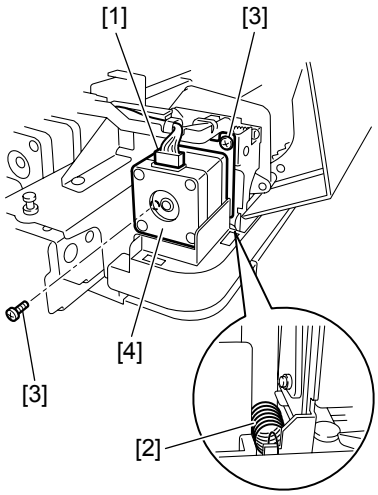
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-20

3.3.3.5 Removing the Pickup Motor

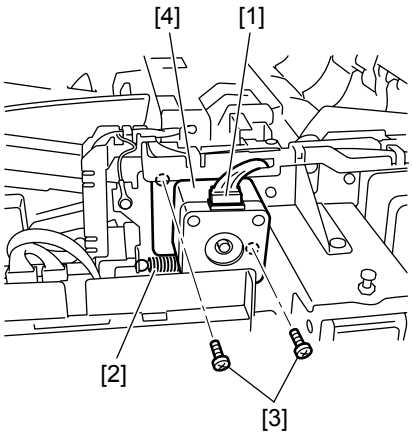
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-21

3.3.3.6 Removing the Feed Motor

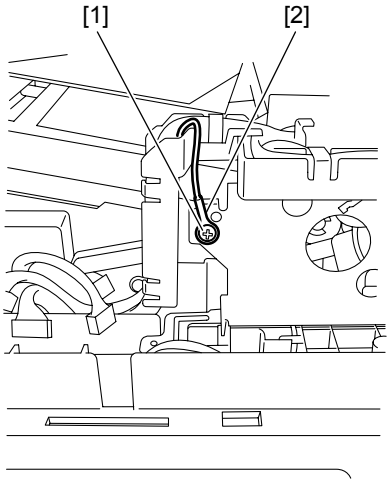
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-22

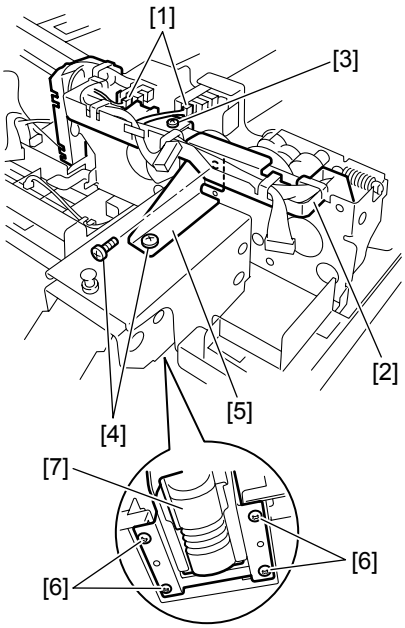
3.3.3.7 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



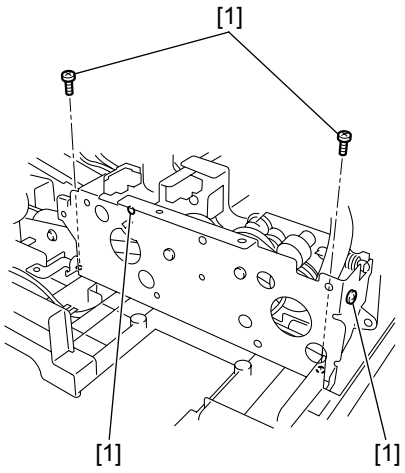
F-3-23

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



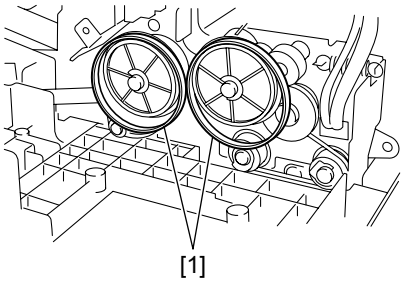
F-3-24

7) Remove the four screws [1], and then remove the metal plate.



F-3-25

8) Remove the timing belt [1].



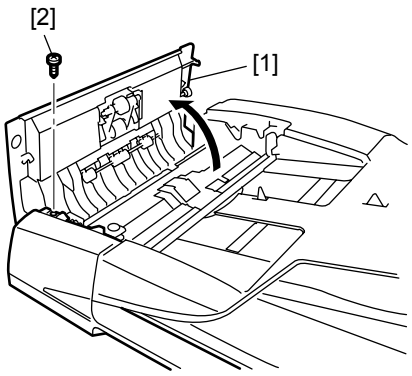
F-3-26

3.4 Document Feeding System

3.4.1 Pickup Roller Unit

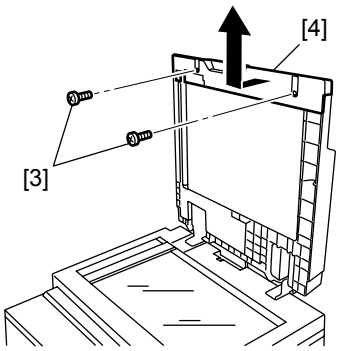
3.4.1.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-27

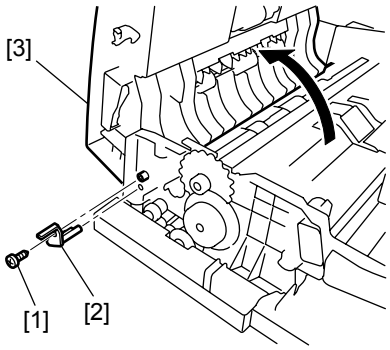
2) Remove the two screws [3], and then detach the front cover [4].



F-3-28

3.4.1.2 Removing the Feeder Cover

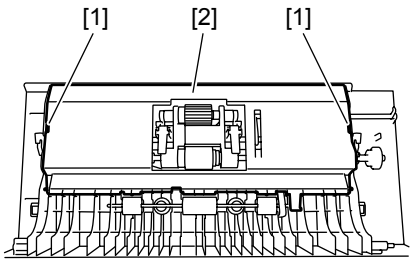
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-29

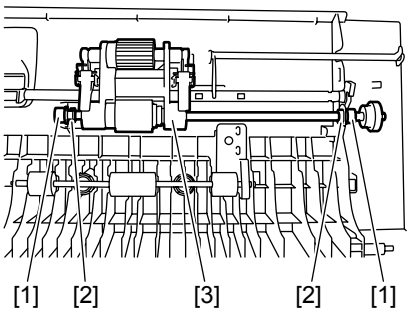
3.4.1.3 Removing the Pickup Roller Unit

1) Release the two hooks [1], and then detach the inner cover [2] of the feeder cover.



F-3-30

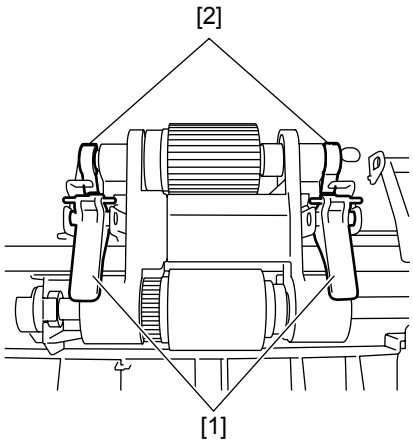
2) Remove the two resin rings [1] and the two bearings [2], and then remove the pickup roller unit [3].



F-3-31

3.4.1.4 Precaution about Pickup Roller Unit Installation

- Install the pickup roller unit with the stopper arm [1] at the front as shown below.
- Install the pickup roller unit with the stopper [2] at the rear as shown below.

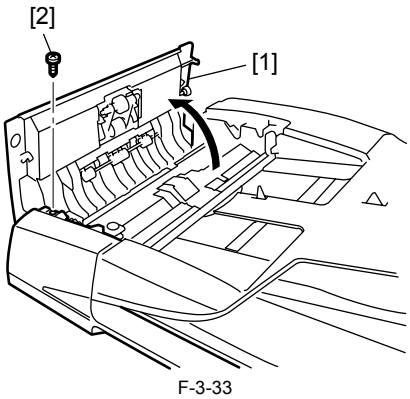


F-3-32

3.4.2 Pickup Roller/Separation Roller

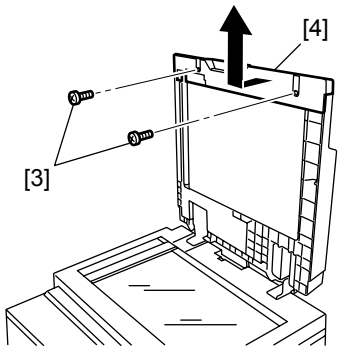
3.4.2.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-33

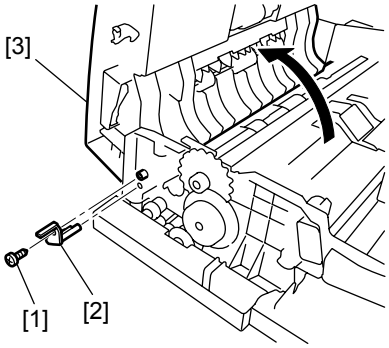
2) Remove the two screws [3], and then detach the front cover [4].



F-3-34

3.4.2.2 Removing the Feeder Cover

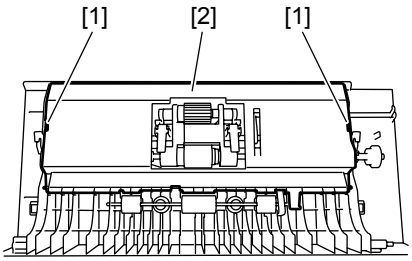
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-35

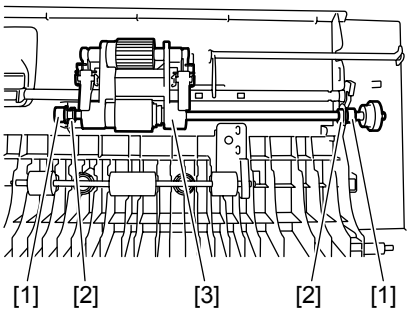
3.4.2.3 Removing the Pickup Roller Unit

1) Release the two hooks [1], and then detach the inner cover [2] of the feeder cover.



F-3-36

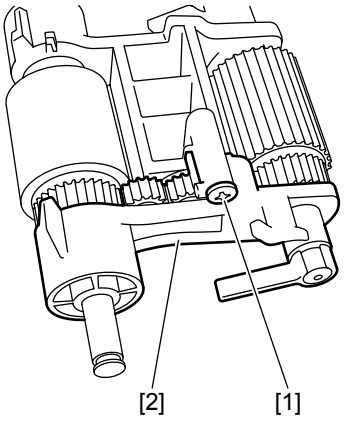
2) Remove the two resin rings [1] and the two bearings [2], and then remove the pickup roller unit [3].



F-3-37

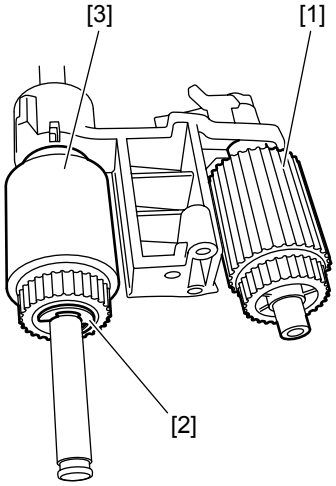
3.4.2.4 Removing the Pickup Roller and Separation Roller

1) Remove the screw [1], and then remove the drive gear [2].



F-3-38

2) Remove the pickup roller [1].
3) Remove the E-ring [2], and then remove the separation roller [3].

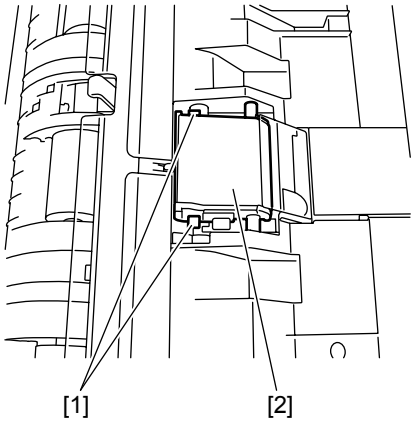


F-3-39

3.4.3 Separation Plate/Separation Pad

3.4.3.1 Removing the Separation Pad

1) Open the feeder cover.
2) Release the two hooks [1], and then remove the separation pad [2].

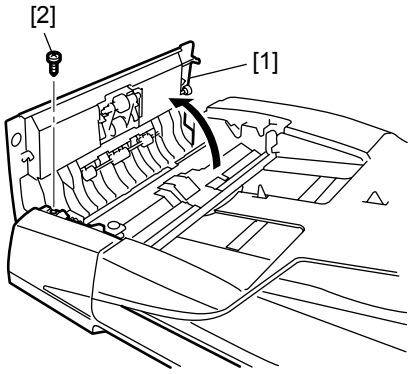


F-3-40

3.4.4 Upper Registration Roller

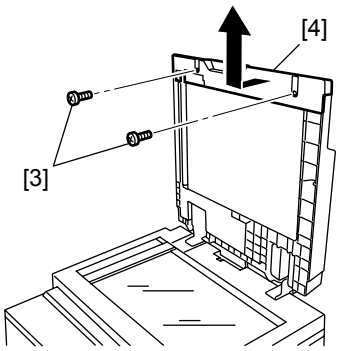
3.4.4.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-41

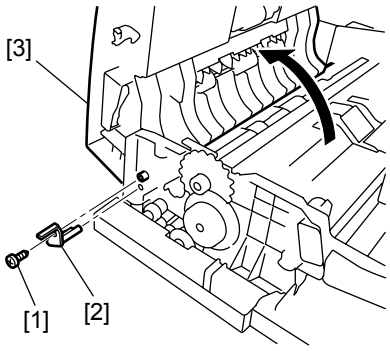
2) Remove the two screws [3], and then detach the front cover [4].



F-3-42

3.4.4.2 Removing the Feeder Cover

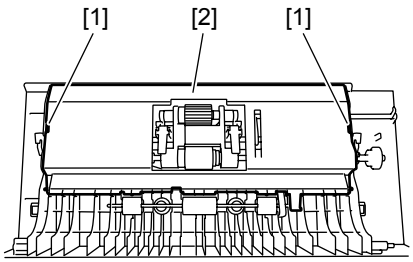
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-43

3.4.4.3 Removing the Upper Registration Roller

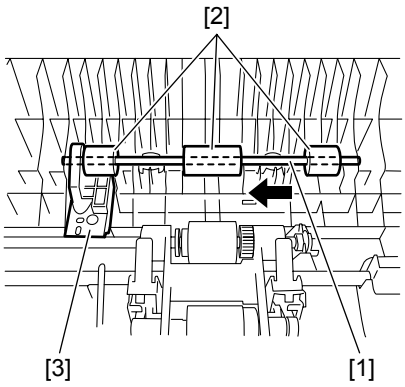
1) Release the two hooks [1], and then detach the inner cover [2] of the feeder cover.



F-3-44

2) Slide the shaft [1] in the direction of the arrow, and then remove the upper registration roller [2].

⚠Do not remove the upper registration roller shaft holder [3] because it was factory-adjusted.

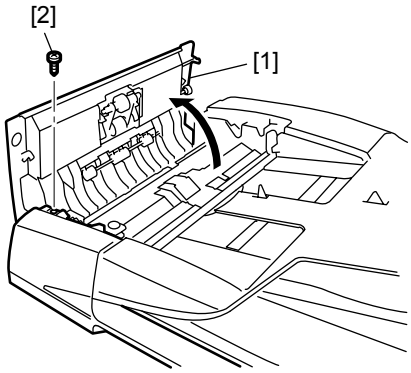


F-3-45

3.4.5 Lower Registration Roller

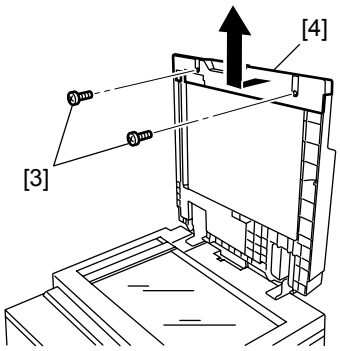
3.4.5.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-46

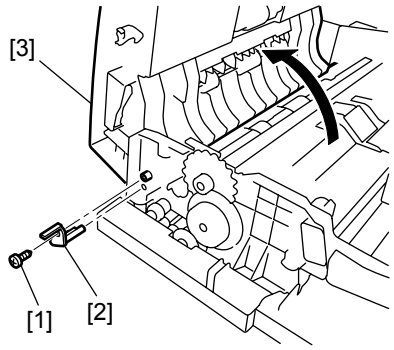
2) Remove the two screws [3], and then detach the front cover [4].



F-3-47

3.4.5.2 Removing the Feeder Cover

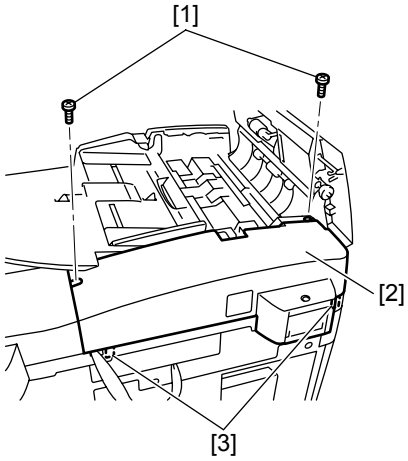
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-48

3.4.5.3 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

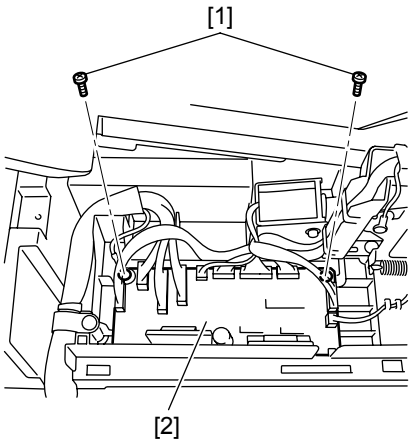


F-3-49

⚠Remove the rear cover with the two claws [3] released.

3.4.5.4 Removing the ADF Driver PCB

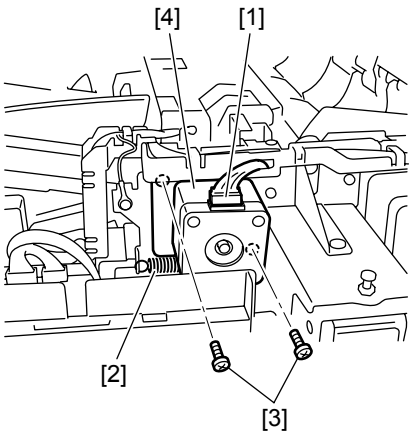
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-50

3.4.5.5 Removing the Feed Motor

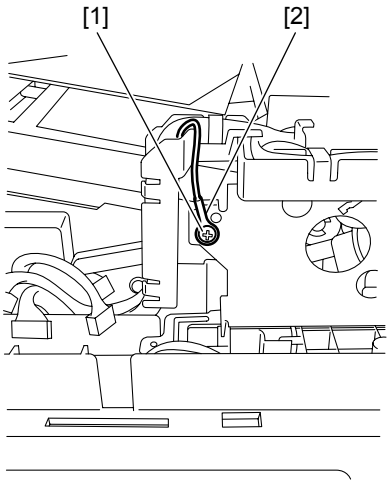
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-51

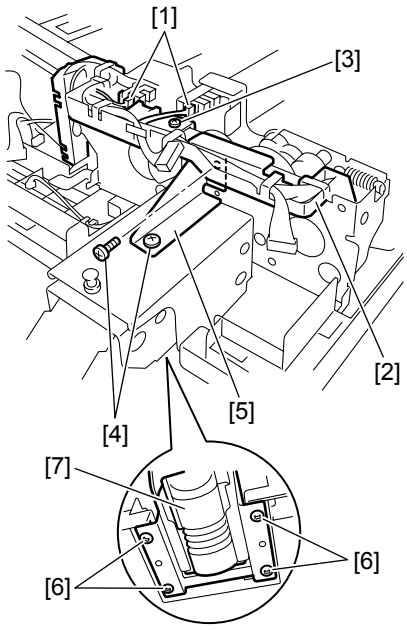
3.4.5.6 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



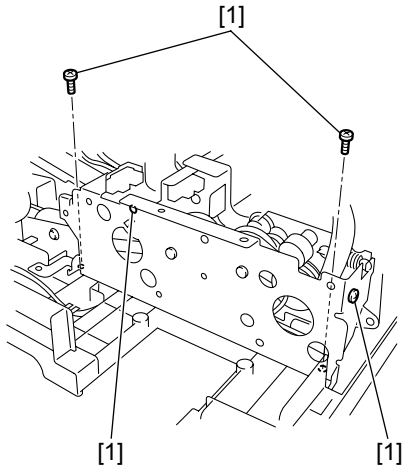
F-3-52

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



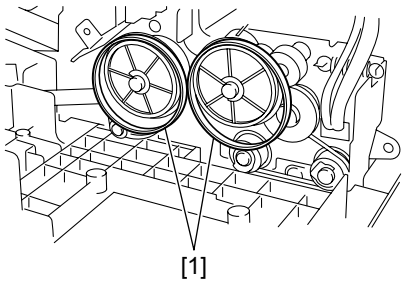
F-3-53

7) Remove the four screws [1], and then remove the metal plate.



F-3-54

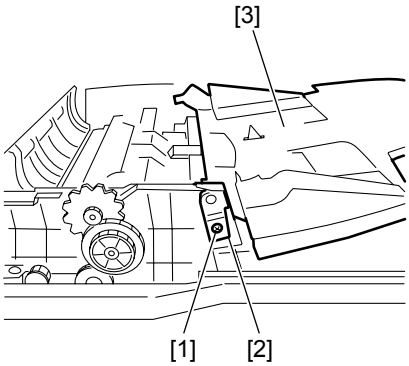
8) Remove the timing belt [1].



F-3-55

3.4.5.7 Removing the Document Tray

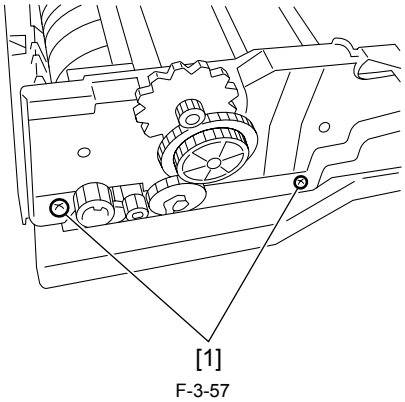
1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].
2) Remove the document tray [3].



F-3-56

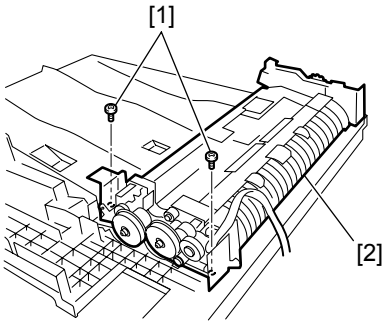
3.4.5.8 Removing the Feeding Unit

1) Remove the two screws [1].



F-3-57

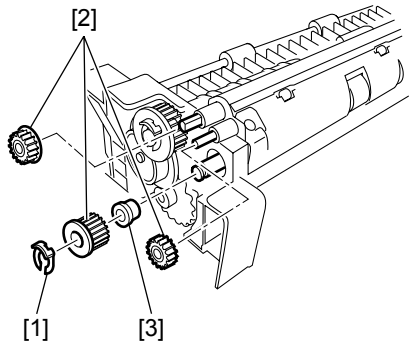
2) Remove the two screws [1], and then remove the feeding unit.



F-3-58

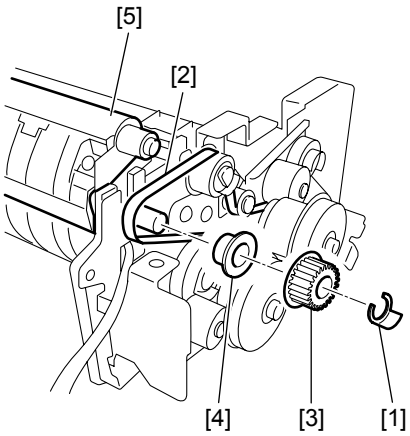
3.4.5.9 Removing the Platen Roller Unit

1) Turn over the feeder unit.
2) Remove the resin ring [1], and then remove the three gears [2] and the bearing [3].



F-3-59

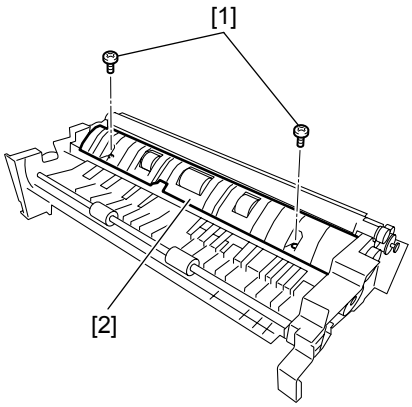
3) Remove the resin ring [1], belt [2], gear [3], and bearing [4].
4) Remove the platen roller unit [5].



F-3-60

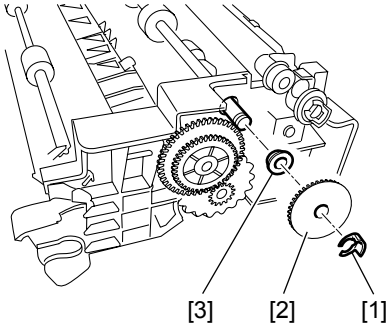
3.4.5.10 Removing the Read Roller 2

1) Remove the two screws [1], and then detach the cover [2].



F-3-61

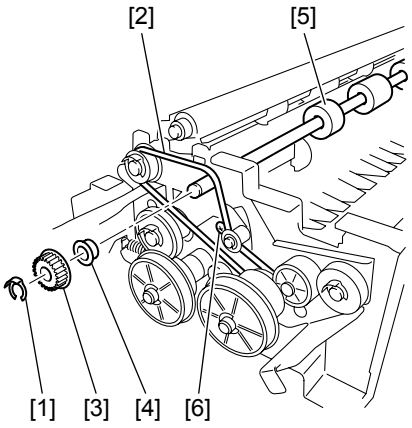
2) Remove the resin ring [1], gear [2], and bearing [3].



F-3-62

3) Remove the resin ring [1], belt [2], gear [3], and bearing [4], and then remove the read roller 2 [5].

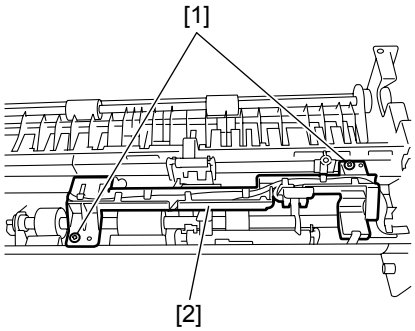
When installing the read roller 2, loosen the screws [6] and attach the belt.



F-3-63

3.4.5.11 Removing the Sensor Unit in the Feeder Unit

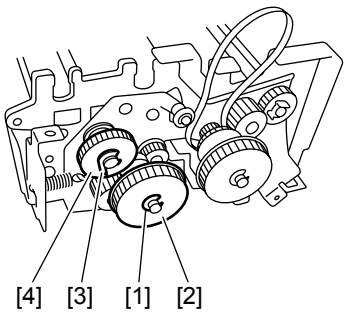
1) Remove the two screws [1], and then remove the sensor unit [2].



F-3-64

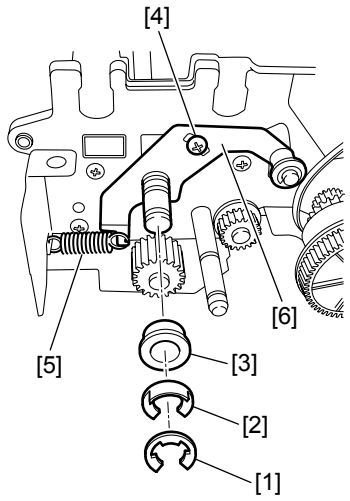
3.4.5.12 Removing the Lower Registration Roller

1) Remove the E-ring [1], and then remove the gear [2].
2) Remove the resin ring [3], and then remove the gear [4].



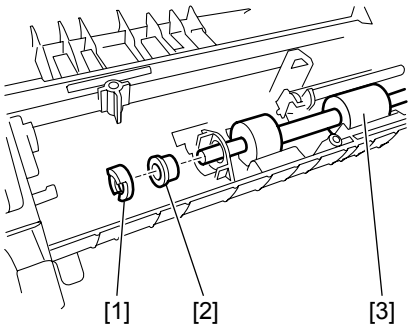
F-3-65

3) Remove the E-ring [1] and resin ring [2], and then remove the bearing [3].
4) Remove the screw [4], and then remove the spring [5] and metal plate [6].



F-3-66

5) Remove the resin ring [1], and then remove the bearing [2] and lower registration roller [3].

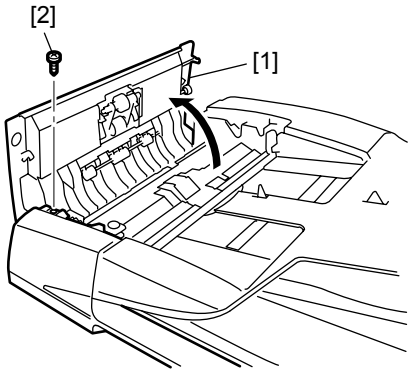


F-3-67

3.4.6 Delivery Reversing Roller (upper)

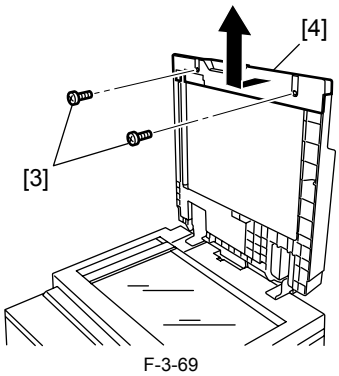
3.4.6.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-68

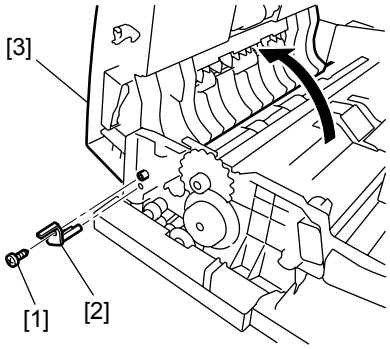
2) Remove the two screws [3], and then detach the front cover [4].



F-3-69

3.4.6.2 Removing the Feeder Cover

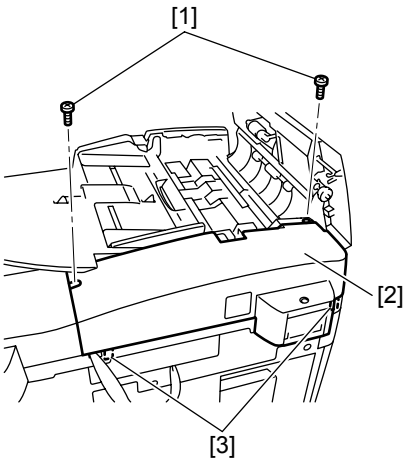
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-70

3.4.6.3 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

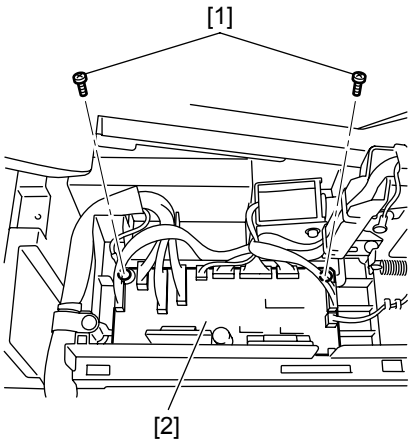


F-3-71

⚠ Remove the rear cover with the two claws [3] released.

3.4.6.4 Removing the ADF Driver PCB

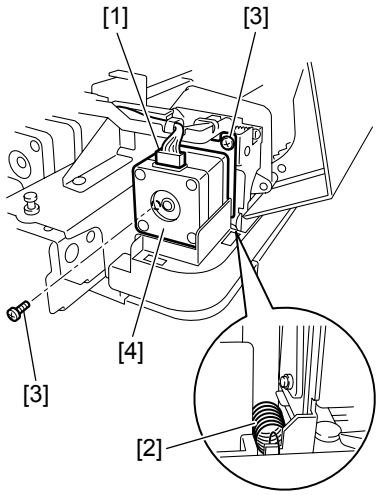
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-72

3.4.6.5 Removing the Pickup Motor

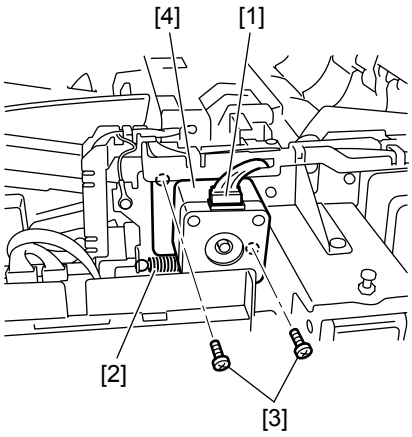
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-73

3.4.6.6 Removing the Feed Motor

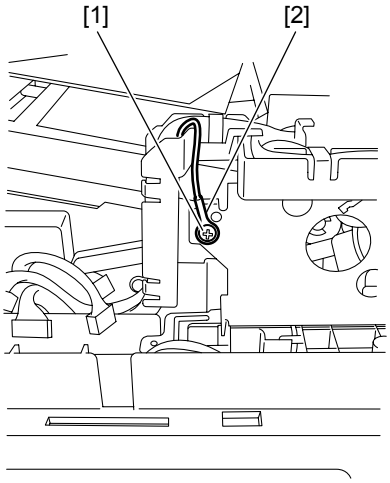
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-74

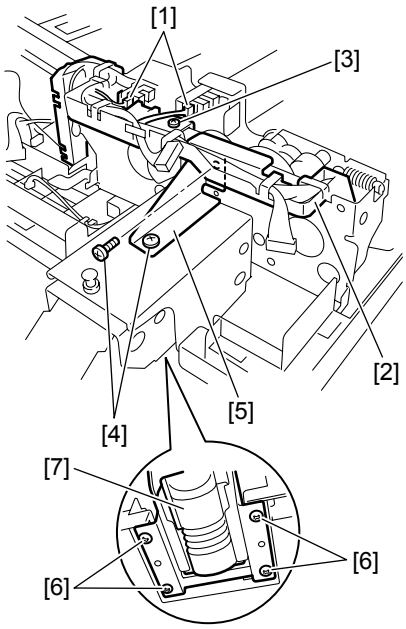
3.4.6.7 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



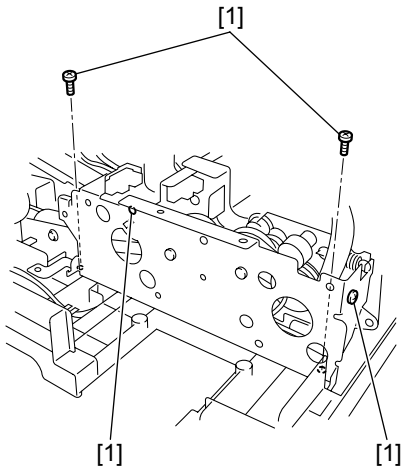
F-3-75

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



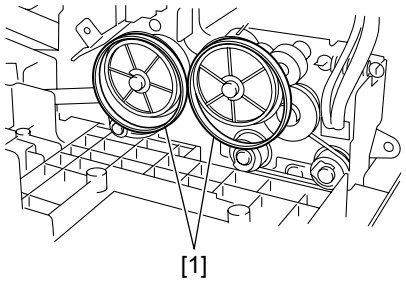
F-3-76

7) Remove the four screws [1], and then remove the metal plate.



F-3-77

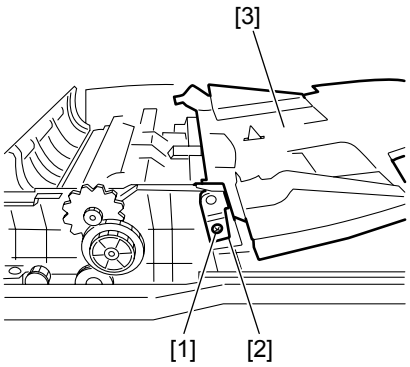
8) Remove the timing belt [1].



F-3-78

3.4.6.8 Removing the Document Tray

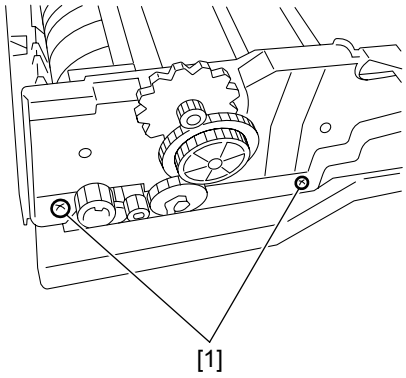
1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].
2) Remove the document tray [3].



F-3-79

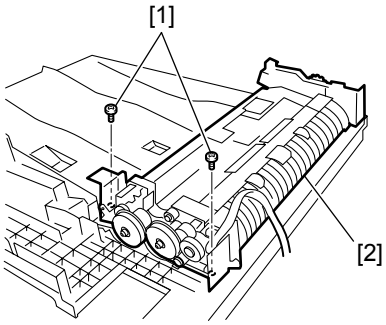
3.4.6.9 Removing the Feeding Unit

1) Remove the two screws [1].



F-3-80

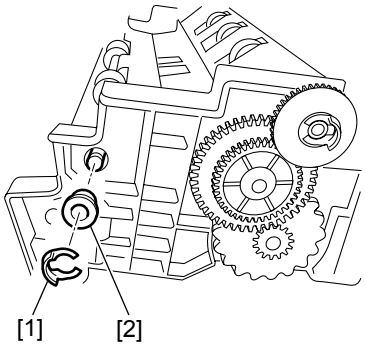
2) Remove the two screws [1], and then remove the feeding unit.



F-3-81

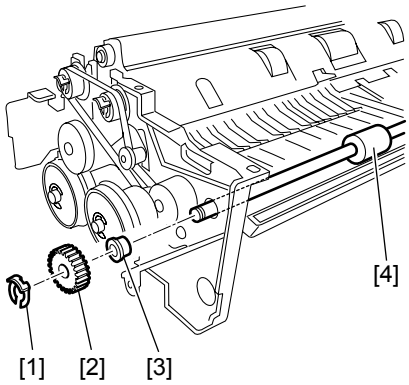
3.4.6.10 Removing the Upper Delivery Reversing Roller

1) Remove the resin ring [1] and bearing [2].



F-3-82

2) Remove the resin ring [1], gear [2], and bearing [3], and then remove the upper delivery reversing roller [4].

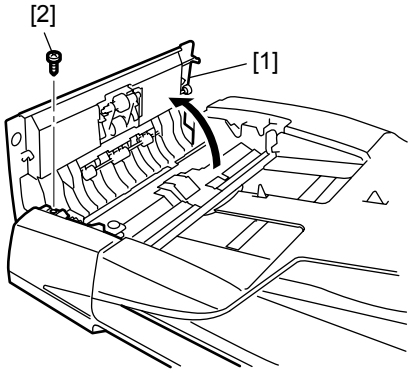


F-3-83

3.4.7 Read Roller 1

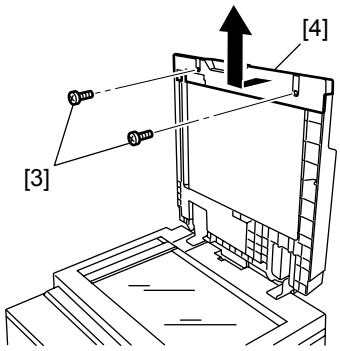
3.4.7.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-84

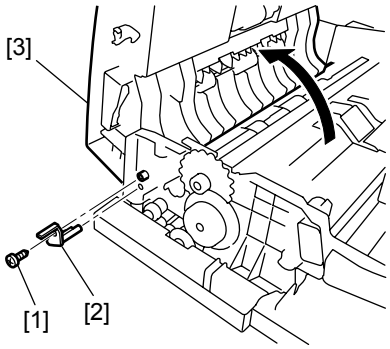
2) Remove the two screws [3], and then detach the front cover [4].



F-3-85

3.4.7.2 Removing the Feeder Cover

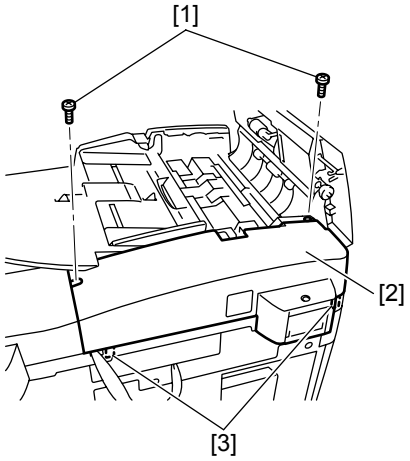
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-86

3.4.7.3 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

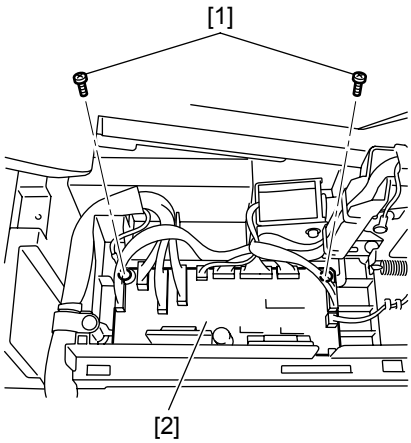


F-3-87

⚠Remove the rear cover with the two claws [3] released.

3.4.7.4 Removing the ADF Driver PCB

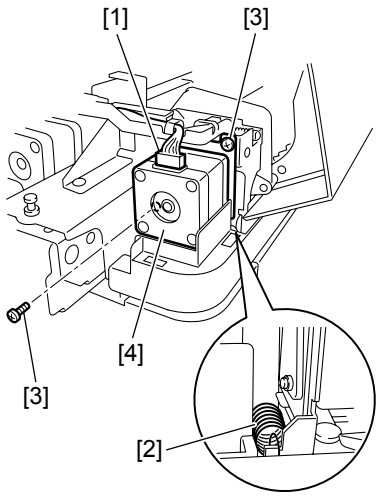
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-88

3.4.7.5 Removing the Pickup Motor

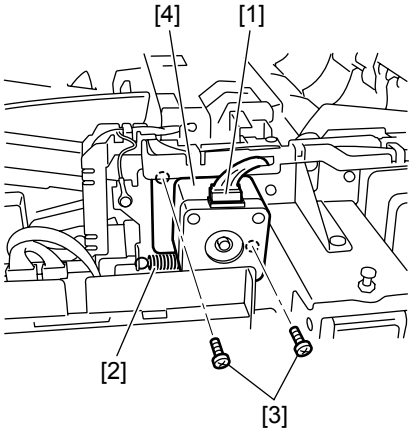
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-89

3.4.7.6 Removing the Feed Motor

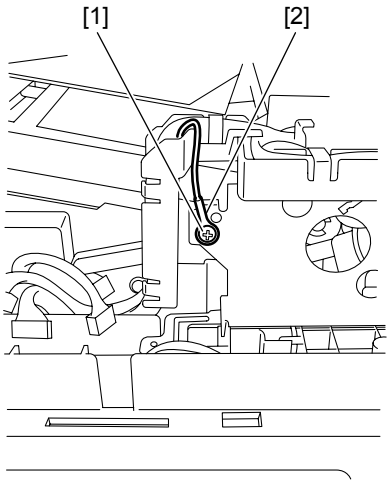
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-90

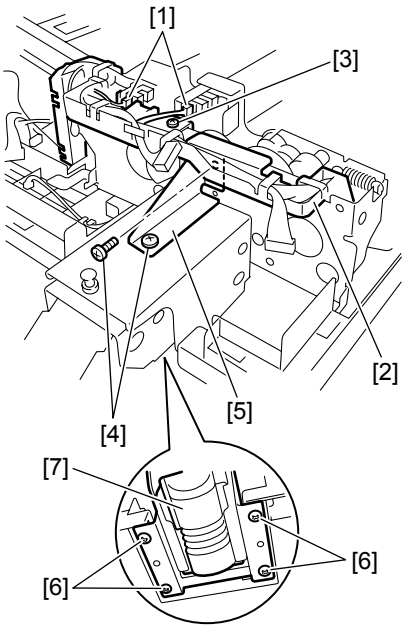
3.4.7.7 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



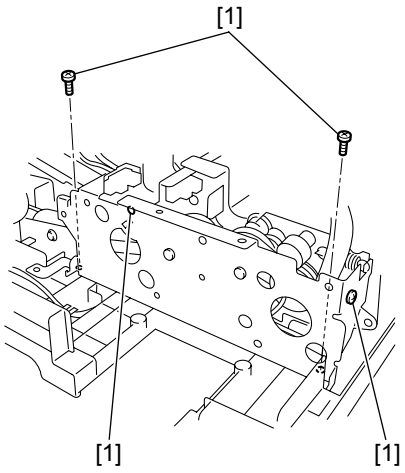
F-3-91

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



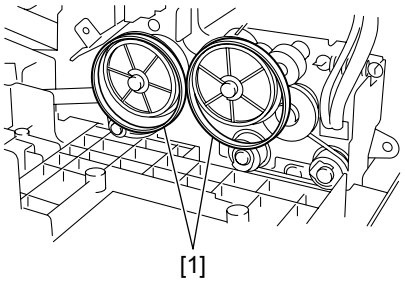
F-3-92

7) Remove the four screws [1], and then remove the metal plate.



F-3-93

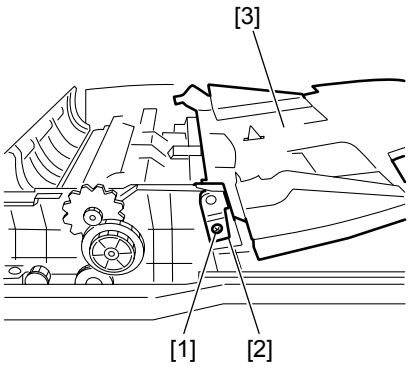
8) Remove the timing belt [1].



F-3-94

3.4.7.8 Removing the Document Tray

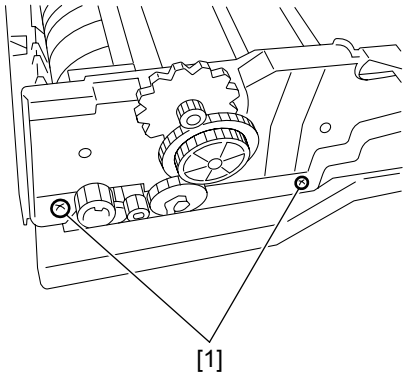
1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].
2) Remove the document tray [3].



F-3-95

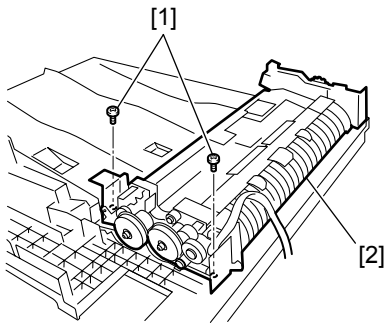
3.4.7.9 Removing the Feeding Unit

1) Remove the two screws [1].



F-3-96

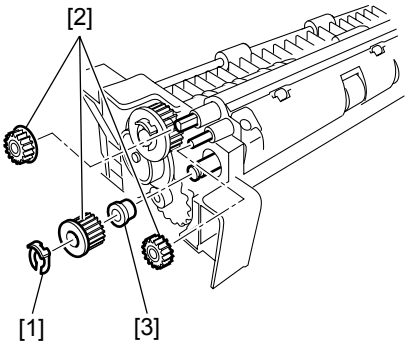
2) Remove the two screws [1], and then remove the feeding unit.



F-3-97

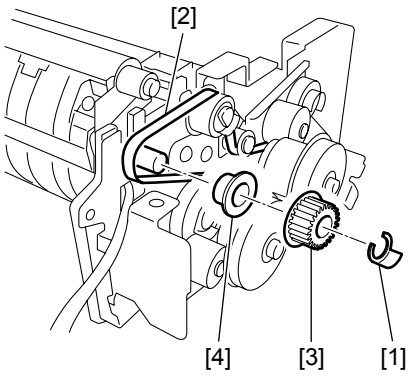
3.4.7.10 Removing the Read Roller 1

1) Turn over the feeder unit.
2) Remove the two resin rings [1], four gears [2], and one bearing [3].



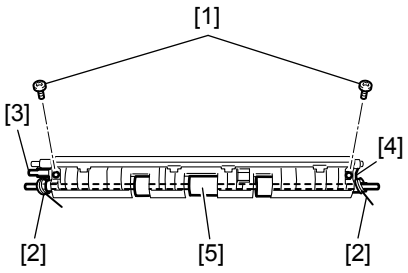
F-3-98

3) Remove the resin ring [1], belt [2], gear [3], and bearing [4].



F-3-99

4) Remove the two screws [1], two springs [2], the member [3], and the member [4] and then remove the read roller 1 [5].



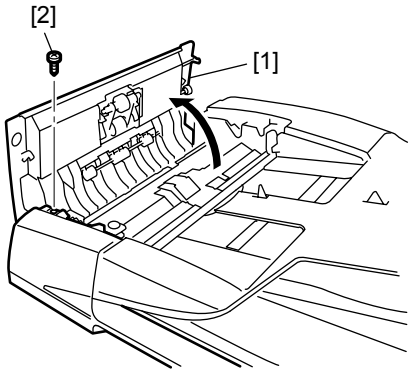
F-3-100

MEMO:
When the read roller 2 is removed first, it works easily [the installation of the read roller 1].

3.4.8 Read Roller 2

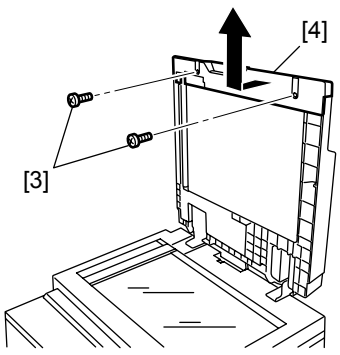
3.4.8.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-101

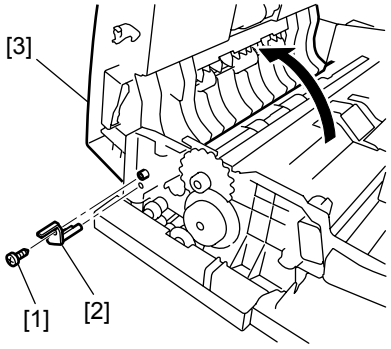
2) Remove the two screws [3], and then detach the front cover [4].



F-3-102

3.4.8.2 Removing the Feeder Cover

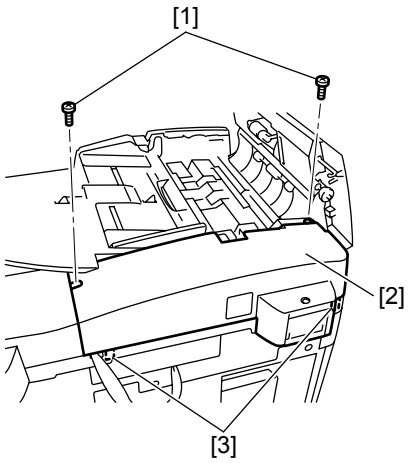
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-103

3.4.8.3 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

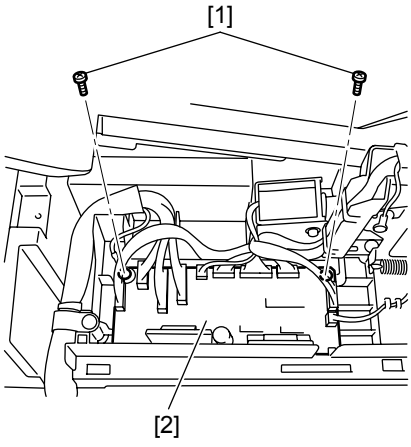


F-3-104

⚠Remove the rear cover with the two claws [3] released.

3.4.8.4 Removing the ADF Driver PCB

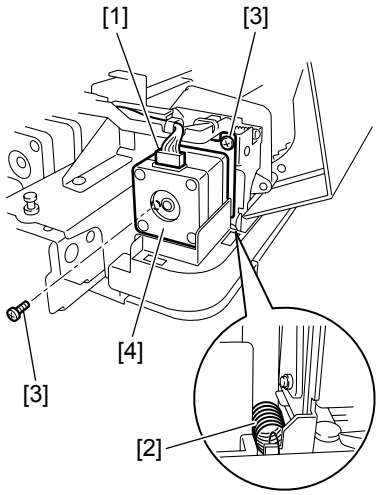
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-105

3.4.8.5 Removing the Pickup Motor

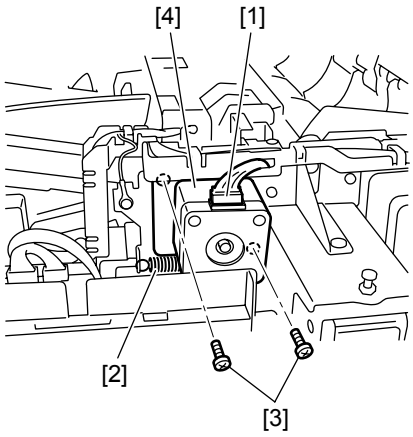
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-106

3.4.8.6 Removing the Feed Motor

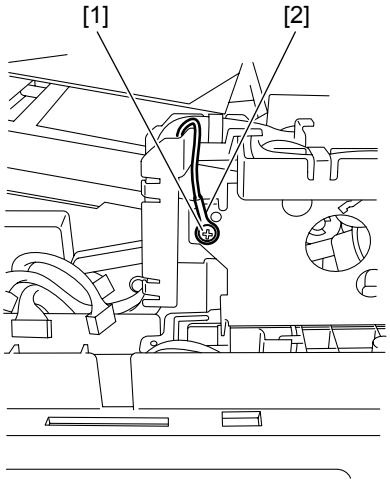
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-107

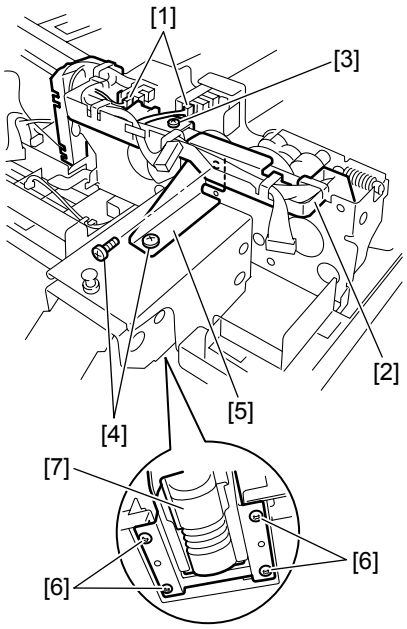
3.4.8.7 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



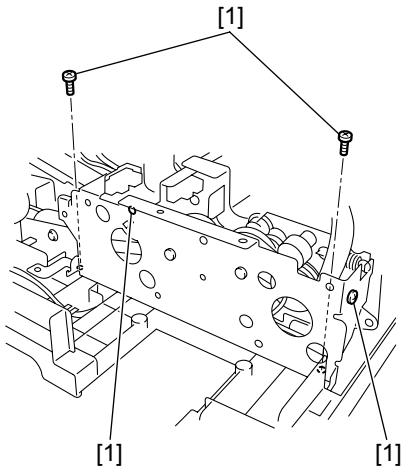
F-3-108

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



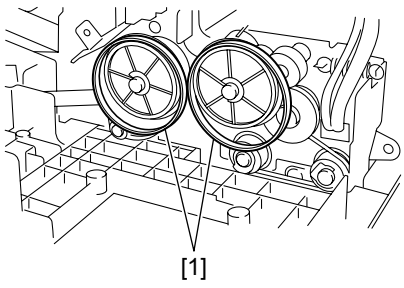
F-3-109

7) Remove the four screws [1], and then remove the metal plate.



F-3-110

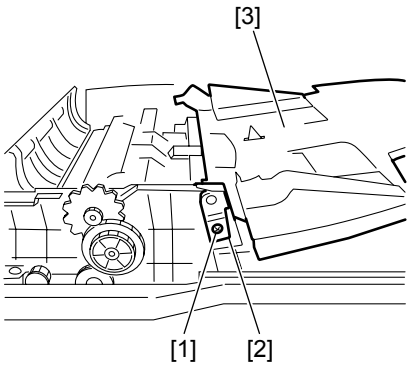
8) Remove the timing belt [1].



F-3-111

3.4.8.8 Removing the Document Tray

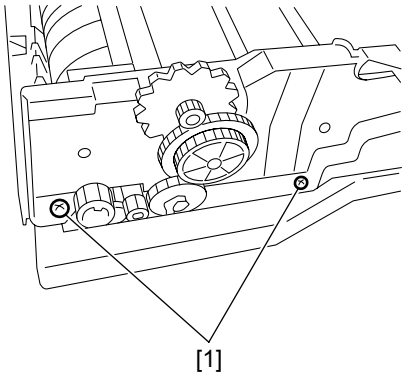
1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].
2) Remove the document tray [3].



F-3-112

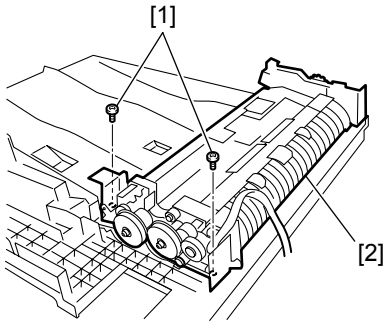
3.4.8.9 Removing the Feeding Unit

1) Remove the two screws [1].



F-3-113

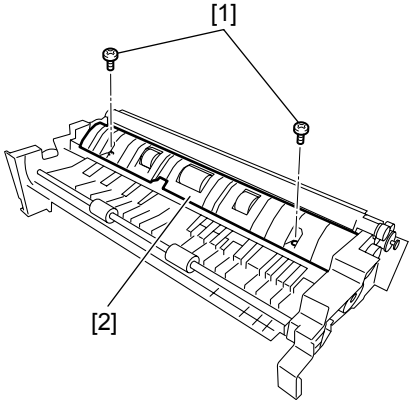
2) Remove the two screws [1], and then remove the feeding unit.



F-3-114

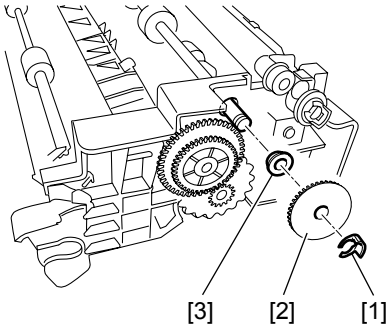
3.4.8.10 Removing the Read Roller 2

1) Remove the two screws [1], and then detach the cover [2].



F-3-115

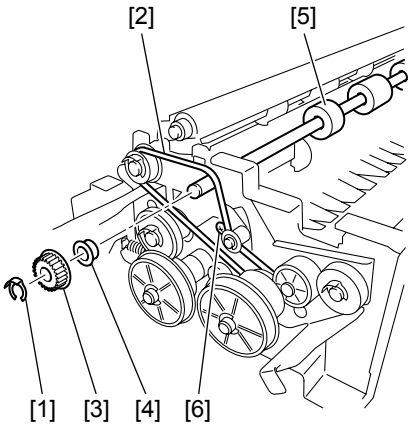
2) Remove the resin ring [1], gear [2], and bearing [3].



F-3-116

3) Remove the resin ring [1], belt [2], gear [3], and bearing [4], and then remove the read roller 2 [5].

⚠When installing the read roller 2, loosen the screws [6] and attach the belt.

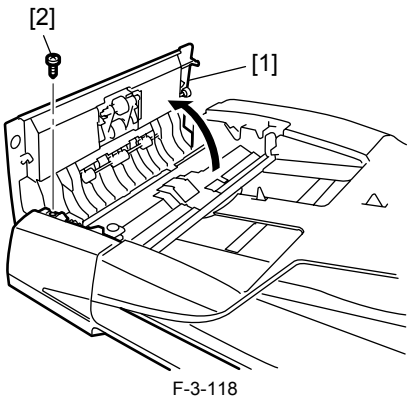


F-3-117

3.4.9 Platen Roller

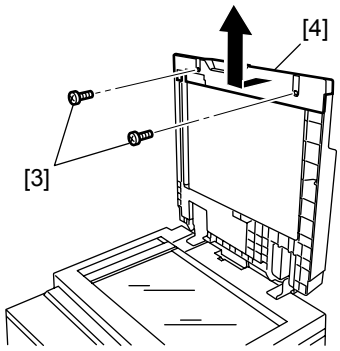
3.4.9.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-118

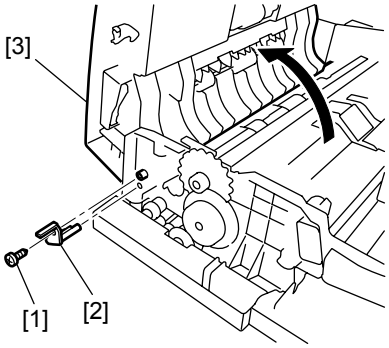
2) Remove the two screws [3], and then detach the front cover [4].



F-3-119

3.4.9.2 Removing the Feeder Cover

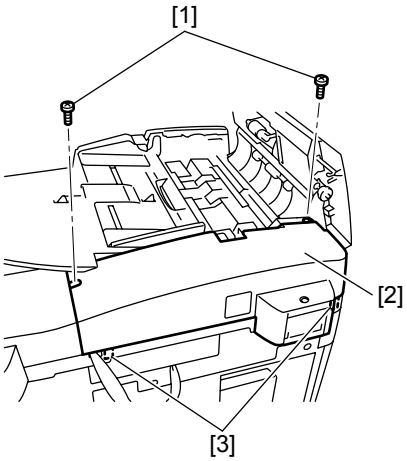
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-120

3.4.9.3 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

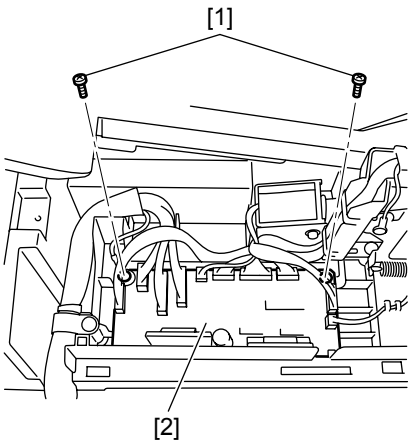


F-3-121

Remove the rear cover with the two claws [3] released.

3.4.9.4 Removing the ADF Driver PCB

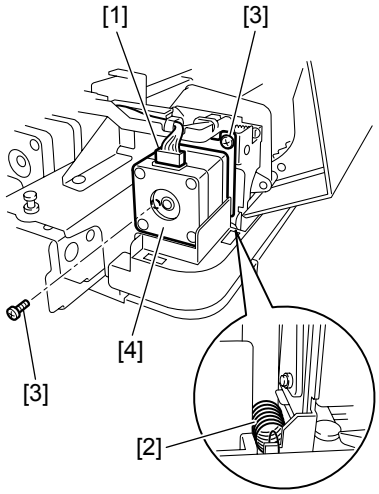
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-122

3.4.9.5 Removing the Pickup Motor

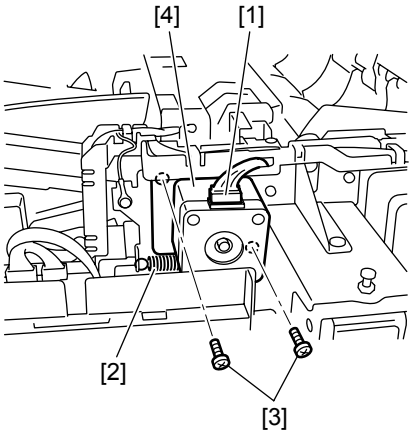
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-123

3.4.9.6 Removing the Feed Motor

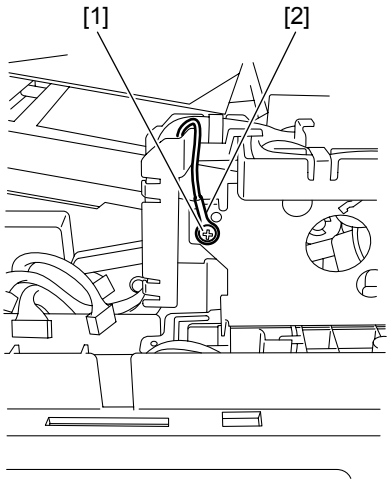
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-124

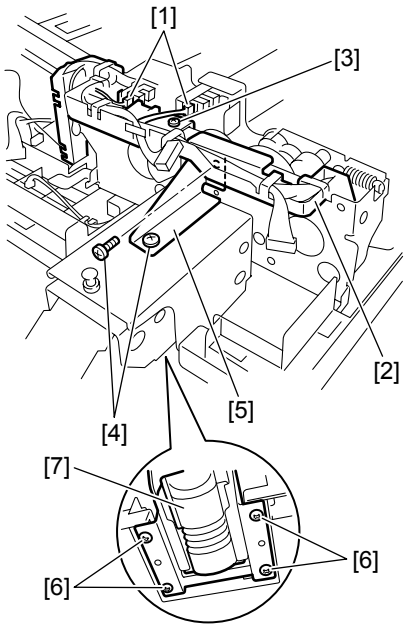
3.4.9.7 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



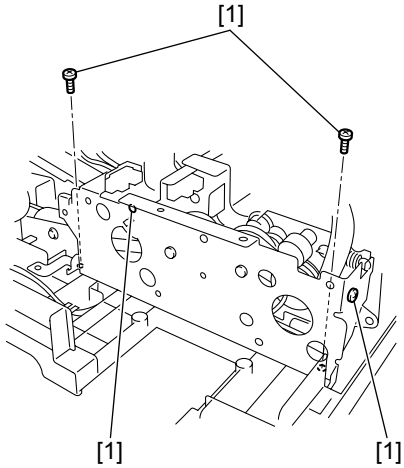
F-3-125

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



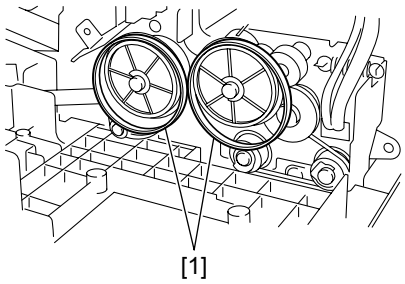
F-3-126

7) Remove the four screws [1], and then remove the metal plate.



F-3-127

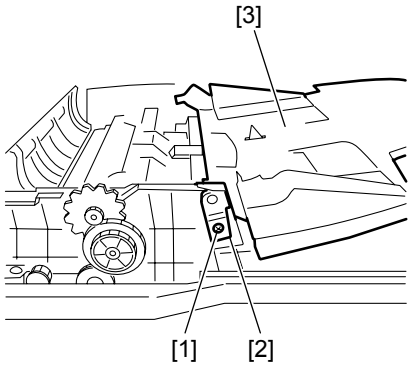
8) Remove the timing belt [1].



F-3-128

3.4.9.8 Removing the Document Tray

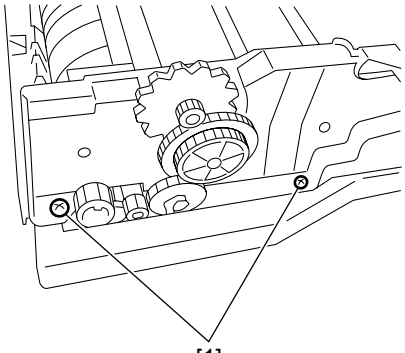
1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].
2) Remove the document tray [3].



F-3-129

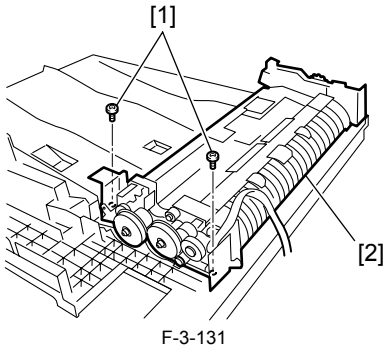
3.4.9.9 Removing the Feeding Unit

1) Remove the two screws [1].



F-3-130

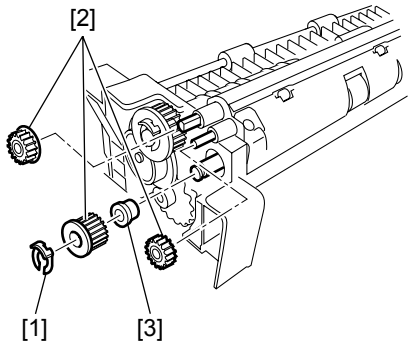
2) Remove the two screws [1], and then remove the feeding unit.



F-3-131

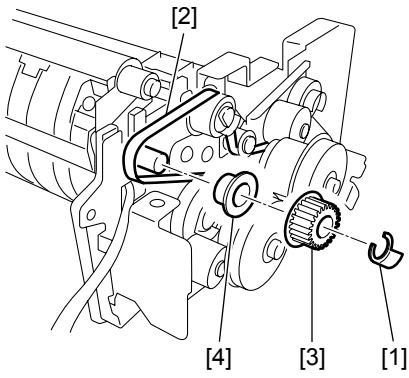
3.4.9.10 Removing the Platen Roller

1) Turn over the feeder unit.
2) Remove the resin ring [1], three gears [2], and one bearing [3].



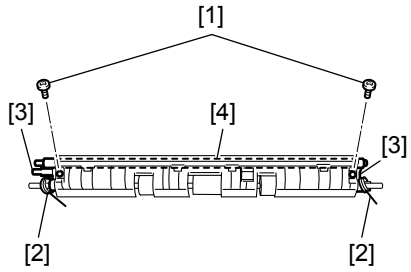
F-3-132

3) Remove the resin ring [1], belt [2], gear [3], and bearing [4].



F-3-133

4) Remove the two screws [1], two springs [2], the member [3], and the member [4] and then remove the platen roller [5].



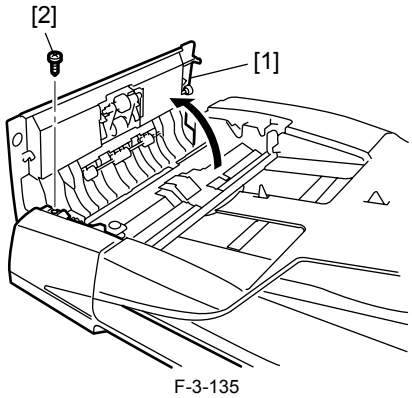
F-3-134

MEMO:
When the read roller 2 is removed first, it works easily [the installation of the platen roller].

3.4.10 Delivery Reversing Roller (lower)

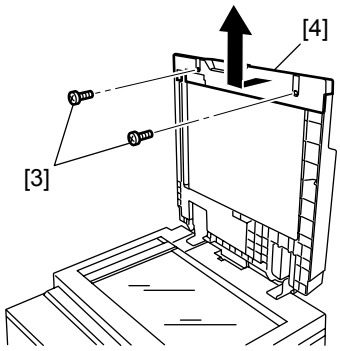
3.4.10.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-135

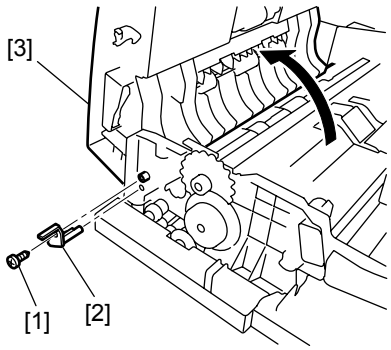
2) Remove the two screws [3], and then detach the front cover [4].



F-3-136

3.4.10.2 Removing the Feeder Cover

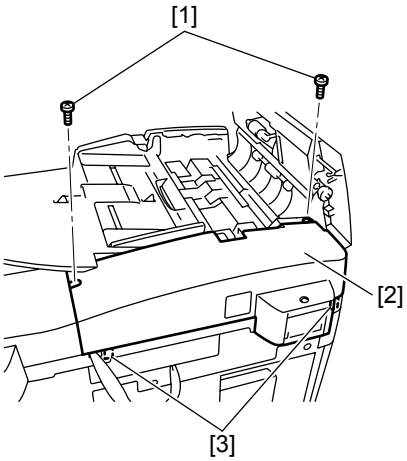
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-137

3.4.10.3 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

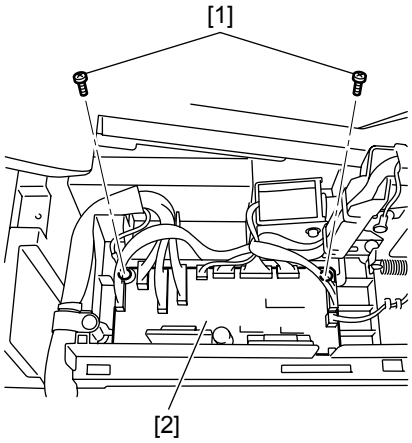


F-3-138

⚠Remove the rear cover with the two claws [3] released.

3.4.10.4 Removing the ADF Driver PCB

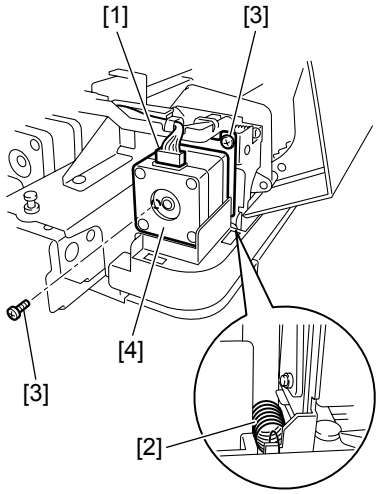
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-139

3.4.10.5 Removing the Pickup Motor

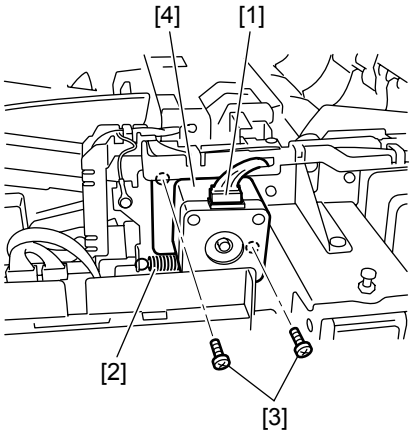
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-140

3.4.10.6 Removing the Feed Motor

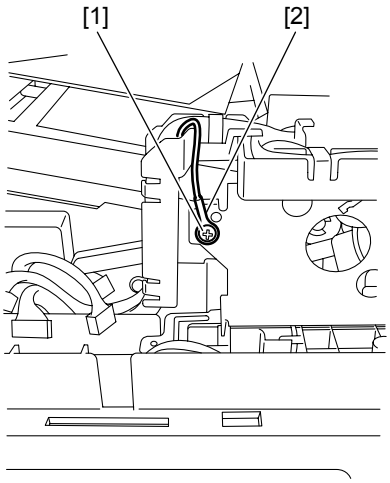
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-141

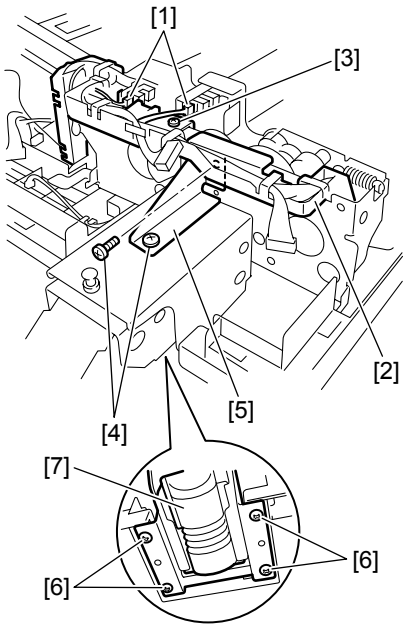
3.4.10.7 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



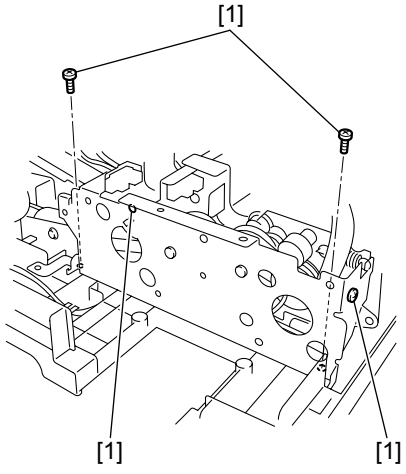
F-3-142

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



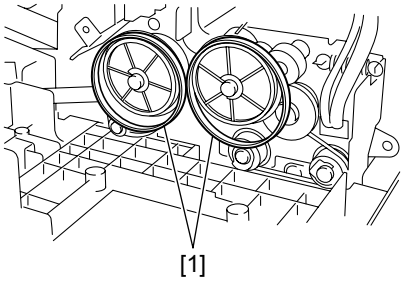
F-3-143

7) Remove the four screws [1], and then remove the metal plate.



F-3-144

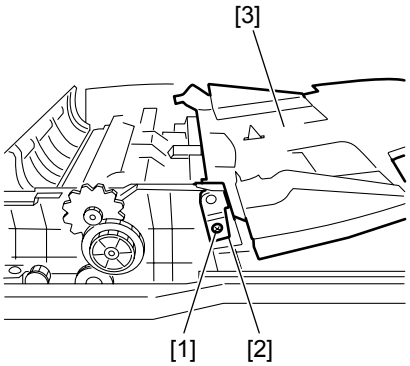
8) Remove the timing belt [1].



F-3-145

3.4.10.8 Removing the Document Tray

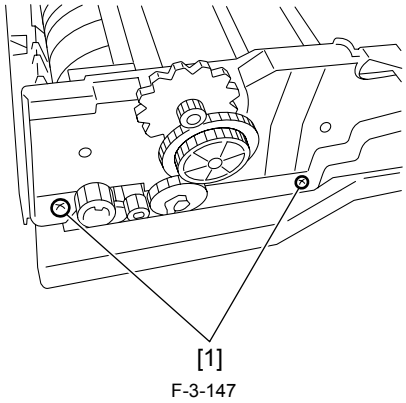
1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].
2) Remove the document tray [3].



F-3-146

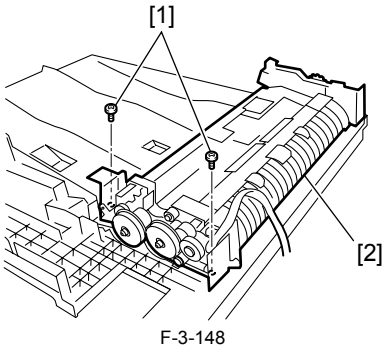
3.4.10.9 Removing the Feeding Unit

1) Remove the two screws [1].



F-3-147

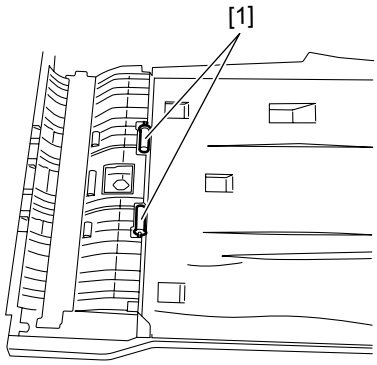
2) Remove the two screws [1], and then remove the feeding unit.



F-3-148

3.4.10.10 Removing the Lower Delivery Reversing Roller

1) Remove the lower delivery reversing roller [1].

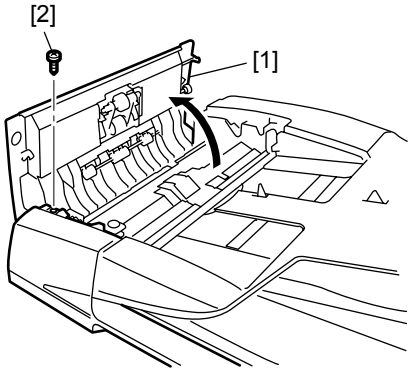


F-3-149

3.4.11 Feeding Unit

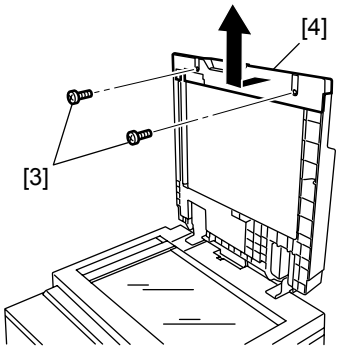
3.4.11.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-150

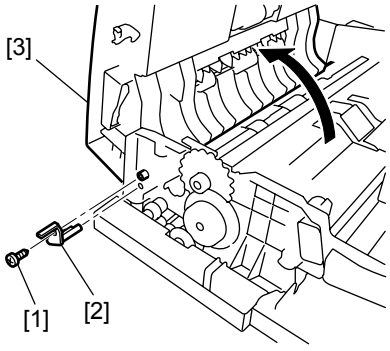
2) Remove the two screws [3], and then detach the front cover [4].



F-3-151

3.4.11.2 Removing the Feeder Cover

1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].

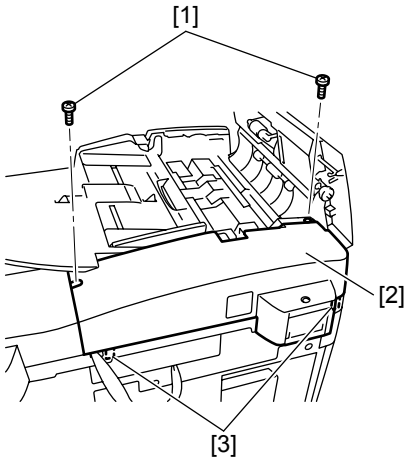


F-3-152

3.4.11.3 Removing the Rear Cover

1) Open the feeder cover.

2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

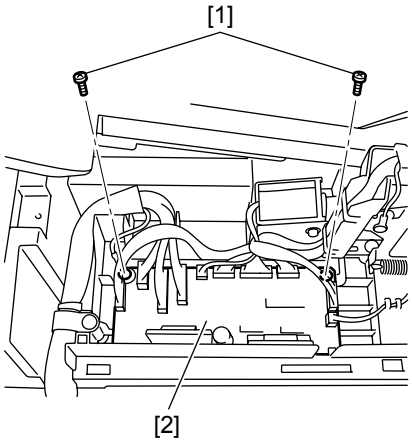


F-3-153

⚠Remove the rear cover with the two claws [3] released.

3.4.11.4 Removing the ADF Driver PCB

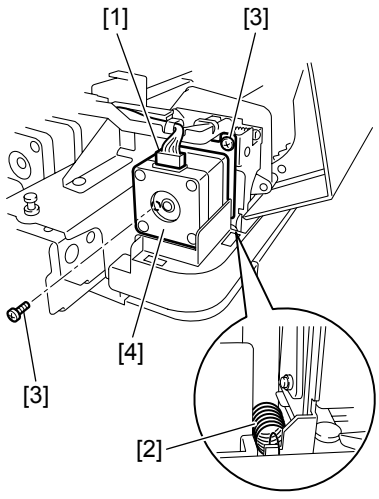
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-154

3.4.11.5 Removing the Pickup Motor

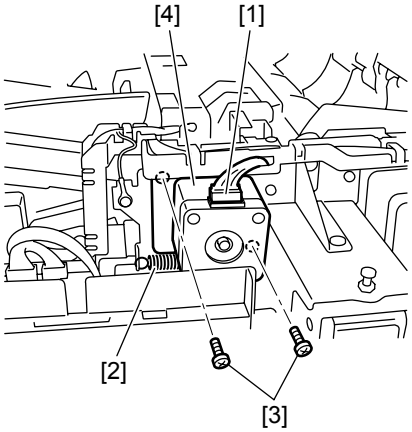
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-155

3.4.11.6 Removing the Feed Motor

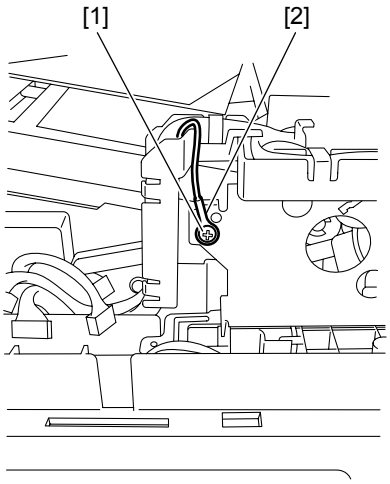
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-156

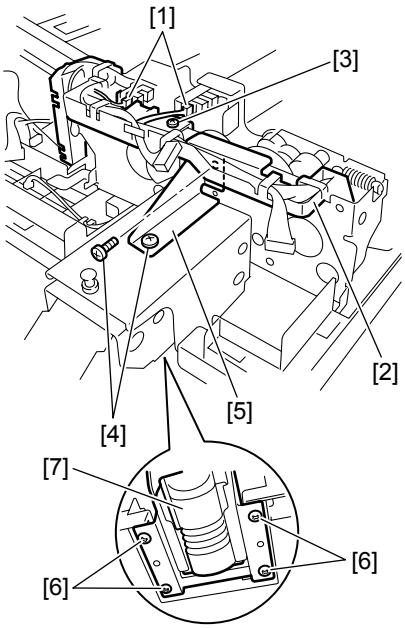
3.4.11.7 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



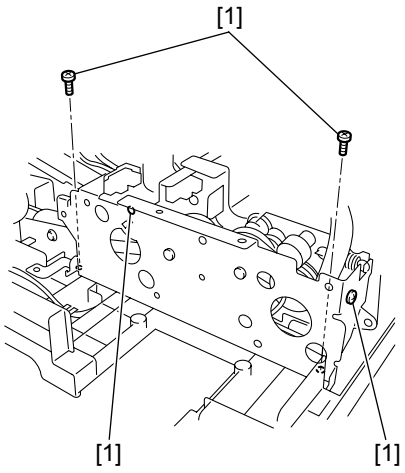
F-3-157

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



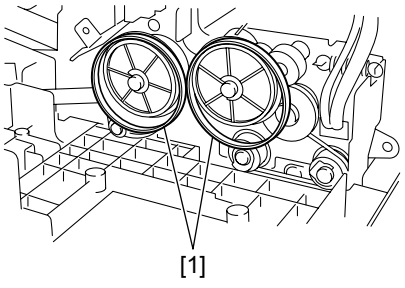
F-3-158

7) Remove the four screws [1], and then remove the metal plate.



F-3-159

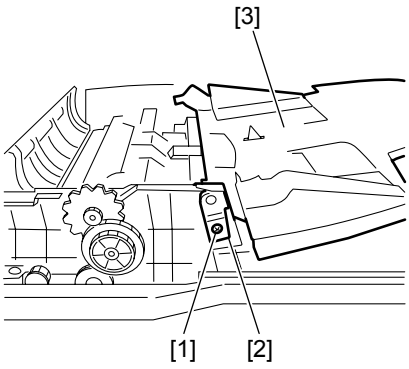
8) Remove the timing belt [1].



F-3-160

3.4.11.8 Removing the Document Tray

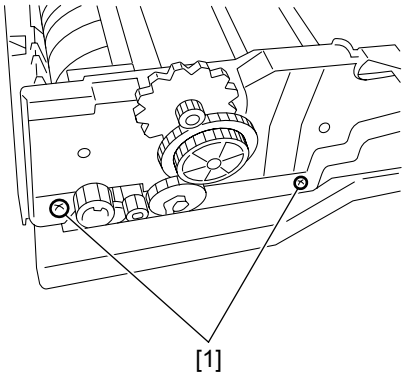
1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].
2) Remove the document tray [3].



F-3-161

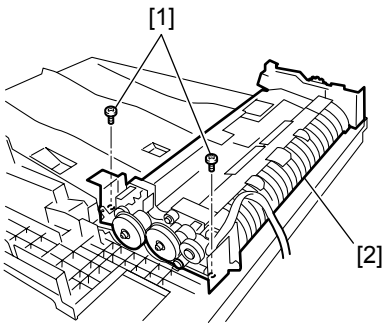
3.4.11.9 Removing the Feeding Unit

1) Remove the two screws [1].



F-3-162

2) Remove the two screws [1], and then remove the feeding unit.

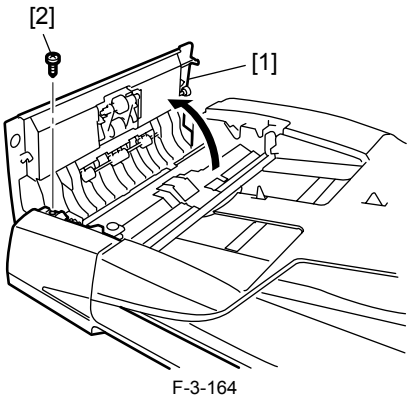


F-3-163

3.4.12 Document Tray

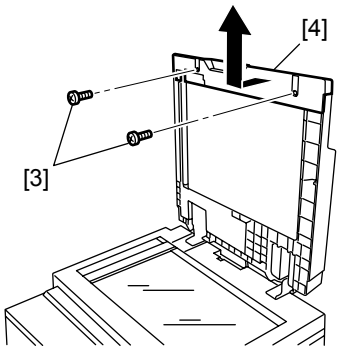
3.4.12.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-164

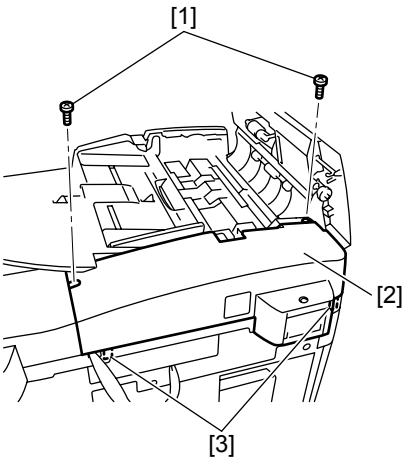
2) Remove the two screws [3], and then detach the front cover [4].



F-3-165

3.4.12.2 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

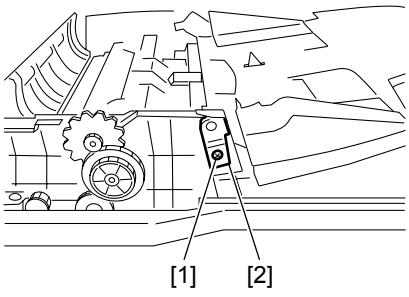


F-3-166

Remove the rear cover with the two claws [3] released.

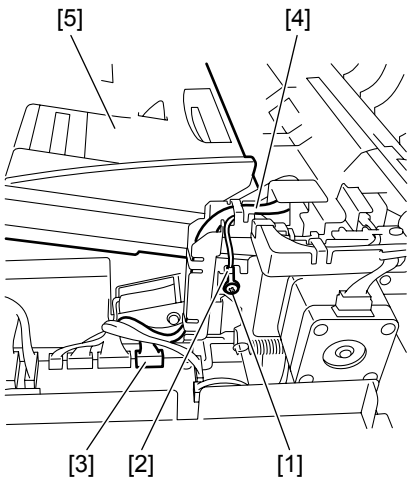
3.4.12.3 Removing the Document Tray

1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].



F-3-167

2) Remove the screw [1] at the back of the machine, and disconnect the ground cable [2].
3) Disconnect the tray harness connector (CN7) [3] from the ADF driver PCB.
4) Remove the harness [4] from the harness guide, and then detach the document tray [5].



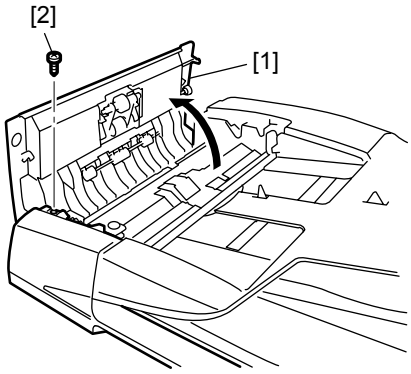
F-3-168

3.5 Electrical System

3.5.1 Inner Sensor of Feed Unit

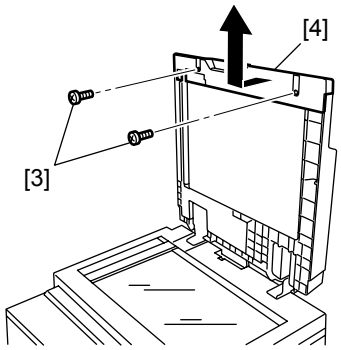
3.5.1.1 Removing the Front Cover

1) Open the feeder cover [1], and then remove the screw [2].



F-3-169

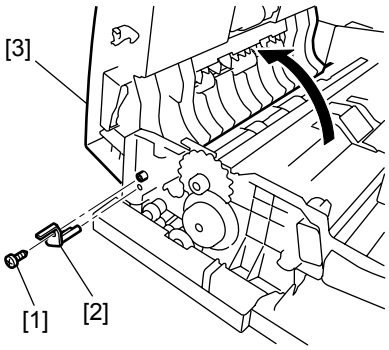
2) Remove the two screws [3], and then detach the front cover [4].



F-3-170

3.5.1.2 Removing the Feeder Cover

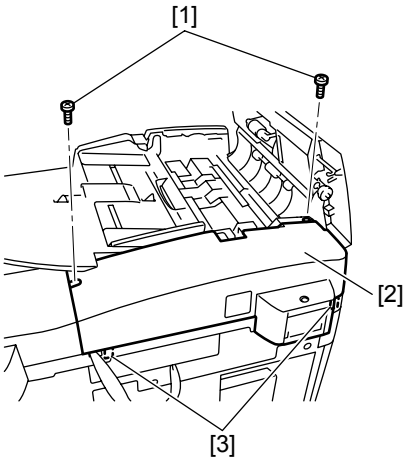
1) Remove the screw [1] and positioning pin [2], and then detach the feeder cover [3].



F-3-171

3.5.1.3 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

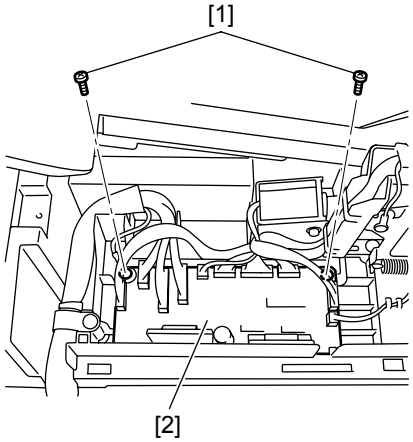


F-3-172

Remove the rear cover with the two claws [3] released.

3.5.1.4 Removing the ADF Driver PCB

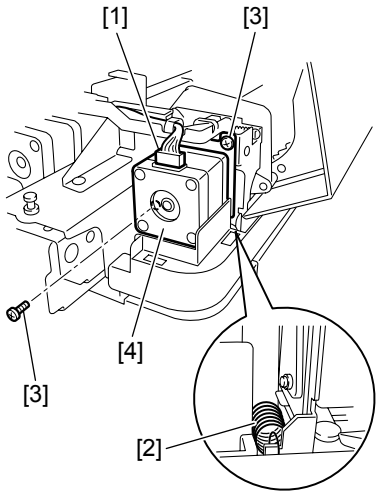
1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-173

3.5.1.5 Removing the Pickup Motor

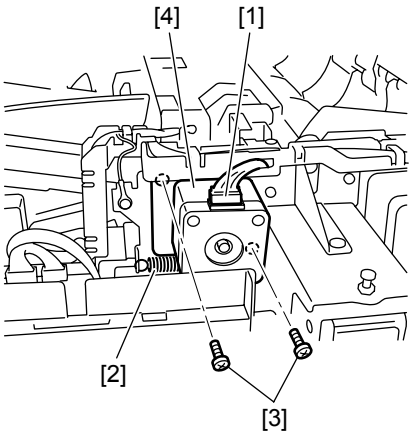
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the pickup motor [4] together with the adjusting plate.



F-3-174

3.5.1.6 Removing the Feed Motor

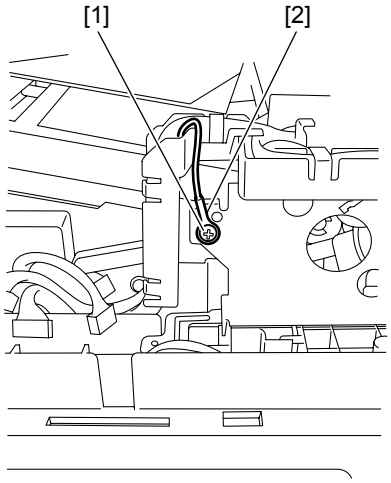
1) Disconnect the connector [1], and then remove the tension spring [2].
2) Remove the two screws [3], and then remove the feed motor [4] together with the adjusting plate.



F-3-175

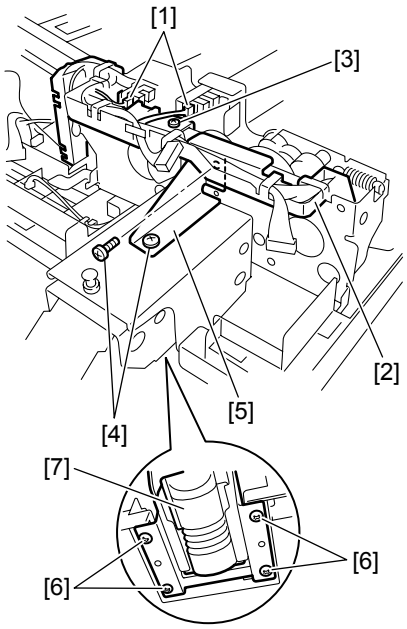
3.5.1.7 Removing the Timing Belt

1) Remove the screw [1], and then disconnect the ground cable [2].



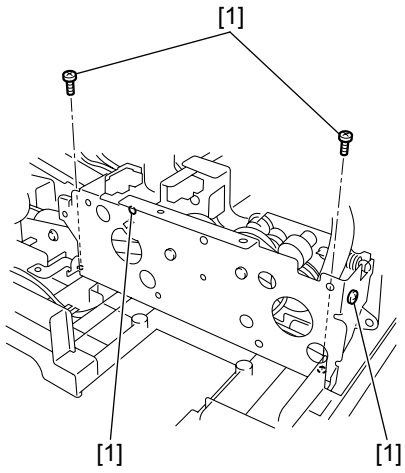
F-3-176

2) Disconnect the two sensor connectors [1].
3) Remove the harness from the harness guide [2].
4) Remove the screw [3], and remove the harness guide [2].
5) Remove the two screws [4], and then remove the metal plate [5].
6) Remove the four screws [6], and then remove the left hinge [7].



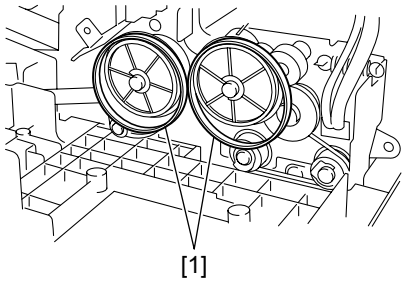
F-3-177

7) Remove the four screws [1], and then remove the metal plate.



F-3-178

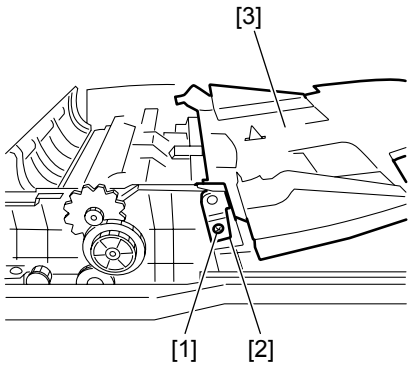
8) Remove the timing belt [1].



F-3-179

3.5.1.8 Removing the Document Tray

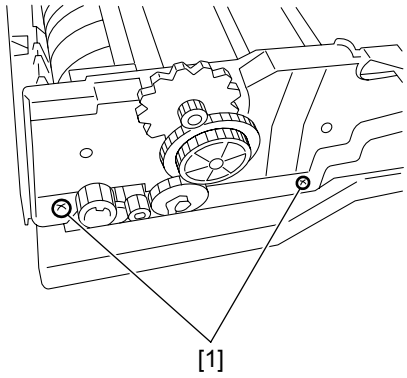
1) Remove the screw [1] at the front of the machine, and then remove the tray holder [2].
2) Remove the document tray [3].



F-3-180

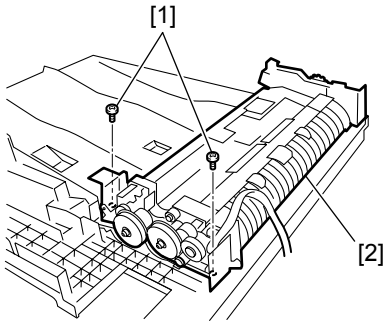
3.5.1.9 Removing the Feeding Unit

1) Remove the two screws [1].



F-3-181

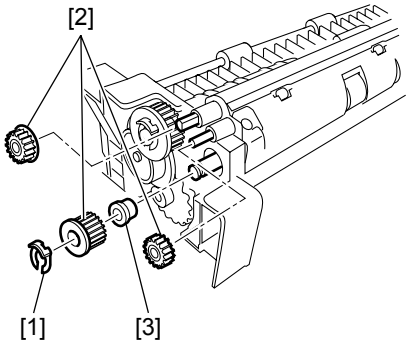
2) Remove the two screws [1], and then remove the feeding unit.



F-3-182

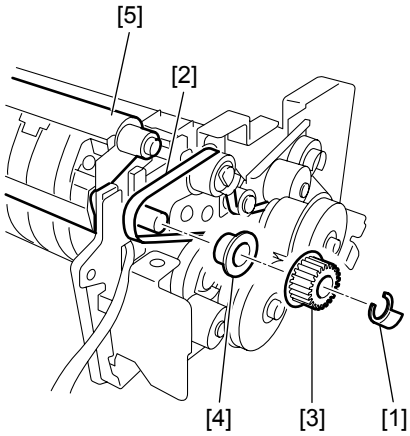
3.5.1.10 Removing the Platen Roller Unit

1) Turn over the feeder unit.
2) Remove the resin ring [1], and then remove the three gears [2] and the bearing [3].



F-3-183

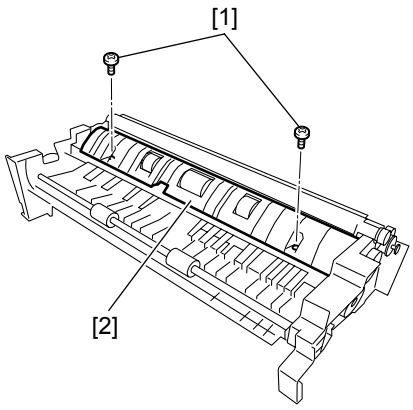
3) Remove the resin ring [1], belt [2], gear [3], and bearing [4].
4) Remove the platen roller unit [5].



F-3-184

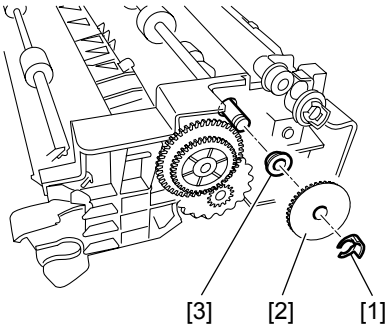
3.5.1.11 Removing the Read Roller 2

1) Remove the two screws [1], and then detach the cover [2].



F-3-185

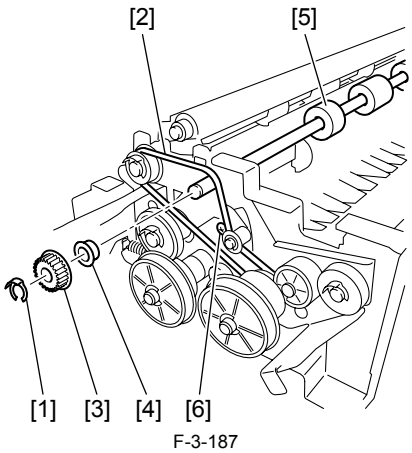
2) Remove the resin ring [1], gear [2], and bearing [3].



F-3-186

3) Remove the resin ring [1], belt [2], gear [3], and bearing [4], and then remove the read roller 2 [5].

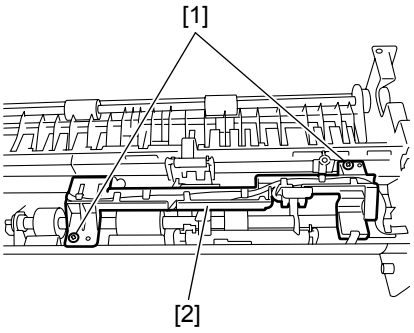
When installing the read roller 2, loosen the screws [6] and attach the belt.



F-3-187

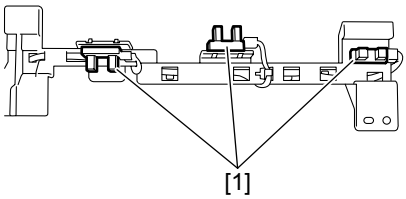
3.5.1.12 Removing the Sensor in the Feeder Unit

1) Remove the two screws [1], and then remove the sensor unit [2].



F-3-188

2) Remove the sensor [1] from the sensor unit.

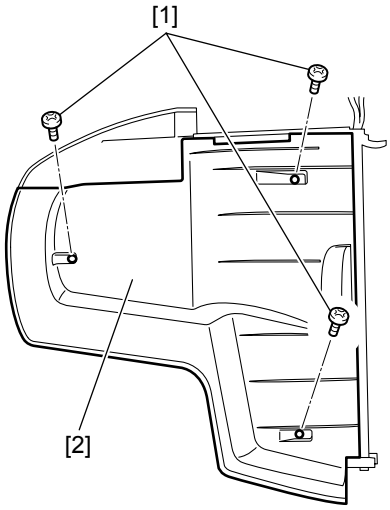


F-3-189

3.5.2 Document Width Volume

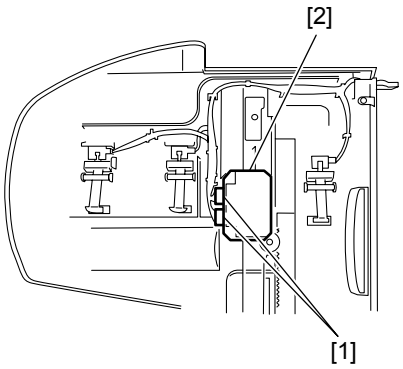
3.5.2.1 Removing the Relay PCB (Document Width Sensor PCB)

1) Remove the three screws [1] on the reverse side of the document tray using the stubby driver, and then detach the cover [2].



F-3-190

2) Disconnect the two connectors [1], and then remove the relay PCB (document width sensor PCB) [2].

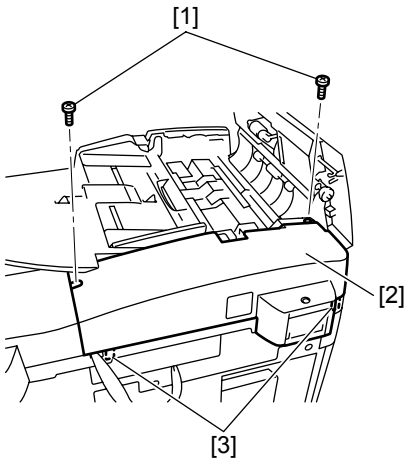


F-3-191

3.5.3 Cover Open/Closed Sensor

3.5.3.1 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

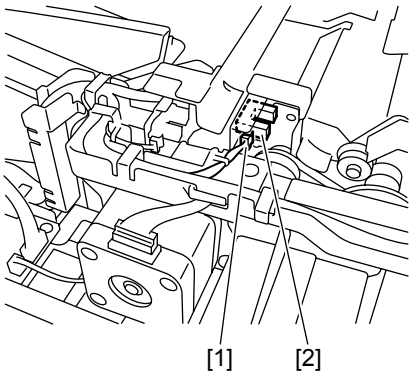


F-3-192

⚠Remove the rear cover with the two claws [3] released.

3.5.3.2 Removing the Feeder Cover Open/Close Sensor

1) Disconnect the connector [1], and then remove the feeder cover open/close sensor [2].

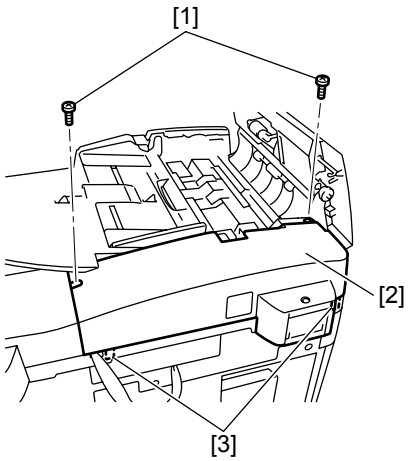


F-3-193

3.5.4 Document Set Sensor

3.5.4.1 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

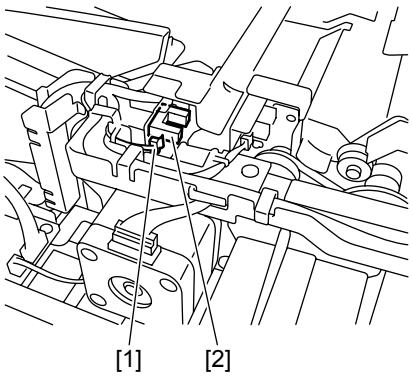


F-3-194

⚠Remove the rear cover with the two claws [3] released.

3.5.4.2 Removing the Document Placement Sensor

1) Disconnect the connector [1], and remove the document placement sensor [2].

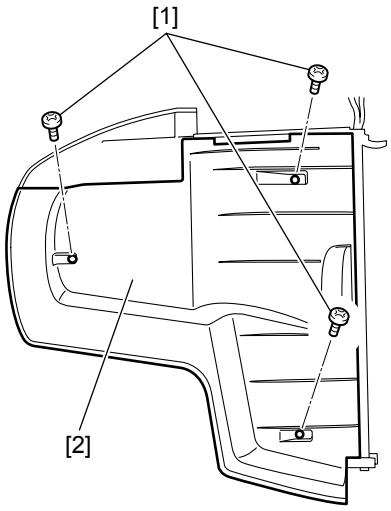


F-3-195

3.5.5 Document Length sensor

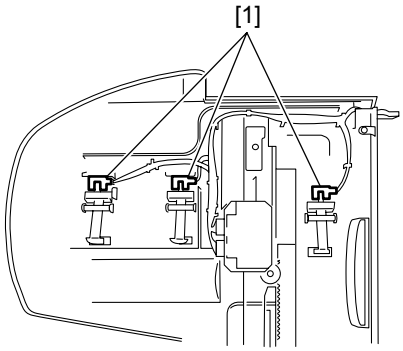
3.5.5.1 Removing the Document Length Sensor

1) Remove the three screws [1] on the reverse side of the document tray using the stubby driver, and then detach the cover [2].



F-3-196

2) Disconnect the connector, and then remove the document length sensor [1].

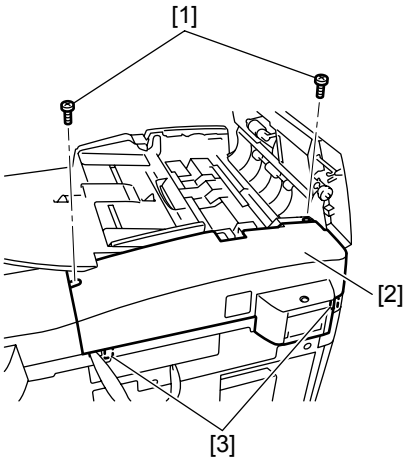


F-3-197

3.5.6 Pressurization Solenoid

3.5.6.1 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

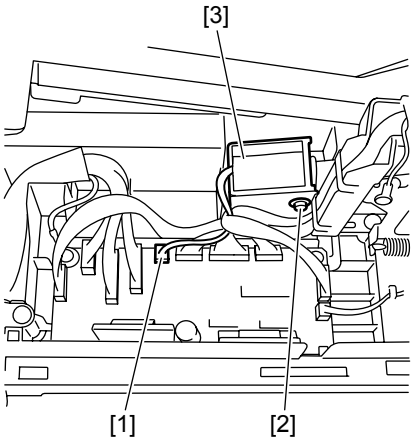


F-3-198

Remove the rear cover with the two claws [3] released.

3.5.6.2 Removing the Pressurization Solenoid (Roller Release Solenoid)

1) Disconnect the connector [1] from the ADF driver PCB.
2) Remove the screw [2], and then remove the pressurization solenoid (Roller Release Solenoid) [3].

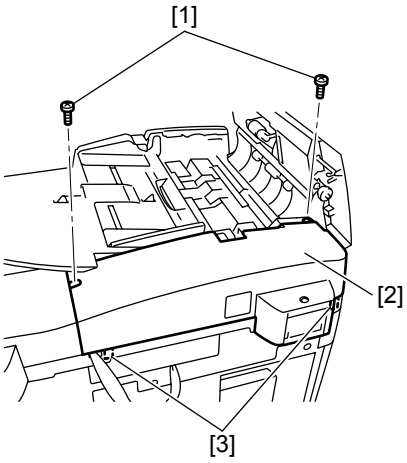


F-3-199

3.5.7 ADF Driver PCB

3.5.7.1 Removing the Rear Cover

1) Open the feeder cover.
2) Move to the back of the machine, remove the two screws [1], and then detach the rear cover [2].

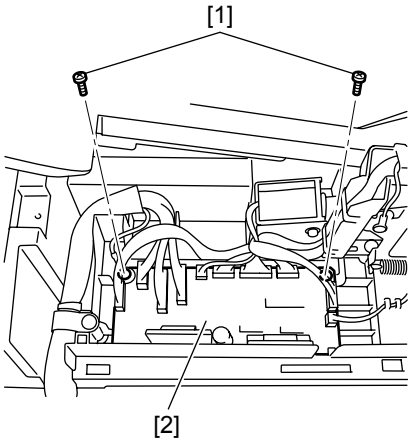


F-3-200

Remove the rear cover with the two claws [3] released.

3.5.7.2 Removing the ADF Driver PCB

1) Disconnect all connectors from the ADF driver PCB. (10 connectors)
2) Remove the two screws [1], and then remove the ADF driver PCB [2].



F-3-201

Chapter 4 Maintenance

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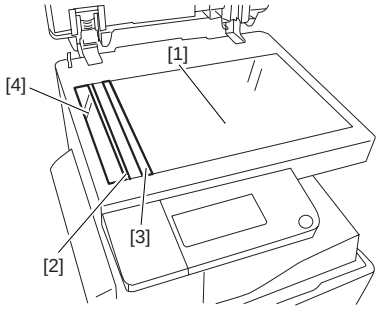
4.1 User Maintenance

4.1.1 Cleaning

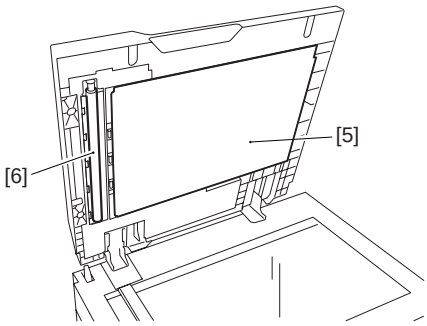
Tell the user to clean the following parts every 2000 sheets.

T-4-1

Parts to clean	Cleaning method	Cleaning cycle	Remarks
White plate (pressure plate)	Clean with a cloth dampened with water or neutral detergent and squeezed hard, and then wipe with a dry cloth.	As required	
Document glasses (large/ small)		As required or every 2000 sheets	Parts of reader unit
Document glass holder		As required	Parts of reader unit
Vertical size plate		As required	Parts of reader unit
Platen roller		As required or every 2000 sheets	Parts of reader unit



F-4-1

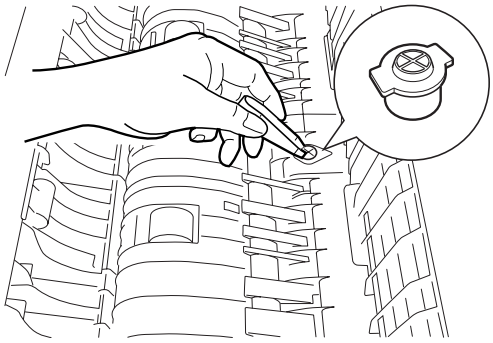


F-4-2

[1] Document glass (large)
[2] Document glass holder
[3] Vertical size plate
[4] Document glass (small)
[5] White plate
[6] Platen roller

4.1.2 Replacement

1. Replacing the Stamp (when the fax feature is provided)
1) Open the feeder cover and separation guide.
2) Using tweezers, remove the stamp.
3) Using tweezers or the like, attach a new stamp.
Be sure to attach the new stamp with the stamp face up.



F-4-3

If the stamp is floating, a jam can occur. Be sure to push in the stamp until it clicks.

4.2 Maintenance and Inspection

4.2.1 Periodically Replaced Parts

4.2.1.1 Periodically Replaced Parts

This machine does not have parts that must be replaced periodically.

4.2.2 Durables

4.2.2.1 Durables

This machine does not have durables.

4.2.3 Periodical Servicing

4.2.3.1 Periodic Service Items

This machine does not have periodic service items.

4.3 Adjustment

4.3.1 Basic Adjustment

4.3.1.1 Outline

This machine has the following adjustment items. Carry out each adjustment after replacing the relevant parts.

T-4-2

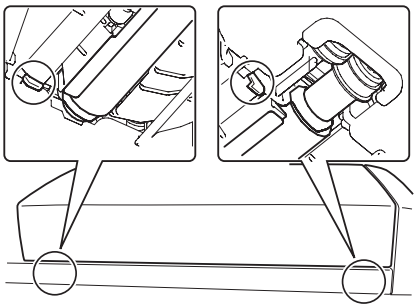
No.	Adjustment type	Replaced parts	Remarks
[1]	Height adjustment	Hinge	
[2]	Perpendicularity adjustment	Hinge	
[3]	Magnification adjustment	Motor/roller	
[4]	Side registration adjustment	-	During installation only
[5]	Leading edge registration adjustment	-	During installation only
[6]	Reading position adjustment	White roller	

⚠Carry out the adjustment of above all after removing the ADF from the reader unit.

4.3.1.2 Height Adjustment

1. Pre-check

Check that the front and rear feet on the pickup side of the DADF are close contact with the document glass when the DADF is closed.



F-4-4

MEMO

Insert a sheet of paper between the ADF's document glass and the feet (two) and pull the paper in the direction of the arrow to check that you feel slight resistance.

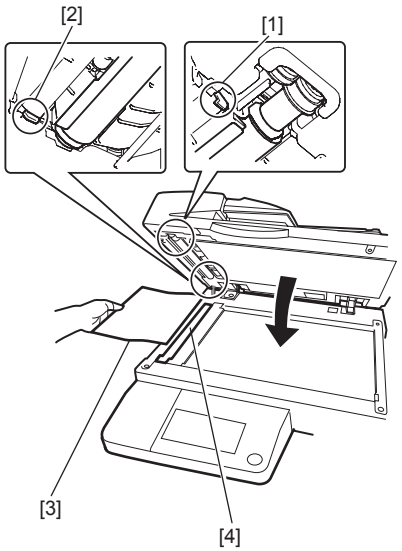
The recommended way of making this check is as follows:

First, insert a sheet of paper between the front foot [1] and the ADF's document glass, and then pull it.

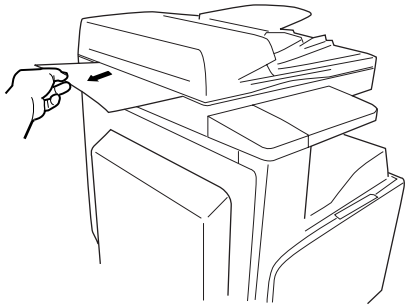
Next, insert a sheet of paper between the rear foot [2] and the ADF's document glass, and then pull it.

⚠

- Use plain paper for this adjustment.
- Insert the paper [3] in such a manner that the sheet portion [4] of the document glass is covered.



F-4-5



F-4-6

2. Adjustment Sequence

* When the front foot or rear foot is floating

1) Adjust the left hinge. (See 3.)
2) Adjust the right hinge. (See 4.)
3) Adjust the left hinge (see 3) or check the left hinge (see 1).

* When both feet are floating

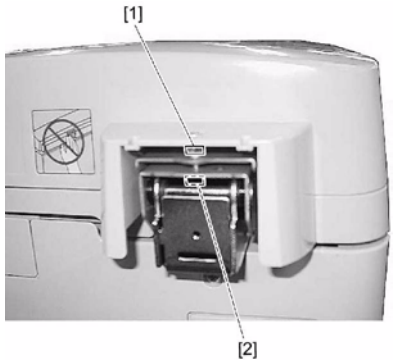
1) Adjust the left hinge. (See 3.)
2) Adjust the right hinge. (See 4.)
3) Adjust the left hinge. (See 3.)
4) Adjust the right hinge (see 4) or check the right hinge (see 4).

3. Adjusting the Left Hinge Height

1) Adjust the left hinge height using the left height adjusting screw [1].

⚠Loosen the nut [2] before adjustment, and tighten it after adjustment.

* If the front foot is floating, turn the adjusting screw clockwise to lower the front foot until it touches the glass.
* If the rear foot or both feet are floating, turn the adjusting screw counter-clockwise to lower the rear foot until it touches the glass.

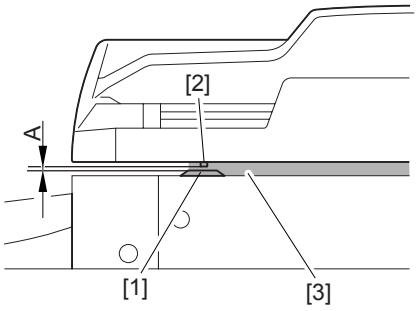


F-4-7

4. Adjusting the Right Hinge Height

1) When closing the DADF, perform the following checks:

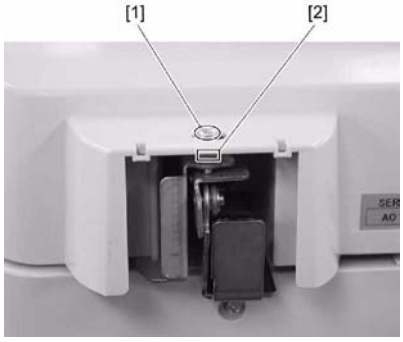
- The rib [1] on the bottom of the ADF must contact the copyboard glass holder (right) [2]. (Gap A should not exist.)
- Check that the document pressure sheet [2] touches the document glass.



F-4-8

2) If the height is inappropriate, adjust it using the right hinge height adjusting screw [1].

⚠Loosen the nut [2] before adjustment, and tighten it after adjustment.



F-4-9

* Turning the adjusting screw clockwise reduces clearance A.
* Turning the adjusting screw counterclockwise increases clearance A.

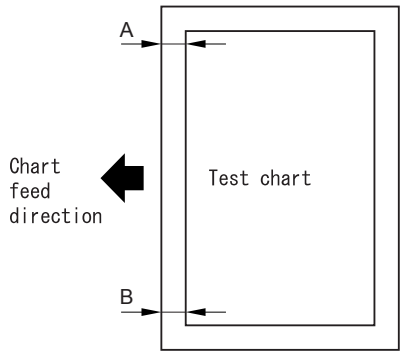
3) Perform step 1 of the left hinge height adjustment procedure. If the height is inappropriate, adjust it again.

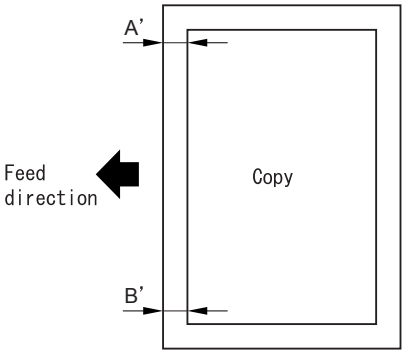
4.3.1.3 Perpendicularity Adjustment

1) Place the test chart on the DADF and take a copy of it.

MEMO
The test chart is printed on the back cover of the Installation Procedure. Copy or clip it.

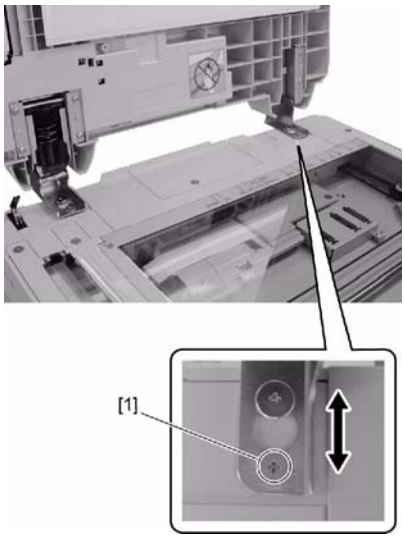
2) Check the squareness of the image on the copy. Measure the dimensions A and B at the leading edge of the test chart and the dimensions A' and B' at the leading edge of the copy. If it not (A-B) = (A'-B'), perform steps 3 and later.





F-4-10

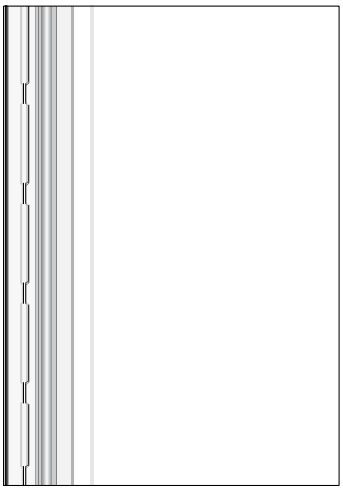
3) Loosen the right hinge clamping screw [1], and slide the hinge back and forth with reference to the graduation marks.



F-4-11

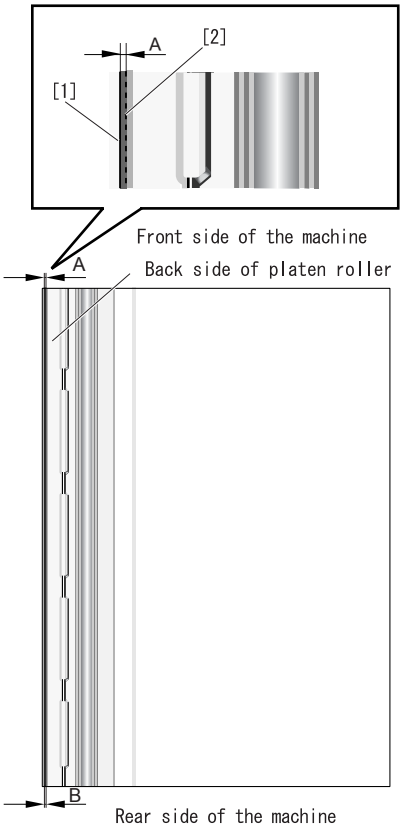
4) Tighten the hinge clamping screw loosened in step 3).

MEMO:
If the chart is not available, the image output by performing the following steps can be used for squareness adjustment.
1) Enter the service mode.
Press the User Mode key "✲", 2 key, 8 key, User Mode key "✲" on the operation panel of the host machine.
2) Using the arrow keys on the operation panel, display "SCAN".
3) Press the OK key.
4) When "#SCAN SW" appears, press the OK key.
5) Using the left and right arrow keys, move the cursor to Bit-4 (fifth bit from right) in the Bit SW layout and then press the 1 key. Make sure that the switch bit indication changes as shown below.
"#SCAN SW 001 10000000">"#SCAN SW 001 10010000"
6) Press the OK key.
7) Make sure that "SCAN SW 002 10000000" is displayed, and then press the Reset key to exit the service mode.
8) Perform copy operation without paper.
9) The following image is output:



F-4-12

10) View the output image. While checking the shadow line (image of the scanned ADF body) [1] between the platen roller and ADF mylar and the shadow line (image of the scanned printer body) [2] of the stream reading glass mylar for parallelism, move the right hinge to adjust squareness.
Move the right hinge so that A=B=2mm.
If A>B, the right side of the ADF is shifted rearward.
If B>A, the right side of the ADF is shifted frontward.



F-4-13

4.3.1.4 Magnification Adjustment

1) Place the test chart on the DADF, and take a copy of it. It is called copy A.
2) Compare the longitudinal length of the image on the test chart with that on copy A. Enter the service mode and adjust magnification as required.
If the length of the image on copy A is shorter, decrease the value (to reduce the stream reading speed).
If the length of the image on copy A is longer, increase the value (to increase the stream reading speed).
3) Enter the service mode.

Press the User Mode key "⊛", 2 key, 8 key, User Mode key "⊛" on the operation panel of the host machine.
4) Using the arrow keys on the operation panel, display "#SCAN".
5) Press the OK key.
6) Using the arrow keys on the operation panel, display "#SCAN NUMERIC".
7) Press the OK key.
8) Using arrow keys, select 48.
9) Using numeric keys, change the value to determine the optimum value. Press the OK key. (Default: 16)
10) Using arrow keys, select 54.
11) Using numeric keys, increase or decrease the value by the value changed in step 9. (Default: 16)

MEMO
- SCAN NUMERIC>48 is the item for adjusting the DADF's feed motor speed.
- SCAN NUMERIC>54 is the item for adjusting the DADF's pickup motor speed.

⚠Do not change the adjustment value greatly.

4.3.1.5 Side Registration Adjustment

1) Place the test chart on the DADF and take a copy of it.
2) Compare the side registration on the test chart with that on the copy. Perform adjustment if required.
If the image is shifted forward, increase the value.
If the image is shifted rearward, decrease the value.
Adjustment step: 0.1 mm
3) Enter the service mode.

Press the User Mode key "⊛", 2 key, 8 key, User Mode key "⊛" on the operation panel of the host machine.
4) Using the arrow keys on the operation panel, display "#SCAN".
5) Press the OK key.
6) Using the arrow keys on the operation panel, display "#SCAN NUMERIC".
7) Press the OK key.
8) Using arrow keys, select 41.
9) Using numeric keys, change the value to determine the optimum value. Press the OK key. (Default: 35)

4.3.1.6 Leading Edge Registration Adjustment

1) Place the test chart on the DADF and take a copy of it.
2) Compare the leading edge registration on the test chart with that on the copy. Perform adjustment if required.
If the image is shifted leftward, decrease the value.
If the image is shifted rightward, increase the value.
Adjustment step: 0.1 mm
3) Enter the service mode.

Press the User Mode key "⊛", 2 key, 8 key, User Mode key "⊛" on the operation panel of the host machine.
4) Using the arrow keys on the operation panel, display "#SCAN".
5) Press the OK key.
6) Using the arrow keys on the operation panel, display "#SCAN NUMERIC".
7) Press the OK key.
8) Using arrow keys, select 42.
9) Using numeric keys, change the value to determine the optimum value. Press the OK key. (Default: 220)

⚠After completion of this adjustment, check for squareness. If it is wrong, go back to the squareness adjustment procedure.

4.3.1.7 Reading Position Adjustment

1) Enter the service mode.

Press the User Mode key "⊛", 2 key, 8 key, User Mode key "⊛" on the operation panel of the host machine.
2) Using the arrow keys on the operation panel, display "TEST MODE".
3) Press the OK key.
4) Press the 2 key. "SCAN TEST" appears.
5) Press the 3 key. "SHEET POS ADJ" appears.
The optical system starts scanning. Several seconds later, automatic adjustment of the reading position finishes and "OK" appears.

⚠If automatic adjustment fails, "NG" appears. Perform the following procedure:
Clean the white roller of the DADF and the document glass of the host machine, and then retry auto adjustment.

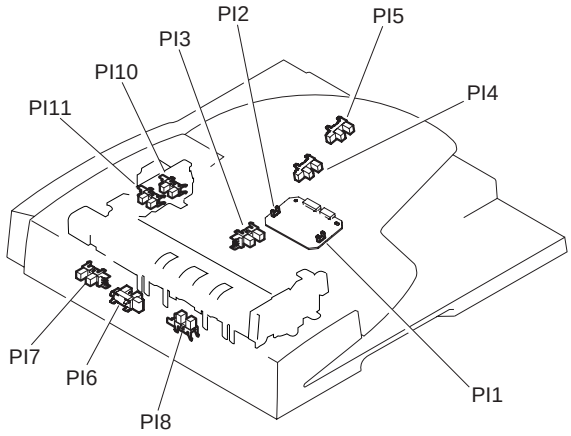
4.4 Outline of Electrical Components

4.4.1 Electric Parts Layout/Functions

<Sensors>

T-4-3

Symbol	Name	Part No.	Relay PCB	ADF driver PCB	Jam code
PI1	Document width sensor 2 (directly mounted on the Relay PCB)	FH5-3731		CN7	
PI2	Document width sensor 1 (directly mounted on the Relay PCB)	FH5-3731		CN7	
PI3	Last document detection sensor	WG8-5696	CN32	CN7	
PI4	Document length sensor 1	WG8-5696	CN32	CN7	
PI5	Document length sensor 2	WG8-5696	CN32	CN7	
PI6	Delivery reversal sensor	WG8-5696		CN8	0007, 000c, 000d
PI7	Read sensor	WG8-5696		CN8	0007, 0008, 000c
PI8	Registration paper sensor	WG8-5696		CN8	0007, 0008, 000c
PI10	Cover open/close sensor	WG8-5696		CN9	000e
PI11	Document set sensor	WG8-5696		CN9	000a

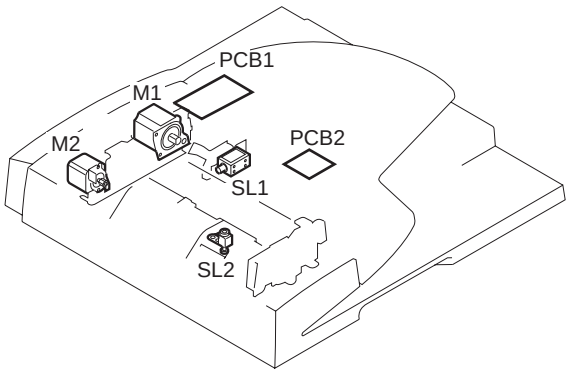


F-4-14

<Motors, Clutch, Solenoids, PCBs, etc.>

T-4-4

Symbol	Name	Function	Part No.	ADF driver PCB	E code
M1	Motor	Feed motor	FH5-1142	CN4	
M2		Pickup motor	FH5-1142	CN11	
SL1	Solenoid	Roller release solenoid	FH6-5136	CN5	
SL2		Stamp solenoid	FB5-9410	CN6	
PCB1	ADF driver PCB	ADF control	FH5-3730		
PCB2	Relay PCB	Repeating for sensors in document pickup tray/Document width detection	FH5-3731	CN7	



F-4-15

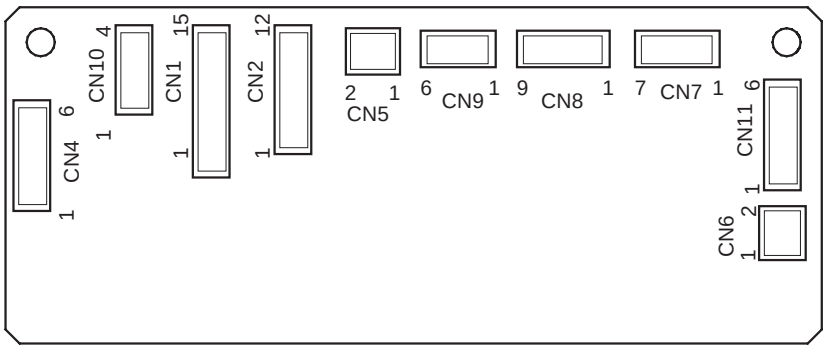
4.5 Variable Resistors (VR), Light-Emitting Diodes (LED), and Check Pins by PCB

4.5.1 Outline

Among the LEDs and check pins of this machine, only those handled during field servicing are listed below.

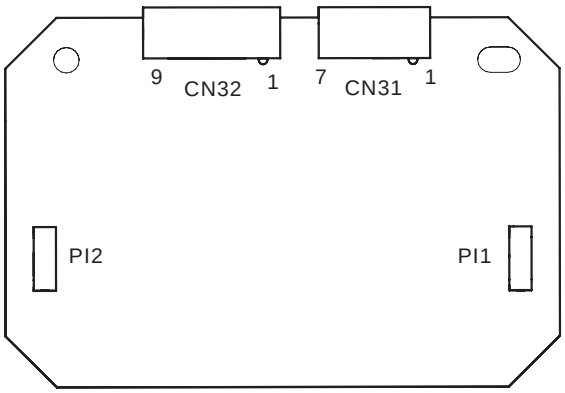
⚠Check pins not listed in the list are used only in the factory. When performing adjustments and checks using these check pins, special tools and measuring instruments are required. Do not touch them during field servicing.

4.5.2 ADF Driver PCB



F-4-16

4.5.3 Relay PCB



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Chapter 5 Error Code

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5.1 Service Error Code

5.1.1 Error Code List

This machine has no error code.

5.2 Jam Codes

5.2.1 Jam Code List

T-5-1

Code	Name	Sensor No.	Description
0000	Unknown jam	-	Other errors
0007	Initial stationary	PI6,PI7,PI8	Paper is detected in the transport path before the DADF starts initial operation.
0008	Read sensor delay	PI7,PI8	The read sensor does not detect paper when the paper has been fed by the predetermined distance since reception of a pickup request.
0009	Read sensor stationary	PI7	The trailing edge of paper is not detected when the paper has been fed by the predetermined distance since detection of it by the read sensor.
000a	Paper absence (Pull out the document.)	PI11	The Document set sensor has been held off since start of pickup.
000c	Delivery reversal sensor delay	PI6,PI7	The delivery reversal sensor does not detect paper since the paper has been fed by the predetermined distance since the read sensor was turned on.
000d	Delivery reversal sensor stationary	PI6	The trailing edge of paper is not detected when the paper has been fed by the predetermined distance since the delivery reversal sensor detected the paper.
000e	ADF cover open	PI10	The feeder cover was opened during operation (of the drive system).
000f	User ADF open	sensor of the reader unit	The ADF was opened during operation (of the drive system).
0010	Pickup NG	-	The registration sensor has been held off since paper pickup started.

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