Service Manual

Feeder
DADF-Q1

Canon

Feb 7 2006

Application

This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

Corrections

This manual may contain technical inaccuracies or typographical errors due to improvements or changes in products. When changes occur in applicable products or in the contents of this manual, Canon will release technical information as the need arises. In the event of major changes in the contents of this manual over a long or short period, Canon will issue a new edition of this manual.

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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."

Contents

Chapter 1 Specifications

Contents

1.1 Product Specifications

1.1.1 ADF Specifications

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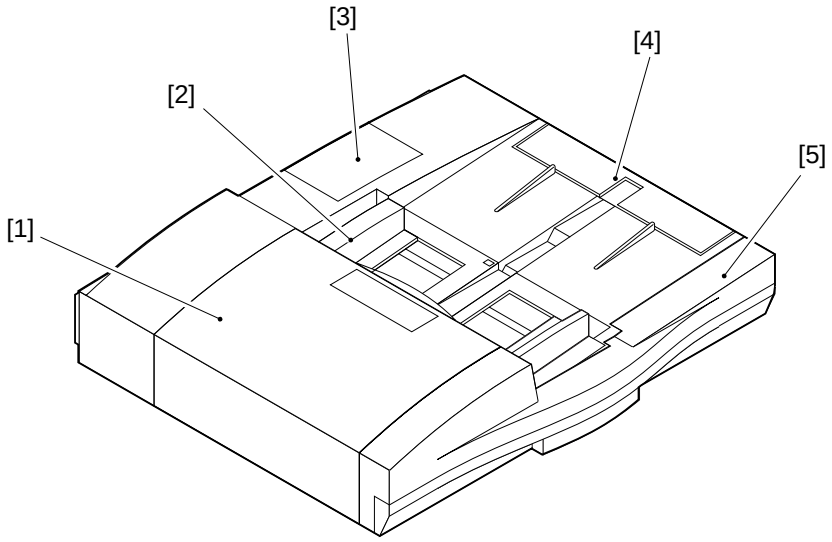
Item	Description		Remarks
Original pickup	auto		
Original placement	original tray	face-up	
	manual feeder	face-down: against rear end	
Original separation	top separation		
Original type	Sheet		
Original weight	original tray	50 to 216g/m2	However, if large-size double-sided, 100 g/m2; if longer than 432 mm, 60 to 90 g/m2.
	manual feeder	38 to 216g/m2	
Original size	A5 to A3 / STMT to 279.4X431.8mm (11'X17')		
	feed direction: 139.7 to 432.0 mm (630.l0 mm) cross-feed direction: 182.0 to 297.0 mm		Value in parentheses represents extra-long paper.
Original tray capacity	small-size	100 sheets	In below 80g/ m2paper. The manuscripts exceeding 80g/m2 are base weight conversion.
	A5, A4, B5, STMT, LTR, A4R, B5R, LTRR		
	large-size	100 sheets	80 g/m2 or less. If heavier than 80 g/m2, conversion used. If longer than 432 mm, 1 sheet.
	A3, B4, LGL, 279.4X431.8mm (11'X17')		
Original reference	tray	center	
	manual feeder	rear	
Original reading	stream (single-sided)/fixed		
Pre-cycle end	no		
Control panel	no		
Display	no		
Original AE detection	no (image processing after reading by host machine)		
2-on-1	no (image processing after reading by host machine)		
Original handling	single-sided, double-sided		
Stream reading	yes (all sizes; with 20% to 200% only on one side)		
Manual feeding	yes (1 sheet)		
Original size identification	yes		
Residual original detection	yes (in combination with host machine)		
Jam recovery	yes		
Count mode	no		
Original size mix	yes (limited to same paper series; width)		
Book original	supported (mobile hinge assembly; up/down)		
Tracing paper mode	no		
Silent mode	no		
stamp	no		
Communication with host machine	IP communication 2		
Power supply	24 VDC, 13 VDC		From printer unit by way of reader unit.
Weight	21.5 kg (approx.)		Not including delivery tray.
Dimensions	646 (W) x 569.5 (D) x 143 (H) mm		Not including delivery tray.
Power consumption	100 W or less (during operation)		
Operating noise	sound pressure: host machine + 3 dB alone: 72 dB		Host machine + ADF + finisher
	sound quality: 10.78 sone (85 ipm)		
DF opening/closing noise (impact)	sound pressure: 70 dB		
Operating noise	same as host machine		
Temperature range			
Humidity range			

The above information is subject to change for product revision.

1.2 Names of Parts

1.2.1 External View



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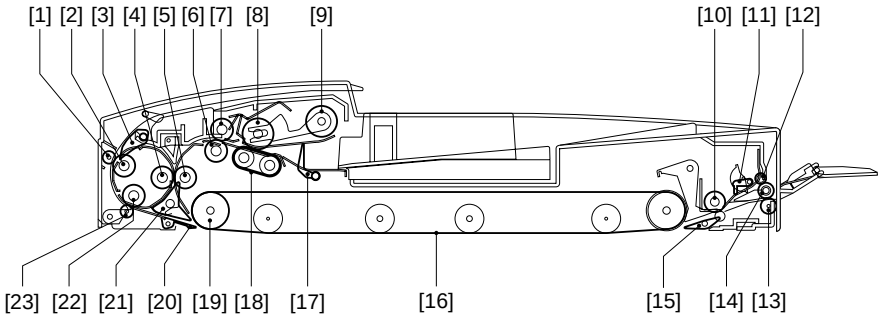
[1]	Upper cover	[4]	Manual feed tray
[2]	Side guide	[5]	Front cover
[3]	ADF controller cover		

1.2.2 Cross Section



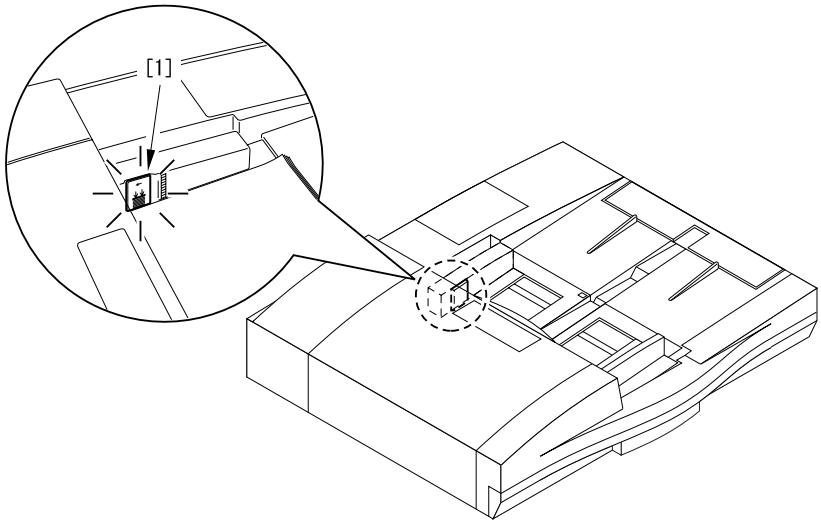
F-1-2

[1]	Reversing roller B member	[13]	Delivery roller B member
[2]	Reversing roller B	[14]	Delivery roller
[3]	Reversing flapper	[15]	Delivery guide flapper
[4]	Registration pressure roller	[16]	Feeding belt
[5]	Registration roller	[17]	Stopper plate
[6]	Pull-off roller	[18]	Separation belt
[7]	Pull-off pressure roller	[19]	Feed belt driver roller
[8]	Feeding roller	[20]	Guide flapper
[9]	Pickup roller	[21]	Pre-reversal flapper
[10]	Manual feed registration roller	[22]	Reversing roller A
[11]	Manual feed stopper plate	[23]	Reversing roller A member
[12]	elivery roller A member		

1.3 Using the Machine

1.3.1 Original Set Indicator

The Original Set Indicator [1] goes on when an original is placed on the original tray, and flashes when a jam occurs.



F-1-3

-Warnings and Action to Take
If the Original Set indicator starts to flash while an original is inside the DADF, suspect a jam; go through the following to remove the jam:
1) Remove all originals from the original tray.
2) Open the upper cover, and remove the jam, if found.
3) Open the DADF, and remove the original from the copyboard glass, if found.
4) Put the originals back into initial sequence, and place the stack in the DADF.

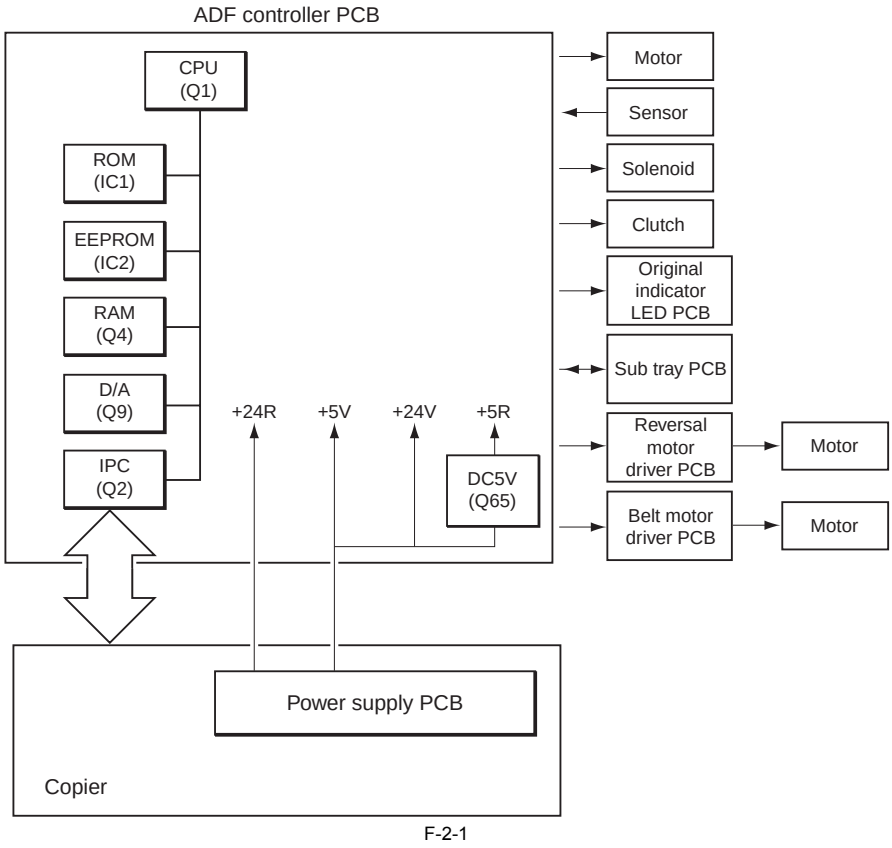
Chapter 2 Functions

Contents

2.1 Basic Construction

2.1.1 Overview of Electrical Circuit

The machine's electrical mechanisms are controlled by the ADF controller PCB (microcomputer CPU). The CPU interprets signals from sensors and the host machine, and generates appropriate signals to drive such loads as motors and solenoids at such times as programmed in advance.



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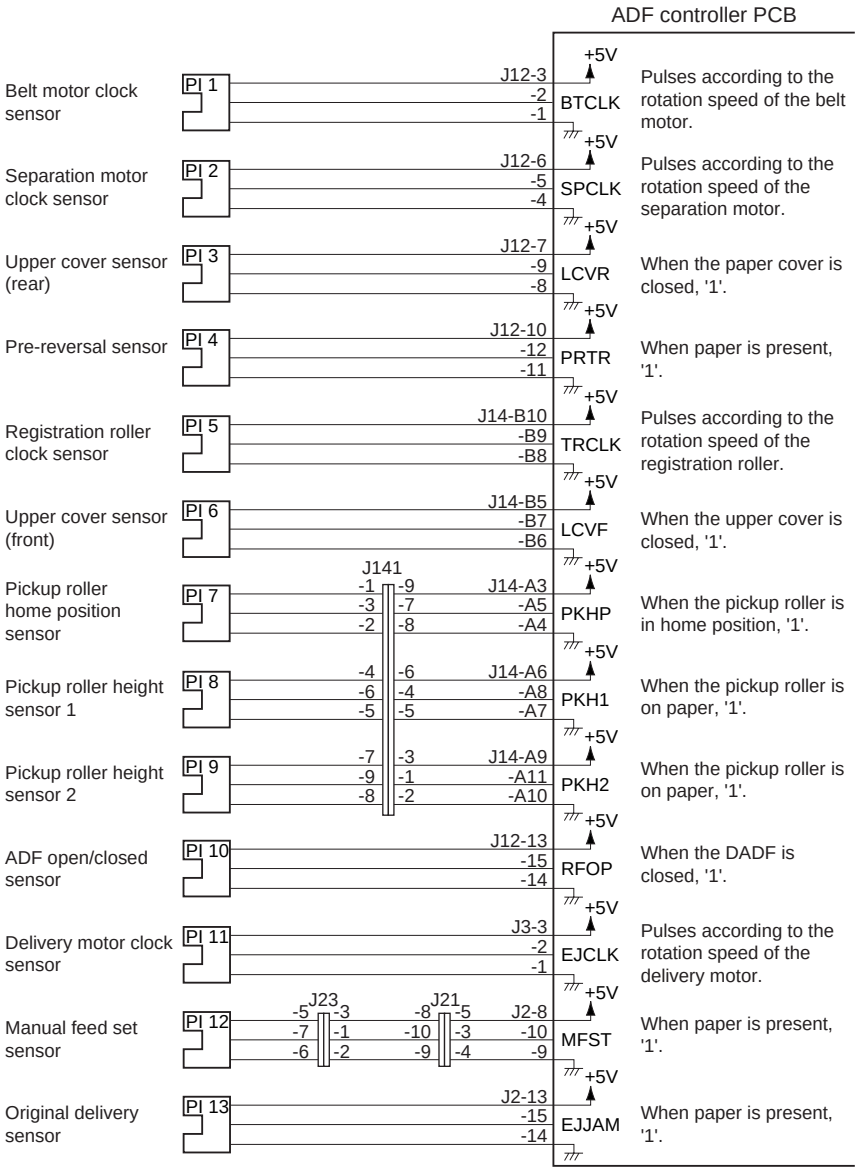
2.1.2 Inputs to ADF Controller PCB

-Inputs to ADF Controller PCB(1/2)



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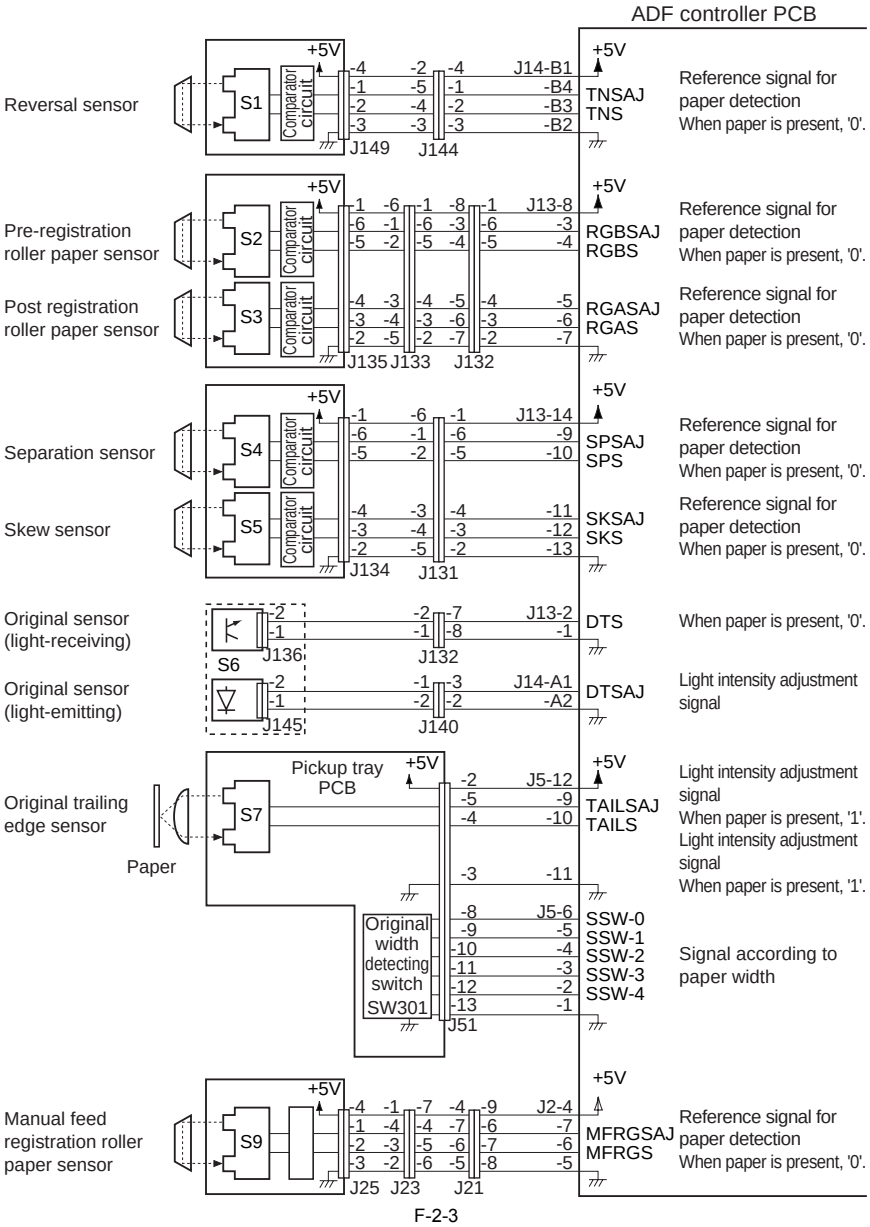
-Inputs to ADF Controller PCB(2/2)



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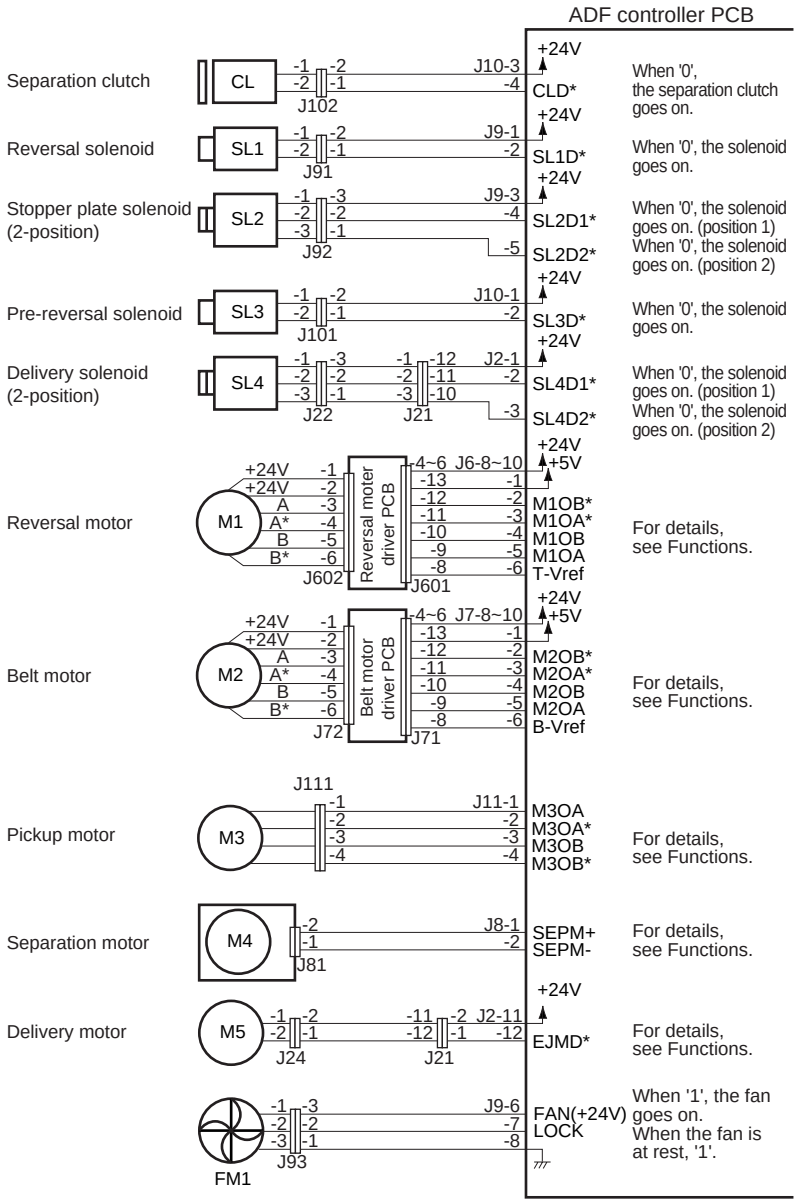
2.1.3 Outputs from ADF Controller PCB

-Outputs from ADF Controller PCB(1/1)



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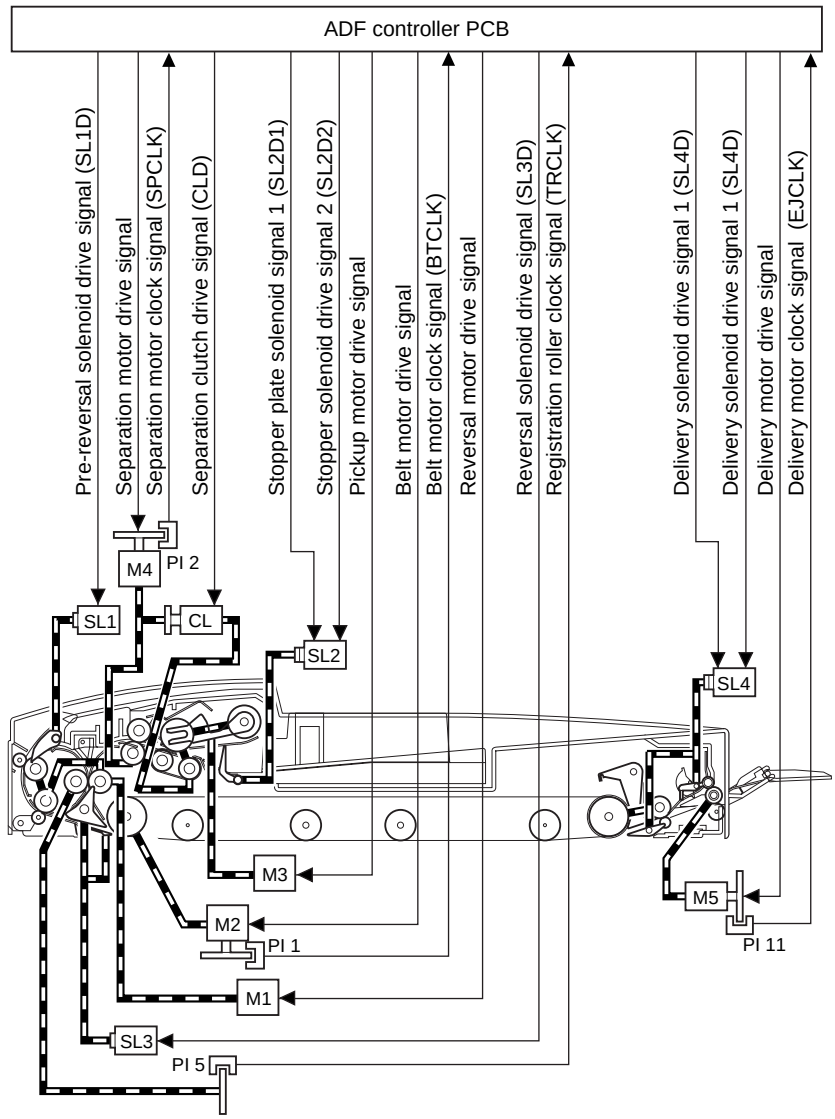
2.2 Basic Operation

2.2.1 Outline

The DADF uses five motors and one clutch to pick up, separate, move, and deliver originals.

Name (notation)	Description
Reversal motor (M1)	Moves and reverses originals.
Belt motor (M2)	Moves originals.
Pickup motor (M3)	Moves up/down the pickup roller.
Separation motor (M4)	Separates originals.
Delivery motor (M5)	Delivers originals and picks up manually fed originals.
Separation clutch (CL)	Turns on/off the pull-off roller and the separation/feed drive system.

Diagram of Drive



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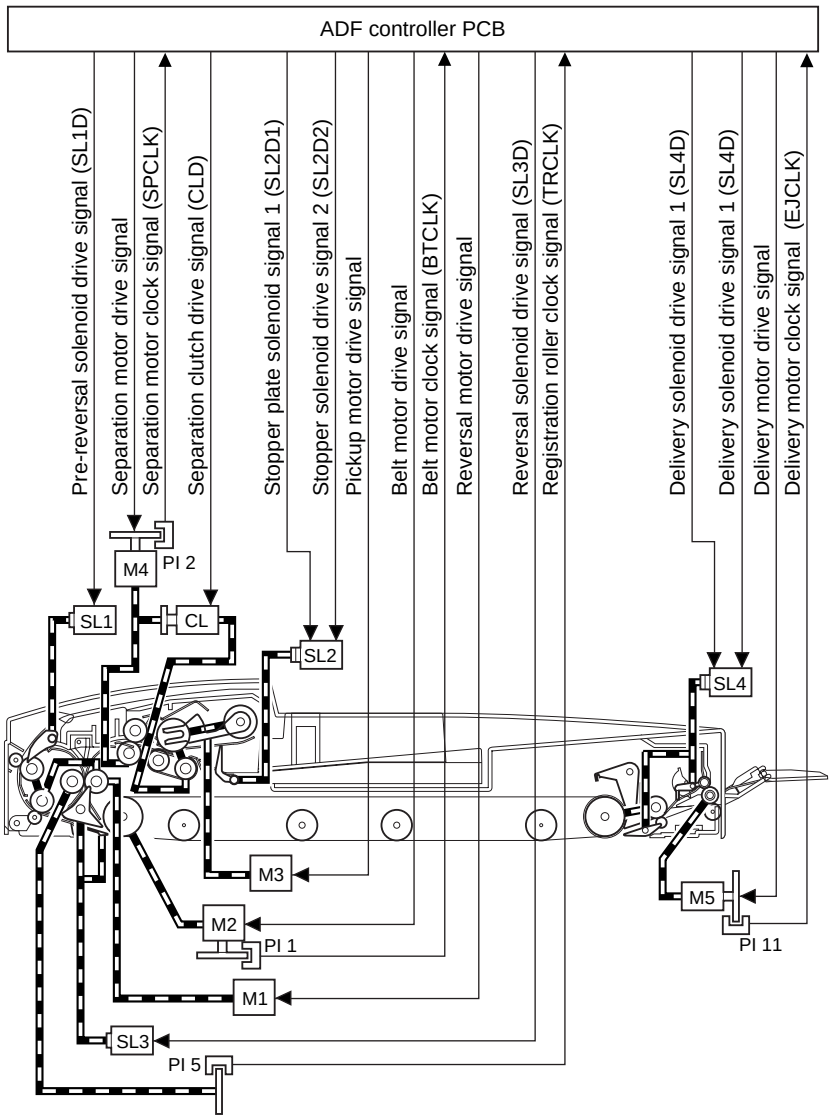
Sensor Arrangement



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2.2.2 Outline

The DADF operates in either of the following three modes; the DADF operates in response to instructions from the copier, executing appropriate modes to suit the copier's operations.
The following table shows each operation mode, an outline of its operation, and its corresponding copying mode:

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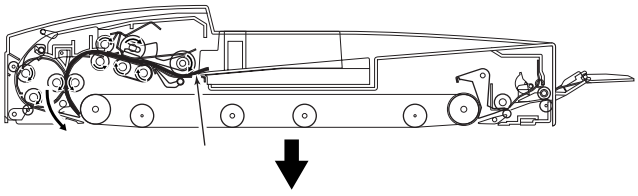
No.	Mode	Operation	Copying mode	Copying operation
1	CW pickup/delivery	Picks up an original, and delivers it as it is after copying.	Single-sided original to single-sided copy Signal-sided original to double-sided copy	Stream reading (fixed if the reproduction ratio is not between 50% and 200%)
2	Pre-reversal pickup/reversal/ delivery	Reverses an original, picks it up, reverses it once again after copying, and delivers it. Fixed reading	Double-sided original to double-sided copy Double-sided original to single-sided copy	Fixed reading
3	Manual feeder pickup/delivery	Picks up an original from the manual feeder, and delivers it after copying.	Manual copy	Fixed reading

2.2.3 CW Pickup/Delivery

The following is an outline of the flow of originals.
Pickup



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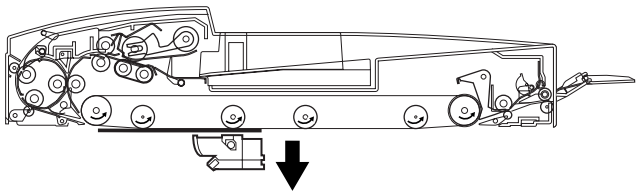
Scan



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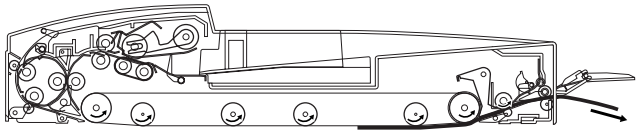
Delivery



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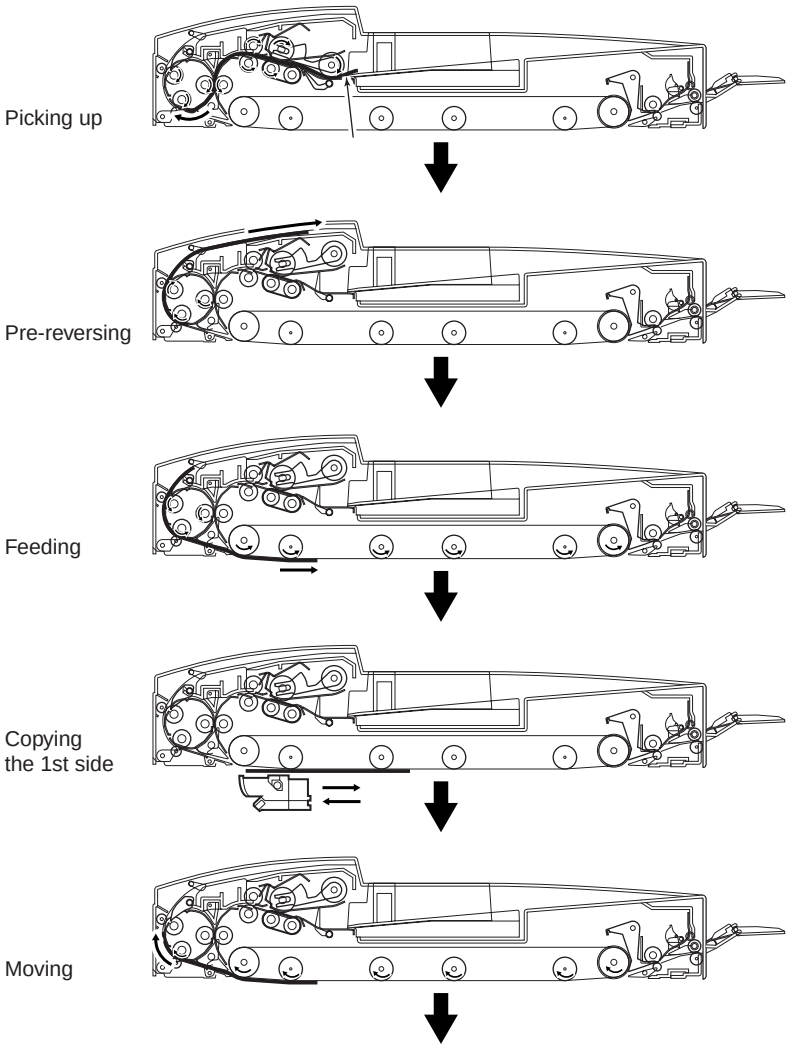
2.2.4 Pre-Reversal/Reversal/Delivery

The following is an outline of the flow of originals:



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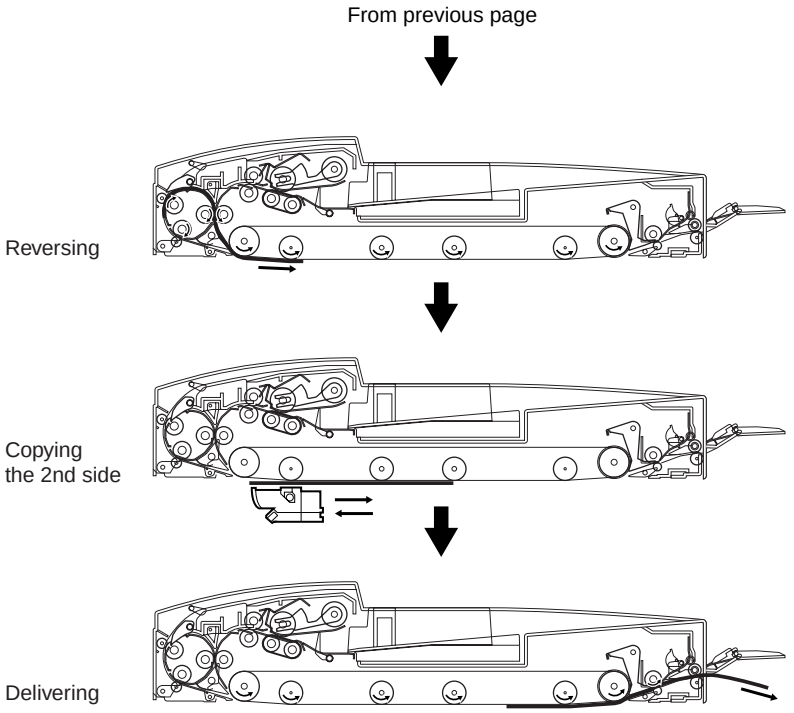

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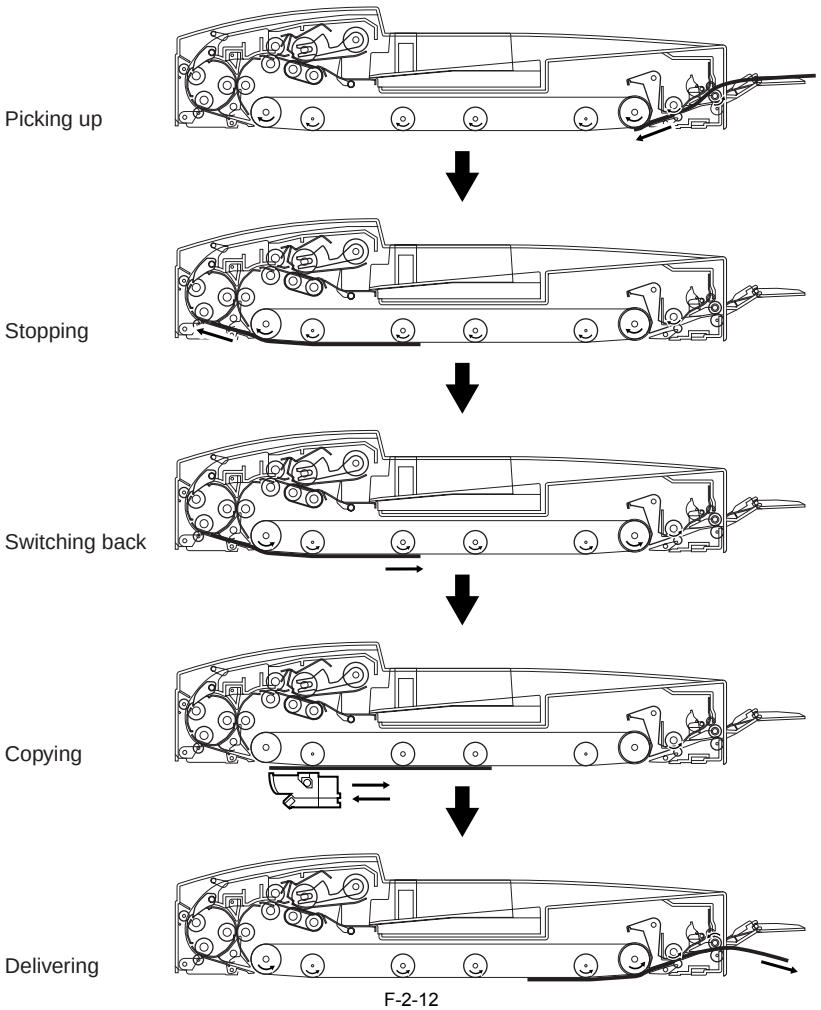
2.2.5 Manual Feeder Pickup/Delivery

The following is an outline of the flow of originals:



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2.3 Document Detection

2.3.1 Outline

The DADF is equipped with the following five types of mechanisms of detection:

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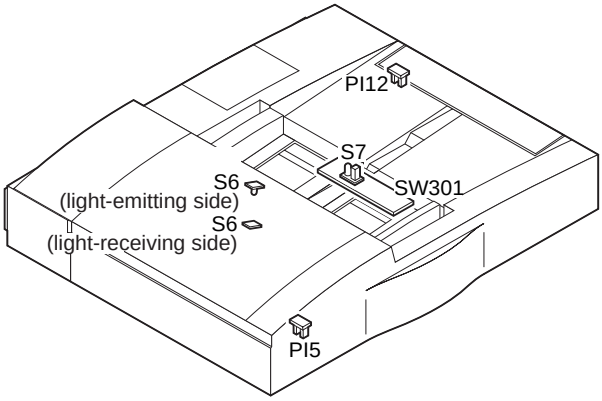
Item	Description	Sensor used (notation)
Presence/absence of an original	Identifies the presence/absence of an original on the original tray.	Original sensor (S6)
Original size 1	Identifies the size of the original placed in the original tray (as to being large-size or small-size).	Original trailing edge sensor (S7)
Original size 2	Identifies the size of an original on the move (default size).	Registration roller clock sensor (PI5)
Original in manual feeder	Detects the presence/absence of an original in the manual feeder.	Manual feeder set sensor (PI12)



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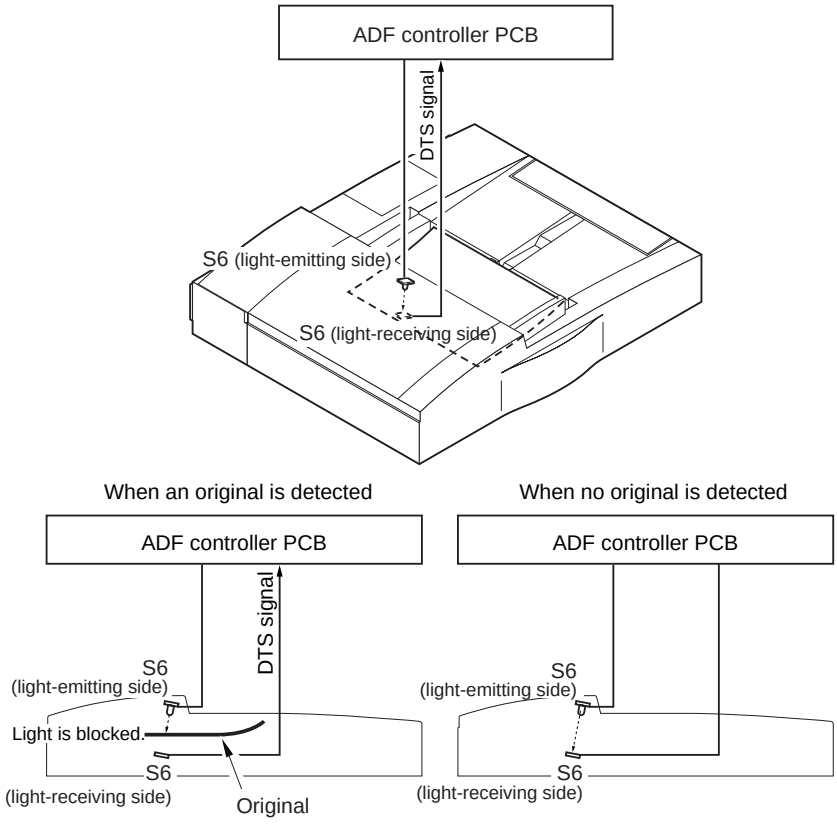
2.3.2 Detecting the Presence/Absence of an Original

The presence/absence of an original in the original tray is detected by the original sensor (S6).
When an original is placed on the original tray, the light from the light-emitting side of the original sensor is blocked, causing the light-receiving side of the original sensor to send the original detection signal (DTS) to the ADF controller PCB, which in response turns on the Original Set indicator.



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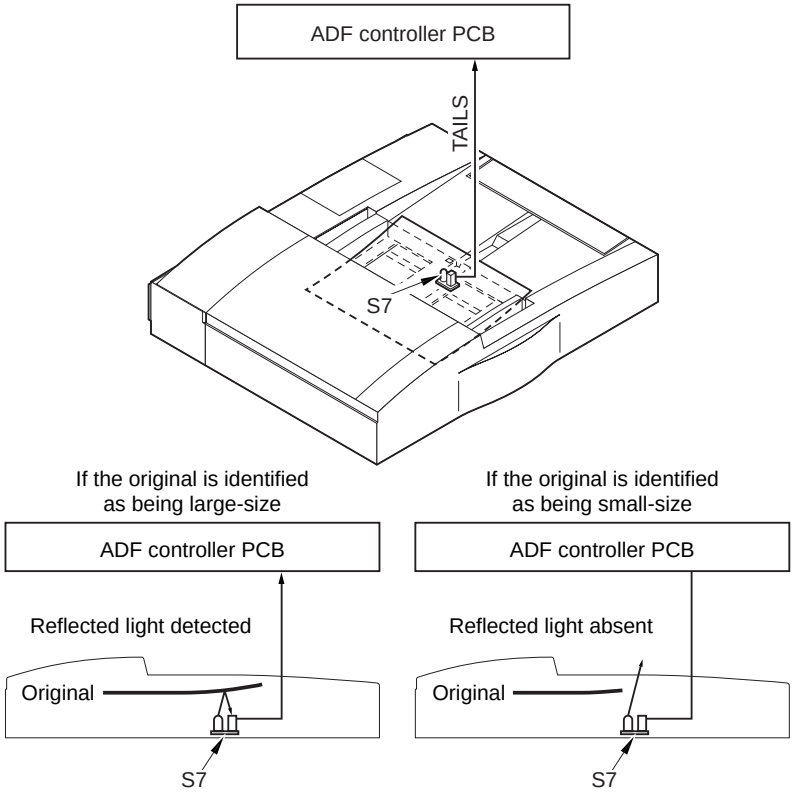
2.3.3 Original Size Detection 1

In original size detection 1, the original trailing edge sensor is used (S7), which is designed to identify the original in the original tray as being small-size or large-size.
When the original covers the original trailing edge sensor, the light from the LED of the original trailing edge sensor is reflected by the original to hit the phototransistor, at which time the DADF identifies the original as being large-size.
The DADF sends original size data (small-size or large-size) to the copier, which uses the data to determine the point at which the scanner is stopped for stream reading.

Small size: A5, A4, B5, STMT, LTR
Large-size: A4R, B5R, A3, B4, LTRR, LGL, 279.4X431.8mm (11"X17")



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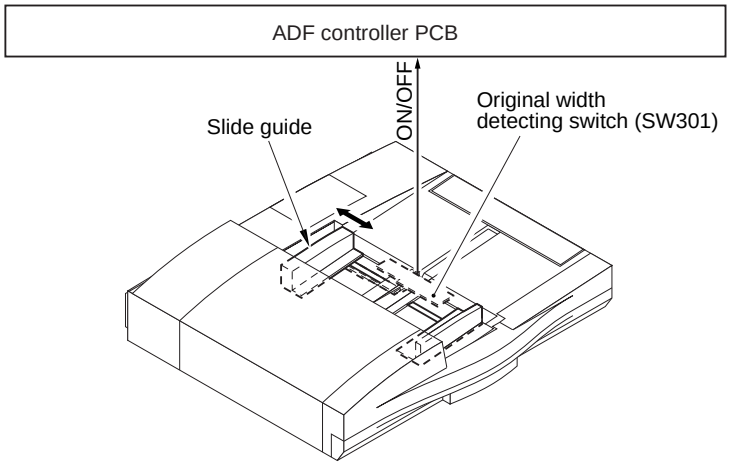
2.3.4 Original Size Detection 2

a. Outline
In original size detection 2, the original width detecting switch (SW301) and the registration roller clock sensor (PI5) are used to identify a default size.
The original width detecting switch is designed to find out the width of originals. As many as five contact plates (SSW0 through 4) are in contact with the original width detecting switch, operating in keeping with the slide guide. The state (ON or OFF) of each contact plate is communicated to the ADF controller PCB, which uses the input to determine the width of the original.
The following table shows the states of the contact plates in relation to default sizes; the states other than those indicated are assumed to indicate the presence of an original which is not of a default size.



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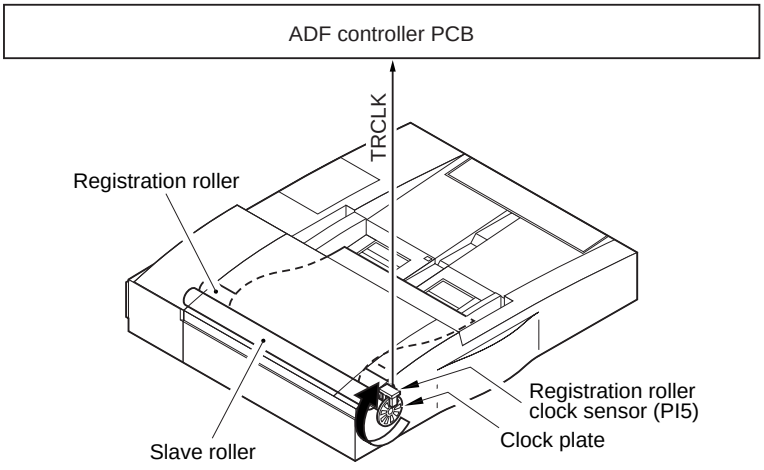
Default size	SSW0	SSW1	SSW2	SSW3	SSW4
A5, A4R	ON	ON	OFF	ON	ON
	ON	OFF	OFF	ON	ON
A4, A3	ON	OFF	OFF	ON	OFF
	ON	OFF	OFF	OFF	OFF
B5R	ON	OFF	OFF	OFF	ON
B5, B4	ON	OFF	ON	OFF	ON
	ON	OFF	ON	OFF	OFF

Default size	SSW0	SSW1	SSW2	SSW3	SSW4
STMT, LTRR, LGL	ON	ON	ON	OFF	ON
	ON	ON	OFF	OFF	ON
LTR, 279.4X431.8mm (11"X17")	ON	ON	OFF	OFF	OFF
	ON	ON	ON	OFF	OFF

The registration roller clock sensor (PI5) is used to measure the length of originals with reference to the revolutions made by the clock plate mounted to the slave roller of the registration roller. Based on the revolutions of the lock plate, the ADF controller PCB identifies the length of the original in question (in feeding direction).



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The DADF uses the data on the width and the length of the original obtained by original detection 2 to identify a default size, and sends the result to the copier. In response, the copier selects the appropriate copy paper size to suit the identified size of the original.
The following tables show the default sizes in relation to the sizes detected by the DADF:

A- and A/B-Configuration T-2-4

(unit: mm)

Default size	Original length	Original width
B5R	237 to 297	177 to 187
A5	129 to 189	205 to 213
A4R	277 to 317	
FOOLSCAP	317 to 370	
B5	162 to 222	252 to 262
B4	344 to 404	
A4	190 to 250	292 to 302
A3	400 to 460	
A size outside of the above ranges will be identified as a non-default size.		

Inch-Configuration T-2-5

(unit: mm)

Default size	Original length	Original width
STMT	120 to 180	213 to 220.9
LTRR	259 to 309	
FOOLSCAP	310 to 343	
LGL	343 to 396	
LTR	196 to 256	274.4 to 284.4
279.4X431.8 (11"X17")	412 to 472	
A size outside of the above ranges will be identified as a non-default size.		

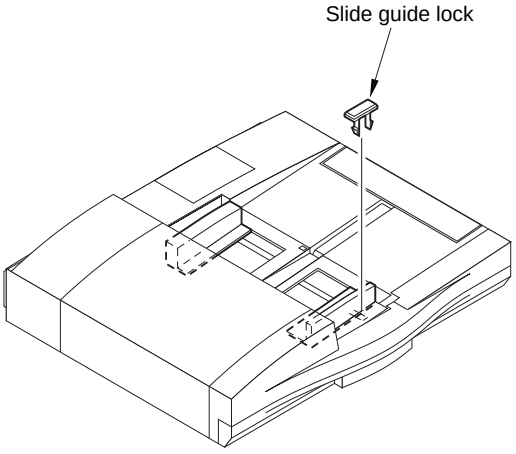
Inch/A- and Inch/AB-Configuration T-2-6

(unit: mm)

Default size	Original length	Original width
B5R	237 to 297	170 to 187
A5	129 to 189	205 to 213
A4R	277 to 337	
STMT	120 to 180	213 to 220.9
LTRR	259 to 309	
FOOLSCAP	317 to 343	
LGL	343 to 396	
B5	162 to 222	252 to 262
B4	344 to 404	
LTR	196 to 256	274.4 to 284.4
279.4X431.8 (11"X17")	412 to 472	

		(unit: mm)
Default size	**Original length**	**Original width**
A4	190 to 250	292 to 302
A3	400 to 460	
A size outside of the above ranges will be identified as a non-default size.		

b.Slide Guide Lock
The DADF is equipped with a slide guide lock so that the slide guide will not slide beyond the width of an A4/A3 sheet.
To use an original wider than 297 mm, remove the slide guide lock (up to 305 mm; however, the feeding length must be 432 mm or less).



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Be sure to adjust the slide guide to suit the original size when making copies.
Otherwise, the original is likely to move askew.

c. Slide Guide Positioning Member
The rail of the slide guide is provided with notches to make sure that the slide guide stops to suit a specific default original size. Some of these points representing differing paper sizes, however, are close enough to allow the slide guide to be set at the wrong point.
To prevent wrong positioning of the slide guide, the DADF comes with two types of slide guide positioning members; when fitted correctly, the positioning members will make sure that the slide guide will stop at the correct point.

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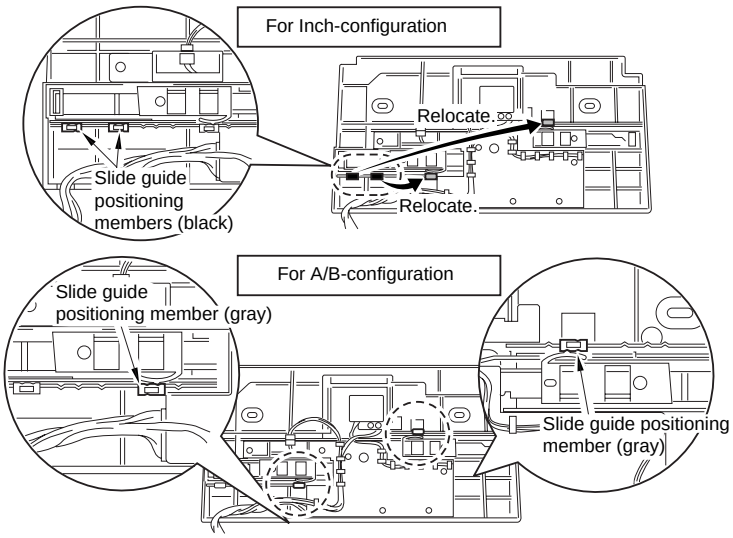
Color of slide guide positioning member	**Stop position of slide guide**	
	Side with 1 notch	**Side with 2 notches**
Gray (for A/B-configuration)	A4R	A4R
		LTRR
Black (for Inch-configuration)	LTRR	LTRR
		A4R



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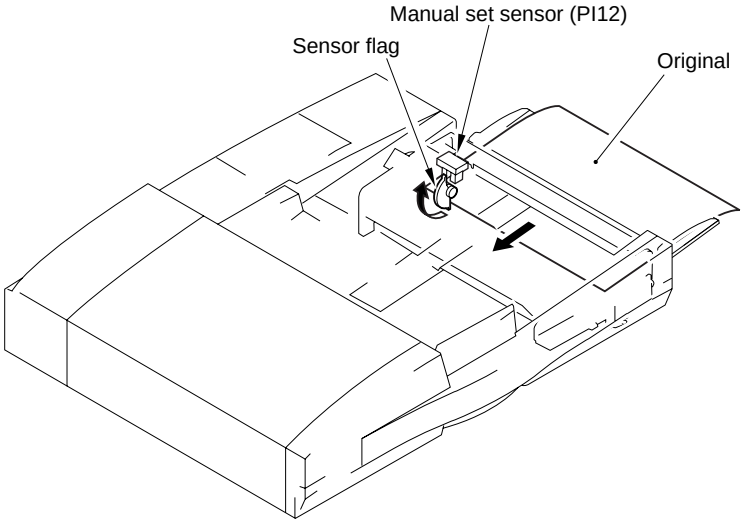
2.3.5 Detecting the Presence/Absence of an Original in the Manual Feeder

The presence/absence of an original in the manual feeder is detected using the manual set sensor (PI12).
When an original is placed in the manual feeder, the original pushes the sensor flag, causing the sensor flag to reach the sensor, enabling the DADF to assume the presence of an original in the manual feeder.
When the Start key is pressed, the DADF picks up the original from the manual feeder for copying.



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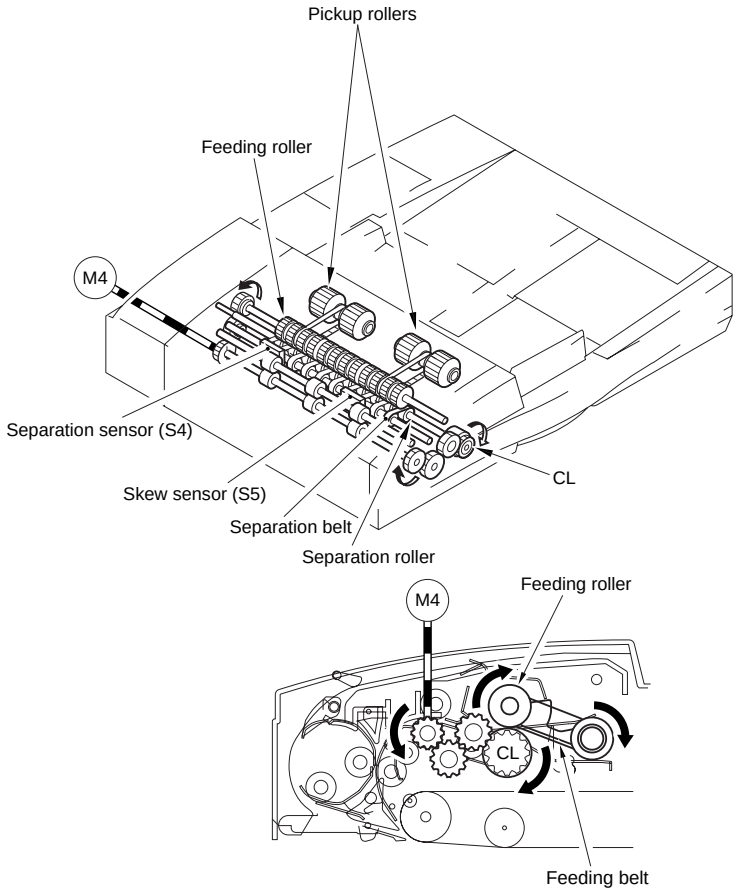
2.4 Document Pickup/Separation

2.4.1 Outline

The pickup roller unit is butted against the original, and the pickup roller is rotated to pick up an original. The pickup roller unit is moved up/down by the pickup motor (M3), and the pickup roller is rotated by the separation motor (M4) and the separation clutch (CL).
Originals are separated by the separation roller and the separation belt with the help of the feeding roller. The rollers and the belt are driven by the separation motor (M4) and the separation clutch (CL).
The separation assembly is equipped with a separation sensor (S4) and a skew sensor (S5) to monitor the movement of originals.



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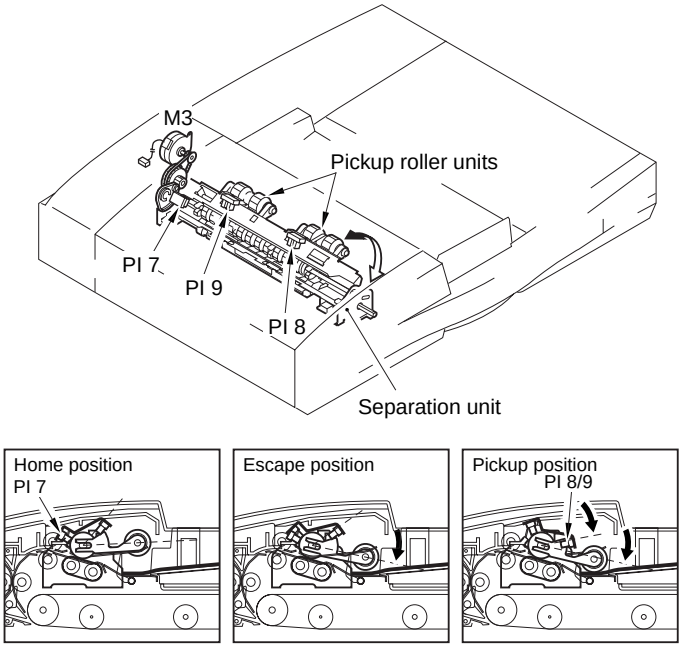
2.4.2 Moving Up/Down the Pickup Roller Unit

a. Outline
The DADF is equipped with two pickup roller units, each designed to move up/down between home position and the surface of the stack of originals. The pickup roller unit is moved up/down by the pickup motor (M3).
The pickup roller unit stops at either of the following positions; positioning is controlled by means of pulses from sensors and the pickup motor.

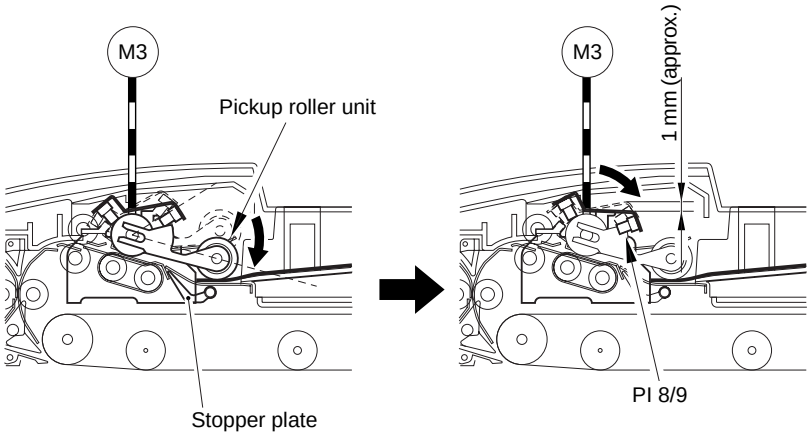
T-2-8

Stop position	Operation	Related sensor (notation)
Home position	Waits until the next copying operation.	Pickup roller home position sensor (PI7)
Wait position	Waits until the next pickup position	Pickup height sensor 1/2 (PI8/9)
		Pulse control of pickup motor (M3)
Pickup position	Picks up originals	Pickup height sensor 1/2 (PI8/9)
		Pulse control of pickup motor (M3)



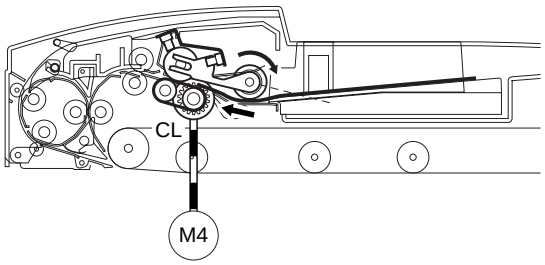
F-2-22

b.Movement
When the Start key on the copier is pressed, the DADF's stopper plate moves down and the pickup motor (M3) starts so that the pickup roller unit moves down to reach the stack of originals.
The pickup motor will stop when the pickup roller unit has reached the pickup height sensor 1 (PI8) and the pickup height sensor 2 (PI9) and then has moved down about 1 mm.



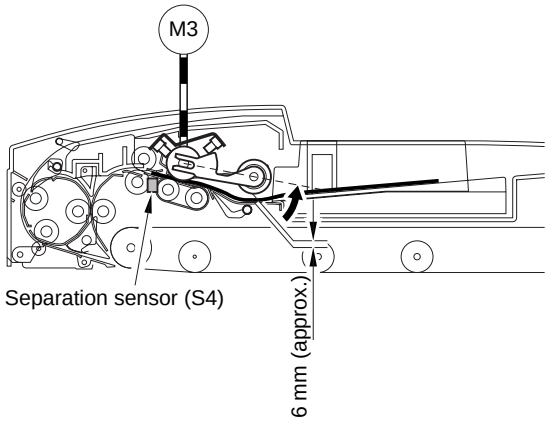
F-2-23

When the pickup roller unit stops to move down, the separation clutch (CL) and the separation motor (M3) start to move the 1st original to the separation assembly.



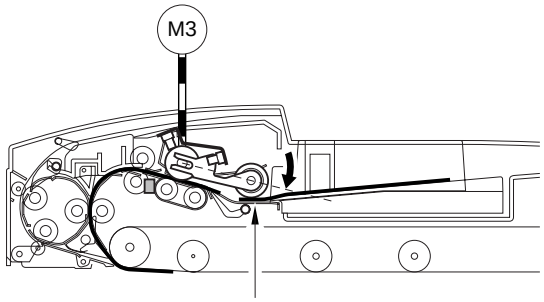
F-2-24

When the leading edge of the 1st original reaches the separation sensor (S4), the pickup motor (M3) starts to rotate to move the pickup roller unit from the surface of the stack of originals. The pickup roller unit stops about 6 mm from the surface of the stack of originals.



F-2-25

When the trailing edge of the 1st original moves past the point of contact [1] of the pickup roller, the pickup roller unit once again moves down to the surface of the stack of originals to pick up the 2nd original.

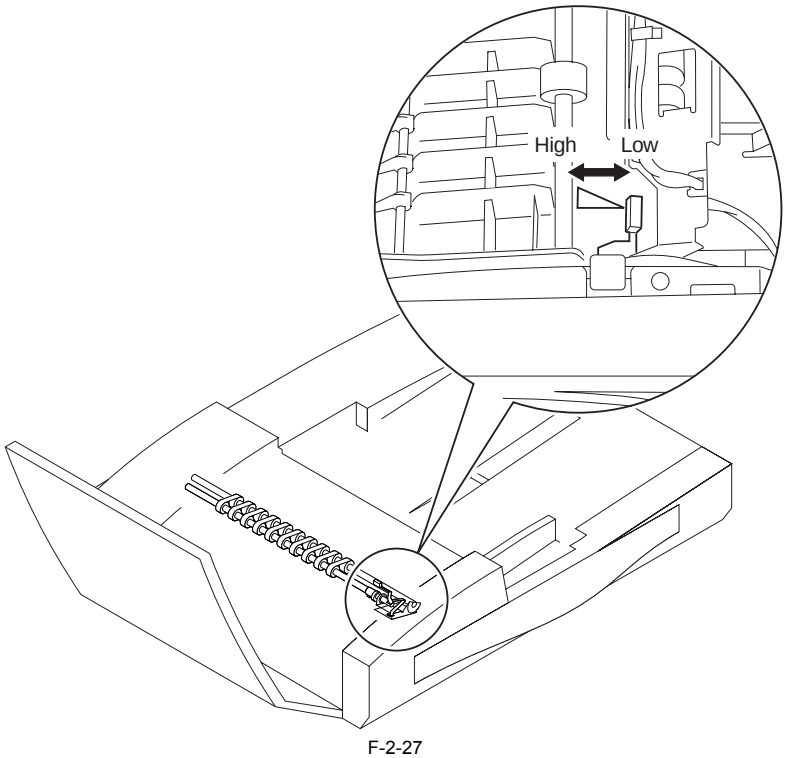


F-2-26

2.4.3 Switching the Separation Pressure

The DADF's separation assembly is equipped with a separation pressure switching mechanism which enables switching between two settings (low or high).
The separation pressure may be switched by operating the separation pressure lever located in front of the separation assembly. When the lever is operated, the position of the separation belt moves up or down to change the amount of overlap in relation to the feeding roller, thereby varying the separation pressure.

MEMO:
The separation pressure lever is set to "Low" at time of shipment from the factory.



F-2-27

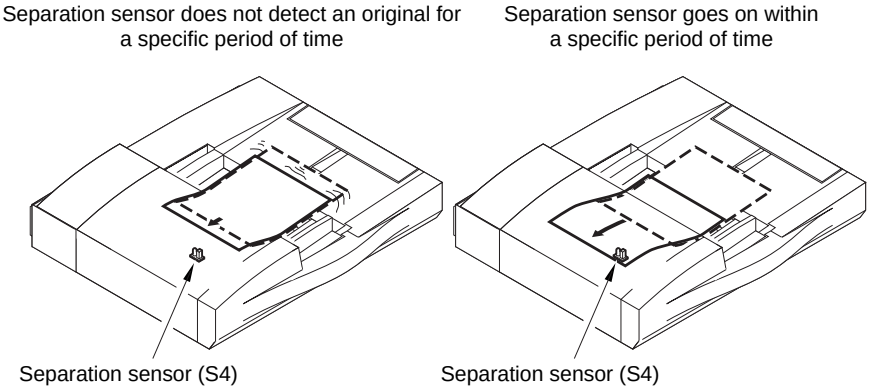
2.4.4 Separation Sensor (S4) and Skew Sensor (S5)

The paper path is equipped with a separation sensor (S4) and a skew sensor (S5) to monitor the movement of originals for the following:

T-2-9

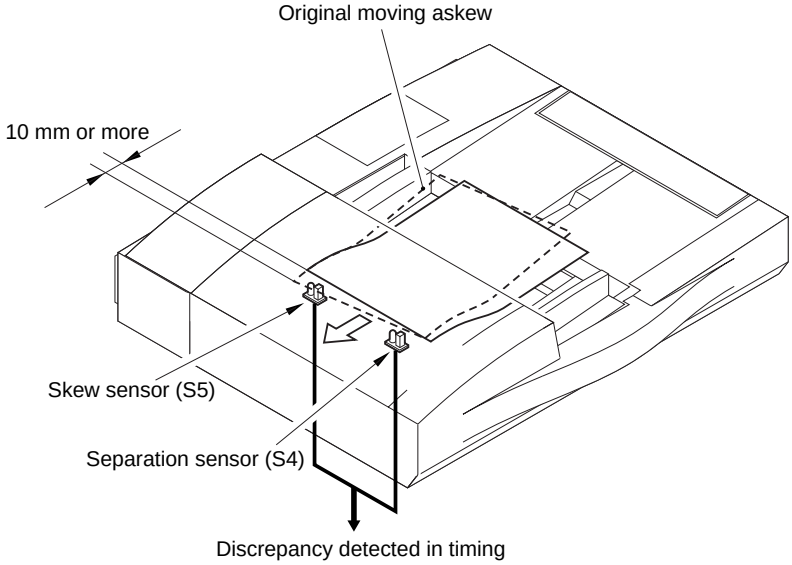
Item	Sensor used (notation)	Alarm
Separation fault (delay)	Separation sensor (S4)	0031
Skew	Separation sensor (S4)	0011
	Skew sensor (S5)	

A separation fault (delay) is identified if the separation sensor does not detect an original a specific period of time after the separation motor has started to rotate.



F-2-28

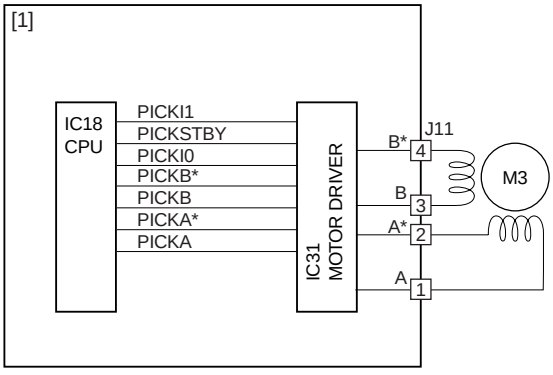
Both separation sensor and skew sensor are used to find out whether an original is moving askew. These two sensors are arranged in a single row in front-rear direction. An original is identified as moving askew if a discrepancy in timing is detected when it moves past these sensors. If the discrepancy is an equivalent of 10 mm, the DADF will assume that the original is moving askew, at which point it stops its operation to protect the original and causes the copier to indicate a jam message.



F-2-29

2.4.5 Controlling the Pickup Motor (M3)

The following is a diagram of the circuit used to control the pickup motor (M3).The pickup motor is a 4-phase stepping motor, and has the following mechanisms:
- turning on/off the motor
- controlling the direction of motor rotation
- holding the motor at rest



F-2-30

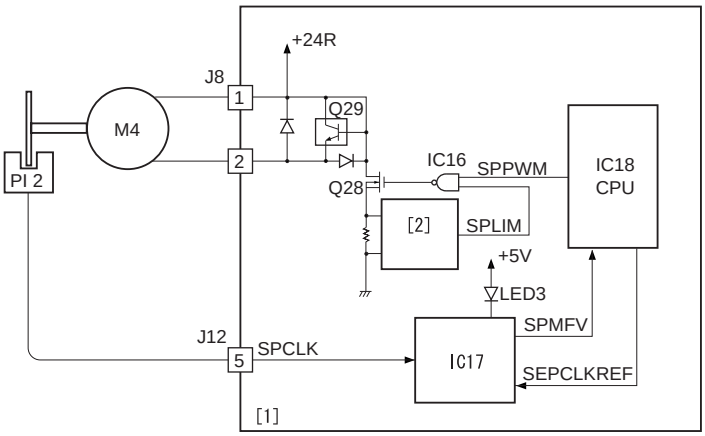
[1] : ADF controller PCB
M3 : pickup motor
The CPU (IC18) sends phase control signals (PICKA, PICKB, PICKA*, PICKB*) to the motor driver (IC31). In response, the motor driver controls the output timing of the pulse signals accordingly, switching over the direction of motor rotation.

PICKI0/PICKI1 is a current setup signal, and its variation (combination) enables a switch-over among 4 steps (from 0% to 100%). PICKSTBY is a motor standby signal, and is used to turn off the motor drive circuit, during which time no phase signal is sent to the motor.

Error code: E410
- fault in the pickup motor (M3)
- fault in the pickup roller height sensor (PI8)
- fault in the pickup roller height sensor (PI9)
- fault in the pickup roller home position sensor (PI7)
- fault in the ADF controller PCB

2.4.6 Controlling the Separation Motor (M4)

The following is a diagram of the circuit used to control the separation motor (M4). The separation motor is a DC motor, and the circuit has the following functions:
- turning on/off the motor
- controlling the speed of the motor
- protecting the motor against overcurrent



F-2-31

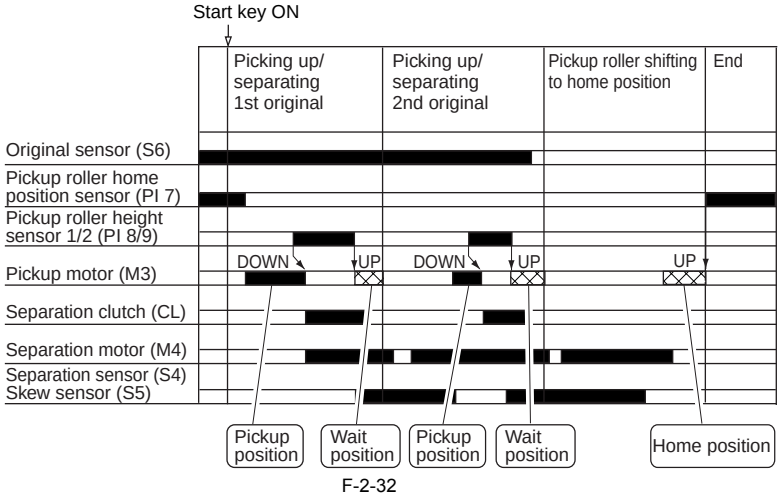
[1] ADF controller PCB
[2] Current detection circuit
M4: separation motor
MI2: separation motor clock sensor
When the CPU sends the motor rotation speed signal (SPPWM), the separation motor (M4) starts to rotate in a specific direction. The separation motor clock sensor (PI2) sends the separation motor rotation speed signal (SPCLK) to IC17 (speed control IC). In response, IC17 compares the arriving rotation speed signal against the speed reference signal (SEPCLKREF) from the CPU, and sends the result as the speed control signal (SPMFV) to the CPU. Using the arriving speed control signal, the CPU varies the rotation speed signal. LED3 goes on when the motor rotation speed is within a specific range, while going off if out of the range. The current detection circuit monitors the current flowing in the separation motor; when the level of the current exceeds a specific value, it sends the separation motor stop signal (SPLIM) to stop the motor. The CPU identifies a fault in the separation motor if the separation motor stop signal continues, indicating an error code (E405) on the host machine's display.

Error code: E405
- fault in the separation motor (M4)
- fault in the separation clock sensor (PI2)
- fault in the ADF controller PCB

2.4.7 Sequence of Operations

Picking Up/ Separation Originals

Feeding/Separation

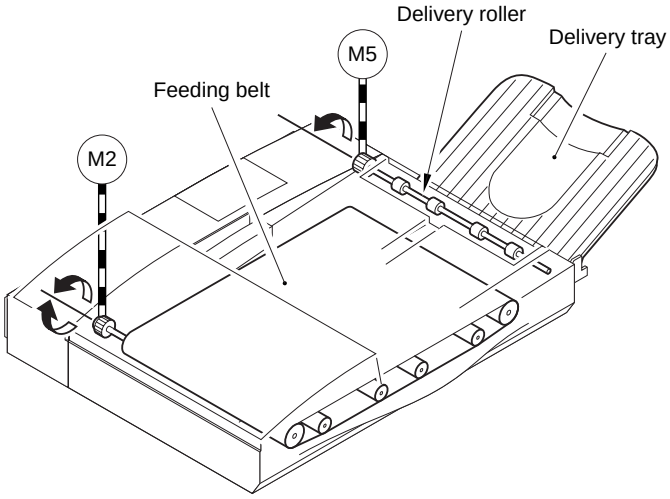


F-2-32

2.5 Document Feeding/Delivery

2.5.1 Outline

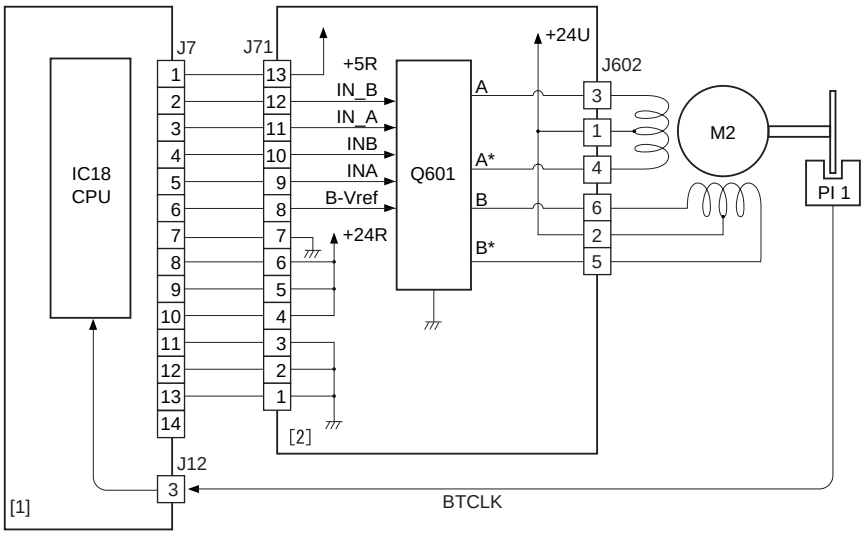
Originals are moved by rotating the feeding belt by the belt motor (M2). Further, originals are moved either to the right or to the left depending on the operating mode in question.
Originals are delivered by rotating the delivery motor (M5). Originals are always delivered to the original delivery tray.



F-2-33

2.5.2 Controlling the Belt Motor (M2)

The following is a diagram of the circuit used to control the belt motor, which is a 4-phase stepping motor. The circuit has the following functions:
- turning off/on the motor
- controlling the direction of the motor
- controlling the speed of motor rotation



F-2-34

[1] ADF controller PCB
[2] belt motor driver PCB
M2: belt motor
PI1: belt motor clock sensor
The CPU (IC18) on the ADF controller PCB sends various motor control signals to the belt motor driver PCB, which in turn controls the motor as instructed by these signals.

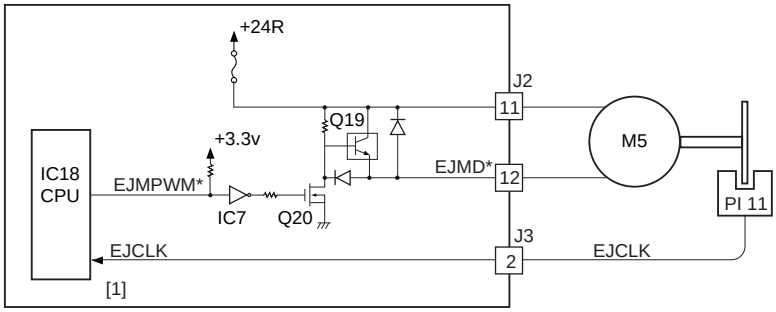
T-2-10

Signals	Description
INA	phase control (direction and speed of rotation)
INB	phase control (direction and speed of rotation)
IN_A	phase control (direction and speed of rotation)
IN_B	phase control (direction and speed of rotation)
B-Vref	motor rotation torque setting

Error code: E402
- fault in the belt motor (M2)
- fault in the belt motor clock sensor (PI1)
- fault in the ADF controller PCB

2.5.3 Controlling the Delivery Motor (M5)

The following is a diagram of the circuit used to control the delivery motor (M5), which is a DC motor. The circuit has the following functions:
- turning on/off the motor
- controlling the speed of motor rotation



F-2-35

[1] ADF controller PCB
M5: delivery motor
PI11: delivery motor clock sensor
The CPU (IC18) on the ADF controller PCB sends the motor rotation speed signal (EJMPWM*) to the drive control block, which in turn generates the motor drive signal (EJMD*) in keeping with the arriving signal.
The rotation of the motor generates the motor rotation signal (EJCLK), used by the CPU to monitor the operation of the motor.

T-2-11

Signal	Description
EJMPWM *	motor rotation speed control
EJMD *	motor operation drive control
EJCLK	motor operation monitoring

Error code: E404
- fault in the delivery motor (M5)
- fault in the delivery motor clock sensor (PI11)
- fault in the ADF controller PCB

- Related adjustment -
sensor/delivery motor adjustment: when replacing the delivery motor

2.6 Feeding Unit

2.6.1 Outline of CW Pickup/Delivery

The machine uses CW pickup/delivery both in fixed reading mode and in stream reading mode.

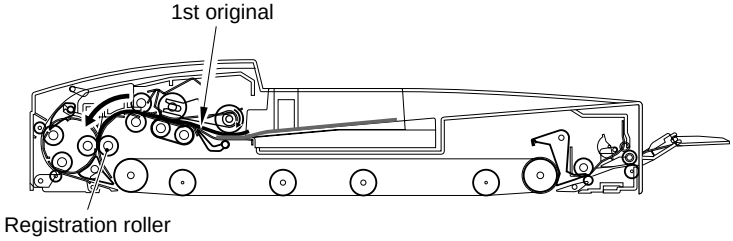
T-2-12

Operation	Mode of operation	Printing mode
Printing mode	fixed reading	single-sided original -> signal-sided print (magnification: between 201% and 400%)
		single-sided original -> double-sided print (magnification: between 201% and 400%)
	stream reading	single-sided original -> double-sided print (magnification: between 25% and 200%)
		single-sided original -> double-sided print (magnification: between 25% and 200%)

The machine uses fixed reading mode for the following:
- the magnification is set to 201% or higher.
- the machine has identified the original as being of a non-default size.
  - Stream reading is disabled in the host machine's service mode.
- the host machine has detected soiling of the copyboard glass.

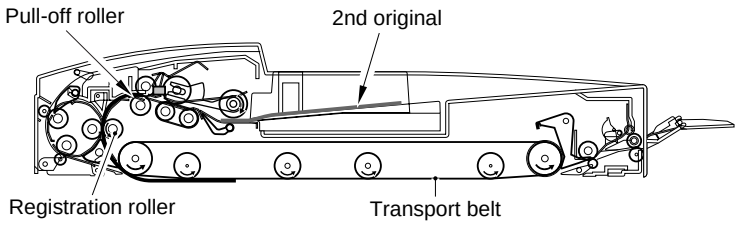
2.6.2 CW Pickup/Delivery Fixed Reading

In fixed reading, the original is held in place on the copyboard glass, and is read by the scanner being moved by the host machine. Specifically,
a. Single-Sided Original
1) The machine picks up the 1st original, and butts its lead edge against the registration roller to remove the skew. (For details of pickup operation, see 'Original Pickup/Separation.')



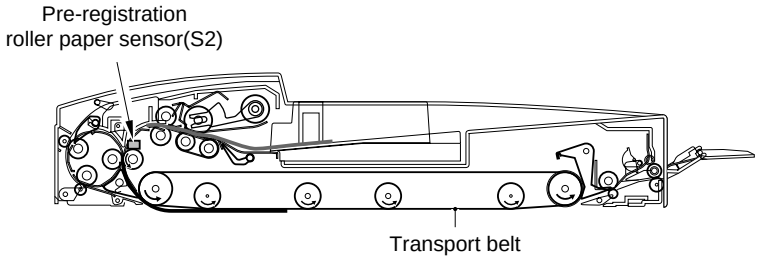
F-2-36

The machine rotates the registration roller and the transport belt to move the 1st original.
When the trail edge of the 1st original has moved past the pull-off roller, the machine starts pickup of the 2nd original. (advance pickup)



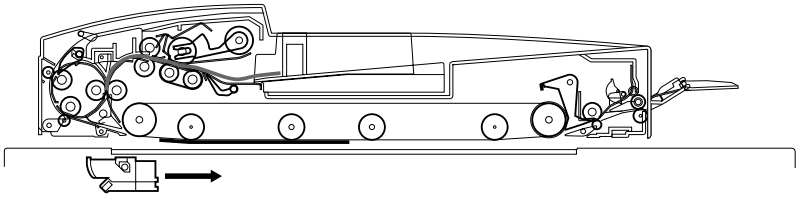
F-2-37

3) The machine rotates the registration roller and the transport belt to move the 1st original.
The machine moves the 1st original using the transport belt over a specific distance after its trail edge has moved past the pre-registration roller sensor (S2), determining the original stop position.



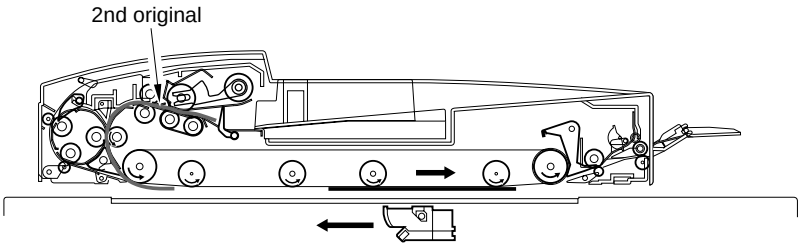
F-2-38

4) The host machine starts printing operation using its scanner.



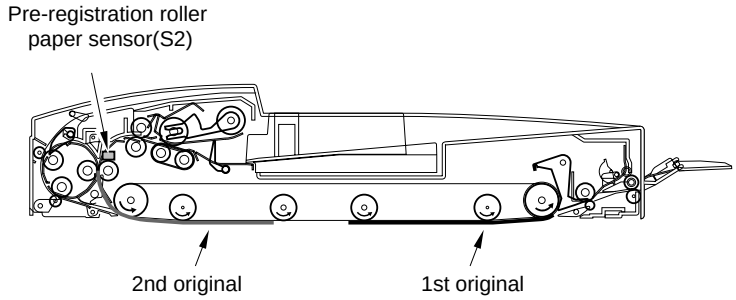
F-2-39

5) When the host machine's scanner starts to move in reverse, the machine rotates the transport belt in reverse to move the 1st original in the direction of delivery. At the same time, the machine rotates the registration roller to move the 2nd original.



F-2-40

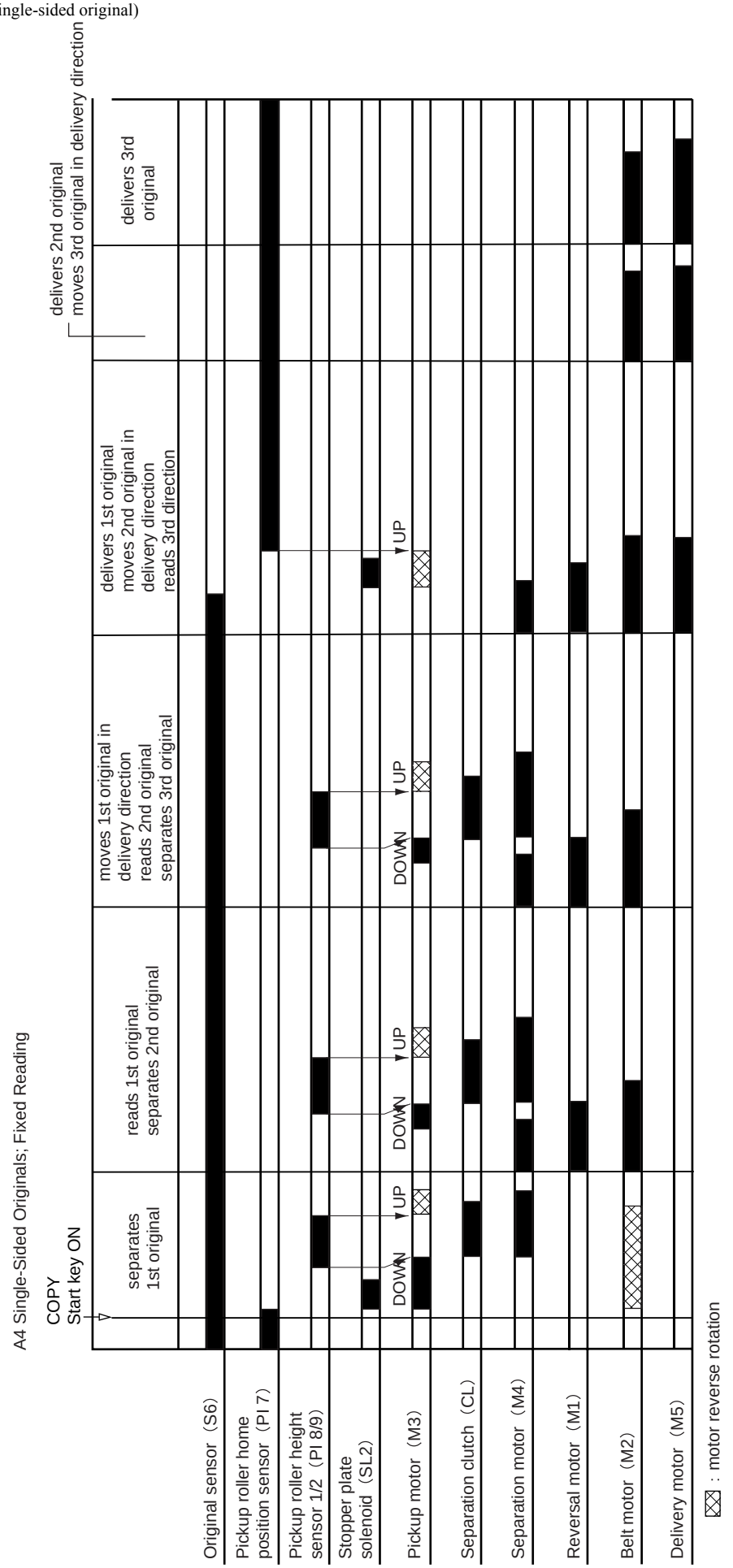
6) The machine moves the 1st and 2nd originals using the transport belt; rotating it over a specific distance after the trail edge of the 2nd original has moved past the pre-registration roller paper sensor (S2) to determine the stop position for the 2nd original.
The machine moves the 1st original in the direction of delivery, stopping it on the copyboard glass.



F-2-41

In the case of a large-size original, the machine controls the distance between sheets so that only a single original is on the copyboard glass at a time in step 6.

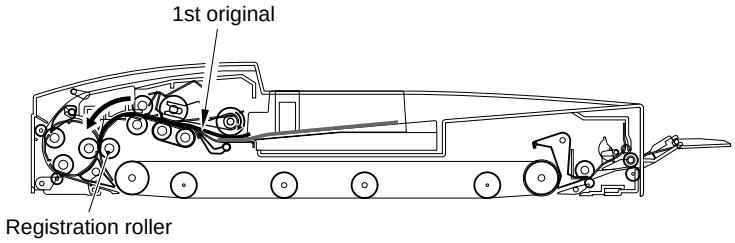
b. Sequence of Operation (single-sided original)



F-2-42

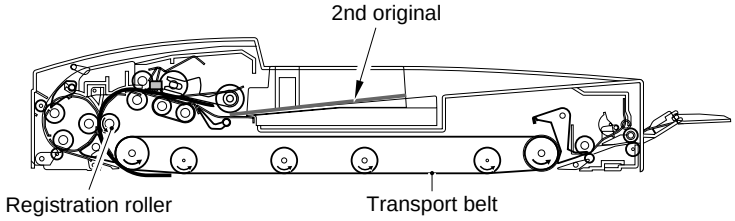
c. Mix of Single-Sided Originals

1) The 1st original is picked up, and its lead edge is butted against the registration roller to remove the skew. (For details of pickup operation, see 'Original Pickup/ Separation.')



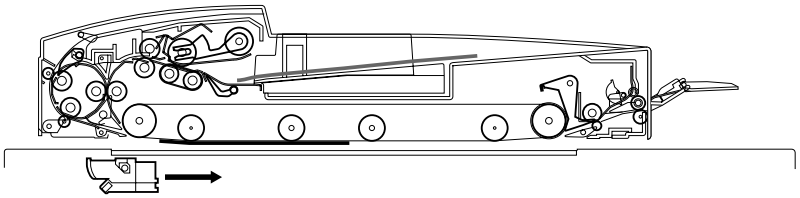
F-2-43

2) The machine rotates the registration roller and the transport belt to move the 1st original.



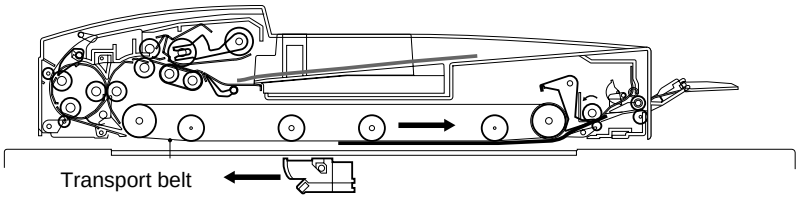
F-2-44

3) The machine places the 1st original on the copyboard. The host machine starts to scan the original.



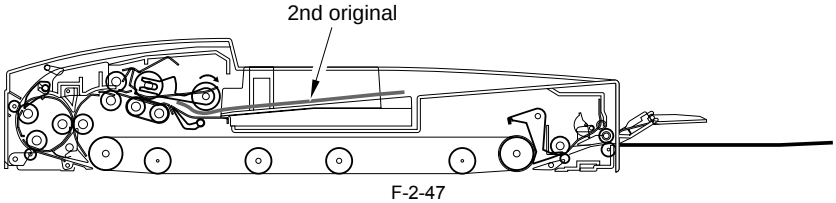
F-2-45

4) The machine uses the transport belt and the delivery roller to discharge the 1st original. The host machine moves the scanner in reverse.



F-2-46

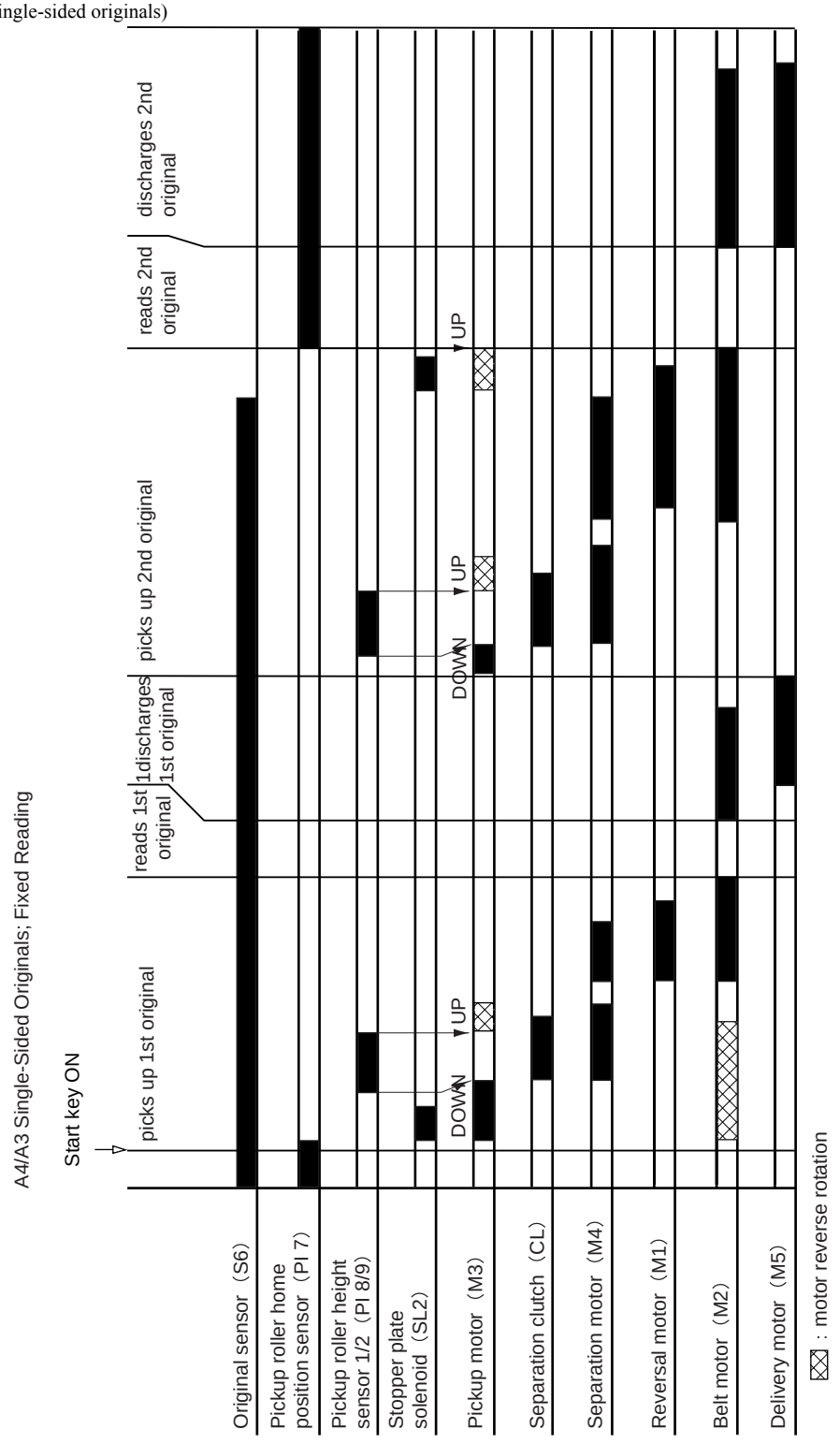
5) When the 1st original is fully discharged, the machine starts pickup of the 2nd original.



F-2-47

6) Goes back to step 2 above, and repeats the subsequent steps.

d. Sequence of Operation (single-sided originals)



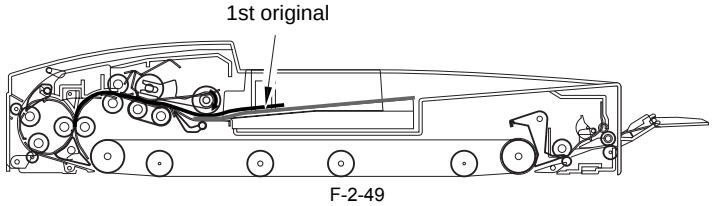
F-2-48

2.6.3 CW Pickup/Delivery (stream reading)

In stream reading mode, the host machine keeps its scanner in place, and reads the original being moved over the copyboard glass. The following is an outline of the operation:

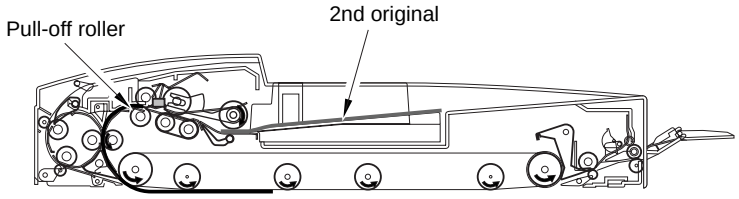
a. Small-Size Original

1) The machine picks up the 1st original, and butts its lead edge against the registration roller to remove the skew. (For details of pickup operation, see 'Original Pickup/Separation.')



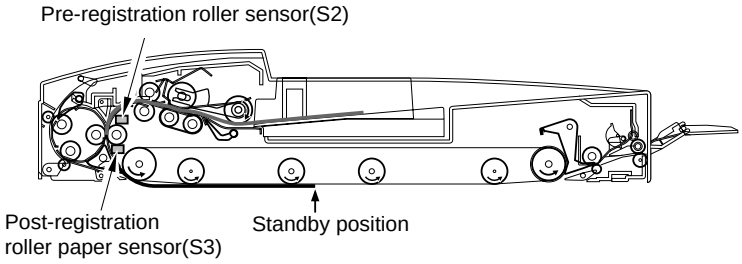
F-2-49

2) The machine rotates the registration roller and the transport belt to move the original.
When the trail edge of the 1st original leaves the pull-off roller, the machine starts pickup of the 2nd original.



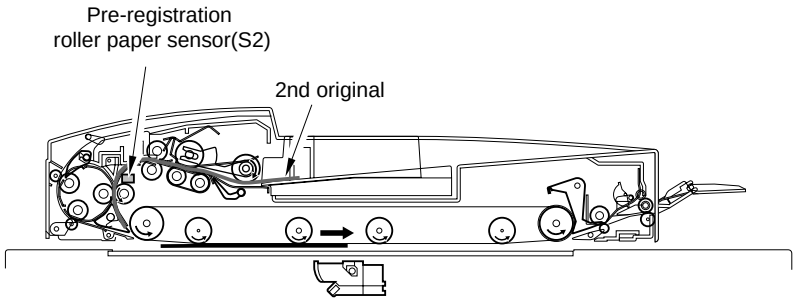
F-2-50

3) When the lead edge of the 1st original has moved past the post-registration roller paper sensor (S3), the machine moves it over a specific distance using the transport belt and stops it (at standby position). (At this time, the machine starts to keep track of the distance over which the 1st original moves after it has moved past the pre-registration roller sensor (S2).)



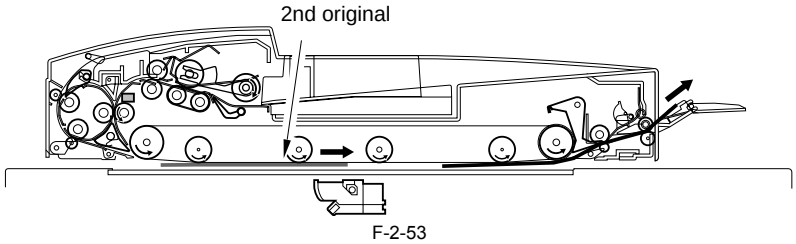
F-2-51

4) The machine rotates the transport belt to move the original over a specific distance. The host machine reads the original.
When the machine has moved the 1st original (based on the count reading started after the trail edge of the original has moved past the pre-registration roller paper sensor (S2)), the machine sends the image lead edge signal to the host machine.
In response to the signal, the host machine starts to read the original.
At this time, the machine starts to move the 2nd original.



F-2-52

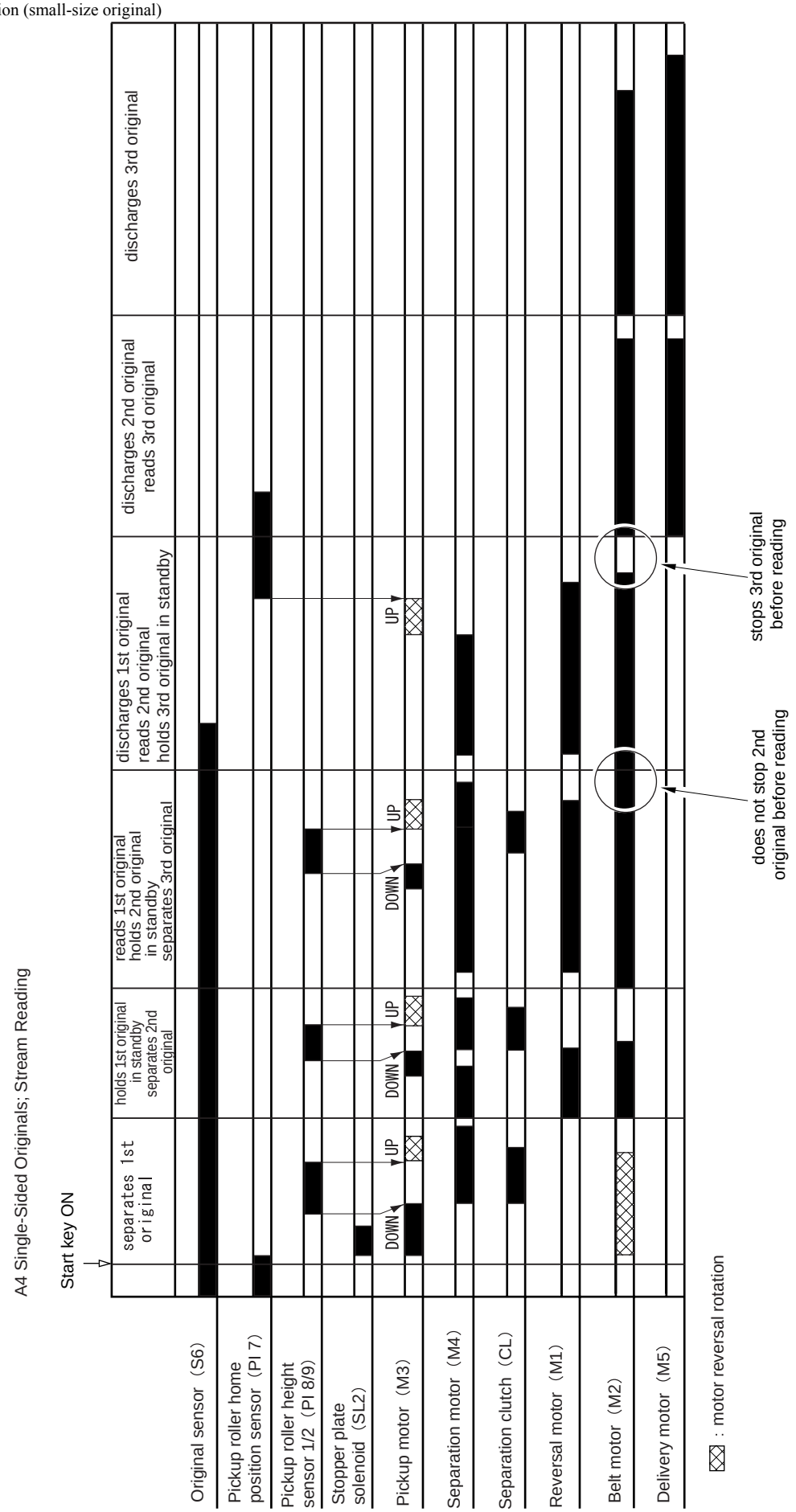
5) The machine rotates the transport belt to move the 2nd original. If the read signal arrives from the host machine before the 2nd original reaches the front position (25 mm + stop distance), the machine does not stop the original for reading. If the signal does not arrive before the original reaches the front position (25 mm + stop distance), on the other hand, the machine stops the original in standby position and then rotates the transport belt for reading of the 2nd original.



F-2-53

6) The machine goes back to step 2. above and repeats the subsequent steps.

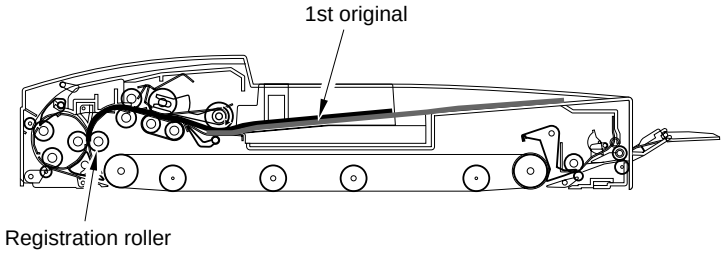
b. Sequence of Operation (small-size original)



F-2-54

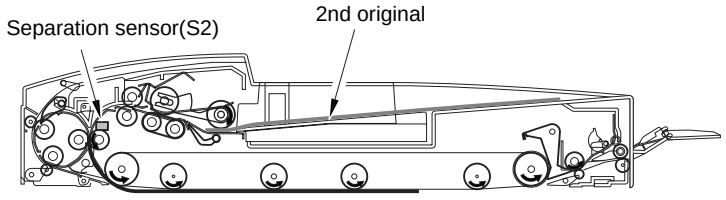
Large-Size Original

1) The 1st original is picked up, and its lead edge is butted against the registration roller to remove the skew. (For details of pickup operation, see 'Original Pickup/ Separation.')



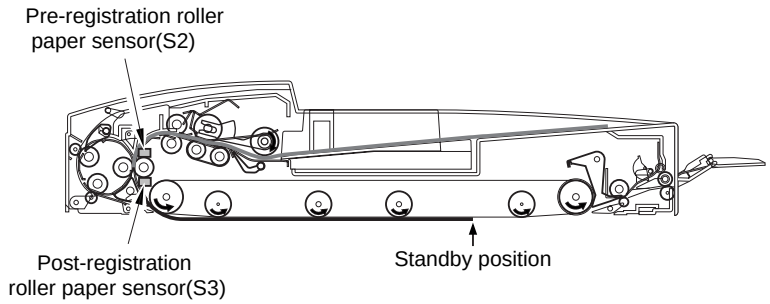
F-2-55

2) The machine rotates the registration roller and the transport belt to move the original.
When the trail edge of the 1st original moves past the pre-registration roller sensor (S2), the machine starts pickup of the 2nd original.
(if the original is 279.4 x 431.8 mm (11x17), after the original starts to move in 4)



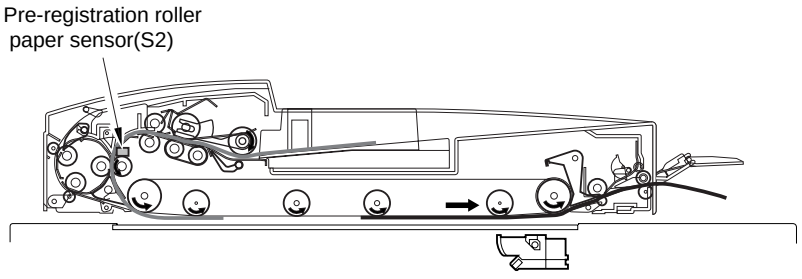
F-2-56

3) When the lead edge of the original has moved past the post-registration roller paper sensor (S3), the machine rotates the transport belt over a specific distance, and stops the original (standby position).
(At this time, the machine starts to keep track of the distance over which the 1st original moves after it has moved past the pre-registration roller paper sensor (S2).)



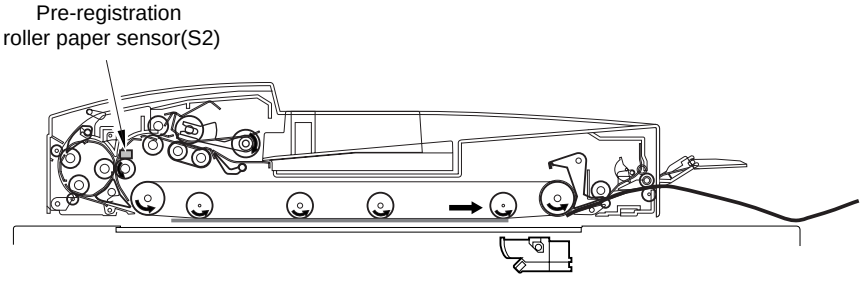
F-2-57

4) The machine rotates the transport belt to move the original.
When the original has been moved over a specific distance (based on the count reading started when the trail edge of the original has moved past the pre-registration roller paper sensor (S2)), the machine sends the image lead edge signal to the host machine.
In response to the signal, the host machine starts to read the original. At this time, the machine also moves the 2nd original.



F-2-58

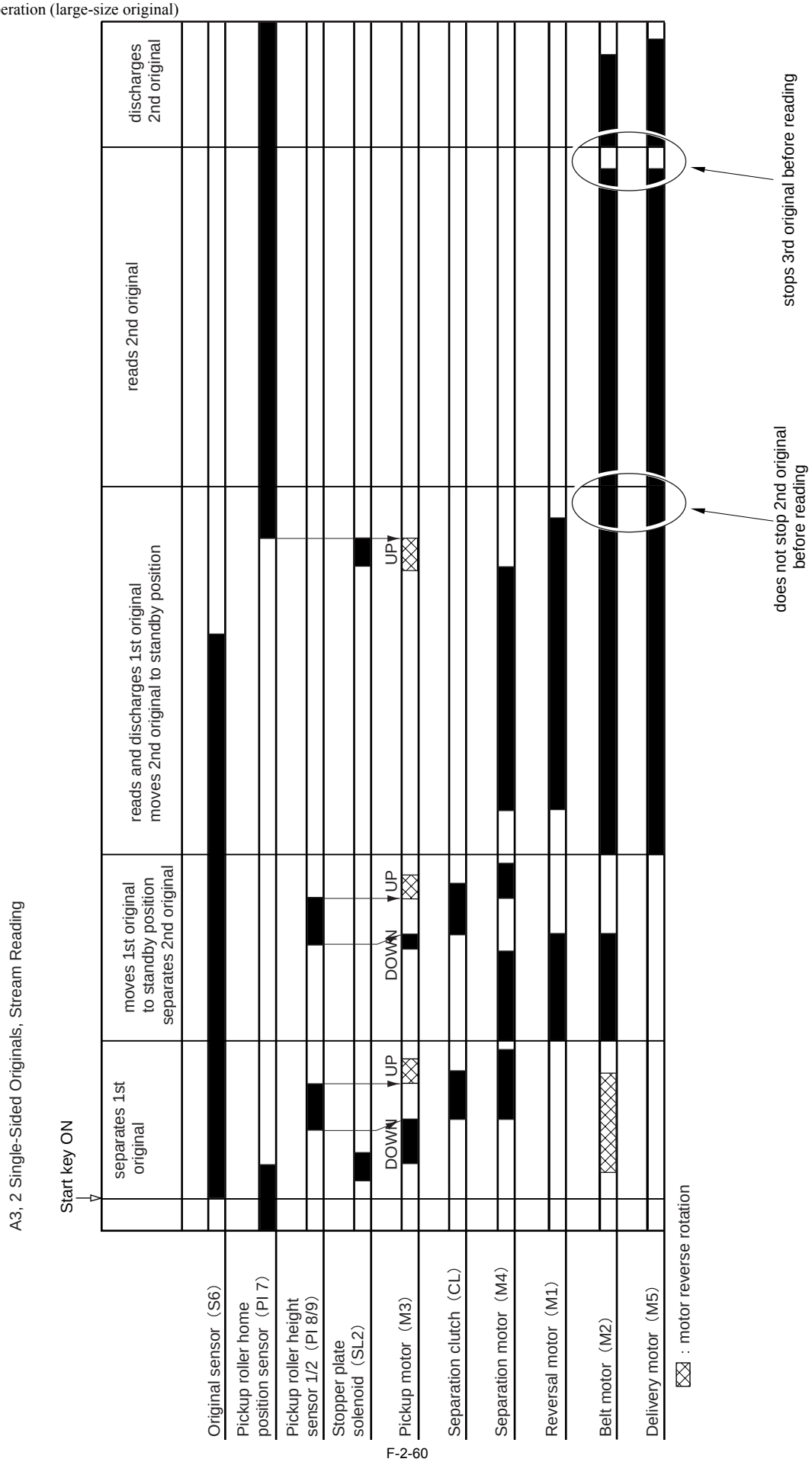
5) The machine rotates the transport belt motor to move the 2nd original. If the read signal arrives from the host machine before the 2nd original arrives in front of read position (25 mm + stop distance), the machine does not stop the 2nd original for reading. If the signal does not arrives in front of read position (25 mm + stop distance), on the other hand, the machine stops the original at standby position and rotates the transport belt for reading of the 2nd original.



F-2-59

6) The machine goes back to step 2. above and repeats the subsequent steps.
d. Sequence of Operation (large-size original)

d. Sequence of Operation (large-size original)

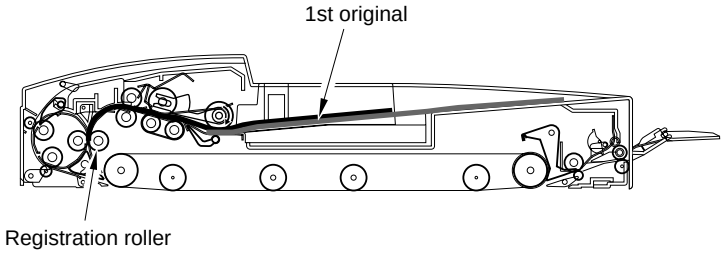


F-2-60

e. Mix of Originals

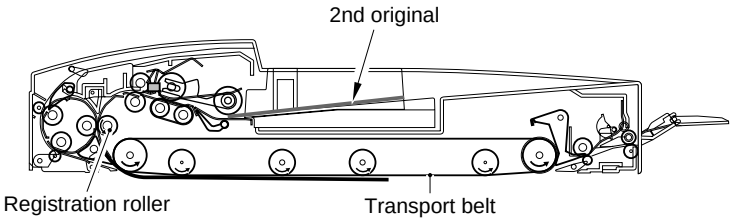
1) The 1st original is picked up, and its lead edge is butted against the registration roller to remove the skew. (For details of pickup operation, see 'Original Pickup/

Separation.')



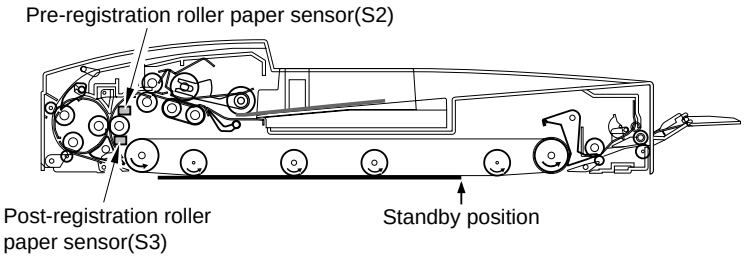
F-2-61

2) The machine rotates the registration roller and the transport belt to move the 1st original.



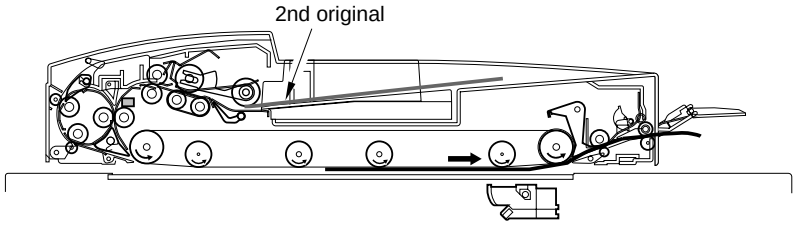
F-2-62

3) When the lead edge of the 1st original has moved past the post-registration roller sensor (S3) and has been moved over a specific distance by the transport belt, the machine stops the original (standby position). (At this time, the machine starts to keep track of the distance over which the 1st original moves after it has moved past the pre-registration roller paper sensor (S2).)



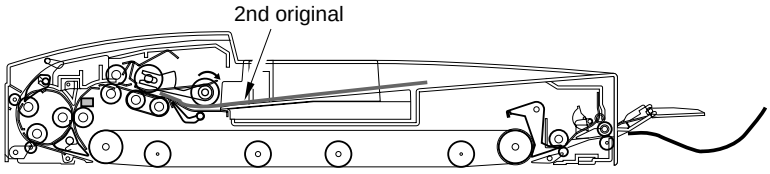
F-2-63

4) The machine rotates the transport belt to move the original over a specific distance, and discharges it (reading takes place here).



F-2-64

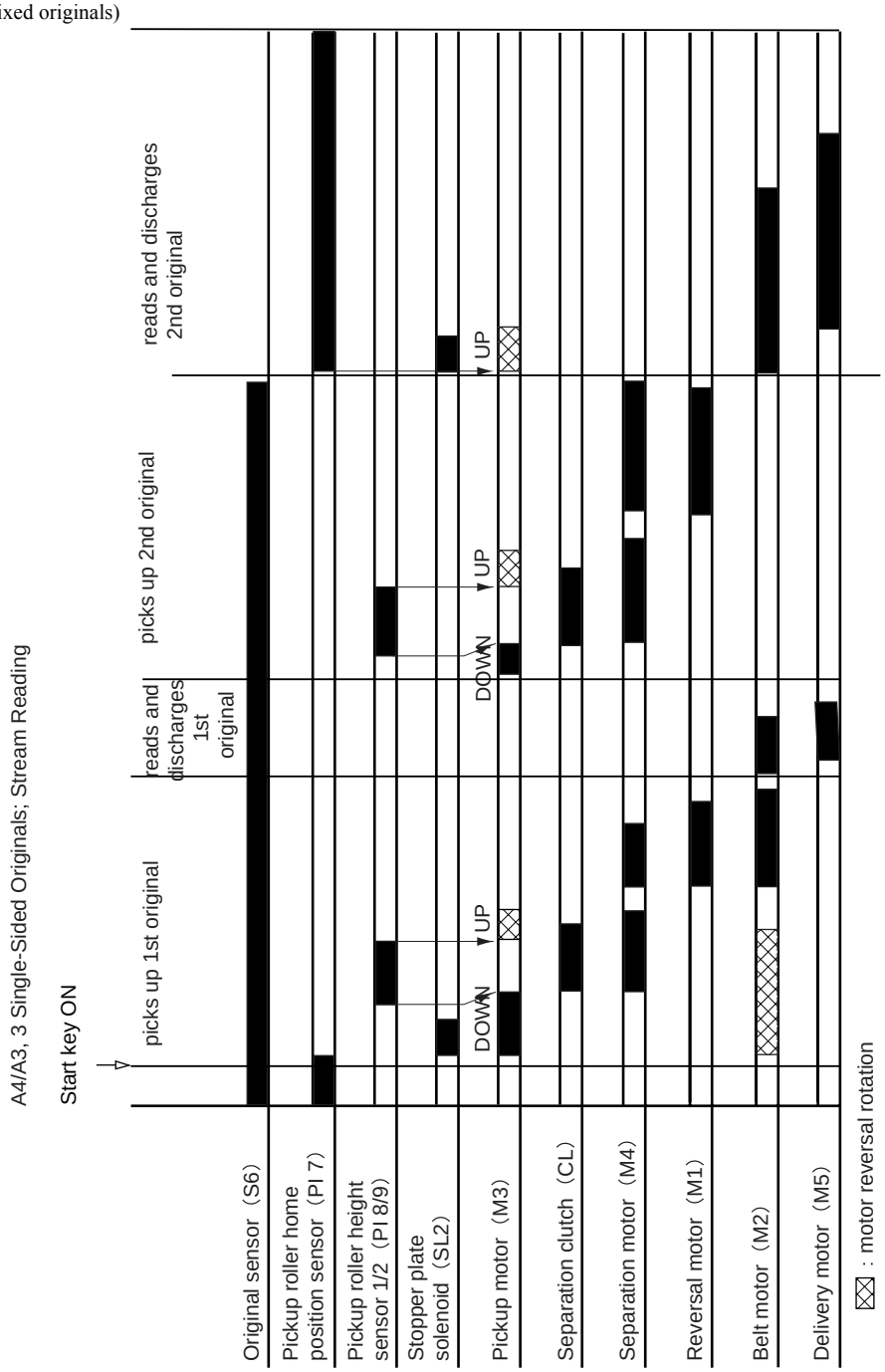
5) When the 1st original has fully been discharged, the machine starts pickup of the 2nd original.



F-2-65

6) The machine goes back to step 2. and repeats the subsequent steps.

f. Sequence of Operation (mixed originals)

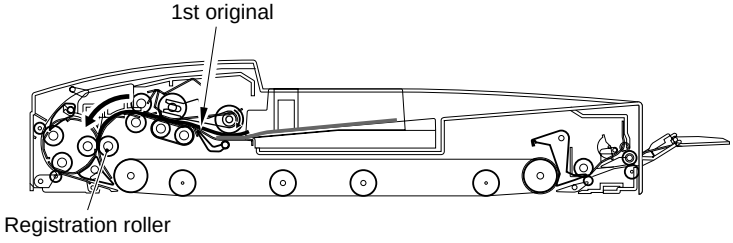


F-2-66

2.6.4 Double-Sided Originals (fixed reading)

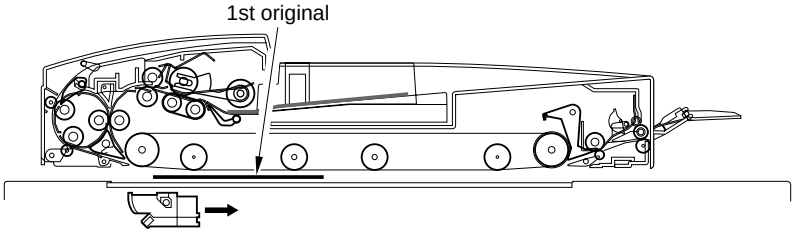
a. Fax/SEND (double-sided original)

1) The machine picks up the 1st original, and butts its lead edge against the registration roller to remove the skew. (For details of pickup operation, see 'Original Pickup/Separation.')



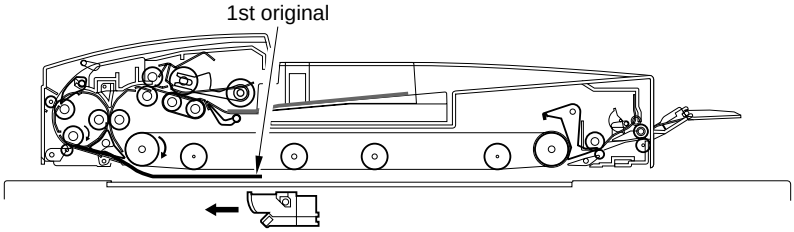
F-2-67

2) The host machine starts to read the original using its scanner when the machine places the original on the copyboard glass.



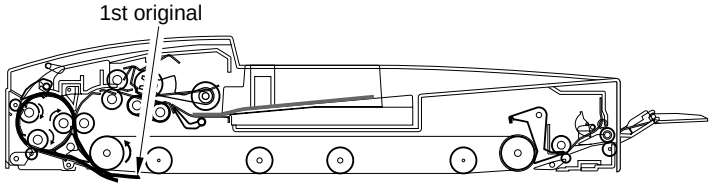
F-2-68

3) As the host machine moves its scanner in reverse, the machine moves the original to the reversing path.

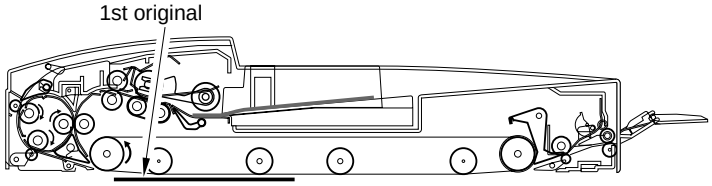


F-2-69

4) The machine turns over the 1st original, and places it on the copyboard glass.

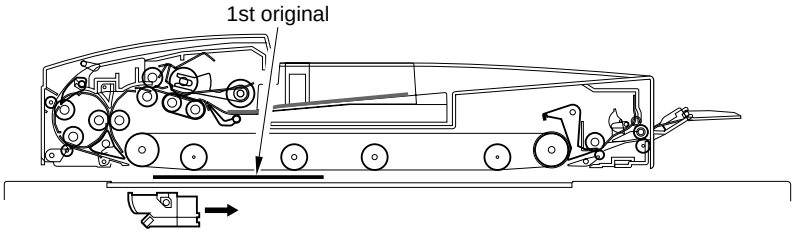


F-2-70



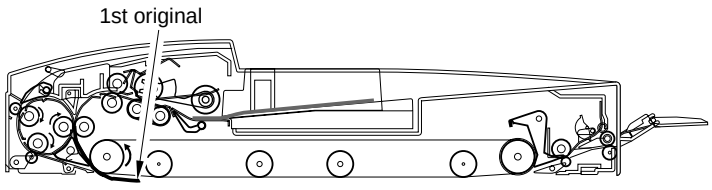
F-2-71

5) The host machine scans the back of the 1st original.



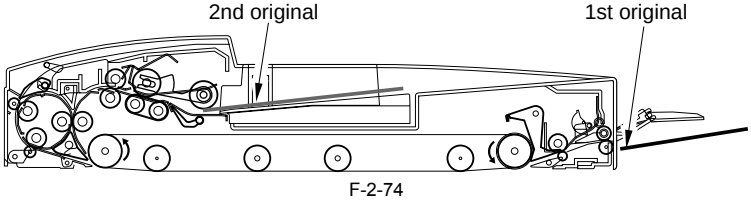
F-2-72

6) The 1st original turns over the 1st original once again.



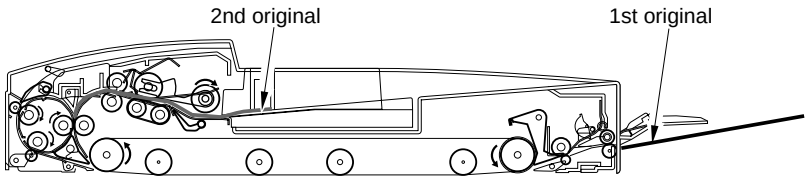
F-2-73

7) The machine discharges the 1st original.

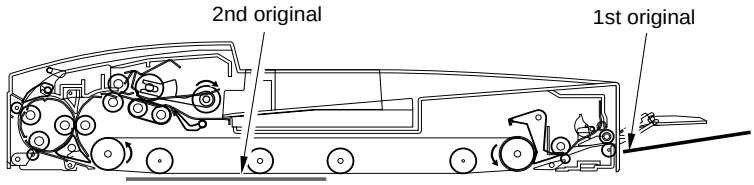


F-2-74

8) The machine places the 2nd original on the copyboard glass.



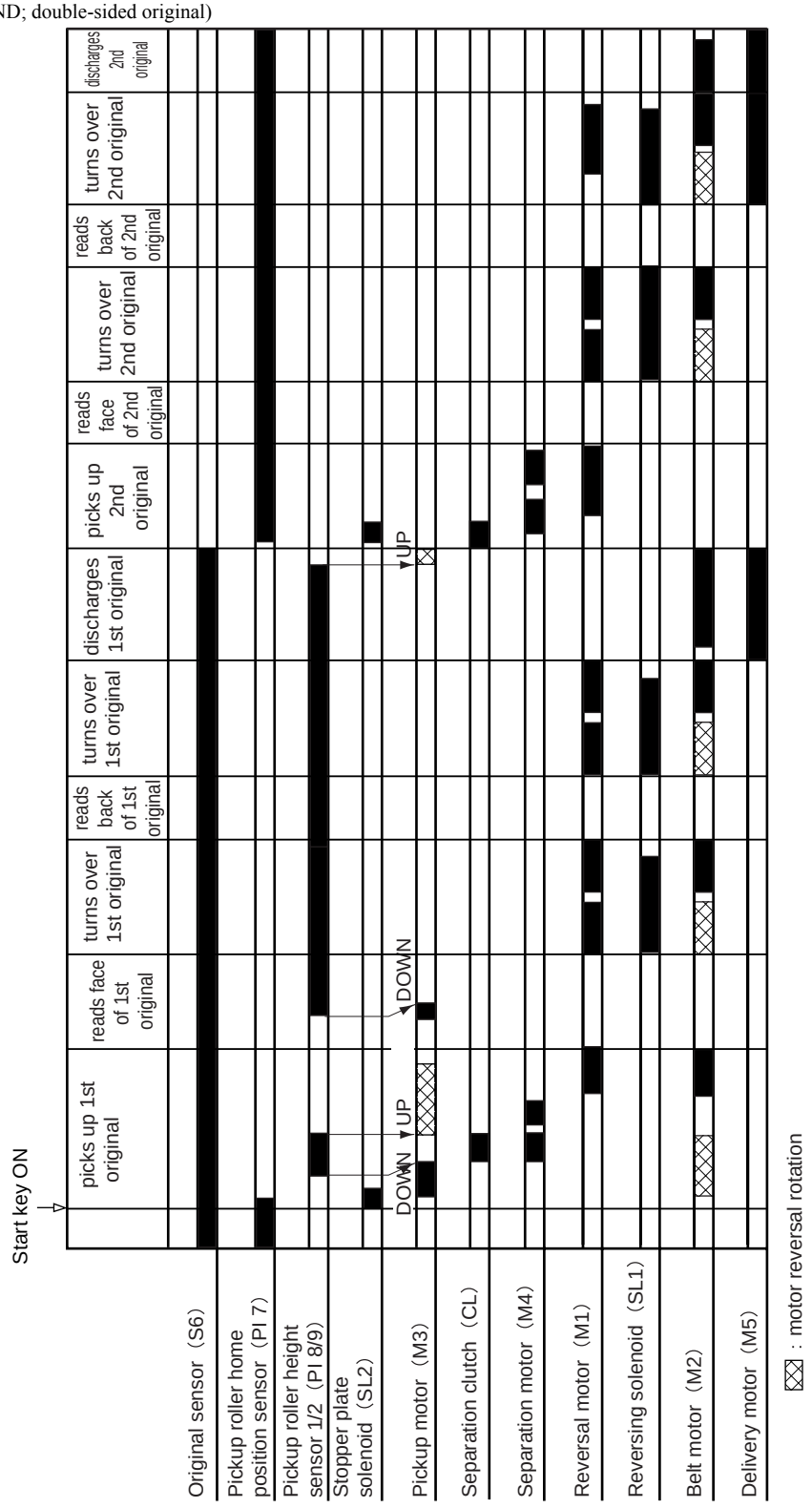
F-2-75



F-2-76

9) The machine goes back to step 2. above and repeats the subsequent steps.

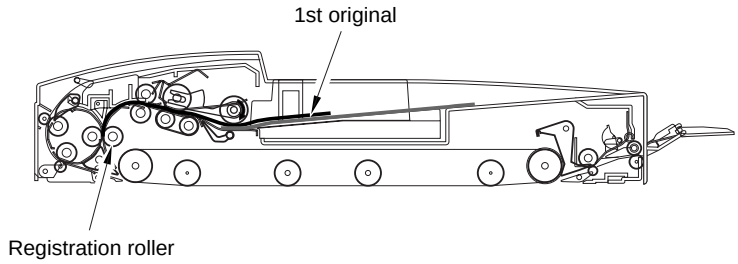
b. Sequence of Operation (fax/SEND; double-sided original)



F-2-77

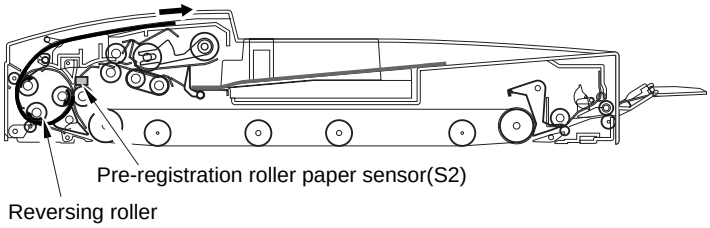
c. Printing (double-side original)

1) The machine picks up the 1st original, and butts its lead edge against the registration roller to remove the skew. (For details of pickup operation, see 'Original Pickup/Separation.')



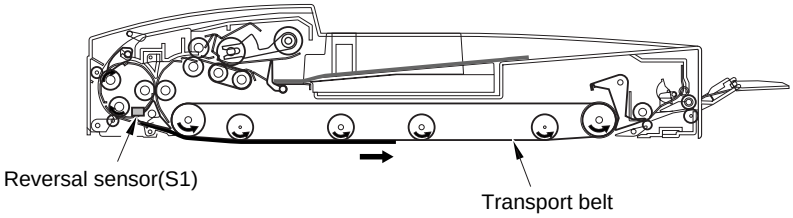
F-2-78

2) The machine drives the registration roller and the reversing roller for pre-reversal of the original.
For the 1st original, the machine uses the reversing roller to move it over a specific distance after its trail edge has moved past the pre-registration roller paper sensor (S2), and stops it.



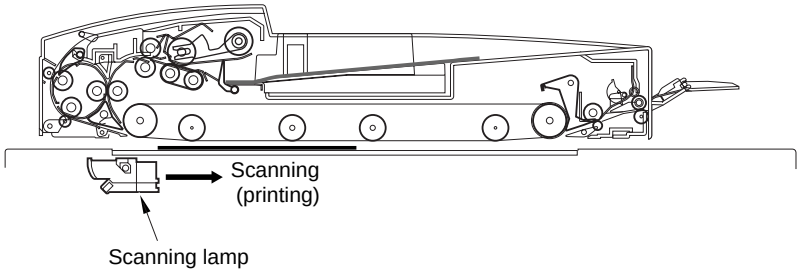
F-2-79

3) The machine uses the reversing roller and the transport belt to move the original.
The machine rotates the transport belt over a specific distance after the trail edge of the 1st original has moved past the reversal sensor (S1), thus determining the original stop position.



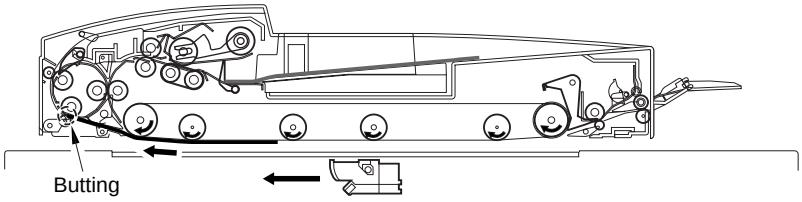
F-2-80

4) The host machine's scanner starts to read the original as part of printing operation.



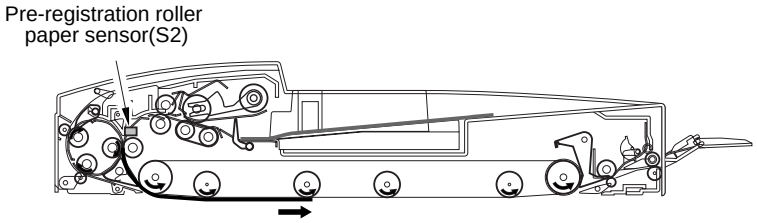
F-2-81

5) When the host machine's scanner starts to move in reverse, the machine rotates the transport belt to move the 1st original to the reversing assembly. At this time, the machine butts the lead edge of the original against the reversing roller to remove the skew.



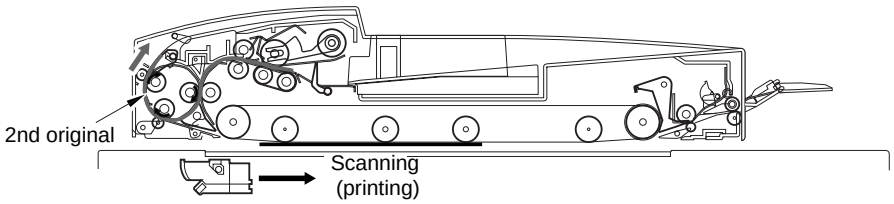
F-2-82

6) The machine rotates the reversing roller and the transport belt to move the original over the copyboard glass.
When the trail edge of the 1st original has moved past the pre-registration roller paper sensor (S2), the machine moves the original over a specific distance using the transport belt.



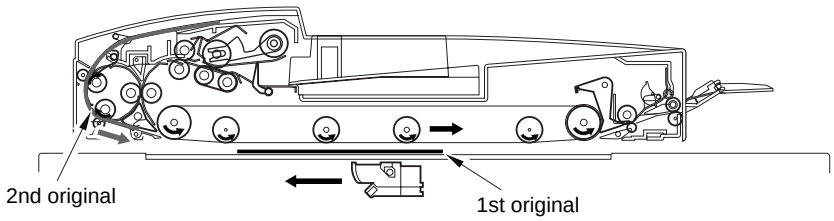
F-2-83

7) The host machine's scanner starts to scan the original as part of printing operation.
At this time, the machine picks up the 2nd original, and executes pre-reversal. (See steps 1 and 2.)



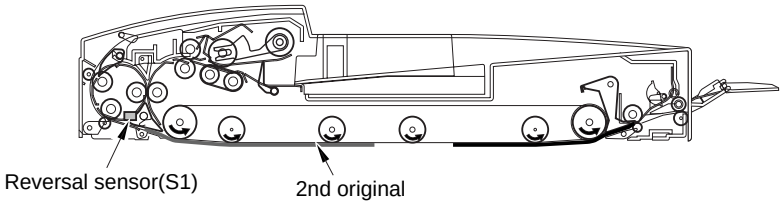
F-2-84

8) When the host machine's scanner starts to move in reverse, the machine rotates the reversing roller and the transport belt to move the 1st and 2nd originals.



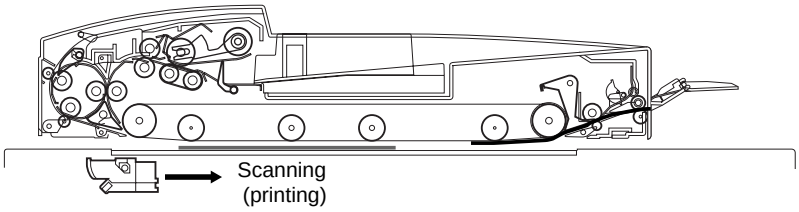
F-2-85

9) When the 2nd original has moved past the reversal sensor (S1), the machine rotates the transport belt over a specific distance and then stops the movement.



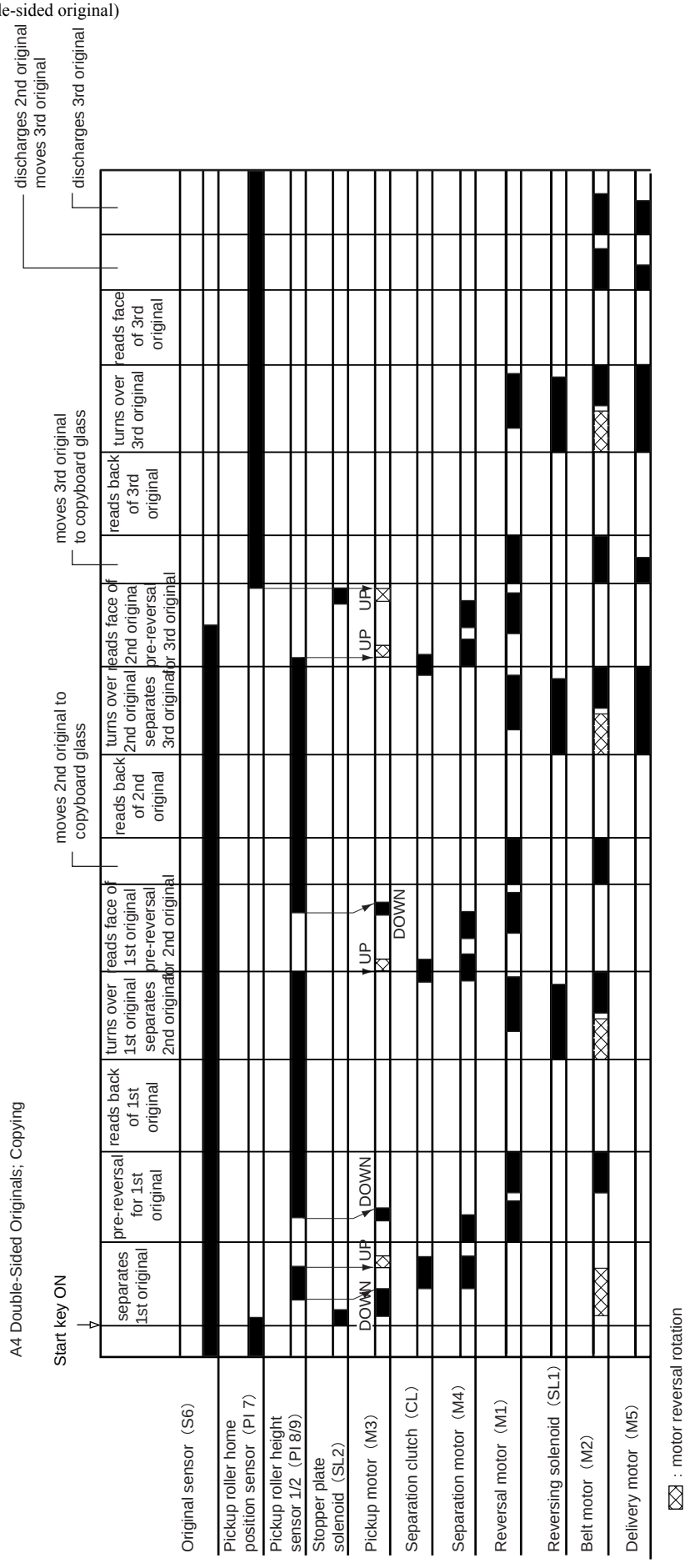
F-2-86

10) The host machine's scanner starts to scan the original as part of printing operation.



F-2-87

d, Sequence of Operation (double-sided original)

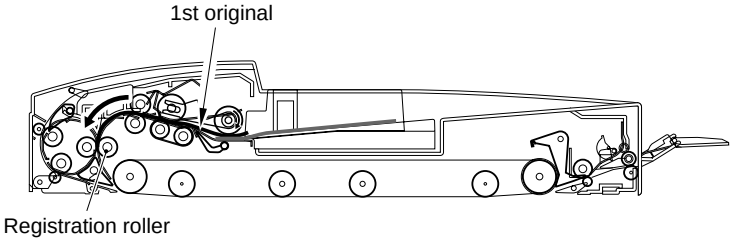


F-2-88

2.6.5 Fixed Reading (continuous; double-sided original)

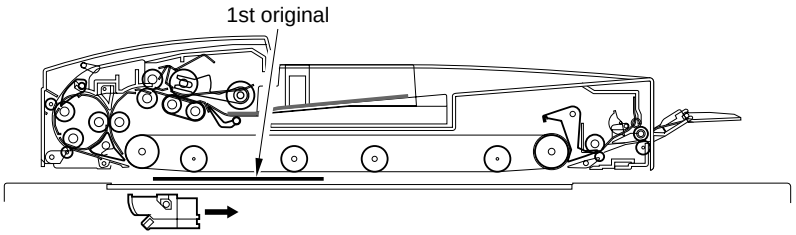
a. Fax/SEND (continuous; double-sided original)

1) The machine picks up the 1st original, and butts its lead edge against the original roller to remove the skew. (For details of pickup operation, see 'Original Pickup/ Separation.')



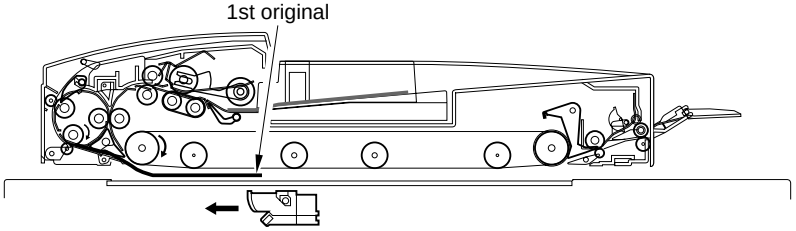
F-2-89

2) As soon as the original is placed on the copyboard glass, the host machine starts to read it using its scanner.



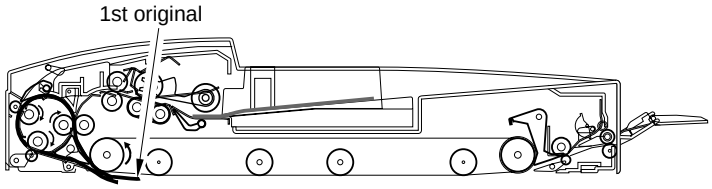
F-2-90

3) The machine sends the original to the reversing path as the host machine moves its scanner in reverse.

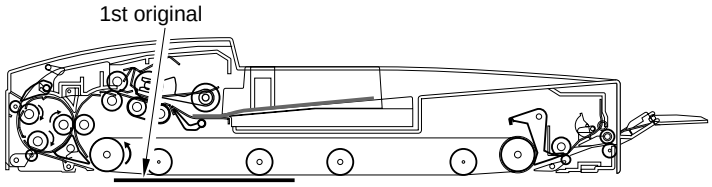


F-2-91

4) The machine turns over the 1st original, and places it on the copyboard glass.

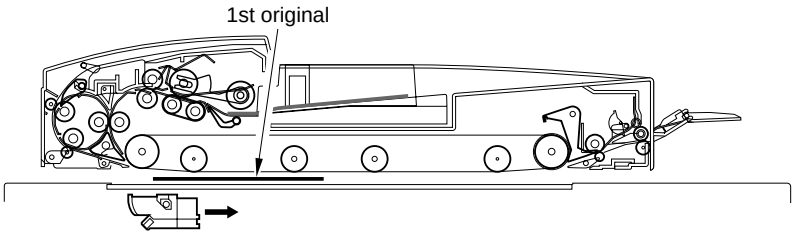


F-2-92



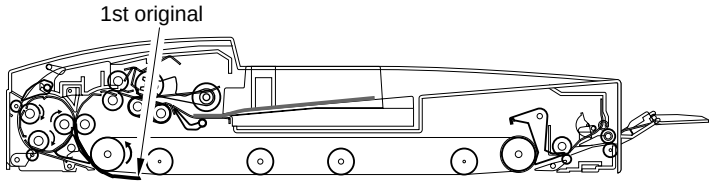
F-2-93

5) The host machine scans the back of the 1st original



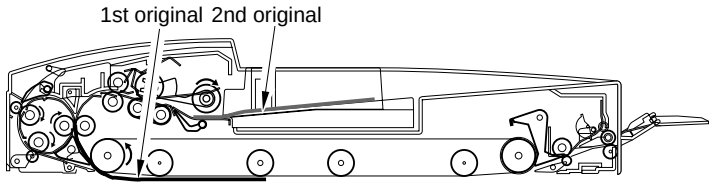
F-2-94

6) The machine turns over the 1st original once again.



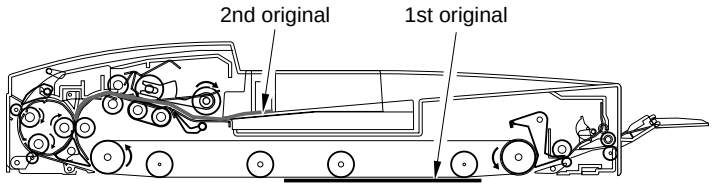
F-2-95

7) The machine starts to pick up the 2nd original when the trail edge of the 1st original moves past the registration roller.

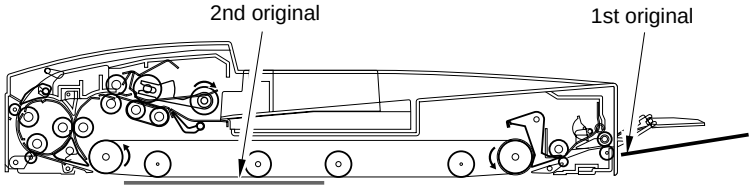


F-2-96

8) The machine places the 2nd original on the copyboard glass and, at the same time, discharges the 1st original.



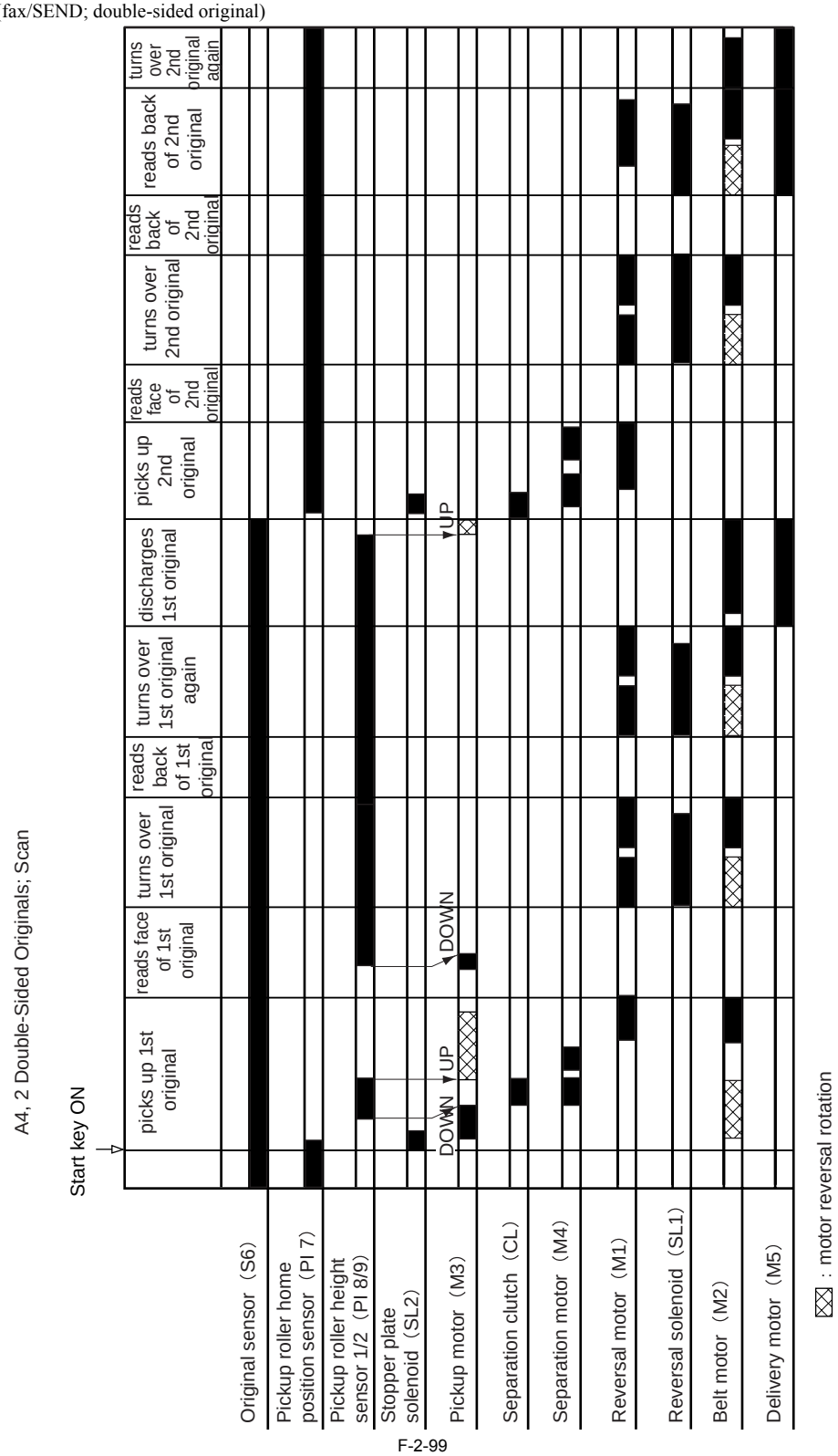
F-2-97



F-2-98

9) The machine goes back to step 2. above and repeats the subsequent steps.

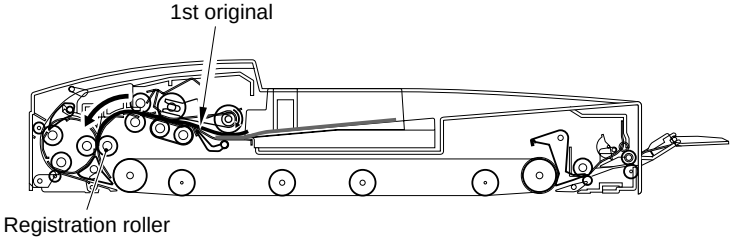
b. Sequence of Operation (fax/SEND; double-sided original)



F-2-99

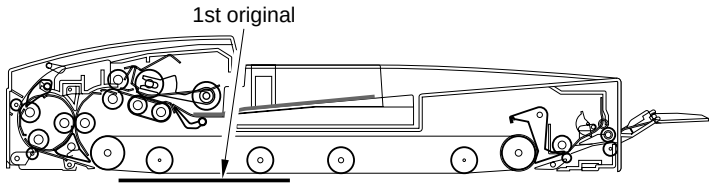
c. Printing (double-sided original)

1) The machine picks up the 1st original, and butts its lead edge against the registration roller to remove the skew. (For details of pickup operation, see 'Original Pickup/Separation.')



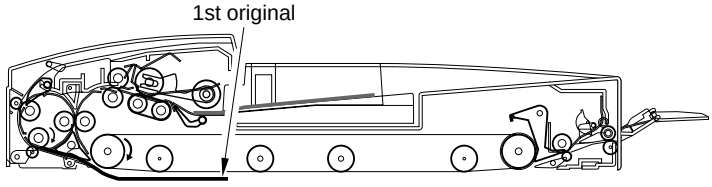
F-2-100

2) The machine places the original on the copyboard glass.



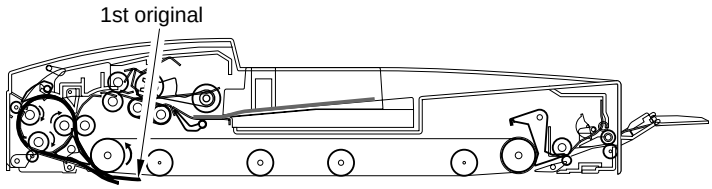
F-2-101

3) The machine sends the original to the reversing path.

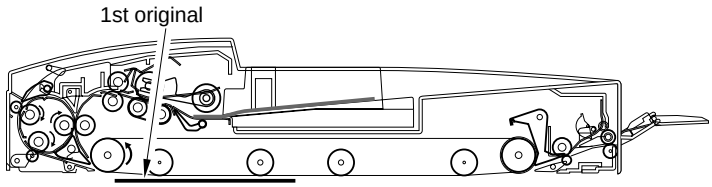


F-2-102

4) The machine turns over the 1st original, and places it on the copyboard glass.

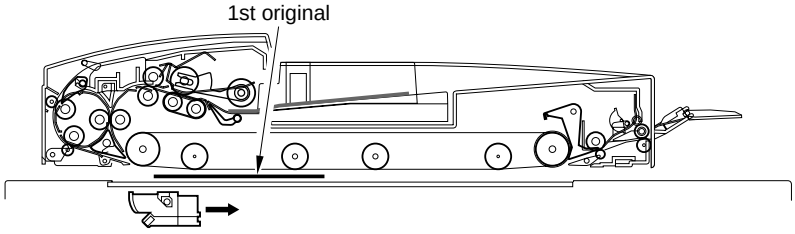


F-2-103



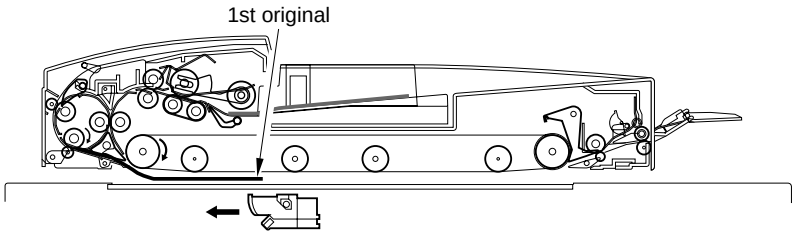
F-2-104

5) The host machine scans the back of the 1st original.



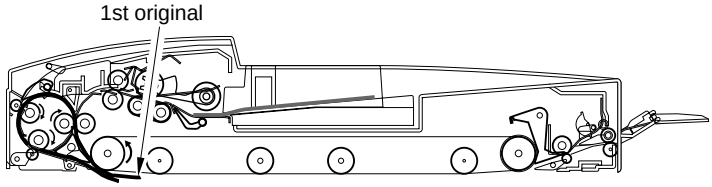
F-2-105

6) The machine sends the original to the reversing path as the host machine moves its scanner in reverse.

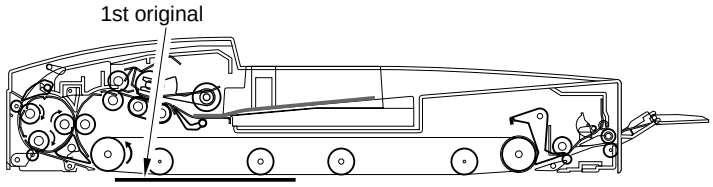


F-2-106

7) The machine turns over the 1st original, and places it on the copyboard glass.

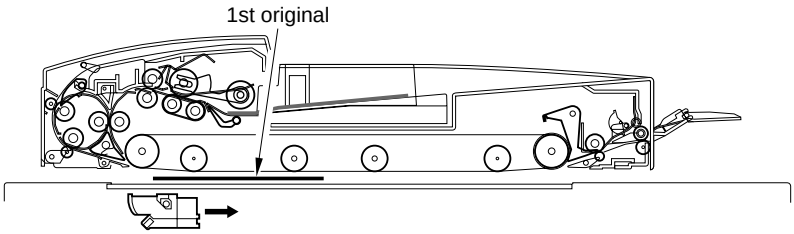


F-2-107



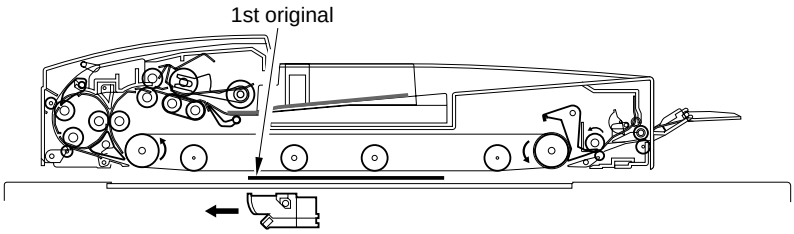
F-2-108

8)As soon as the original is placed on the copyboard cover, the host machine uses its scanner to scan and read its face.



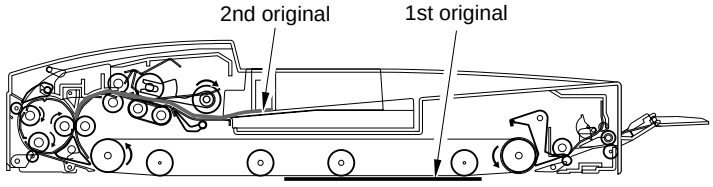
F-2-109

9) The machine sends the original in the direction of the delivery roller while the host machine moves its scanner in reverse.

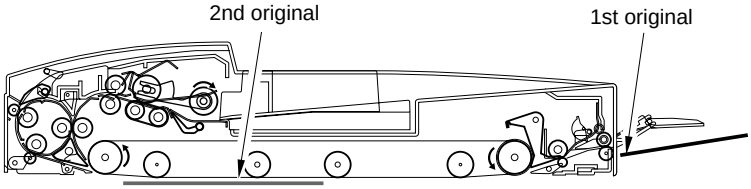


F-2-110

10) The machine discharges the 1st original while placing the 2nd original on the copyboard glass.



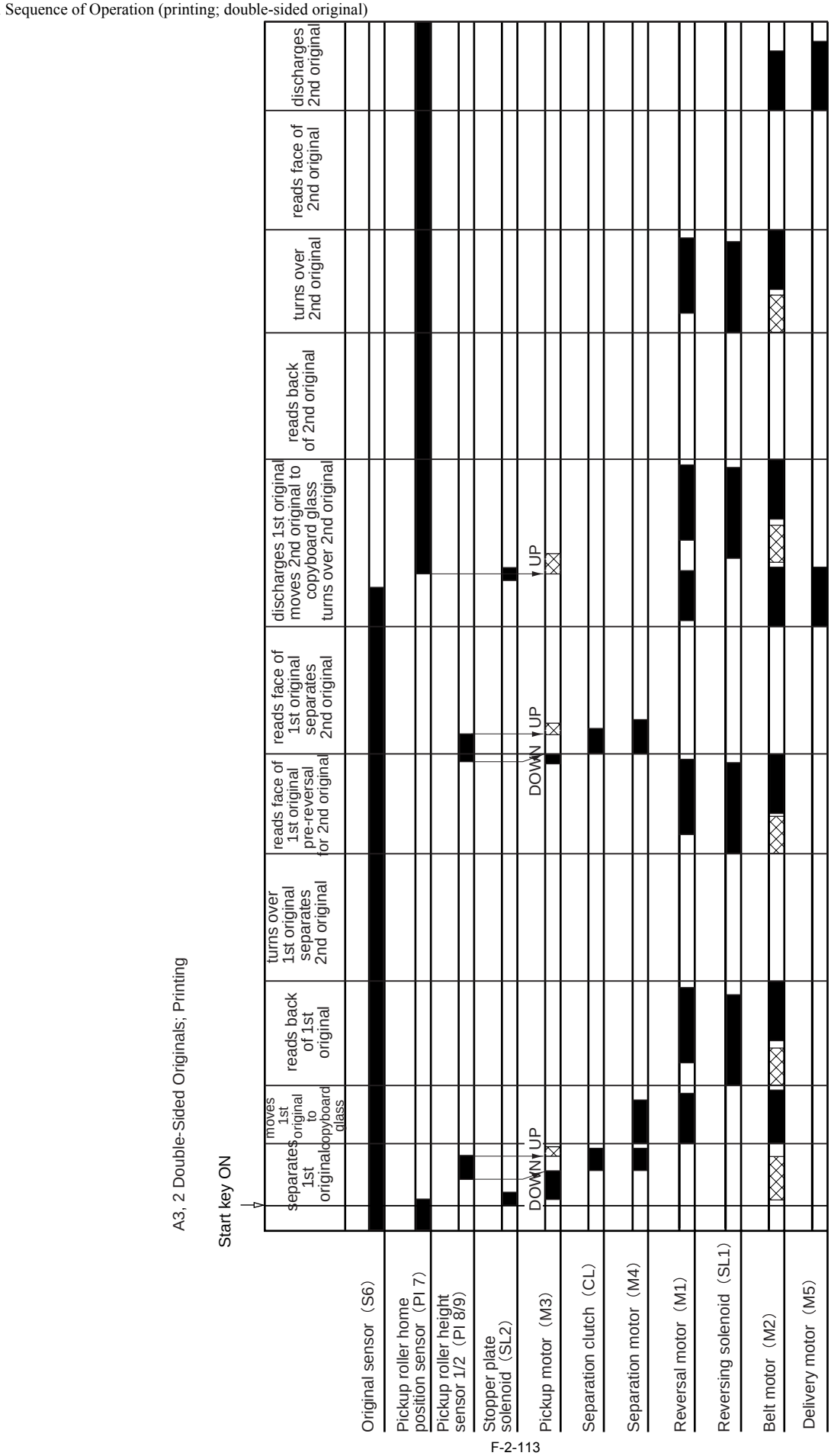
F-2-111



F-2-112

11) The machine goes back to step 2. and repeats the subsequent steps.

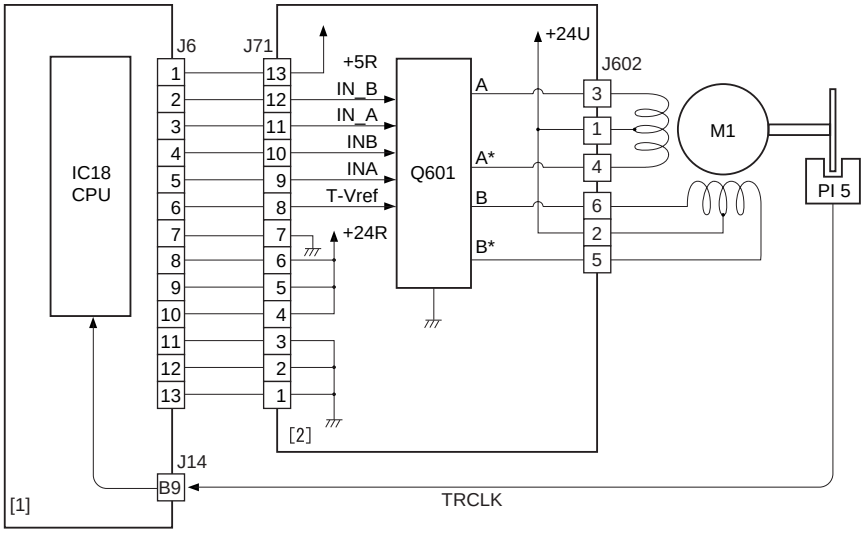
d. Sequence of Operation (printing; double-sided original)



F-2-113

2.6.6 Controlling the Reversal Motor (M1)

The following is a diagram of the circuit used to control the reversal motor (M1), which is a 4-phase stepping motor. The circuit has the following functions:
- turning off/on the motor
- controlling the direction of motor rotation
- controlling the speed of motor rotation



F-2-114

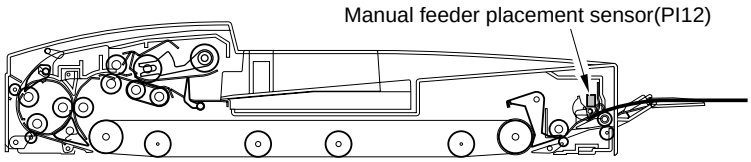
[1] ADF controller PCB
[2] reversal motor drive PCB
M1: reversal motor
PI5: reversal motor clock sensor
The CPU (Q18) on the ADF controller PCB sends various motor control signals to the reversal motor driver PCB, which in turn controls the motor as dictated by these signals.

T-2-13

Signal name	Description
INA	phase control (direction and speed of rotation)
INB	phase control (direction and speed of rotation)
IN_A	phase control (direction and speed of rotation)
IN_B	phase control (direction and speed of rotation)
T-Vref	motor rotation torque setting

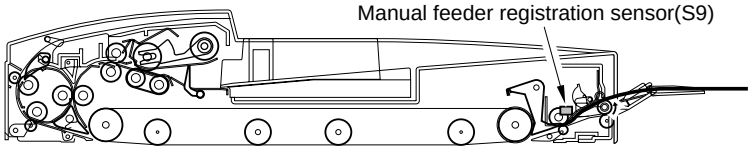
2.6.7 Manual Feeder Pickup/Delivery Operation

The machine uses 'manual feeder pickup/delivery' only for fixed reading mode.
1) When an original is placed in the manual feeder, the manual feeder placement sensor (PI12) detects it.



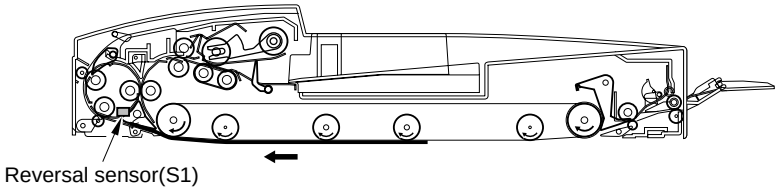
F-2-115

2) When the Start key is pressed, the machine uses the delivery roller to move the original until the lead edge of the original butts against the manual feeder registration roller (thus removing the skew).



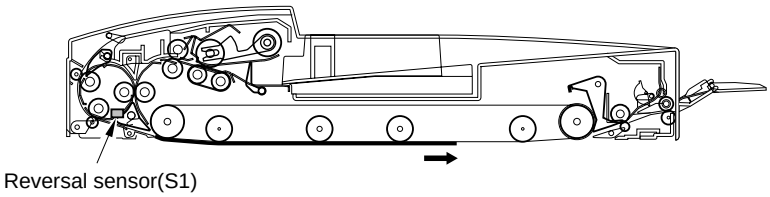
F-2-116

3) The machine moves the original to move the delivery roller and the transport belt. The original stops when its lead edge reaches the reversal sensor (S1).



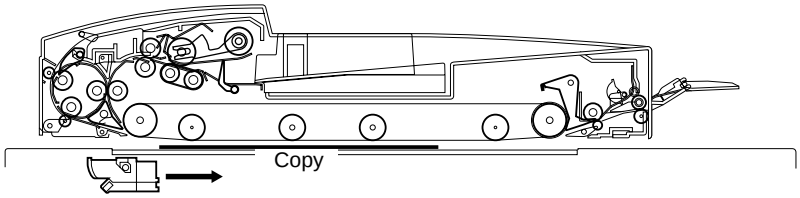
F-2-117

4) The machine rotates the transport belt. The original is moved over a specific distance after its trail edge has moved past the reversal sensor (S1), and is then stopped.



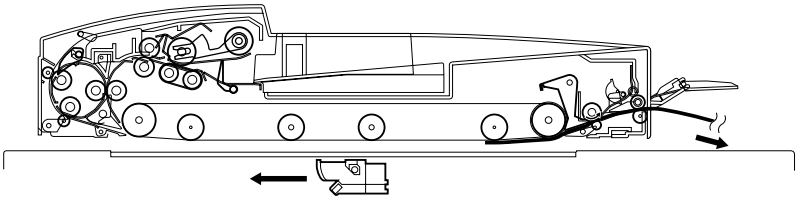
F-2-118

5) The host machine starts printing operation.



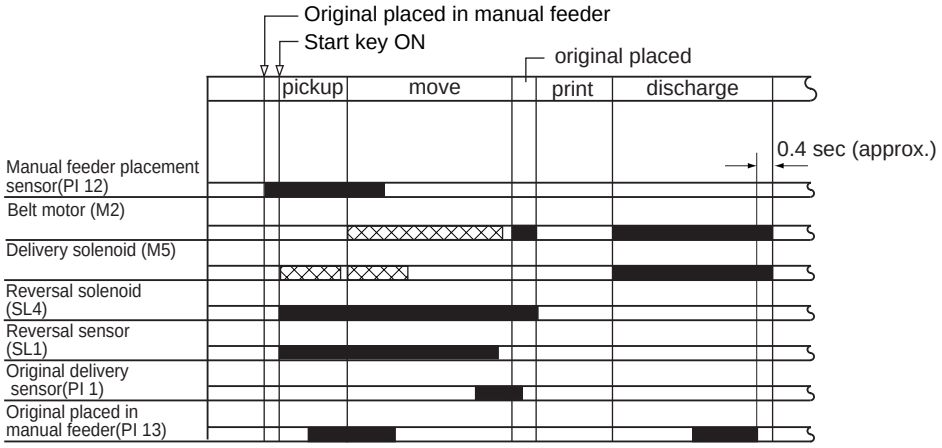
F-2-119

6) When the host machine's scanner starts to move in reverse, the machine starts to rotate the transport belt and the delivery roller, thus moving the original to the delivery assembly.



F-2-120

Sequence of Operation

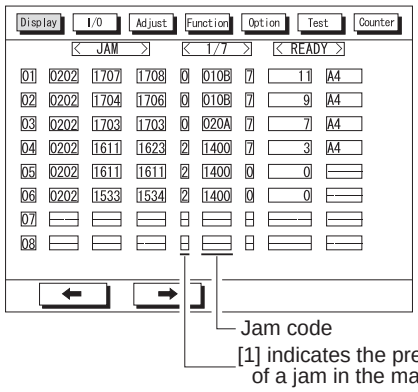


F-2-121

2.7 Detecting Jams

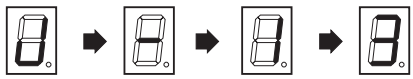
2.7.1 Overview

The machine checks for jams using the following sensors. The CPU on the ADF controller PCB runs a check at such times as programmed in advance, and detects the presence/absence of a jam in relation to the presence/absence of paper over a specific sensor.
Upon detection of a jam, the machine communicates the fact to the host machine, which in turn indicates the fact in service mode in the form of a code. A check may also be made with reference to the indicator (LED2) of the machine's ADF control PCB.
Service Mode Screen of the Host Machine

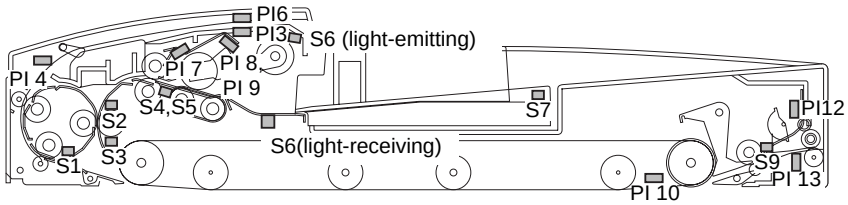


F-2-122

The indicator (LED2) of the machine's controller PCB flashes 4 times to indicate a specific jam type:
[EX: if code is 0013]



F-2-123



F-2-124

2.7.2 List of Jam Code

The following shows jam codes, jam types, and associated sensors with descriptions of detection conditions:

T-2-14

Code	Sensor type	Sensor notation	Description
0001	separation delay	S4	At time of separation, the separation sensor does not detect the original when it has been moved over a specific distance (221 mm) after the start of the separation motor.
0002	pickup delay	S4,S2	At time of separation, the pre-registration sensor does not detect the original when it has been moved over a specific distance (93 mm) after the separation sensor has detected its lead edge.
0003	pickup stationary 1	S3	At time of pickup, the post-registration sensor does not detect the original when it has been moved over a specific distance (40 mm) after the start of the reversal motor.
0004	pickup stationary 2	S2	At time of pickup, the pre-registration roller sensor detects the original when it has been moved over a specific distance (330 mm if small; 660 mm if large) after the start of the reversal motor.
0005	reversal delay	S1	At time of reversal, the reversal sensor does not detect the original when it has been moved a specific distance (104 mm) from the platen roller.
0006	reversal stationary	S1	At time of reversal, the reversal sensor detects the original when it has been moved over a specific distance (original length x 1.5 mm) after the end of arching.
0007	delivery delay	PI13	At time of delivery, the delivery sensor does not detect the original when it has been moved over a specific distance (631 mm - original length) after the start of the belt motor.
0008	delivery stationary 1	PI13,S9	At time of delivery, the manual feeder registration roller sensor detects the original when it has been moved over a specific distance (original length + 100 mm) after the delivery sensor has gone on.
0009	delivery stationary 2	PI13,S9	At time of delivery, the delivery sensor detects the original when it has been moved over a specific distance (100 mm) after the manual feeder registration roller sensor has gone off.
0010	pre-reversal delay 1	S3	At time of pre-reversal, the post-registration roller sensor does not detect the original after it has been moved over a specific distance (50 mm) from the start of the reversal motor.
0011	pre-reversal delay 2	S1,S3	At time of pre-reversal, the reversal sensor does not detect the original when it has been moved over a specific distance (100 mm) after the post-registration roller sensor has gone on.
0012	pre-reversal delay 2	PI4	At time of pre-reversal, the pre-reversal sensor does not detect an original when the reversal motor stops.
0013	pre-reversal stationary 1	S1,S4	At time of pre-reversal, the separation sensor detects the original when it has been moved over a specific distance (169 mm) after the reversal sensor has gone on.
0014	pre-reversal stationary 2	S2,S4	At time of pre-reversal, the pre-registration roller sensor detects the original when it has been moved over a specific distance (120 mm) after its trail edge has moved past the separation pull-off roller.
0015	pre-reversal stationary 3	S2,S3	At time of reversal, the post-registration sensor detects the original when it has been moved over a specific distance (50 mm) after its trail edge has moved past the pre-registration roller sensor.
0016	pre-reversal stationary 4	S1,S3	At time of pre-reversal, the reversal sensor detects the original when it has been moved over a specific distance (100 mm) after the start of the reversal motor.
0017	pre-reversal pickup delay	S1	At time of pre-reversal pickup, the reversal sensor does not detect the original when it has been moved over a specific distance (100 mm) after the start of the reversal motor.
0018	pre-reversal pickup stationary 1	S1,PI4	At time of pre-reversal pickup, the pre-reversal sensor detects the original when it has been moved over a specific distance after the reversal sensor has detected its lead edge.

Code	Sensor type	Sensor notation	Description
0019	pre-reversal pickup stationary 2	S1,PI4	At time of reversal pickup, the reversal sensor detects the original when it has been moved over a specific distance after the pre-reversal sensor has detected its trail edge.
0020	reversal pickup delay	S2	At time of reversal, the pre-registration roller sensor does not detect the original when it has been moved over a specific distance (197 mm) after the end of arching.
0021	reversal pickup stationary	S2	At time of reversal, the pre-registration sensor detects the original when it has been moved over a specific distance (original length x 1.5 mm) after the pre-registration roller sensor has gone on.
0022	pickup lead edge skew	S4,S5	At time of separation, there is a discrepancy of 10 mm in timing of lead edge detection between separation sensor and skew sensor.
0023	pickup trail edge skew	S4,S5	A time of pickup, there is a discrepancy of 10 mm in timing of trail edge detection between separation sensor and skew sensor.
0024	pickup NG1	S1	At time of pickup, the reversal sensor detects the original before it has moved past the pre-registration roller sensor.
0025	pickup NG2	S3,S2	At time of pickup, the post-registration roller sensor detects an original before the reversal motor has started. At time of pickup, the pre-registration roller sensor does not detect the original when it has been moved over a specific distance. At time of pre-reversal, the post-registration roller sensor detects an original before the reversal motor has started. At time of reversal, the pre-registration roller sensor does not detect the original when its trail edge moves past the reversal sensor.
0026	reversal pickup edge skew	S4,S5	At time of pre-reversal, there is a discrepancy of 10 mm in timing of trail edge detection between separation sensor and skew sensor.
0027	reversal pickup NG1	PI4	At time of reversal, the pre-reversal sensor detects an original while the machine waits for the activation of the pre-registration roller sensor.
0030	manual feed registration delay	S9	At time of arching in manual feed mode, the manual feeder registration roller sensor does not detect an original within a specific time after the start of the delivery motor.
0031	manual feed registration stationary	S1	In manual feed mode, the reversal sensor does not detect the original when it has been moved over a specific distance (638 mm) after the start of the belt motor.
0032	manual feed reversal stationary	S1	In manual feed mode (platen roller), the reversal sensor detects the original when it has been moved over a specific distance (50 mm) after the start of the belt motor.
0033	manual feed delivery delay	PI13	At time of delivery in manual feed mode, the delivery sensor does not detect the original when it has been moved over a specific distance (621 mm - original length).
0034	manual feed delivery stationary	PI13	At time of delivery in manual feed mode, the delivery sensor does not detect the original after it has been moved over a specific distance (621 mm - original length).
0043	1st sheet pickup stationary 1	S3	A pickup stationary 1 condition (0003) has occurred on the 1st sheet.
0044	1st sheet reversal delay	S2	A pickup stationary 2 condition (0004) has occurred on the 1st sheet.
0045	1st sheet registration delay	S1	A reversal delay condition (0005) has occurred on the 1st sheet.
0046	1st sheet reversal stationary	S1	A reversal stationary condition (0006) has occurred on the 1st sheet.
0047	1st sheet delivery delay	PI13	A delivery delay condition (0007) has occurred on the 1st sheet.
0048	1st sheet delivery stationary 1	PI13,S9	A delivery stationary condition (0008) has occurred on the 1st sheet.
0049	1st sheet delivery stationary 2	PI13,S9	A delivery stationary condition (0009) has occurred on the 1st sheet.
0050	1st sheet pre-reversal delay 1	S3	A pre-reversal delay 1 condition (0010) has occurred on the 1st sheet.
0051	1st sheet pre-reversal delay 2	S1,S3	A pre-reversal delay 1 condition (0011) has occurred on the 1st sheet.
0052	1st sheet pre-reversal delay 3	PI4	A pre-reversal delay 3 condition (0012) has occurred on the 1st sheet.
0053	1st sheet pre-reversal stationary 1	S1,S4	A pre-reversal delay 1 condition (0013) has occurred on the 1st sheet.
0054	1st sheet pre-reversal stationary 2	S2,S4	A pre-reversal stationary 2 condition (0014) has occurred on the 1st sheet.
0055	1st sheet pre-reversal stationary 3	S2,S3	A pre-reversal stationary 3 condition (0015) has occurred on the 1st sheet.
0056	1st sheet pre-reversal stationary 4	S1,S3	A pre-reversal stationary 4 condition (0016) has occurred on the 1st sheet.
0057	1st sheet pre-reversal pickup delay	S1	A pre-reversal pickup delay condition (0017) has occurred on the 1st sheet.
0058	1st sheet pre-reversal pickup stationary 1	S1,PI4	A pre-reversal pickup stationary 1 condition (0018) has occurred on the 1st sheet.
0059	1st sheet pre-reversal stationary 2	S1,PI4	A pre-reversal pickup stationary 2 condition (0019) has occurred on the 1st sheet.
0060	1st sheet reversal pickup delay	S2	A reversal pickup delay condition (0020) has occurred on the 1st sheet.
0061	1st sheet reversal pickup stationary	S2	A reversal pickup stationary condition (0021) has occurred on the 1st sheet.
0062	1st sheet pickup lead edge skew	S4,S5	A pickup lead edge skew condition (0022) has occurred on the 1st sheet.
0063	1st sheet pickup trail edge skew	S4,S5	A pickup trail edge skew condition (0023) has occurred on the 1st sheet.
0064	1st sheet pickup NG1	S1	A pickup NG1 condition (0024) has occurred on the 1st sheet.
0065	1st sheet pickup NG2	S3,S2	A pickup NG2 condition (0025) has occurred on the 1st sheet.
0066	1st sheet reversal pickup trail edge skew	S4,S5	A reversal pickup trail edge skew condition (0026) has occurred on the 1st sheet.
0067	1st sheet reversal pickup NG1	PI4	A reversal pickup NG1 condition (0027) has occurred on the 1st sheet.
0071	timing fault 1	-	A software control mechanism has failed.
0072	timing fault 2	-	At time of fixed reading, the delivery of the preceding original is not over when an original has been moved and stopped on the right side of the platen roller.
0073	illegal size	S3	In LDR stream reading, the post-registration roller sensor detects the original when it has been moved over a specific distance (30 mm) from standby position.
0074	manual feeder original size fault	S9,S1	In manual feed mode, the reversal sensor detects an original while the manual feeder registration roller sensor detects another original.
0075	image lead edge fault	S7	In stream reading, no change of read position has taken place despite a request for a change of reading position.
0076	1st sheet image lead edge position fault	S7	An image lead edge fault condition (0075) has occurred on the 1st sheet.
0077	belt speed setting fault	PI1	The speed setting of the belt motor is the minimum speed (100 mm/sec) or lower or is the maximum speed (700 mm/sec) or higher.
0078	belt speed switchover fault	PI1	At time of a belt motor speed switchover, the belt motor is not operating at a specific speed.

Code	Sensor type	Sensor notation	Description
0079	belt status fault	PI1	At time of a switchover of the belt motor state (acceleration, constant, deceleration), the motor is not in any of the 3 states.
0080	image lead edge output timing fault	S2,S3,SW301	At time of stream reading, the image lead edge signal is generated during acceleration over the distance from standby position to image lead edge position.
0081	reversal speed setting fault	PI5	The speed setting of the reversal motor is the minimum speed (100 mm/sec) or lower or is the maximum speed (700 mm/sec) or higher.
0082	reversal speed switchover fault	PI5	At time of a reversal motor speed switchover, the motor is not operating at a specific speed.
0083	reversal status fault	PI5	At time of a switchover of the motor state (acceleration, constant, deceleration), the motor is not in any of the 3 settings.
0084	last original error	PI1	While the last original is being discharged from the platen roller or is being moved, a belt motor error has occurred.
0085	error	PI1,PI2, PI11	A motor error other than an IPC communication/pickup error has occurred. (less than 3 occurrences)
0090	ADF open	PI10	An ADF open condition has been detected.
0091	user DF open	PI10	An ADF open condition has been detected while the machine is in operation.
0092	cover open	PI3,PI6	A cover open condition (front or rear) has been detected.
0093	user cover open	PI3,PI6	While the machine is operating, a sensor in the paper path has detected an original.
0094	initial stationary	PI4,PI12,PI13,S1,S2,S3,S4,S5,S9	At the start of operation, the presence of an original has been detected by a senser in the paper path.
0095	cycle NG	S6	While no sensor is on, the pickup signal is received for a specific time (2 sec).
0096	residual original	S1	Before the start of a left pickup job, the reversal sensor has detected an original while the belt motor is being driven for a specific time.
0097	manual feeder residual original	S1,S9	At time of manual feed pickup, the reversal sensor detects an original while the manual feeder registration roller sensor also detects an original.
0098	power-down	-	While the machine is operating, a drop has occurred in the voltage of the power supplied by the host machine.

2.7.3 Alarm Code

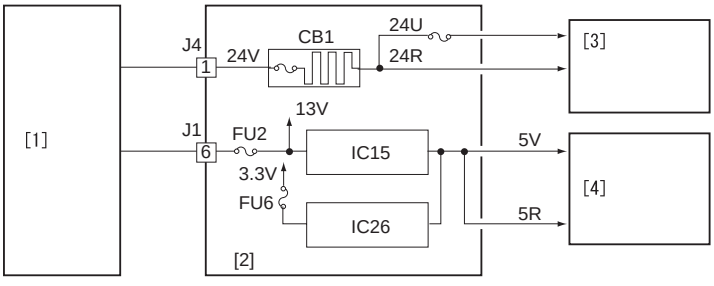
T-2-15

Code	Name	Description
03	separation fault	a jam caused by the 1st original not reaching the post-separation sensor a jam caused by the 1st original not reaching the registration sensor
11	decrease in number of originals after jam recovery	a condition caused by a decrease in the number of originals in the tray before delivery of as many as [originals to be recovered - 1] have been delivered at time of jam recovery
21	mode fault	selection of mode not permitting execution

2.8 Power Supply

2.8.1 Overview

The following is a diagram of the machine's power supply system:
The machine is supplied with 24V and 13V power by its host machine. The 24V power is supplied to various loads by way of a circuit breaker (CB1). Of the 24V power supplied to the loads, 24U is sent by way of a fuse, while 24R is sent directly.
The 13 V power is converted into 5 V for sensors by a regulator IC (IC15). Another regulator IC (IC26) is used to convert 5 V into 3.3 V, which is used to drive the ADF controller PCB.



F-2-125

[1] Host machine
[2] ADF controller PCB
[3] Motors, clutches, solenoids
[4] Sensors

Chapter 3 Parts Replacement Procedure

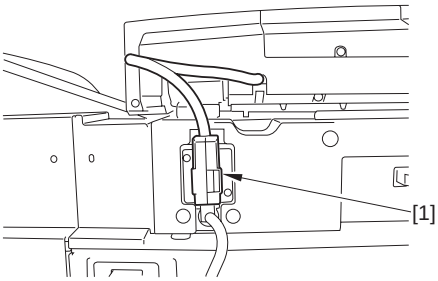
Contents

3.1 Removing from the Host Machine

3.1.1 Feeder

3.1.1.1 Disconnecting the DADF

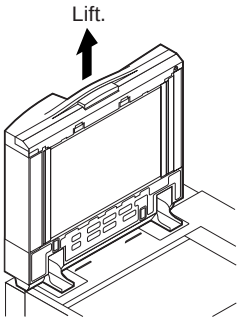
1) Turn off the copier.
2) Disconnect the DADF's communication cable [1] from the copier.



F-3-1

3) Open the DADF fully.
4) Standing at the rear of the copier, lift the DADF to detach.

MEMO:
The hinge foot is equipped with a locking mechanism, requiring the DADF to be fully opened for removal.



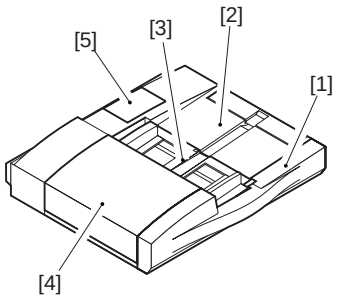
F-3-2

3.2 External Covers

3.2.1 External Covers

3.2.1.1 External Covers

[1] Body front cover
[2] Main cover
[3] Original tray
[4] Upper cover
[5] ADF controller cover

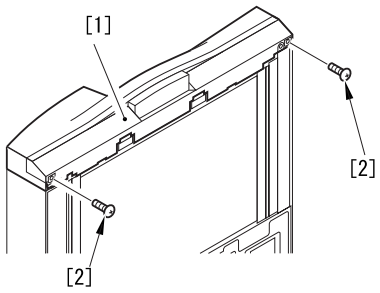


F-3-3

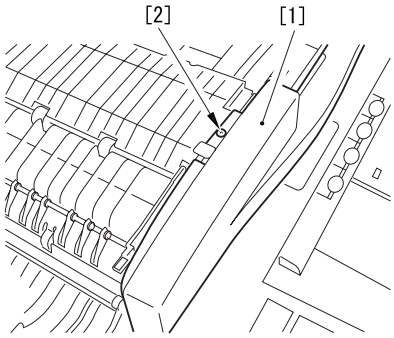
3.2.2 Front Cover

3.2.2.1 Removing the Front Cover

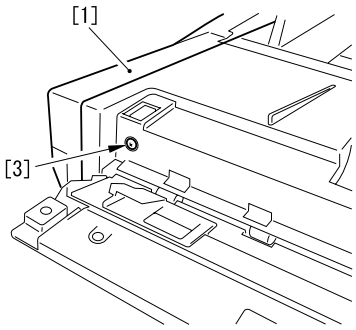
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-4



F-3-5

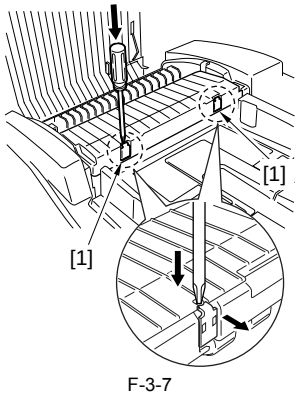


F-3-6

3.2.3 Main Cover

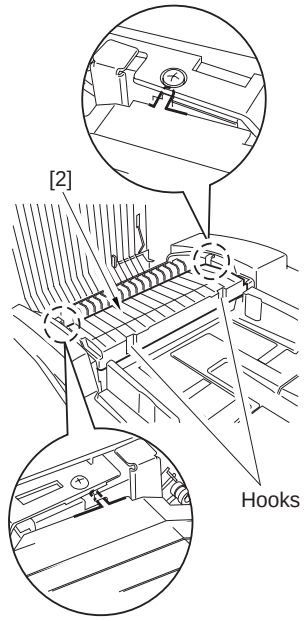
3.2.3.1 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



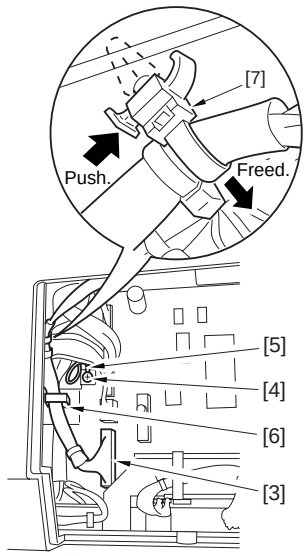
F-3-7

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-8

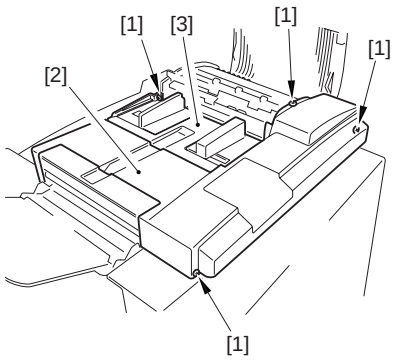
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-9

4) Remove the four screws [1], and detach the main cover [2].

The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



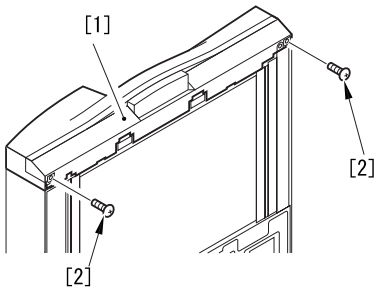
F-3-10

3.3 Drive System

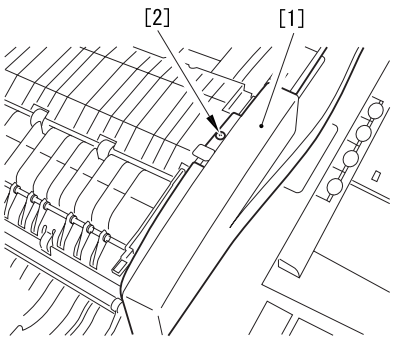
3.3.1 Reversal Motor

3.3.1.1 Removing the Front Cover

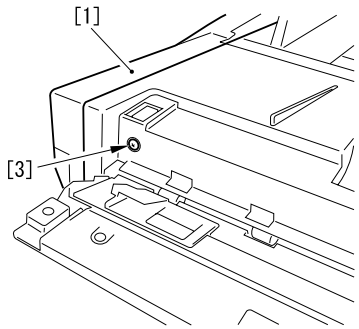
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-11



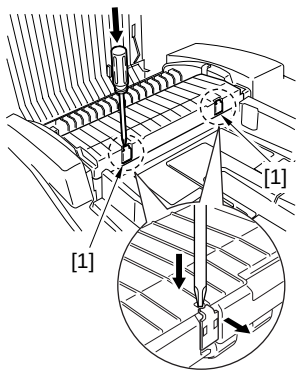
F-3-12



F-3-13

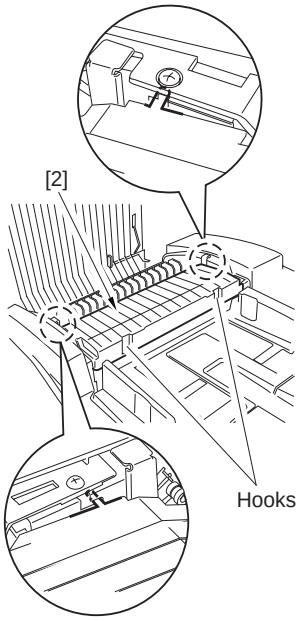
3.3.1.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



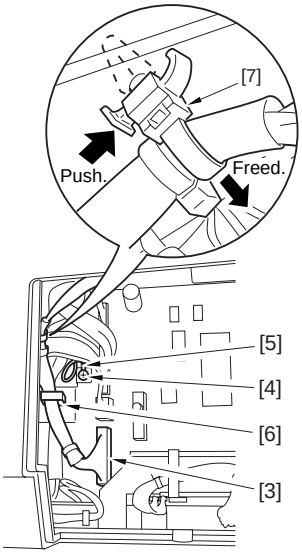
F-3-14

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-15

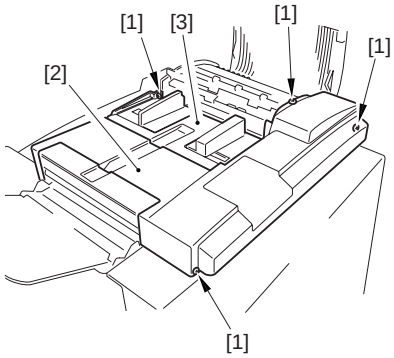
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-16

4) Remove the four screws [1], and detach the main cover [2].

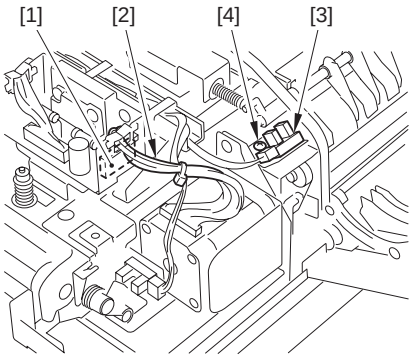
The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-17

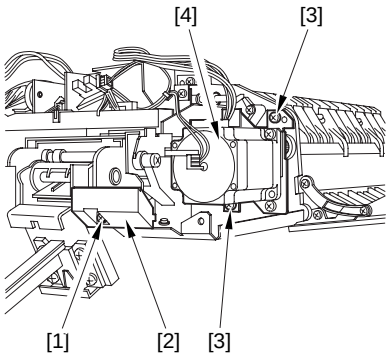
3.3.1.3 Removing the Reversal Motor Unit

1) Disconnect the connector J602 [2] from the reversal motor driver PCB [1].
2) Remove the cable [2] from the cable clamp.
3) Remove the screw [4], and detach the pre-reversal sensor base [3].



F-3-18

3) Remove the screw [2], and detach the cover [2]; then, remove the two screws [3], and detach the reversal motor unit [4].

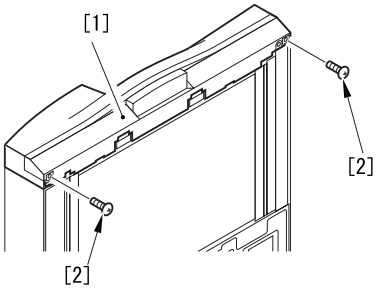


F-3-19

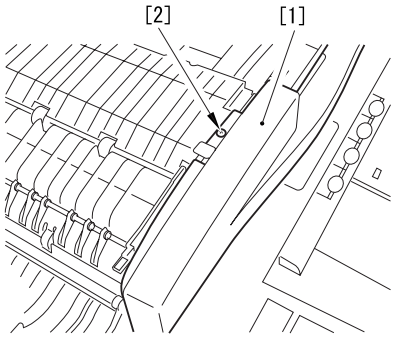
3.3.2 Pickup Motor

3.3.2.1 Removing the Front Cover

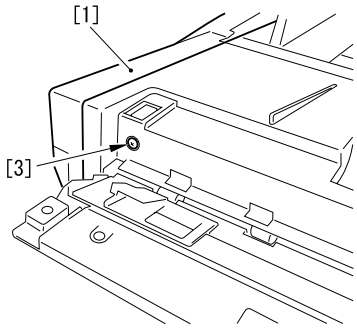
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-20



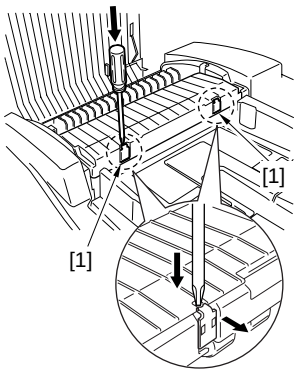
F-3-21



F-3-22

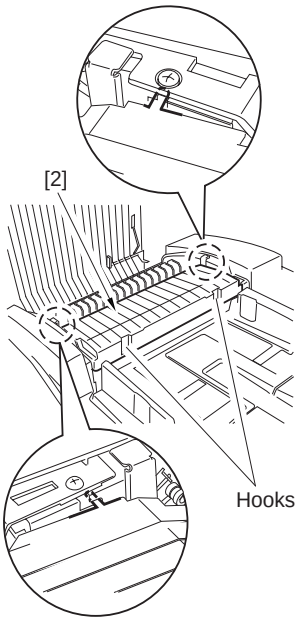
3.3.2.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



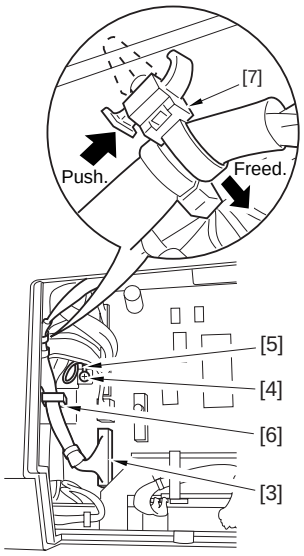
F-3-23

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-24

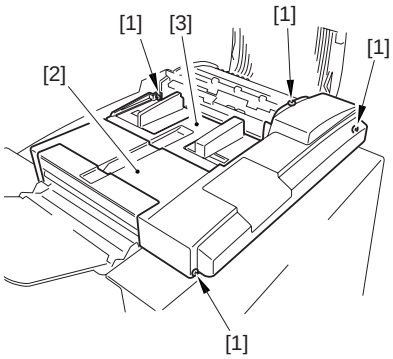
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-25

4) Remove the four screws [1], and detach the main cover [2].

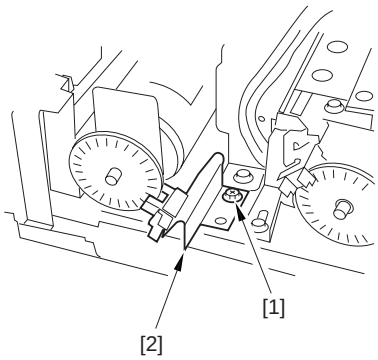
The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-26

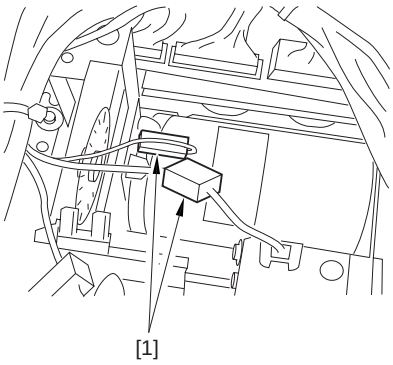
3.3.2.3 Removing the Separation Motor Unit

1) Remove the screw [1], and detach the separation motor sensor support plate [2].



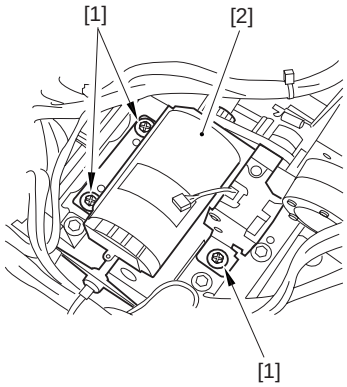
F-3-27

2) Disconnect the two connectors [1].



F-3-28

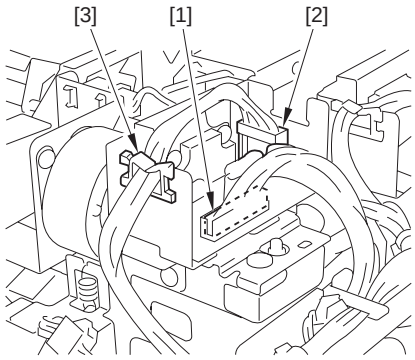
3) Remove the three mounting screws [1], and detach the separation motor unit [2].



F-3-29

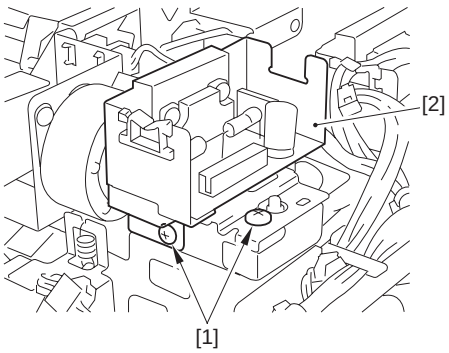
3.3.2.4 Removing the Pickup Motor Unit

1) Disconnect J601 [1] and J602 [2], and free the cable from the edge saddle [3].



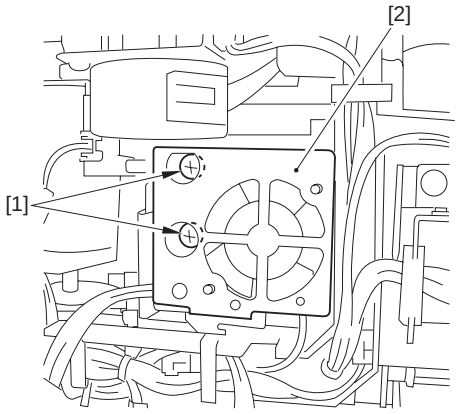
F-3-30

2) Remove the two screws [1], and detach the belt motor driver PCB unit [2].



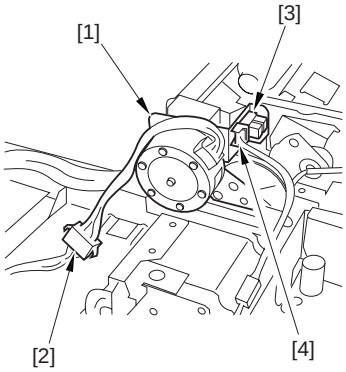
F-3-31

4) Detach the fan mtor unit [1] by removing the two screws [2].



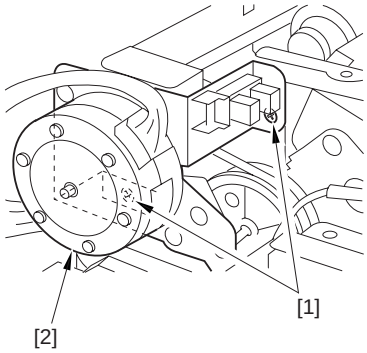
F-3-32

5) Disconnect the pick up motor unit [1] connecter [2] and open/ closed sensor (rear) [3] connecter [4].



F-3-33

6) Remove the two mounting screws [1], and detach the pickup motor unit [2].

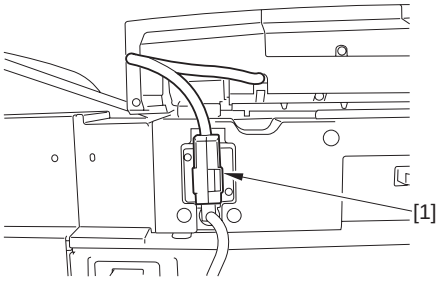


F-3-34

3.3.3 Delivery Motor

3.3.3.1 Disconnecting the DADF

1) Turn off the copier.
2) Disconnect the DADF's communication cable [1] from the copier.

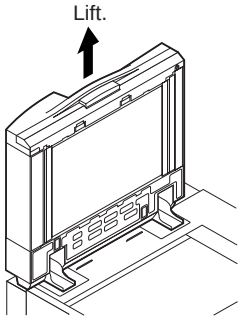


F-3-35

3) Open the DADF fully.
4) Standing at the rear of the copier, lift the DADF to detach.

MEMO:

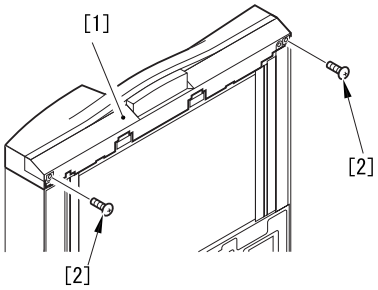
The hinge foot is equipped with a locking mechanism, requiring the DADF to be fully opened for removal.



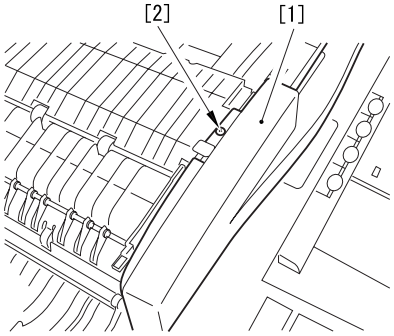
F-3-36

3.3.3.2 Removing the Front Cover

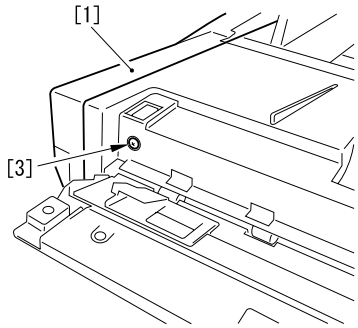
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-37



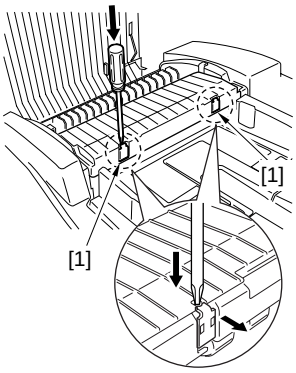
F-3-38



F-3-39

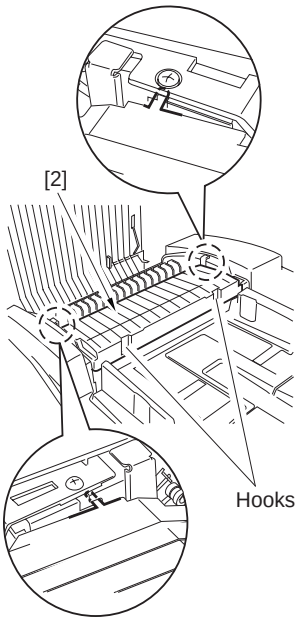
3.3.3.3 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



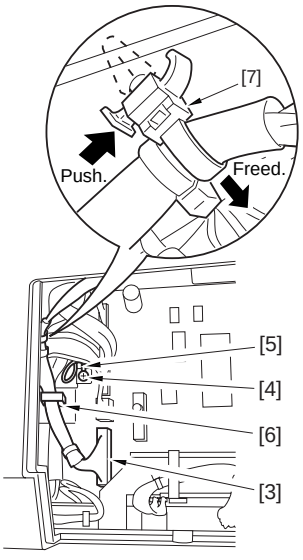
F-3-40

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-41

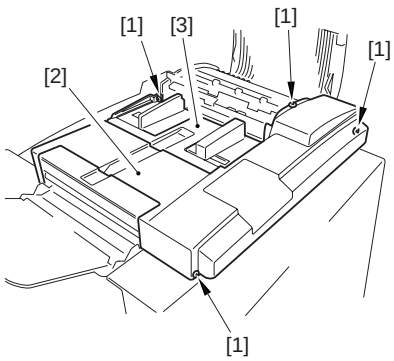
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-42

4) Remove the four screws [1], and detach the main cover [2].

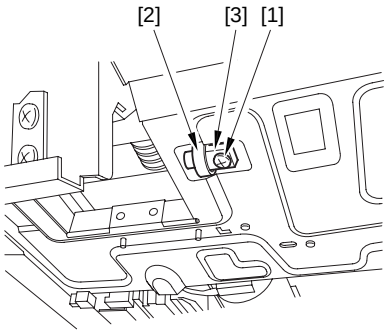
⚠ The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-43

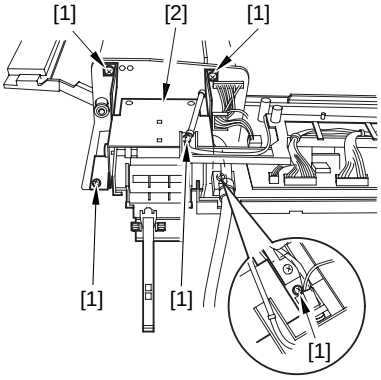
3.3.3.4 Removing the Delivery Motor

1) Remove the screw [1] from the bottom of the DADF, and remove the bearing [2] and the rod [3].



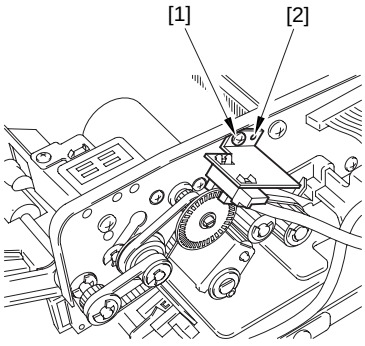
F-3-44

2) Remove the four screws [1], and detach the hinge (right) [2].



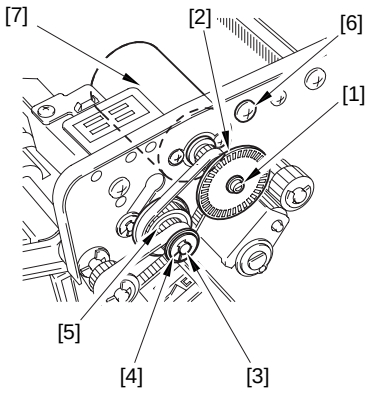
F-3-45

4) Remove the screw [1], and detach the delivery motor sensor [2].



F-3-46

4) Remove the grip ring [1], and detach the lock plate [2].
5) Remove the E-ring [3], and remove the belt retaining washer [4] and the gear [5].
6) Remove the screw [6], and detach the delivery motor [7].



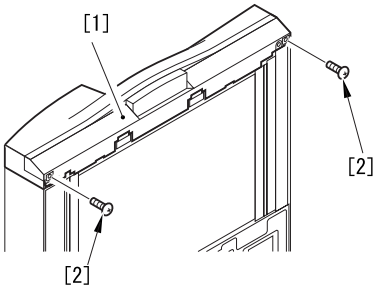
F-3-47

If you have replaced the delivery motor, be sure to adjust the sensor and the delivery motor.

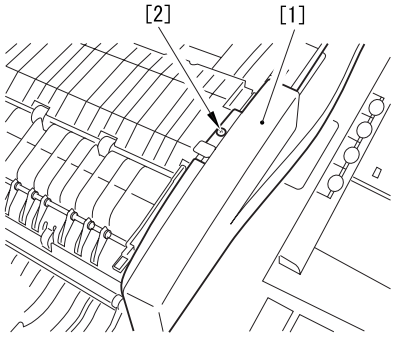
3.3.4 Separation Motor Unit

3.3.4.1 Removing the Front Cover

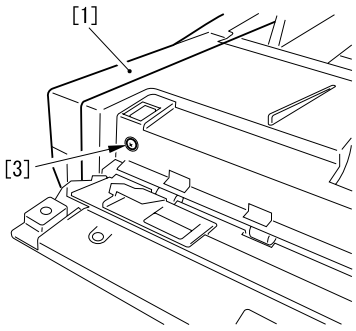
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-48



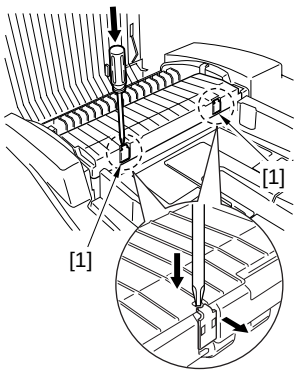
F-3-49



F-3-50

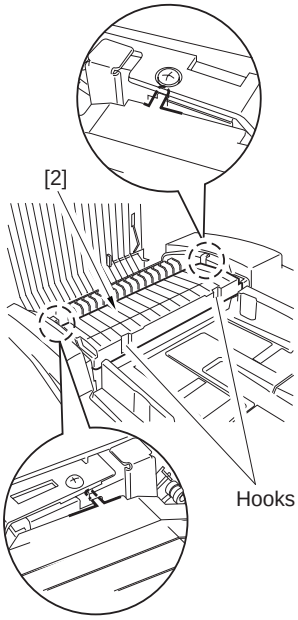
3.3.4.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



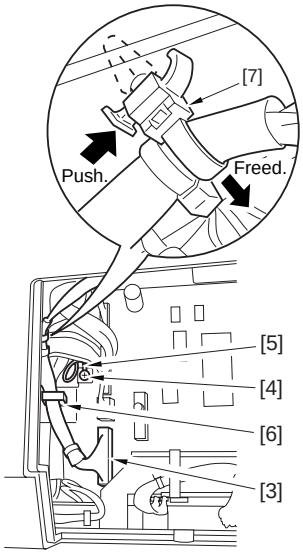
F-3-51

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-52

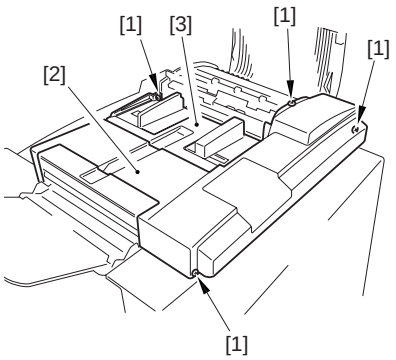
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-53

4) Remove the four screws [1], and detach the main cover [2].

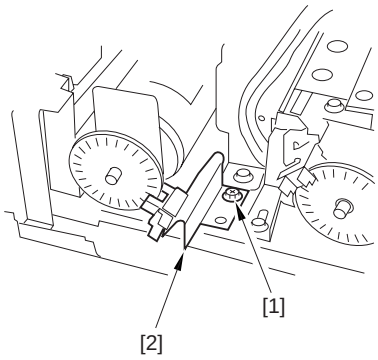
The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-54

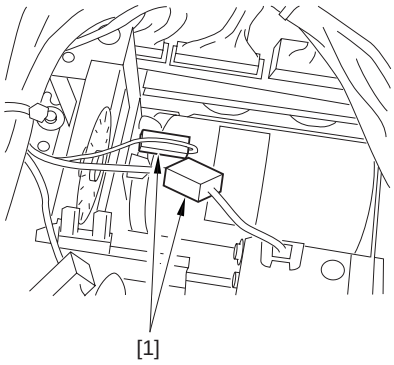
3.3.4.3 Removing the Separation Motor Unit

1) Remove the screw [1], and detach the separation motor sensor support plate [2].



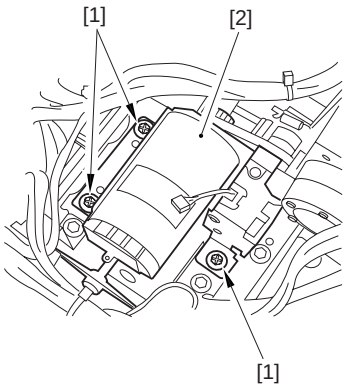
F-3-55

2) Disconnect the two connectors [1].



F-3-56

3) Remove the three mounting screws [1], and detach the separation motor unit [2].

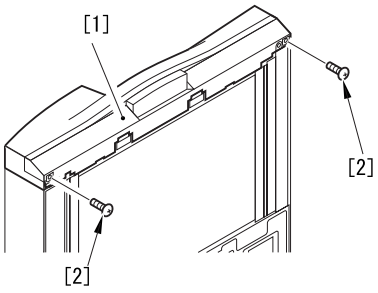


F-3-57

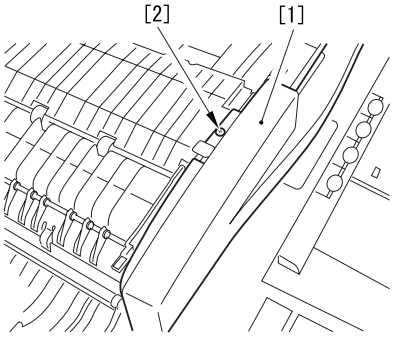
3.3.5 Belt Motor Unit

3.3.5.1 Removing the Front Cover

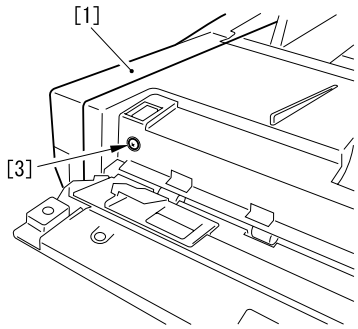
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-58



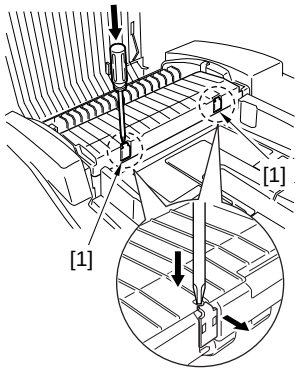
F-3-59



F-3-60

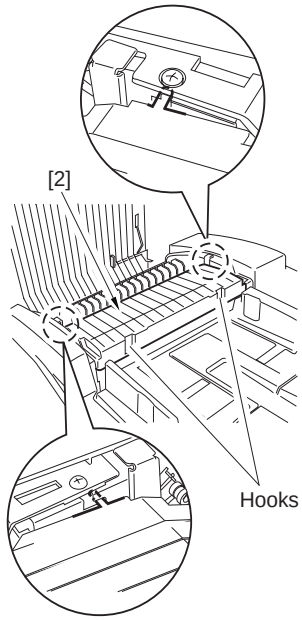
3.3.5.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



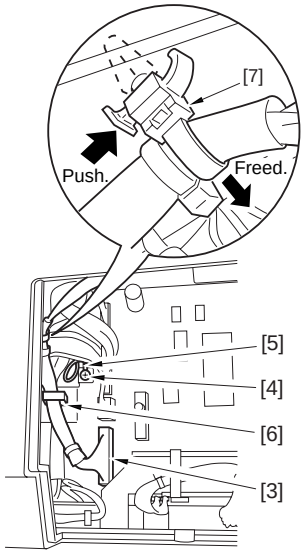
F-3-61

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-62

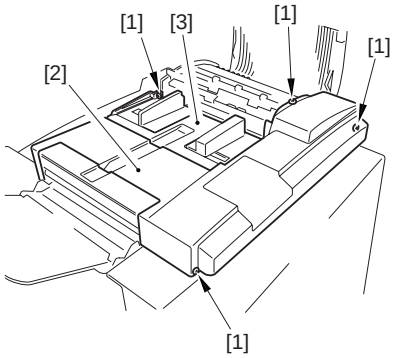
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-63

4) Remove the four screws [1], and detach the main cover [2].

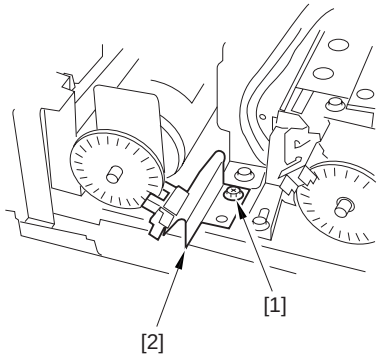
⚠ The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-64

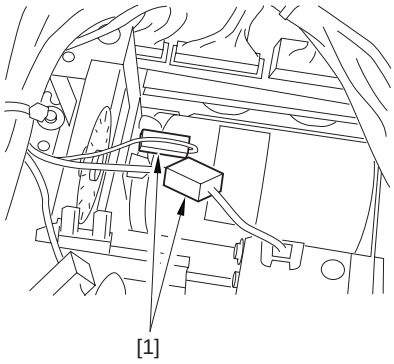
3.3.5.3 Removing the Separation Motor Unit

1) Remove the screw [1], and detach the separation motor sensor support plate [2].



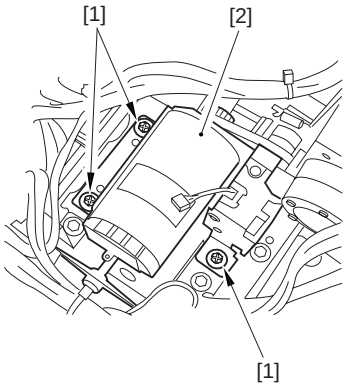
F-3-65

2) Disconnect the two connectors [1].



F-3-66

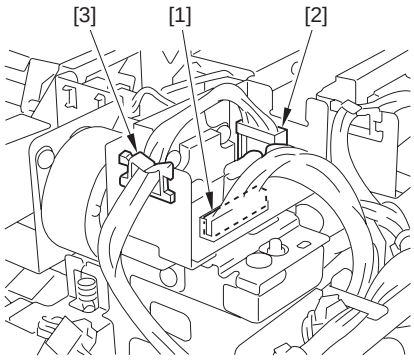
3) Remove the three mounting screws [1], and detach the separation motor unit [2].



F-3-67

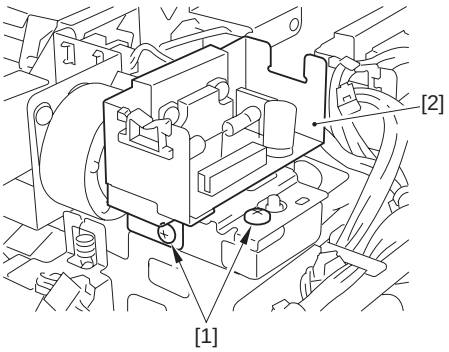
3.3.5.4 Removing the Pickup Motor Unit

1) Disconnect J601 [1] and J602 [2], and free the cable from the edge saddle [3].



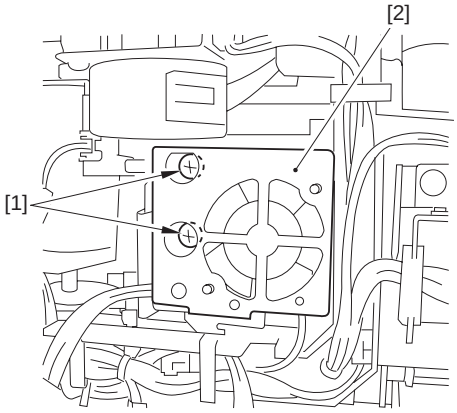
F-3-68

2) Remove the two screws [1], and detach the belt motor driver PCB unit [2].



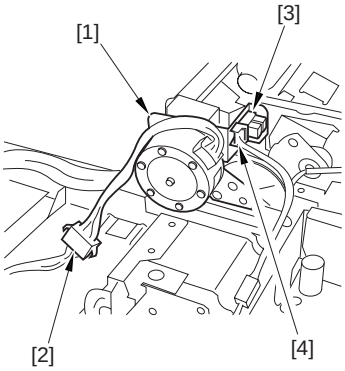
F-3-69

4) Detach the fan mtor unit [1] by removing the two screws [2].



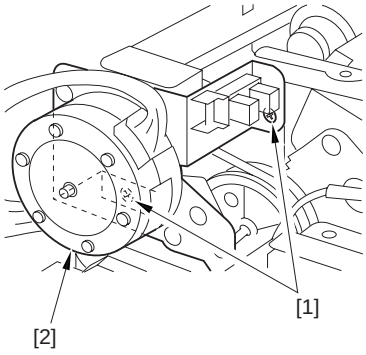
F-3-70

5) Disconnect the pick up motor unit [1] connecter [2] and open/ closed sensor (rear) [3] connecter [4].



F-3-71

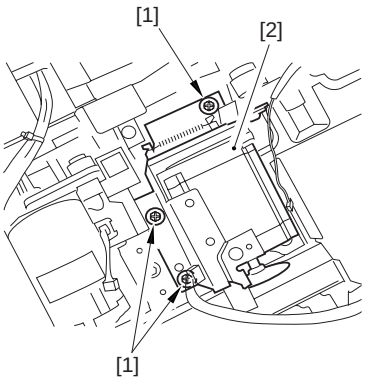
6) Remove the two mounting screws [1], and detach the pickup motor unit [2].



F-3-72

3.3.5.5 Removing the Belt Motor Unit

3) Remove the three screws [1], and detach the belt motor unit [2].



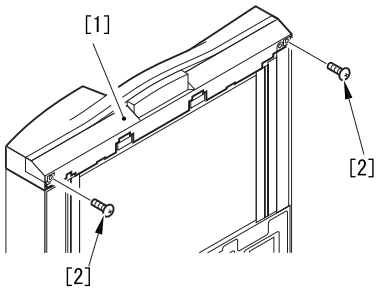
F-3-73

3.4 Document Feeding System

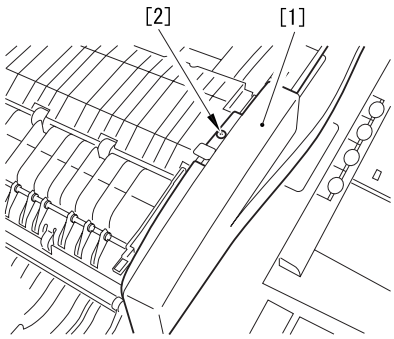
3.4.1 Registration Roller

3.4.1.1 Removing the Front Cover

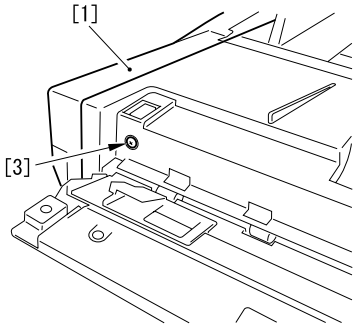
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-74



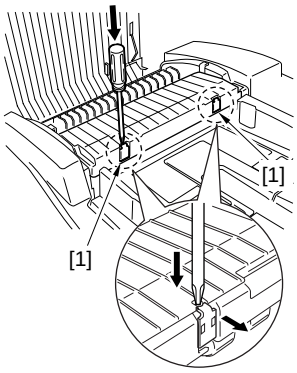
F-3-75



F-3-76

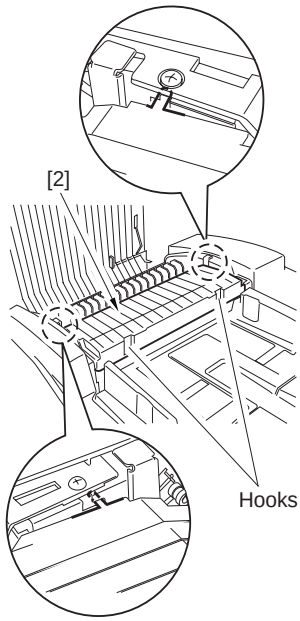
3.4.1.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



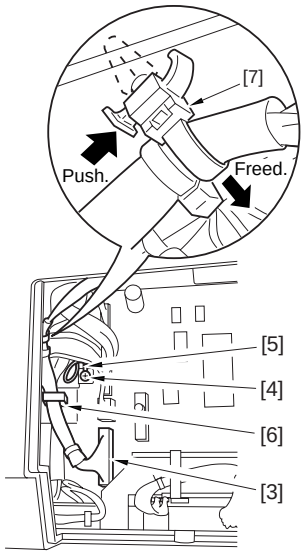
F-3-77

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-78

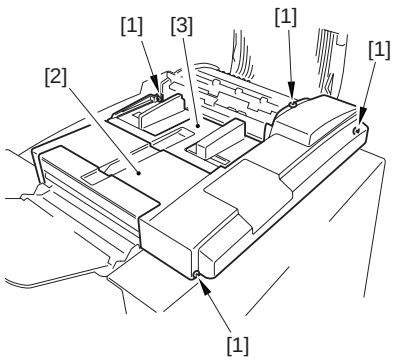
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-79

4) Remove the four screws [1], and detach the main cover [2].

⚠ The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.

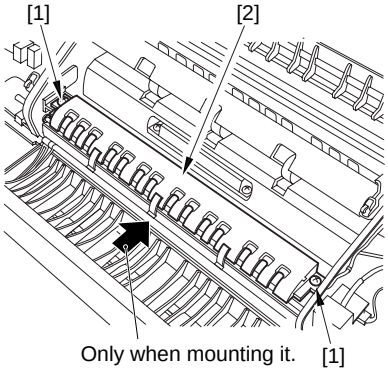


F-3-80

3.4.1.3 Removing the Registration Roller

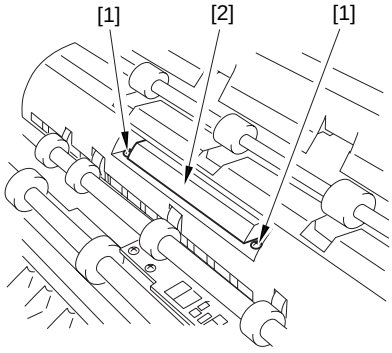
1) Remove the two screws [1], and detach the reversing guide [2].

When mounting the reversing guide, do so while forcing it in the direction of the arrow. If not mounted properly, it can trigger jams.



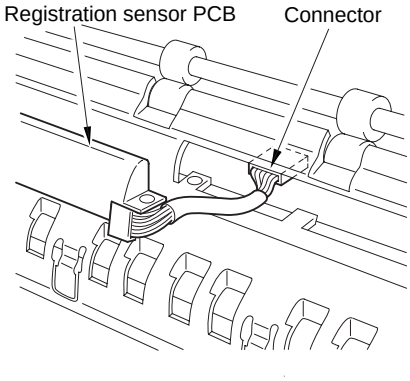
F-3-81

2) Remove the two screws [1], and detach the registration sensor PCB [2].



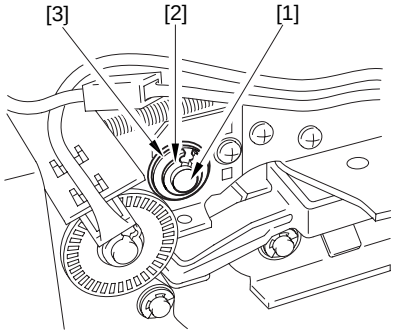
F-3-82

When removing the registration sensor PCB, be sure to disconnect the connector of the cable connected to it.



F-3-83

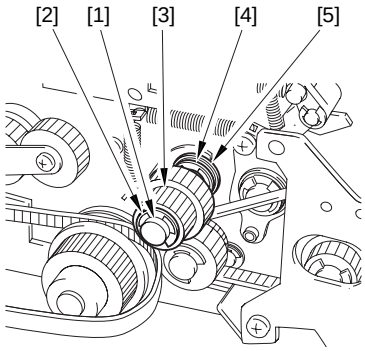
3) Remove the grip ring [1] and the bearing [2] of the registration roller [3] (front side plate).



F-3-84

4) Remove the E-ring [1], gear [2], E-ring [3], and bearing [4] of the registration roller [5] (rear side plate).

The gear holds a pin. Take care not to lose it when removing the gear.

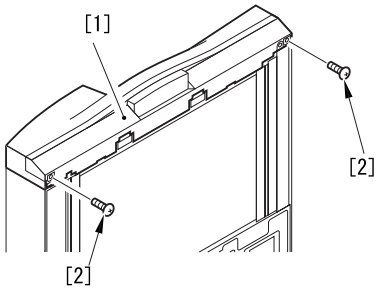


F-3-85

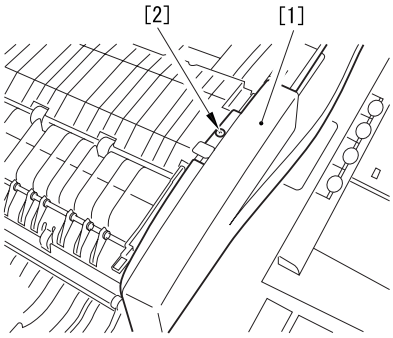
3.4.2 Reversing Roller

3.4.2.1 Removing the Front Cover

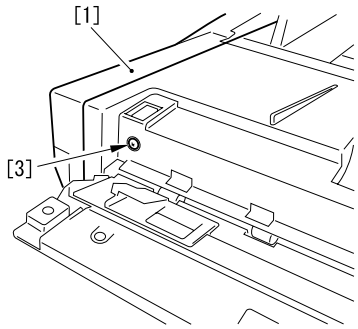
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-86



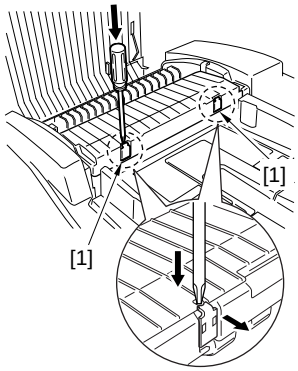
F-3-87



F-3-88

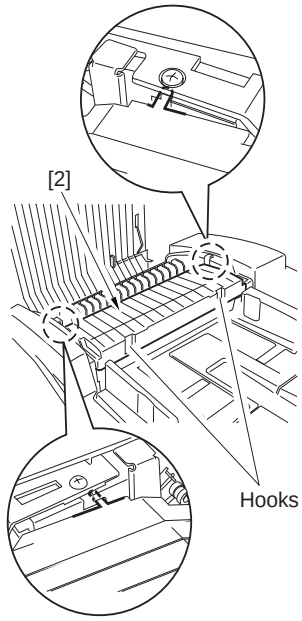
3.4.2.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



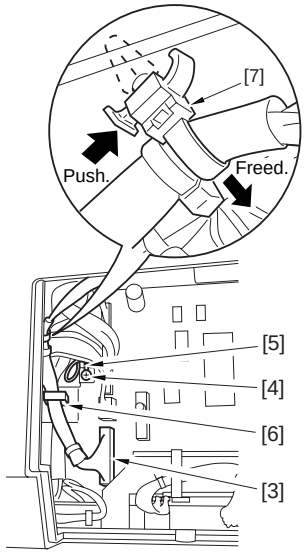
F-3-89

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-90

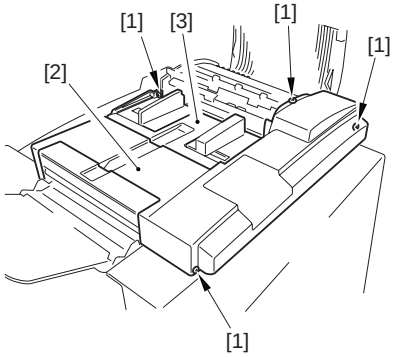
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-91

4) Remove the four screws [1], and detach the main cover [2].

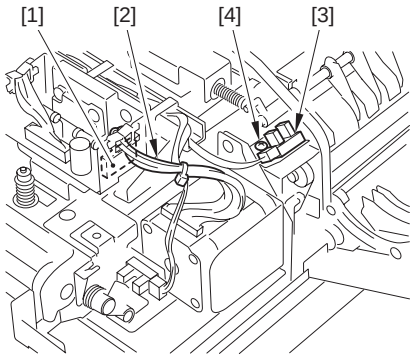
⚠ The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-92

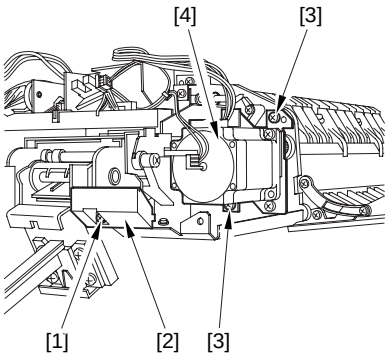
3.4.2.3 Removing the Reversal Motor Unit

1) Disconnect the connector J602 [2] from the reversal motor driver PCB [1].
2) Remove the cable [2] from the cable clamp.
3) Remove the screw [4], and detach the pre-reversal sensor base [3].



F-3-93

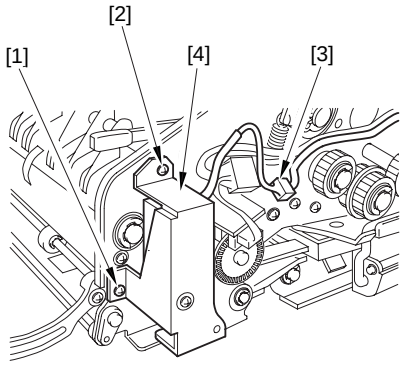
3) Remove the screw [2], and detach the cover [2]; then, remove the two screws [3], and detach the reversal motor unit [4].



F-3-94

3.4.2.4 Removing the Reversing Roller

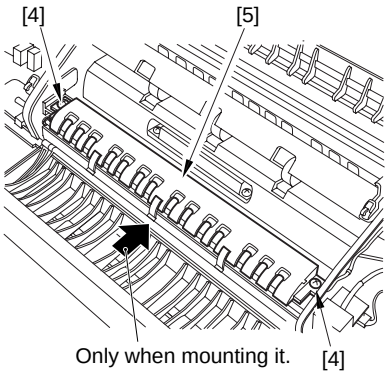
1) Remove the two screws (M3X4) [1] and (M3X6) [2] of the pickup front side plate , and disconnect the connector [3]; then, detach the pre-reversal solenoid unit [4].



F-3-95

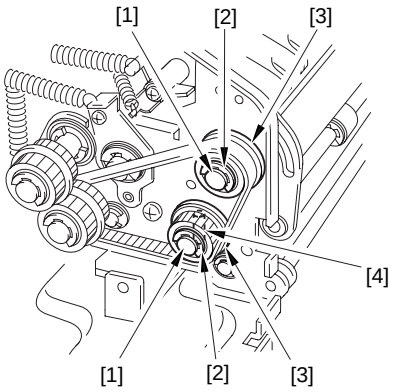
2) Remove the two screws [4], and detach the reversing guide [5].

When mounting the reversing guide, do so while forcing it in the direction of the arrow. If not properly mounted, it can trigger jams.



F-3-96

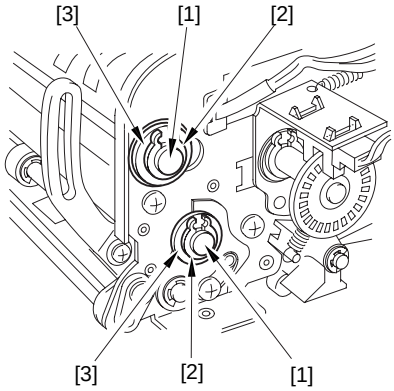
3) Remove the E-ring [2], gear [3], and parallel pin [4] on the rear side plate side of the reversing roller [1] (2 pc.).



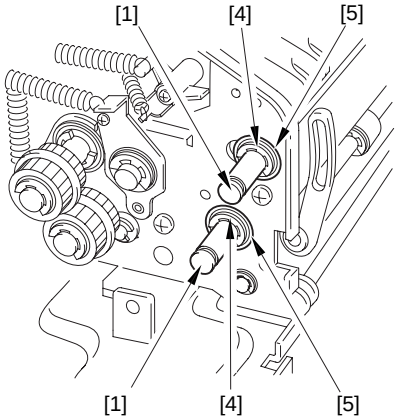
F-3-97

The gear holds a pin. Take care not to lose it when removing the gear.

4) Remove the grip ring [2] and the bearing [3] on the front side plate side of the reversing roller [1] (2 pc.), and remove the E-ring [4] and the bearing [5] on the rear side plate side.
5) Pull out the reversing roller [6].



F-3-98

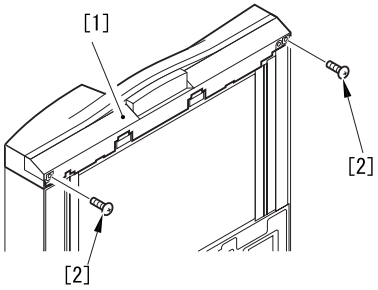


F-3-99

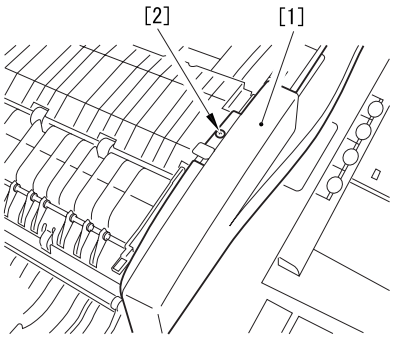
3.4.3 Feed Belt

3.4.3.1 Removing the Front Cover

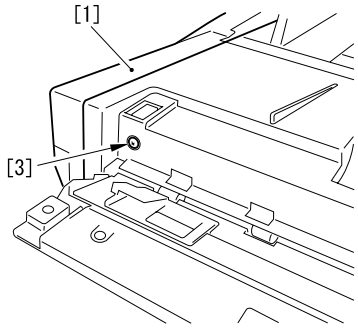
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-100



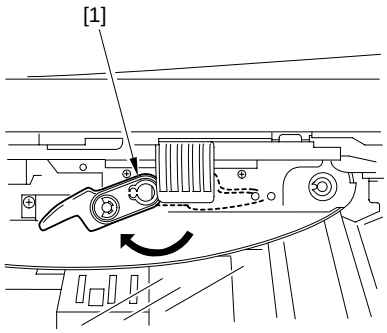
F-3-101



F-3-102

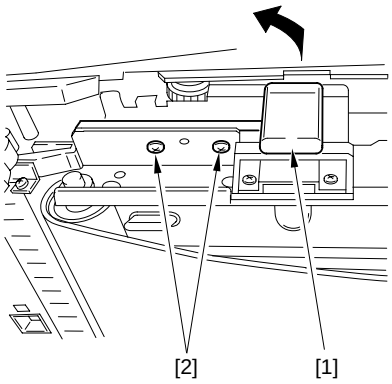
3.4.3.2 Removing the Feeding Belt

1) Turn the releasing lever [1] clockwise to decrease the tension of the belt.

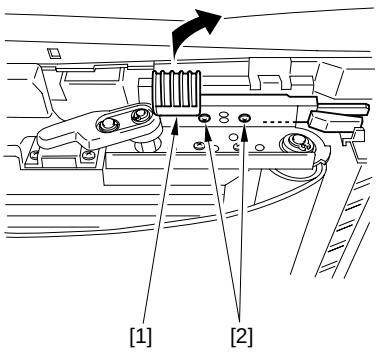


F-3-103

2) Turn the releasing levers (left/ right) [1] outward after removing the two fixing screws [2] each.

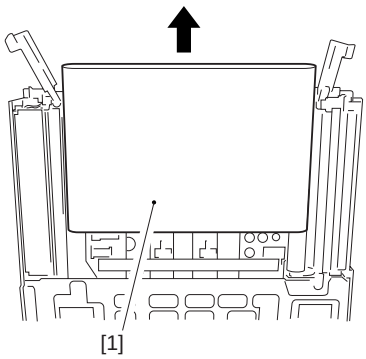


F-3-104



F-3-105

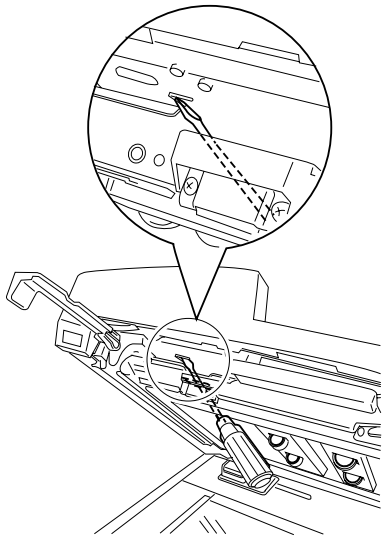
3) Detach the feeding belt [1].



F-3-106

3.4.3.3 Attaching the Feeding Belt

1) Insert a screwdriver between the DADF and the feeding assembly as shown to increase the gap.
2) Fit in the feeding belt, and pull out the screwdriver when the belt has come into contact with it; then, push in the belt.

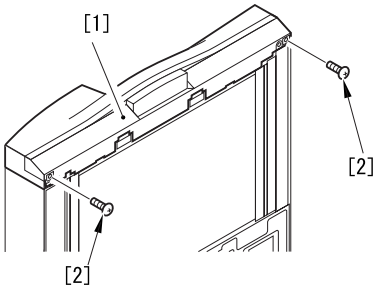


F-3-107

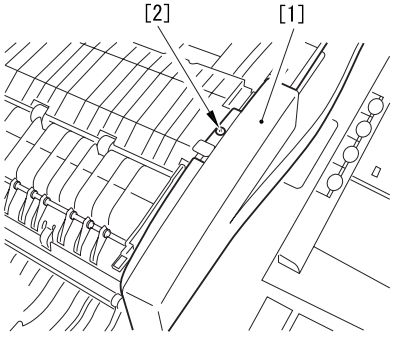
3.4.4 Separation Belt

3.4.4.1 Removing the Front Cover

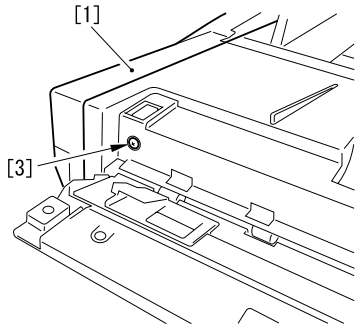
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-108



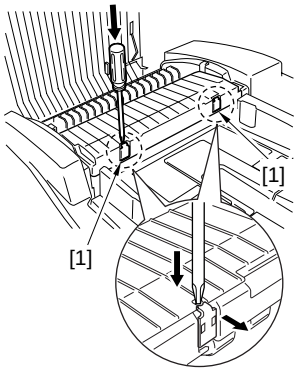
F-3-109



F-3-110

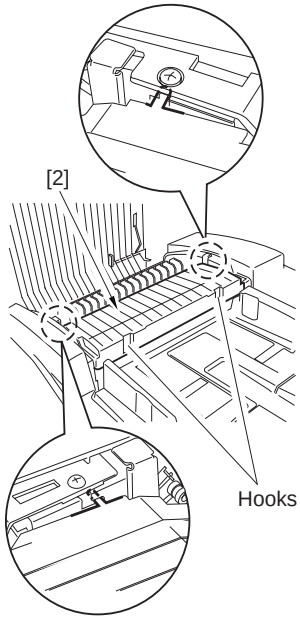
3.4.4.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



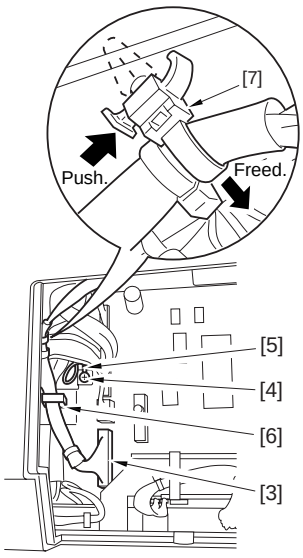
F-3-111

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-112

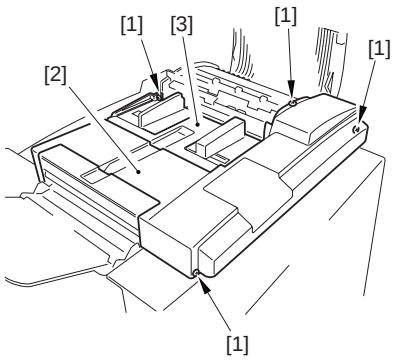
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-113

4) Remove the four screws [1], and detach the main cover [2].

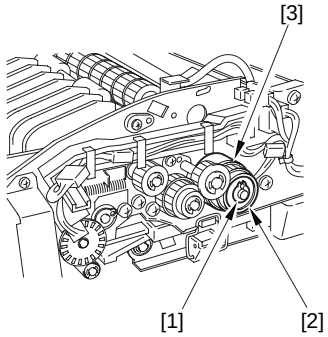
The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-114

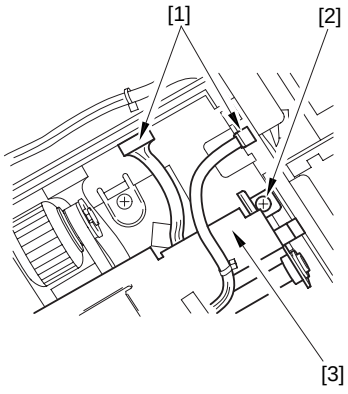
3.4.4.3 Removing the Separation Belt

1) Remove the two screws, and loosen the separation unit.
2) Remove the grip ring [1] at the front; then, remove the clutch ring [2] and the clutch [3].

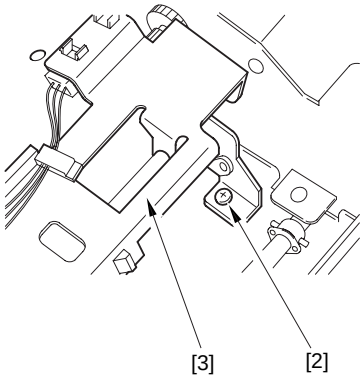


F-3-115

3) Disconnect the two connectors [1], and remove the two screws [2]; then, detach the separation unit [3].

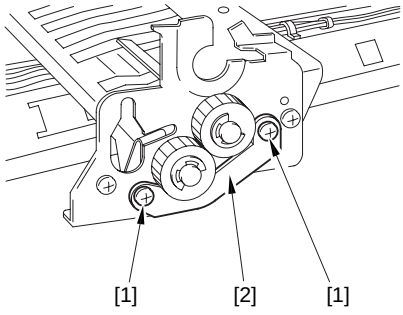


F-3-116



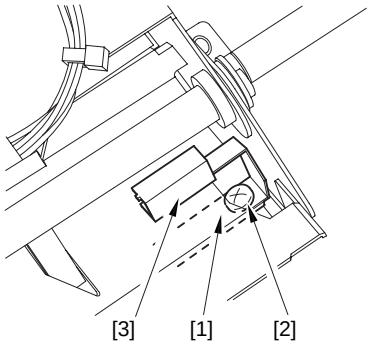
F-3-117

4) Remove the two mounting screws [1], and detach the separation auxiliary plate [2].



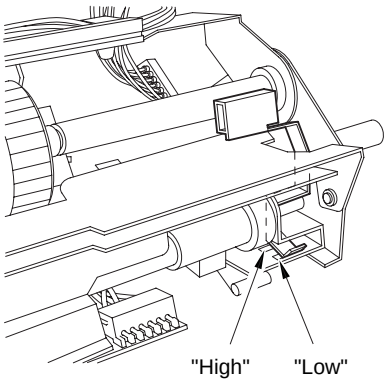
F-3-118

5) Loosen the screw [3] on the separation pressure adjusting lever [2] of the separation roller [3].



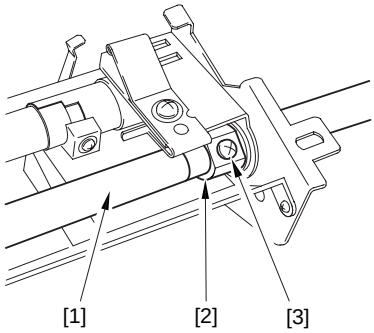
F-3-119

When mounting the separation pressure adjusting lever, be sure that the lever is set to low.



F-3-120

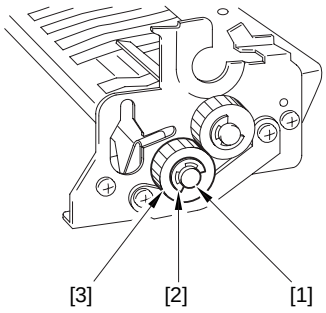
6) Loosen the screw [3] on the thrust stopper [2] of the separation roller [1].



F-3-121

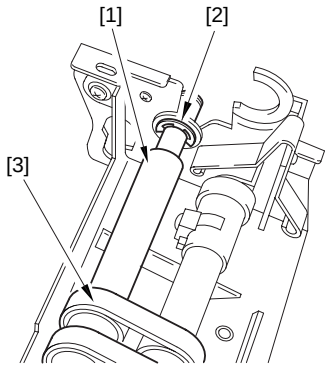
7) Remove the E-ring [2] and the gear [3] at the rear of the separation roller [1].

The gear holds a pin. Take care not to lose it when removing the gear.



F-3-122

8) Remove the E-ring [2] at the rear of the separation roller [1] to detach the separation belt [3].

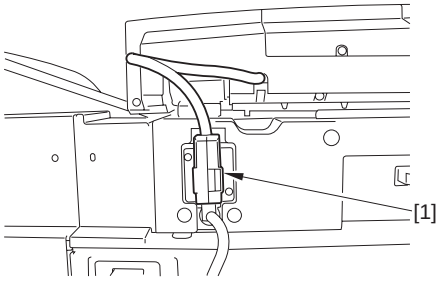


F-3-123

3.4.5 Delivery Roller

3.4.5.1 Disconnecting the DADF

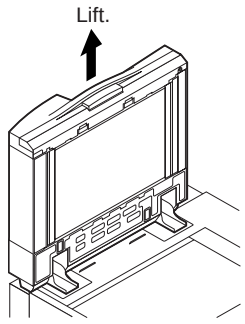
1) Turn off the copier.
2) Disconnect the DADF's communication cable [1] from the copier.



F-3-124

3) Open the DADF fully.
4) Standing at the rear of the copier, lift the DADF to detach.

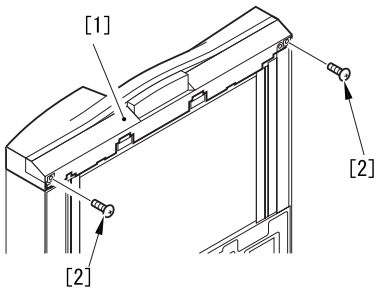
MEMO:
The hinge foot is equipped with a locking mechanism, requiring the DADF to be fully opened for removal.



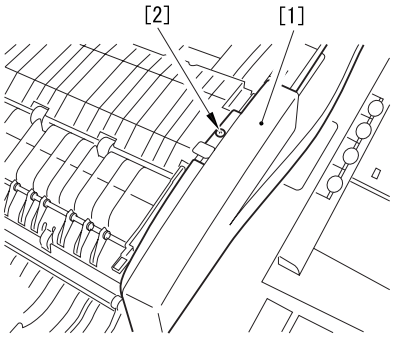
F-3-125

3.4.5.2 Removing the Front Cover

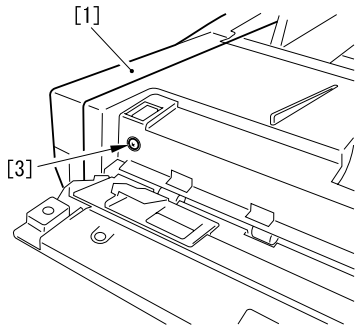
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-126



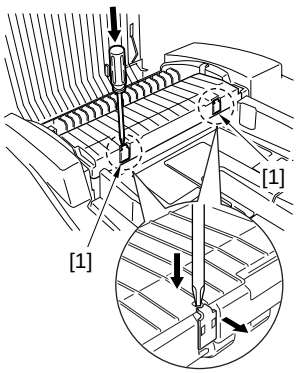
F-3-127



F-3-128

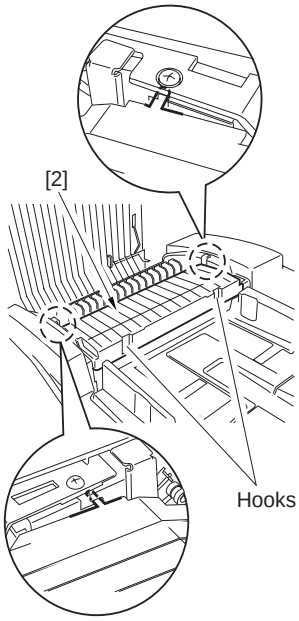
3.4.5.3 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



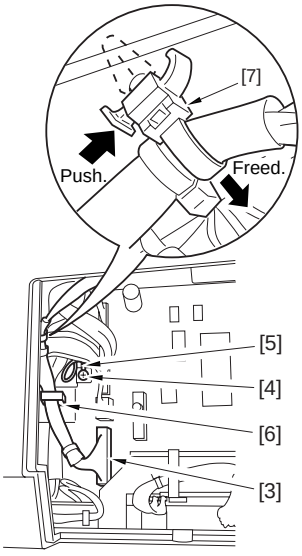
F-3-129

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-130

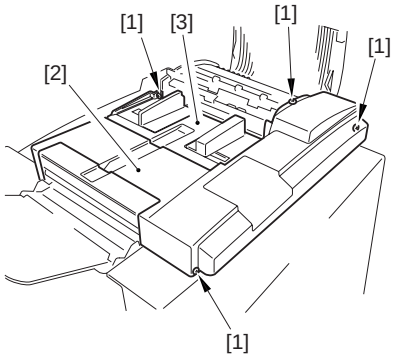
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-131

4) Remove the four screws [1], and detach the main cover [2].

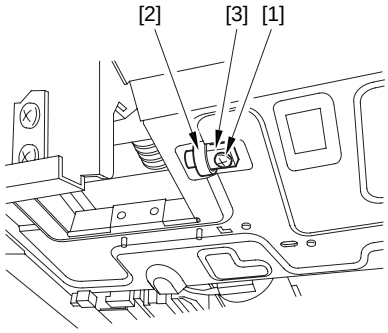
The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-132

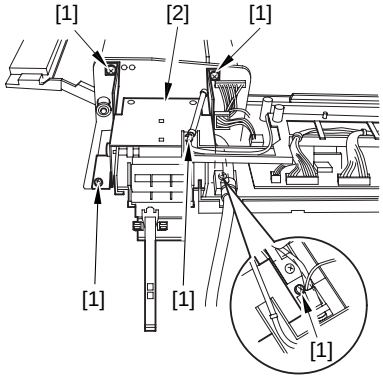
3.4.5.4 Removing the Delivery Roller

1) Remove the screw [1] from the bottom of the DADF, and remove the bearing [2] and the rod [3].



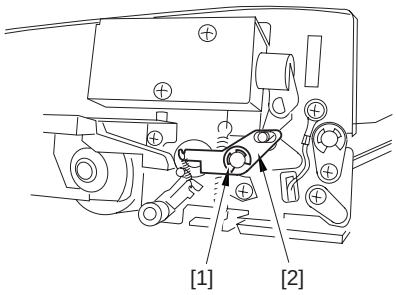
F-3-133

2) Remove the four screws [1], and detach the hinge (right) [2].



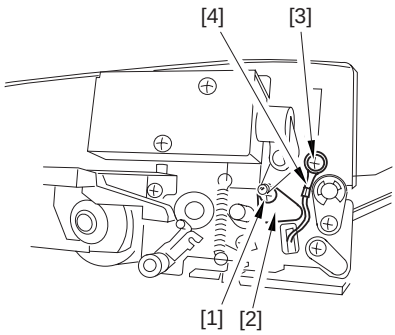
F-3-134

3) Remove the E-ring [1], and detach the solenoid link arm [2].



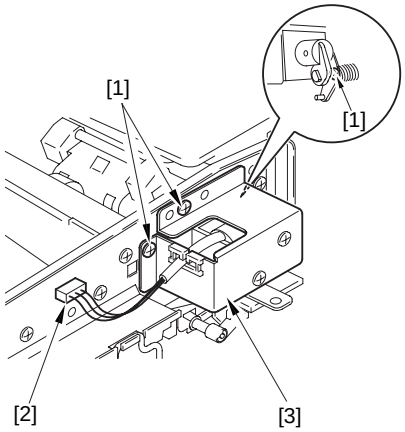
F-3-135

4) Remove the screw [1], and detach the delivery guide plate [2].
5) Remove the screw [3], and free the grounding wire [4] of the static eliminator attached to the delivery guide.



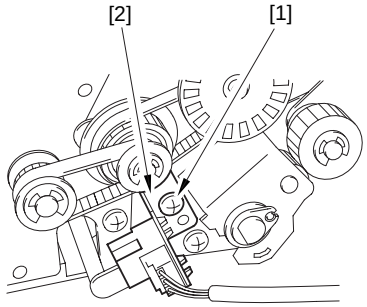
F-3-136

6) Remove the three screws [1], and disconnect the connector [2]; then, detach the solenoid unit [3] from the delivery assembly front side plate.



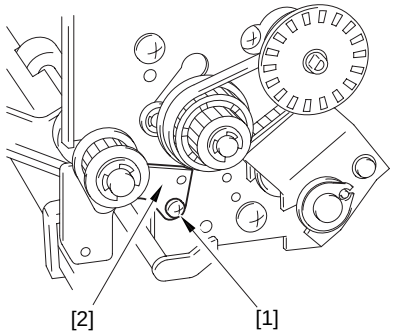
F-3-137

7) Remove the screw [1], and detach the delivery sensor support plate [2] on the delivery assembly rear side plate side.



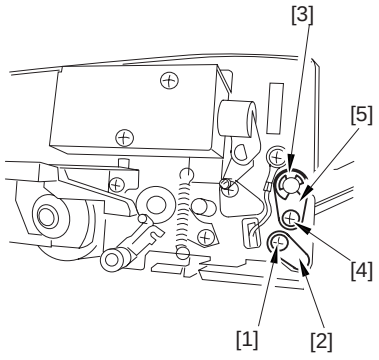
F-3-138

8) Remove the screw [1], and detach the delivery guide support plate [2] on the delivery assembly rear side plate side.



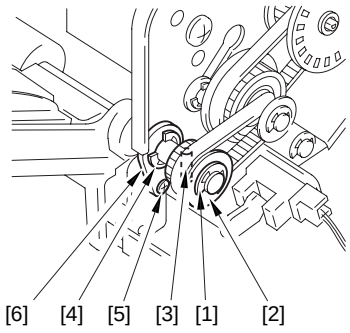
F-3-139

9) Remove the screw [1], and detach the delivery lower guide support plate [2] on the delivery assembly front plate side.
10) Remove the E-ring [3] from the delivery assembly front plate side; then, remove the screw [4], and detach the bushing [5].



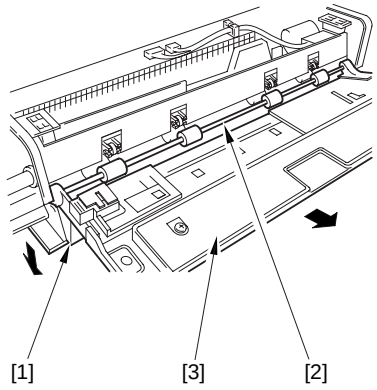
F-3-140

11) Remove the E-ring [1] from the delivery assembly rear side plate side; then, remove the gear [2] and the parallel pin [3].
12) Remove the E-ring [4]; then, remove the screw [5] and the bushing [6].



F-3-141

13) Shift down the delivery lower guide [1], and slide out the delivery roller [2] together with the manual feed tray [3].

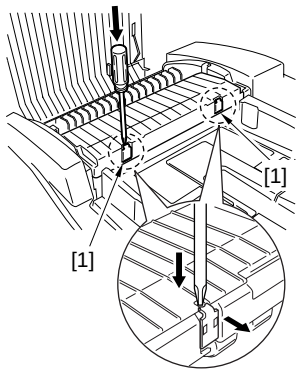


F-3-142

3.4.6 Pickup Rollor

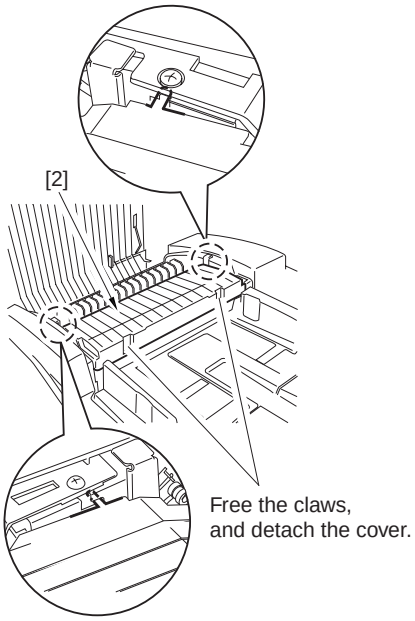
3.4.6.1 Removing the Pickup Roller

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



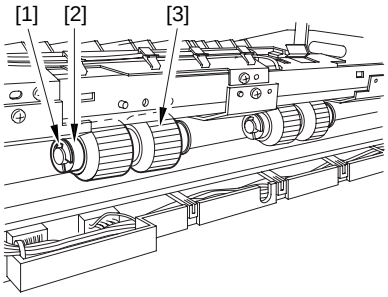
F-3-143

2) Remove pickup assembly cover [1].



F-3-144

3) Remove the resin E-ring [1]; then, remove the roller arm [2], and detach the pickup roller [3].

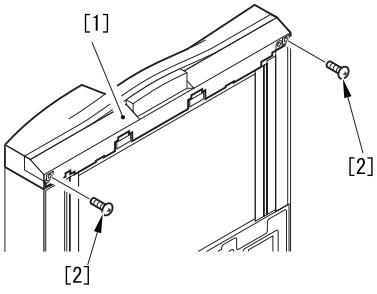


F-3-145

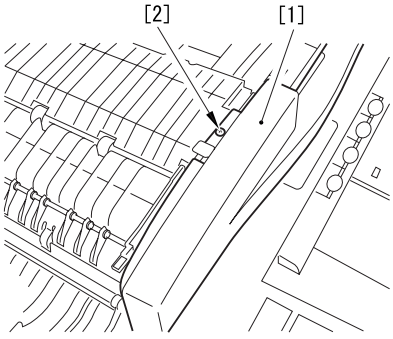
3.4.7 Separation Rollor

3.4.7.1 Removing the Front Cover

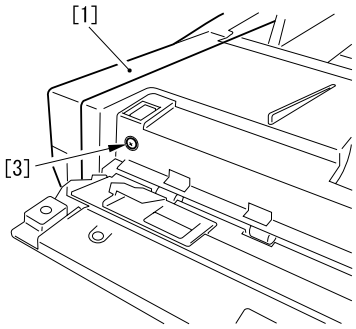
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-146



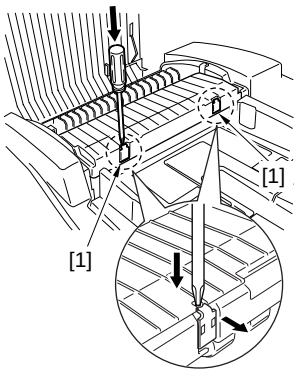
F-3-147



F-3-148

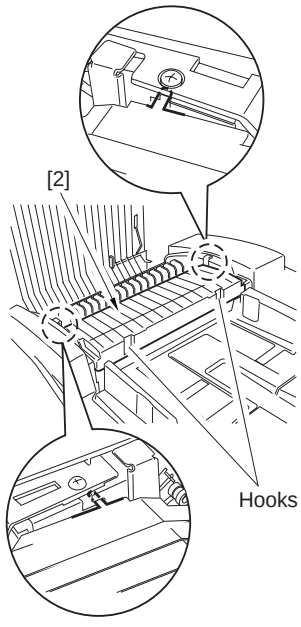
3.4.7.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



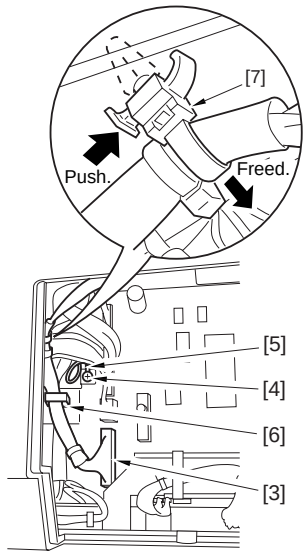
F-3-149

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-150

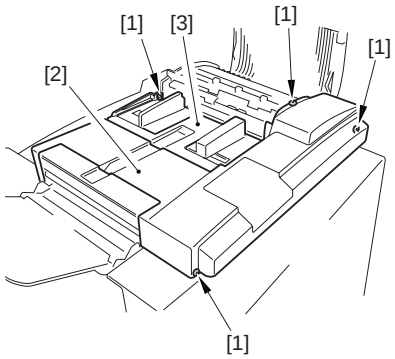
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-151

4) Remove the four screws [1], and detach the main cover [2].

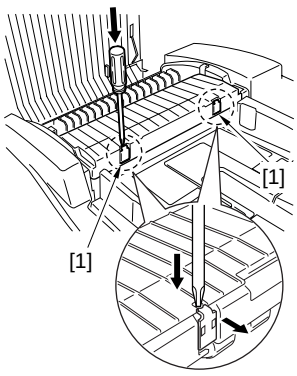
⚠ The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-152

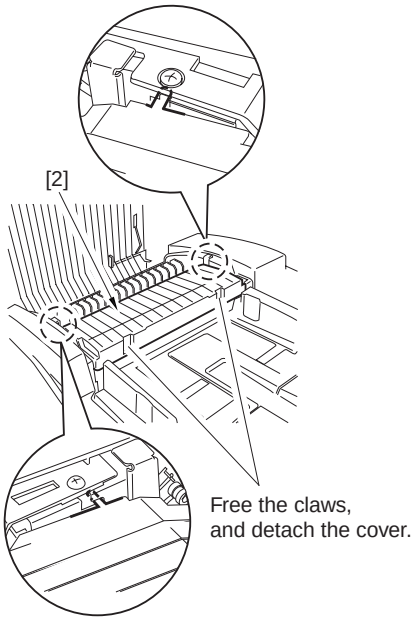
3.4.7.3 Removing the Separation Roller

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



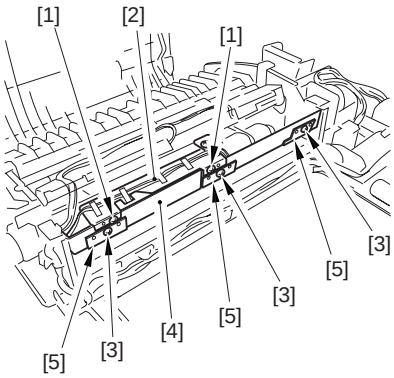
F-3-153

2) Remove pickup assembly cover [1].



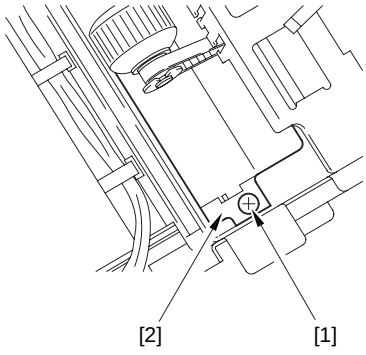
F-3-154

3) Remove the two screws [1], and detach the sensor stay [2].
4) Remove the three screws [3], and detach the three guide plates [5] from the right stay [4].

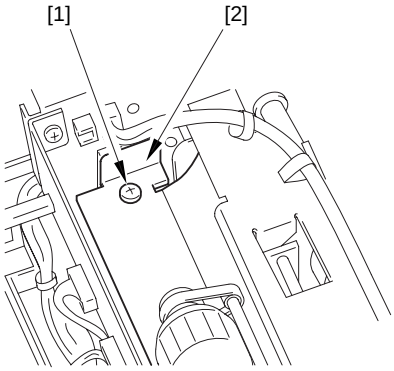


F-3-155

5) Remove the two screws [1], and detach the lower guide [2].

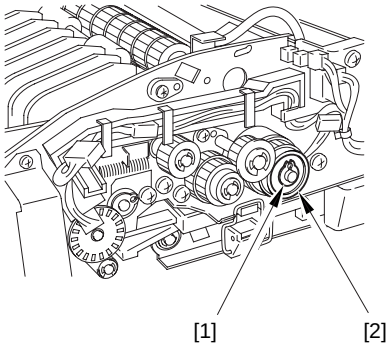


F-3-156



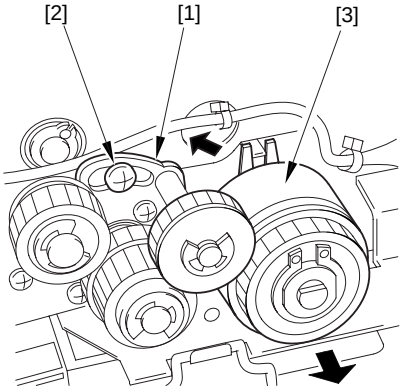
F-3-157

6) Remove the grip ring [1] on the front side plate side, and pull out the clutch ring [2].



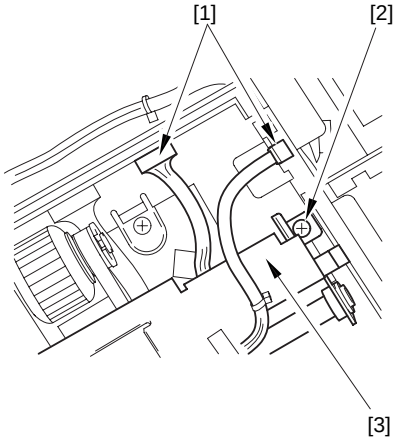
F-3-158

7) Remove the screw [2] of the gear support plate (front) [1]; then, shift the gear support plate (front) [10] to the left to pull out the clutch [3] to the front. The clutch has two stoppers. Use the white stopper when re-assmbling.

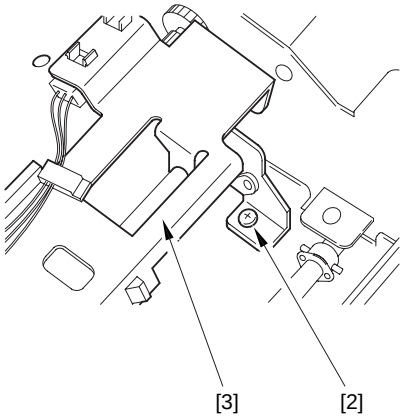


F-3-159

8) Disconnect the two connectors [1], and remove the two mounting screws [2]; then, detach the separation unit [3].

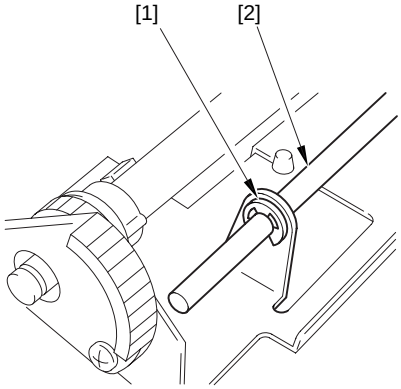


F-3-160



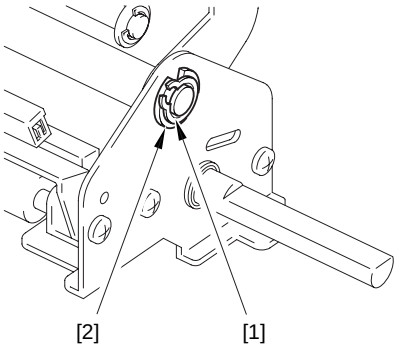
F-3-161

9) Remove the E-ring [1], and pull out the shaft [2].



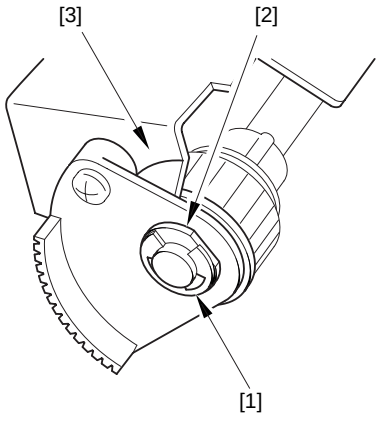
F-3-162

10) Remove the grip ring [1] at the front, and remove the bushing [2].



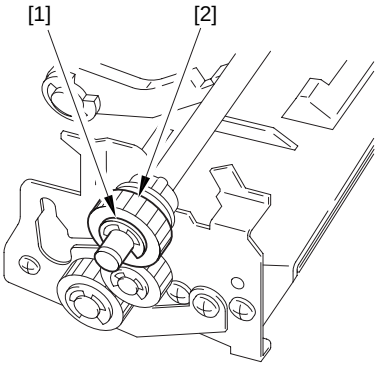
F-3-163

11) Remove the E-ring [21] and the bushing [2] at the rear, and detach the rod arm plate [3].



F-3-164

12) Remove the E-ring [1] and the one-way gear [2].

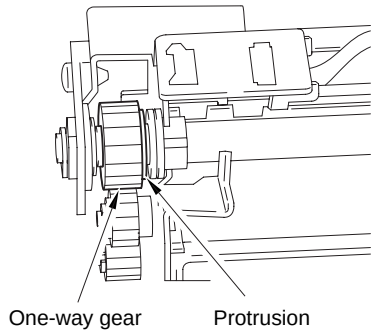


F-3-165

13) Remove the separation roller.

⚠

When mounting the one-way gear, be sure that the protrusion faces inside.

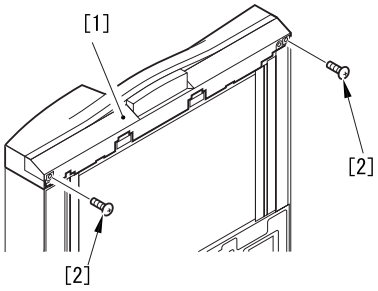


F-3-166

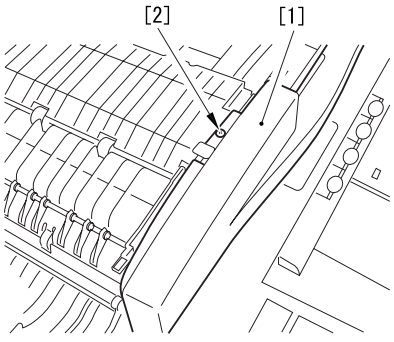
3.4.8 Feeding (pull-off) Roller

3.4.8.1 Removing the Front Cover

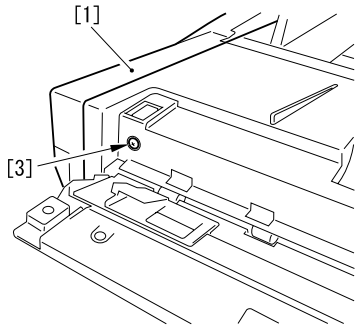
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-167



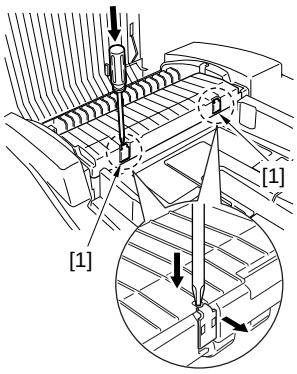
F-3-168



F-3-169

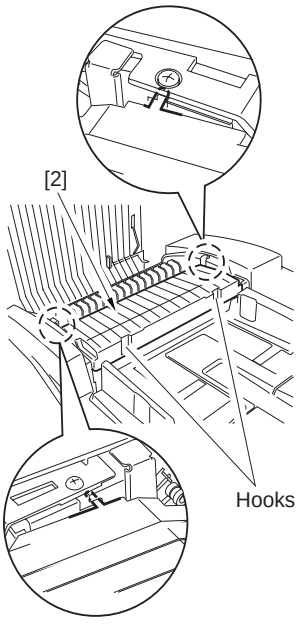
3.4.8.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



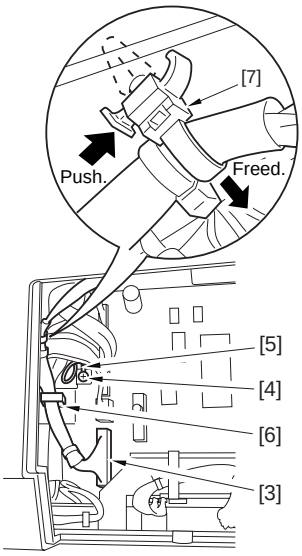
F-3-170

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-171

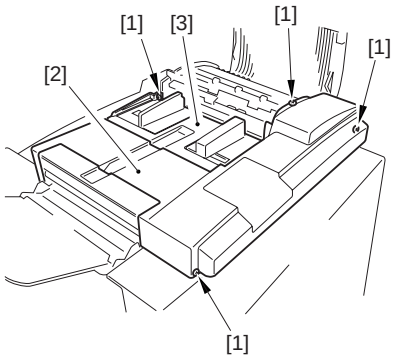
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-172

4) Remove the four screws [1], and detach the main cover [2].

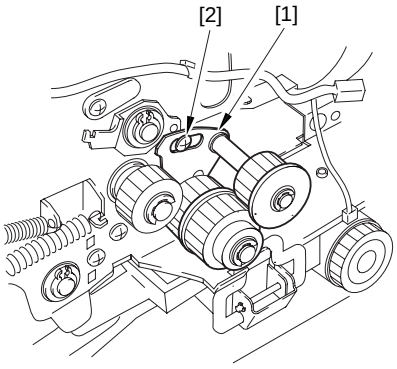
The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-173

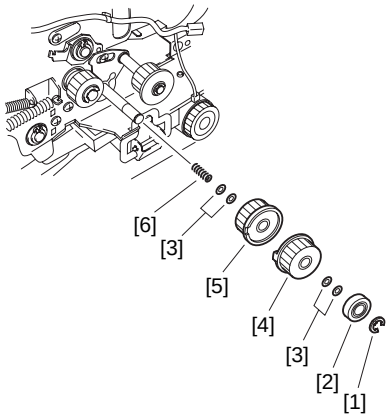
3.4.8.3 Removing the Feeding (pull-off) Roller

1) Remove the mounting screw [2] of the gear support plate [1] of the pickup front side plate.



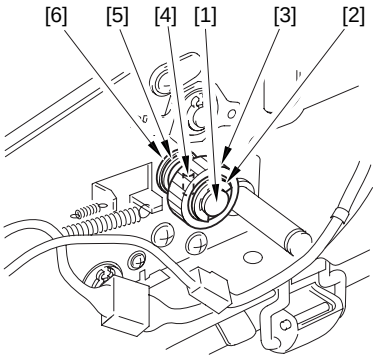
F-3-174

2) Remove the E-ring [1], washer [2], two shims [3], gear (black) [4], gear (white) [5], two shims [6], and spring [7] in sequence.



F-3-175

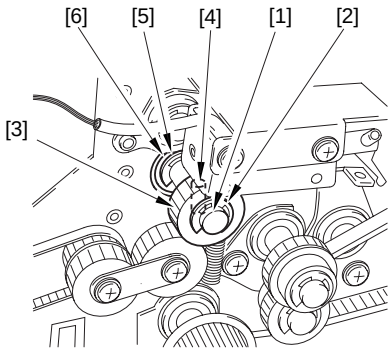
3) Remove the gear support plate of the front side plate.
4) Remove the E-ring [2], gear [3], parallel pin [4], grip ring [5], and bearing [6] of the feeding (pull-off) roller [1] (front side plate).



F-3-176

5) Remove the E-ring [2], gear [3], parallel pin [4], E-ring [5], and bearing [6] of the feeding (pull-off) roller [1] (rear side plate); then, remove the feeding (pull-off) roller [1].

The gear holds a pin. Take care not to drop it.

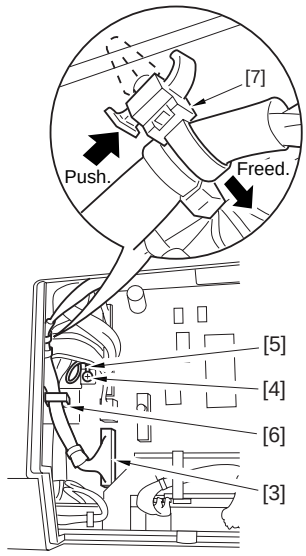


F-3-177

3.4.9 Document Tray

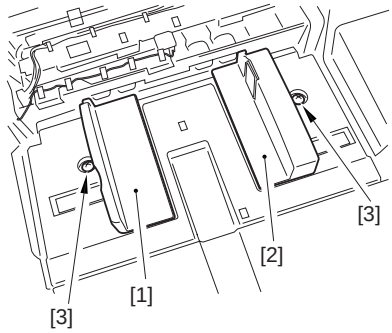
3.4.9.1 Removing the Original Tray

1) Remove the ADF controller cover.
3) Disconnect the connector [1] of the ADF controller PCB; then, remove the screw [2], and remove the grounding wire [3].
4) Free the harness from the wire saddle [4],
5) Detach the other saddle [5].



F-3-178

5) Move the side guides (front) [1]/(rear) [2] to the inside; then, remove the two screws [3], and detach it.



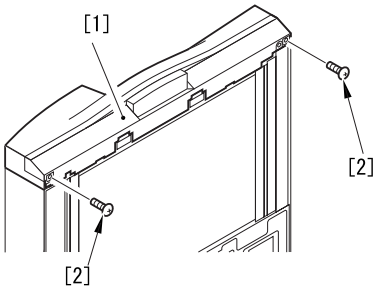
F-3-179

After mounting it, be sure to adjust the horizontal registration.

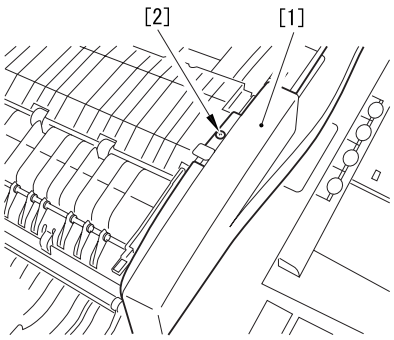
3.4.10 Manual Feed Registration Roller

3.4.10.1 Removing the Front Cover

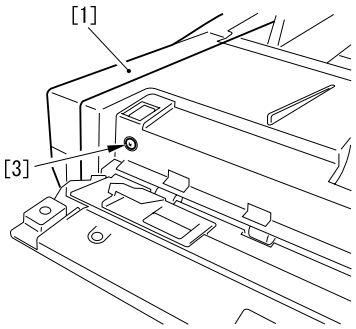
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-3-180



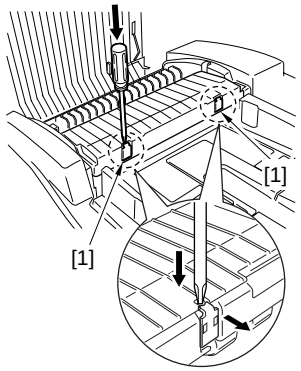
F-3-181



F-3-182

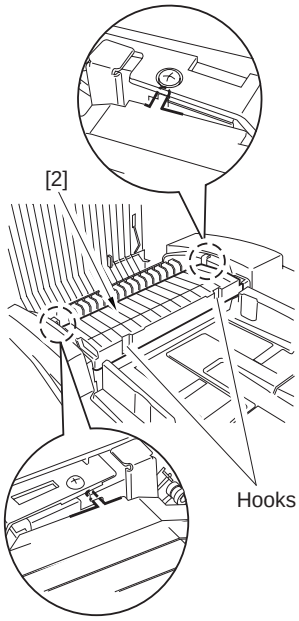
3.4.10.2 Removing the Main Cover

1) Open the upper cover, and insert a screwdriver from above the hook; then, remove the two hooks [1].



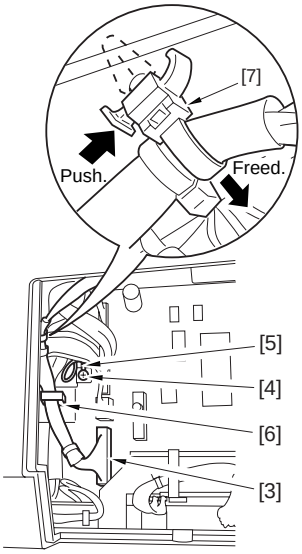
F-3-183

2) Free the hook of the pickup assembly cover [2] from the right stay; then, detach it while paying attention to the hooks on the front and rear side plates.



F-3-184

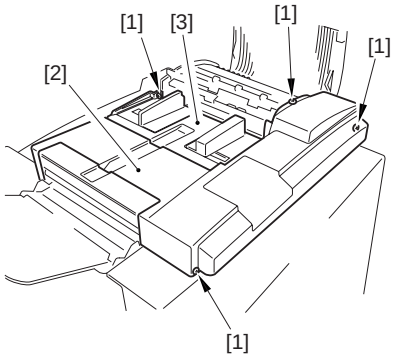
3) When you have removed the ADF controller cover, disconnect the connector [3] of the ADF controller PCB; then, remove the screw [4], and remove the grounding wire [5]. Free the harness from the wire saddle [6], and detach the other saddle [7].



F-3-185

4) Remove the four screws [1], and detach the main cover [2].

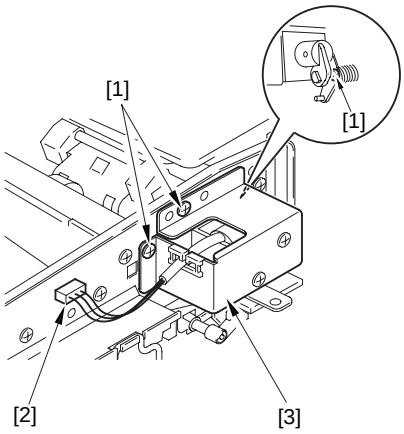
The main cover is fitted with the original tray [3], and cables are connected to it. Take extra care when removing it not to damage the cables.



F-3-186

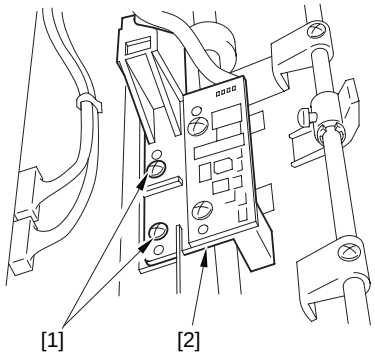
3.4.10.3 Removing the Manual Feed Registration Roller

1) Remove the three screws [1], and disconnect the connector [2]; then, remove the solenoid unit [3] from the delivery assembly front side plate.



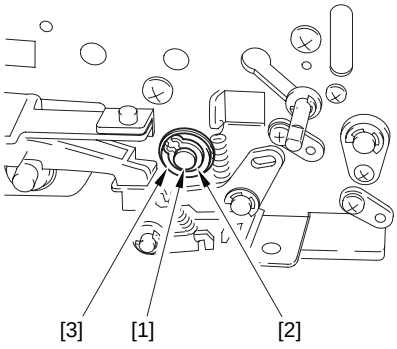
F-3-187

2) Remove the two screws [1], and detach the manual feed registration sensor PCB assembly [2].



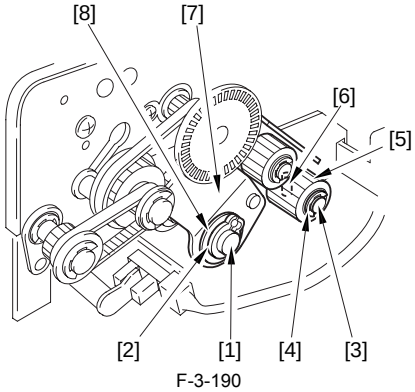
F-3-188

3) Remove the grip ring [2] and the bearing [3] from the manual feed registration roller [1]. (delivery assembly front side plate)



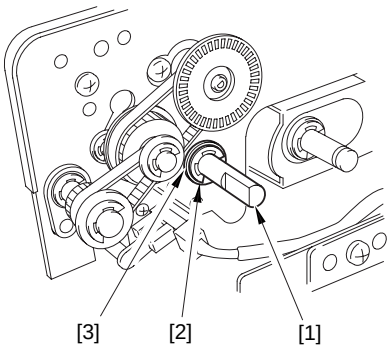
F-3-189

4) Remove the grip ring [2] of the manual feed registration roller [1], and remove the E-ring [4] of the feeding belt roller shaft [3]; then, remove the gear [5] and the parallel pin [6]. Thereafter, remove the gear unit [6] and the bushing [8].



F-3-190

5) Remove the E-ring [2] and the bearing [3] of the manual feed registration roller [1] (delivery assembly rear plate); then, pull out the manual feed registration roller [1].



F-3-191

Chapter 4 Maintenance

Contents

4.1 User Maintenance

4.1.1 User maintenance item

T-4-1

Item	Period	Substance
Copyboard glass	opportune or every 10,000 documents	Cleaning
Copyboard glass retainer	opportune	
Feeding belt		
Vertical size plate		

4.2 Maintenance and Inspection

4.2.1 Periodically Replaced Parts

4.2.1.1 Periodiccally Replaced Parts

This machine dose not have the periodiccally replaced parts.

4.2.2 Durables

4.2.2.1 Durables

Some parts of the DADF may require replacement once or more over the period of product warranty because of wear or damage. Replace them as needed by referring to the following guide, in which the life of each part is expressed in terms of the number of originals (may be checked in the copier's service mode).

T-4-2

No.	Part name	Part No.	Q'ty	Estimated life	Remarks
1	Feeding belt	FB5-9541	1	200,000	The time when cleaning is not effective.
2	Pickup roller	FB4-7640	2	250,000	Replace
3	Feeding roller*	FB4-6991 (separation roller)	12	250,000	
		FG6-7725 (Feed roller unit)	1		
4	Separation belt*	FG6-7724 (separation unit)	1	250,000	
		FE6-3059 (separation belt)	11		
5	Hinge (L)	FC6-0987	1	100,000	
6	Hinge (R)	FC6-0988	1		

* Replacement with unit is recommended for No. s and 4, however individual part is set up.
The actual number of originals handled may be checked in the copier's service mode (COPIER>COUNTER>DRBL-2).

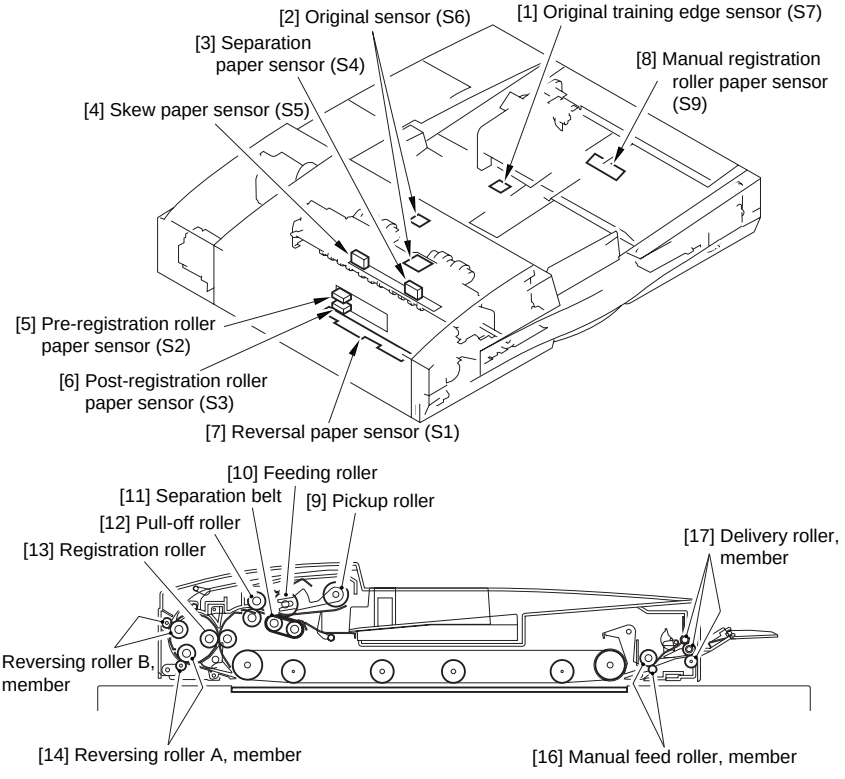
Expected service life shows the central value of a group of evaluation data points. Parts Numbers may subject to change because of design

4.2.3 Periodical Servicing

4.2.3.1 Scheduled Servicing Chart

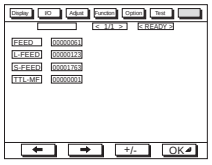
T-4-3

Ref.	Part name	every 100,000 or 6 mo	every 200,000 or 1 yr	Remarks
1	Original training edge sensor (S7)		Cleaning	Actual volume
2	Original sensor (S6)		Cleaning	
3	Separation paper sensor (S4)		Cleaning	
4	Skew paper sensor (S5)		Cleaning	
5	Pre-registration roller paper sensor (S2)		Cleaning	
6	Post-registration roller paper sensor (S3)		Cleaning	
7	Reversal paper sensor (S1)		Cleaning	
8	Manual registration roller paper sensor (S9)		Cleaning	
9	Pickup roller	Cleaning		
10	Feeding roller	Cleaning		
11	Separation belt	Cleaning		
12	Pull-off roller		Cleaning	
13	Registration roller		Cleaning	
14	Reversing roller A, member		Cleaning	
15	Reversing roller B, member		Cleaning	
16	Manual feed roller, member		Cleaning	
17	Delivery roller, member		Cleaning	
	Various slave roller, member		Cleaning	



F-4-1

The actual number of originals handled may be checked in the copier's service mode (the sum of L-FEED and S-FEED under COPIER>COUNTER>Feeder).



F-4-2

Expected service life shows the central value of a group of evaluation data points. Parts Numbers may subject to change because of design

4.2.4 Cleaning

4.2.4.1 Outline

T-4-4

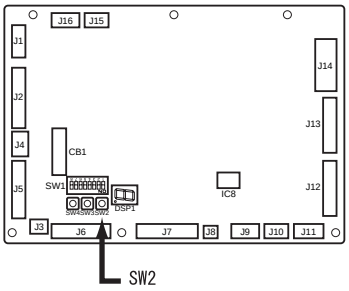
Item	Description
Separation assembly	Clean the separation assembly using copy paper and alcohol.
Registration roller (tray pickup)	1. If the dirt is limited, Execute automatic cleaning of the registration roller. 2. If dirt is appreciable, Clean the registration roller using lint-free paper and alcohol.

4.2.4.2 Cleaning the Separation Assembly

1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F-4-3

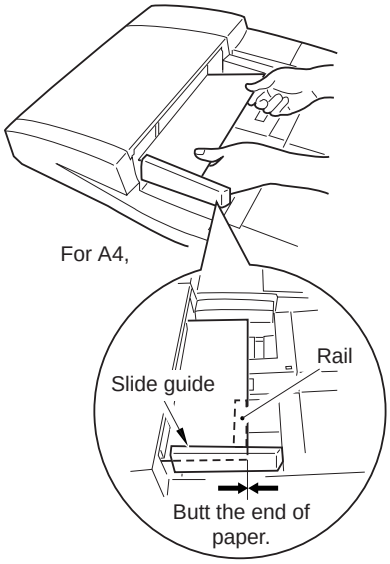
3) Press the push switch (SW2) on the ADF controller PCB.



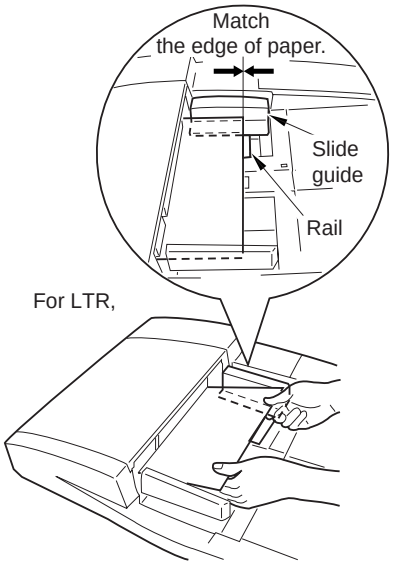
F-4-4

4) Moisten copy paper with alcohol, and slide it in while firmly holding on to its trailing edge.

Be sure to keep the trailing edge of the copy paper as indicated.



F-4-5



F-4-6

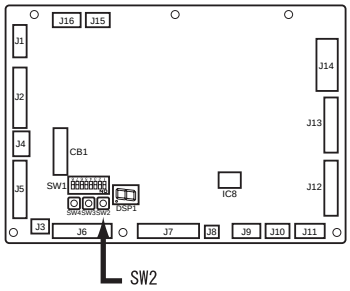
5) Press the push switch (SW2) on the ADF controller PCB to end the operation.

4.2.4.3 Cleaning the Registration Roller

If the dirt is limited,
1) Remove the screw, and detach the ADF controller cover.
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

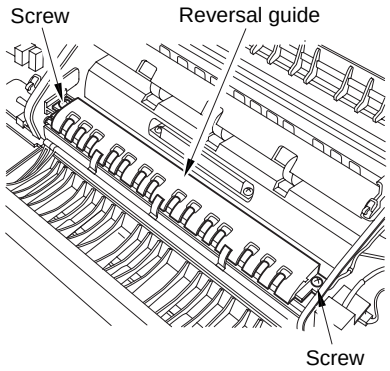
F-4-7

3) Place about ten sheets of copy paper in the original tray.
4) Press the push switch (SW2) on the ADF controller PCB. The operation will end automatically.



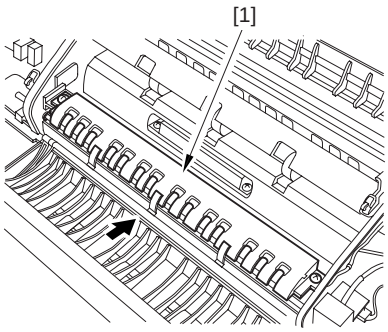
F-4-8

If dirt is appreciable,
1) Open the upper cover, and open the feeding guide.
2) Remove the two screws, and detach the reversal guide.



F-4-9

⚠
When mounting the reversing guide, do so while forcing it in the direction of the arrow. If not mounted properly, it can trigger jams.

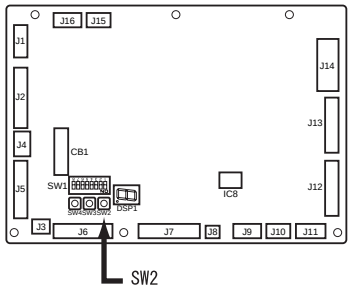


F-4-10

3) Remove the ADF controller cover, and set the DIP switch (SW1) ADF controller PCB as follows.

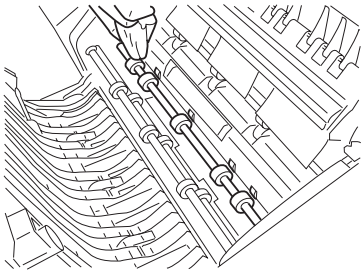
F-4-11

4) Press the push switch (SW2) on the ADF controller PCB.
- The reversing assembly will start to operate.



F-4-12

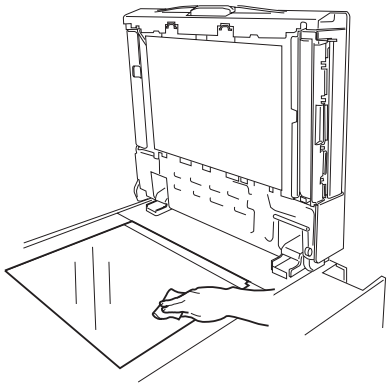
5) Clean with lint-free paper moistened with alcohol.



F-4-13

4.2.4.4 Copyboard Glass

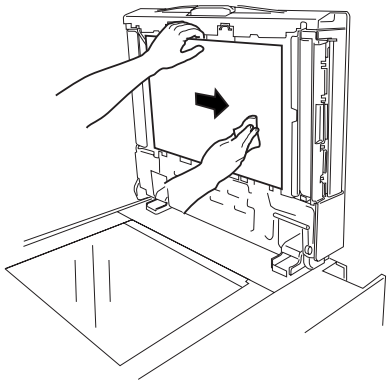
1) Wipe the copyboard glass of the copier with a cloth moistened with alcohol.



F-4-14

4.2.4.5 Belt Assembly

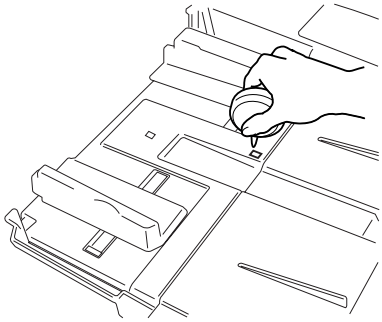
1)Dry wipe the original feeding belt while moving it in the direction of the arrow.
If the dirt is excessive, wipe it with a cloth moistened with a solution of mild detergent; then, dry wipe it.



F-4-15

4.2.4.6 Original Trailing Edge Sensor

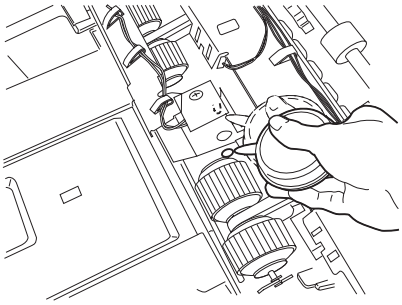
1) Clean the sensor widow in the original tray using a blower brush.



F-4-16

4.2.4.7 Original Sensor

1) Remove the pickup assembly cover.
2) Clean the light-receiving area of the sensor stay and the light-emitting area at the rear of the guide plate using a blower brush.



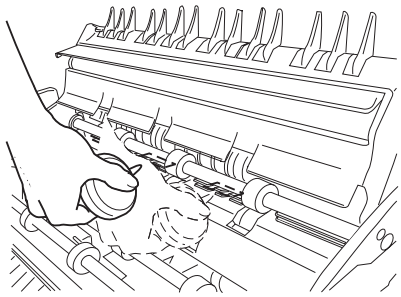
F-4-17

4.2.4.8 Separation Paper/Skew Paper

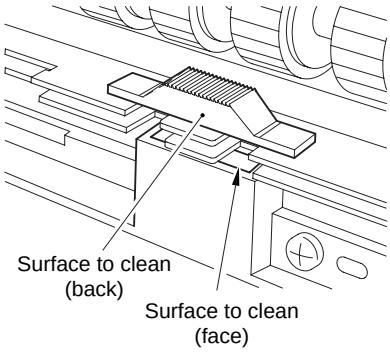
⚠
Do not use a solvent (alcoholfamily or ketone family) to clean the prism face. It is made of acrylic resin, and contact with solvent can discolor it, adversely affecting its operation.

---

1) Open the pickup assembly upper cover.
2) Open the registration guide, and put the blower brush between the separation stay and the separation guide to clean. (The one to the front is the separation paper sensor, while the one at the rear is the skew paper sensor.)



F-4-18

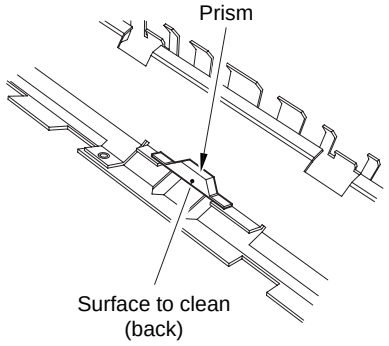


F-4-19

4.2.4.9 Pre-Registration Roller Paper

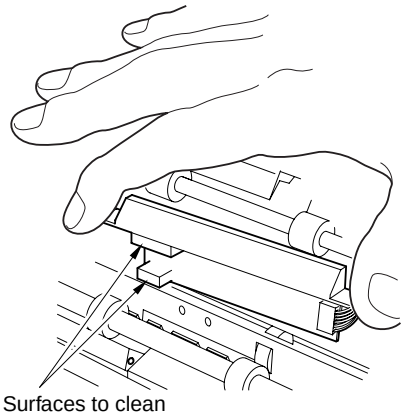
Do not use a solvent (alcoholfamily
or ketone family) to clean the prism face. It is made of acrylic resin, and contact with solvent can discolor it, adversely affecting its operation.

1) Remove the reversing guide.
2) Clean the face of the prism behind the reversing guide.



F-4-20

3) Remove the registration sensor PCB.
4) Clean the two filter surfaces of the sensor.

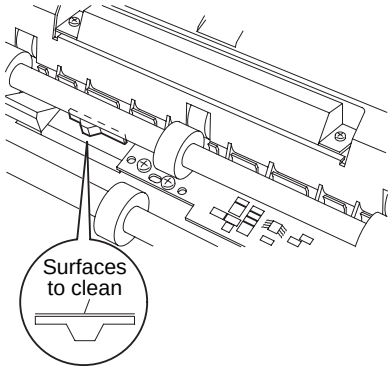


F-4-21

4.2.4.10 Post-Registration Roller Paper

Do not use a solvent (alcoholfamily or ketone family) to clean the prism face. It is made of acrylic resin, and contact with solvent can discolor it, adversely affecting its operation.

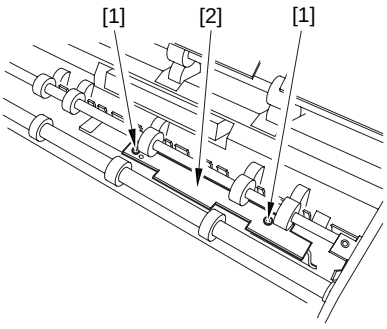
1) Open the pickup upper cover.
2) Remove the reversing guide.
3) Clear the surface of the prism of the post-registration roller paper sensor.



F-4-22

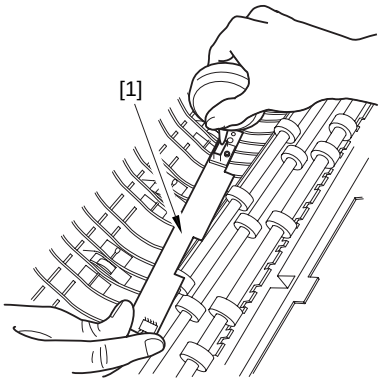
4.2.4.11 Reversal Paper Sensor

1) Remove the reversing guide.
2) Remove the two screws [1], and detach the reversal sensor [2].



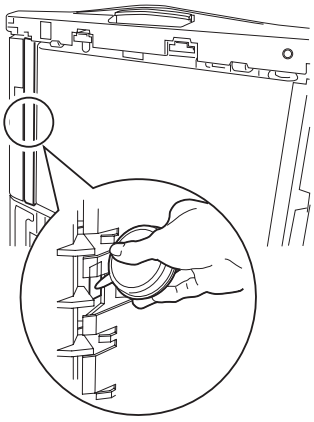
F-4-23

3) Clean the filter face of the reversal sensor [2] using a blower brush.



F-4-24

4) Open the DADF fully.
5) While opening the pickup middle guide found to the left of the feeding belt, aim a blower brush against the prism of the reflecting face of the reversal sensor in view in the rear to clean.

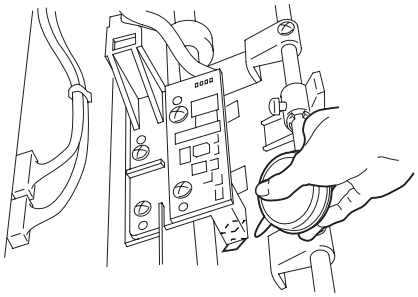


F-4-25

4.2.4.12 Manual Feed Registration

1) Remove the body front cover.

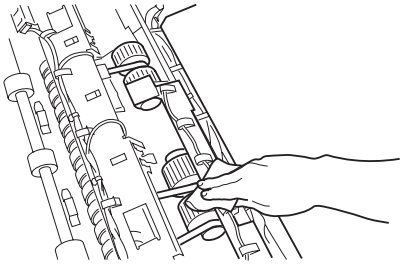
2) Remove the main cover.
3) Aim a blower brush against the detecting hole of the registration sensor on the delivery upper guide to clean.



F-4-26

4.2.4.13 Pickup Roller

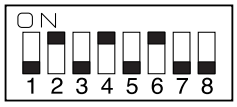
1) Open the pickup assembly upper cover.
2) Remove the pickup cover.
3) Clean the surface of the roller using lint-free paper or cloth moistened with alcohol.



F-4-27

4.2.4.14 Separation Belt/Feeding

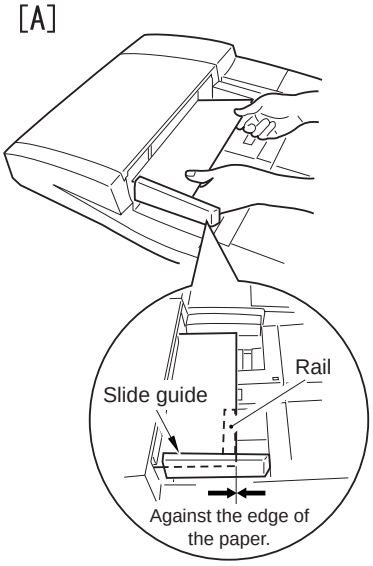
1) Obtain a single sheet of A4 or LTR copy paper.
2) Remove the ADF controller cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated.



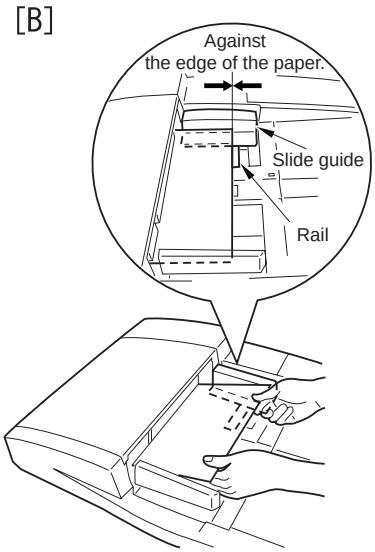
F-4-28

3) Press the push switch (SW2) on the ADF controller PCB.
- The separation assembly will start.
4) Moisten t the copy paper obtained in step 1) with alcohol.
5) Keep the copy paper against the pickup slot to clean.

The pull-off roller is also driven. Hold the copy paper so that it will not be drawn to the pull-off roller: in the case of A4, as shown in Figure A; in the case of LTR, as shown in Figure B.



F-4-29

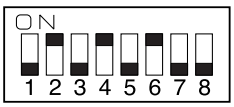


F-4-30

6) At the end of cleaning work, press the push switch (SW2) once again.
- The separation assembly will stop.

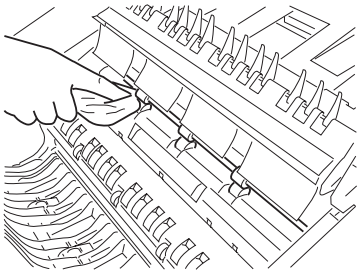
4.2.4.15 Pull-Off Roller

1) Open the upper cover, and open the feeding guide.
2) Remove the ADF controller cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated.



F-4-31

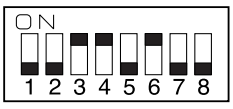
3) Press the push switch (SW2) on the ADF controller PCB.
- The separation assembly will start.
4) Clean it with lint-free paper moistened with alcohol.



F-4-32

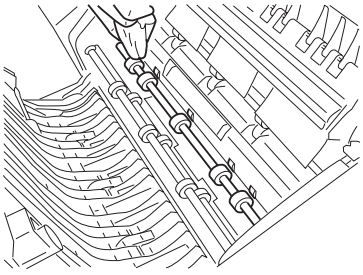
4.2.4.16 Registration Roller

1) Open the upper cover, and open the feeding guide.
2) Remove the reversing guide.
3) Remove the ADF controller cover, and set the DIP switch (SW1) on the ADF controller PCB as indicated.



F-4-33

4) Press the push switch (SW2) on the ADF controller PCB.
- The reversing assembly will start.
5) Clean it with lint-free paper moistened with alcohol.

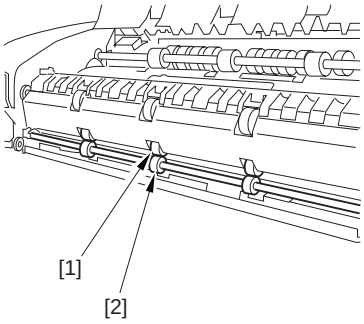


F-4-34

6) Press SW2 to stop the operation.

4.2.4.17 Reversing Roller A, Support Member

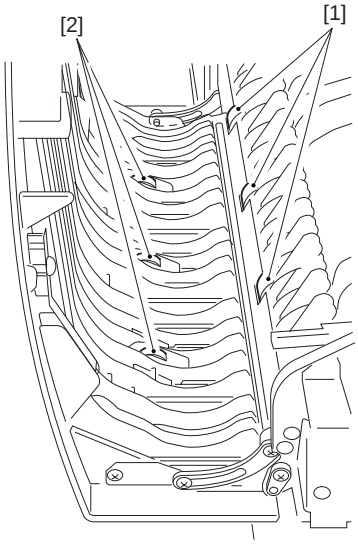
1) Open the pickup assembly upper cover.
2) Clean the reversing roller A [2] and the support member [1] with lint-free paper or a cloth moistened with alcohol.



F-4-35

4.2.4.18 Reversing Roller B, Support Member

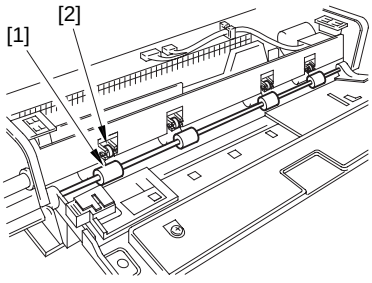
1) Open the pickup assembly upper cover.
2) Clean the reversing roller B [1] and the support member [2] with lint-free paper or a cloth moistened with alcohol.



F-4-36

4.2.4.19 Manual Feed Roller, Support Member

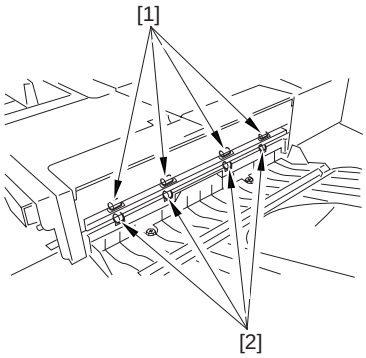
1) Open the manual feed tray.
2) Clean the manual feed (delivery) roller [1] and the support member [2] with lint-free paper or a cloth moistened with alcohol.



F-4-37

4.2.4.20 Delivery Roller, Support Member

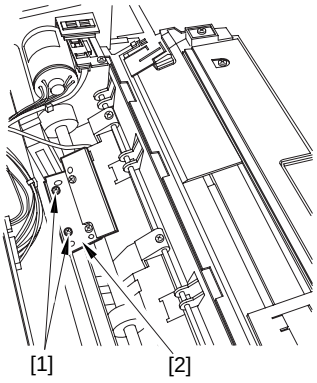
1) With the manual feed tray closed, clean the delivery (manual feed) roller [1] and the support member [2] with lint-free paper or a cloth moistened with alcohol.



F-4-38

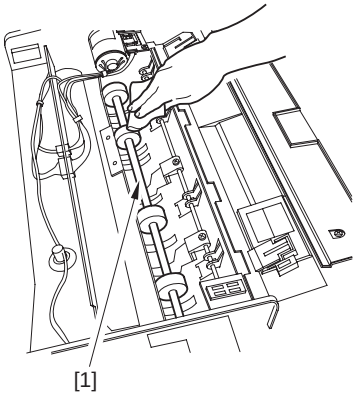
4.2.4.21 Manual Feed Registration Roller, Support Member

1) Remove the main cover.
2) Remove the two screws [1], and the detach the manual feed registration sensor PCB [2].



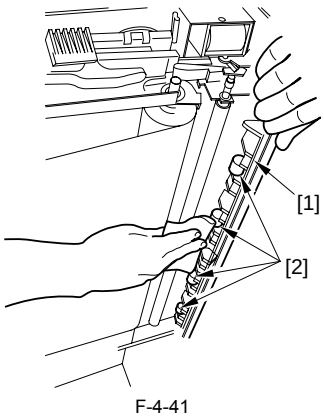
F-4-39

3) Clean the manual feed registration roller [3] with lint-free paper or a cloth mounted with alcohol.



F-4-40

4) Shift up the DADF, and open the delivery lower guide [4]; then, clean the manual feed registration roller member [5] with lint-free paper or a cloth moistened with alcohol.



F-4-41

4.3 Adjustment

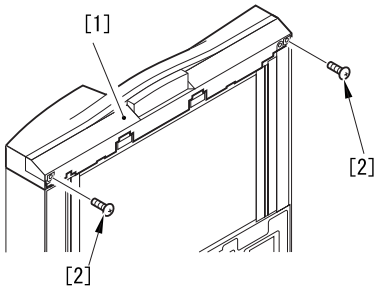
4.3.1 Basic Adjustment

4.3.1.1 Basic Adjustments

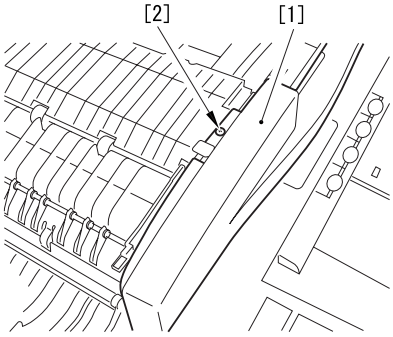
The basic adjustments of the DADF consist of the following, which must be performed in sequence:
[1] ADF height adjustment
[2] ADF right angel adjustment
[3] Skew correction
[4] Horizontal adjustment
[5] Original stop position adjustment

4.3.1.2 ADF Height Adjustment

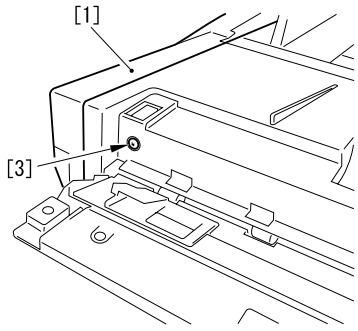
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-4-42

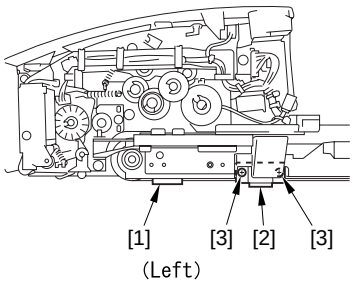


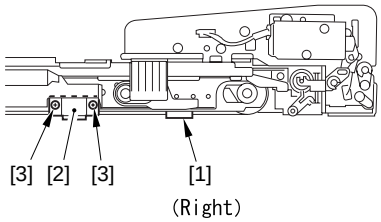
F-4-43



F-4-44

2) Make adjustments by loosening the two fixed screws [5] on the magnet catch so that the left and right rubber feet are in contact with the base when the DADF is closed.



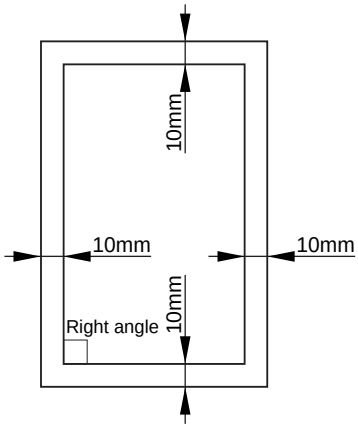


F-4-45

3) After the adjustment, tighten the fixing screws on the magnet catch, and mount the front cover.

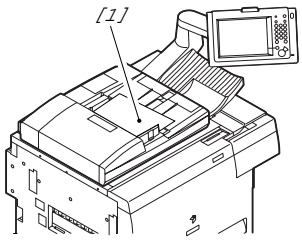
4.3.1.3 ADF Right Angle Adjustment

This adjustment is to adjust the right angle made by the copier's scanner and the DADF's original feed path.
1) Using an A4 or LTR sheet of copy paper, prepare a test chart as shown.



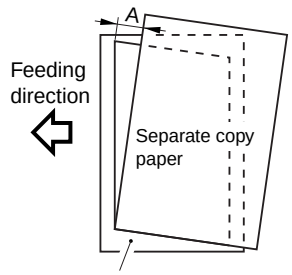
F-4-46

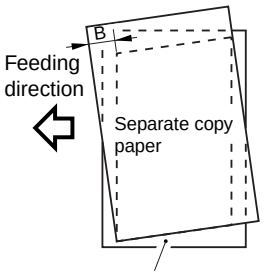
2) Place the test chart [1] in the original tray, and make a Direct copy in stream reading mode.



F-4-47

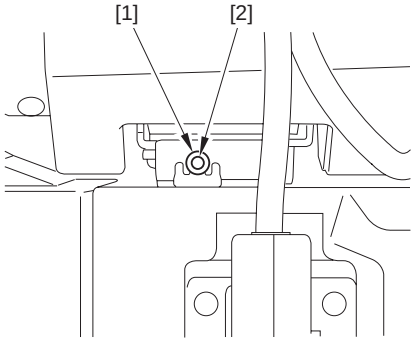
3) Place a separate sheet of copy paper over the output obtained in step 2) to check the right angel.
A<1 mm
B<1 mm





F-4-48

4) If the value is not as indicated, loosen the fixing nut [1] found at the rear of the right hinge unit; then, make adjustments by turning the adjusting screw [2].



F-4-49

If A>0, turn the adjusting screw counterclockwise.
If B>0, turn the adjusting screw clockwise.

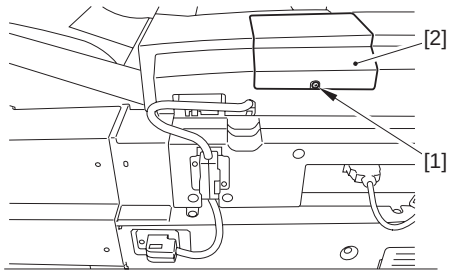
5) Tighten the fixing nut to secure the adjusting screw.

4.3.1.4 Correcting the Skew

The skew must be removed for the following three:
[1] Pickup from the original tray
[2] Pickup from the manual feed tray
[3] Reversal for double-sided originals ADF controller cover

a. Pickup from the Original Tray

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

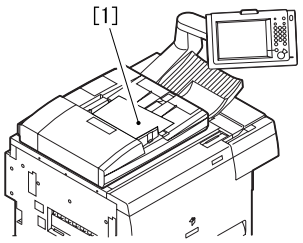


F-4-50

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

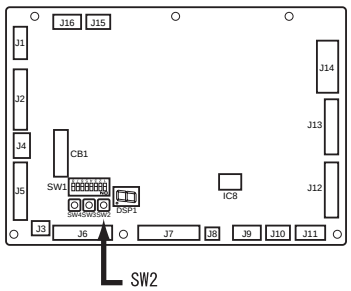
F-4-51

3) Place a single sheet of A4 or LTR copy paper in the original tray. Copy paper [1].



F-4-52

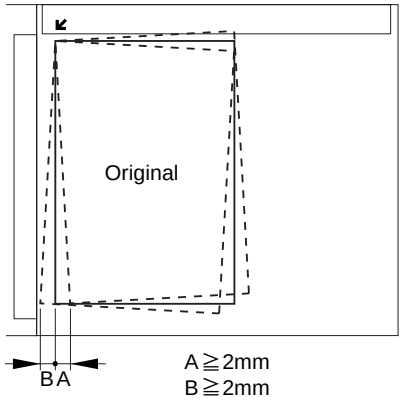
4) Press the push switch (SW2) on the ADF controller PCB once.
- The original will be picked up and stopped on the copyboard glass.



F-4-53

5) Open the DADF slowly, and check to make sure that A and B indicated in the figure are 2 mm or less.

Close the DADF, and press the push switch (SW2) on the ADF controller PCB once.
- The original will be delivered to the delivery tray.

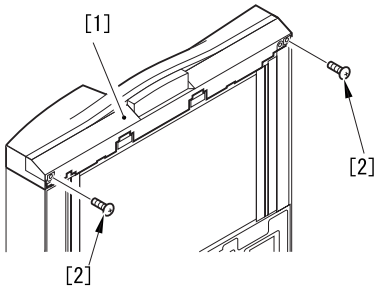


F-4-54

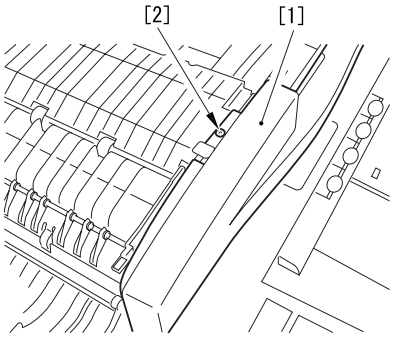
If the Value Is Not As Indicated

Adjust the position of the registration roller.

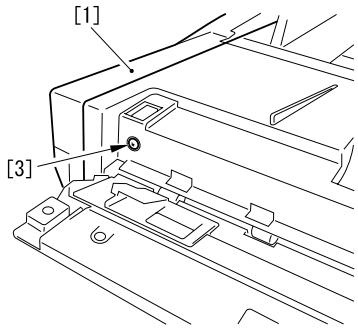
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-4-55



F-4-56

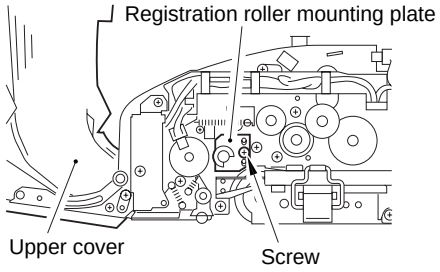


F-4-57

2) Open the upper cover, and loosen the fixing screw on the registration roller mounting plate; then, slide it up/down to adjust the mounting angle of the registration roller.

If A>0, slide the mounting plate down.

If B>0, slide the mounting plate up.



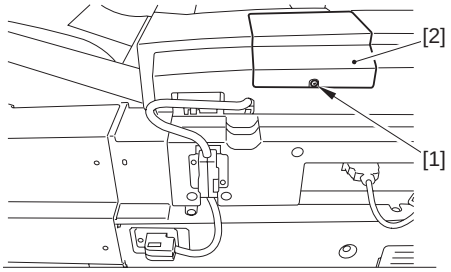
F-4-58

3) At the end of adjustment, tighten the fixing screw of the registration roller mounting plate.

4) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.

b. Pickup from the Manual Feed Tray

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



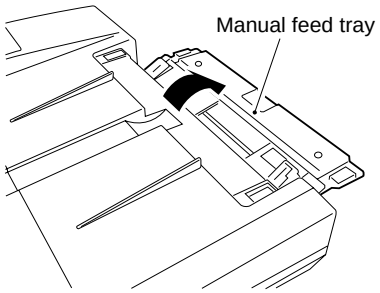
F-4-59

2) Set the DIP switch (SW1) on the ADF controller PCB as follows.

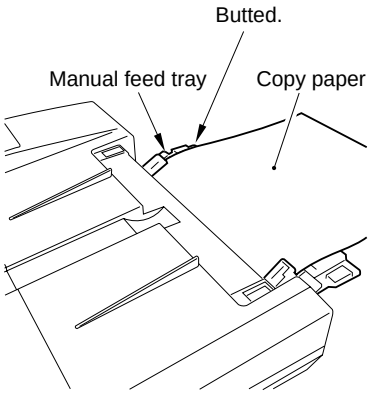
F-4-60

3) Open the manual feed tray, and place a single sheet of A4 or LTR copy paper.

- Be sure to butt the copy paper against the rear.



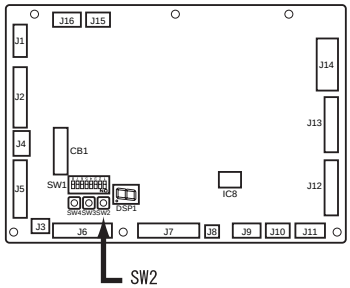
F-4-61



F-4-62

4) Press the push switch (SW2) on the ADF controller PCB once.

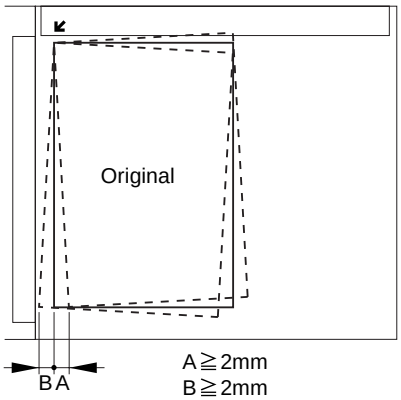
- The original will be picked up and stopped on the copyboard glass.



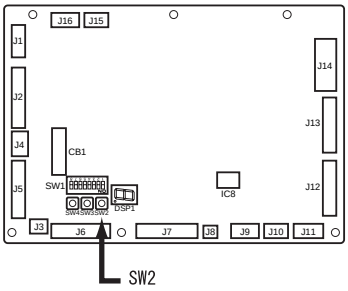
F-4-63

5) Open the DADF slowly, and check to make sure that A and B indicated in the Figure is 2 mm or less. Close the DADF, and press the push switch (SW2) on the ADF controller once.

- The original will be delivered to the delivery tray.



F-4-64



F-4-65

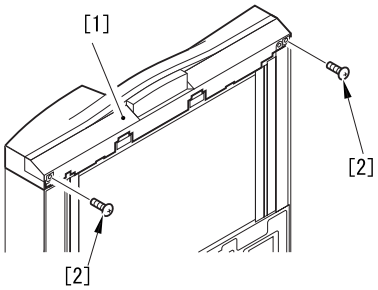
If the Value Is Not As Indicated

Adjust the position of the manual feed registration roller.

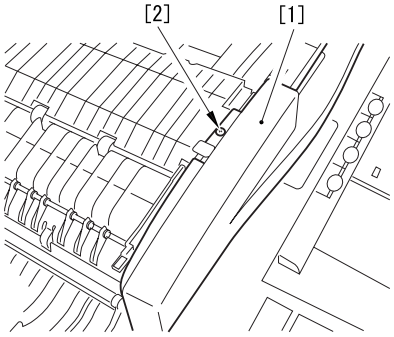
1) Remove the front cover [1].

-Three screws [2] (remove)

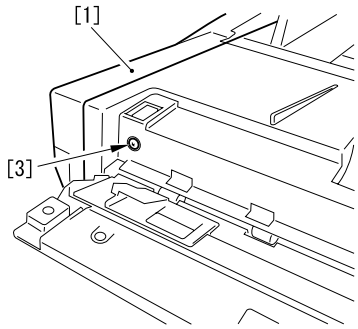
-One screw [3] (loosen)



F-4-66



F-4-67

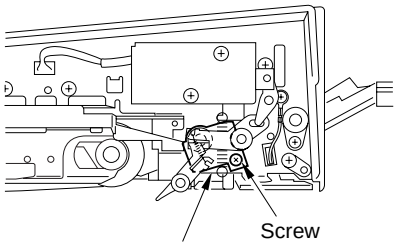


F-4-68

2) Loosen the fixing screw on the manual feed registration roller mounting plate, and slide it to the left and the right to adjust the position of the registration roller.

If A>0, slide the mounting plate to the right.

If B>0, slide the mounting plate to the left.



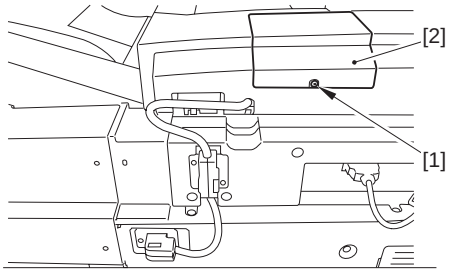
F-4-69

3) At the end of the adjustment, tighten the fixing screw on the manual feed registration roller mounting plate.

4) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.

c. Reversal for Double-Sided Originals

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

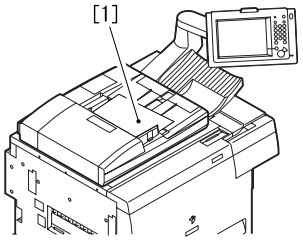


F-4-70

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F-4-71

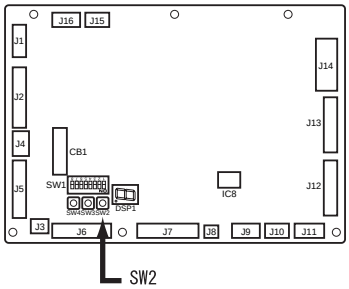
3) Place a single sheet [1] of A4 or LTR copy paper in the original tray.



F-4-72

4) Press the push switch (SW2) on the ADF controller PCB twice.

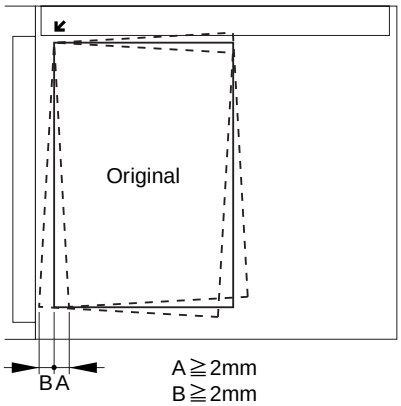
- A single press on the push switch (SW2) causes the original to be picked up and stopped on the copyboard glass. (CW rotation) Another press will reverse the original and stop it on the copyboard glass.



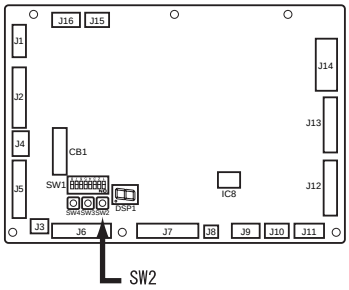
F-4-73

5) Open the DADF slowly, and check to make sure that A and B indicated in the figure are 2 mm or less. Close the DADF, and press the push switch (SW2) on the ADF controller PCB once.

- The original will be delivered to the delivery tray.



F-4-74

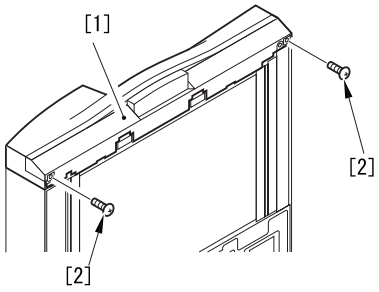


F-4-75

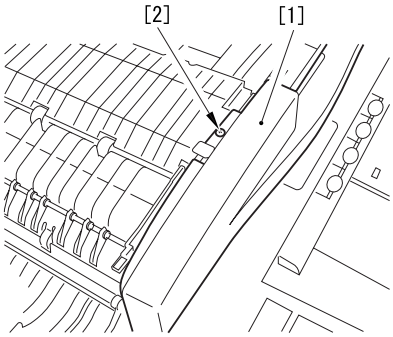
If the Value Is Not As Indicated

If the value is not as indicated, adjust the position of the registration roller.

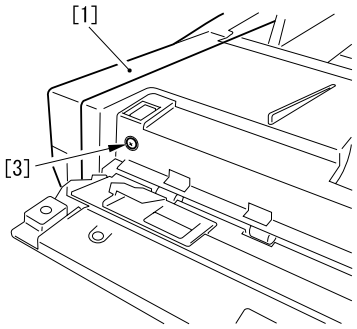
1) Remove the front cover [1].
-Three screws [2] (remove)
-One screw [3] (loosen)



F-4-76

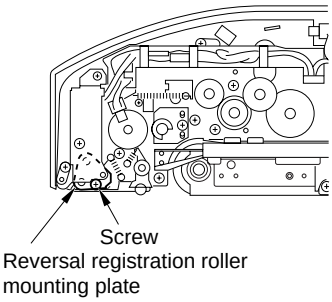


F-4-77



F-4-78

2) Loosen the fixing screw on the reversal registration roller mounting plate, and slide it to the left and the right to adjust the mounting angle of the registration roller.



F-4-79

If A>0, slide the mounting plate to the left.
If B>0, slide the mounting plate to the right.

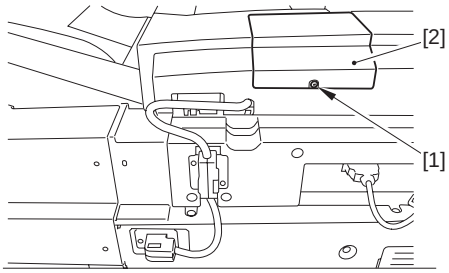
3) At the end of adjustment, tighten the fixing screw on the reversal registration roller mounting plate.
4) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.

4.3.1.5 Horizontal Registration Adjustment

Horizontal registration adjustment is made for the following two:
[1] Pickup from the original tray
[2] Pick up from the manual feed tray

a. Pickup from the Original Tray

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

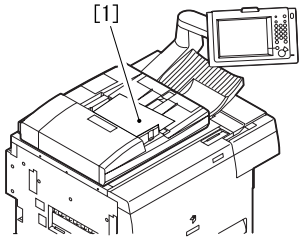


F-4-80

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

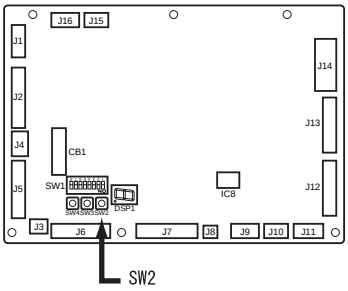
F-4-81

3) Place a single sheet [1] of A4 or LTR copy paper in the original tray.



F-4-82

4) Press the push switch (SW2) on the ADF controller PCB once.
- A single press on the push switch (SW2) causes the original to be picked up and stopped on the copyboard glass.

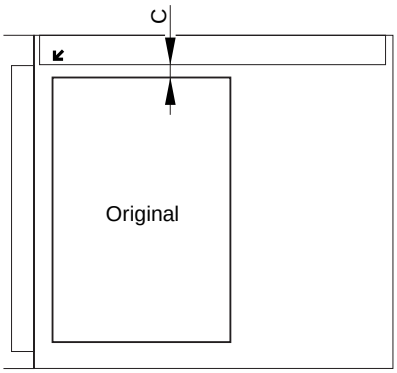


F-4-83

5) Open the ADF slowly, and check to make sure that C shown in the figure is as indicated.

T-4-5

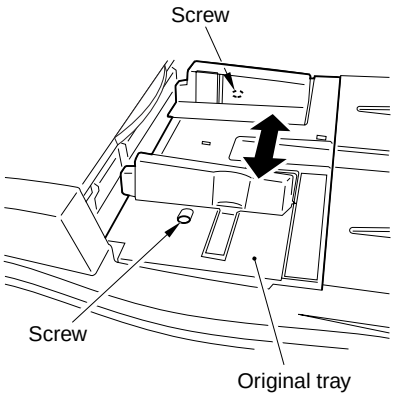
Original size	Value of C
A4	3.1±1mm
LTR	11.9±1mm



F-4-84

6) Close the DADF, and press the push switch (SW2) on the ADF controller PCB once.
- The original will be delivered to the delivery tray.

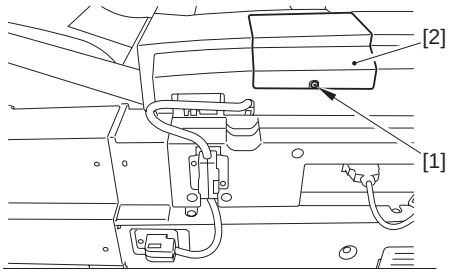
If the Value Is Not As Indicated
If the value is not as indicated, adjust the position of the original tray.
1) Loosen the tray fixing screw, and adjust the position of the original tray.



F-4-85

If C>3.1 mm for A4 or 11.9 mm for LTR, shift the manual feed tray toward the rear.
If C<3.1 mm for A4 or 11.9 mm for LTR, shift the manual feed tray toward the front.
2) At the end of the adjustment, loosen the original tray fixing screw.
3) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.

b. Manual Feed Tray Pickup
1) Remove the screw [1], and detach the ADF controller cover [2].

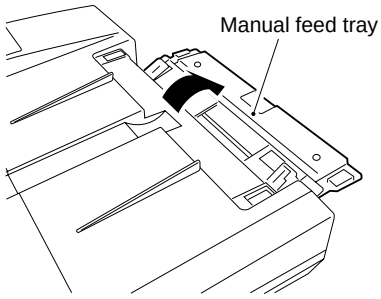


F-4-86

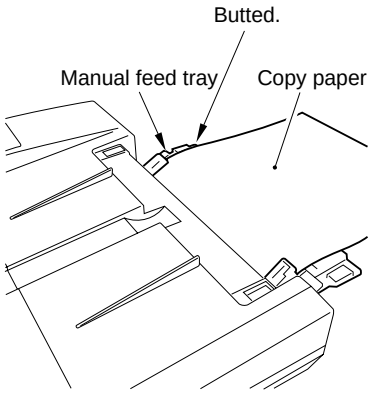
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F-4-87

3) Open the manual feed tray, and place a single sheet of A4 or LTR copy paper.
- Be sure to butt the copy paper against the rear.

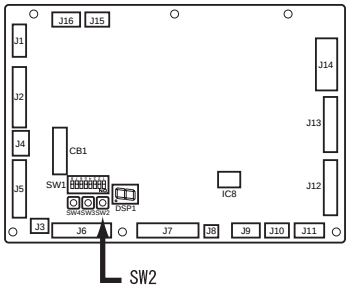


F-4-88



F-4-89

4) Press the push switch (SW2) on the ADF controller PCB once.
- A single press on the push switch (SW2) causes the original to be picked up and sopped on the copyboard glass.

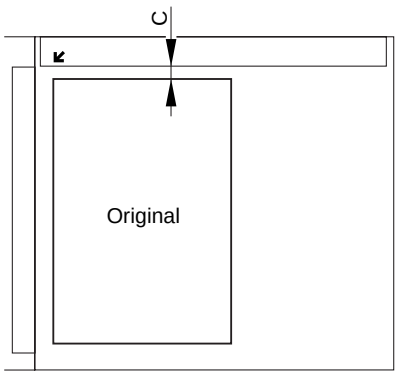


F-4-90

5) Open the DADF slowly, and check to make sure that C shown is as indicated.

T-4-6

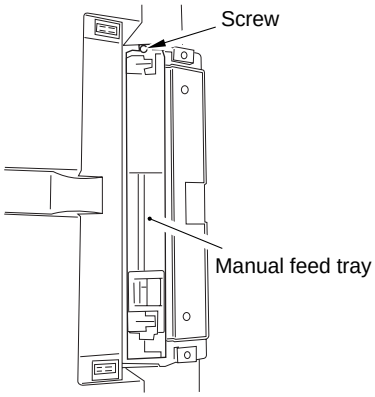
Value of C
3.1±1mm



F-4-91

Close the DADF, and press the push switch (SW2) on the ADF controller PCB once.
- The original will be delivered to the delivery tray.

If the Value Is Not As Indicated
If the value is not as indicated, adjust the position of the manual feed tray.
1) Loosen the manual feed tray fixing screw, and adjust the position of the manual feed tray.



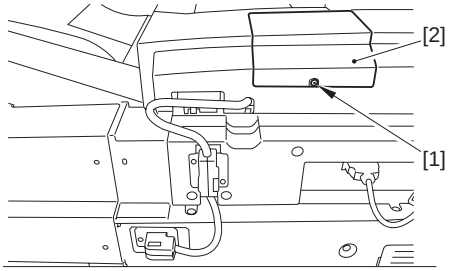
F-4-92

If C>3.1 mm, shift the original tray toward the rear.
If C<3.1 mm, shift the original tray toward the front.
2) At the end of adjustment, tighten the manual feed tray fixing screw.
3) Set the DIP switch (SW1) on the ADF controller PCB back to its initial setting, and mount the ADF controller cover.

4.3.1.6 Original Stop Position Adjustment

Original stop position adjustment is made for the following two:
[1] Pickup from the original tray
[2] Pickup from the manual feed tray ADF controller cover

a. Original Tray Pickup
1) Remove the screw [1], and detach the ADF controller cover [2].

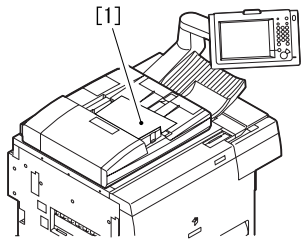


F-4-93

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

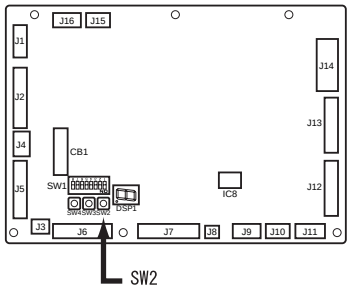
F-4-94

3) Place a single sheet [1] of A4 or LTR copy paper in the original tray.



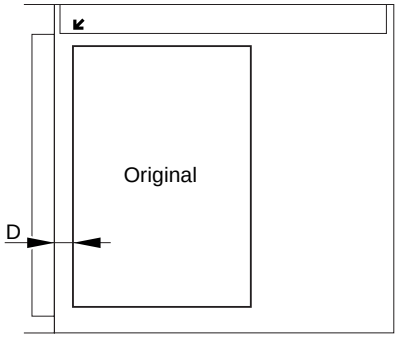
F-4-95

4) Press the push switch (SW2) on the ADF controller PCB once.
- A single press on the push switch (SW2) causes the original to be picked up and stopped on the copyboard glass.



F-4-96

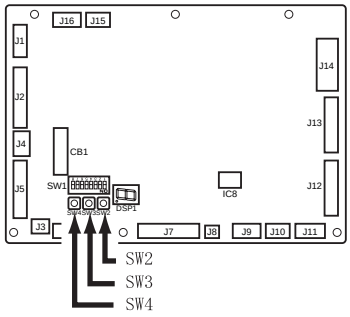
5) Open the DADF slowly, and check to make sure that D indicated is 11±1 mm.
Then, close the DADF slowly.



D=11±1mm

F-4-97

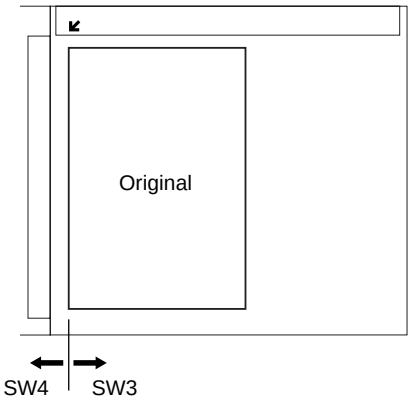
6) To adjust the original stop position, use the push switches SW3 and SW4 on the ADF controller PCB.
A single press on each switch will shift the original stop position by a distance of 0.5 mm. When the correct stop position is attained, press the push switch (SW2).
- The original will be delivered, and the new position will be stored in memory.



F-4-98

T-4-7

Switch	Direction of shift
SW3	Right
SW4	Left



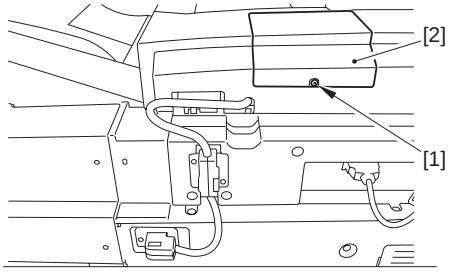
F-4-99

Holding down on the push switch will not cause more than a single shift.

EX
If the copy paper is stopped 12 mm from the copyboard glass,
Close the DADF slowly leaving the copy paper on the copyboard glass.
To shift the stop position 1 mm to the left, the following is true:
1 0.5 (adjustment interval) = 2
Hence, press the push switch SW4 twice, and then press the push switch SW2.
- The copy paper will be delivered, and the new setting will be stored in memory.

b. Pickup from the Manual Feed Tray

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

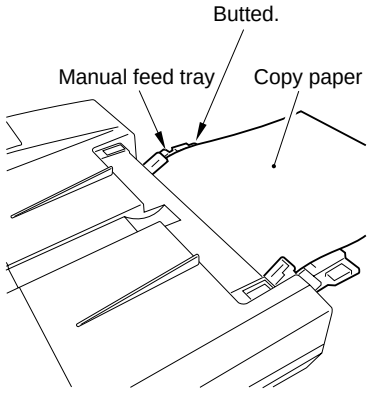


F-4-100

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

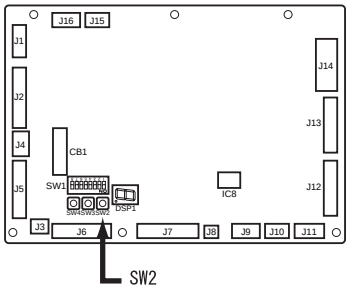
F-4-101

3) Open the manual feed tray, and place a single sheet of A4 or LTR copy paper.
- Be sure to butt the copy paper against the rear.



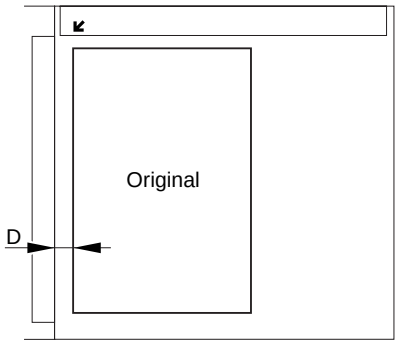
F-4-102

4) Press the push switch (SW2) on the ADF controller PCB once.
- A single press on the push switch (SW2) causes the original to be picked up and stopped on the copyboard glass.



F-4-103

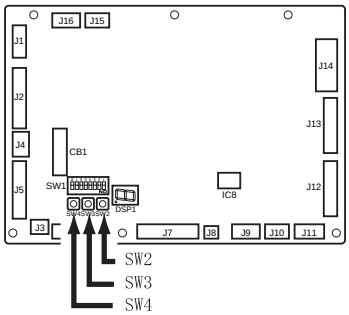
5) Open the DADF slowly, and check to make sure that D indicated is 11±1 mm.
Close the DADF slowly.



D=11±1mm

F-4-104

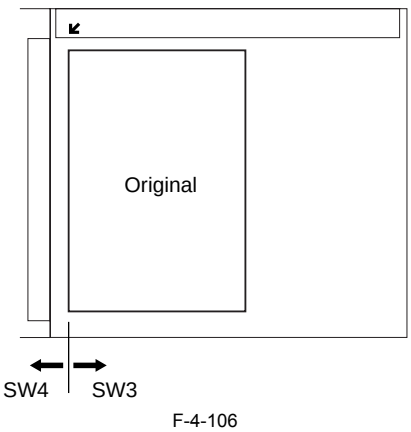
6) To adjust the original stop position, use the push switches SW3 and SW4 on the ADF controller PCB.
A single press on each switch will shift the original stop position by 0.5 mm.
When the correct position is attained (after switch operation), press the push switch SW2.
- The original will be delivered, and the new setting will be stored in memory.



F-4-105

T-4-8

Switch	Direction of shift
SW3	Right
SW4	Left



F-4-106

Holding down the push switch will not cause more than a single shift.

EX
If the copy paper stops 12 mm from the copyboard glass,
Close the DADF slowly leaving the copy paper on the copyboard glass.
To shift the stop position 1 mm to the left, the following is true:
1 0.5 (adjustment interval) = 2
Hence, press the push switch SW4 twice, and press the push switch SW2.
- The copy paper will be delivered, and new setting will be stored in memory.

4.3.2 Adjustment at Time of Parts Replacement

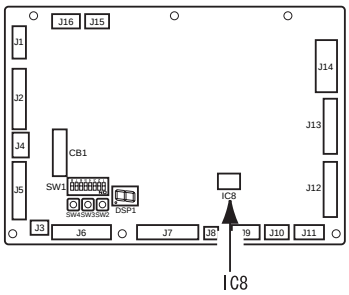
4.3.2.1 Outline

T-4-9

Major parts	Work
- ADF controller PCB	1) Replacement of the EEPROM
-EEPROM (memory back-up) -Reversal sensor (S1) -Pre-registration roller paper sensor (S2) -Post-registration roller paper sensor (S3) -Separation paper sensor (S4) -Skew paper sensor (S5) -Original sensor (S6) -Original trailing edge sensor (S7) -Manual feed registration roller paper sensor (S9) -Delivery motor (M5)	2) Adjust the sensors and the delivery motor

4.3.2.2 Replacing the EEPROM

Perform the following when replacing the ADF controller PCB.
1) Remove the EEPROM (IC8) from the faulty ADF controller PCB.



F-4-107

2) Mount the EEPROM removed in step 1) to the new ADF controller PCB.

MEMO:
The EEPROM on the new ADF controller PCB is not used yet.

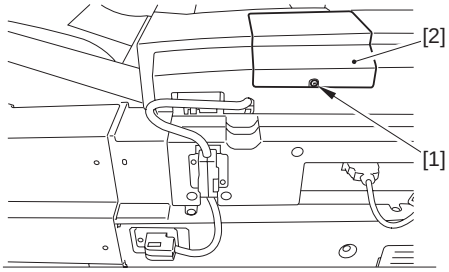
3) Turn on the copier, and check to make sure that error code E420 is not indicated.
4) If error code E420 is indicated, mount back the EERPOM once removed from the new ADF controller PCB.
5) Perform the work under 1.2.3 "Adjusting the Sensors and the Delivery Motor."

4.3.2.3 Adjusting the Sensors and the

Perform the adjustment if you have replaced any of the following parts:
- EEPROM (memory backup)
- Reversal sensor (S1)
- Pre-registration roller senor (S2)
- Post-registration roller sensor (S3)
- Separation paper sensor (S4)
- Original sensor (S6)
- Original trailing edge sensor (S7)
- Manual feed registration roller paper sensor (S9)
- Delivery motor (M5)

MEMO:
The delivery motor is adjusted by sending a reference signal to it, and the speed of rotation at that time is measured by the delivery motor clock sensor (PI11).
The result is used when generating the motor rotation speed control signal (EJMPWM*).

Steps to Take
1) Open the DADF, and make a single A4 copy of a solid black original.
2) Remove the screw [1], and detach the ADF controller cover [2].

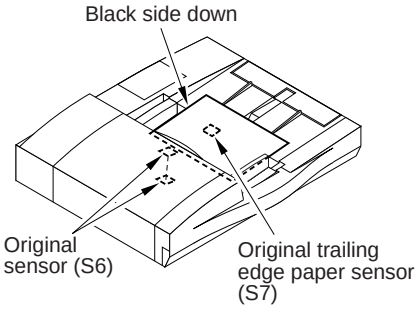


F-4-108

3) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

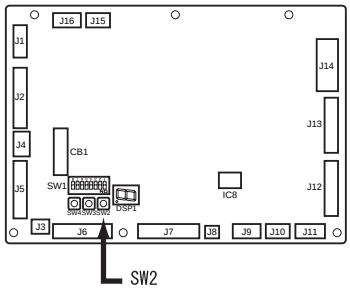
F-4-109

4) Place the output obtained in step 1) in the original tray with the black side facing down. Take care not to cover the original sensor (S6) when placing the output.



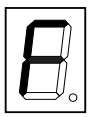
F-4-110

5) Press the push switch (SW2) on the ADF controller PCB.
- The LED will indicate the following in sequence, showing the result at the end: 1, 2, 3, 4, 5, 6, 7, 8, 9, A.



F-4-111

T-4-10

Result	LED2 indication	Description
OK	 (O)	All sensors (S1 through S9) are normal).
NG	 (F)	Any of the sensors (S1 through S9) is faulty.

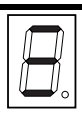
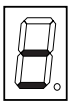
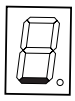
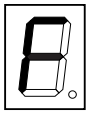
6) At the end of the operation, press the push switch (SW2) on the ADF controller PCB once again.

If the Result is NG

Check the condition of each of the sensors (S1 through S9), and replace the sensor considered to be faulty.

The condition of a sensor is indicated in the following three levels:

T-4-11

Condition	DSP1 indication	Check or replace
Good		No
Alarm 1		No
Alarm 2		Yes
Faulty		Yes

1) While DSP1 is indicating 'NG', press the push switch SW3 or SW4 to select the sensor.

T-4-12

Switch	DSP1 indication	Sensor or motor in question
SW3	1	Original sensor (S6)
	2	Original trailing edge sensor (S7) Separation sensor (S4)
	3	Separation sensor (S4)
	4	Skew sensor (S5)
	5	Pre-registration roller paper sensor (S2)
	6	Post-registration paper sensor (S3)
	7	Reversal sensor (S1)
	8	Pre-last original paper sensor (S8)
SW4	9	Delivery motor (M5)

2) At the end of the operation, press the push switch (SW2) on the ADF controller PCB.

4.3.3 Auxiliary Adjustmant

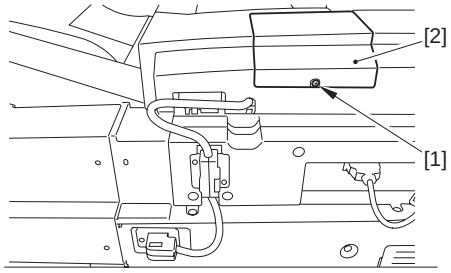
4.3.3.1 Outline

T-4-13

Item to adjust	Function
Degree of arching at the registration roller when pickup is from the tray	Removing the skew for CW pickup
Degree of arching at the registratoin roller at time of reversal	Removing the skew at time of reversal
Degree of arching at the registration roller in manual feed mode	Removing the skew in manual feed mode
Speed of the feeding belt	Fine-adjusting the reproduction ratio for stream reading mode
Speed of reversal	Fine-adjusting the speed of reversal
Checking the sensor output	Checking the presence/absence of paper over a specific sensor
Hinge spring pressure	Adjustment of a hinge hold angle

4.3.3.2 Adjusting the Degree of Arching at the Registration Roller (pickup from the tray), (at time of reversal), (manual feed mode)

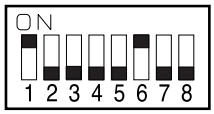
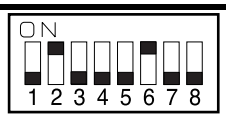
1) Remove the screw [1], and detach the ADF controller cover [2].



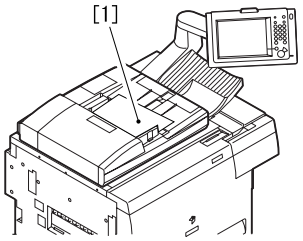
F-4-112

2) Set the DIP switch (SW1) on the ADF controller PCB as follows to suit the need:

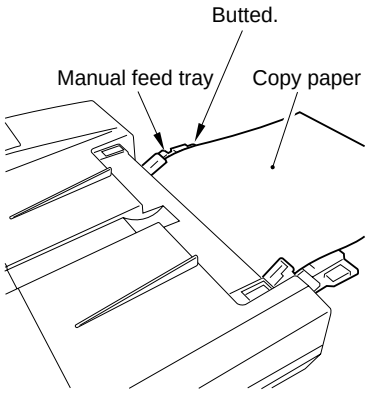
T-4-14

Item	Switch setting
Pickup from tray	
Reversal	
Manual feed	

3) Place a single sheet [1] of A4 or LTR copy paper in the original tray.

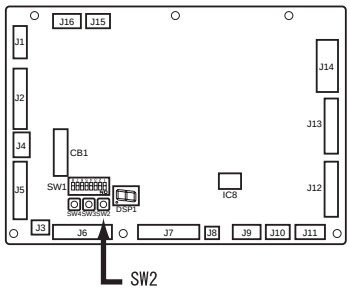


F-4-113



F-4-114

4) Press the push switch (SW2) on the ADF controller PCB.
- The copy paper will be picked up and stopped on the copyboard glass.
- DSP1 will start to flash to indicate the current value.



F-4-115

T-4-15

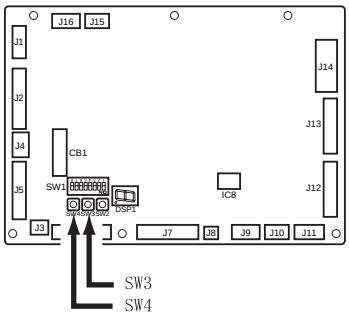
Switch	DSP1 indication	Adjustment value*	Switch	DSP1 indication	Adjustment value*	Switch	DSP1 indication	Adjustment value*
SW3	A-E2	-30	SW3	A-F7	-9	SW3	A-0C	12
↓	A-E3	-29	↓	A-F8	-8	↓	A-CD	13
	A-E4	-28		A-F9	-7		A-CE	14
	A-E5	-27		A-FA	-6		A-CF	15
	A-E6	-26		A-Fb	-5		A-10	16
	A-E7	-25		A-FC	-4		A-11	17
	A-E8	-24		A-Fd	-3		A-12	17
	A-E9	-23		A-FE	-2		A-13	18
	A-EA	-22		A-FF	-1		A-14	19
	A-Eb	-21		A-00	0 (reference value)		A-15	20
	A-Ec	-20		A-01	1		A-16	21
	A-Ed	-19		A-02	2		A-17	22
	A-Ee	-18		A-03	3		A-18	23
	A-Ef	-17		A-04	4		A-19	24
	A-F0	-16		A-05	5		A-1A	25
	A-F1	-15		A-06	6		A-1b	26
	A-F2	-14		A-07	7		A-1C	27
	A-F3	-13		A-08	8		A-1d	28
	A-F4	-12		A-09	9		A-1E	29
↑	A-F5	-11	↑	A-0A	10	↑	A-1F	30
SW4	A-F6	-10	SW4	A-0b	11	SW4	-	-

*0.1% (feed length).

5) Press the push switch SW3 or SW4 on the ADF controller PCB to adjust the degree of arching by referring to the table.

T-4-16

Switch	Change
SW3	Increases the arching.
SW4	Decreases the arching.



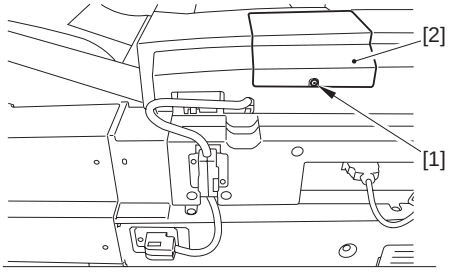
F-4-116

6) At the end of operation, press the push switch (SW2) on the ADF controller PCB once again.
- The copy paper will be delivered, and the adjustment value will be stored in memory.

4.3.3.3 Adjusting the Speed of the Feeding Belt

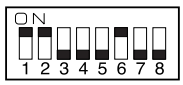
MEMO:
Adjusting the speed of the feeding belt will automatically adjust the speed of reversal.

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



F-4-117

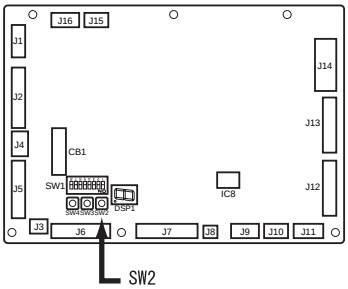
2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.



F-4-118

3) Pres the push switch (SW2).
- DSP 1 displays the current volume by flushing.

T-4-17

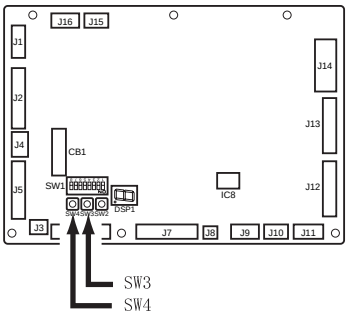


F-4-119

Switch	DSP1 indication	Adjustment value*	Switch	DSP1 indication	Adjustment value*	Switch	DSP1 indication	Adjustment value*
SW3	A-E2	-30	SW3	A-F7	-9	SW3	A-0C	12
↓	A-E3	-29	↓	A-F8	-8	↓	A-CD	13
	A-E4	-28		A-F9	-7		A-CE	14
	A-E5	-27		A-FA	-6		A-CF	15
	A-E6	-26		A-Fb	-5		A-10	16
	A-E7	-25		A-FC	-4		A-11	17
	A-E8	-24		A-Fd	-3		A-12	17
	A-E9	-23		A-FE	-2		A-13	18
	A-EA	-22		A-FF	-1		A-14	19
	A-Eb	-21		A-00	0 (reference value)		A-15	20
	A-Ec	-20		A-01	1		A-16	21
	A-Ed	-19		A-02	2		A-17	22
	A-Ee	-18		A-03	3		A-18	23
	A-Ef	-17		A-04	4		A-19	24
	A-F0	-16		A-05	5		A-1A	25
	A-F1	-15		A-06	6		A-1b	26
	A-F2	-14		A-07	7		A-1C	27
	A-F3	-13		A-08	8		A-1d	28
	A-F4	-12		A-09	9		A-1E	29
↑	A-F5	-11	↑	A-0A	10	↑	A-1F	30
SW4	A-F6	-10	SW4	A-0b	11	SW4	-	-

*0.1% (image reproduction ratio).

4) Press the push switch SW3 or SW4 on the ADF controller PCB, and adjust the speed of the belt by referring to the table.



F-4-120

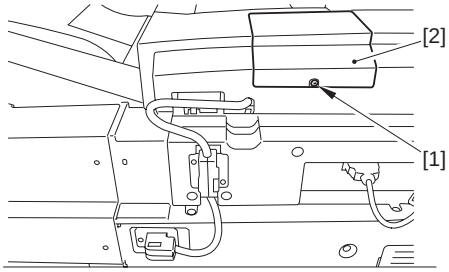
T-4-18

Switch	Change
SW3	Increases the belt speed (decreasing the image).
SW4	Decreasing the belt speed (increasing the image).

5) At the end of the operation, press the push switch (SW2) on the ADF controller PCB once again.

4.3.3.4 Adjusting the Speed of Reversal

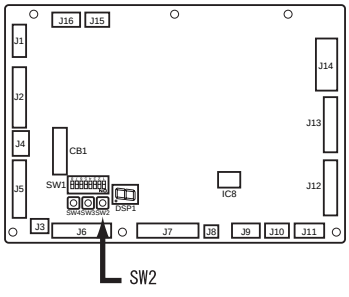
1) Remove the ADF cover [2] by the screw [1], and set the DIP switch (SW1) on the ADF controller PCB as indicated.



F-4-121

F-4-122

2) Pres the push switch (SW2).
- DSP 1 displays the current volume by flushing.



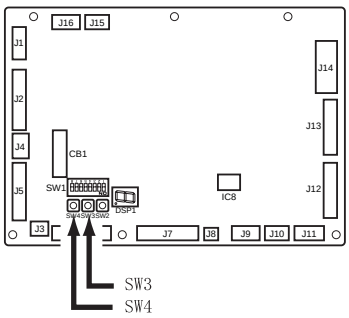
F-4-123

T-4-19

Switch	DSP1 indication	Adjustment value*	Switch	DSP1 indication	Adjustment value*	Switch	DSP1 indication	Adjustment value*
SW3	A-E2	-30	SW3	A-F7	-9	SW3	A-0C	12
↓	A-E3	-29	↓	A-F8	-8	↓	A-CD	13
	A-E4	-28		A-F9	-7		A-CE	14
	A-E5	-27		A-FA	-6		A-CF	15
	A-E6	-26		A-Fb	-5		A-10	16
	A-E7	-25		A-FC	-4		A-11	17
	A-E8	-24		A-Fd	-3		A-12	17
	A-E9	-23		A-FE	-2		A-13	18
	A-EA	-22		A-FF	-1		A-14	19
	A-Eb	-21		A-00	0 (reference value)		A-15	20
	A-Ec	-20		A-01	1		A-16	21
	A-Ed	-19		A-02	2		A-17	22
	A-Ee	-18		A-03	3		A-18	23
	A-Ef	-17		A-04	4		A-19	24
	A-F0	-16		A-05	5		A-1A	25
	A-F1	-15		A-06	6		A-1b	26
	A-F2	-14		A-07	7		A-1C	27
	A-F3	-13		A-08	8		A-1d	28
	A-F4	-12		A-09	9		A-1E	29
↑	A-F5	-11	↑	A-0A	10	↑	A-1F	30
SW4	A-F6	-10	SW4	A-0b	11	SW4	-	-

*0.1% (image reproduction ratio).

3) Press the push switch SW3 or SW4 on the ADF controller PCB to adjust the speed of reversal by referring to theable.



F-4-124

T-4-20

Switch	Change
SW3	Increase the speed of reversal.
SW4	Decrease the speed of reversal.

4) At the end of the operation, press the push switch (SW2) on the ADF controller.

4.3.3.5 Checking the Sensor Output

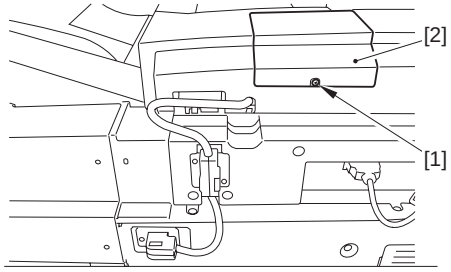
The DADF uses a 7-segment LED (DSP1) on its ADF controller PCB to allow a check on the presence/absence of paper or the state (open/closed) of the upper cover of the following sensors:

T-4-21

DIS1	Sensor in question (notation)	DSP1	Sensor in question (notation)
(1)	Original sensor (S6)	(7)	Reversal sensor (S1)
(2)	Original trailing edge sensor (S7)	(8)	Manual feed registration roller paper sensor (S9)
(3)	Separation sensor (S4)	(9)	Pre-reversal sensor (PI4)
(4)	Skew sensor (S5)	(A)	Original paper sensor (PI13)
(5)	Pre-registration roller paper sensor (S2)	(b)	Manual feed set sensor (PI12)
(6)	Post-registration roller paper sensor(S3)	(c)	ADF closed/open sensor (PI10)

DIS1	Sensor in question (notation)	DSP1	Sensor in question (notation)
		(d)	Upper cover sensor (front; PI6)
		(e)	Upper cover sensor (rear; PI3)

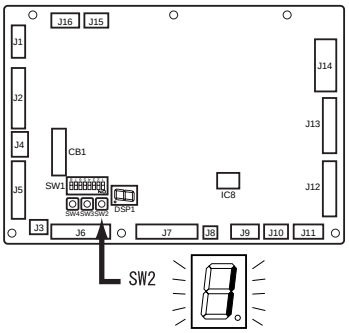
1) Remove the ADF controller cover [2] by removing the screw [1], and set the DIP switch (SW1) on the ADF controller PCB as indicated (normal operation mode).



F-4-125

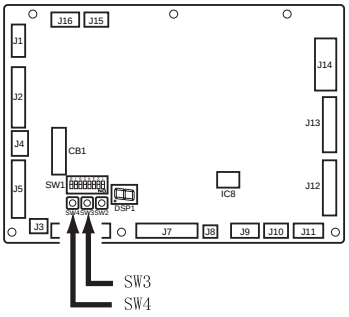
F-4-126

2) Press the push switch (SW2) once.
- The 7-segment LED (DSP1) on the ADF controller PCB will start to flash [1] to indicate that a check on the sensor operation has started.



F-4-127

3) Press the push switch SW3 or SW4; the indication of the 7-segment LED (DSP1) will change to indicate the state (paper present/absent) of the sensor in question.

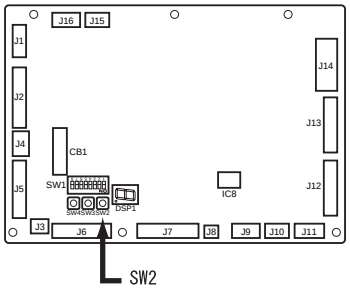


F-4-128

T-4-22

DSP1	Presence/absence of paper
ON	Present
Flashing	Absent

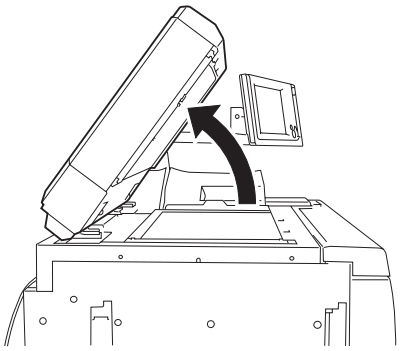
4) To end the check, press the push switch (SW2) once.
- The LED2 indication will return to normal mode.



F-4-129

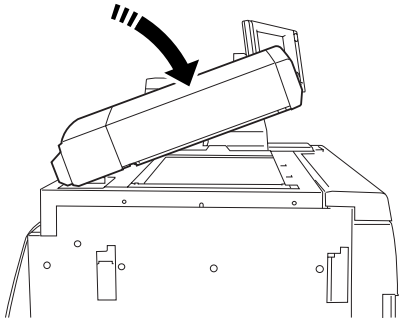
4.3.3.6 Hinge spring pressure adjustment

1.How to Check the Hinge
1) Open the ADF widely.



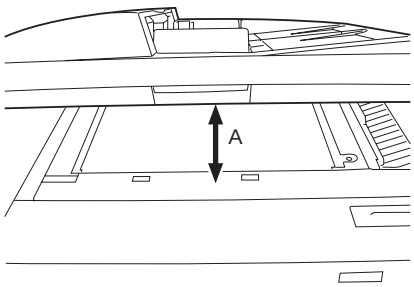
F-4-130

2) Close the ADF gradually and stop it just before the point where it closes with its own weight (just before the hinge becomes unable to retain the ADF).



F-4-131

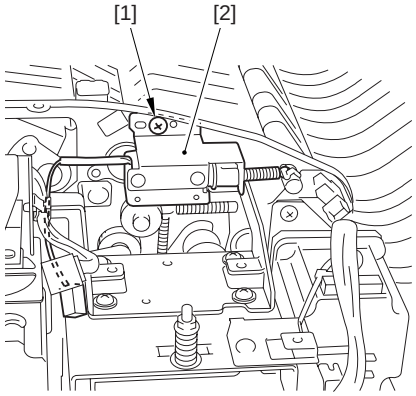
3) At this point, if the distance 'A' between the edge of the front cover and the upper front cover is 20cm or more, perform the hinge spring pressure aadjustment described next.



F-4-132

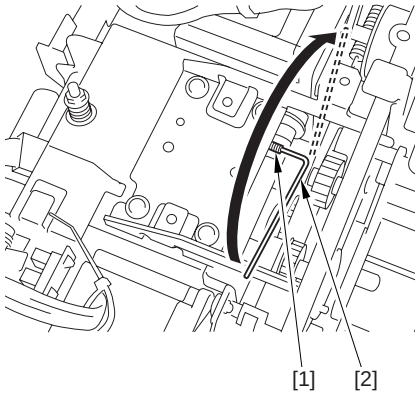
2.How to adjust the pressure of hinge spring

a. Hinge (left)
1)Unscrew a screw [1] and detach and pre-reversal solenoid mount [2].



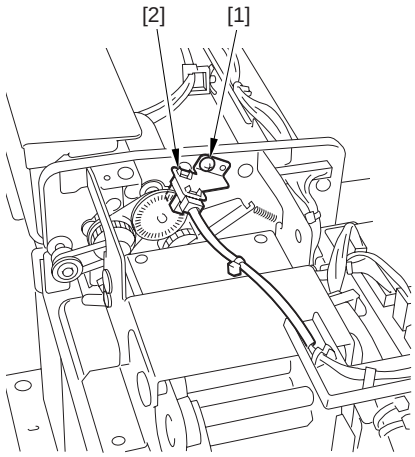
F-4-133

2)Rotate the spring pressure adjusting screw [A] of the hinge to the direction of the arrow [B] (in a clockwise direction) using a hex wrench 18 times by 60 degrees (Max. angle to be rotated per time) per time (Shorten the spring pressure adjusting screw [A] by 2mm).



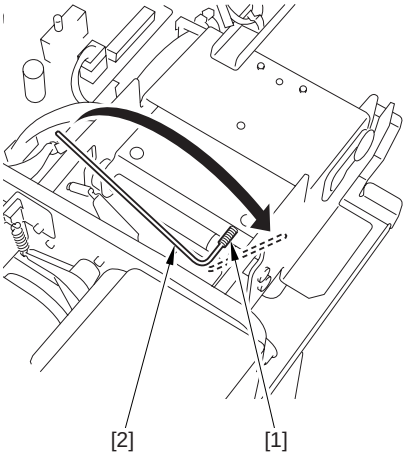
F-4-134

b. HInge (right)
1) Unscrew a screw [1] and detach the delivery motor clock sensor mount [2].



F-4-135

2) Rotate the spring pressure adjusting screw [A] of the hinge to the direction of the arrow [B] (in a clockwise direction) using a hex wrench 18 times by 60 degrees (Max. angle to be rotated per time) per time (Shorten the spring pressure adjusting screw [A] by 2mm).



F-4-136

4.3.4 Other

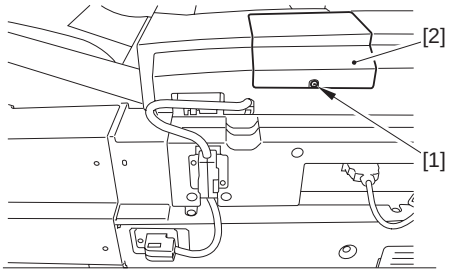
4.3.4.1 Outline

T-4-23

Item	Description
Jam history	Indicates the most recent 3 jams.
Software version	Indicates the version of the software.
Document width detection switch (SW301) check	A document width detection switch (SW301) check is carried out automatically.
Backup RAM clearance	A backup RAM clear is performed.

4.3.4.2 Jam History

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

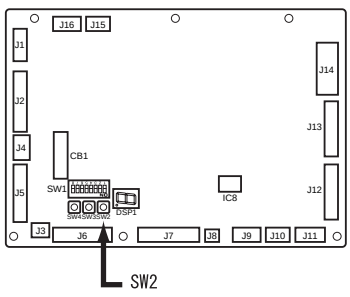


F-4-137

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

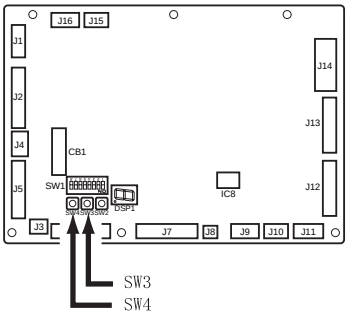
F-4-138

3) Press the push switch (SW2) on the ADF controller PCB.
- DSP1 will indicate the latest jam code.



F-4-139

4) Press the push switches SW3 and SW4 to change the DSP1 indication, thereby checking the jam history. DSP1 will flash five times in sequence to indicate the nature of the jam.



F-4-140

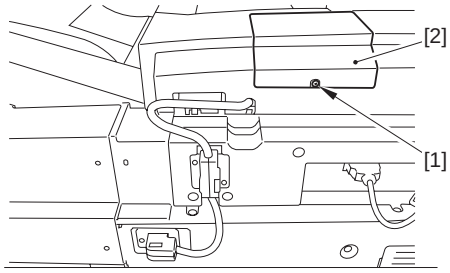
T-4-24

Switch	DSP1	Description
SW3 ↓	1-X1-X2-Y1-Y2	Previous (latest)
	2-X1-X2-Y1-Y2	2nd most recent
SW4 ↑	3-X1-X2-Y1-Y2	3rd most recent

5) At the end of the check, press the push switch (SW2) on the ADF controller PCB once again.

4.3.4.3 Version of the Software

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

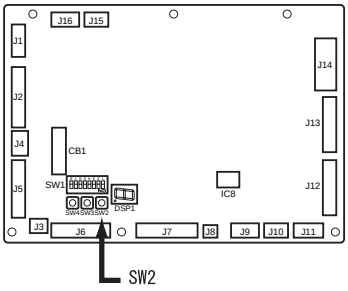


F-4-141

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

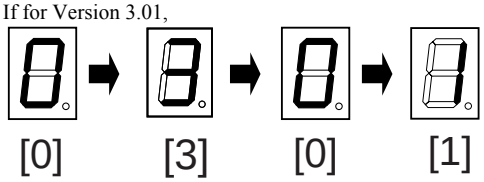
F-4-142

3) Press the push switch (SW2) on the ADF controller PCB.
- DSP1 will flash four times to indicate the version of the software.



F-4-143

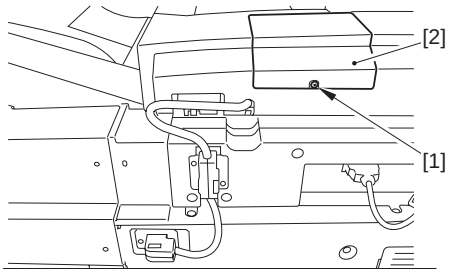
EX:
If for Version 3.01,



4) Press the push switch (SW2) on the ADF controller PCB to end the indication.

4.3.4.4 Checking the Original Width

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

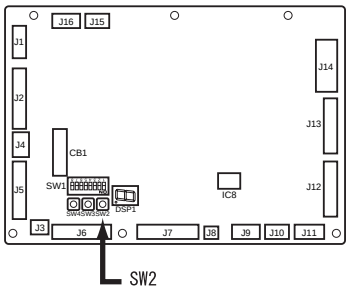


F-4-144

2) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F-4-145

3) Press the push switch (SW2) on the ADF controller PCB.
- DSP1 will go on or flash to indicate the width of the original each time the position of the side guide is changed.



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T-4-25

DSP1 indication		Default size	DSP1 indication		Default size
0	ON	A4	0	ON	A4
	Flash	Non-default		Flash	Non-default
1	ON	LTR	1	ON	LTR
	Flash	Non-default		Flash	Non-default
2	ON	B4	2	ON	B4
	Flash	Non-default		Flash	Non-default
3	ON	LTR	3	ON	LTR
	Flash	Non-default		Flash	Non-default
4	ON	A4	4	ON	A4
	Flash	Non-default		Flash	Non-default
5	ON	ERROR*	5	ON	ERROR*
	Flash	ERROR		Flash	ERROR
6	ON	ERROR	6	ON	ERROR
	Flash	ERROR		Flash	ERROR
7	ON	ERROR*	7	ON	ERROR*
	Flash	ERROR		Flash	

Note: * The original width detecting switch (SW301) may be faulty.

4) Press the push switch (SW2) on the ADF controller PCB to end the operation.

4.4 Troubleshooting

4.4.1 Error Code

4.4.1.1 E402

E402

1) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F-4-147

Press the push switch (SW2). Does the belt motor (SW2) rotate?
(To stop the operation, press the push switch (SW2) once again.)
YES: Go to step 3).
B**elt motor (M2)**

2)Does it become good if the belt motor is exchanged?
YES: End.
NO: Go to the next step.
Belt motor clock sensor (PI1)
3) Set the meter range to 10 VDC. Does the voltage between connectors J12-2 (+) and J12-1 (-) on the ADF controller PCB alternate between 0 and 5 V when the belt motor is rotated by hand?
NO: Replace the belt motor clock sensor (PI1).
Cable

4) Is the cable between the belt motor driver PCB and the ADF controller PCB connected properly?
NO: Connect it properly.
Belt motor driver PCB,
ADF controller PCB

5) Try replacing the belt motor driver PCB. Is the problem corrected?
YES: Replace the belt motor drive PCB.
NO: Replace the ADF controller PCB.

4.4.1.2 E404

1) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F-4-148

Does the delivery motor (M5) rotate when the push switch (SW2) is pressed?
(To stop the operation, press the push switch (SW2) once again.)
YES: Go to step 3).
Delivery motor (M5)

2) Does it become good if the delivery motor is exchanged?
YES: End.
NO: Go to the next step.
After replacing the delivery motor, be sure to perform "Adjusting the Sensors and the Delivery Motor."
Delivery Motor Clock Sensor (PI11), ADF Controller PCB
3) Set the meter range to 10 VDC. Does the voltage between connectors J3-2 (+) and J3-1 (-) on the ADF controller PCB alternate between 0 and 5 V when the delivery motor is rotated by hand?
NO: Replace the delivery motor clock sensor (PI11).
YES: Replace the ADF controller PCB.

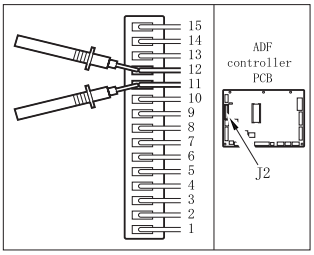
4.4.1.3 E405

1) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F-4-149

Does the separation motor (M4) rotate when the push switch (SW2) is pressed?
(To stop the operation, press the push switch (SW2) once again.)
YES: Go to step 3).
Separation motor (M4)

2) Disconnect the connector (J8) of the ADF controller PCB. Set the meter range to x1 ohm, and connect the meter probe to the connectors on the cable side as indicated. Is the resistance about 5.0 ohm?



F-4-150

NO: Replace the separation motor (M4).
Separation motor clock sensor (PI2), ADF controller PCB
3) Set the meter range to 10 VDC. Does the voltage between connectors J12-5 (+) and J12-4 (-) on the ADF controller PCB alternate between 0 and 5 V?
NO: Replace the separation motor clock sensor (PI2).
YES: Replace the DADF controller PCB.

4.4.1.4 E410

1) Set the DIP switch (SW1) on the ADF controller PCB as indicated.

F-4-151

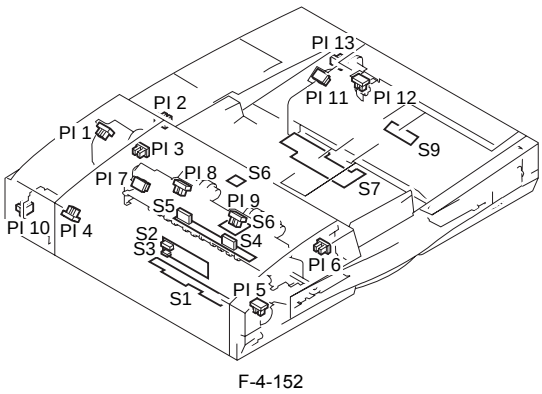
Does the motor (M3) rotate when the push switch SW2 and then the push switch SW3/SW4 are pressed?
(To stop the operation, press the push switch (SW2) once again.)
YES: Go to step 3).
Pickup motor (M3)
2) Does it become good if the pickup motor is exchanged?
YES: End.
NO: Go to the next step.
Pickup roller height sensor 1 (PI8)
3) Se the meter range to 10 VDC. Does the voltage between J14-A8 (+) and J14-A7 (-) on the ADF controller PCB alternate between 0 and 5 V when the pickup roller unit (rear) is moved up/down by hand?
NO: Replace the pickup roller height sensor 1 (PI8).
Pickup roller height sensor 2 (PI9)
4) Set the meter range to 10 VDC. Does the voltage between connectors J14-A1 (+) and J14-A10 (-) on the ADF controller PCB alternate between 0 and 5 V when the pickup roller unit (front) is moved up/down by hand?
NO: Replace the pickup roller height sensor 2 (PI9).
Pickup roller home position sensor (PI7)
5) Set the meter range to 10 VDC. Is the voltage between connectors J14-A5 (+) and J14-A4 (-) on the ADF controller PCB about 5 V when the pickup roller unit is returned to home position by hand?
NO: Replace the pickup roller home position sensor (PI7).
ADF controller PCB
6) Try replacing the ADF controller PCB. Is the problem corrected?
YES: Replace the ADF controller PCB.

4.4.1.5 E420

Communication cable
1) Is the cable between the copier and the DADF properly connected?
NO: Connect the cable properly.
Connector
2) Is the connector (J1) on the ADF controller PCB properly connected?
NO: Connect the connector properly.
Cable, ADF controller PCB
3) Is the cable from the connector (J1) on the ADF controller PCB to the communication cable connected properly?
NO: Connect the cable properly.
YES: Replace the ADF controller PCB.

4.5 Outline of Electrical Components

4.5.1 Sensors



F-4-152

T-4-26

Name	Notation	Description
Photointerrupter	PI 1	Belt motor clock detection
	PI 2	Separation motor clock detection
	PI 3	Left cover open/closed detection (rear)
	PI 4	Pre-reversal paper detection
	PI 5	Registration roller rotation detection
	PI 6	Left cover open/closed detection (front)
	PI 7	Pickup roller home position detection
	PI 8	Pickup roller height detection 1
	PI 9	Pickup roller height detection 2
	PI 10	ADF open/closed detection
	PI 11	Delivery motor clock detection
	PI 12	Manual feed set detection
	PI 13	Original delivery detection

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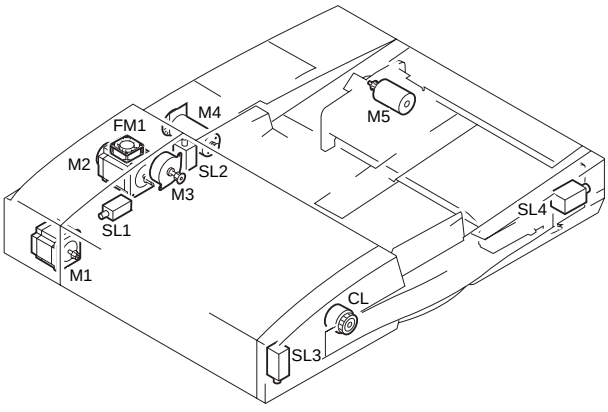
Name	Notation	Description
Reflecting type sensor	S1	Reversing assembly paper detection
	S2	Pre-registration roller paper detection
	S3	Post-registration roller paper detection
	S4	Separation paper detection
	S5	Skew paper detection
	S6	Original detection
	S7	Original trailing edge detection
	S9	Manual feed registration roller paper detection

4.5.2 Motors, Clutches, and Solenoids



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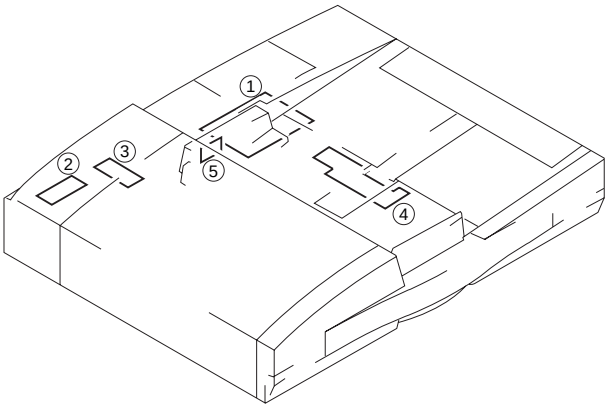
T-4-28

Name	Notation	Description
Motor	M1	Reversal motor
	M2	Belt motor
	M3	Pickup motor
	M4	Separation motor
	M5	Delivery motor
Clutch	CL	Separation clutch
Solenoid	SL1	Reversing solenoid
	SL2	Reversing solenoid
	SL3	Pre-reversal solenoid
	SL4	Delivery solenoid
Fan	FM1	Belt motor cooling fan

4.5.3 PCBs



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T-4-29

Reference	Name
1	ADF controller PCB
2	Reversal motor driver PCB
3	Belt motor driver PCB
4	Pickup tray PCB
5	Indication LED PCB

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

4.6.1 Outline

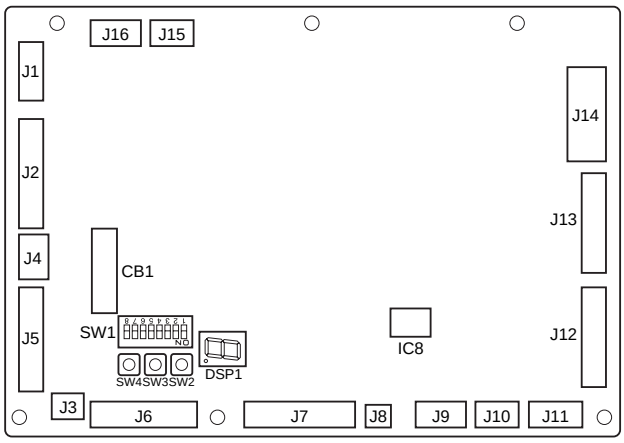
Of the LEDs and check pins found in the machine, those used in the field are discussed:

Do not touch any check pins that are not indicated in the table. They are for the factory, and require special tools and high precision.

4.6.2 ADF Controller PCB

Some LEDs emit light when they are off because of leakage current. This is a normal condition, and must be kept in mind.

Arrangement of Components

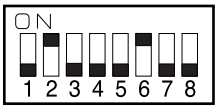


F-4-155

4.6.3 DIP Switch Functions

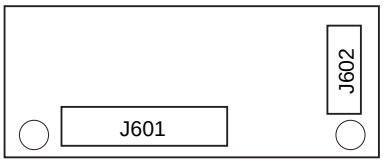
The DIP switch (SW1) on the ADF controller PCB provides the following functions according to how it is set:

T-4-30

Setting	Description
	Normal Operation
	Single-Sided Intermittent Feed Press the push switch SW2 on the ADF controller PCB; thereafter, each press on the push switch SW2 will send the original intermittently.
	Double-Sided Intermittent Feed Press the push switch SW2 on the ADF controller PCB; thereafter, each press on the push switch SW2 will send the original intermittently.
	Belt Motor (M2) Drive Press the push switch SW2 on the ADF controller PCB to start it; another press will stop it. The operation will be as follows, executed automatically: CW (700 -> 520 -> 260 -> 30 mm/sec) -> CCW: 700 -> 520 -> 260 -> 130 mm/sec).
	Reversal Motor (M1) Drive Press the push switch SW2 on the ADF controller PCB to start it; another press will stop it. The operation will be as follows, executed automatically: CW (700 -> 520 -> 260 -> 130 mm/sec) -> CCW (700-> 520 -> 260 -> 130 mm/sec).
	Delivery Motor (M5) Drive Press the push switch SW2 on the ADF controller PCB to start it; another press will stop it. The operation will be as follows, executed automatically: CW (700 -> 520 -> 260 -> 130 mm/sec) -> CCW (700 -> 520 -> 260 -> 130 mm/sec).
	Pickup Motor (M3) Drive Press the push switch (SW2) on the ADF controller PCB; press SW3 to move up or SW4 to move down. Another press on SW2 will stop it.
	Solenoid/Clutch Drive Press the push switch SW2 on the ADF controller PCB to execute the following in sequence; the operation will end automatically: Stopper plate solenoid (SL2) ↓ Stopper plate solenoid (SL2) ↓ Pre-reversal solenoid (SL3) ↓ Reversal solenoid (SL1) ↓ Clutch (CL)
	Separation Motor (M4), Clutch (CL) Drive Press the push switch (SW2) on the ADF controller PCB to start it; another press will stop it. While in operation, each press on the push switch SW3 changes the speed of motor rotation to 100mm/sec. (700 -> 100 mm/sec)
	Manual Feed Operation Place an original in the manual feed assembly, and press the push switch (SW2) on the ADF controller PCB so that the original will be picked up and stopped.
	Tray Pickup Arch Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch S23/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting.
	Reversal Arch adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting.
	Manual Feed Arch Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting.
	Feeding Belt Speed Adjustment (reproduction ratio in stream reading) Press the push switch SW2 on the ADF controller to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting.

Setting	Description
	Reversal Speed Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting.
	Original Stop Position Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. At the end, press the push switch SW2 to store the new setting.
	Manual Feed Original Stop Position Adjustment Press the push switch SW2 on the ADF controller PCB to start, and use the push switch SW3/SW4 to make adjustments. A the end, press the push switch SW2 to store the new setting.
	Sensor and Delivery Motor Auto Adjustment Press the push switch SW2 on the ADF controller PCB. The operation will end automatically.
	Jam History Indication The jam history of the DADF will be indicated by DSP1 on the ADF controller PCB (most recent three jams).
	Software Version Indication Press the push switch SW2 on the ADF controller PCB to indicate the version of the software; another press will stop the indication.
	Separation Assembly Cleaning Press the push switch (SW2) on the ADF controller PCB to rotate the registration roller; another press will stop the operation.
	Registration Roller Cleaning If the dirt is limited, Place 10 sheets of copy paper in the original tray, and press the push switch on the ADF controller PCB. The operation will end automatically.
	Registration Roller Cleaning If the dirt is appreciable, Press the push switch SW2 on the ADF controller PCB. When the registration roller starts to rotate, clean with lint-free paper moistened with alcohol. To stop operation, press the push switch SW2 onceagain.
	Original Width Detecting Switch (SW301) Check Press the push switch SW2 on the ADF controller PCB to start it; another press will stop it.
	Backup RAM Clear
	Press the push switch SW2 on the ADF controller PCB; press the push switch SW3 five times in succession to automatically end backup RAM clear.

4.6.4 Reversal Motor Driver PCB/ Belt Motor Driver PCB



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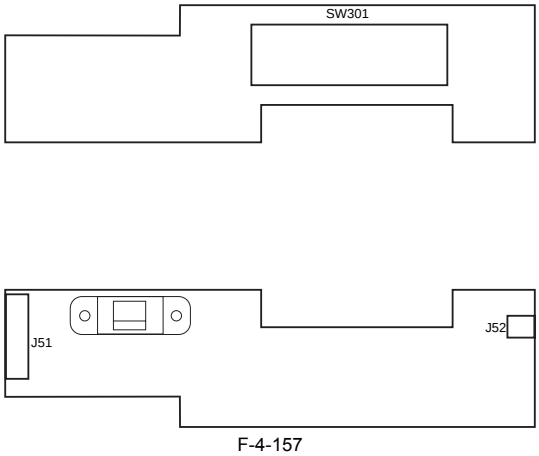
4.6.5 Pickup Tray PCB



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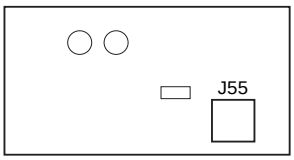
4.6.6 Indication LED PCB



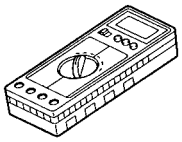
F-4-158

4.7 Service Tools

4.7.1 Special Tools

You will need the following special tool when servicing the machine in addition to the standard tools set.

T-4-31

Tool name	Tool No.	Shape	Rank*	Remarks
Digital Multimeter	FY9-2002-000		A	For making electrical checks

MEMO:
*Use the following as a guide:
A: Each service person is expected to carry one.
B: Each group of five service persons is expected to carry one.
C: Each workshop is expected to carry one.

4.7.2 Solvents and Oils List

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning; e.g., glass, plastic, rubber (external covers).	Fluorine-family hydrogen carbon, alcohol, surface activating agent	• Do not bring near fire. • Procure locally. • IPA (isopropyl alcohol)
2	Lubricant	Driving parts, friction parts	Silicone oil	CK-0551 (20 g)

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Chapter 5 Error Code

Contents

5.1 Service Error Code

5.1.1 E402

Cause
The belt motor (M2) is faulty.
The belt motor clock sensor (PI1) is faulty.
The ADF controller PCB is faulty.

Detection
When the belt motor drive signal is generated, no clock signal is detected for 100 msec.

5.1.2 E404

Cause
Cause The delivery motor (M5) is faulty.
The delivery motor clock sensor (PI11) is faulty.
The ADF controller PCB is faulty.

Detection
When the delivery motor drive signal is generated, no clock signal is detected for 200 msec.

5.1.3 E405

Cause
The separation motor (M4) is faulty.
The separation motor clock sensor (PI2) is faulty.
The ADF controller PCB is faulty.

Detection
When the separation motor drive signal is generated, no clock signal is generated for 200 msec.

5.1.4 E410

Cause
The pickup motor (M3) is faulty.
The pickup roller height sensor 1 (PI8) is faulty.
The pickup roller height sensor 2 (PI9) is faulty.
The pickup roller home position sensor (PI7) is faulty.
The ADF controller PCB is faulty.

Detection
The pickup roller height sensor 1 (PI8) and the pickup roller height sensor 2 (PI9) do not generate a signal within 2 sec after the pickup motor has been driven.
The pickup roller home position sensor (PI7) does not generate a signal within 2 sec after the pickup motor has been driven.

5.1.5 E420

Cause
The backup data cannot be read; or, the data that has been read has an error.

Detection
When the copier is turned on, the backup data cannot be read twice; or, the data that has been read has an error.

Feb 7 2006

Canon