Canon SERVICE INFORMATION

Issued by Copying Machine Quality Assurance Center, Canon Inc.

MODEL: **DADF-B1/K1**

NO. : F-04-E03001
DATE : JAN.2003

☐ Major quality issues ☐ Quality upgrade/production efficiency
☐ Field quality problems ■ Miscellaneous

LOCATION
SUBJECT

Revision of Service Manual

The captioned technical documentation has been revised to reflect the following:

Reasons
to update the descriptions in the previous documentation covering modification of functions and correction of typographical mistakes.

The present revision is a full revision. Kindly make arrangements so that the old document may be replaced with the one being released. Further, please make sure the old document is properly disposed of.

FY8-13G6-01Y

Printed in Japan
Imprimé au Japon

DADF-B1/K1

SERVICE MANUAL

REVISION 1

Canon

JAN. 2003 FY8-13G6-010

CANON DADF-B1/K1 REV.1 JAN. 2003 PRINTED IN JAPAN (IMPRIME AU JAPON)

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.

The following paragraph does not apply to any countries where such provisions are inconsistent with local law.

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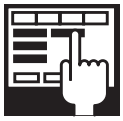
Caution

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

1 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.
	Refers to the Copier Basics Series for a better understanding of the contents.

2 Outline of the Manual

This Service Manual provides basic facts and figures about the DADF-B1/K1 needed to service the machine in the field, ensuring product quality and machine functions.

This Service Manual consists of the following chapters:

Chapter 1	Introduction:	features, specifications, and operations
Chapter 2	Operation Overview:	principles of operations in relation to mechanical and electrical systems by function and timing of operation
Chapter 3	Mechanical Systems:	mechanical construction, disassembly/assembly, and adjustment
Chapter 4	Maintenance and Inspection:	table of periodically replaced parts, table of consumables and durables, and scheduled servicing chart
Chapter 5	Malfunction Countermeasures:	standards, adjustments, and troubleshooting
Appendix:		general timing chart, lit of signals/abbreviations, and general circuit diagrams

This Service manual does not contain instructions on the installation of the machine. For installation, refer to the Installation Procedure that comes with the machine.

This Service Manual uses the following conventions:

1. Each chapter provides outlines of functions in relation to electrical and mechanical systems involved, and the descriptions cover the timing at which each component is operated.
   In the diagram, ▬▮▮▮▬ indicates a path of mechanical drive, while ⟶ given with a signal name indicates the flow of an electric signal.
   The expression 'turn on the power" refers to turning on the power switch, closing the front door, or closing the delivery door, ultimately supplying the machine with power.
2. In explaining the machine's digital circuits, the level of voltage is expressed as being '1' when high or '0' when low. The actual lev el of voltage, however, differs from circuit to circuit.
   The machine uses a CPU; however, since its internal mechanisms cannot be checked in the field, this manual omits explanation of its operations.
   As a rule, PCBs are not to be repaired in the field, and this manual limits the explanations of the PCBs to providing general descriptions with block diagrams. The descriptions cover either 'from sensors to control functions or the inputs of PCBs possessing drive functions" or 'from the outputs of PCBs possessing drive functions to loads." Block diagrams by function are given as needed.
   The descriptions in the manual are subject to change to accommodate improvements or the like made to the product. Major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to go through this Service Manual and the aforementioned bulletins and acquire a thorough understanding of the machine, thereby equipping himself/herself with the skill and the ability to identify faults in the machine and, ultimately, maintaining the quality and the functions of the machine.

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CHAPTER 1 INTRODUCTION

CHAPTER 2 OPERATION OVERVIEW

CHAPTER 3 MECHANICAL SYSTEMS

CHAPTER 4 MAINTENANCE AND INSPECTION

CHAPTER 5 MALFUNCTION COUNTERMEASURES

APPENDIX

CHAPTER 1

INTRODUCTION

1 Features

1.1.1 Compact and lightweight

The product is a compact and lightweight document feeding device that uses a monocock frame

1.1.2 Double sided documents

In the reverse delivery assembly, the document is flipped over and fed back onto the copyboard glass.

1.1.3 Wingless ADF

The ADF is a wingless type with the delivery tray attached.

1.1.4 Automatic document size detection

The document size is detected in both the long (document feed) direction and the side direction and the document length information is sent to the copier.

1.1.5 Mixed document sizes

Documents of different lengths and same width (same document type) can be mixed and set in the document tray.

1.1.6 Thick documents

A book equalizing hinge is employed to enable thick documents, such as books, etc., up to 50mm to be handled.

1.1.7 Reverse delivery flapper

The forward and reverse rotation of the reverse delivery motor causes the flapper to open and close and switches the delivery path.

2 Specifications

Item	Specification
Document pickup	Automatic pickup system
Document types	Document tray: Double sided sheet document (52 to 105g/m^2)*1 Document rest: Book (up to 50mm)
Document sizes	A3 (279mm x 431.8mm (11"x 17")) to A5 (STMT) Length 139.7 to 432mm (document feed direction) Width 182 to 297 (305) *3 mm
Document setting	Documents set face up with the first page as the top sheet.
Document set position	Centre reference
Document separation	Separation pad (upper separation)
Document processing mode	Single sided document processing (small size, large size) double sided document processing
Document stack height	Small size 30 sheets (A4, B5, A5, STMT, LTR)
Paper lighter than 80g/m^2	Large size 15 sheets (A3, 279mm x 431.8mm (11"x 17"), B4, LGL)
Mixed documents	Yes (Only for documents of same width size)
Document size recognition	Yes (Feed direction length detection + standard width detection)
Detecting document left in ADF	Yes (LED display)
2 in 1 function	No (copier memory)
Stamp function	No
Final document detection	Yes (A5, STMT are not detected)
Document exchange time length*2	690msec or less
Document transport speed	750mm/sec *420mm/sec (quiet mode) *DADF-K1 only
Communication with copier	IPC 2
Power supply	DC24V (supplied from copier)
Serial numbers	<DADF-B1> ZSB xxxxx (AB) ZSC xxxxx (Inch/A) ZSD xxxxx (A) ZSE xxxxx (AB/Inch) <DADF-K1> XKW xxxxx (AB) XKX xxxxx (Inch/A) XKY xxxxx (A) XKZ xxxxx (Inch/AB)
Maximum power usage	160W or lower at peak, average 39W
Weight	<DADF-B1> Approx. 12.8kg <DADF-K1> Approx. 12.7kg

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Item	Specification
Dimensions	<DADF-B1> 580 (width) x 506 (depth) x 179 (height) mm <DADF-K1> 580 (width) x 506 (depth) x 164 (height) mm
Operating environment Temperature/ Humidity range	As for photocopier

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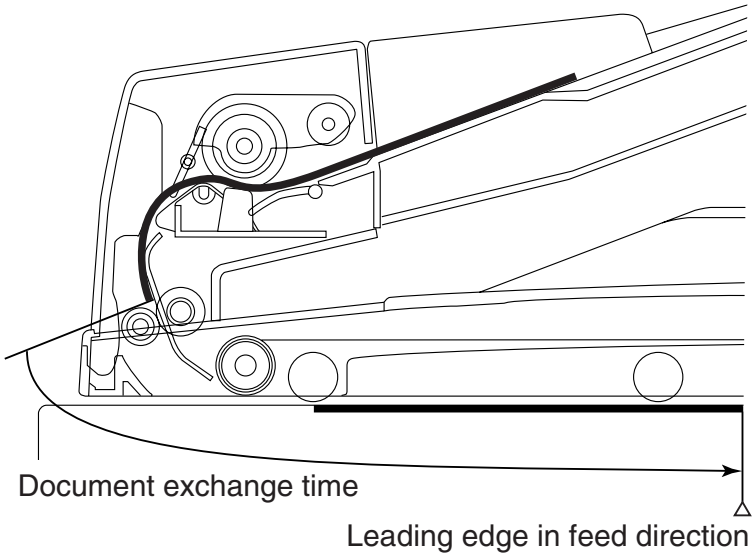
*1 The following document types cannot be used.
· OHP film and transparencies where the transparency is 80% or lower.
· Punched paper
· Paper with staples, paper clips or paste on it.
· Cut and paste documents
· Documents with carbon backing sheets
· Curled, creased or wrinkled paper
Explain to the customer that, if a curled document must be used, they should try to smooth out the curl as much as possible and place the most curled end of the paper as the trailing edge.

*2 Document exchange time
This is the length of time from when document feed starts till the trailing edge reaches the exposure position. However, this does not include the time for the document separation operation.



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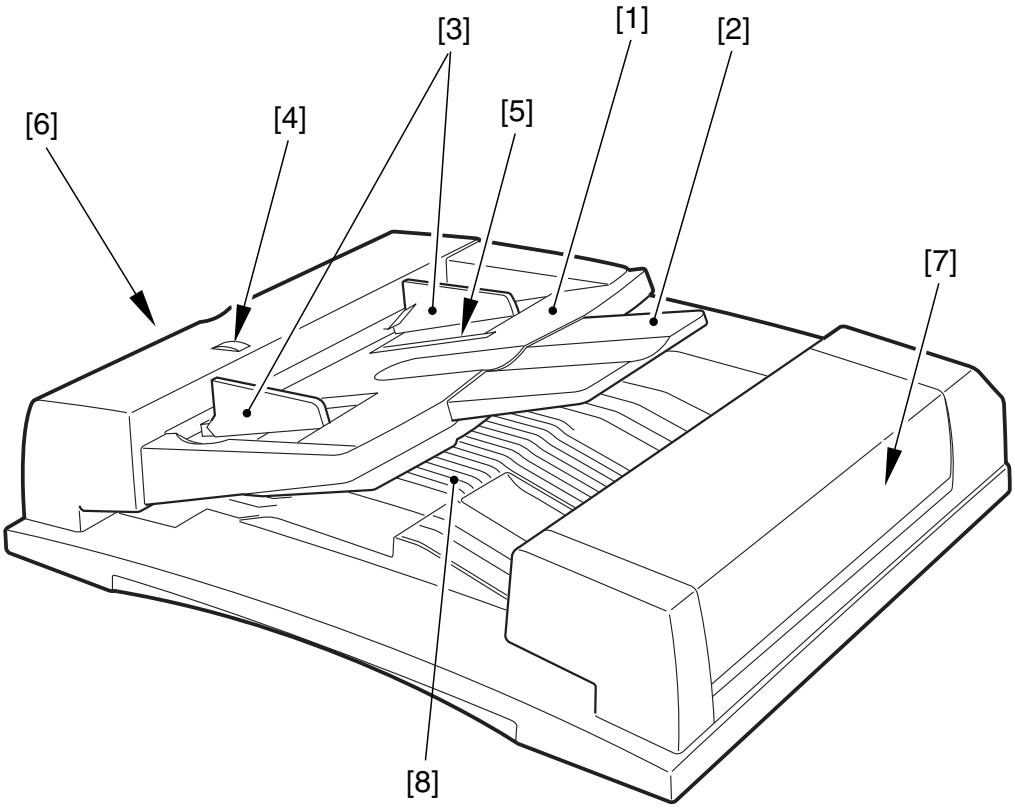
*3 Figures in parentheses ( ) refer to when the guide lock is released.

3 Parts names

3.1 Outer view



<DADF-B1>
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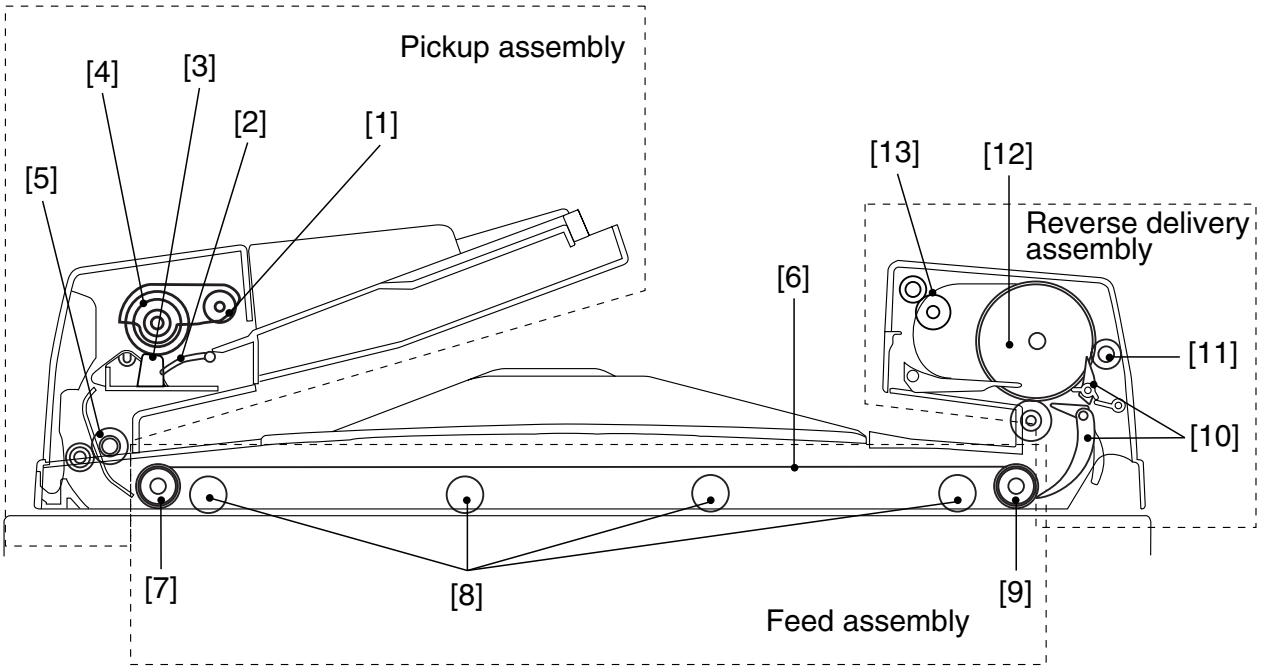
[1] Document tray
[2] Document support tray*
[3] Slide guide
[4] Document set display
[5] Final document detection sensor
[6] Pickup unit cover
[7] Reverse delivery unit cover
[8] Document delivery tray

* DADF-K1 is attached at a parallel angle to the transport belt.

3.2 Cross section



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Pickup assembly
[1] Pickup roller
[2] Lifter
[3] Separation pad
[4] Separation roller
[5] Registration roller

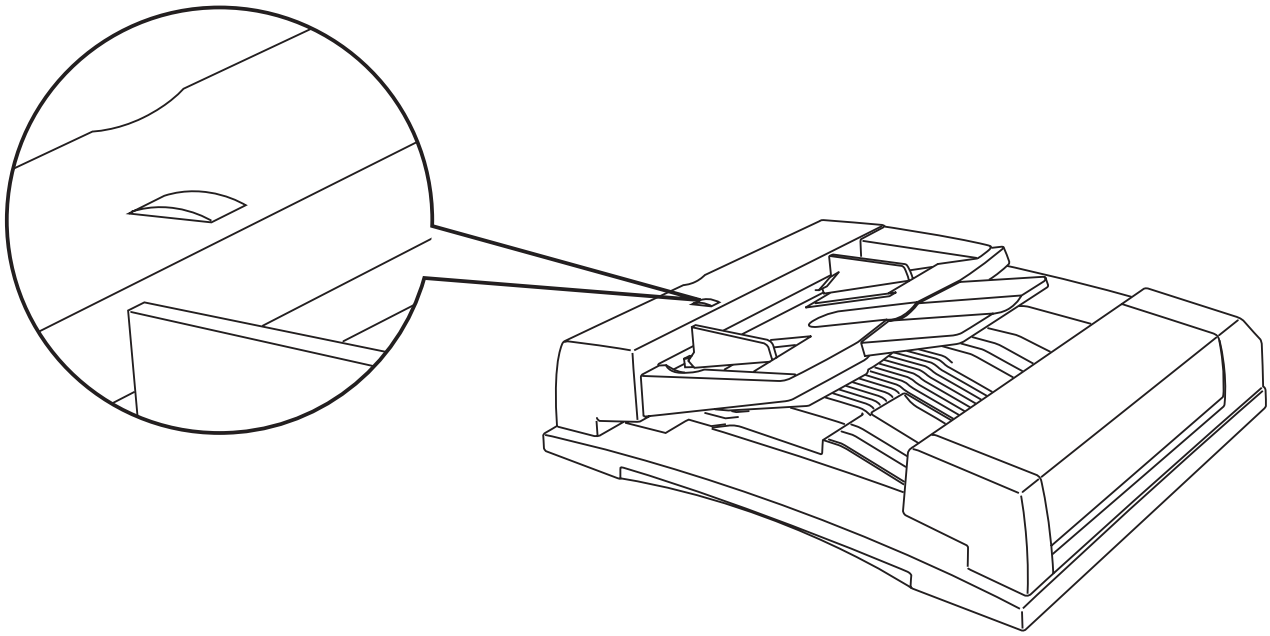
Feed assembly
[6] Feed belt
[7] Feed belt drive roller
[8] Retaining roller
[9] Feed bell linked roller

Reverse delivery assembly
[10] Reverse delivery flapper
[11] Reverse delivery registration roller
[12] Reverse roller
[13] Feed roller

4 Operations

4.1 Document set display

The document set display lights when a document is set on the document tray. In the event of a document jam, the display will flash.



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4.2 Basic copy operation

1) Adjust the slide guide to match the document size.
2) Set the first page of the document on the top and push the document into the tray until it fits flush against the end.
3) Set the operating mode according to the intended purpose.
4) Press the START key on the copier.

4.3 Warning display and countermeasures

If the document set display starts to flash during document feeding, it is probably because a document jam has occurred. Carry out the following check procedures and clear the jam as required.

1) Open the pickup unit cover and reverse delivery unit cover and remove any jammed paper.
2) Remove any documents from the document tray.
3) Open the ADF and remove any jammed paper.
4) Remove any documents from the copyboard glass.
5) Close the ADF.
6) Realign all the pages of the document and place once more on the document tray.
7) Press the copier START key.

4.4 Daily checks by user

Explain the following checks and cleaning items and have the user carry them out regularly.

1. Cleaning the copyboard glass

Wipe with a cloth dampened with water or alcohol and then wipe with the dry cloth.

2. Cleaning the feed belt

Wipe with water or alcohol.

3. Others

If the outer cover of the ADF is soiled, wipe with a neutral detergent and then clean off the dried dirt.

CHAPTER 2

OPERATION OVERVIEW

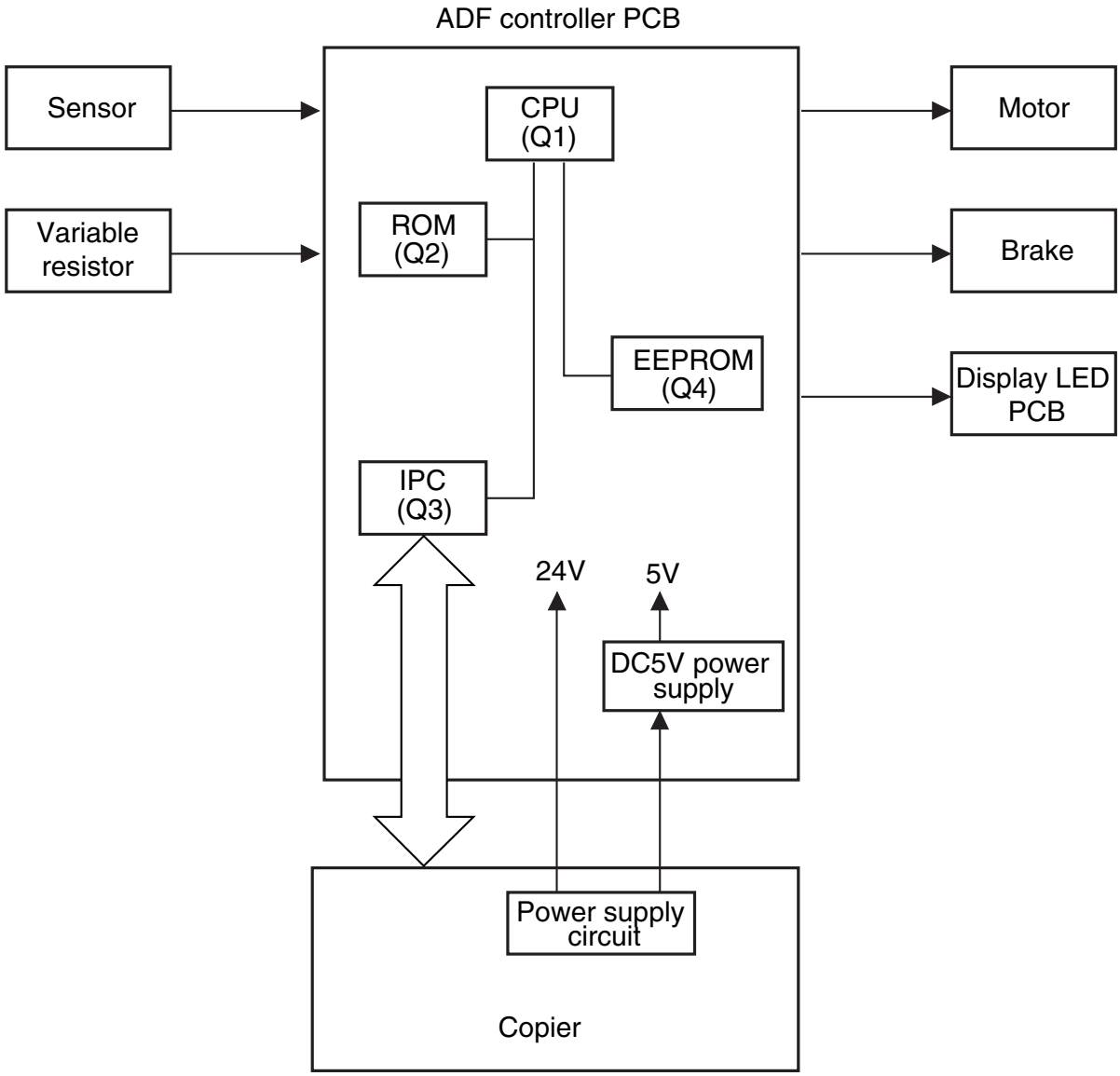
1 Basic configuration

1.1 Overview of electrical circuits

The unit is electrically controlled by the microcomputer (CPU) on the ADF controller PCB.

REF.

The CPU reads the input signals from the sensors as well as the signals from the copier main unit and then, according to a fixed timing, emits the signals that drive the DC loads, such as motors, brakes, etc.



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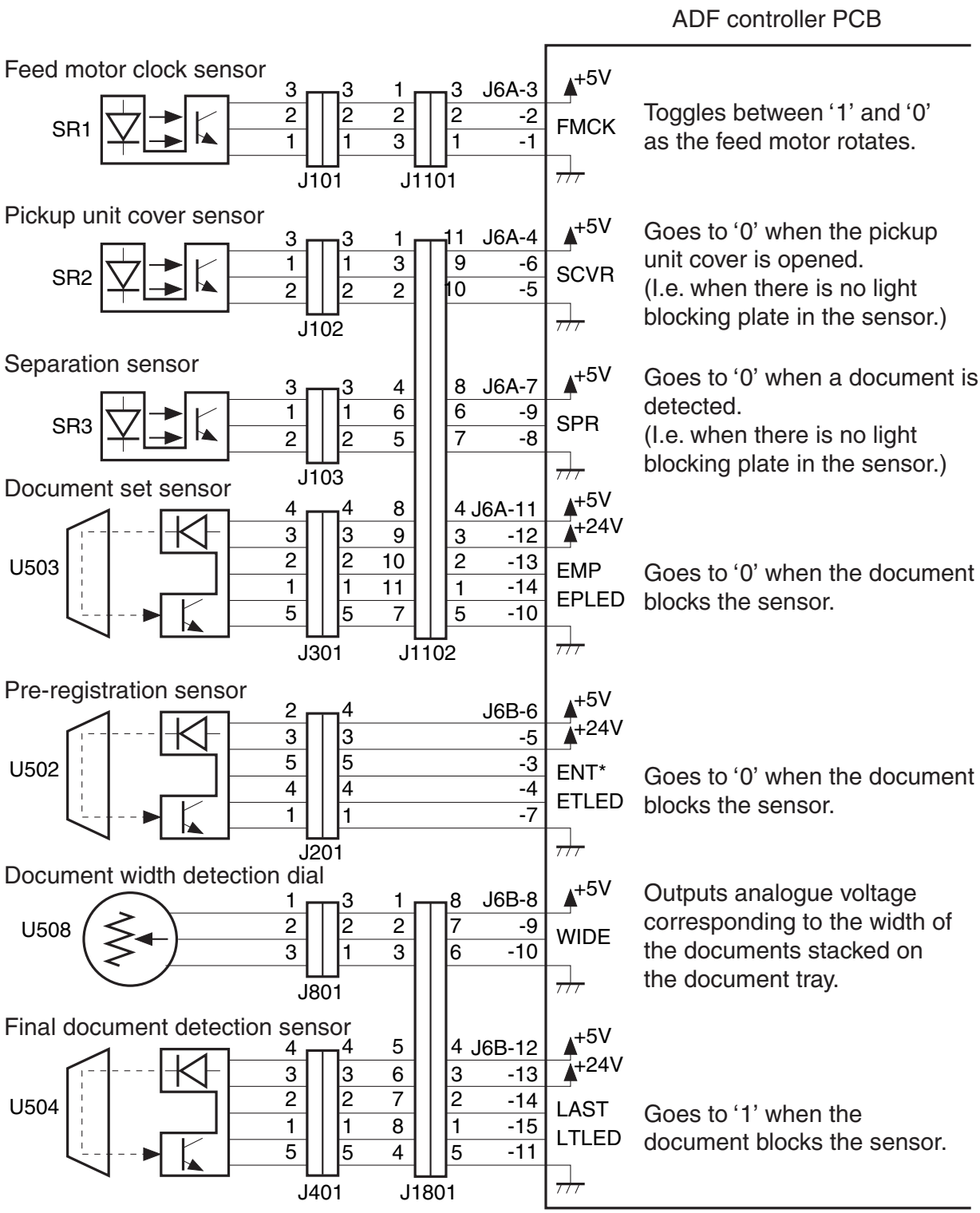
1.2 ADF controller circuit board input

1.2.1 ADF controller circuit board input (1/2)



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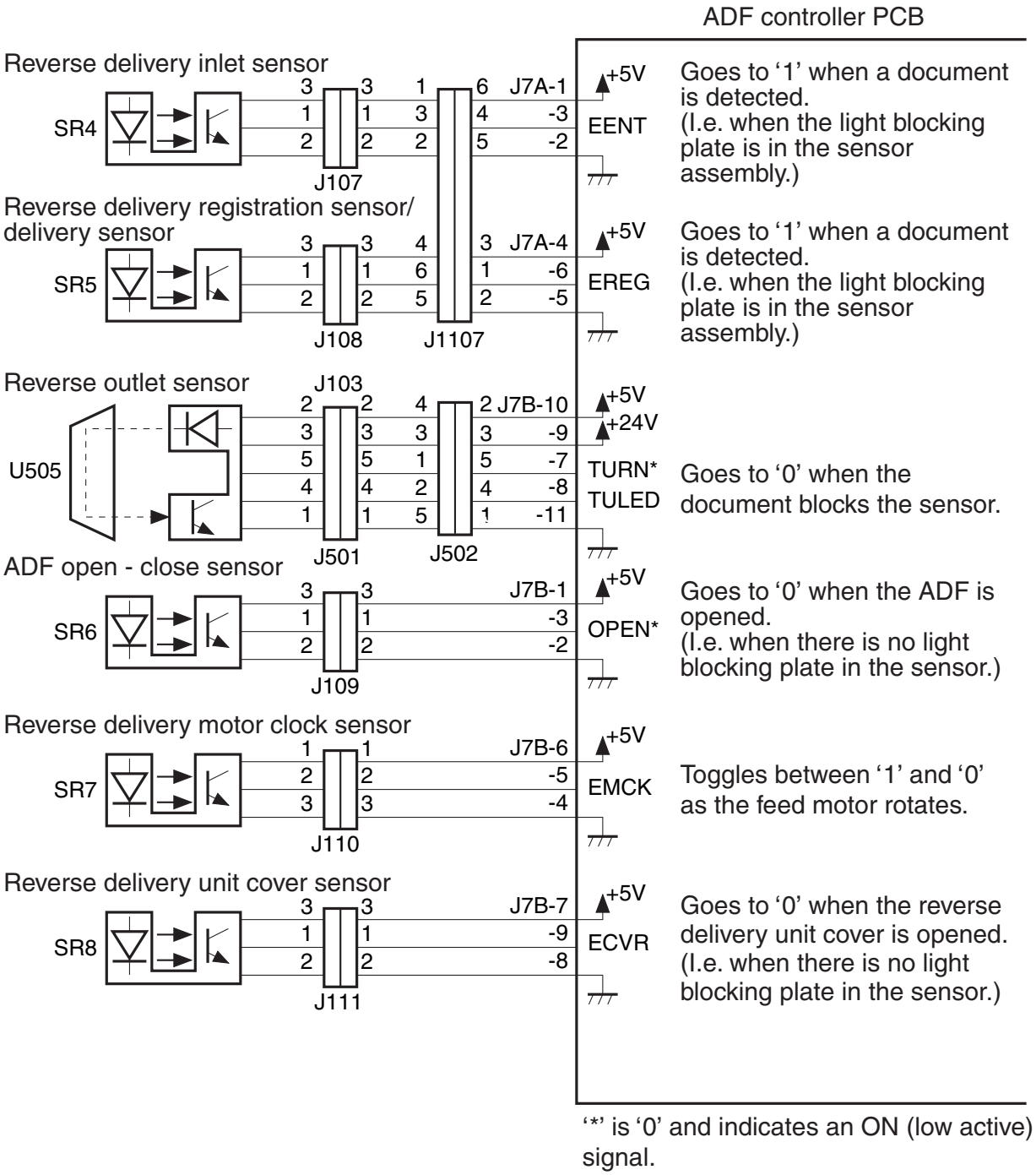
1.2.2 ADF controller circuit board input (2/2)



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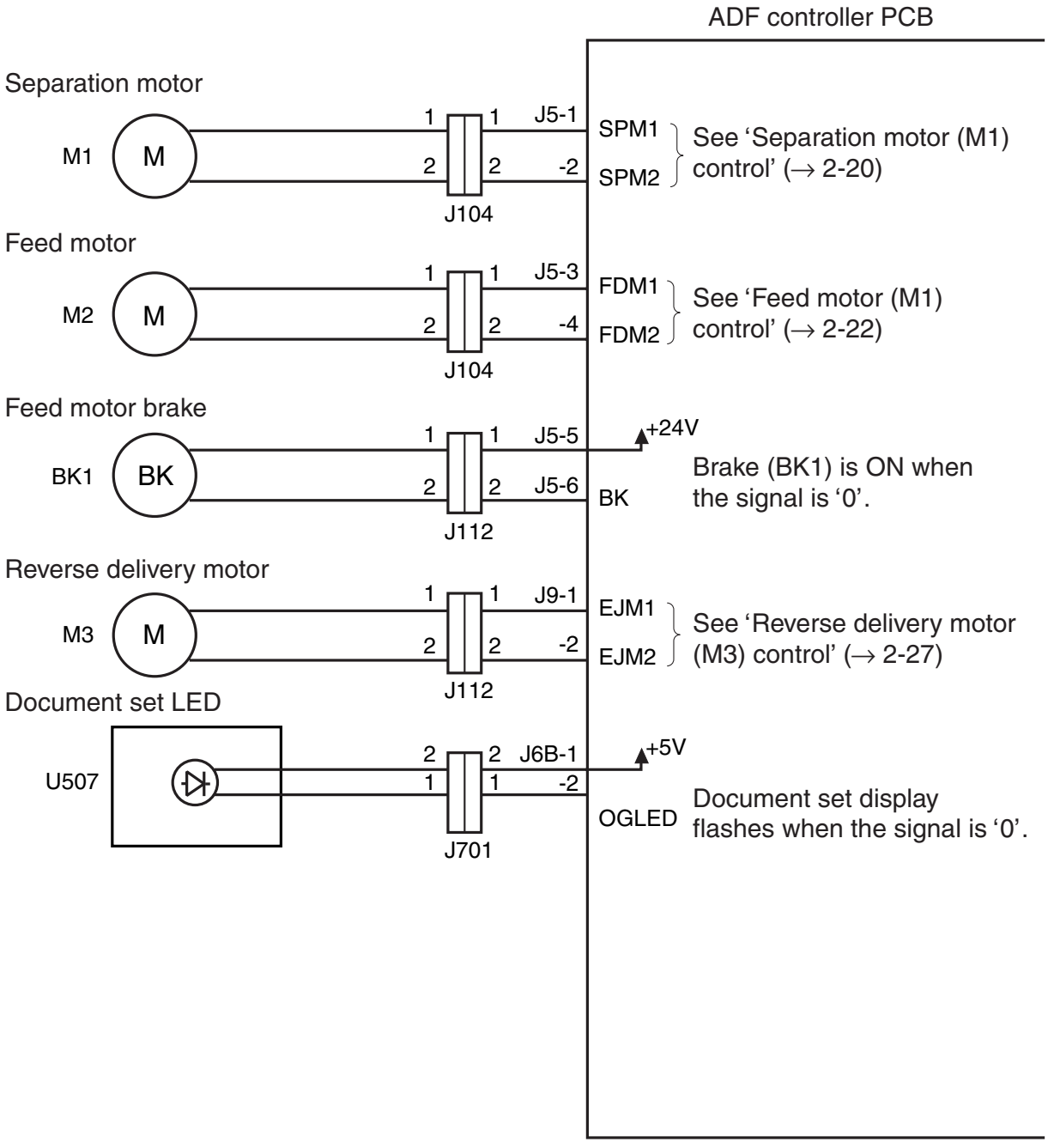
1.3 ADF controller circuit board output

1.3.1 ADF controller circuit board output (1/1)



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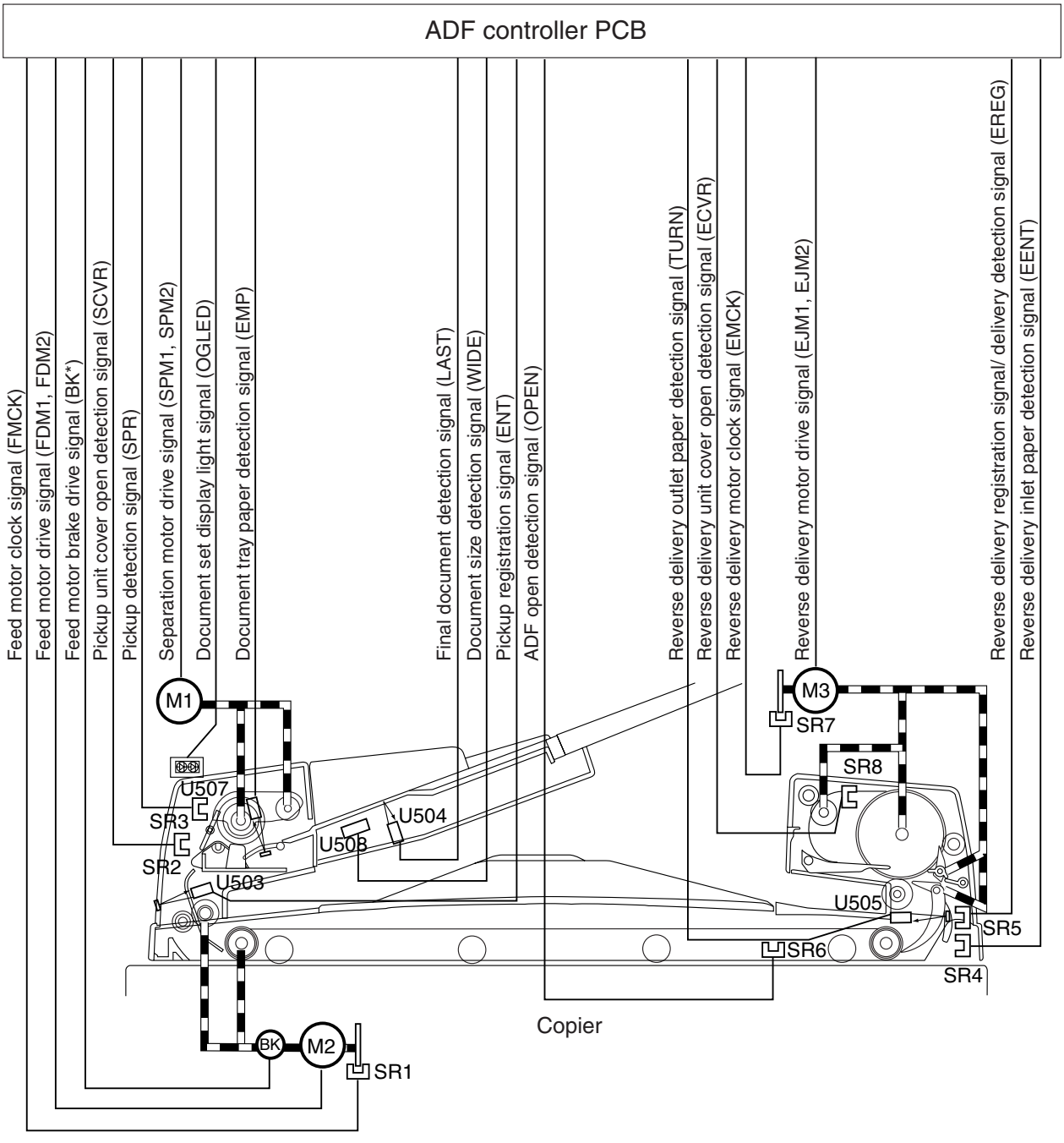
2 Basic operations

2.1 Overview

This unit has three motors and one brake to control document pickup, separation, feed and delivery (reverse).

Separation motor (M1):	Document separation and pickup
Feed motor (M2):	Feeding the document onto the copyboard glass, stopping the document and delivery.
Reverse delivery motor (M3):	Document delivery and reversal
Brake (BK):	Stops the feed motor (M2)



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2.2 Document detection

2.2.1 Overview

This unit is capable of the following three types of document detection.

a. Document presence

Detects whether there is a document on the document tray.

b. Document size detection

Detects the length (in the document feed direction) and width of the document.

c. Final document detection

Detects the trailing edge of the last document.

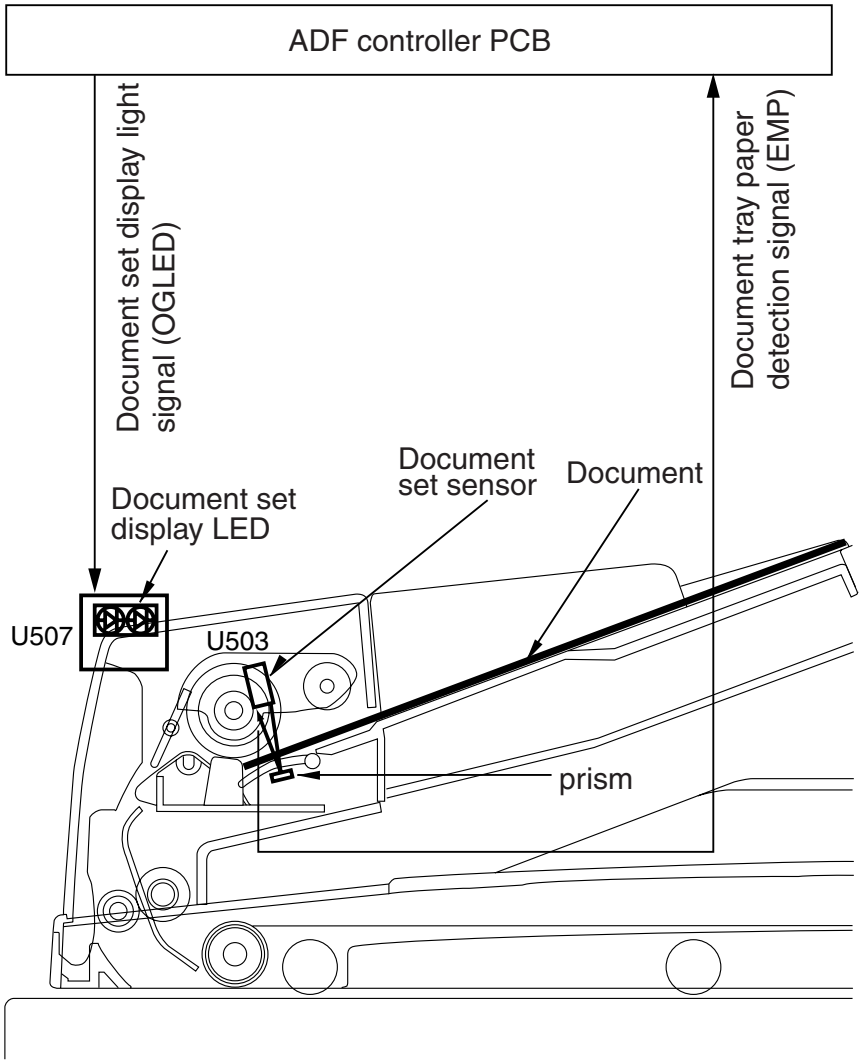
a. Document presence

Detected by document sensor (U503).

When a document is set on the document sensor, the light from the light emitting diode of the document sensor is blocked.

A document detection signal (EMP) is sent to the ADF controller PCB and the document set display light signal (OGLED) is emitted.

The document set display (U507) lights.



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b. Document size detection

Detects the length (in the document feed direction) and width of the document

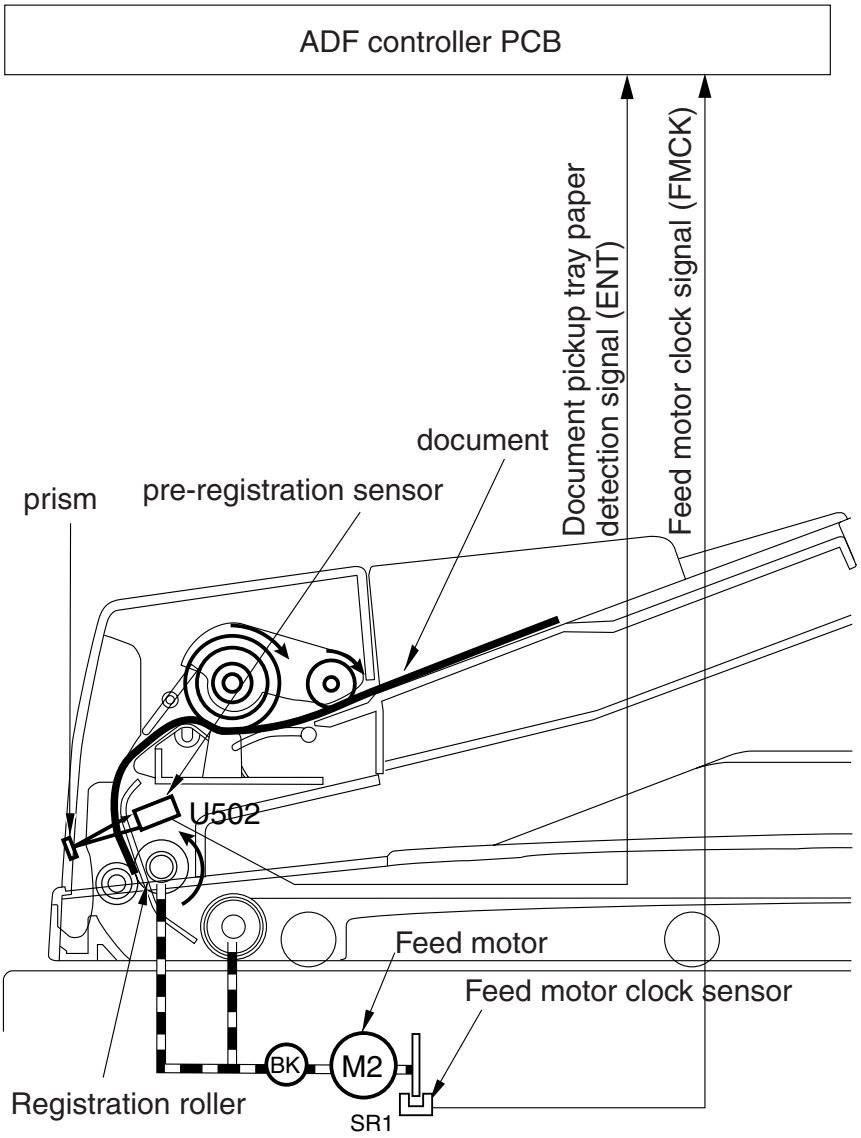
<Length detection>

Computed from the signals from the pre-registration sensor (U502) and the registration roller clock count.

The pre-registration sensor detects the leading edge (ON) and the trailing edge (OFF) of the document.

The length of the document as it passes the pre-registration sensor is computed from the clock count obtained from the feed motor clock sensor (SR1), and this is converted into document size in the feed direction.

The terms 'leading edge' and 'trailing edg e' refer to the downstream (leading) end of the document in the feeding direction and the upstream (trailing) end, respectively.



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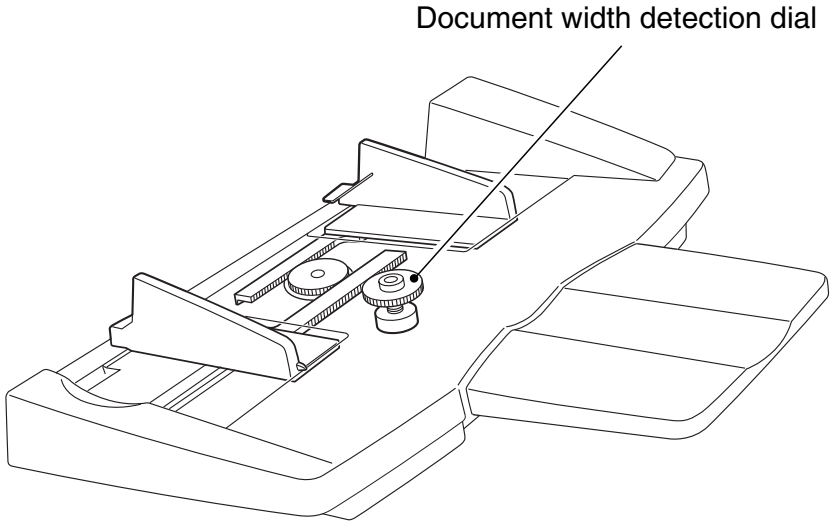
The ADF controller judges the standard sizes from these converted figures.

<Width detection>

This is done by the document width detection dial (U508) in the document pickup tray.

The document width detection dial works in conjunction with the slide guide and changes the voltage resistance value. The ADF controller changes the width based on the changed resistance.



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The copier accepts the document as a standard sized document, based on the length and width information received from this unit. The accepted standard sizes and their measurements are as shown below.

• A/B type DADF

Standard size	Length (mm)	Width (mm)
B5R	238 to 277	178 to 187
A5	130 to 169	206 to 215
A4R	278 to 169	
B5	163 to 202	253 to 262
B4	345 to 384	
COMPUTER	362 to 401	275 to 284
A4	191 to 230	293 to 297
A3	401 to 440	

The document will be judged of standard length if its length is within ± 10mm of standard size.
The document will be judged of standard width if its width is within ± 5mm of standard size.
Sizes outside of this range will be judged non-standard.

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• Inch type DADF

Standard size	Length (mm)	Width (mm)
STMT	121 to 160	212 to 221
LTRR	260 to 299	
FLSC	311 to 343	
LGL	344 to 376	
LTR	197 to 236	275 to 284
COMPUTER	362 to 401	
11 x 17 (297.4 to 431.8)	413 to 450	

The document will be judged of standard length if its length is within ± 10mm of standard size.
The document will be judged of standard width if its width is within ± 5mm of standard size.
Sizes outside of this range will be judged non-standard.

T02-202-02

• Inch/A /B type DADF

Standard size	Length (mm)	Width (mm)
BR5	238 to 277	178 to 187
A5	130 to 169	200 to 213
A4R	278 to 317	
STMT	121 to 160	214 to 221
LTRR	260 to 299	
FLSC	311 to 343	
LGL	344 to 376	
B5	163 to 202	253 to 262
B4	345 to 384	
LTR	197 to 236	275 to 284
COMPUTER	362 to 401	
11 x 17(297.4 to 431.8)	413 to 450	
A4	191 to 230	293 to 297
A3	401 to 440	

The document will be judged of standard length if its length is within ± 20mm of standard size.
The document will be judged of standard width if its width is within ± 5mm of standard size.
Sizes outside of this range will be judged non-standard.

T02-202-03

c. Final document detection

Detects the trailing edge of the last document.

Immediately after the first document page has been picked up, this unit sends the next page on to the pre-registration sensor position. (Advance separation. However, DADF-K1 does not perform advance separation if the document is large sized.)

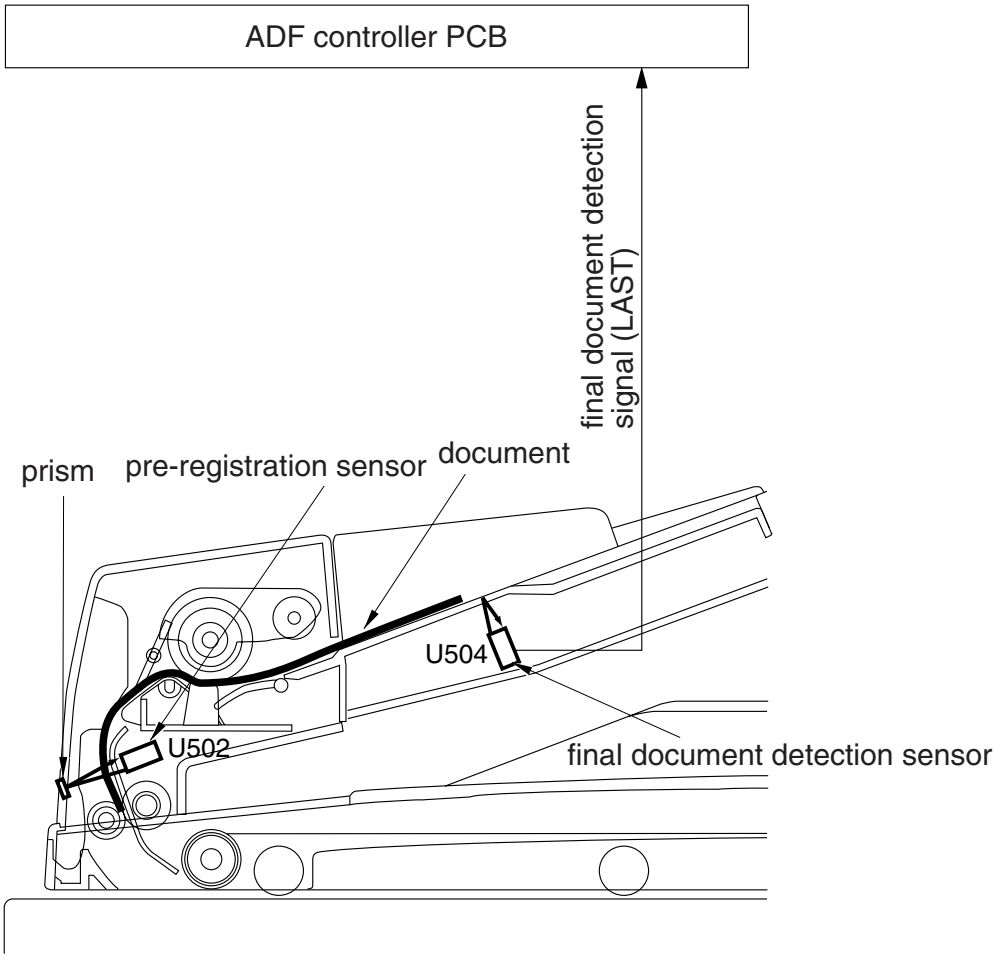
If no document is detected by the final document detection sensor, the ADF controller judges that the final document has been picked up.

A final document detection signal (LAST) is sent on to the copier main unit, and the copier then knows not to pickup any more paper.

<Final document detection document sizes>

· Standard sizes: B5, A4, LTR

· Length: 165 to 226mm



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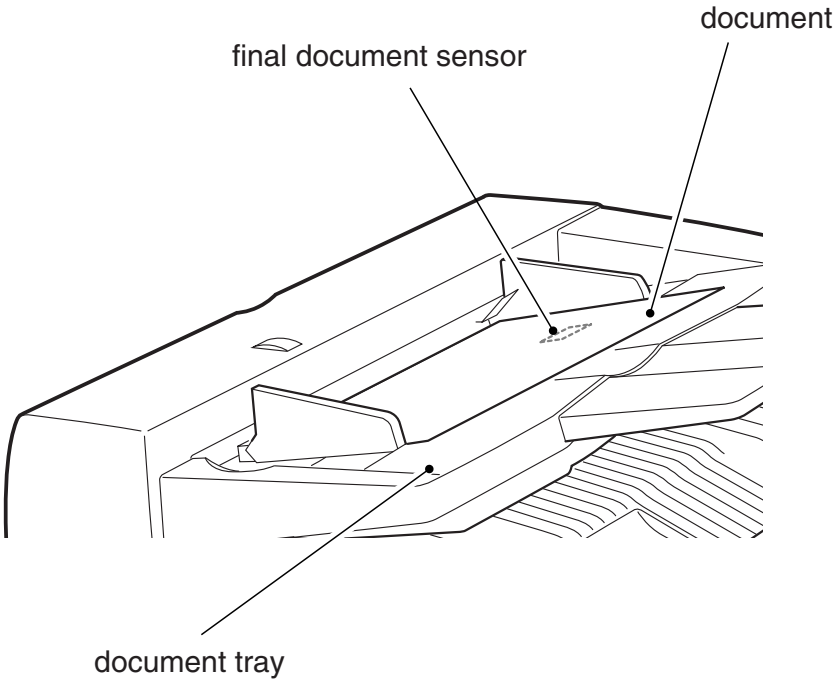

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■ Counting Originals

The number of times that the registration sensor has turned on in response to the trailing edge of an original is used as the number of originals.

The ADF is not equipped with an original feed mode for counting originals when making double-sided copies of single-sided originals.

The originals are copied in order of how they are picked up and delivered accordingly.

2.3 Document pickup/separation

2.3.1 Overview

The first (top) page of the document is separated as described below.

The pickup roller and lifter are raised so as to pinch the whole document.

→ The separation roller rotates.

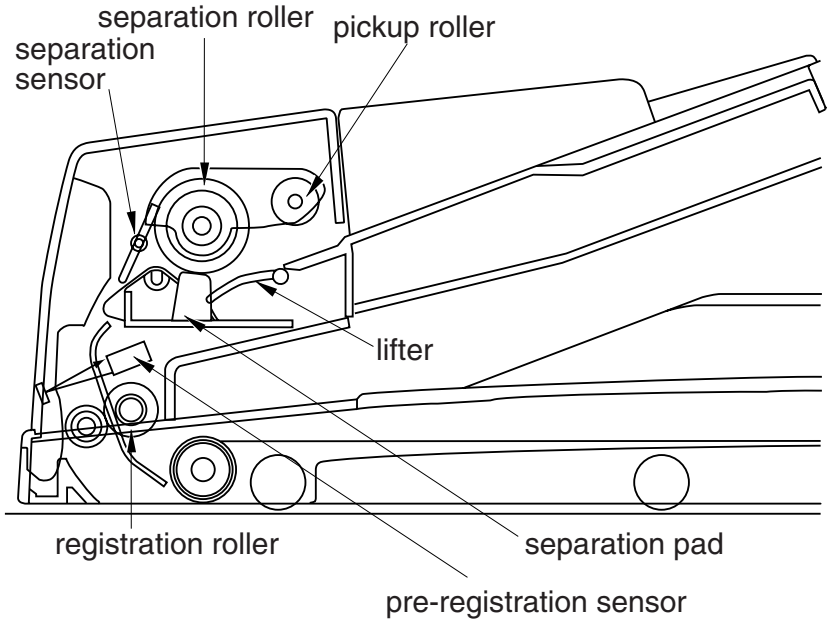
→ The separation roller rotates on top of the document that has been pushed up against the separation pad.

Pickup roller descent/lifter elevation: separation motor (M1) is rotated in reverse.

Pickup roller elevation/lifter descent/separation roller rotation: separation motor (M1) rotates forward.

The separation unit has a separation sensor (SR3) in it which monitors the feed status of the document.

When a document is set in the document tray and the START key pressed on the copier main unit, pickup and separation are performed as per diagram below.



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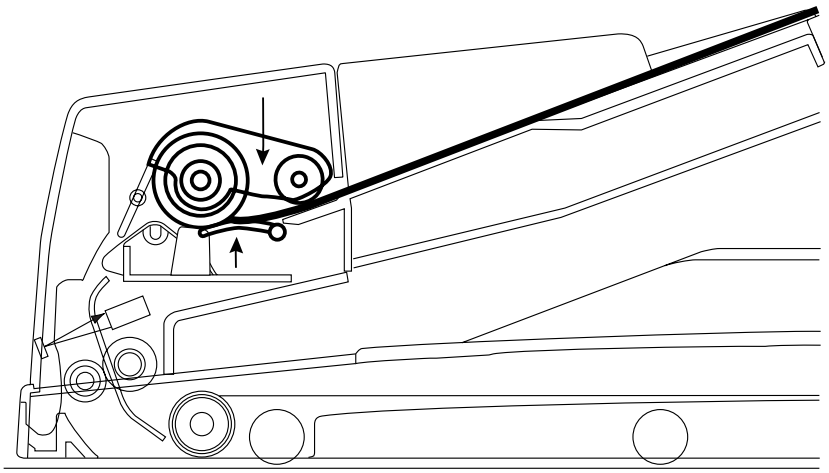
1) Elevation operation start (pre-separation)
The separation motor (M1) rotates in reverse and the separation lifter rises. The pickup roller (which lifts up the document) is lowered onto the topmost document page and presses down on the document. The separation motor rotates in reverse for 250msec. and then stops.



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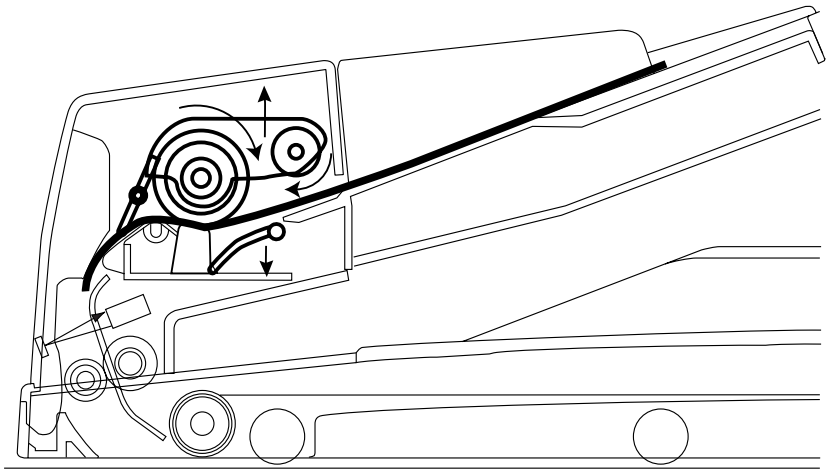
2) Pickup separation operation
The separation motor (M1) rotates forward and the pickup roller picks up the first page of the document. Only the topmost sheet, which is in contact with the separation pad, is separated and then sent on to the registration roller. Then, the lifter descends and the pickup roller ascends.



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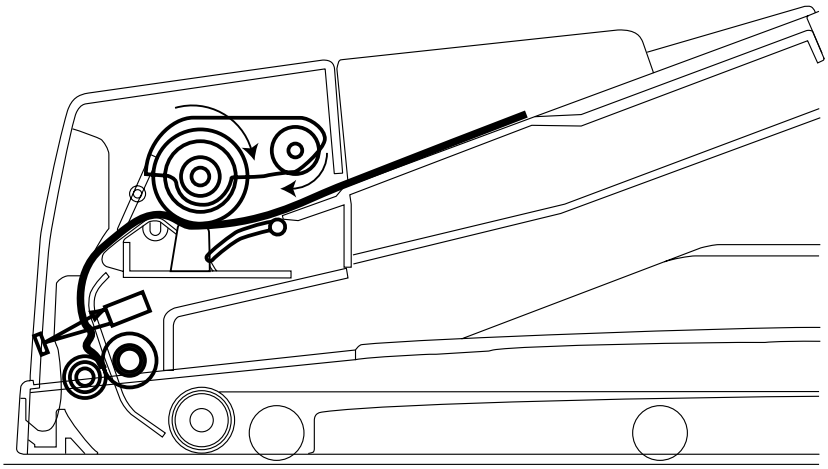
3) Loop operation
The first page is pushed against the registration roller, where it forms a loop.
The separation roller stops 52 sec. after the pre-registration sensor (U502) detects the leading edge of the document.



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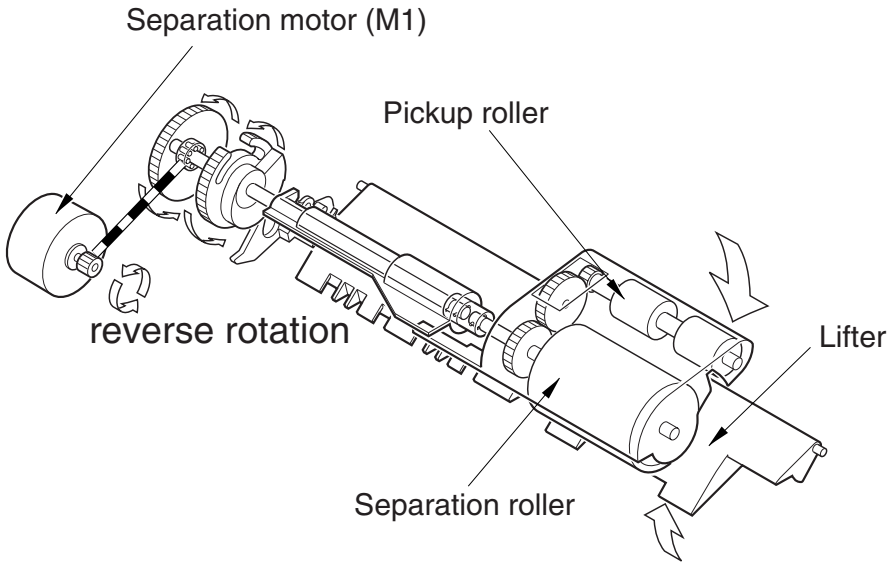
2.3.2 Pickup roller unit elevation

The pickup roller and lifter ascend and descend in conjunction with the operation of the separation motor (M1).

■ Separation motor reverse rotation
When the separation motor rotates in reverse, the lock retaining the pickup roller is released and the roller descends under its own weight. Drive is transmitted through the lifter arm and the lifter ascends. In this way, the unit gets ready to pick up the document.



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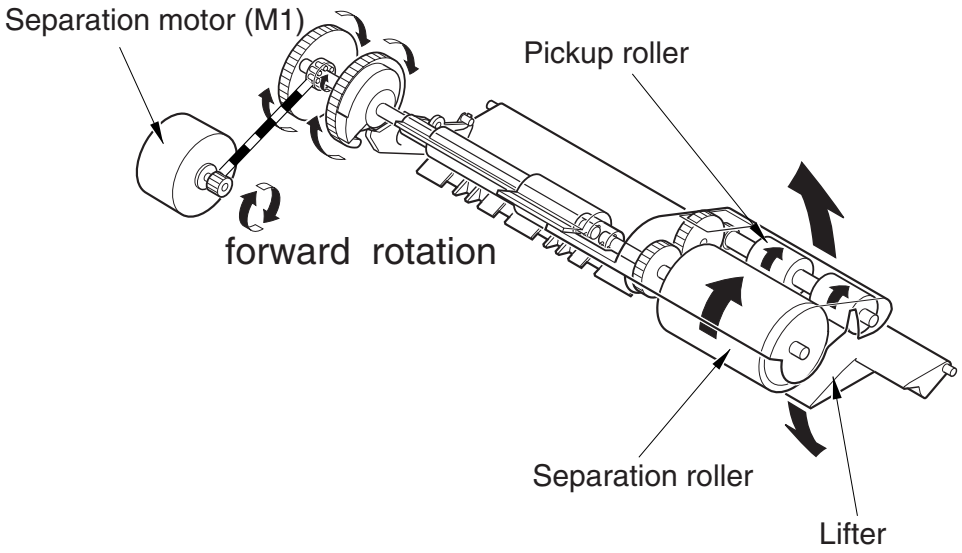
■ Separation motor forward rotation
When the separation motor (M1) rotates forward, the lifter begins to descend. Then, the pickup roller returns to the upper position. Only when the separation motor is rotating forward, the rotation drive force is transmitted and the separation roller and pickup roller begin to rotate.



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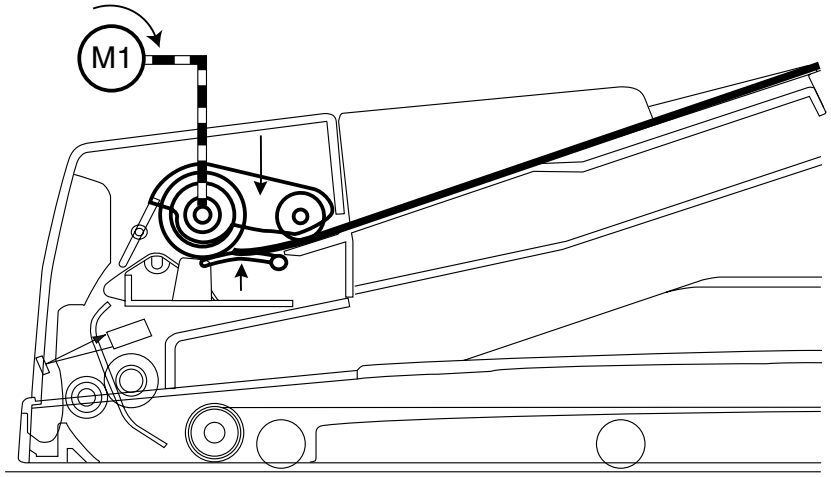
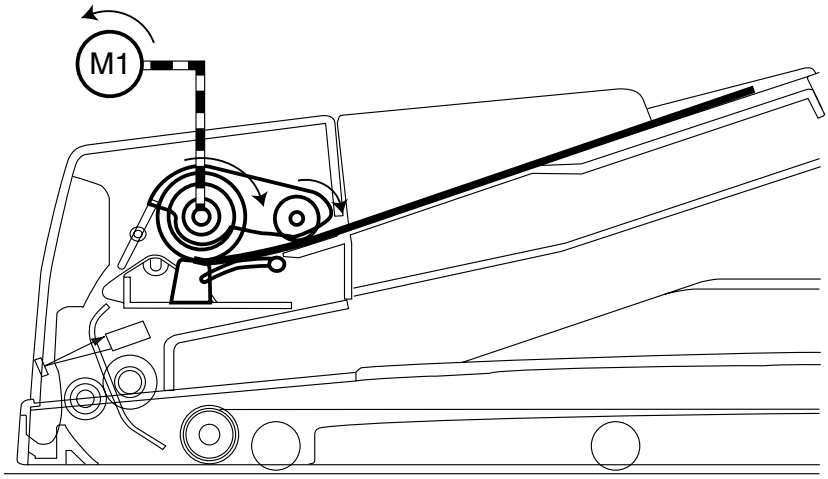
1) When the copier START key is pressed, the separation motor (M1) begins to rotate in reverse. The motor stops after 250msec. and the lifting operation also stops.



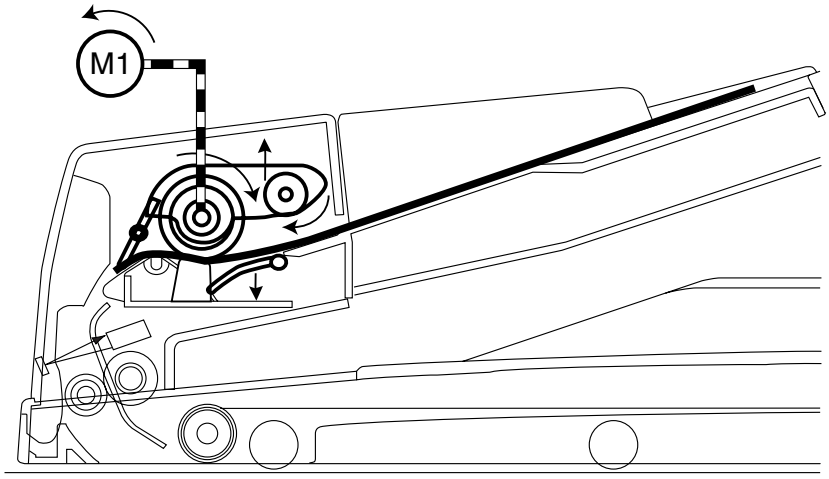
F02-203-07

2) Once the pickup roller has stopped descending and the lifter has stopped ascending, the separation roller begins to rotate forward.



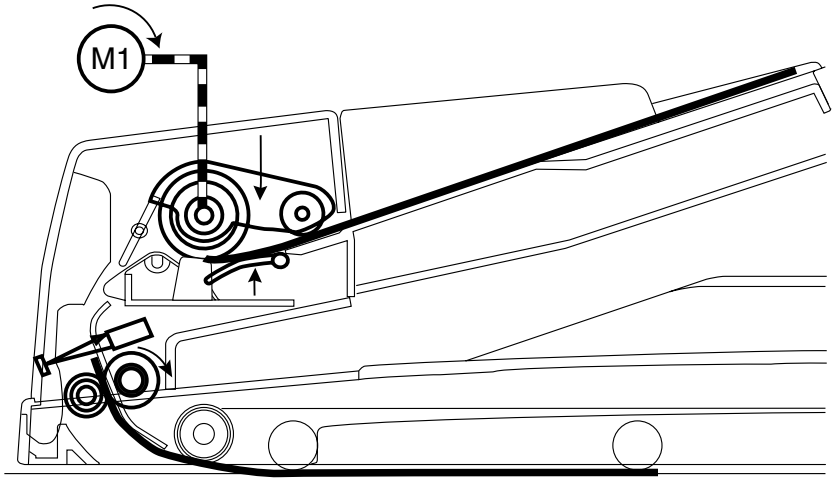
F02-203-08

3) After the separation motor has been rotating for a while, the lifter descends. Then, the pickup roller rotates and rises up from the document surface (and returns to its standby position).



F02-203-09

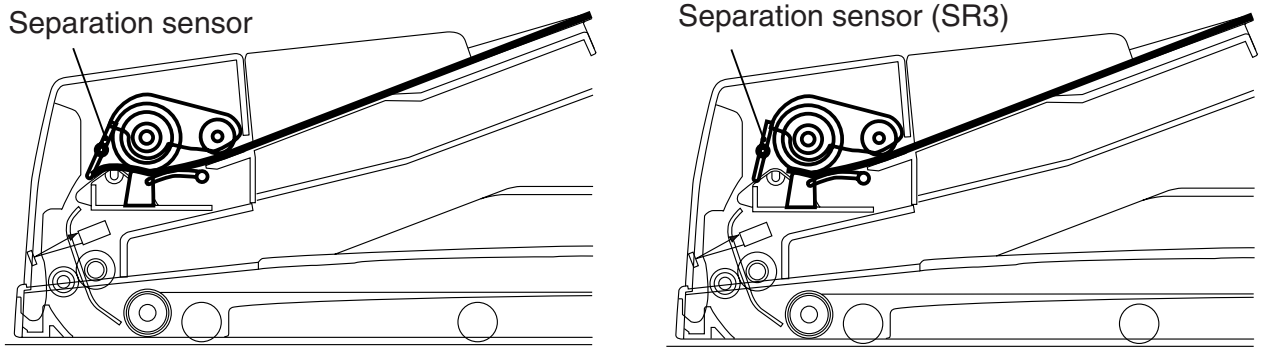
4) When the pre-registration sensor (U508) detects the trailing edge of the document (OFF), the separation motor begins to rotate in reverse once again. The lifter comes up and lifts up the document.



F02-203-10

2.3.3 Separation sensor (SR3)

There is a separation sensor (SR3) in the document feed path, which monitors the document feed status. After the document has been fed on by the forward rotation of the separation motor, if the sensor cannot detect the presence of a document after a prescribed period of time, the ADF controller will judge that some kind of separation malfunction (delay) has occurred and will display a jam warning on the control panel.



F02-203-11

2.3.4 Separation motor (M1) control

Below is an overview of the control circuit of the separation motor (M1: DC motor).

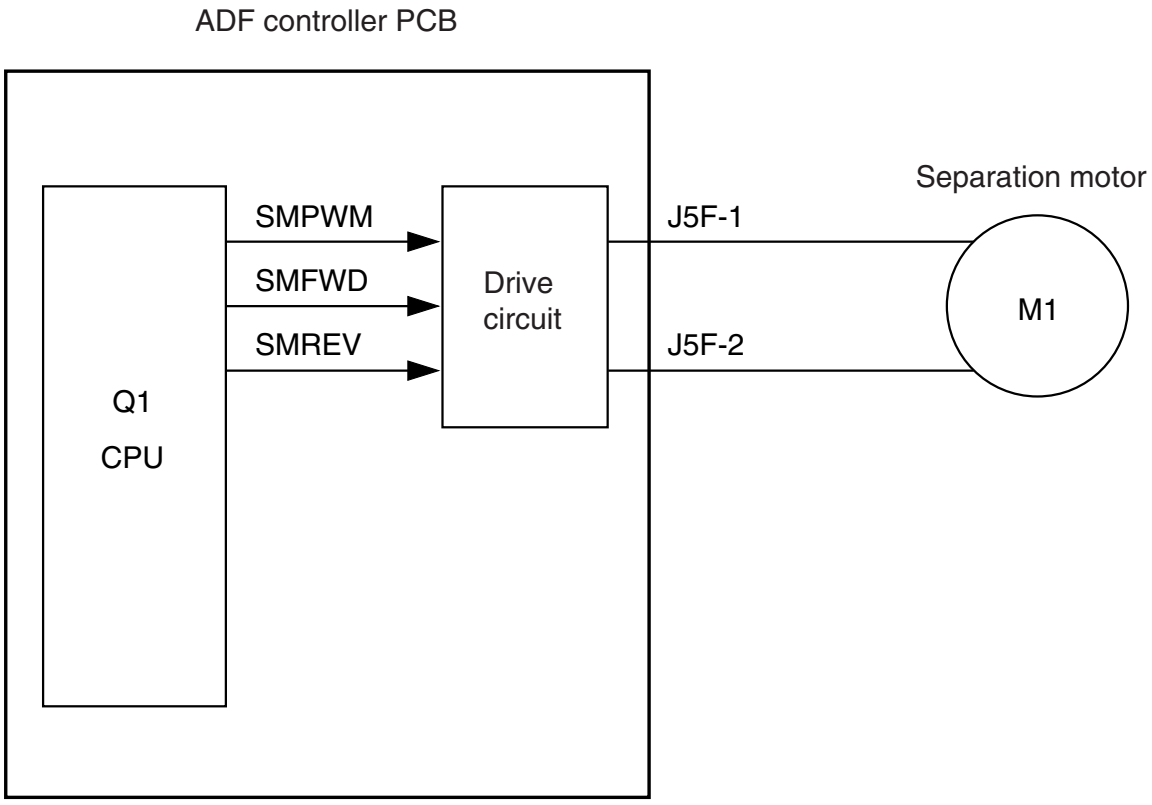
CPU (Q1) on the ADF controller PCB sends 3 types of signals to the drive circuit assembly,

· separation motor rotation speed control signal (SMPWMP)

· separation motor rotation direction signals (SMFWD, SMREV)

The drive circuit assembly drives the separation motor according to the signals received.

The rotation speed control signal (SMPWMP) is always fixed and will not be corrected even if the separation motor rotation speed is altered by some external force.



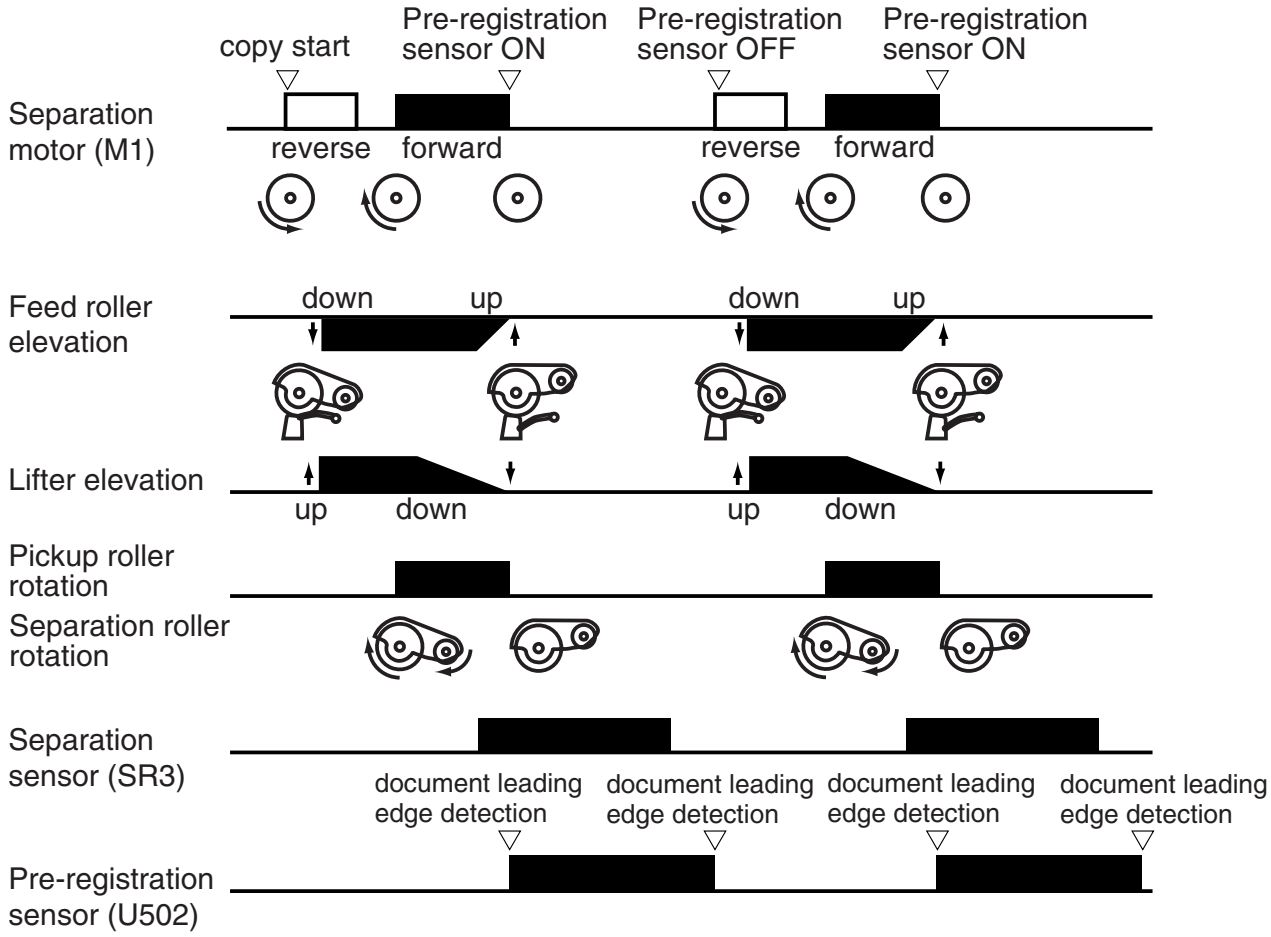
F02-203-12

The relationships between the signals and the separation motor are as described below.

separation motor rotation speed control signal (SMPWMP)	separation motor rotation direction signal SMFWD	separation motor rotation direction signal SMREV	separation motor operation
'0'	'0'	'0'	Stop
'1'	'0'	'1'	Forward
'1'	'1'	'0'	Reverse

T02-203-01

2.3.5 Operation timing (pickup assembly)

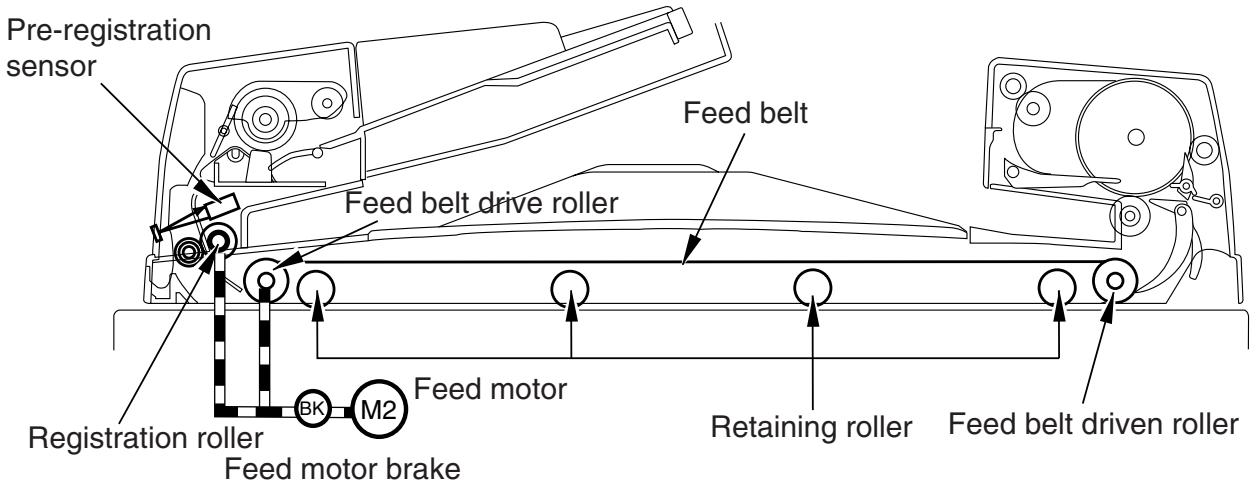


F02-203-13

2.4 Document feeding

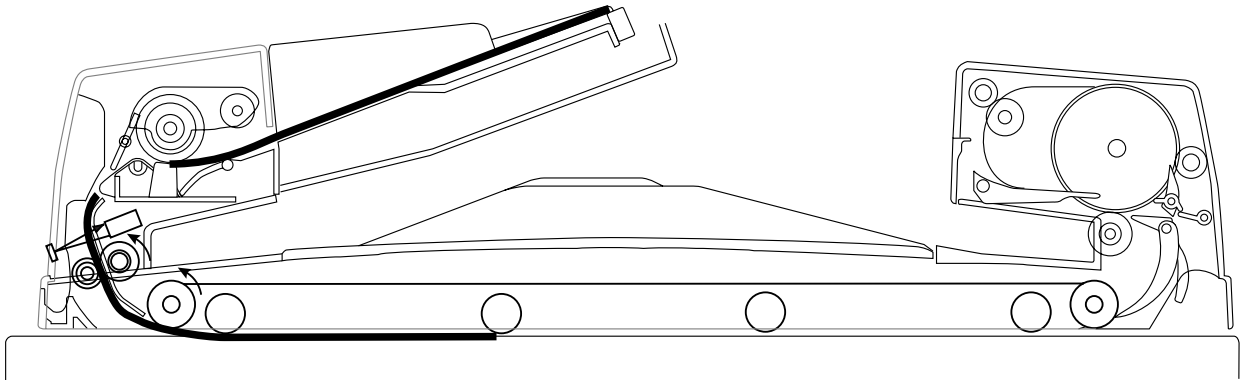
2.4.1 Overview

The drive from the feed motor (M2) causes the registration roller and feed belt drive roller to rotate. The document feed direction will switch between forward and reverse, depending on the document size (small size, large size) and the operating mode (single sided, double sided, etc.).



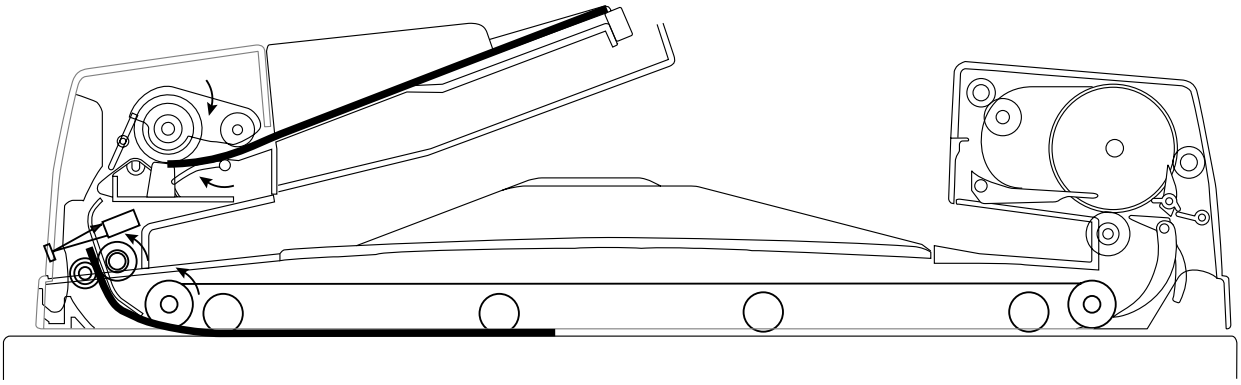
F02-204-01

1) Feeding starts
After the document has been fed on to the separation unit, the feed motor (M2) rotates forward and the document is fed onto the copyboard glass.



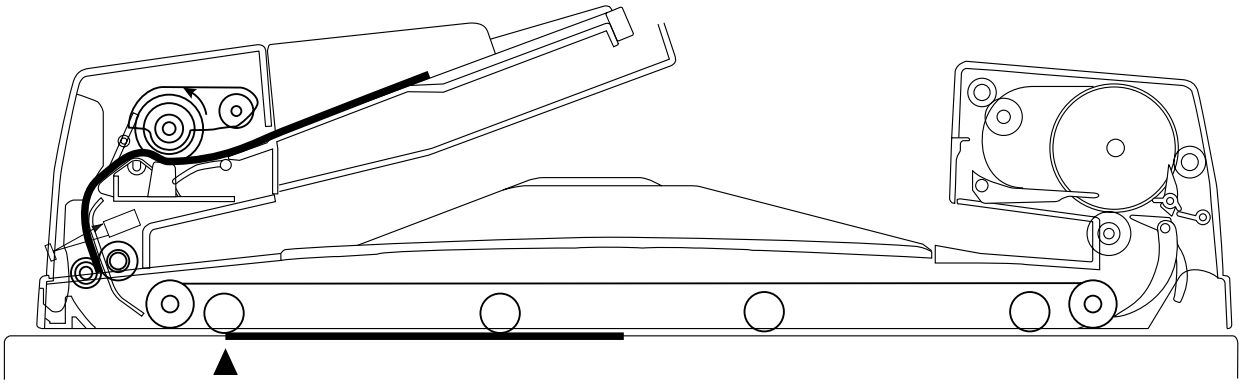
F02-204-01

2) Deceleration control
Once the pre-registration sensor (U502) detects the trailing edge of the document, the document length (in the forward direction) is computed from the time of the pre-registration sensor detection and the feed motor clock count.



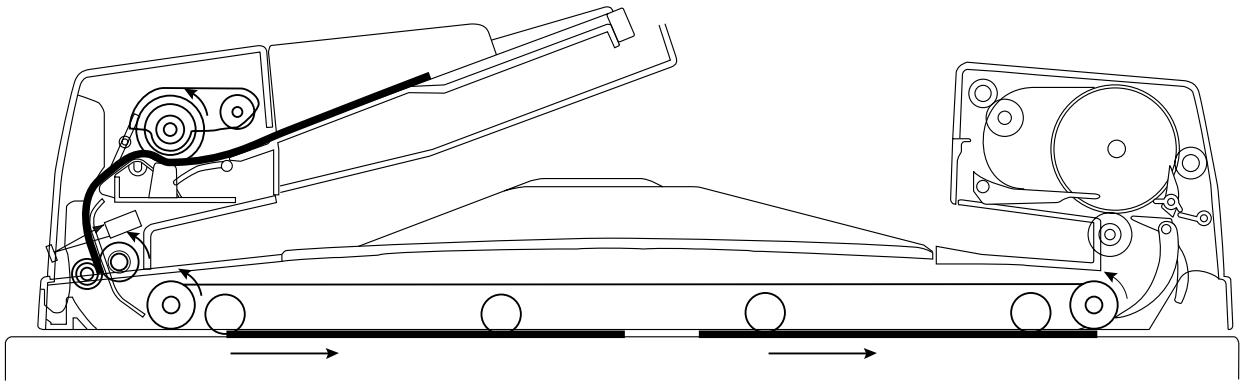
F02-204-03

3) Separation stops (copying begins)
When the document has been fed onto the copyboard glass and positioned, the feed motor brake (BK) engages and stops the feeding operation.



F02-204-04

4) Delivery begins (copying stops)
The feed motor (M2) rotates forward and the document is fed to the reverse delivery assembly.



F02-204-05

2.4.2 Feed motor (M2) control

Below is an overview of the control circuit of the feed motor (M2: DC motor).

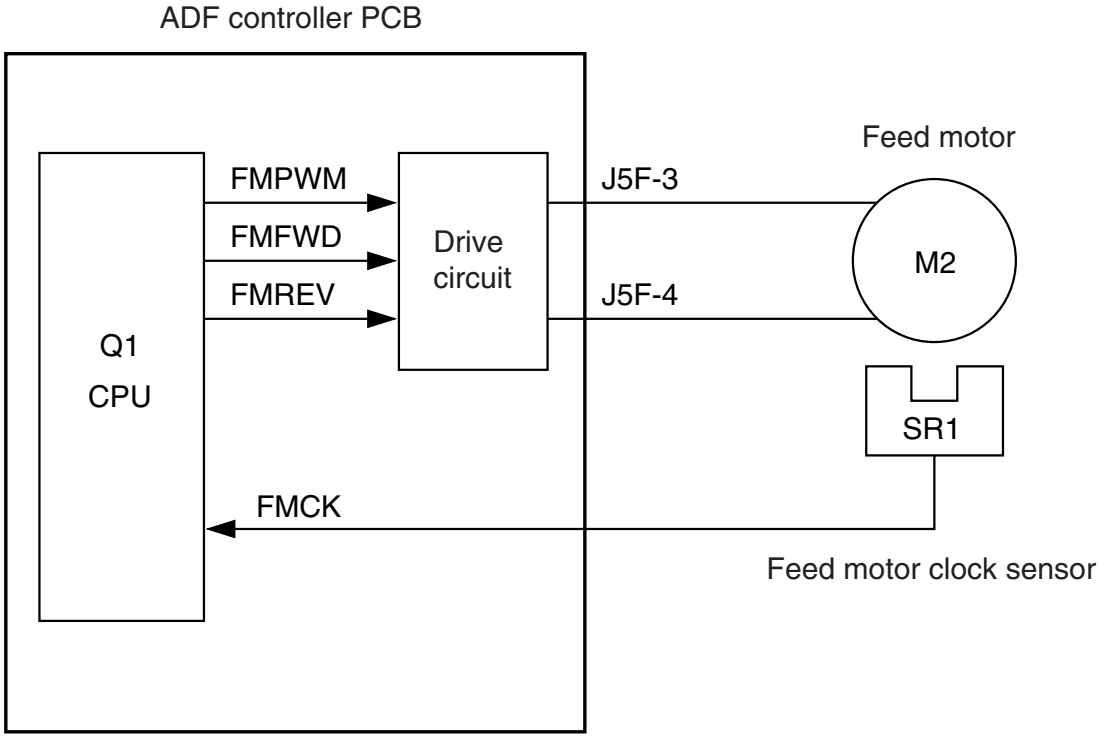
CPU (Q1) on the ADF controller PCB sends 3 types of signals to the drive circuit assembly,

· feed motor rotation speed control signal (FMPWM)

· feed motor rotation direction signals (FMFWD, FMREV)

The drive circuit assembly drives the separation motor according to the signals received.

When the feed motor rotates, a feed motor clock signal (FMCK) is sent to the CPU by the feed clock sensor (SR1). Based on this signal, the CPU changes the feed motor rotation speed control signal (FMPWM) to match the set speed.



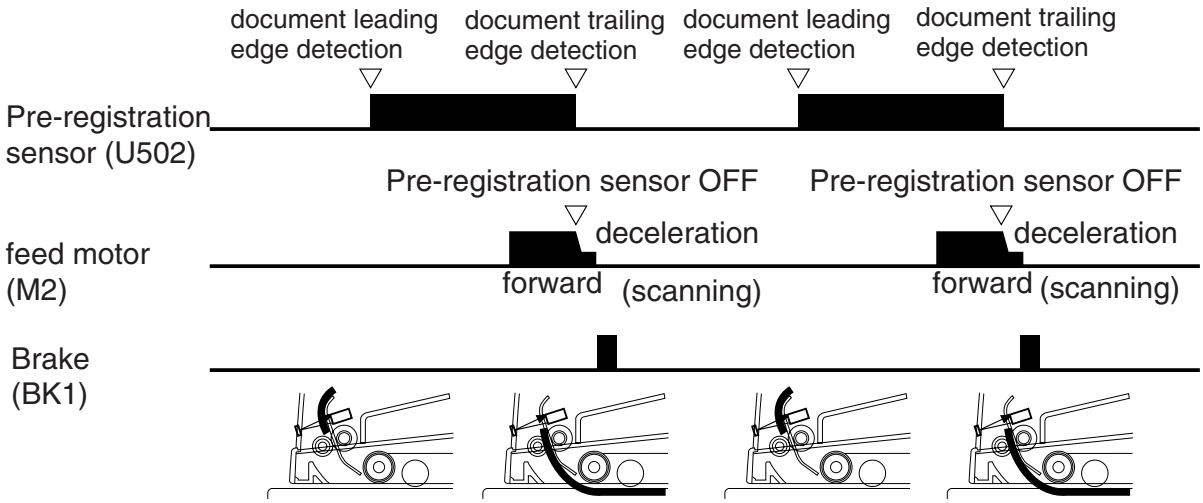
F02-204-06

The relationships between the signals and the separation motor are as described below.

feed motor rotation speed control signal (FMPWM)	feed motor rotation direction signal FMFWD	feed motor rotation direction signal FMREV	feed motor operation
'0'	'0'	'0'	Stop
'1'	'0'	'1'	Forward
'1'	'1'	'0'	Reverse

T02-204-01

2.4.3 Operation timing (feed assembly)



F02-204-07

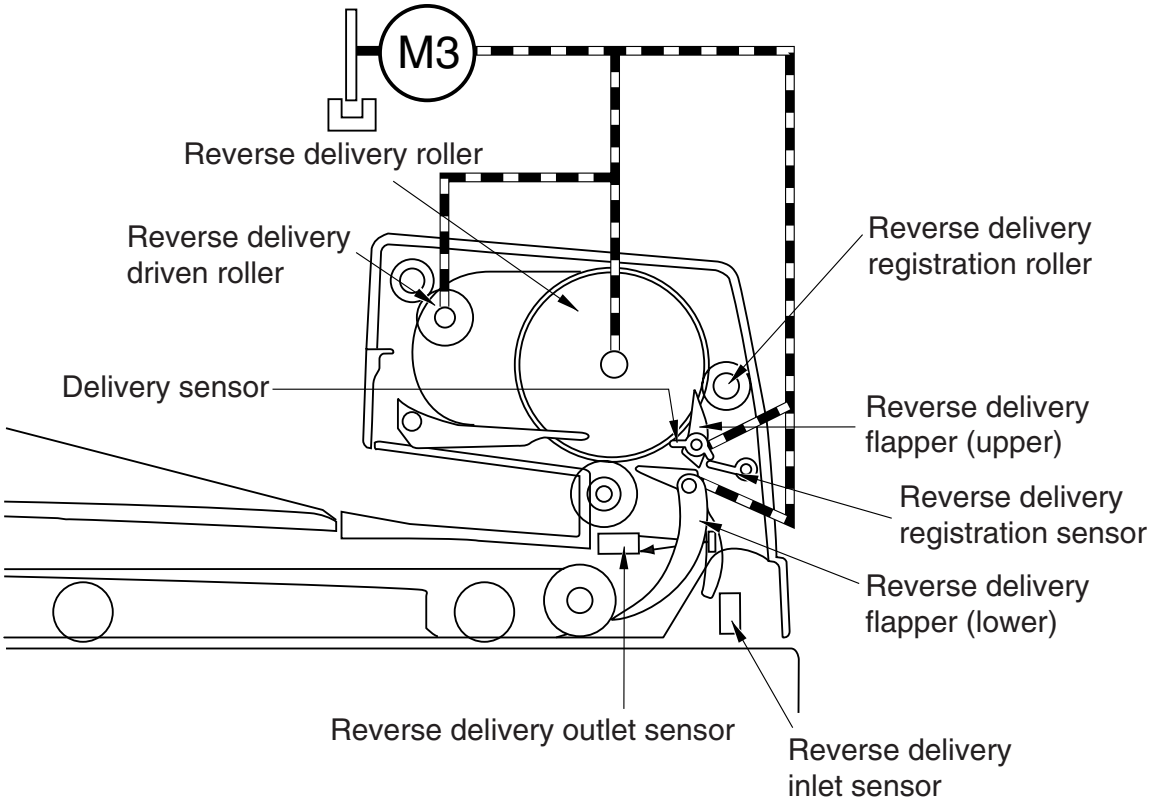
2.5 Document reversal/delivery

2.5.1 Overview

The reverse delivery motor (M3) drive causes the reverse delivery roller and reverse delivery driven roller to rotate.

In this unit, after feeding in the feeding direction, the feeding path is switched and the reverse delivery motor rotates in reverse to deliver the paper. (The document is delivered from the fist page, face down in the delivery tray.)

The switching of the feed path is done by the opening and closing of two flappers.



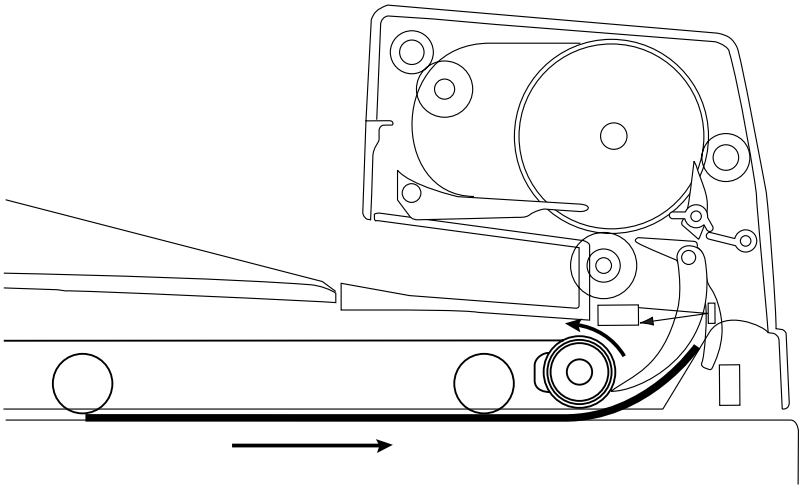
F02-205-01

a. With small sized paper (A5, A4, B5, STMT, LTR)

The reverse delivery motor (3) rotates forward and the document is brought into the small size switchback position.

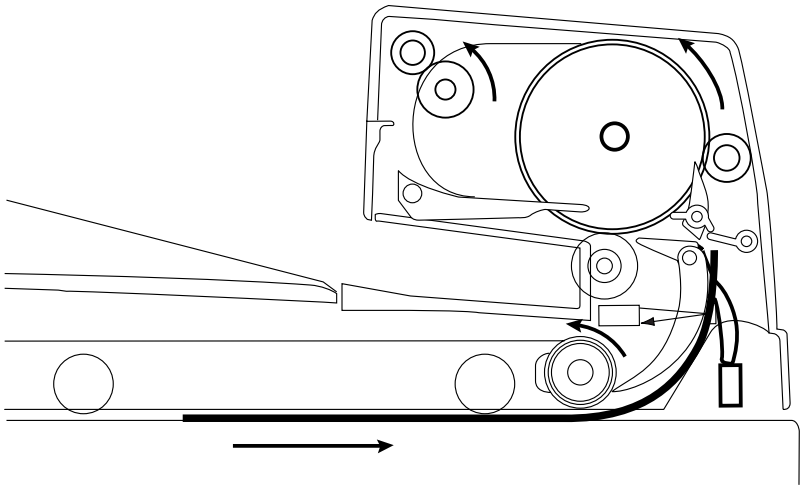
The reverse delivery motor then rotates in reverse and the document is delivered face down into the document delivery tray.

1) Delivery starts
The feed motor (M2) rotates forward and carries the paper to the reverse delivery assembly.



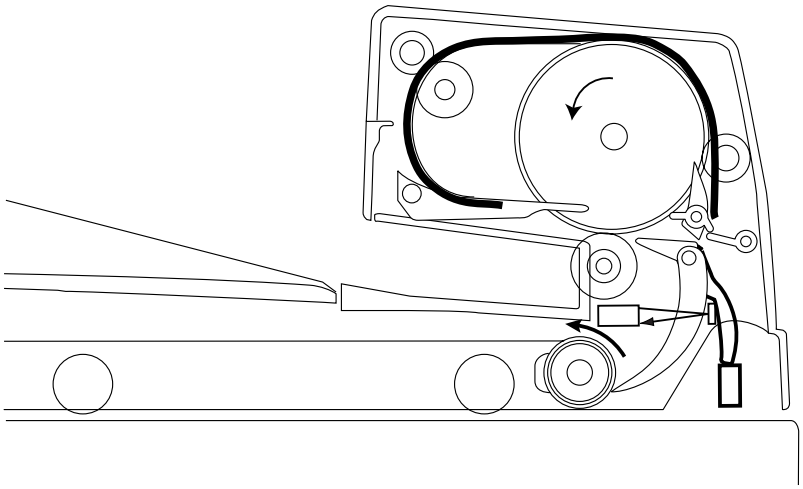
F02-205-02

2) Delivery operation (forward rotation)
The reverse delivery registration sensor (SR5) detects (ON) the document leading edge and the reverse delivery motor (M3) rotates forward. (The document is sent to the reverse delivery assembly.)



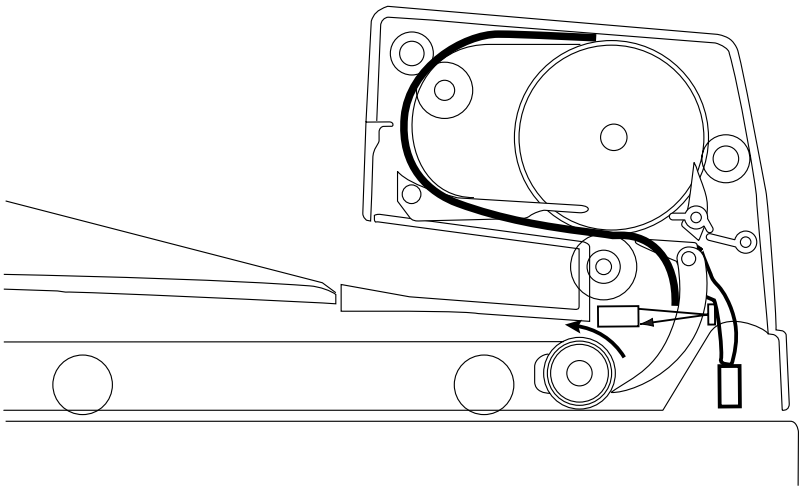
F02-205-03

3) Delivery operation (reverse rotation)
The reverse delivery registration sensor (SR5) detects (OFF) the trailing edge of the document.



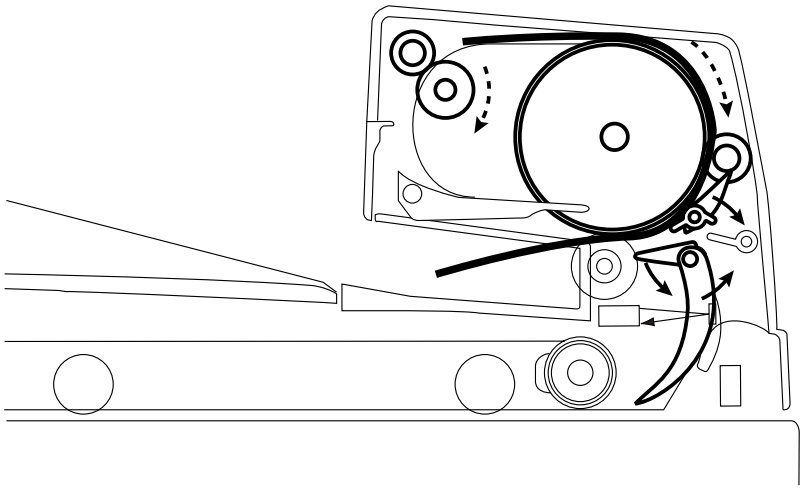
F02-205-04

The reverse delivery motor (M3) feeds the document until the leading edge is in the switchback position and then stops.



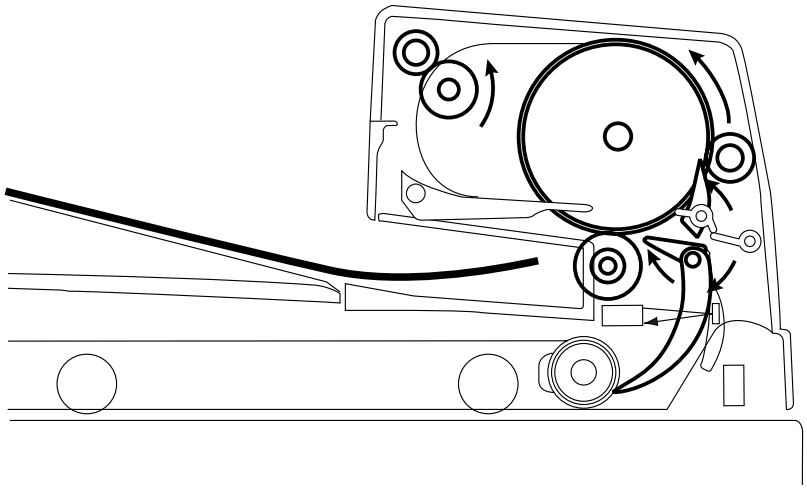
F02-205-05

4) Deceleration control
After the delivery operation has been performed, the reverse delivery motor (M3) rotates in reverse. The reverse delivery sensor (SR5) detects the leading edge of the document and feeds it on for the prescribed amount. Then the reverse delivery motor begins to decelerate.



F02-205-06

5) Delivery operation stops
After decelerating, the reverse delivery motor rotates in reverse until the document is fed into the document delivery tray and then stops.
After stopping, The motor again rotates the equivalent of 60mm and the flapper closes.



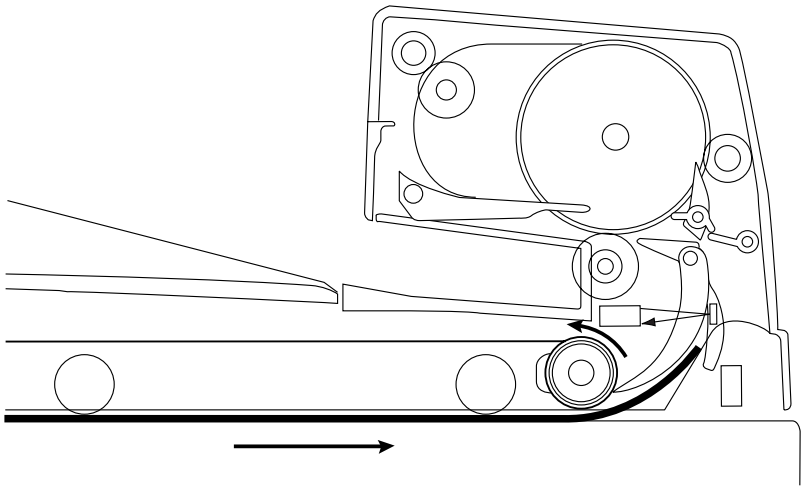
F02-205-07

b. With small sized paper (A4R, B5R, A3, LTRR, LGL, 11 x 17)

The reverse delivery motor (M3) rotates forward and the document is brought into the large size reverse position.

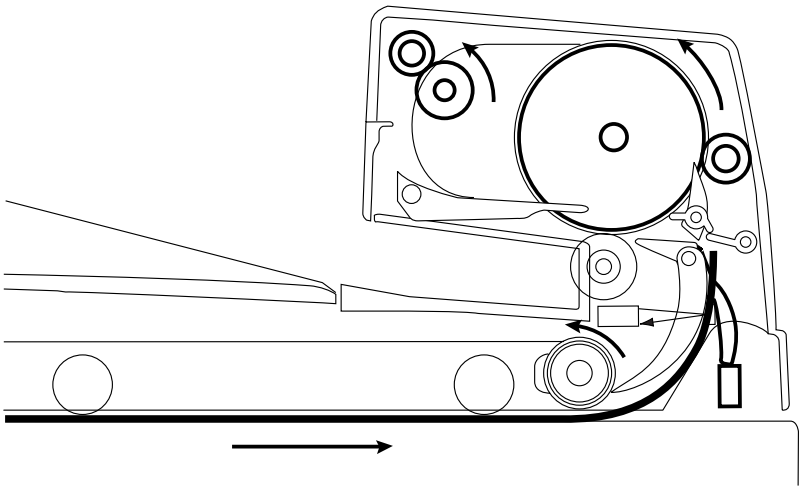
The reverse delivery motor then rotates in reverse and the document is delivered face down into the document delivery tray.

1) Delivery starts
The feed motor (M2) rotates forward and carries the paper to the reverse delivery assembly.



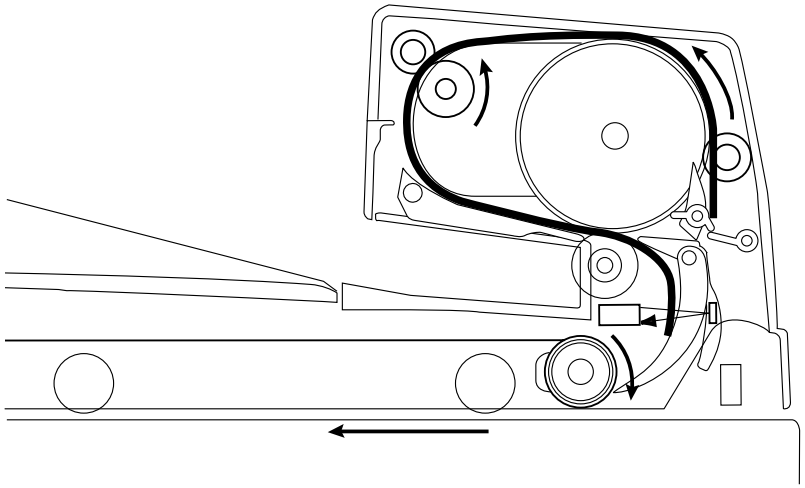
F02-205-08

2) Delivery operation (forward rotation)
The reverse delivery inlet sensor (SR4) detects (ON) the document leading edge and the reverse delivery motor (M3) rotates forward. (The document is sent to the reverse delivery assembly.)
The document is fed along the path with the flapper closed.



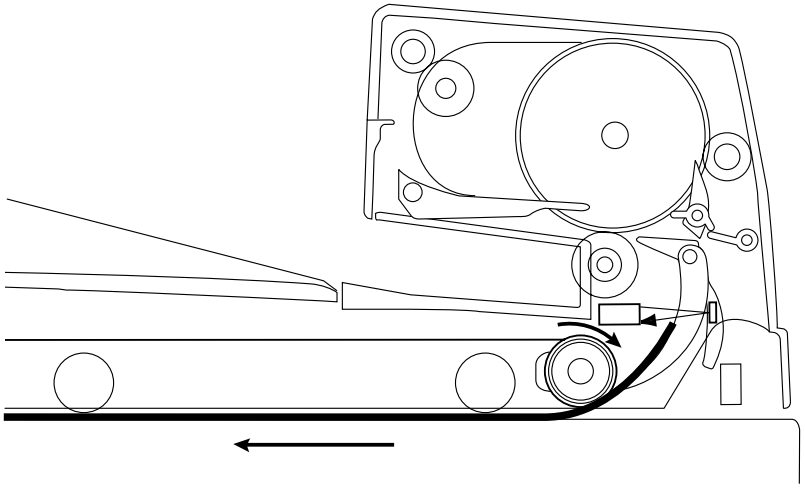
F02-205-09

3) Reversal begins
The reverse inlet sensor (U505) detects (ON) the leading edge of the document and the feed motor (M2) rotates in reverse. (The document is returned to the copyboard glass.)



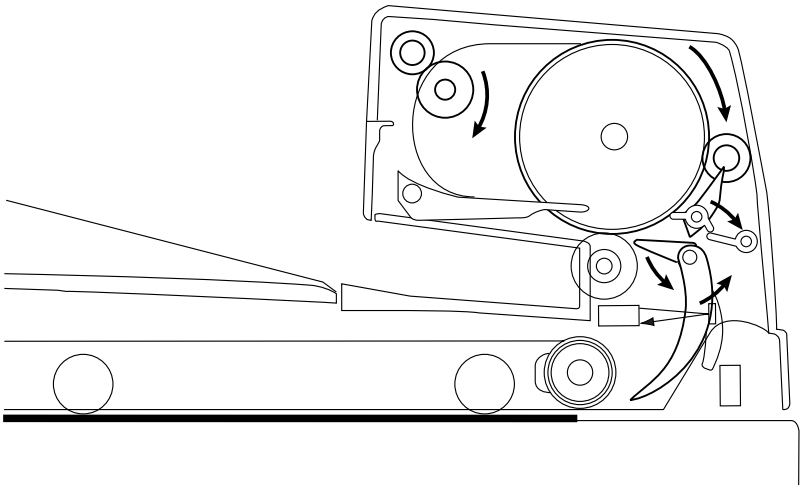
F02-205-10

4) The reverse inlet sensor (U505) detects (OFF) the trailing edge of the document. The delivery motor (M2) feeds the document till the leading edge is in the reverse stop position and then stops.



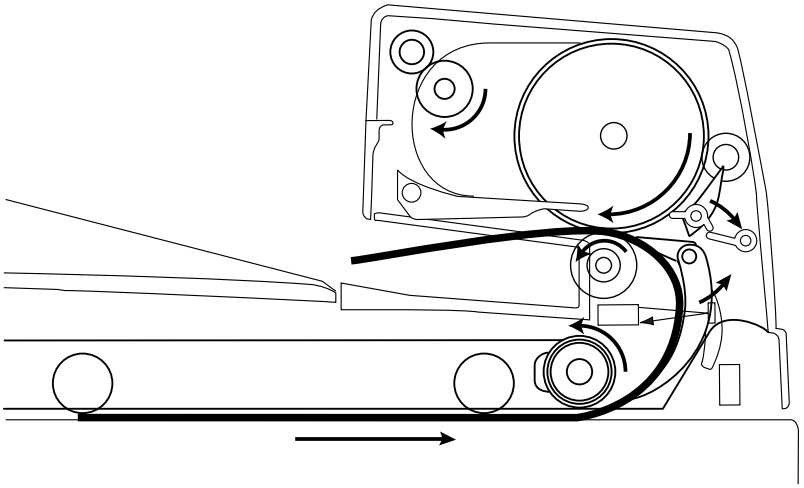
F02-205-11

5) Feed path switching
When the document has stopped in the reverse stop position, the reverse delivery motor (M3) rotates in reverse the equivalent of 60mm and the flapper opens.



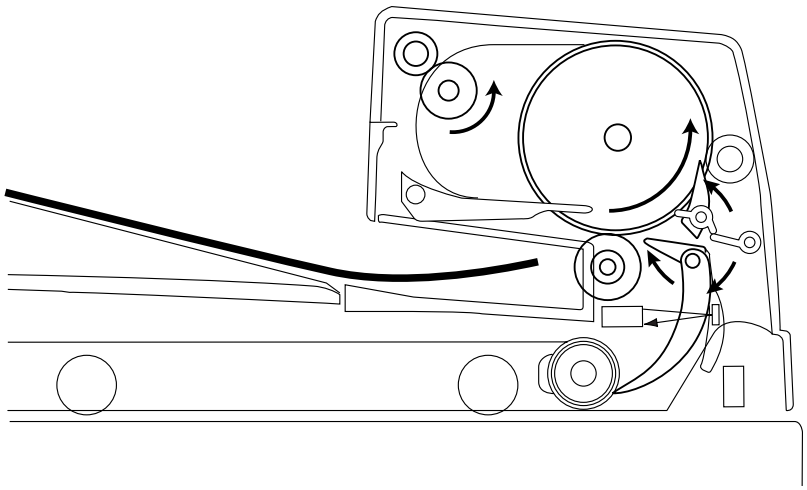
F02-205-12

6) Deceleration control
After the feed path switching operation has been performed, the feed motor (M2) rotates forward and the reverse delivery motor rotates in reverse (M3). (The document is delivered into the delivery tray.)
The document passes the retaining roller and the reverse delivery motor (M3) begins to decelerate.



F02-205-13

7) Delivery stops
After decelerating, the reverse delivery motor rotates in reverse until the document is delivered into the delivery tray. After stopping, the motor again rotates the equivalent of 60mm and the flapper closes.



F02-205-14

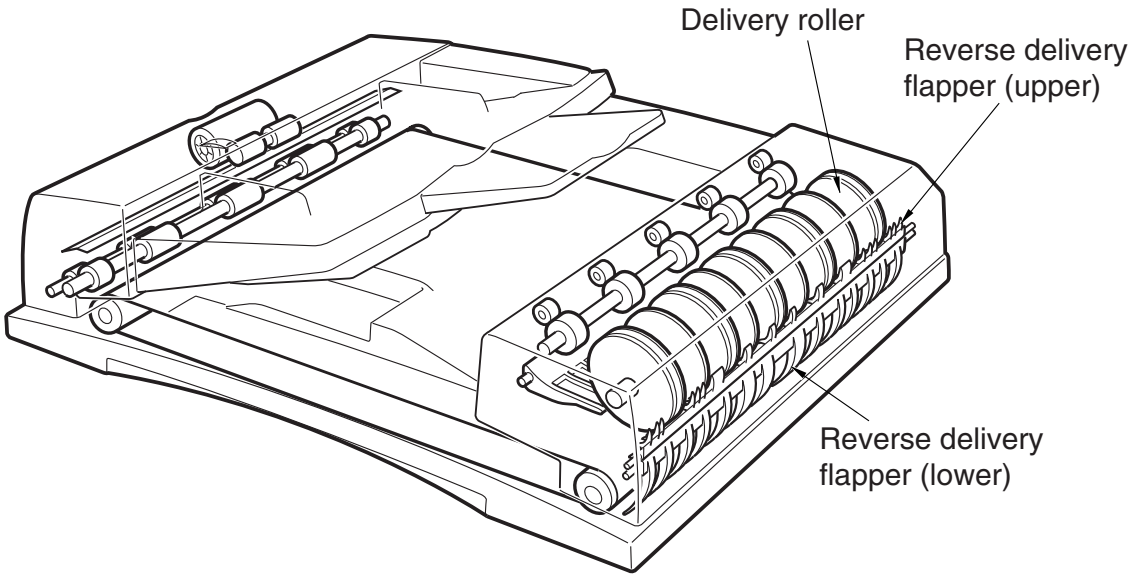
2.5.2 Reverse delivery flapper operation

The construction comprises three flappers which open and close in conjunction with the operation of the reverse delivery motor (M3).

When the reverse delivery motor rotates in reverse, the flappers are open.

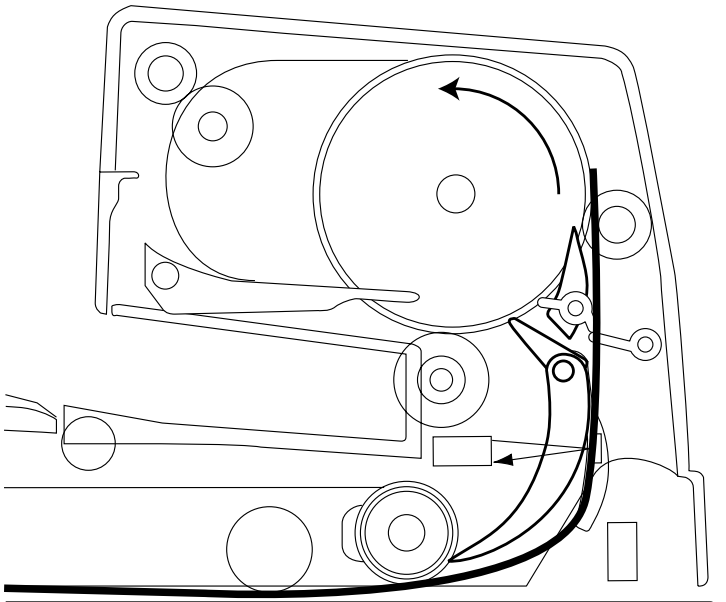
When the reverse delivery motor rotates forward, the flappers are closed.

This operation is used to switch the feed path.



F02-205-15

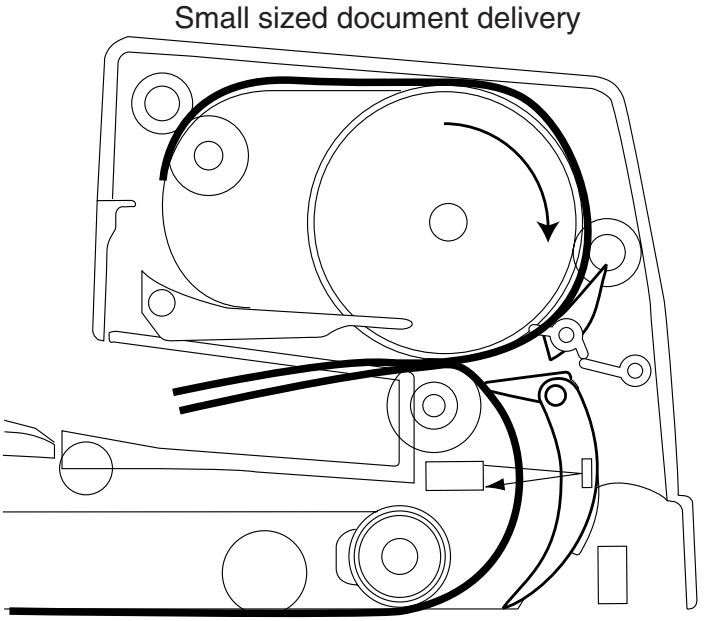
■ Reverse delivery motor rotates forward
The three flappers will close and the document is fed along the path shown.



Reverse delivery flappers closed

F02-205-16

■ Reverse delivery motor rotates in reverse
The three flappers open and the document is fed along the path shown.



Large sized document delivery

F02-205-17

2.5.3 Reverse delivery motor (M3) control

Below is an overview of the control circuit.

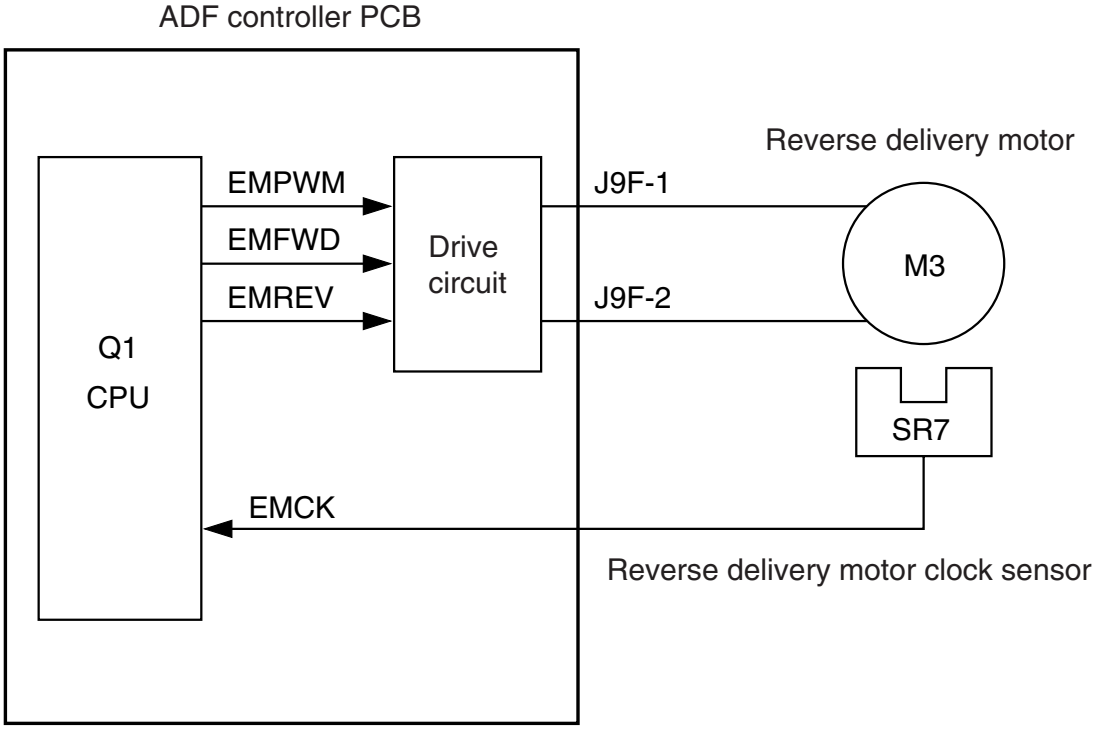
CPU (Q1) on the ADF controller PCB sends 3 types of signals to the drive circuit assembly,

· reverse delivery motor rotation speed control signal (EMPWM)

· reverse delivery motor rotation direction signals (EMFWD, EMREV)

The drive circuit assembly drives the reverse delivery motor according to the signals received.

When the reverse delivery motor rotates, a reverse delivery motor clock signal (EMCK) is sent to the CPU (Q1) by the reverse delivery motor clock sensor (SR7). The CPU (Q1) changes the reverse delivery motor rotation speed control signal (EMPWM) to match the set speed.



F02-205-18

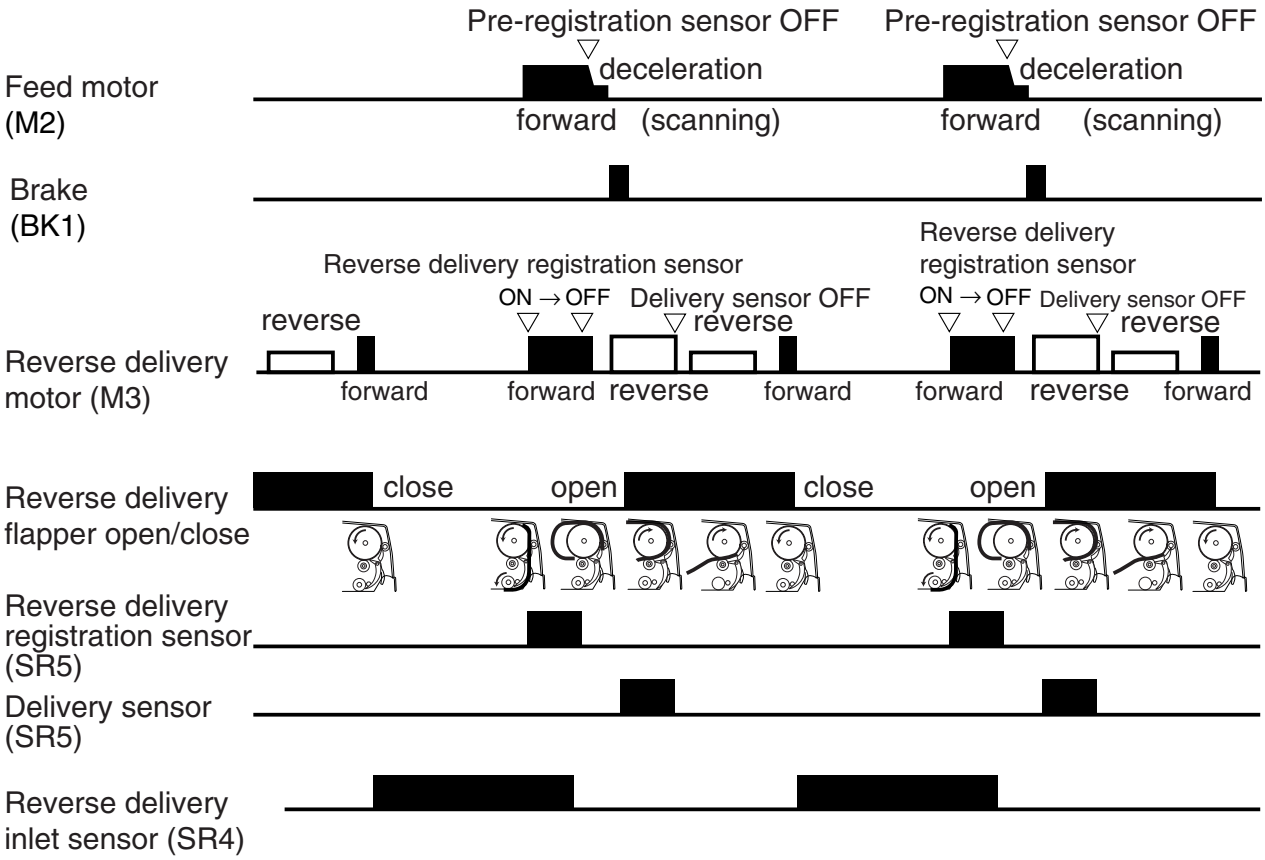
The relationships between the signals and the separation motor are as described below.

Reverse delivery motor rotation speed control signal (SMPWMP)	Reverse delivery motor rotation direction signal SMFWD	Reverse delivery motor rotation direction signal SMREV	Reverse delivery motor operation
'0'	'0'	'0'	Stop
'1'	'0'	'1'	Forward
'1'	'1'	'0'	Reverse

T02-205-01

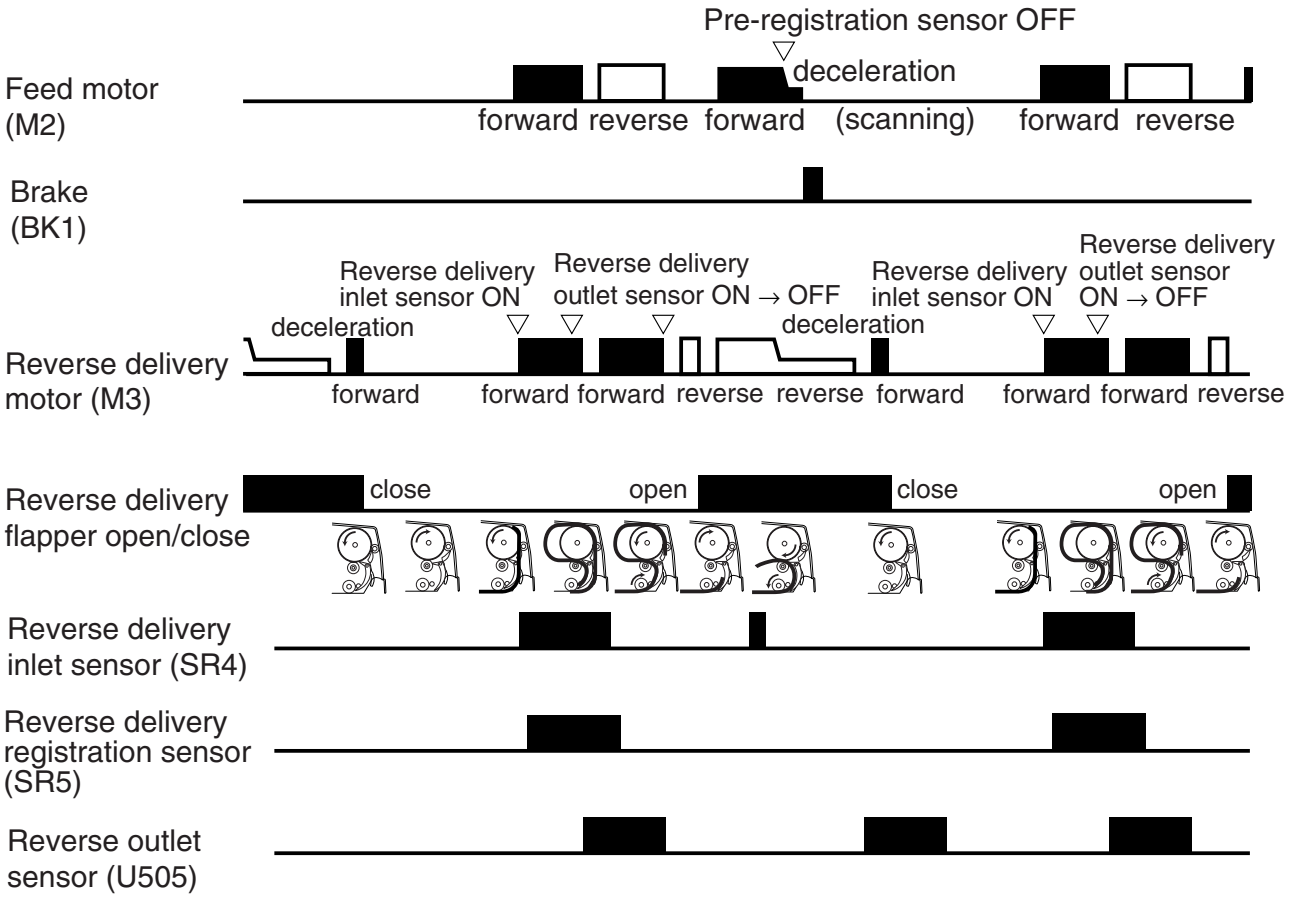
2.5.4 Operation timing (reverse delivery assembly)

a. Small sized paper



F02-205-19

b. Large sized paper



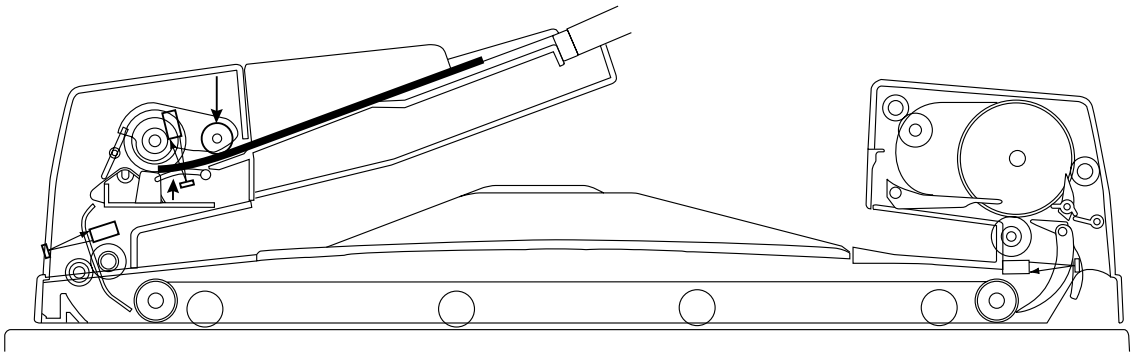
F02-205-20

2.6 Document flow

2.6.1 Small sizes (continuous feed, single side)

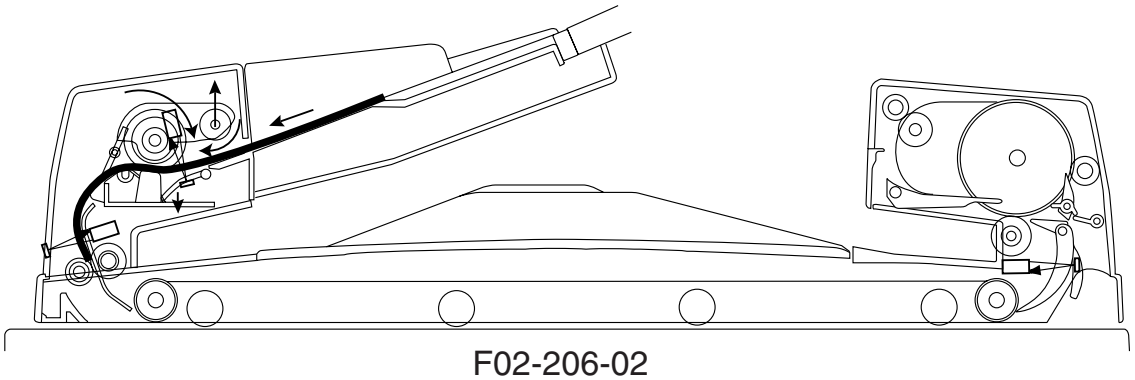
When making a single sided copy of a small sized document, the first page of the document is sent to the copyboard glass while the next page is picked up at the same time.

1) When the START key is pressed, the separation motor (M1) rotates briefly, the pickup roller descends and the lifter ascends. (Pickup standby)



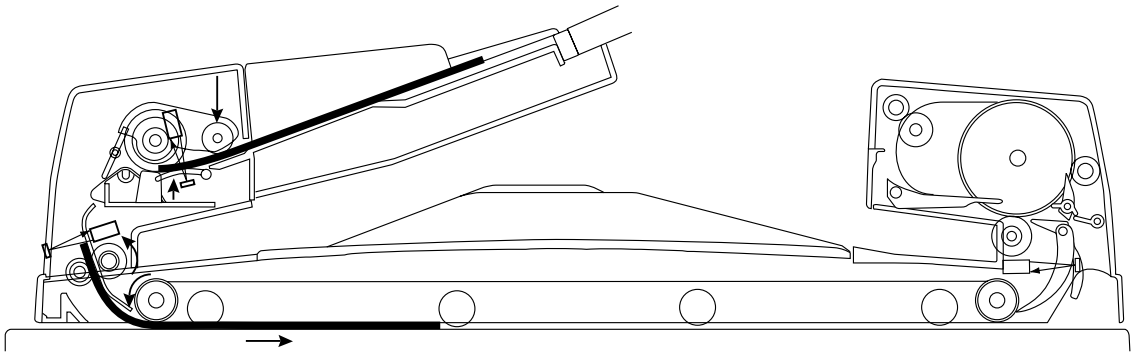
F02-206-01

2) The separation motor (M1) stops momentarily and then rotates forward. The separation roller and the pickup roller rotate. (The first page is separated.)
The lifter descends and then the pickup roller ascends and when the pre-registration sensor (U502) detects (ON) the leading edge of the document, the separation motor stops.



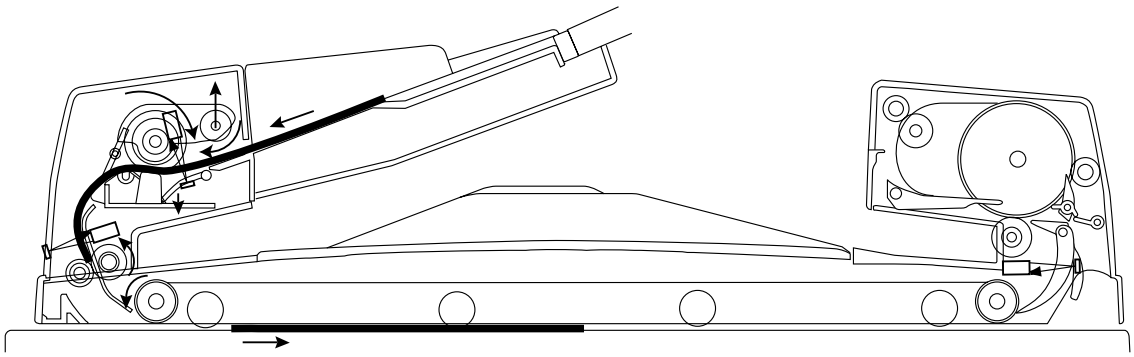
F02-206-02

3) The feed motor (M2) rotates forward and the document is delivered to the copyboard glass. The pre-registration sensor (U502) detects (OFF) the trailing edge of the document. (The next page is in pickup standby mode.)



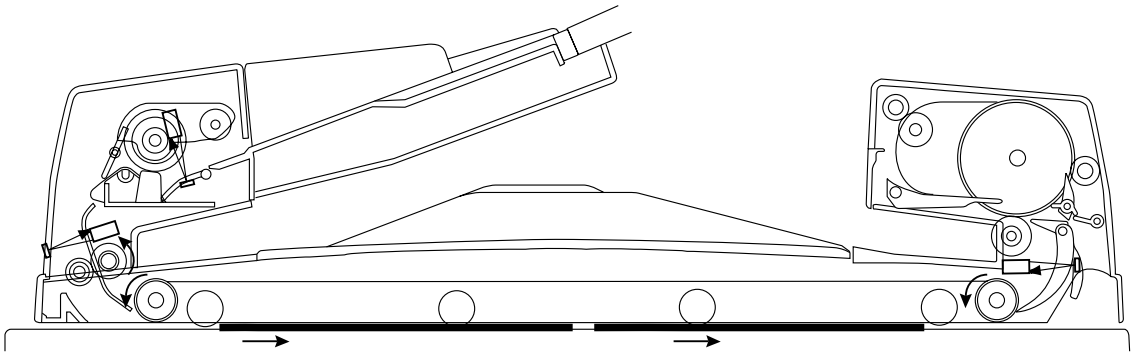
F02-206-03

4) The pre-registration sensor (U502) detects (OFF) the trailing edge of the document. The feed motor (M2) begins to decelerate and stops when the trailing edge of the document is in the scanning position. The document is scanned. (The next page moves to the separation operation.)



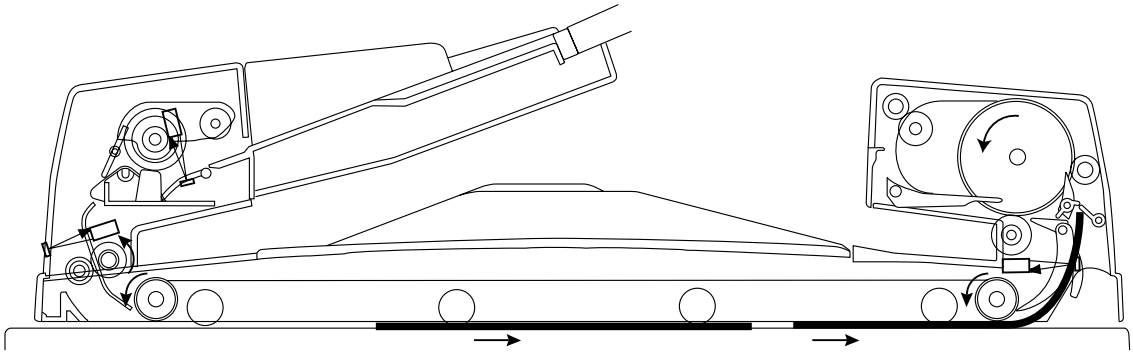
F02-206-04

5) The feed motor (M2) rotates forward and feeds the first page to the right and the next page to the copyboard glass.
The pre-registration sensor (U502) detects (OFF) the trailing edge of the next page.
Then the feed motor decelerates and stops once the document is in the scanning position.
Scanning of the next page begins.



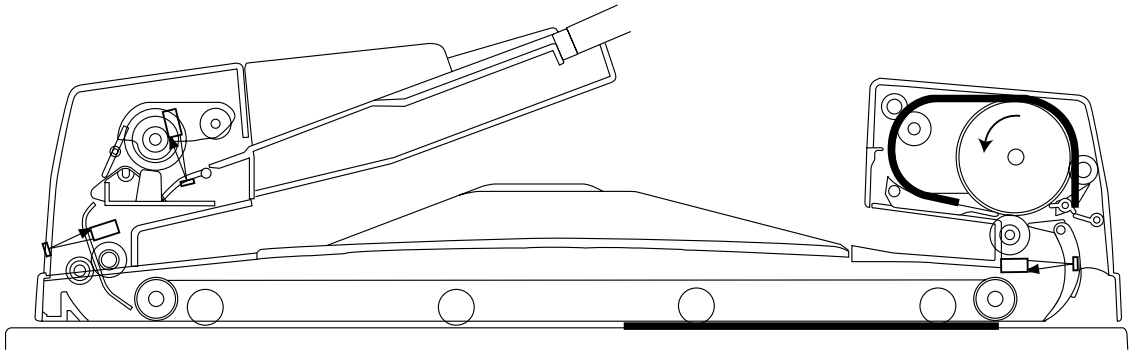
F02-206-05

6) The reverse delivery registration sensor (SR5) detects (ON) the leading edge of the document. The reverse delivery motor (M3) begins to rotate forward. (The reverse delivery flapper is closed.) Once the trailing edge of the document passes the right retaining roller, the feed motor stops. (In continuous pickup, the feed motor stops once the next page has been picked up.)



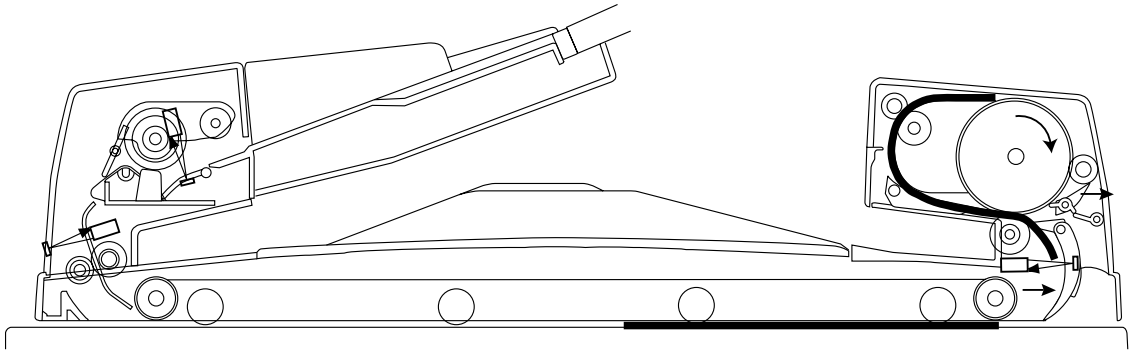
F02-206-06

7) The reverse delivery registration sensor (SR5) detects the trailing edge of the document.



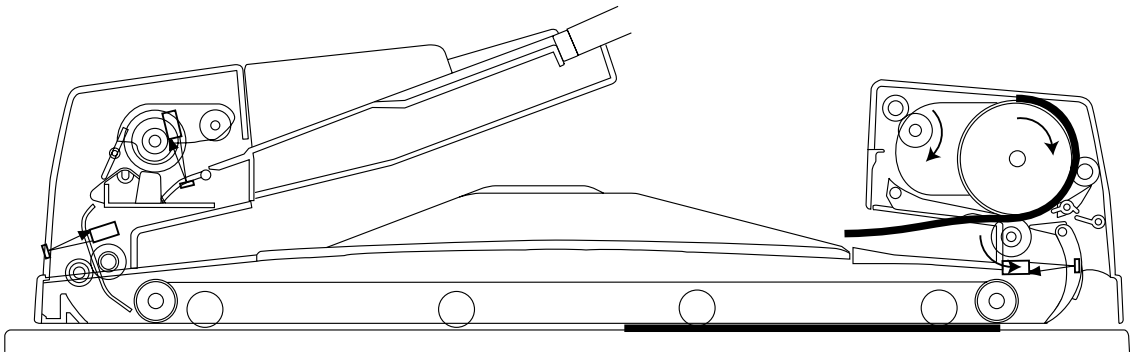
F02-206-07

8) The reverse delivery motor (M3) send the document to the switchback position and then stops momentarily before rotating in reverse.
The reverse delivery flapper opens and the feed path is switched.



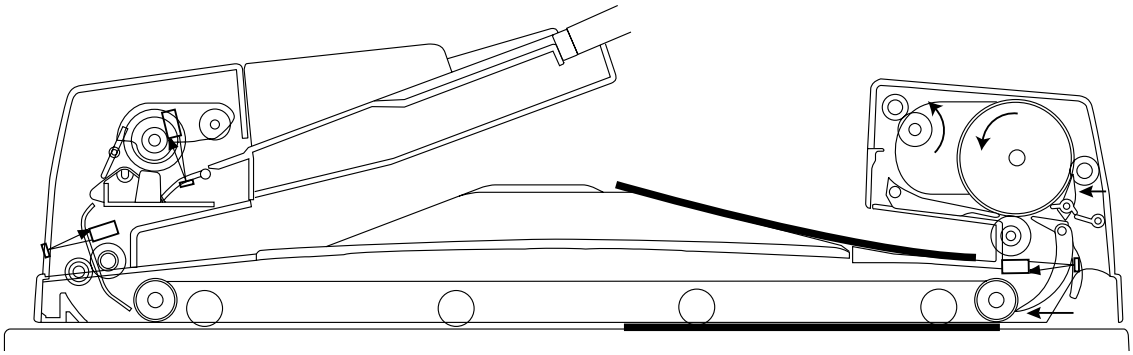
F02-206-08

9) The first page is delivered on to the document delivery tray.



F02-206-09

10) The reverse delivery motor stops when the document has been delivered onto the document delivery tray and then rotates briefly forward. The reverse delivery flapper closes.

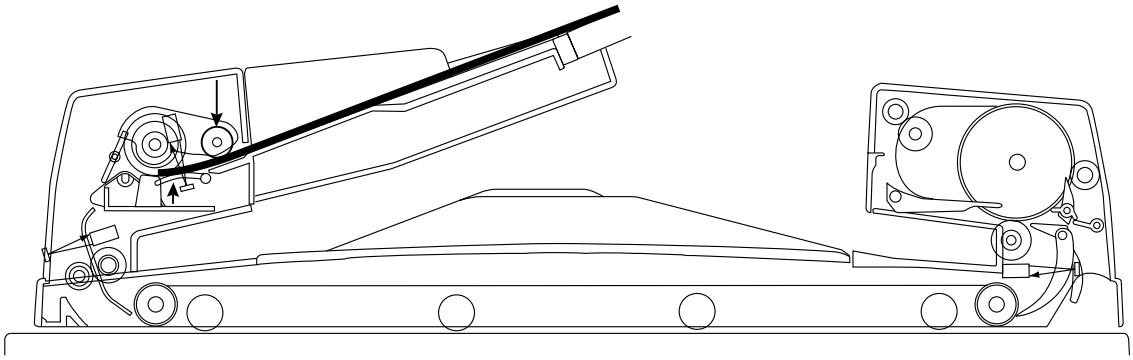


F02-206-10

2.6.2 Large sizes (single side)

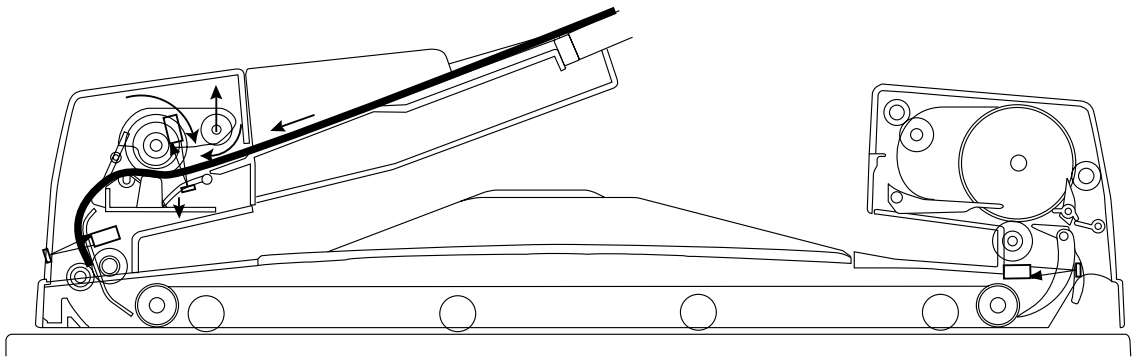
When copying a large sized single sided document, once the first page has been delivered, the next page is brought onto the copyboard glass.

1) When the START key is pressed, the delivery motor (M1) rotates briefly forward, the pickup roller descends and the lifter ascends (pickup standby).



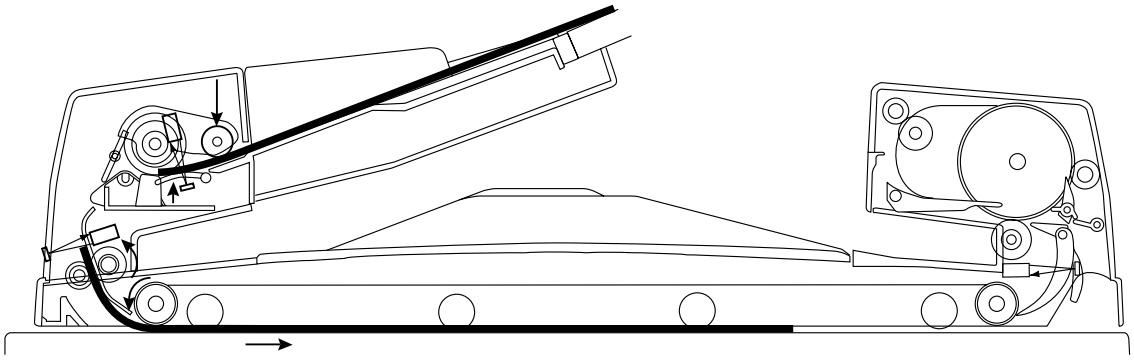
F02-206-11

2) The separation motor (M1) stops momentarily and then rotates forward. The separation roller and the pickup roller rotate and the first page is separated.
The lifter descends and then the pickup roller ascends and when the pre-registration sensor (U502) detects (ON) the leading edge of the document, the separation motor stops.



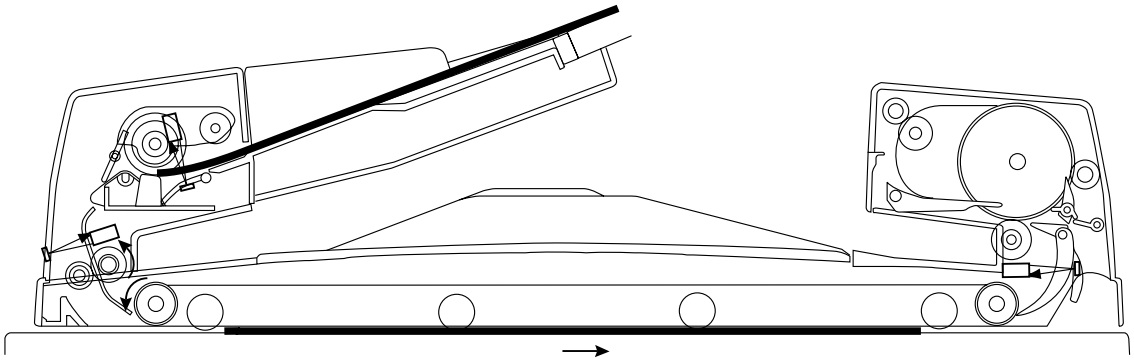
F02-206-12

3) The feed motor (M2) rotates forward and the document is brought onto the copyboard glass. The Pre-registration sensor (U502) detects (OFF) the trailing edge of the document. (The next page is now in pickup standby mode.)



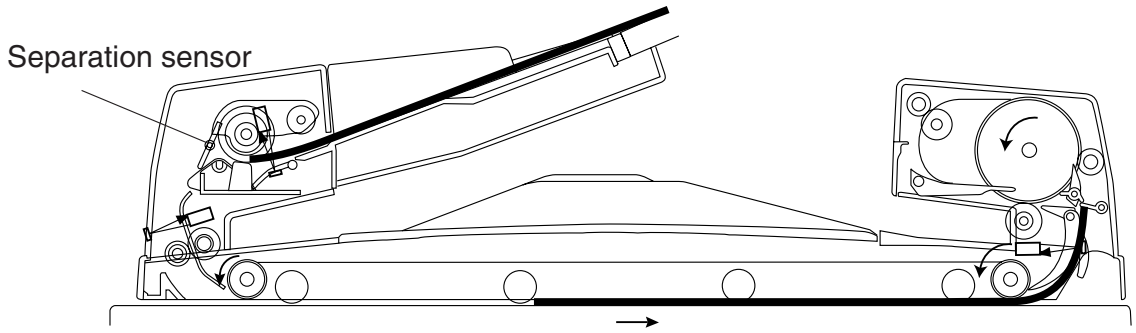
F02-206-13

4) The Pre-registration sensor (U502) detects (OFF) the trailing edge of the document. The feed motor (M2) decelerates and then feeds the document onto the scanning position and then stops. The document is scanned.



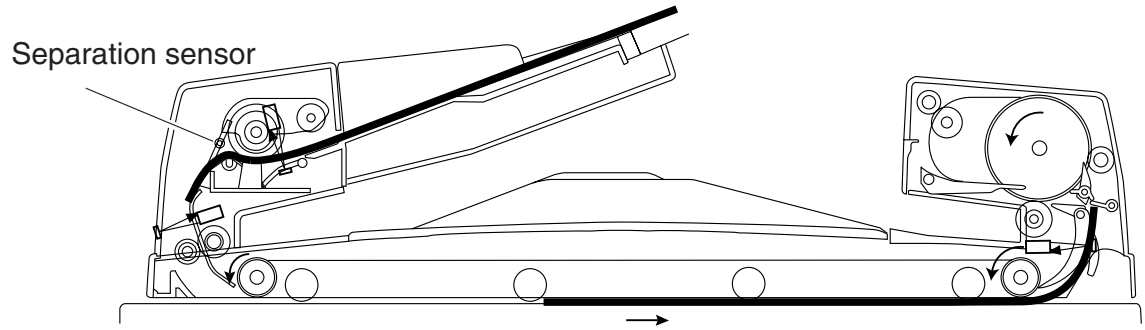
F02-206-14

5) Once the scanning is completed, * (the second page of the document is separated and the separation motor stops momentarily 100msec. after the separation sensor comes ON)
*DADF-B1 only
the feed motor (M2) rotates forward and the fist page of the document is sent to the reverse delivery assembly.
The reverse delivery inlet sensor (SR4) detects (ON) the leading edge of the document and then the reverse delivery motor (M3) begins to rotate forward. (The reverse delivery flapper is closed.)
<DADF-K1>



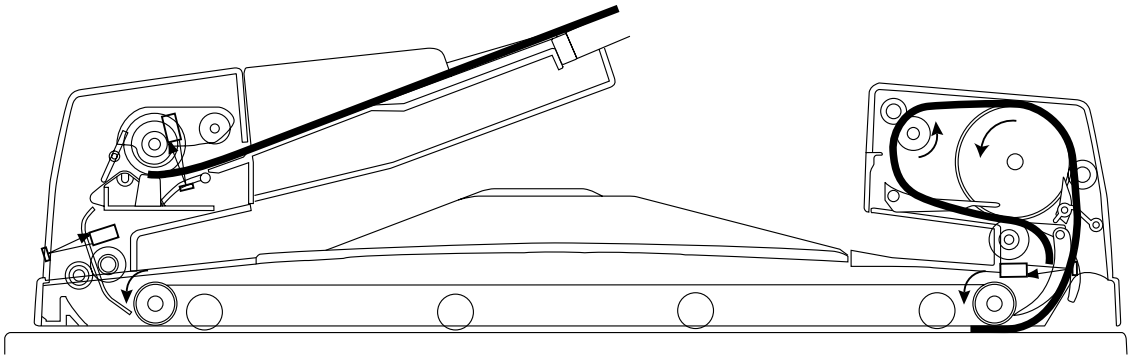
F02-206-15

<DADF-B1>



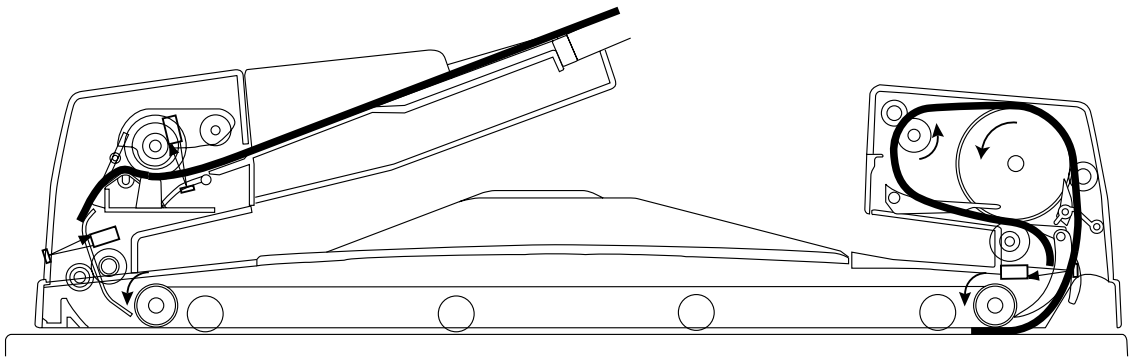
F02-206-16

6) The reverse delivery outlet sensor (U505) detects (ON) the leading edge of the document.
The feed motor (M2) and reverse delivery motor (M3) both stop momentarily.
<DADF-K1>



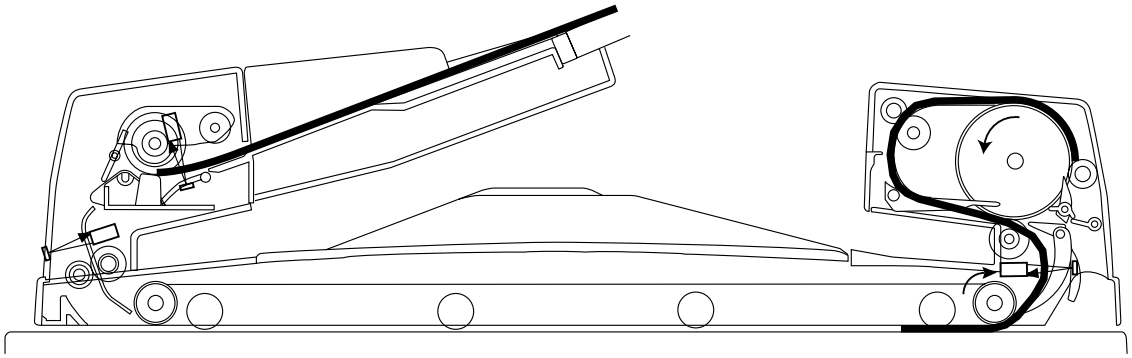
F02-206-17

<DADF-B1>



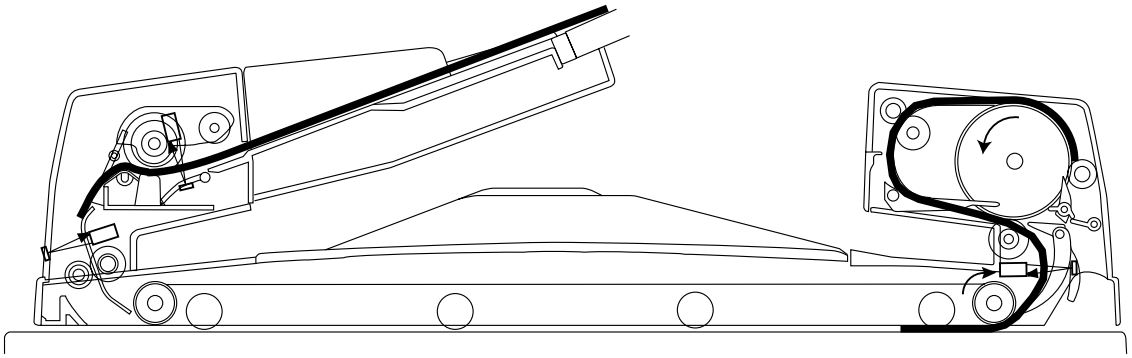
F02-206-18

7) After100ms, the feed motor (M2) rotates in reverse and the reverse delivery motor (M3) rotates forward.
<DADF-K1>



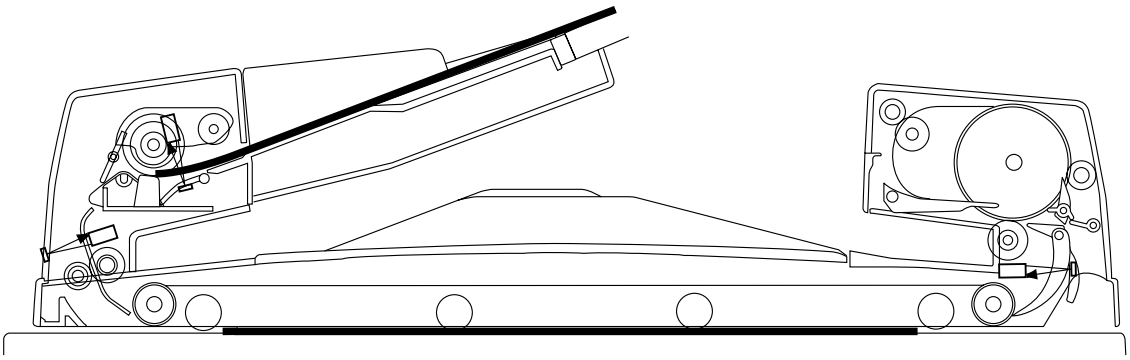
F02-206-19

<DADF-B1>



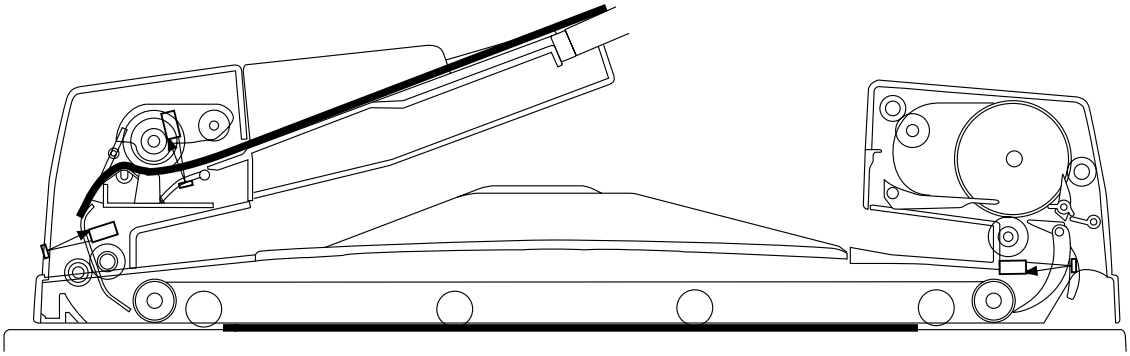
F02-206-20

8) The reverse outlet sensor (U505) detects (OFF) the trailing edge of the document and the reverse delivery motor (M3) stops. The feed motor (M2) feeds the document until the trailing edge is at the reverse stop position and then stops.
<DADF-K1>



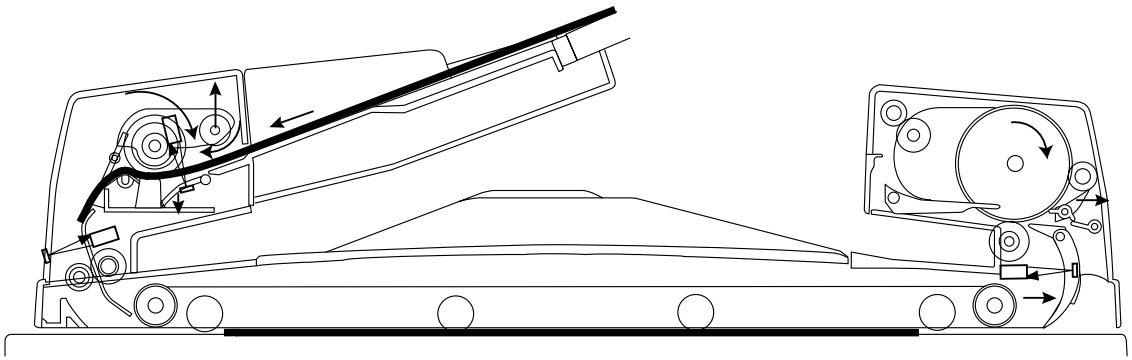
F02-206-21

<DADF-B1>



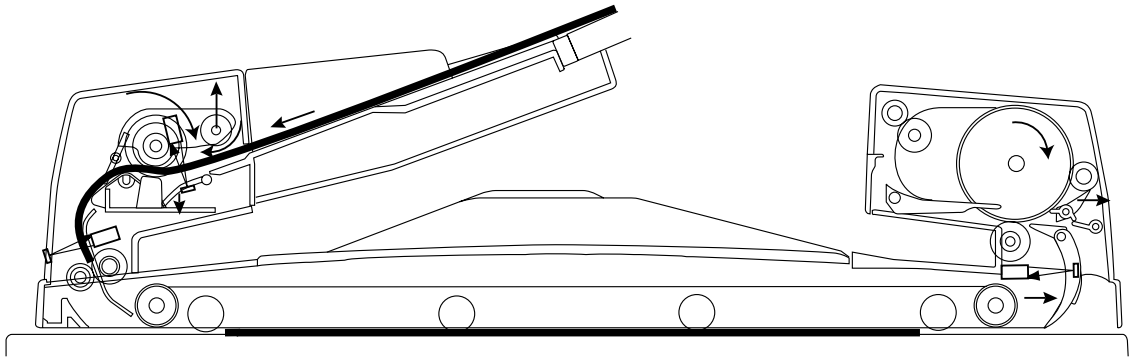
F02-206-22

9) At this time, the reverse delivery motor (M3) stops only after it has rotated in reverse the prescribed amount.
(The reverse delivery inlet flapper opens and the feed path is switched.)
At the same time, the separation roller rotates forward and separation of the next page begins.
<DADF-K1>



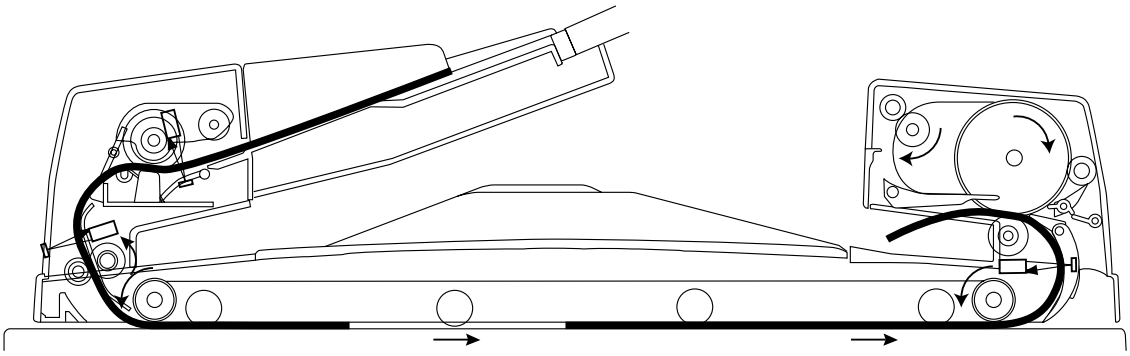
F02-206-23

<DADF-B1>



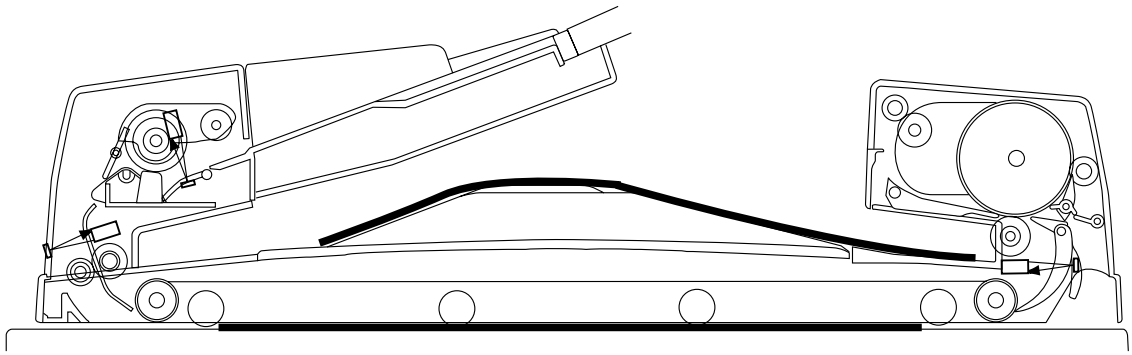
F02-206-24

10) When the next page reaches the registration roller (and pickup is finished), the feed motor (M2) rotates forward and the reverse delivery motor (M3) begins to rotate in reverse.



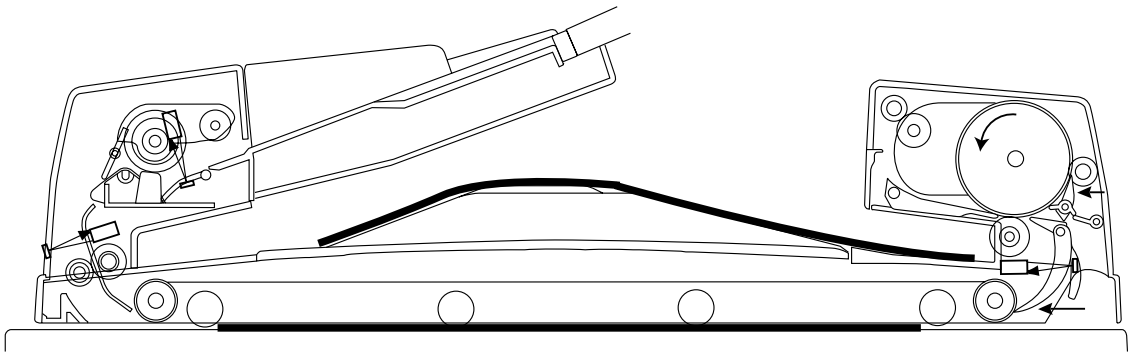
F02-206-25

11) When the pre-registration sensor (U502) detects (ON) the trailing edge of the document, the feed motor (M2) decelerates and stops when the document trailing edge reaches the scanning position.
When the reverse delivery inlet sensor (SR4) detects the leading edge of the first page and the page has been fed on for the prescribed amount, the reverse delivery motor (M3) decelerates and then feeds the document into the document delivery tray and stops.



F02-206-26

12) Then, the reverse flapper motor (M3) rotates forward for the prescribed amount and stops. (The reverse flapper closes.)



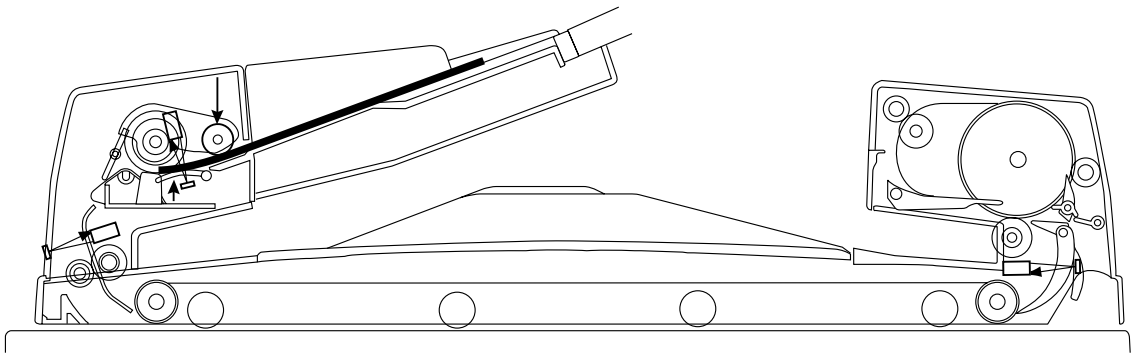
F02-206-27

2.6.3 Double sided copy mode

After the front side has been scanned, the document is sent on to the reverse delivery assembly and reversed.

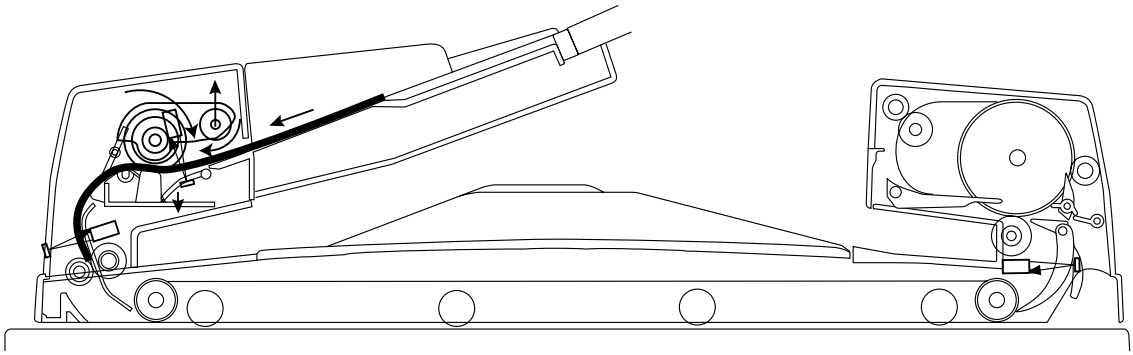
The reversed document is briefly returned to the pre-registration sensor (U502) and then aligned in the scanning position on the copyboard glass. Then the reverse side is scanned.

1) When the START key is pressed, the separation motor (M1) rotates in reverse briefly, the pickup roller descends and the lifter ascends. (Pickup standby)



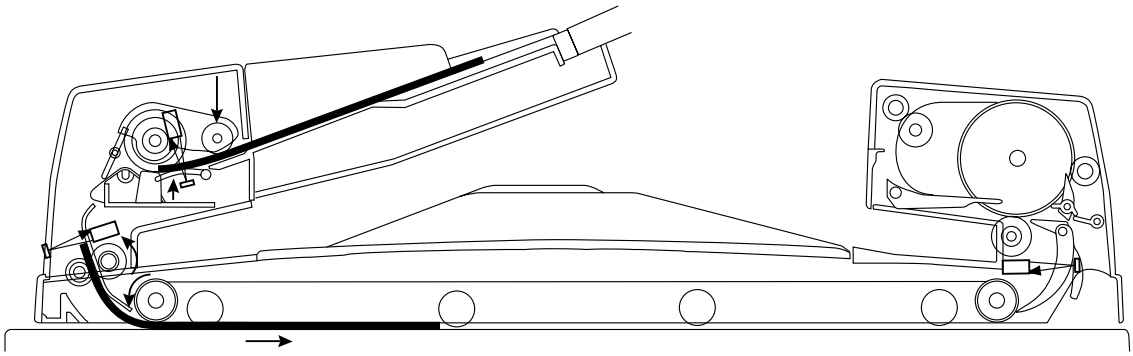
F02-206-28

2) The separation motor stops momentarily then rotates forward and the separation roller and the pickup roller rotate and the first page of the document is separated. The lifter descends and the pickup roller ascends. Pre-registration sensor (U502) detects (ON) the leading edge of the document and the separation motor stops.



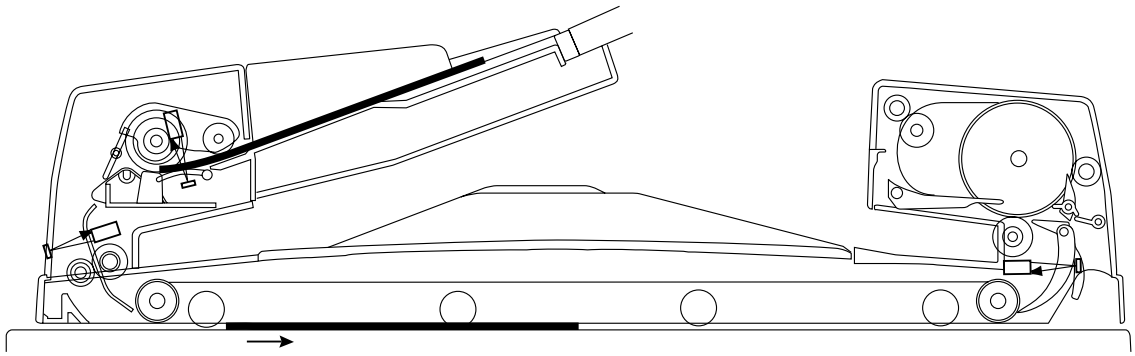
F02-206-29

3) The feed motor (M2) rotates forward and the document is fed onto the copyboard glass. Pre-registration sensor (U502) detects (OFF) the trailing edge of the document. (The next page is now in pickup standby mode.)



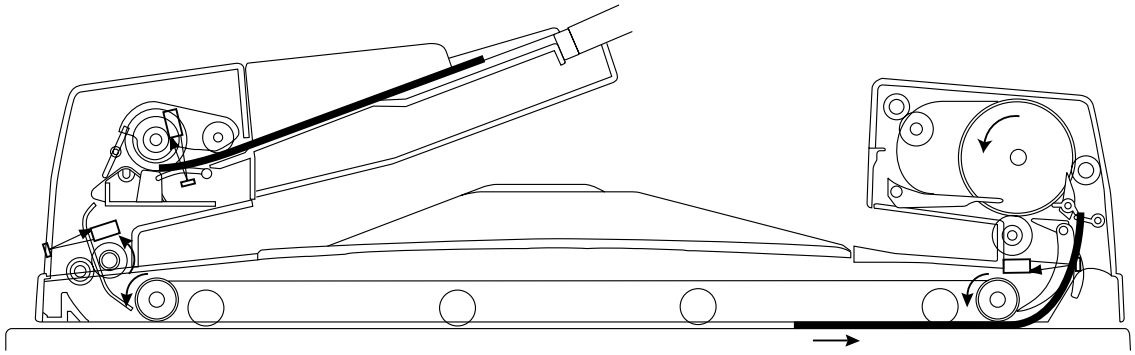
F02-206-30

4) Pre-registration sensor (U502) detects (OFF) the trailing edge of the document. The feed motor (M2) decelerates and stops when the document has been brought into the scanning position. The front side of the page is scanned.



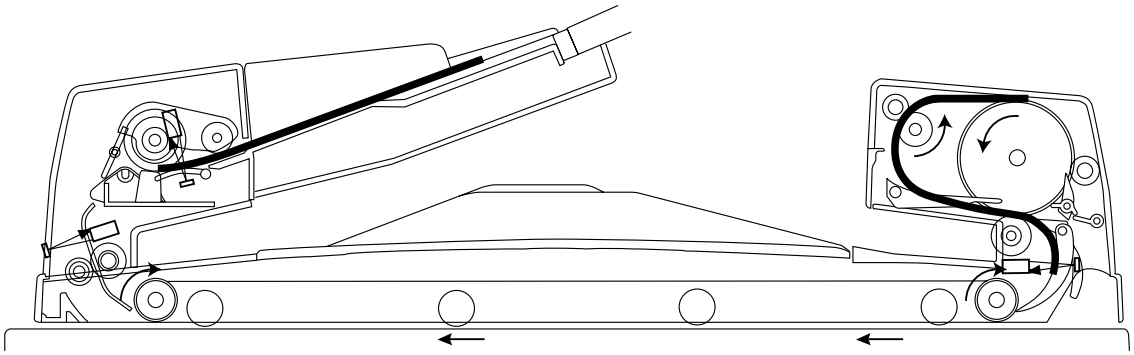
F02-206-31

5) When scanning is complete, the feed motor rotates forward and the document is sent on to the reverse delivery assembly. The reverse delivery inlet sensor (SR4) detects (ON) the leading edge of the document and the reverse delivery motor (M3) begins to rotate forward. (The reverse delivery flapper is now closed.)



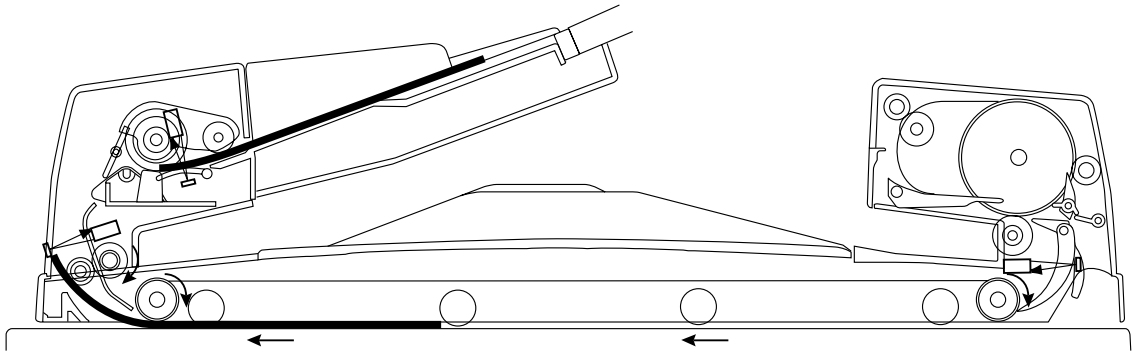
F02-206-32

6) The reverse outlet sensor (U505) detects (ON) the leading edge of the document. The feed motor (M2) stops momentarily and then begins to rotate in reverse.



F02-206-33

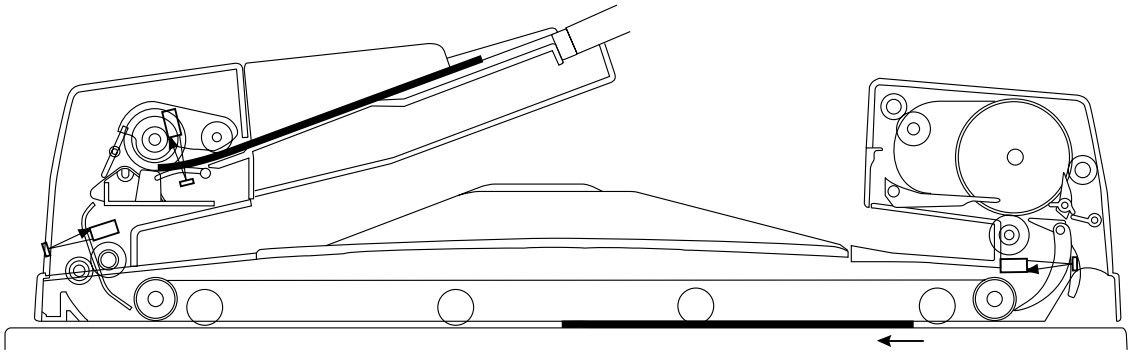
7) *DADF only
The document returned to the copyboard glass is now sent to the pickup assembly. The pre-registration sensor (U502) detects (ON) the leading edge of the document and the feed motor (M2) stops.
<DADF-B1>



F02-206-34

8) <DADF-K1>

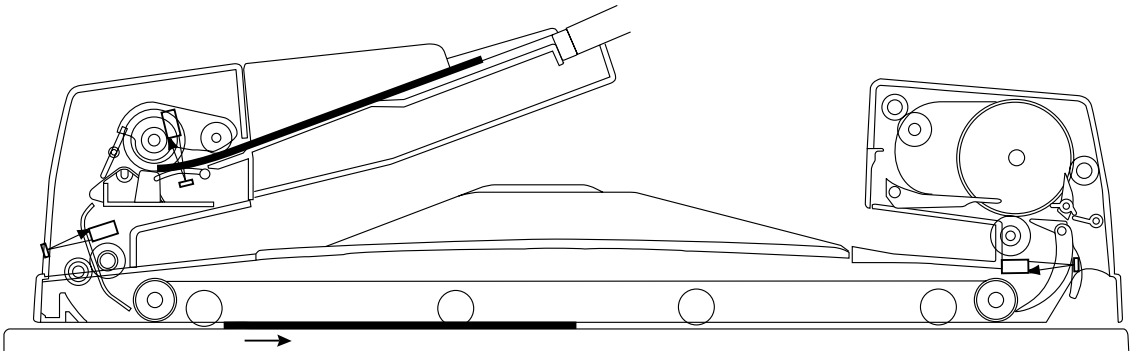
The reverse output sensor (U505) detects (OFF) the trailing edge of the document and the motor begins to decelerate. The motor stops when the trailing edge of the document has been fed to the scanning position in double sided copy mode.



F02-206-35

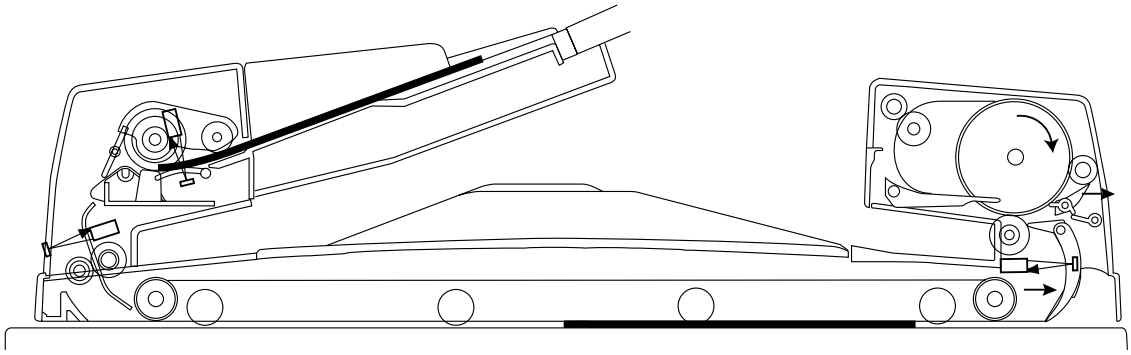
<DADF-B1>

After stopping, the feed motor then begins to rotate forward. The pre-registration sensor (U502) detects (OFF) the trailing edge of the document and the motor begins to decelerate. The motor stops when the leading edge of the document has been fed onto the scanning position.



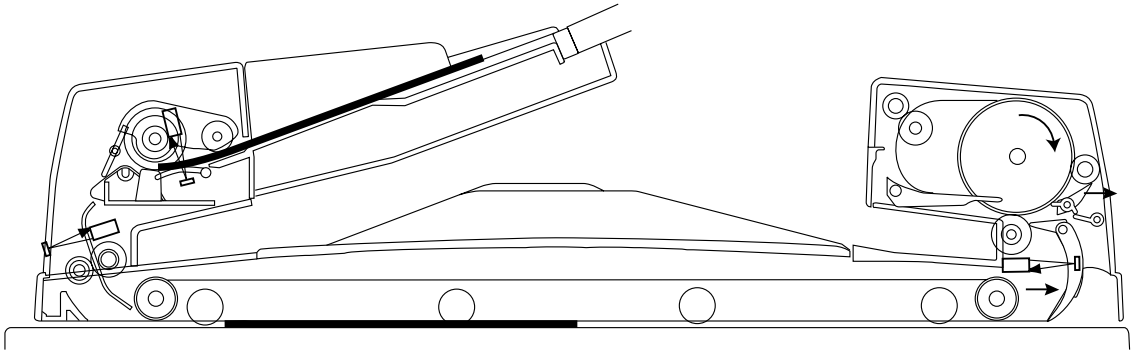
F02-206-36

9) When the document stops at the prescribed position, the reverse delivery motor (M3) rotates briefly in the reverse direction. The reverse delivery flapper opens and the delivery path is switched and the reverse side of the page is scanned.
<DADF-K1>



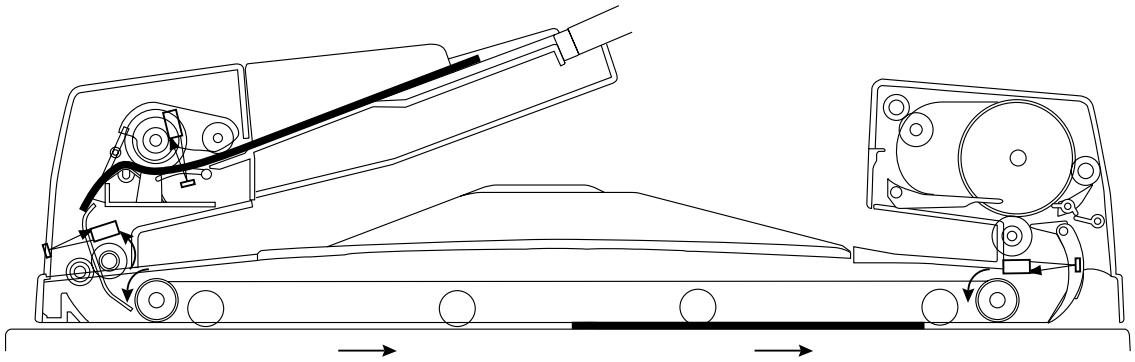
F02-206-37

<DADF-B1>



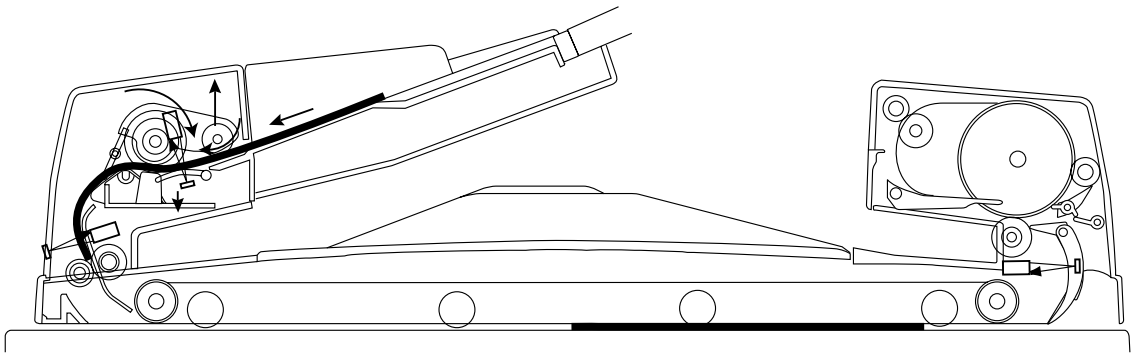
F02-206-38

10) When the scanning is finished, the separation of the second page begins.
    * (The separation motor (M2) rotates forward and the first page is moved to the right.)
    * DADF-B1 only.



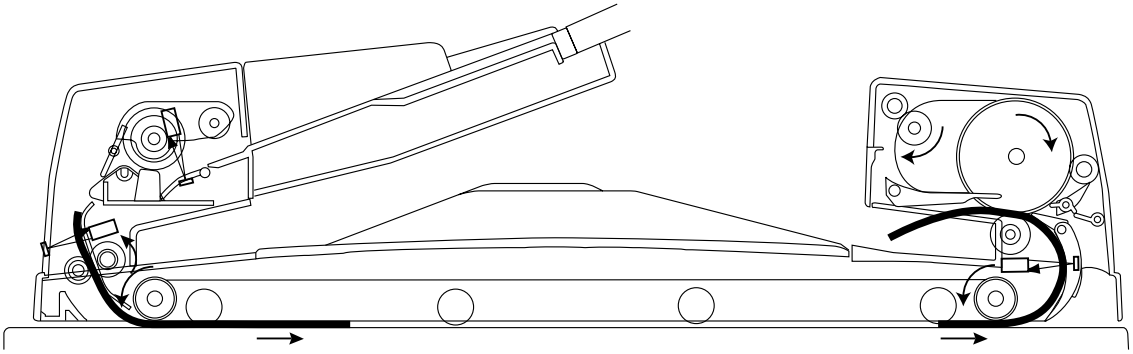
F02-206-39

11) The separation motor (M1) rotates forward and the next page is separated. The pre-registration sensor (U502) detects (ON) the leading edge of the document and the separation motor stops.



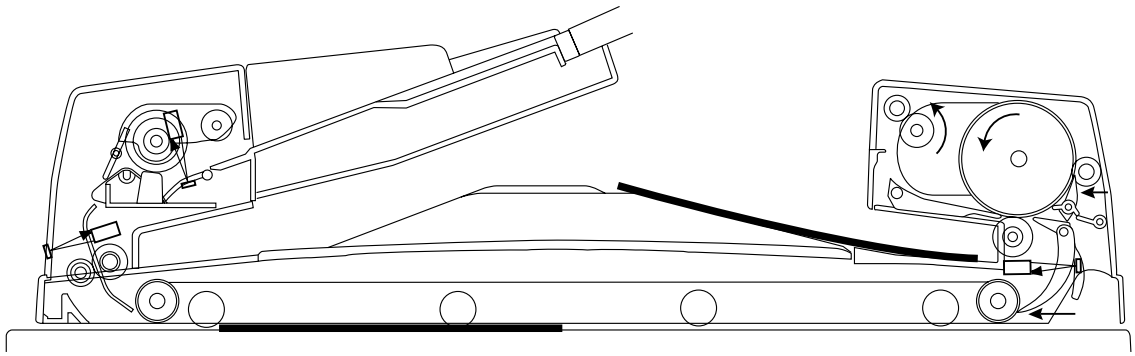
F02-206-40

12) The feed motor (M2) rotates forward and the reverse delivery motor (M3) rotates in reverse. The first page of the document is sent to the document delivery tray. (The next page is brought onto the copyboard glass.)



F02-206-41

13) The pre-registration sensor (U502) detects (OFF) the trailing edge of the document. The feed motor (M2) decelerates and stops when the trailing edge of the document is in the scanning position. The reverse delivery inlet sensor (SR4) detects (ON) the leading edge of the first page of the document and when the document is fed on the prescribed amount, the reverse delivery motor (M3) decelerates and stops when the document has been sent to the document delivery tray.
The reverse delivery motor stops momentarily and then rotates briefly forward. (The reverse delivery flapper is closed.)



F02-206-42

2.6.4 Mixed size mode

In this unit, documents of mixed length and the same width type can be copied together.

In mixed size copying, after the first page has been delivered, the next page is brought onto the copyboard glass. The operation mode is the same for the final sheet in large size or double sided copying.

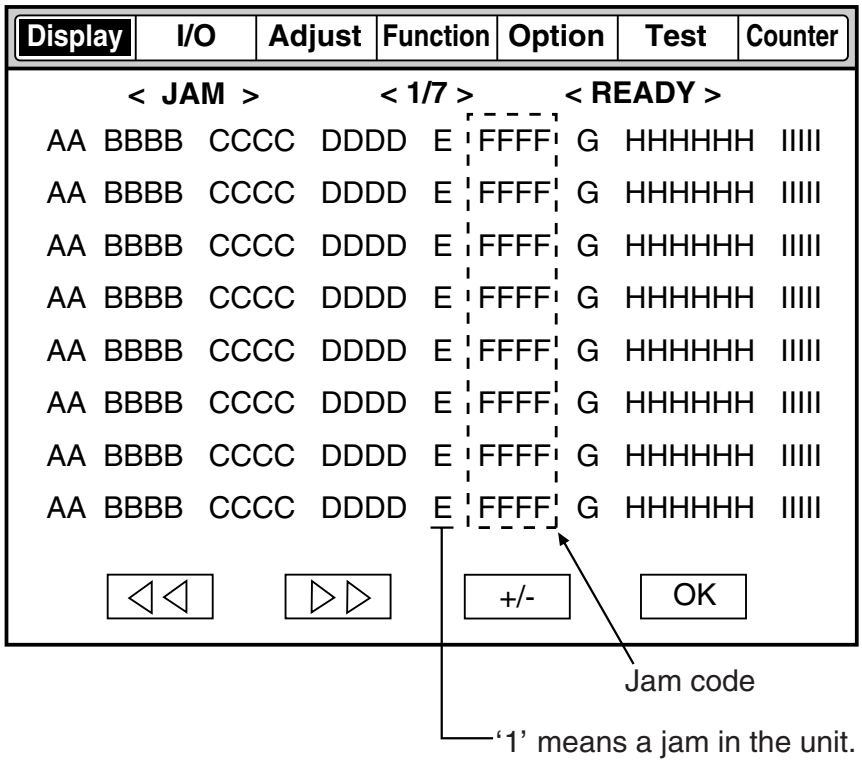
2.6.5 Jam recovery mode

When a jam occurs, the copied document left on the copyboard glass is idle fed. The document flow is the same as for single sided copying but there is no scanning and the documents are fed continuously.

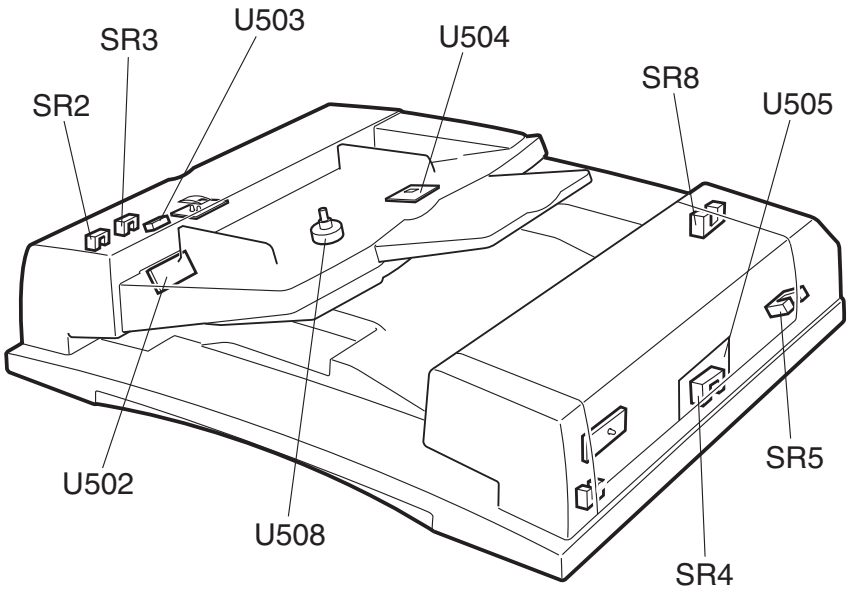
2.7 Document jam detection

This unit detects document jams, using the sensors displayed below. When a jam occurs, the unit sends the details and code to the copier main unit. The jam codes can be checked with COPIER > DISPLAY > JAM in the copier service mode.

Copier service mode window



F02-207-01



F02-207-02

SR2 ... Pickup unit cover sensor
SR3 ... Separation sensor
SR4 ... Reverse delivery inlet sensor
SR5 ... Reverse delivery registration sensor/ delivery sensor
SR6 ... ADF open/ close sensor
SR8 ... Reverse delivery unit cover sensor

U502 .... Pre-registration sensor
U503 .... Document set sensor
U504 .... Final document detection sensor
U505 .... Reverse outlet sensor
U508 .... Document width detection dial

1. Jam timing
   When any of the jams in Table 2-207 are detected, the ADF operation stops immediately.
2. Jam reset
   Pickup delay jam: When the document is cleared from the document tray, reset is possible.
   Other jams: When the document is removed from the document tray and any jammed paper removed from the ADF, the unit can be reset by opening and closing the ADF.
3. An alarm will be displayed when the following are attempted.
   · Using mixed documents without specifying mixed document mode.
   · Copying with stapled documents.
   (However, in cases where it is possible to remove a document from inside of the unit, a combination of a jam alert and alarm will be displayed.)

E.g. 'Alarm display + 8C jam' will be displayed together.

■ DADF-B1
An alarm is displayed 5 seconds after a jam is cleared. The alarm will then clear automatically.

■ DADF-K1
The message 'CHECK DOCUMENT' appears on the control panel and then disappears when the OK button is pressed.

The document jam sensors and conditions under which a jam is judged are as follows.

Jam	Code	Sensor	Conditions
Separation delay	0002	SR3	After the separation motor (M1) begins rotate forward, the separation sensor (SR3) does not come ON within 500msec.
Pickup delay	0003	U502	The pre-registration sensor (U502) does not go ON within 1 sec from the separation sensor (SR3) in the case of small sized paper and from around the separation sensor in the case of large sized paper.
Pickup stationary	0005	U502	The pre-registration sensor pre-registration sensor (U502) does not come even though the feed motor has been rotating for 500msec,. after coming ON after the registration loop has been formed.
Early separation timing	0006	SR3	The separation sensor (SR3) comes on after separation begins.
Reverse outlet delay	0011	U505	The reverse outlet sensor (U505) does not come ON within the prescribed time after the trailing edge of the document has cleared the right end of the retaining roller.
Reverse outlet stationary	0012	U505	The reverse outlet sensor (U505) does not go OFF after the trailing edge of the document has been detected by the reverse delivery registration sensor (SR5) and fed by the delivery motor the equivalent of 500msec.
Double sided	0023	U502	<DADF-B1> After a double sided document has been reversed, when the document is transported from the copyboard glass to the pickup unit, the pre-registration sensor (U502) does not come ON within the prescribed time.
		U505	<DADF-K1> After a double sided copy has been reversed, the feed motor rotates for the prescribed period of time with the reverse outlet sensor (U505) still ON.
Delivery inlet delay	0041	SR4	In the case of small sized paper, from the start of document pickup, and in the case of large sized paper and double sided documents, from a point 51mm before the reverse delivery inlet sensor (SR4), the feed motor (M2) rotates the equivalent of 100msec., but reverse delivery inlet sensor (SR4) does not come ON.
Delivery inlet stationary*	0042	SR4	In the case of small sized paper, from when the document leading edge reaches the reverse registration roller nip, and in the case of large sized paper and double sided documents, when the document leading edge reaches the reverse outlet sensor (U505), the reverse inlet sensor (SR5) does not go OFF within the prescribed time.

*DADF-B1 only

T02-207-01

Jam	Code	Sensor	Conditions
Reverse registration delay	0043	SR5	The reverse inlet sensor (SR5) does not come ON within the prescribed time after reverse delivery inlet sensor (SR4) comes ON.
Reverse registration delay	0044	SR5	The reverse registration sensor (SR5) does not go OFF within the prescribed time after the reverse delivery inlet sensor (SR4) OFF.
Reverse flapper failure (small size)	0045	U505	The flapper has not switched when the reverse outlet sensor (U505) checks the flapper switching after every delivery.
Delivery sensor stationary (small size)	0046	SR5	After reverse delivery motor (M3) begins to rotate in reverse, the delivery sensor (SR5) does not go OFF within the prescribed time.
Delivery sensor delay (small size)	0047	SR5	The delivery sensor (SR5) does not go OFF after the document has been fed the equivalent of 50mm after the trailing edge has passed the sensor.
Delivery sensor delay (large size and double sided)	0048	SR4	The reverse inlet sensor (SR5) does not come ON with the prescribed time after delivery has commenced.
Reverse delivery unit cover open	0080	SR8	When the copier has stopped because it has no paper, the reverse delivery unit cover is opened.
DADF open	0081	SR6	When the copier has stopped because it has no paper, the DADF cover is opened.
Pickup cover open	0082	SR2	When the copier has stopped because it has no paper, the pickup unit cover is opened.
Document left on copyboard glass	0088	SR4, SR5	Pickup starts with a document left on the copyboard glass. Detected by reverse delivery inlet sensor (SR4) and reverse delivery registration sensor (SR5).
Timing failure 1	008A		The correct timing could not be obtained for picking up the second side in double sided copying. Or, task completion could not be detected within the prescribed time.
Timing failure 2	008B		During continuous feeding, while the delivered documents are being counted by the delivery clock sensor (SR7), the pickup of the next document is completed but the reverse delivery motor (M3) encoder pulse cannot be detected.
Timing failure 3	008C		When mixed documents are fed though mixed document mode has not been designated, a document size abnormality alarm (0014) is generated and, since jam clearing is necessary, this jam display appears. 008C (jam) and 0014 (alarm) appear together and the unit automatically recovers 5 seconds after the jam has been cleared.
User DADF open	0091	SR6	The DADF is opened during operation.
User cover open	0092	SR2, SR8	The cover is opened while the DADF is operating.

T02-207-02

Jam	Code	Sensor	Conditions
Separation sensor initial status	0094	SR3	Before separating the first page of the document, the document sensor (SR3) comes ON.
Pre-registration sensor initial status	0095	U502	Before separating the first page of the document, the reverse delivery inlet sensor (SR4) comes on.
Reverse deliveryinlet sensor initial status	0096	SR4	Before separating the first page of the document, the pre-registration sensor (U502) comes on.
Reverse delivery sensor	0097	SR5	Before separating the first page of the document, the reverse delivery sensor (SR5) comes on.

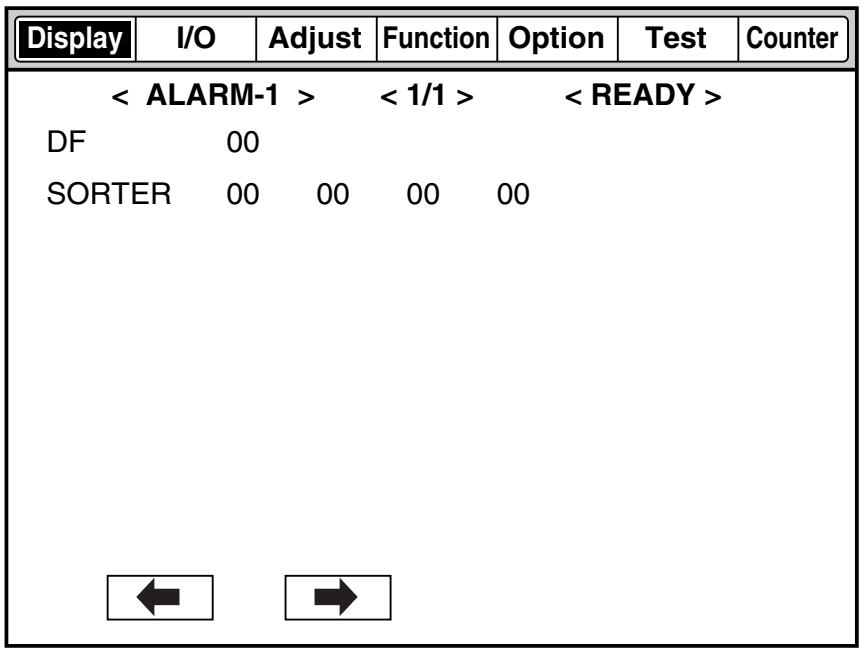
T02-207-03

2.8 Alarm detection

The alarm codes for this unit are as shown below and shown in the following service mode.

(COPIER > DISPLAY > ALARM-1 > DF)

Copier alarm display window (service mode)



F02-208-01

The alarm detection sensors and conditions for judging an alarm are as shown below.

Alarm	Code	Sensor	Conditions
Separation failure	03	SR3	When the first sheet is picked up and the separation motor (M1) rotates forward, the separation sensor (SR3) does not come ON within 500msec.
Jam recovery sheet count error	11		The jam recovery sheet count is greater than the actual number of document pages.
Document pulled out	13		The document is pulled out of the tray during document processing.
Document size error	14		Mixed size documents are loaded even though mixed document mode has not been designated. Or, documents with lengths differing by ± 10mm or more in the feed direction are detected. 008C (jam) is displayed at the same time. After the jam is cleared, the alarm (14) is displayed for five seconds and then cleared automatically.
Operating mode error	21		The operating mode combination cannot be executed.

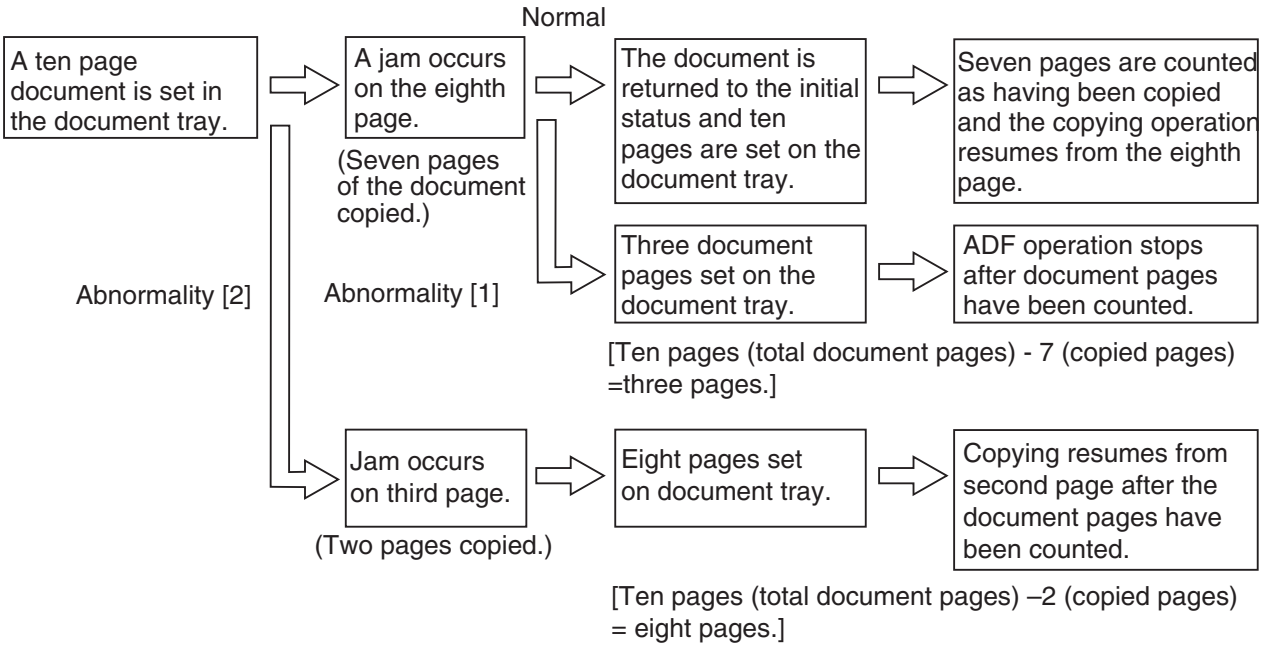
T02-208-01

REF.

When a jam occurs, the copier records how many pages were copied at that time. The ADF controller rotates the copied pages and when the un-copied pages are set on the copyboard, copying begins.
After the jam has been cleared, if the number of document pages is changed, proper copying cannot be performed.
E.g. Refer to the diagram below.

Abnormality [1]: After a jam has been cleared, the number of document pages is changed. (ADF and copier operations stop.)

Abnormality [2]: Normal operation performed.



F02-208-02

2.8.1 Reset

To reset after a document set failure, remove the documents from the document tray and then reset them.

Also, the copier will display a message. This should be checked before setting the documents.

2.9 Power supply

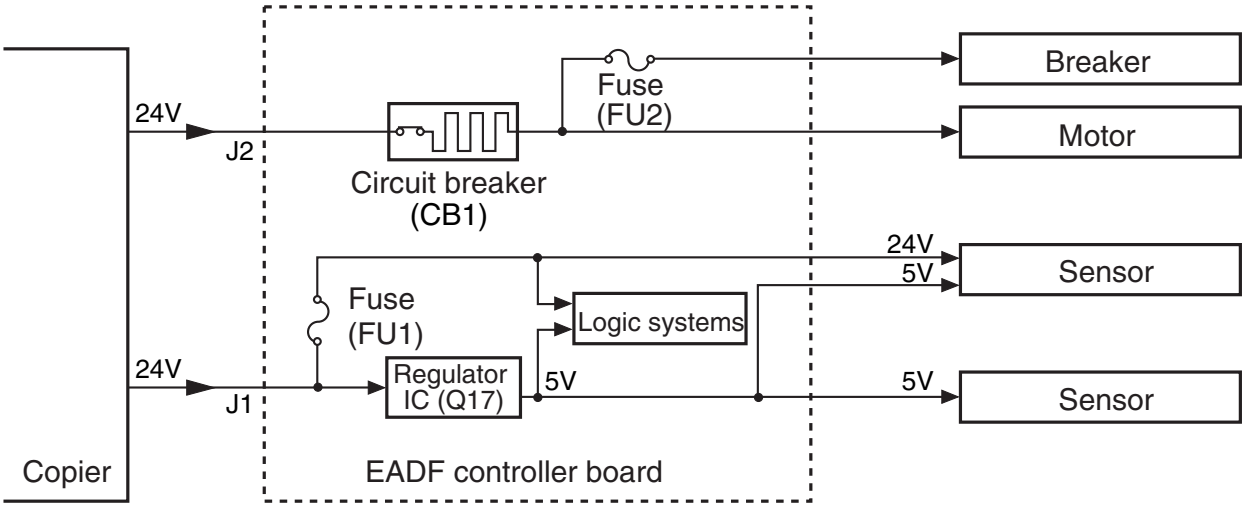
The diagram below gives an overview of the power supply.

The power supply for this unit is supplied by the copier's two 24V systems.

System 1 (J2): Supplies loads after passing the circuit breaker (CB1).
The circuit breaker protects the circuitry by shutting off the power supply if an over-current is detected.

System 2 (J1F): Converted to 5V by the regulator (Q17) and then used for logic systems and sensors.

Fuse resistors (FU1 and FU2) protect the circuitry by blowing to shut off the power supply if an over-current is detected.



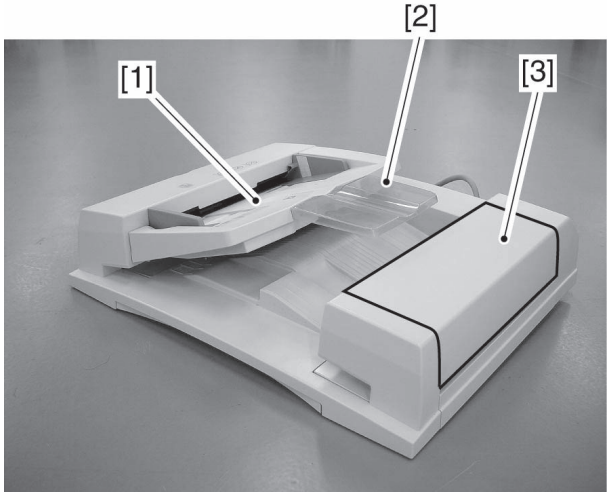
F02-209-01

CHAPTER 3

MECHANICAL SYSTEMS

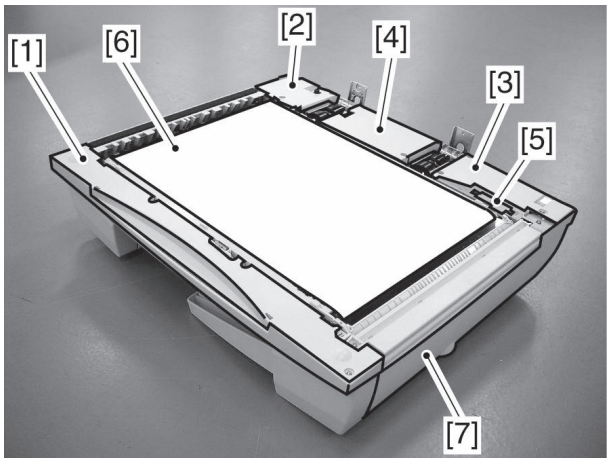
1 Basic configuration

1.1 Outer covers



F03-101-01

[1] Document tray
[2] Document support tray
[3] Reverse delivery unit cover



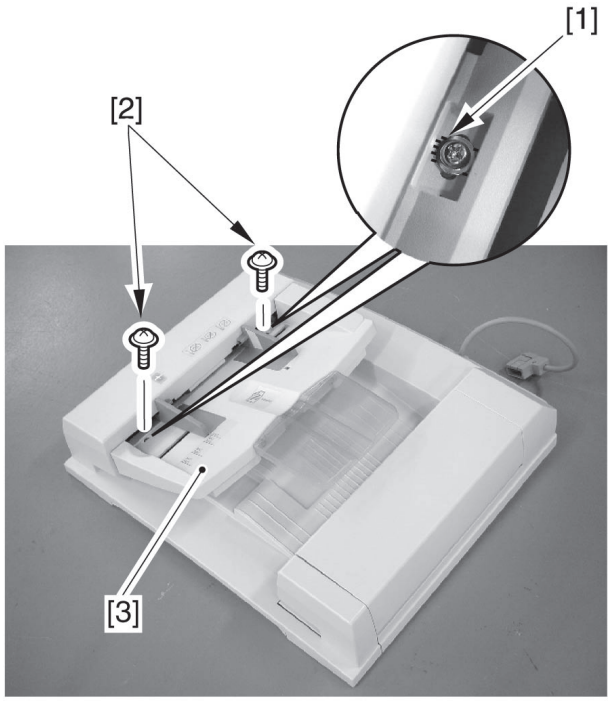
F03-101-02

[1] Main unit front cover
[2] Main unit rear cover 1
[3] Main unit rear cover 2
[4] ADF control cover
[5] Timing belt cover
[6] Feed belt
[7] Pickup unit cover

To perform cleaning, maintenance and repairs inside the unit, remove the covers in the following sequence.

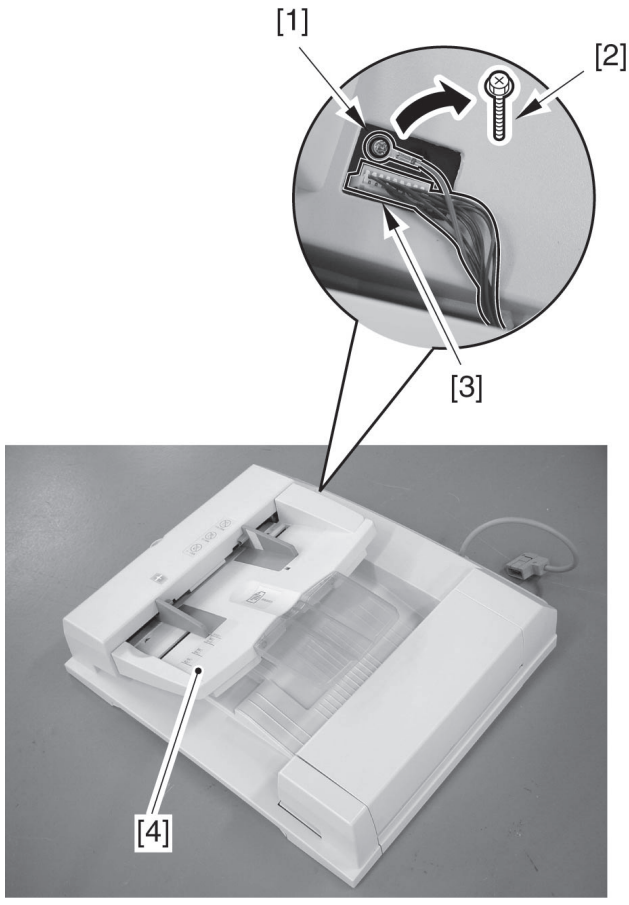
1.1.1 Removing the document tray

1) Turn off the power to the copier.
2) Remove the ADF communication cable from the copier.
3) Check the (two) document tray installation positions [1] (the positions of the fixing screws are marked) beforehand.
4) Remove the two fixing screws [2] and slide out the document tray [3] forwards.



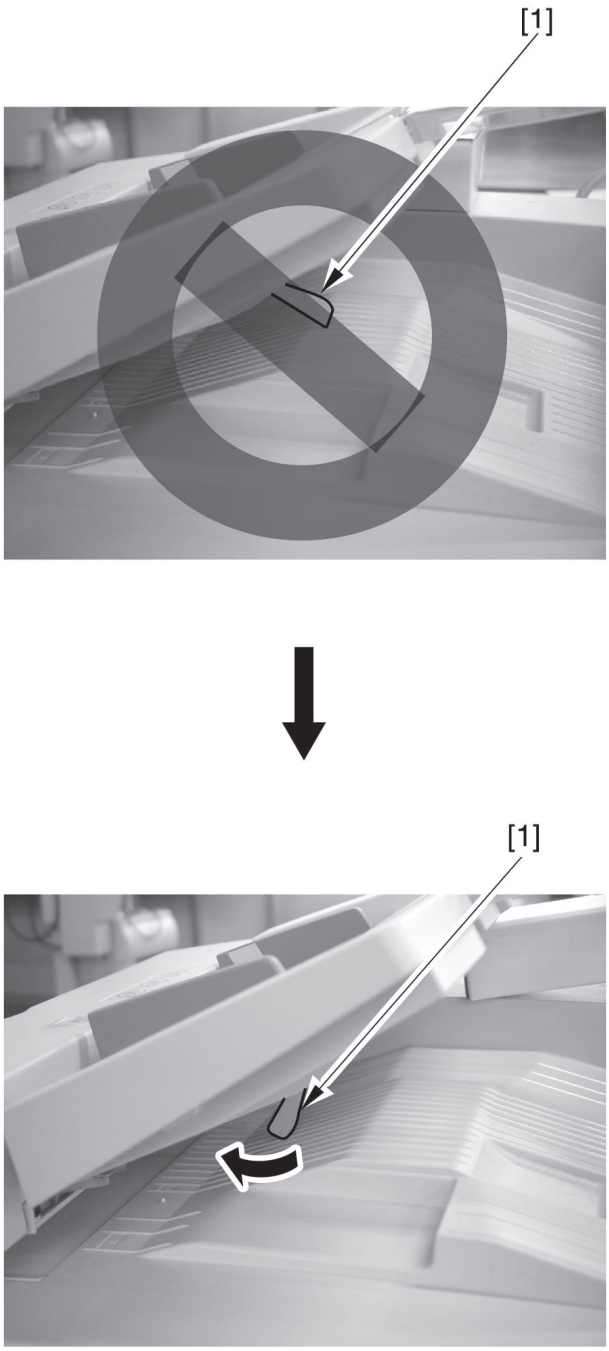
F03-101-03

5) Remove the earth wire [1] (two screws [2]) and connector [3].
6) Remove the document tray [4].



F03-101-04

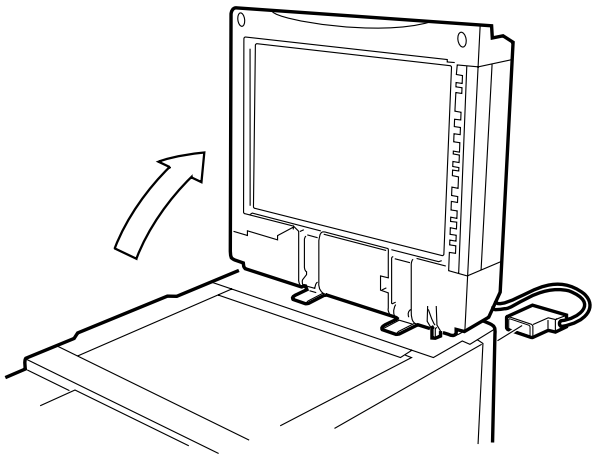
When attaching the document tray, attach the document retainer [1] by fixing it into the pickup side. Be careful not to attach the document retainer [1] in reverse, as illustrated.



F03-101-05

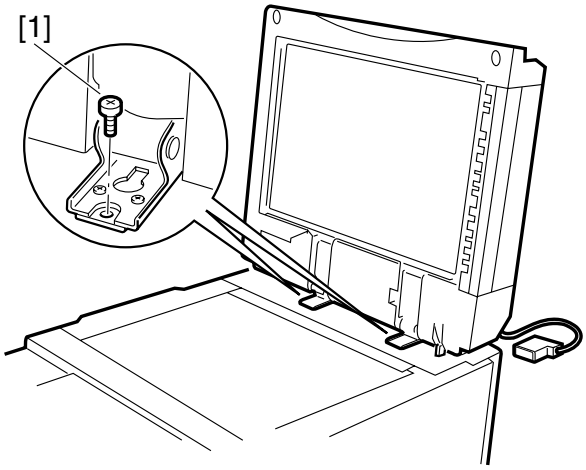
1.1.2 Removing the ADF

1) Turn off the power to the copier.
2) Remove the ADF communication cable from the copier.
3) Open the ADF as far as it will go.



F03-101-06

4) Remove the two black screws [2].



F03-101-07

5) Slide the ADF to the back and, holding it firmly in both hands, lift it up and remove it.

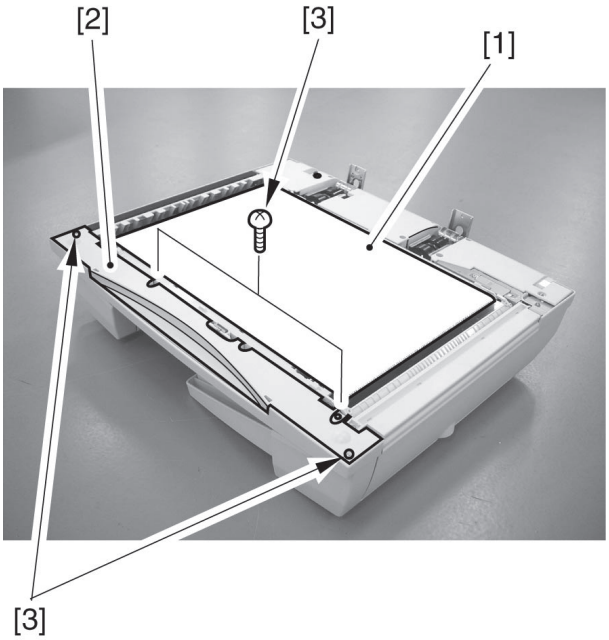
The unit has a locking mechanism at the hinge legs, to prevent it from coming loose. Therefore, to remove the unit from the copier, it needs to be opened fully.

1.1.3 Removing the main unit cover

To remove the pickup unit and the reverse delivery unit, first remove the ADF from the copier.

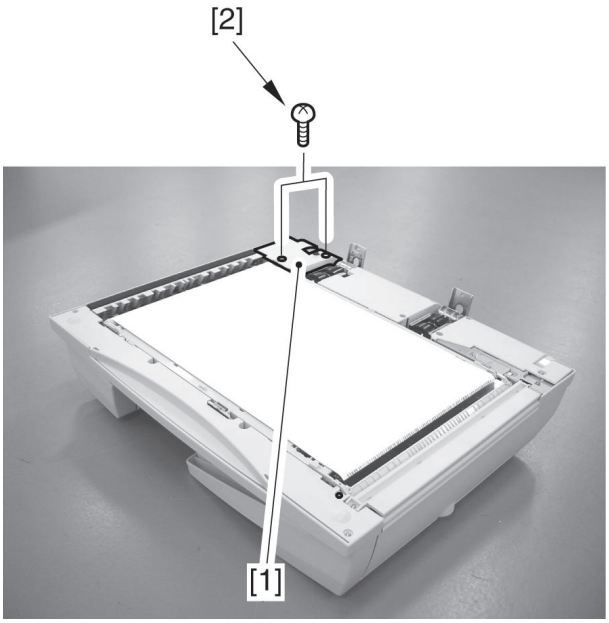
Remove the document tray. (There is a risk of its being damaged.)

1) Lay the ADF unit with the feed belt [1] uppermost.
2) Remove the 4 screws [3] from the main unit front cover [2].



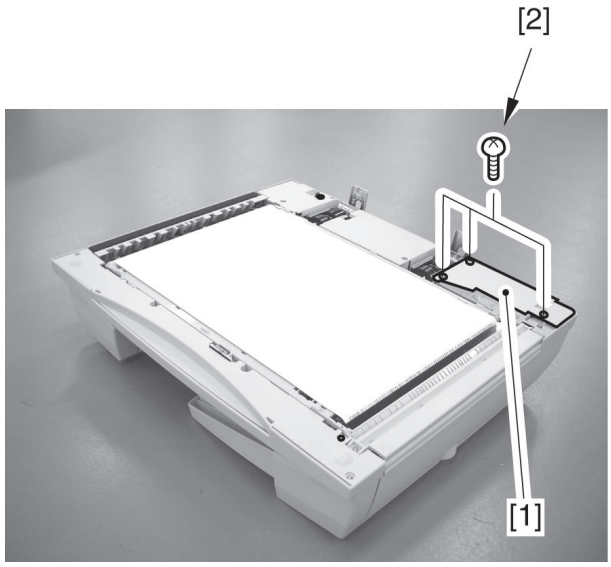
F03-101-08

3) Remove 2 screws [2] and remove the main unit rear cover [1].



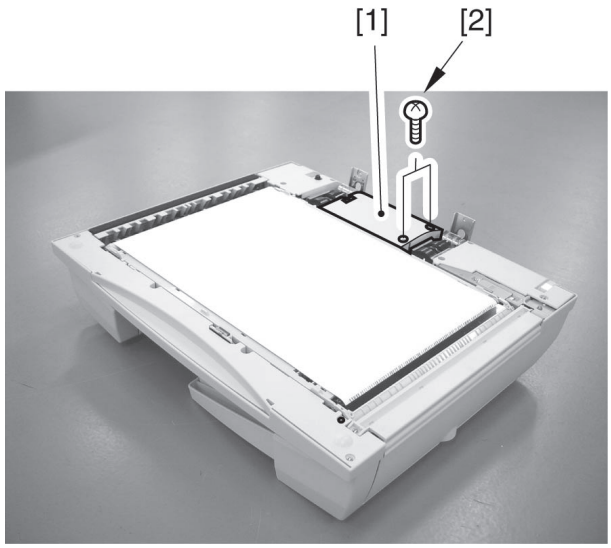
F03-101-09

4) Take out three screws [2] and remove the main unit rear cover [1].



F03-101-10

5) Remove the ADF controller cover [1] by removing 2 screws [2].

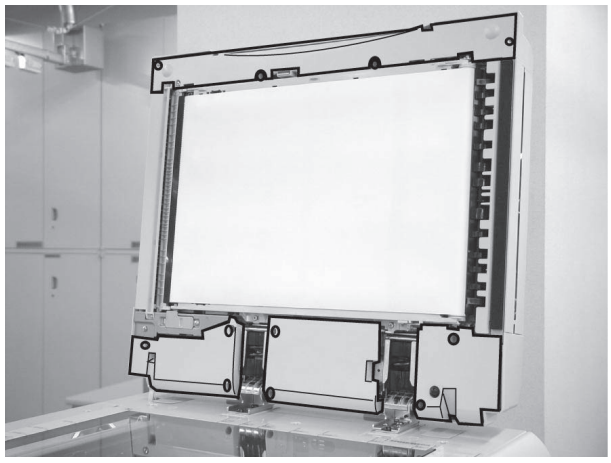


F03-101-11

■ Remove only the main unit covers (with the ADF attached to the copier main unit.)

REF.

(→ Basic configuration > 1.1 Outer covers > 1.1.3 Removal of main unit covers 2) to 5).)



F03-101-12

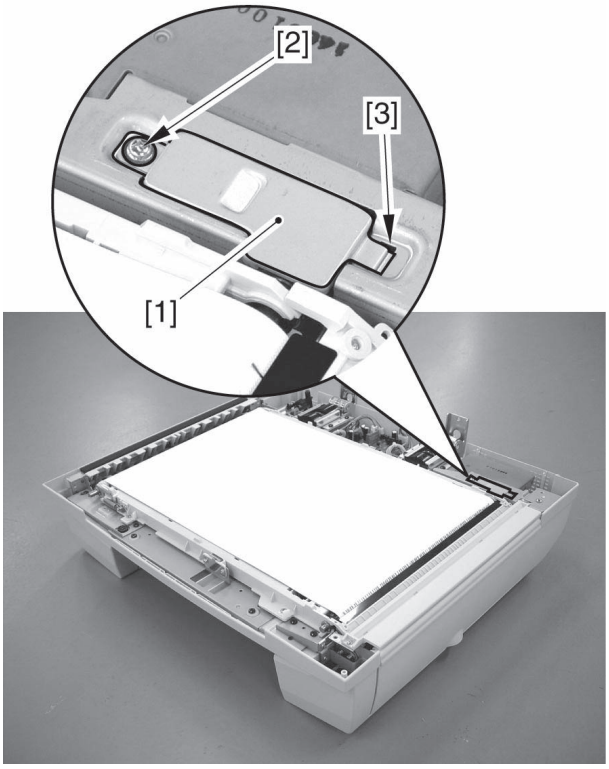
1.2 Removing the feed belt unit

To remove the pickup unit and the reverse delivery unit, first remove the ADF from the copier.

(→ Basic configuration > 1.1 Outer covers > 1.1.3 Removal of main unit covers.)

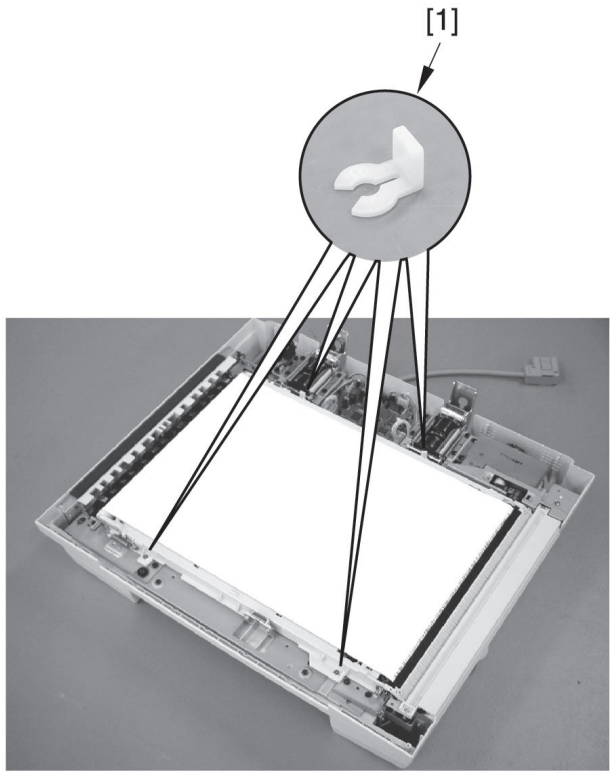
1) Remove the timing belt cover [1] by removing 1 screw [2].

When attaching the timing belt cover[1], clip on the tab [3].



F03-102-01

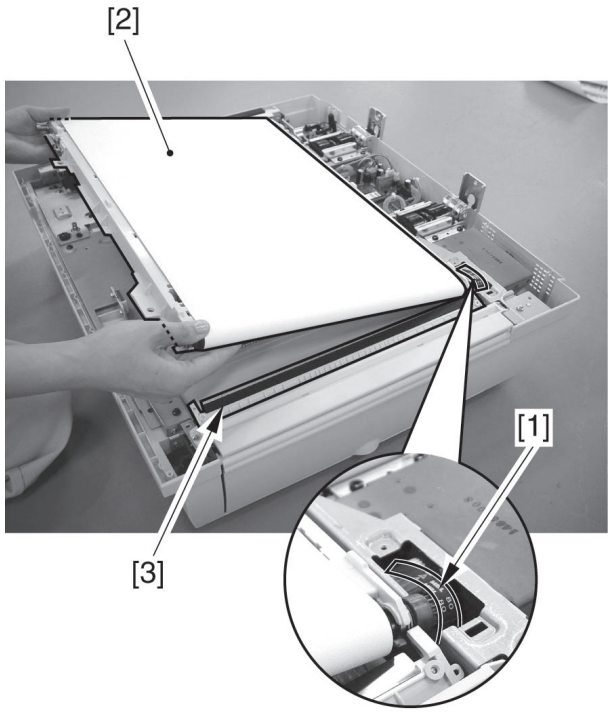
2) Remove the 4 retaining clips [1].



F03-102-02

3) Lift up the feed belt unit [2] so that it can slide out from the timing belt [1].

When attaching the feed belt unit, left up the pickup inner guide [3] slightly to ease attachment.



F03-102-03

■ Removal of main unit covers and feed unit (with the ADF attached to the copier).

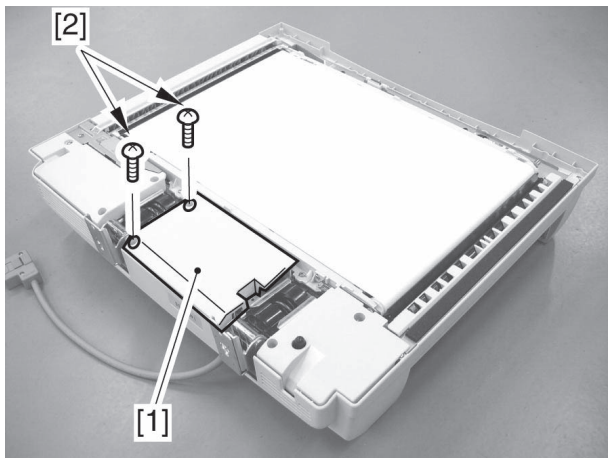
(→ Basic configuration > 1.1 Outer covers > 1.1.3 Removal of main unit covers ■ Removal of the main unit covers (with the ADF attached to the copier), > 1.2 Removal of the feed belt unit > ■ Removal of the pickup unit, reverse delivery unit)

1.3 ADF controller circuit board

1.3.1 Removal

When removing the ADF controller PCB as part of the pickup unit and reverse delivery unit removal procedure, first remove the ADD from the copier.

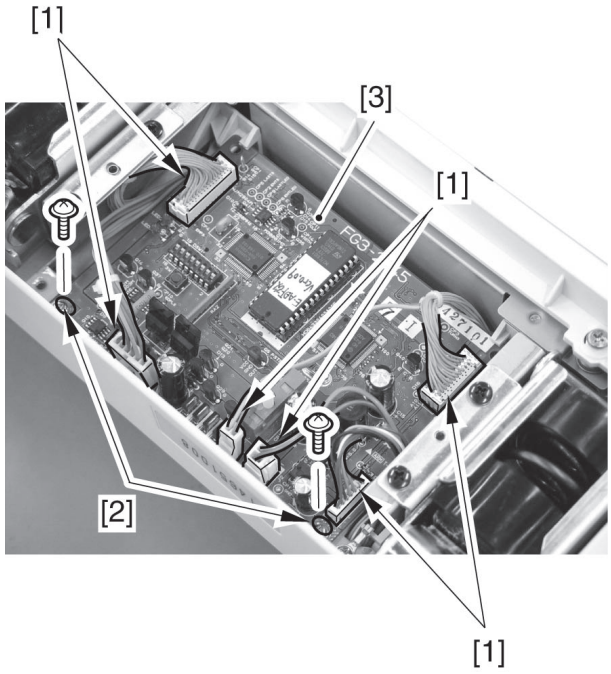
1) Remove the ADF controller [1] by removing two screws [2].



F03-103-01

2) Remove the six connectors [1] and the two screws [2] then remove the ADF controller PCB.

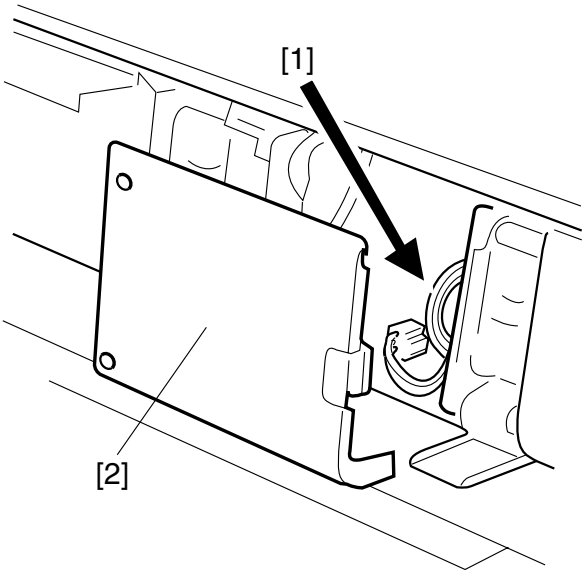
Do not touch the connectors of the ADF controller PCB.



F03-103-02

1.3.2 Installation

When attaching the ADF controller cover, make sure that the wires [1] do not get nipped by the cover [2], as illustrated.



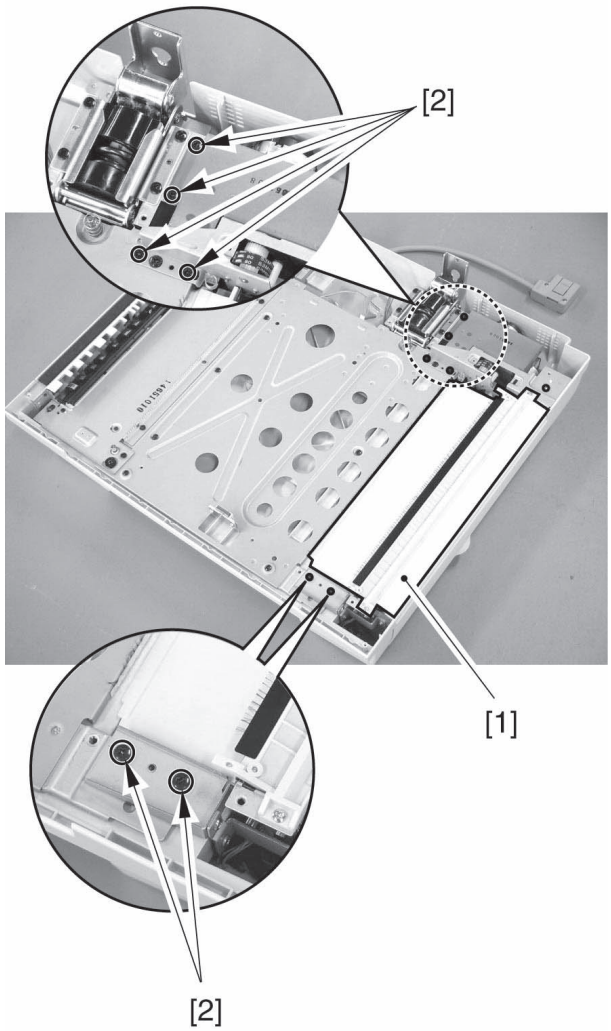
F03-103-03

2 Drive systems

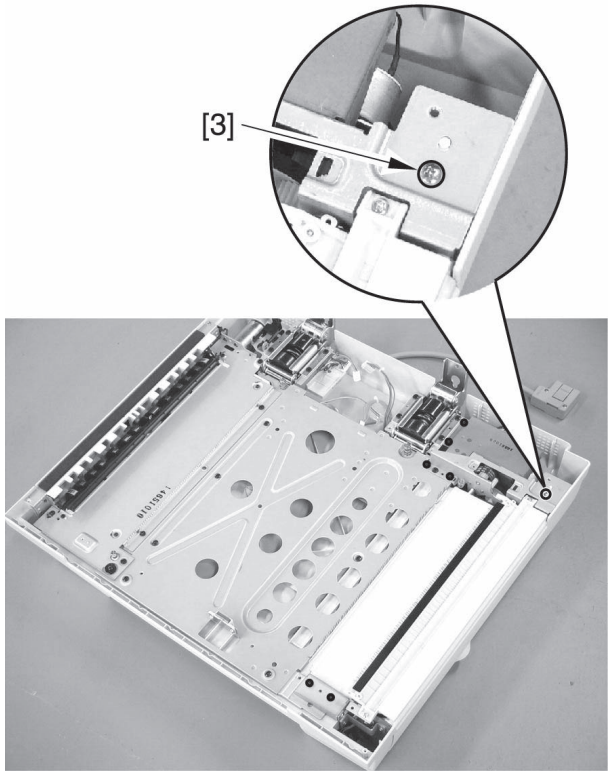
2.1 Removing the pickup unit

To remove drive related units, first remove the ADF unit from the copier.

1) Remove the document tray. (→ Basic configuration > 1.1 Outer covers > 1.1.1 Removal of document tray)
2) Remove the ADF. (→ Basic configuration > 1.1 Outer covers > 1.1.2 Removal of the ADF.)
3) Remove the main unit cover. (→ Basic configuration > 1.1 Outer covers > 1.1.3 Removal of the main unit cover.)
4) Remove the feed belt unit. (→ Basic configuration > 1.2 Removal of the feed belt unit · With the pickup unit and reverse delivery unit removed.)
5) Remove the ADF controller PCB. (→ Basic configuration > 1.3 ADF controller PCB > 1.3.1 Removal)
6) Remove the pickup unit [1] by removing six black screws [2] and one white screw [3].



F03-201-01

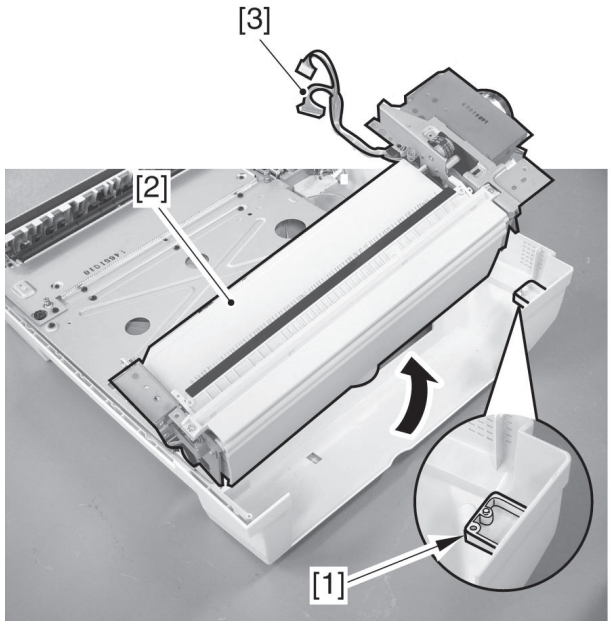


F03-201-02

6)

Remove carefully, so as not to catch on the protrusion [1] shown in the figure.

Place your hands under the pickup unit [2] and pull out the cables [3] from the trough in the main unit.

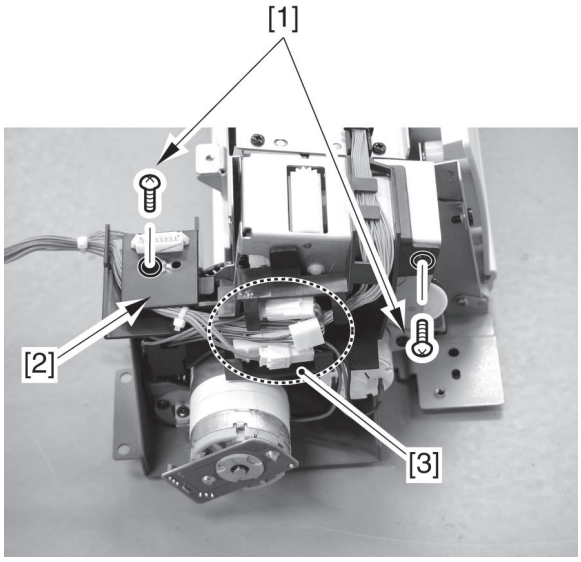


F03-201-03

2.2 Removing the separation motor (M1)

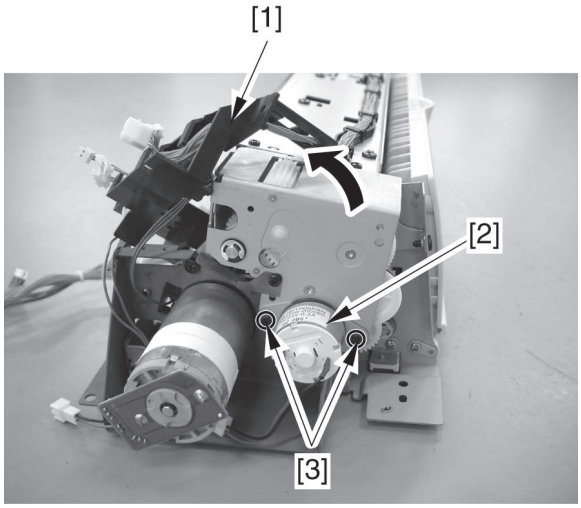
(→ 2 Drive related units > 2.1 Removal of the pickup unit 1) to 6))

1) Remove the two black screws [1].
2) Remove the four connectors [3] connected to the cable guide [2].



F03-202-01

3) Slide the cable guide [1] upward and remove the separation motor [2] by removing two black screws [3].



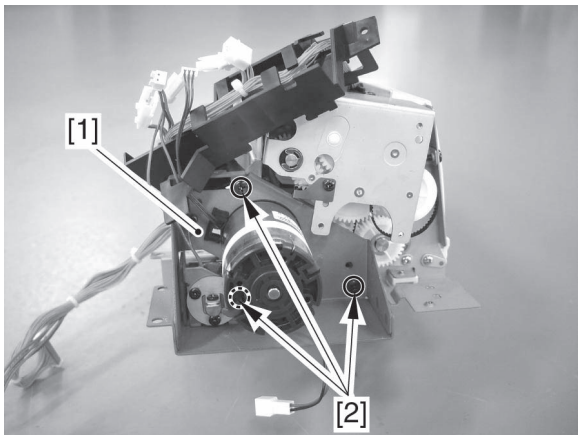
F03-202-02

2.3 Removing the feed motor (M2)

(→ 2 Drive related units > 2.1 Removal of the pickup unit)

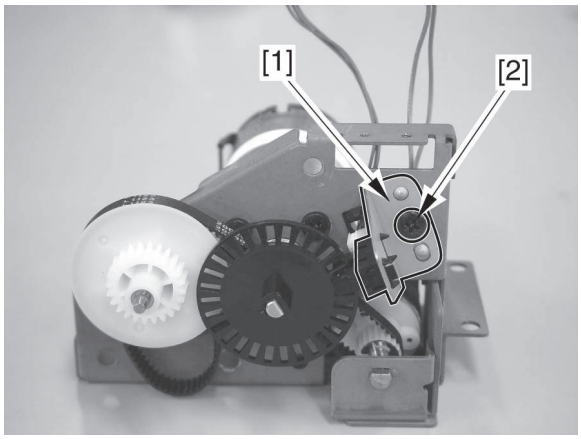
2.3.1 Removal

1) Remove the pickup unit motor unit [1] by removing three black screws [2].



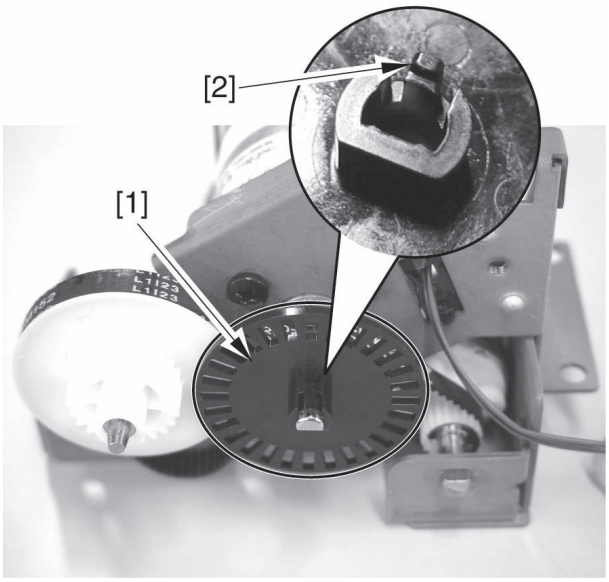
F03-203-01

2) Remove the feed delivery motor clock sensor [1] by removing the two screws [2].



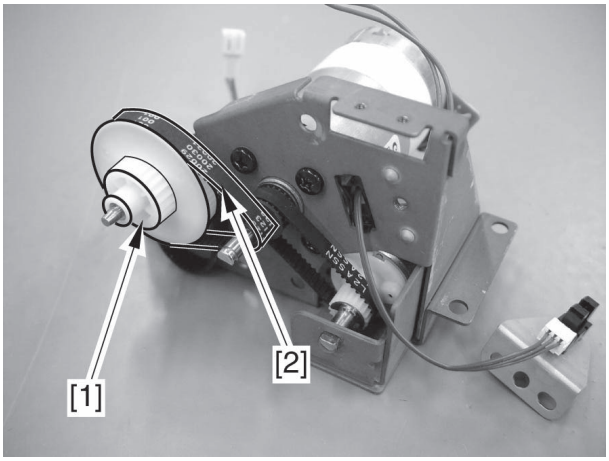
F03-203-02

3) Remove the feed motor encoder board [1] by opening the retaining claws [2].



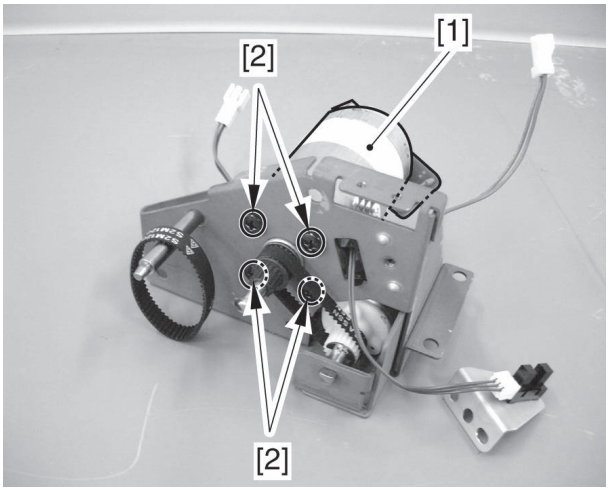
F03-203-03

4) Remove the feed motor relay gear [1] and the timing belt [2].



F03-203-04

5) Remove the feed motor [1] by removing four black screws [2].



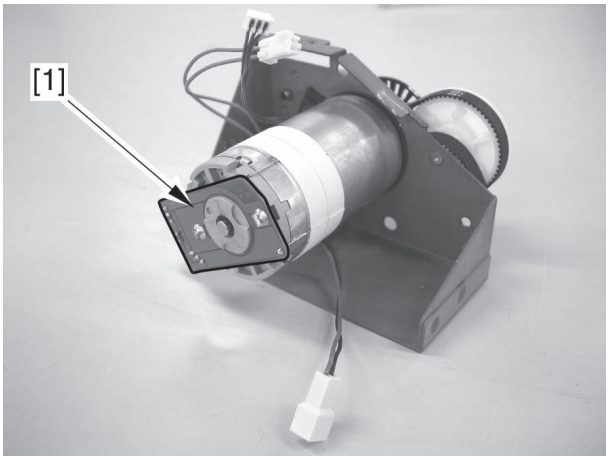
F03-203-05

2.3.2 Installation

1)

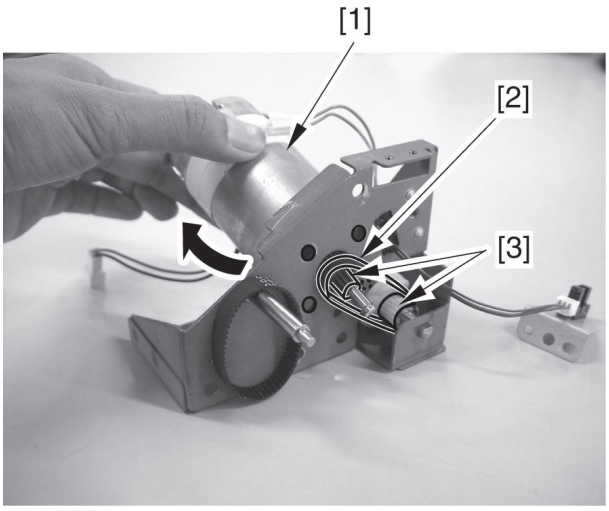
Note the following when installing the feed motor.

The feed motor needs to be attached facing the right way. The board [1] attached to the motor should be facing as shown in the illustration.



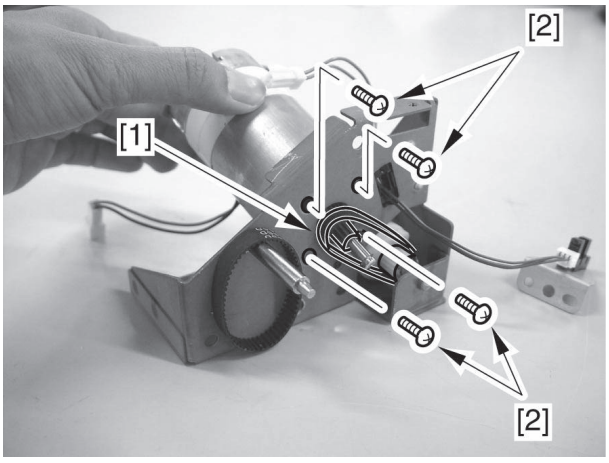
F03-203-06

2) Attach the feed motor [1] at an angle to the timing belt [2] and the gear [3].



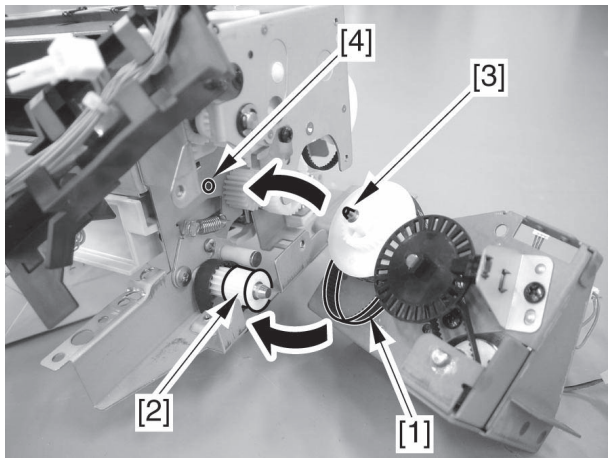
F03-203-07

3) Check that the timing belt [1] is taut and then attach with four black screws [2].



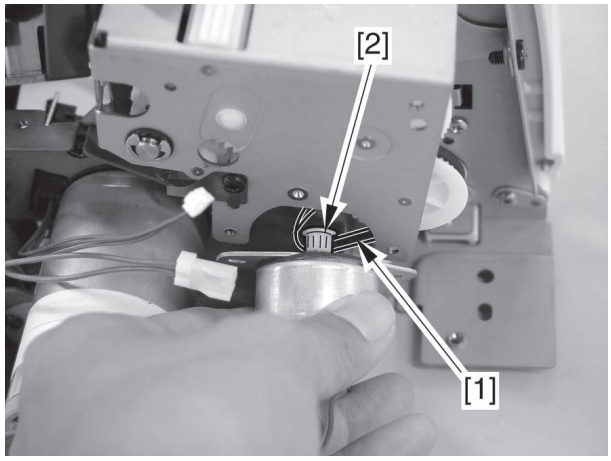
F03-203-08

■ When attaching the motor unit, hook the timing belt [1] onto the gear [2] and attach so that the motor axle [3] and the hole [4] in the metal plate are aligned.



F03-203-09

■ When attaching the separation motor, first hook the timing belt [1] onto the separation motor gear [2].



F03-203-10

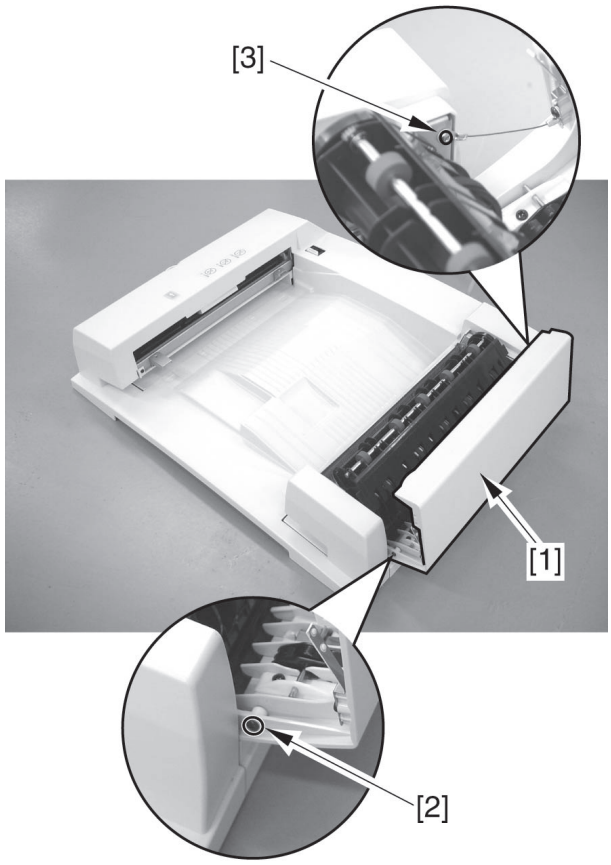
2.4 Removing the reverse delivery unit

1) Remove the document tray. (→ Basic configuration > 1.1 Outer covers > 1.1.1 Removal of document tray)
2) Remove the ADF. (→ Basic configuration > 1.1 Outer covers > 1.1.2 Removal of the ADF.)
3) Remove the main unit cover. (→ Basic configuration > 1.1 Outer covers > 1.1.3 Removal of the main unit cover.)
4) Remove the feed belt unit. (→ Basic configuration > 1.2 Removal of the feed belt unit ■With the pickup unit and reverse delivery unit removed.)
5) Remove the ADF controller PCB. (→ Basic configuration > 1.3 ADF controller PCB > 1.3.1 Removal)

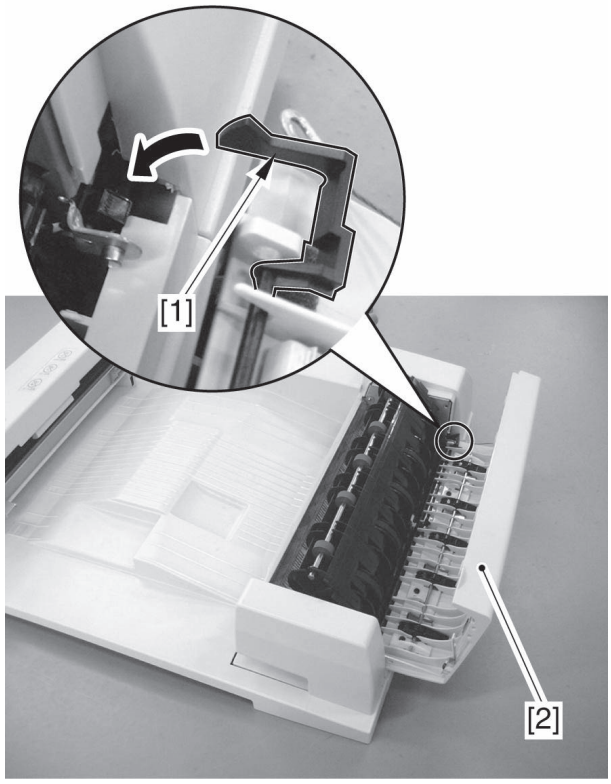
2.4.1 Removal

1) Remove the black screw [2] securing the delivery cover [1] support axle and remove the white screw [3] securing the wire.

Be careful not to bend the sensor flag [1] attached to the delivery cover [2].

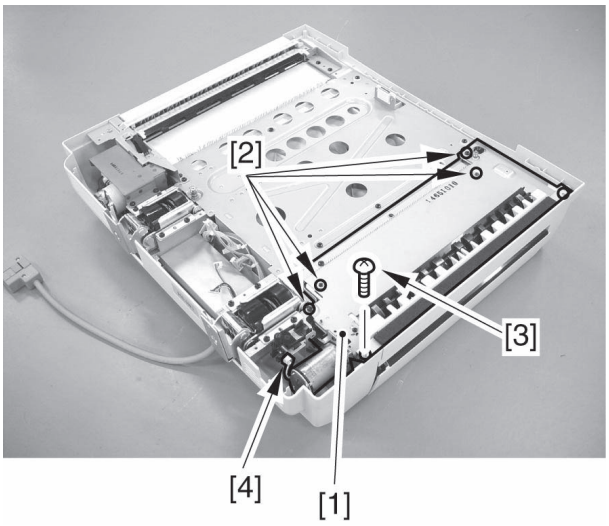


F03-204-01



F03-204-02

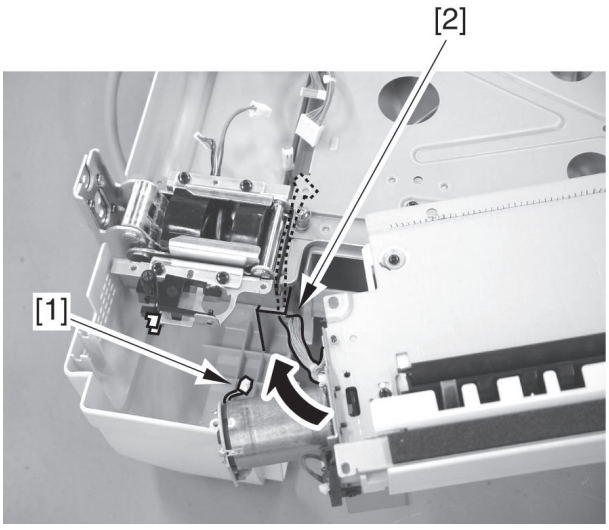
2) Remove the reverse delivery unit [1] by removing four black screws [2] and one white screw [3] and then remove the connector [4] attached to the motor.
3) Place your hand under the reverse delivery unit [1] and pull out the cables from the trough in the main unit.



F03-204-03

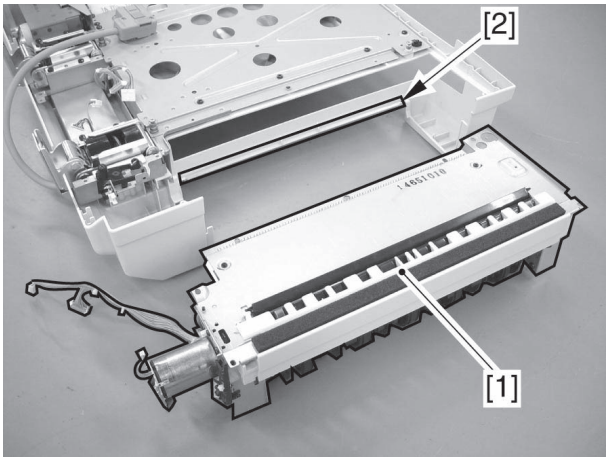
2.4.2 Installation

1) Before attaching the reverse delivery unit, re-attach the connector [1] and feed the reverse delivery unit connector [2] through the trough of the main unit and attach it.



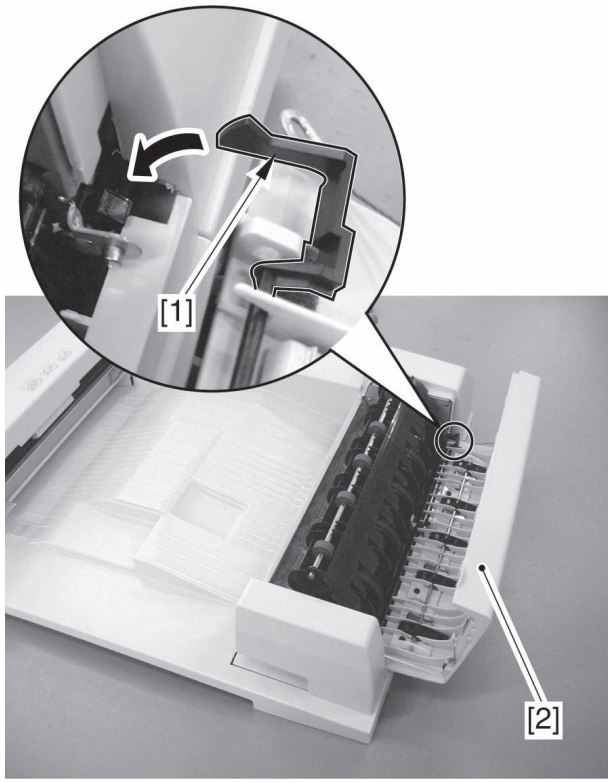
F03-204-04

Make sure that the reverse delivery unit [1] does not interfere with the reverse transfer mylar [2].
If the mylar becomes warped, it may cause jams in the reverse delivery assembly.



F03-204-05

2) Insert the sensor flag [1] first and then attach the delivery cover [2].



F03-204-06

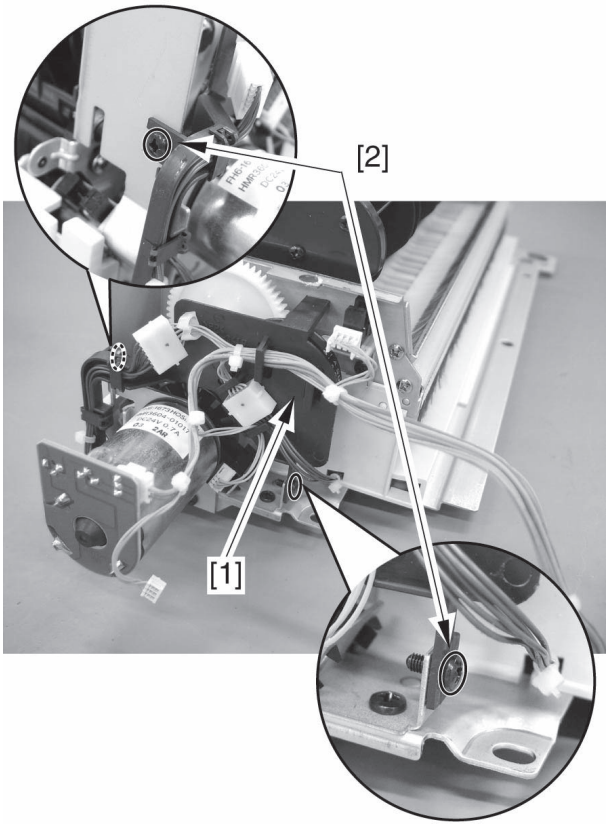
REF.

When attaching the cover support axle, push it in while closing the delivery cover.

2.5 Removing the reverse delivery motor (M3)

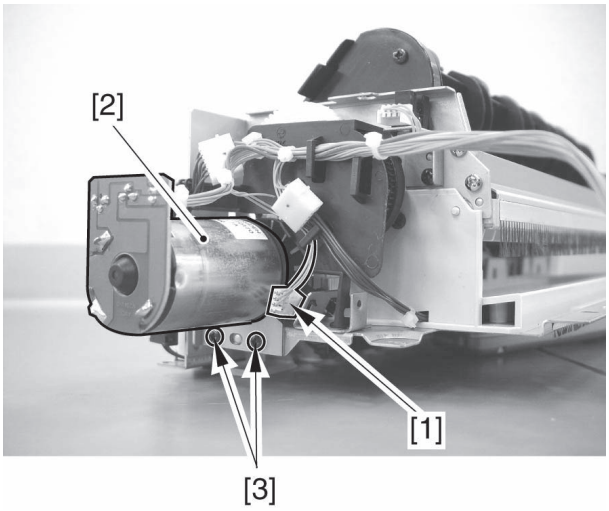
(→ 2 Drive related units > 2.4 reverse delivery unit > 2.4.1 Removal)

1) Remove the two screws [2] from the cable guide [1] and loosen it.



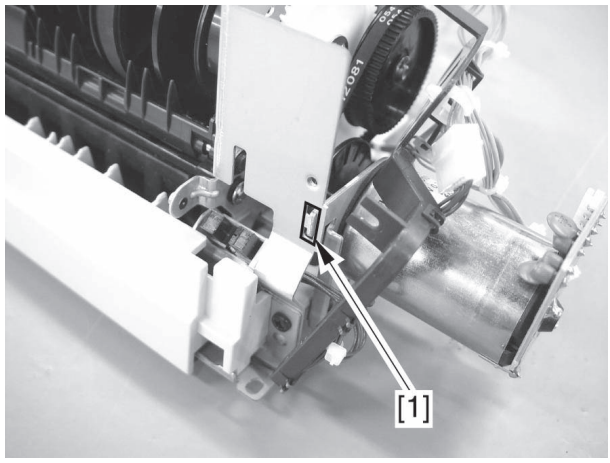
F03-205-01

2) Remove the connector [1] and remove the reverse delivery motor [2] by removing the two screws [3].



F03-205-02

When removing the reverse delivery motor, make sure that it does not catch on the notch in the metal plate [1].

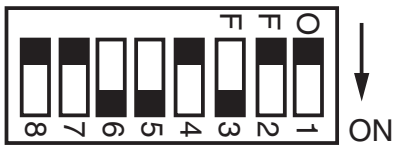


F03-205-03

3 Paper feed related

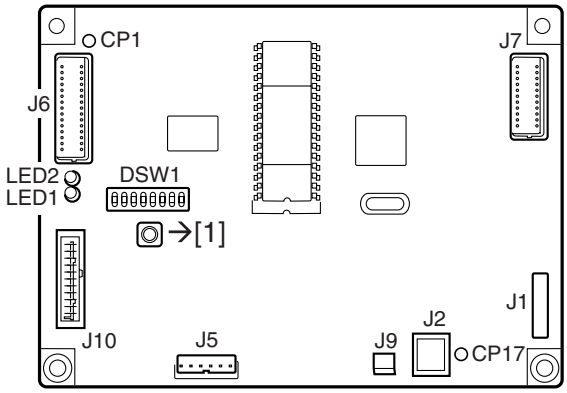
3.1 Removing the separation pad

1) Set the dipswitch bits 3, 5 and 6 on the ADF controller PCB ON. (Lifter ascend mode)



F03-301-01

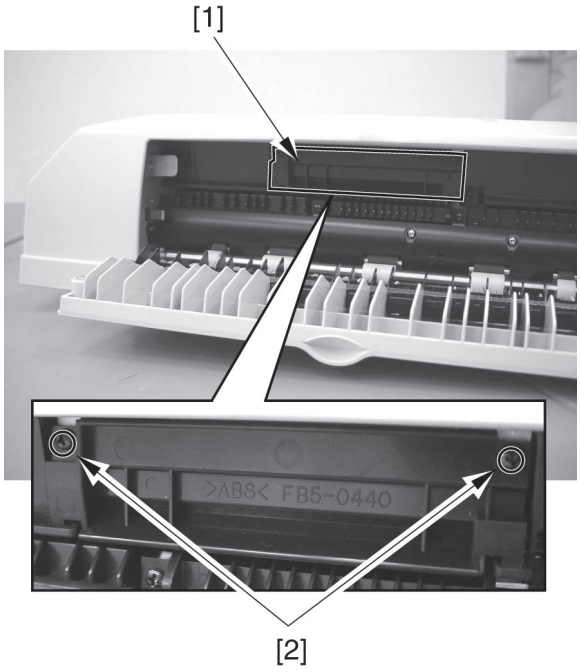
2) Turn ON the power to the copier. When the dipswitch [1] on the ADF controller is pressed, the lifter will automatically ascend after three seconds.



ADF controller PCB

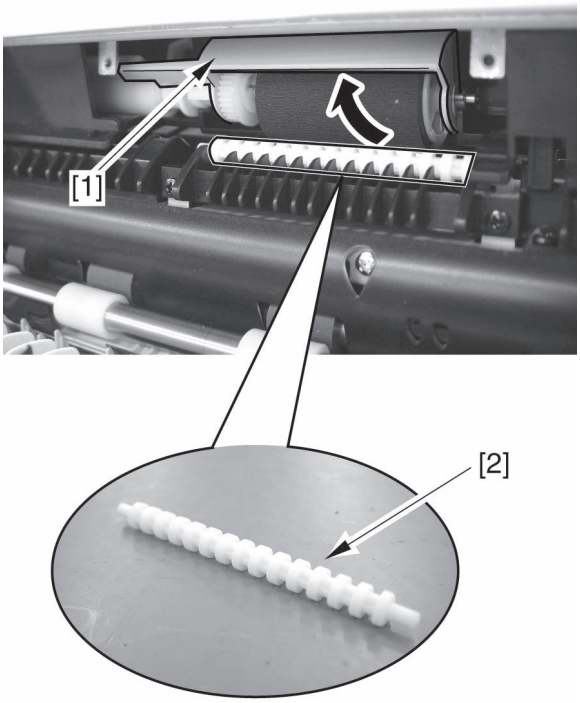
F03-301-02

3) Close the ADF.
4) Remove the separation roller cover [1] by removing the two black screws [2].



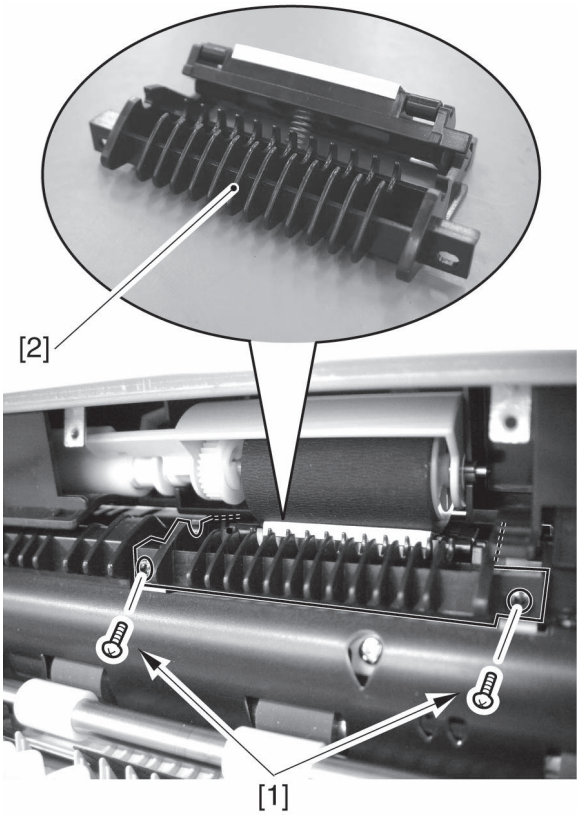
F03-301-03

5) Make sure that the separation roller holder [1] is raised as illustrated, and then attach the guide roller [2].



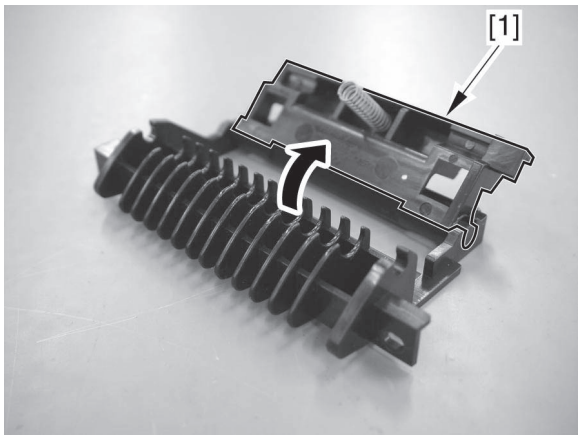
F03-301-04

6) Remove the two black screws [1] and then remove the separation purge unit [2].



F03-301-05

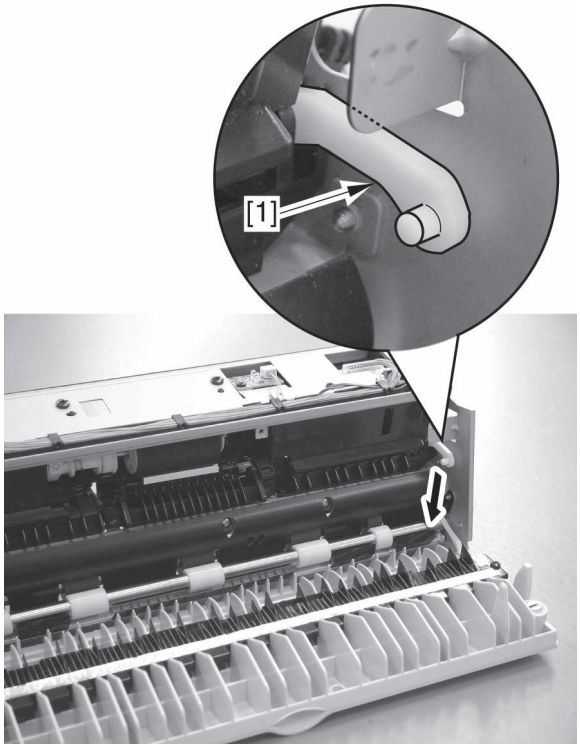
7) Raise the separation pad [1] and attach it.



F03-301-06

When attaching or removing the separation pad, push the left release lever [1] in the direction of the arrow shown here.

8) After attaching the separation pad, turn bits 3 and 6 ON and press the push switch.
The lifter will automatically descend and stop three seconds later.

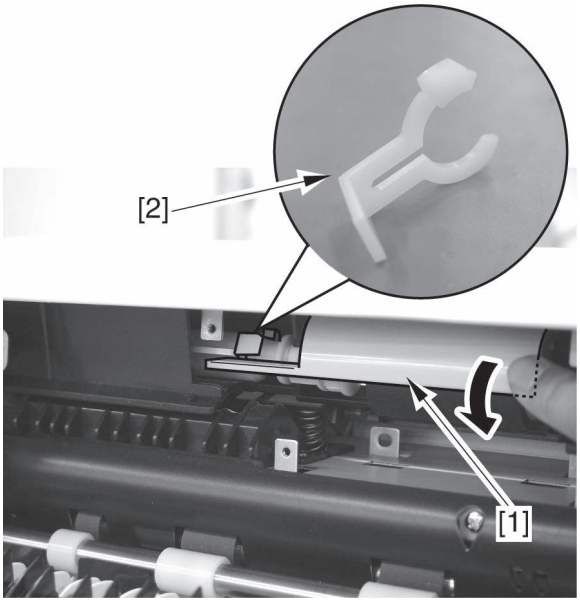


F03-301-07

3.2 Removing the separation roller

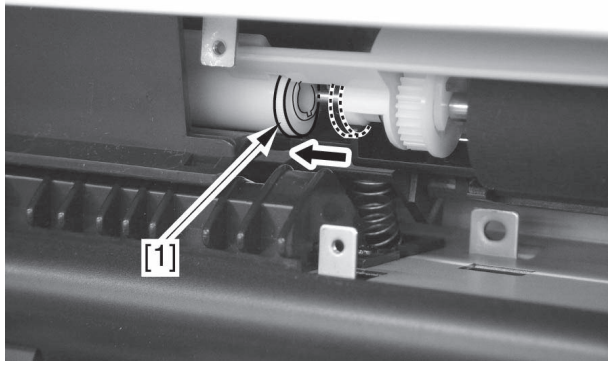
(→ 3 Paper feed related > 3.1 Removal of the separation pad assembly)

1) Lower the separation roller holder [1] and pull out the stopper [2].



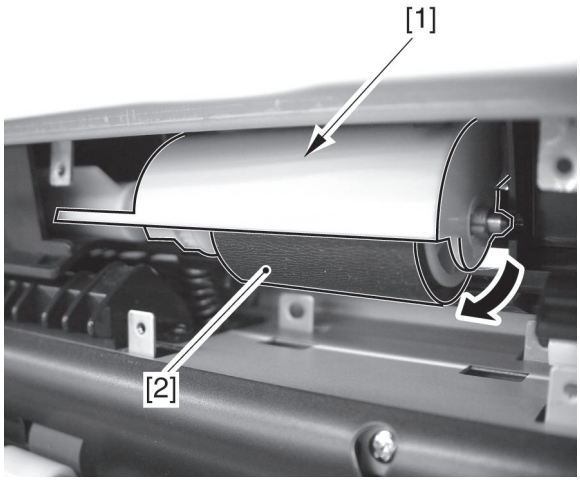
F03-302-01

2) Slide the separation roller coupling [1] over to the left.



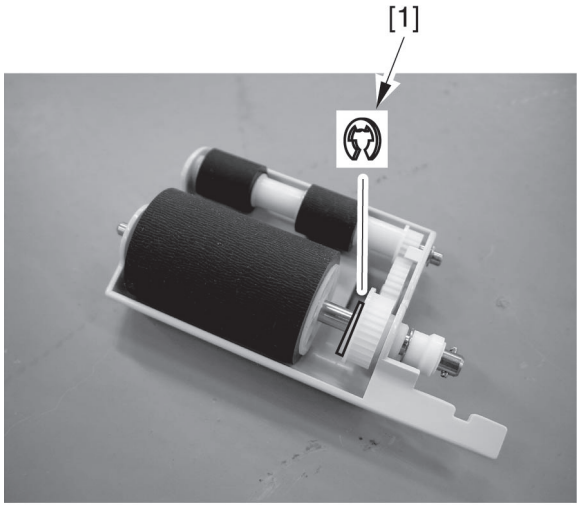
F03-302-02

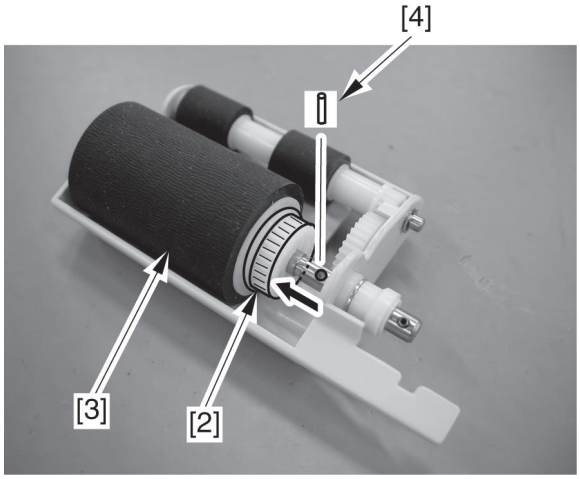
3) Lower the separation roller holder and pull out the separation roller unit to the left.



F03-302-03

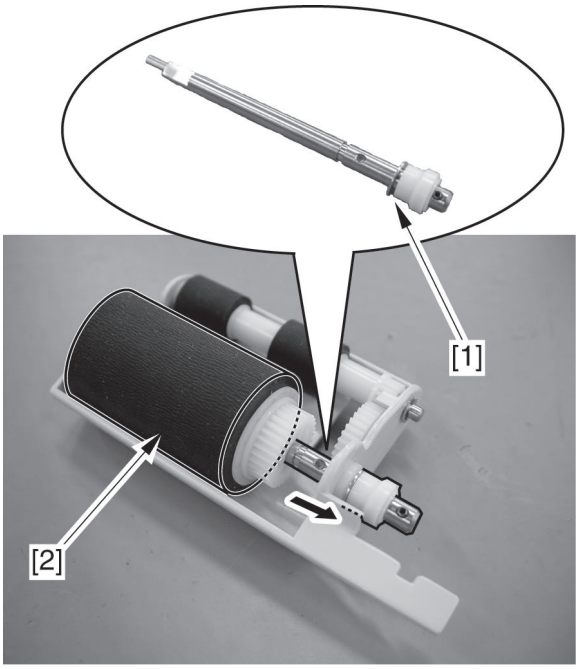
4) Remove the resin E-ring [1] that secures the shaft and then move the gear [2] to the separation roller side [3] and remove the shaft pin [4].





F03-302-04

5) Pull out the shaft [1] in the direction of the arrow and then remove the separation roller [2].

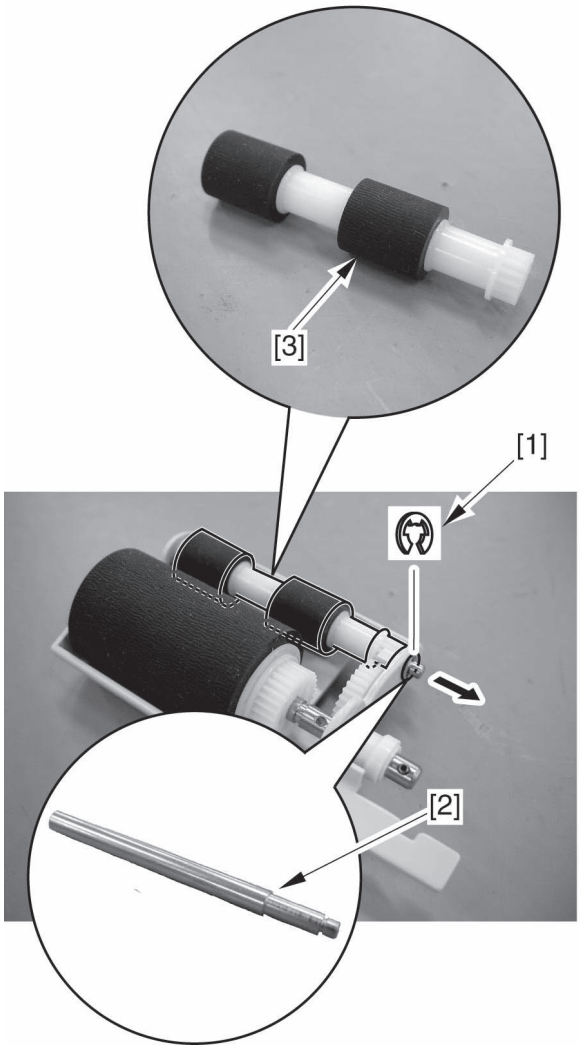


F03-302-05

3.3 Removing the pickup roller

(→ 3 Paper feed related units > 3.2 Removal of the separation roller > 1) to 3))

1) Remove the resin E-ring [1] that secures the shaft. Then pull out the shaft [2] and remove the pickup roller [3].

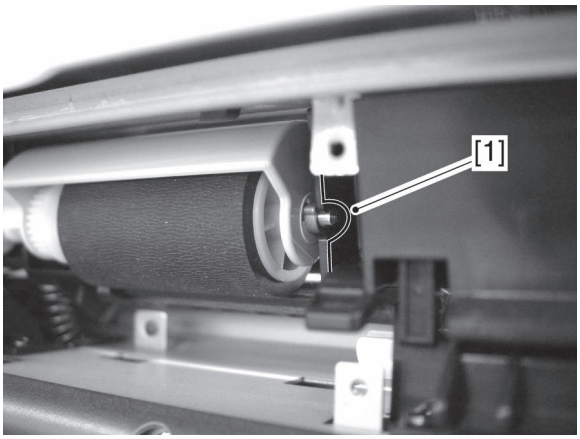


F03-303-01

3.4 Installing the separation roller unit

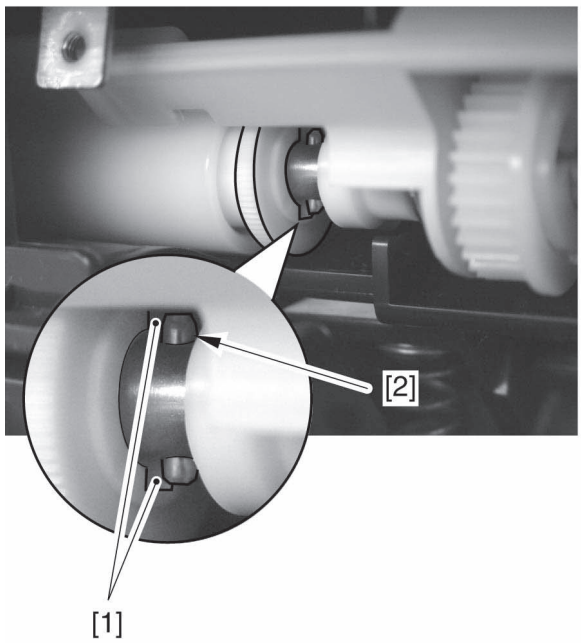
(→ 3 Paper feed related units > 3.1 Removing the separation pad)

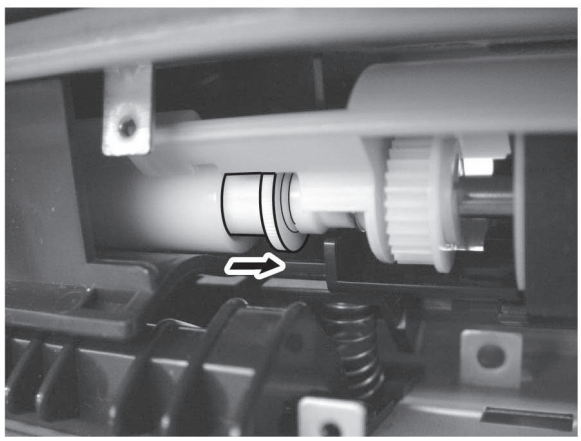
1) Fit the separation roller into the pickup unit, being careful of the position of the bearing [1].



F03-304-01

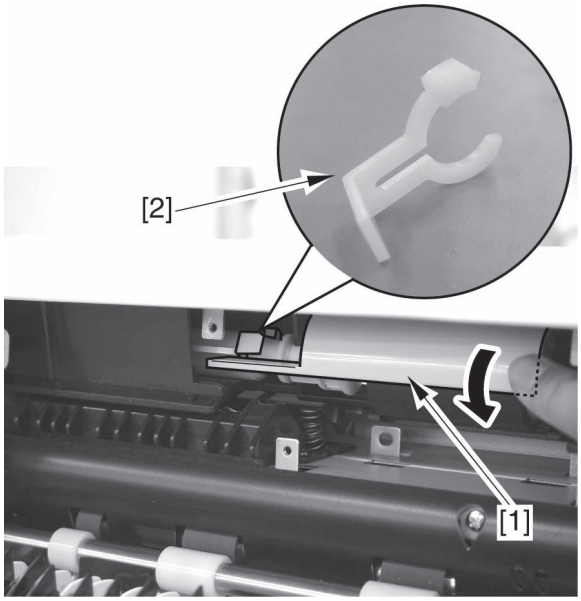
2) Slide the coupling in the direction of the arrow shown so that the notch [1] meshes with the spring pin [2].





F03-304-02

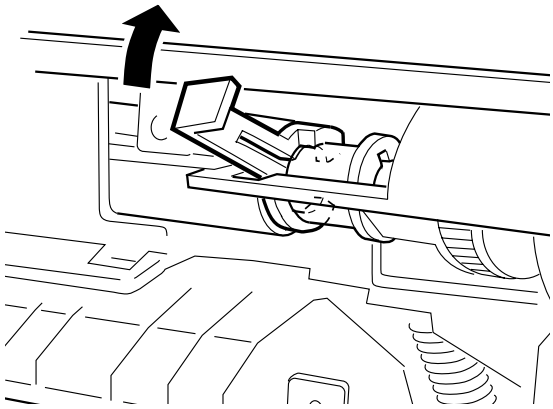
3) Lower the separation holder [1] and slide in the stopper [2].



F03-304-03

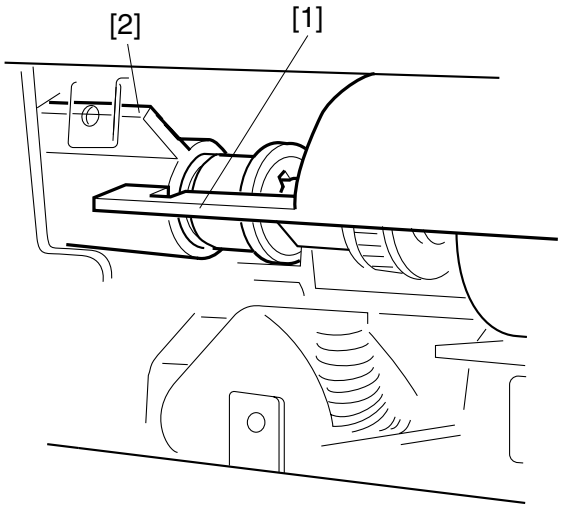
The stopper should be attached from above the separation roller holder lever.

4) Move the stopper slightly up and down to check that it is properly in the separation roller coupling groove.



F03-304-04

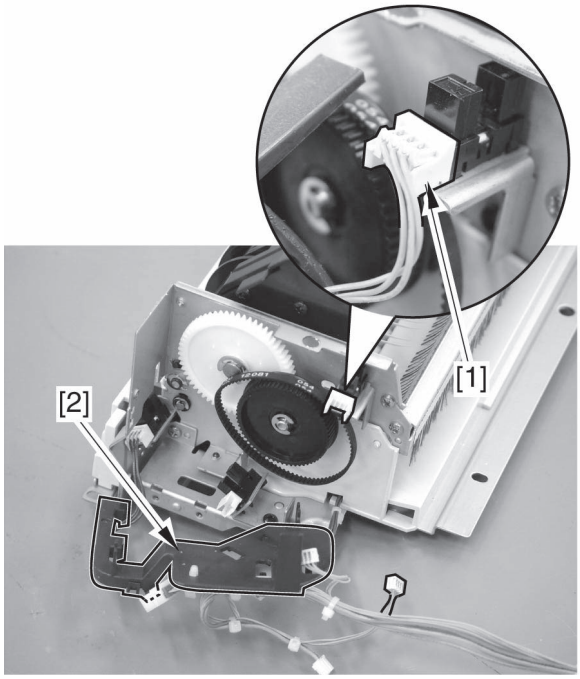
Make sure that the separation roller holder [1] is below the pickup roller joint [2].



F03-304-05

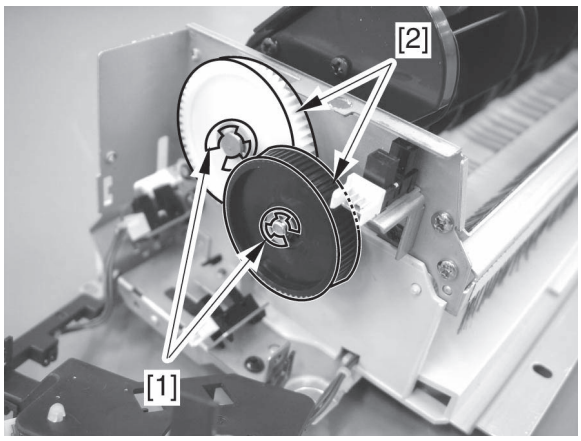
3.5 Removing the reverse roller and feed roller

1) Remove the reverse delivery unit. (→ 2 Drive related units > 2.4.1 Removal of the reverse delivery unit)
2) Take out the reverse delivery motor. (→ 2 Drive related units > 2.5 Removal of the reverse delivery motor (M3) 1) to 2))
3) Remove the connector [1] and then slide the cable guide [2] downward.



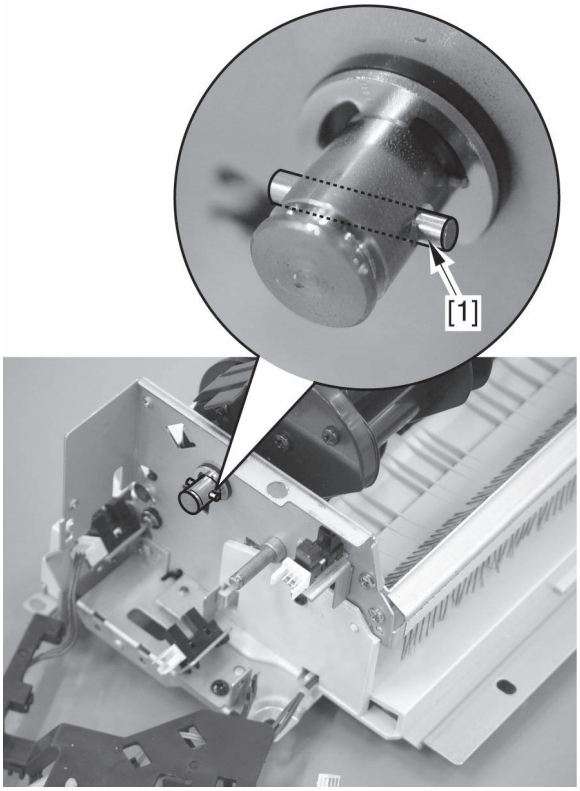
F03-305-01

4) Remove the two E rings [1] and the two gears [2].



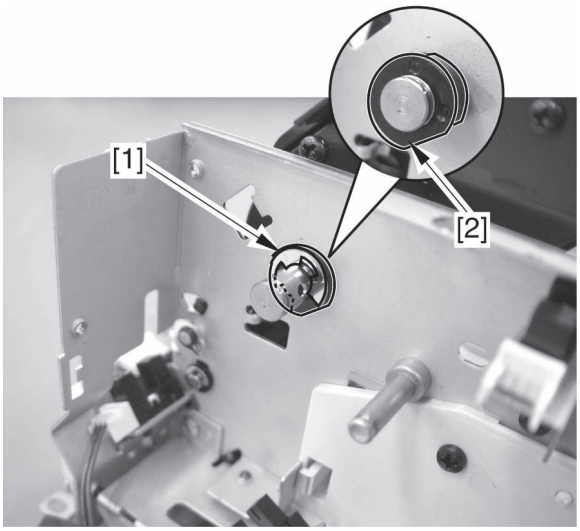
F03-305-02

5) Remove the shaft pin [1] from the main axle.



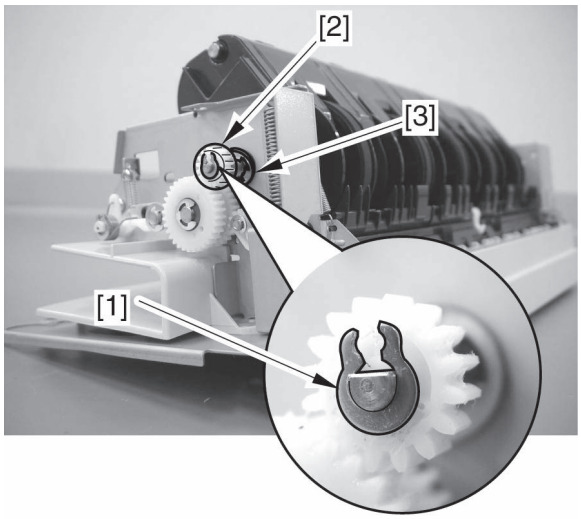
F03-305-03

6) Remove the E ring [1] and the bushing [2].



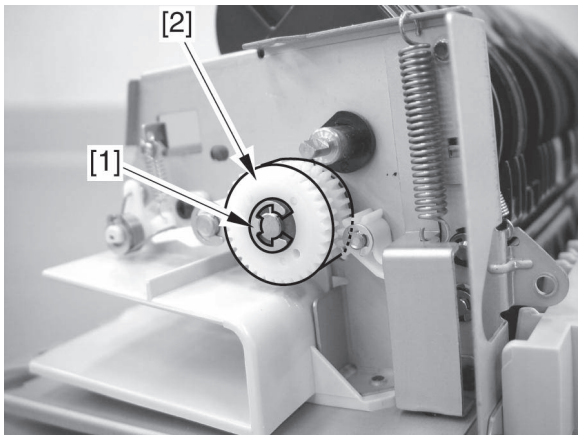
F03-305-04

7) Remove the clip ring [1] securing the gear [2]. Remove the gear [2] and the E-ring [3] securing the gear shaft.



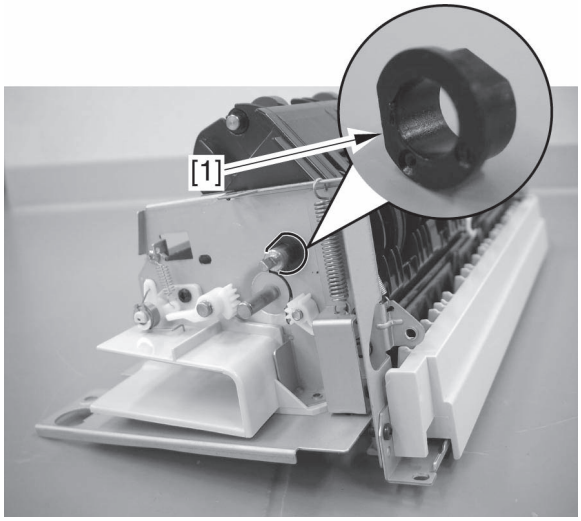
F03-305-05

8) Remove the E ring [1] and the gear [2].



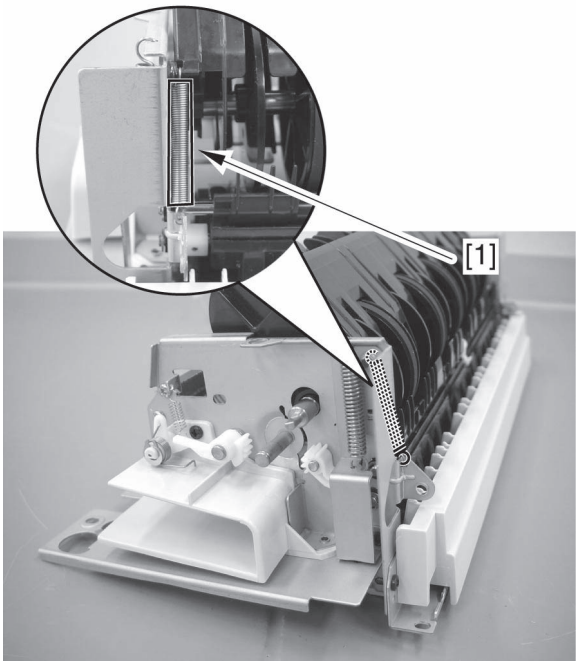
F03-305-06

9) Remove the bushing [1].



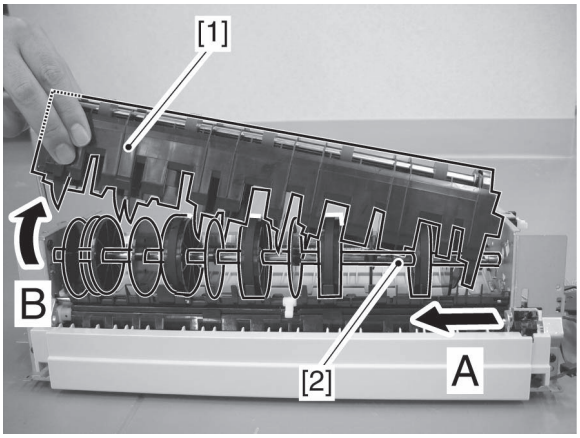
F03-305-07

10) Remove the inner guide spring [1].



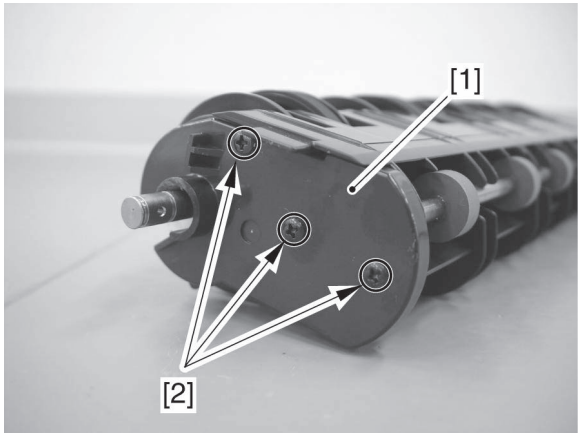
F03-305-08

11) As you lift up the inner guide unit [1] slide the reverse roller [2], with the shaft, in the direction of the arrow. Then lift up the inner guide unit [1] and the reverse roller [2] together and remove them/



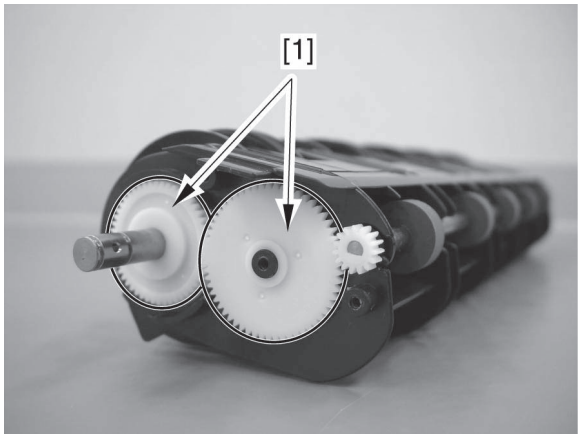
F03-305-09

12) Remove the gear cover [1] by removing the three black screws [2].



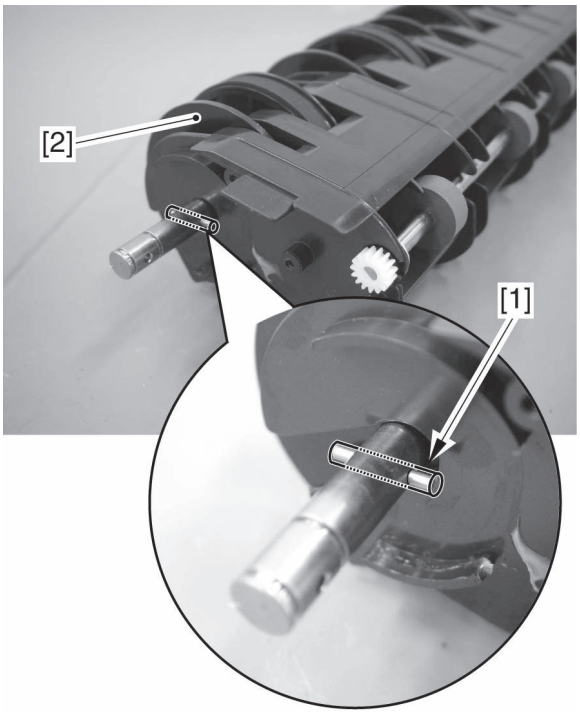
F03-305-10

13) Remove the two gears [1].



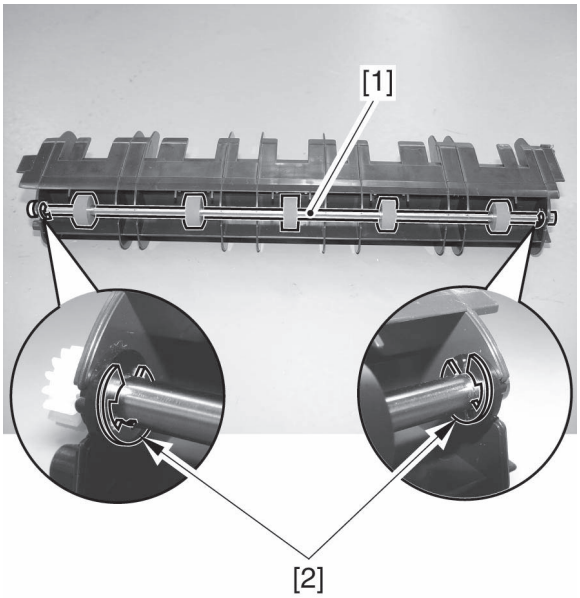
F03-305-11

14) Remove the shaft pin [1] from the reverse roller axle and remove the reverse roller [2].



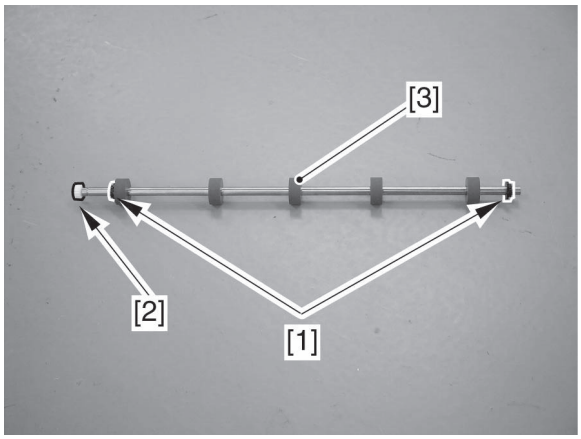
F03-305-12

15) Remove the two Erings [2] securing the feed roller shaft [1].



F03-305-13

16) Remove the bearings [1] at both ends and the gear [2] and then remove the feed roller [3].



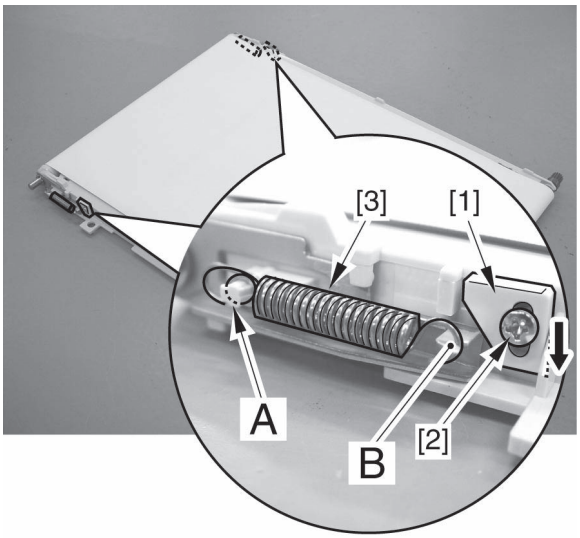
F03-305-14

3.6 Removing the feed belt

1) Remove the transfer belt unit (→ 1. Basic configuration > 1.2 Removal of the transfer belt unit)

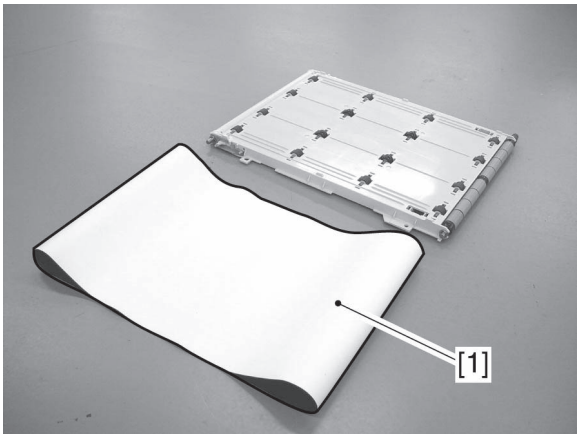
To remove the spring, first unhook the ring section from the protrusion A in the illustration. To attach the spring, first secure at notch B and then hook onto protrusion A. (This is to maintain the accuracy of the belt tension.)

2) (Remove the two stoppers [1] at either side of the feed belt unit by removing one screw [2] and then)* remove the two springs [3] at either end.
* DADF-K1 only.
When attaching the two stoppers [1], make sure to fit them in the direction indicated by the arrow and to fasten with the screws.



F03-306-01

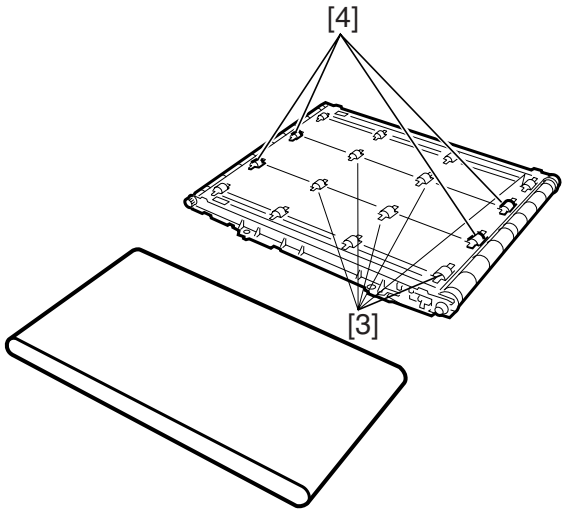
3) Pull out the feed belt [1].



F03-306-02

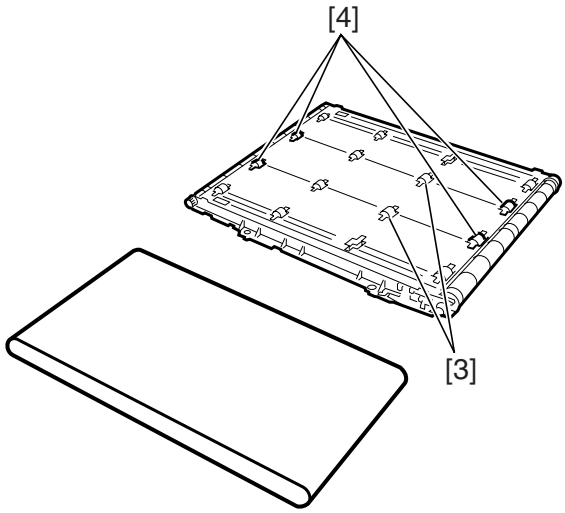
The spring strength of the feed belt unit retaining roller depends on the type of spring (strong, medium, weak). When replacing the spring, be careful not to attach the spring in the wrong position.
There are three types of spring.
<DADF-K1>
[3]: Six marking springs (medium)
[4]: Four silver springs (strong)
Other than [3] and [4]:
Six silver springs (weak)
<DADF-B1>
[3]: Two gold springs (medium)
[4]: Four silver springs (strong)
Other than [3]: and [4]:
Eight silver springs (weak)

<DADF-K1>



F03-306-03

<DADF-B1>

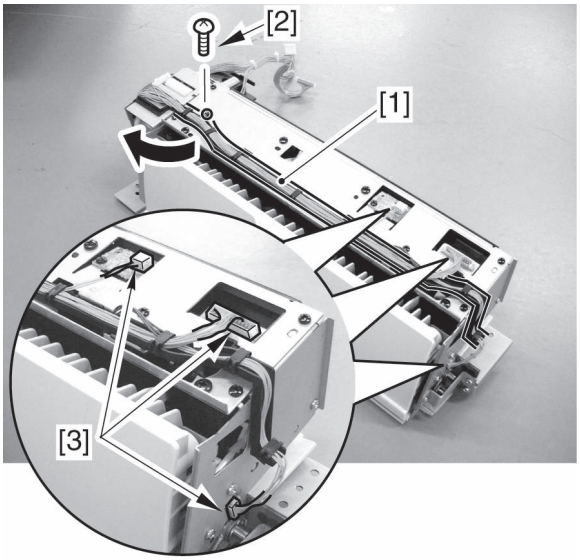


F03-306-04

4 Sensors

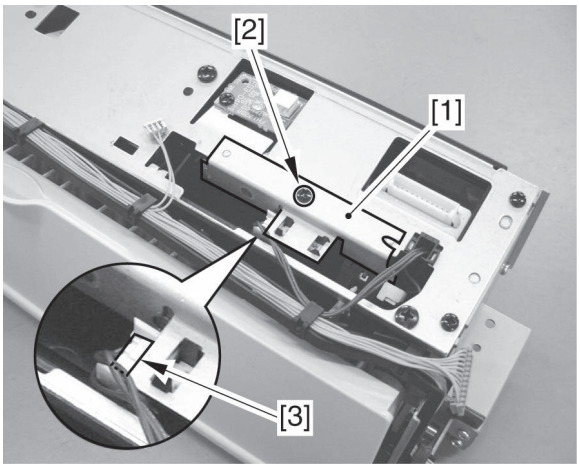
4.1 Removing the document sensor board (U503)

1) Remove the pickup unit. (→ 2 Drive related units > 2.1 Removal of the pickup unit)
2) Remove the black screw [2] from the cable guide [1] and the three connectors [3], then slide out the cable guide in the direction of the arrow shown.



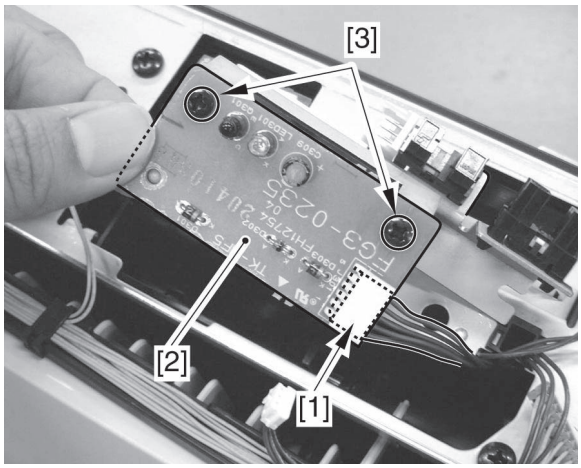
F03-401-01

3) Remove the document sensor board attachment stay [1] by removing one black screw [2] and then remove the connectors [3] from the sensor.



F03-401-02

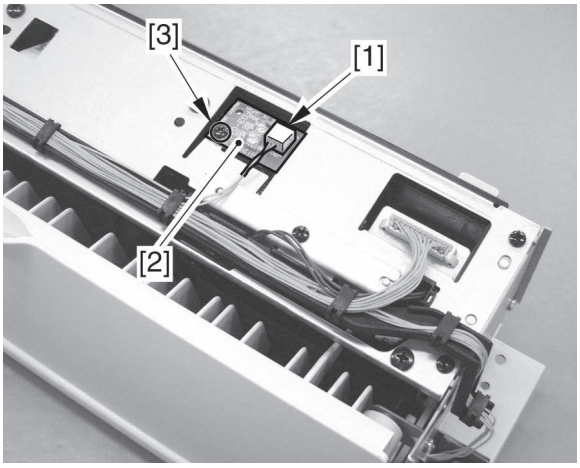
4) Lift up the document sensor board attachment stay and remove the single connector [1] then remove the document sensor board [2] by removing the two black screws [3].



F03-401-03

4.2 Removing the document set LED board

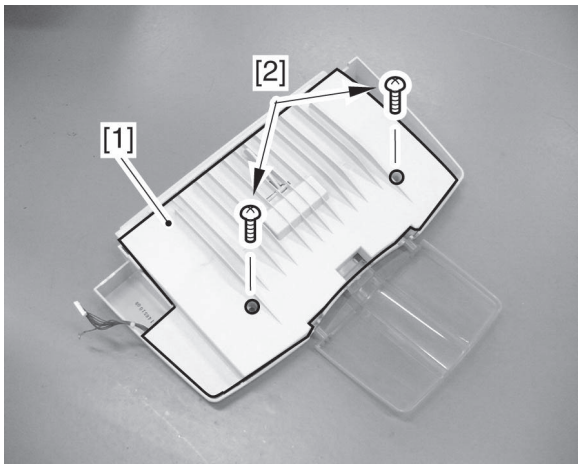
1) Remove the pickup unit. (→ 2 Drive related units > 2.1 Removal of the pickup unit)
2) Remove the connector [1] and then remove the document set LED board [2] by removing one black screw [3].



F03-402-01

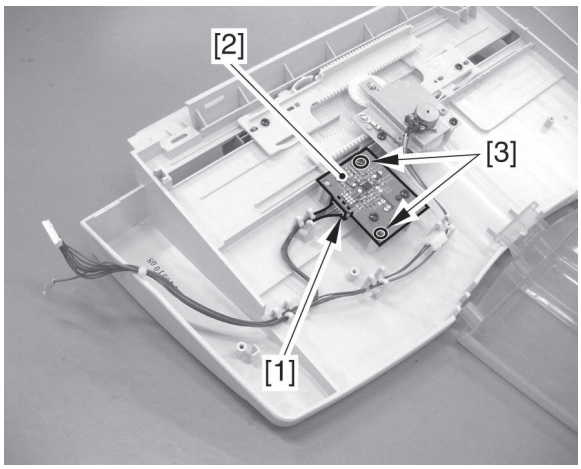
4.3 Removing the final document detection sensor board (U504)

1) Remove the document tray. (→ 1 Basic configuration > 1.1.1 Removing the document tray)
2) Remove the document tray cover [1] by removing the two screws [2].



F03-403-01

3) Remove the connector [1] and then remove the final document detection sensor board [2] by removing the two black screws [3].

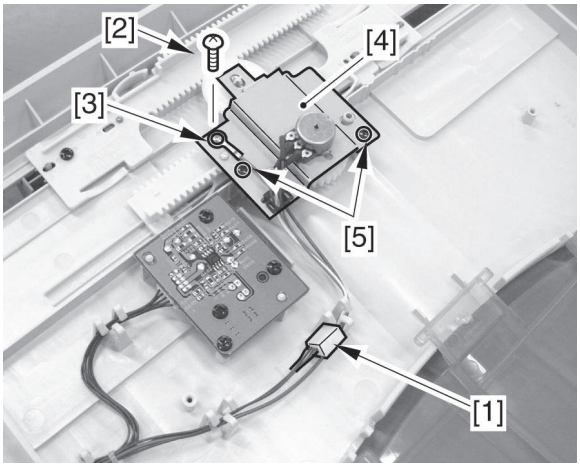


F03-403-02

4.4 Document detection dial (VR)

4.4.1 Removal

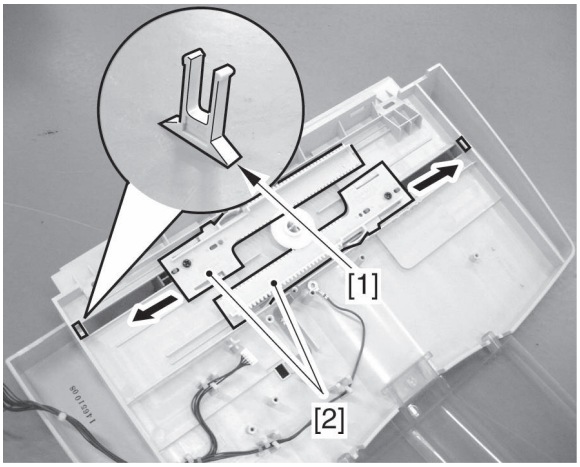
1) Remove the document tray. (→ 1 Basic configuration > 1.1.1 Removing the document tray)
2) Remove the document tray cover. (→ 4 Sensors > 4.3 Removing the final document detection sensor board (U504) 1) to 2))
3) After removing the connector [1], remove the screw [2] and then the earth wire [3].
4) Remove the final document detection dial [4] by removing the two black screws [5].



F03-404-01

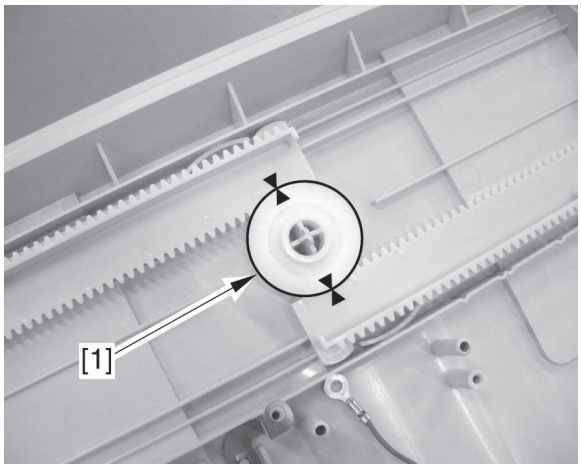
4.4.2 Installation

1) Remove the single document stopper [1] and then open out the slide guide [2] to both ends.



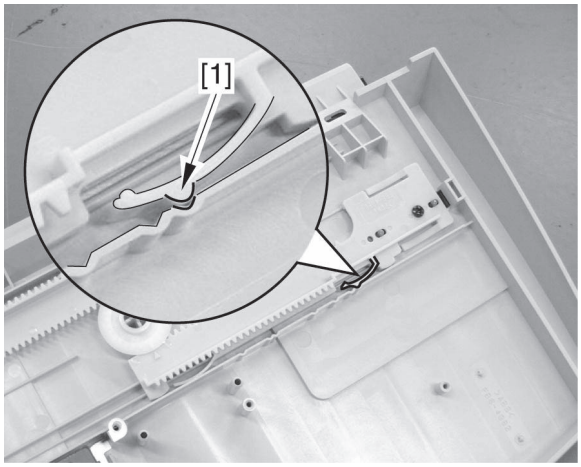
F03-404-02

2) Attach the dial idler gear [1] to match the position shown by the arrow.



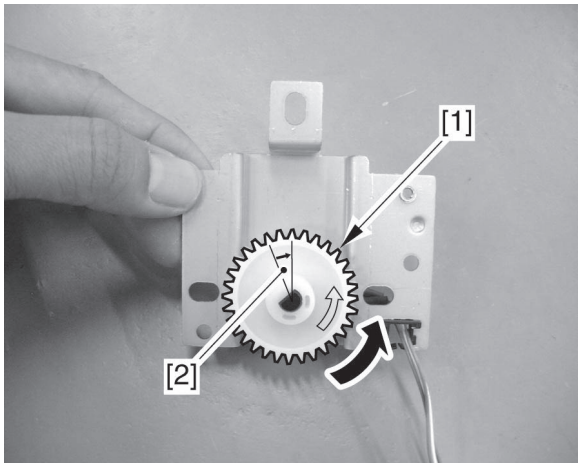
F03-404-03

3) Check that the click tab [1] of the side guide gear is in the position illustrated.



F03-404-04

4) Rotate the dial gear [1] in the direction of the arrow and then return it two clicks [2].

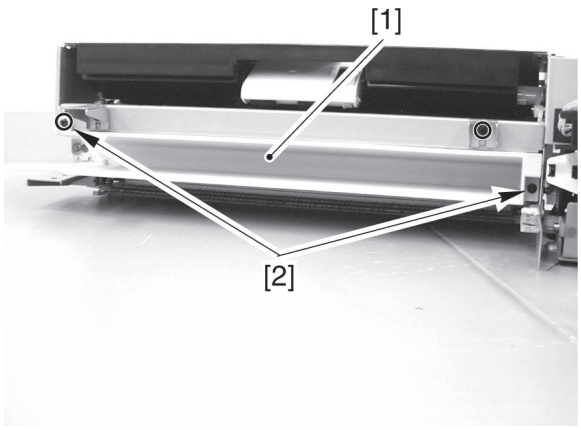


F03-404-05

5) Attach the document detection dial with two screws.
6) Attach the two width guides, covers and the document tray to the ADF.
7) Perform the document tray width adjustments described in 'Chapter 5 1 Standard adjustments' to 1.2 Electrical units'.

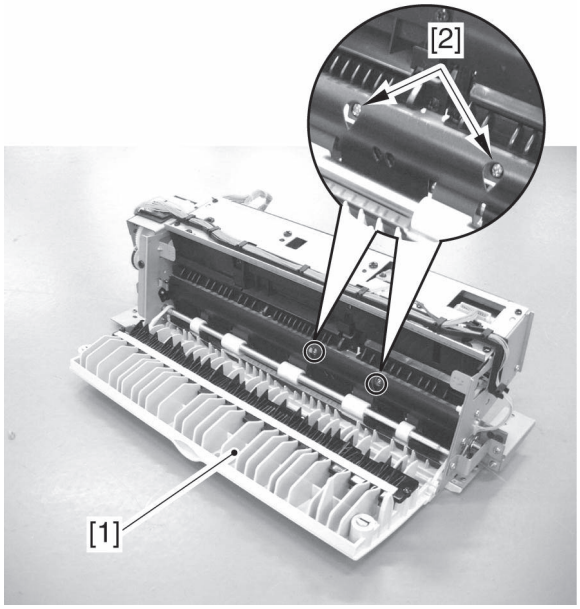
4.5 Removing the pre-registration sensor (U502)

1) Remove the pickup unit. (→ 2 Drive related units > 2.1 Removal of the pickup unit)
2) Remove the pickup lower cover [1] by removing the two black screws [2].



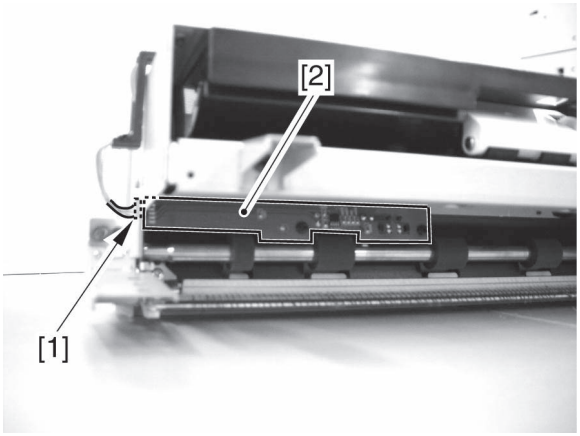
F03-405-01

3) Open the pickup unit [1] and remove the two screws [2].



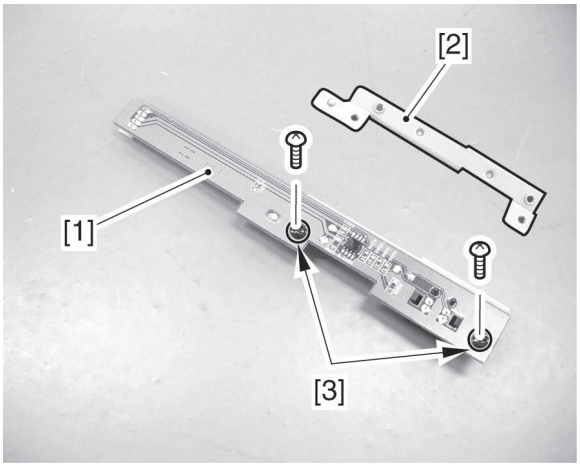
F03-405-02

4) Remove the connector [1] and then remove the pre-registration sensor board [2].



F03-405-03

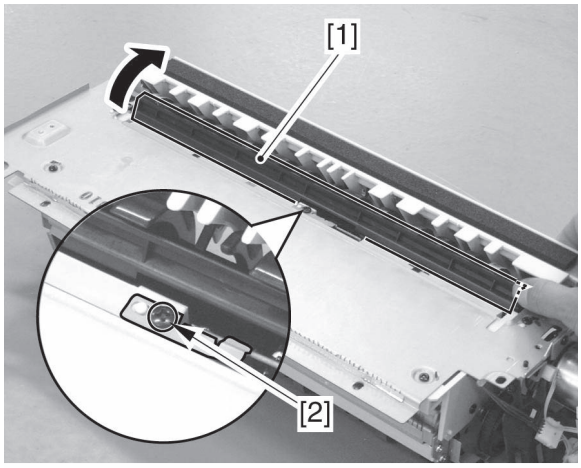
5) Remove the attachment stay [2] of the pre-registration sensor board [1] by removing three black screws [3].



F03-405-04

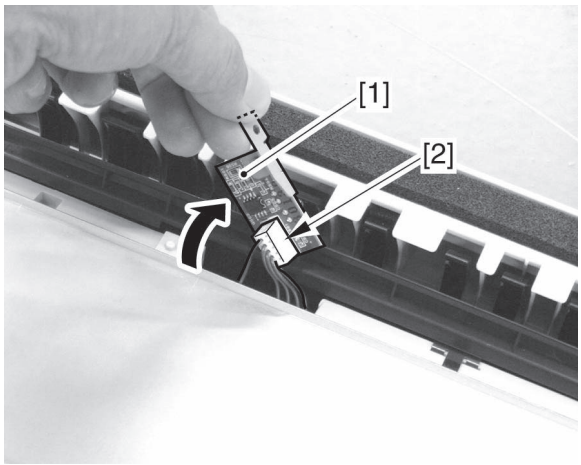
4.6 Removing the reverse exit sensor (U505)

1) Remove the reverse delivery unit. (→ Drive related units > 2.5 Removal of the reverse delivery unit.)
2) Pressing down on the reverse inner guide [1] in the direction of the arrow, remove the black screw [2].



F03-406-01

3) Pull out the reverse outlet sensor board [1] part way in the direction of the arrow and remove the connector [2].



F03-406-02

CHAPTER 4

MAINTENANCE AND INSPECTION

1 Periodic replacement parts

This unit has no periodic replacement parts.

2 Consumable replacement parts replacement targets list

Some parts that are likely to need replacement at least once during the life of the product, through wear or breakage, and can be replaced as necessary, are listed below, with their average expected lives (numbers of sheets).

As of March, 1999

No.	Part name	Part No.		Q'ty	expected life (No. of sheets)	Remarks
		DADF-B1	DADF-K1			
1	Feed belt	FB4-6934	FB4-6934	1	120,000	Replace when the belt is still dirty after cleaning.
2	Separation roller	Fb5-0466	FB5-4978	1	180,000*	Replace after target No. of sheets used.
3	Separation pad	FF5-9160	FF6-2452	1	60,000	Replace after target No. of sheets used.
4	Pickup roller	FB4-1151	FB6-4977	1	120,000	Replace after target No. of sheets used.

* For DADF-K1, 120, 000 sheets.

T04-200-01

The figures in the table above are not the counter values from the copier but refer to the actual number of sheets used. These are estimates and the actual figure may change based on empirical data.
The number of sheets used can be checked in the service mode (COPIER > COUNTER > FEEDER > FEED. (Refer to Chapter 5 5.2.4 COUNTER.

3 Periodic service items list

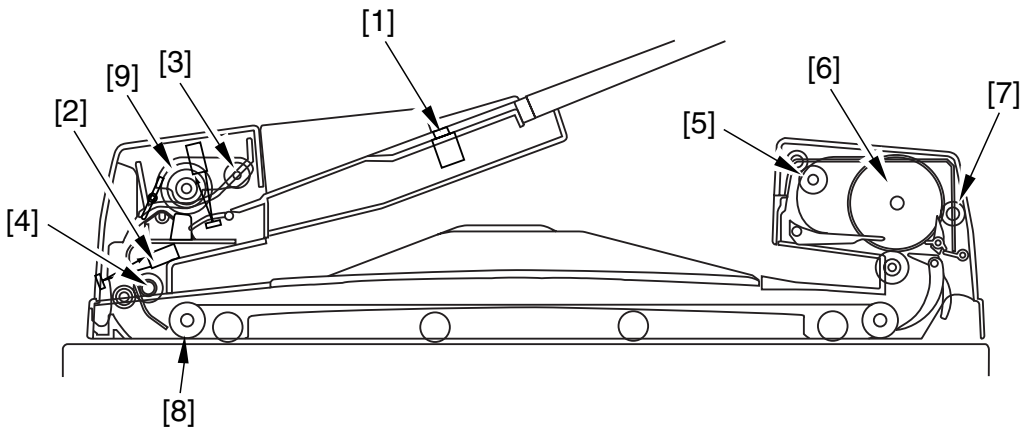
Use only the recommended solvents and lubricants.

△ : Cleaning ● : Replacement × : Lubrication □ : Adjustment ○ : Inspection

No.	Part	Periodic service: 60,000 or 6 months	Periodic service: 60,000 or one year	Periodic service: 120,000	Remarks
1	Final document sor (U504)		△		Remove the sensor and wipe with a dry cloth.
2	Pre-registration sensor (U502)		△		
3	Pickup roller	△			
4	Registration roller	△			
5	Feed roller	△			
6	Reverse delivery roller	△			
7	Retaining roller	△			
8	Feed belt drive roller			△	When replacing feed belt (120,000) Clean with alcohol.
9	Separation roller			△	
10	Feed belt* *DADF-K1 Only	△			

T04-300-01

When cleaning the feed belt, always remember to remove the feed belt unit. If the feed belt is pulled, it will become slack and may result in faulty operation.



F04-300-01

CHAPTER 5

MALFUNCTION COUNTERMEASURES

1 Standards and adjustments

The standards and adjustments for this unit are as follows.

1.1 Mechanical systems: Document skew adjustment
Reverse delivery flapper position adjustment

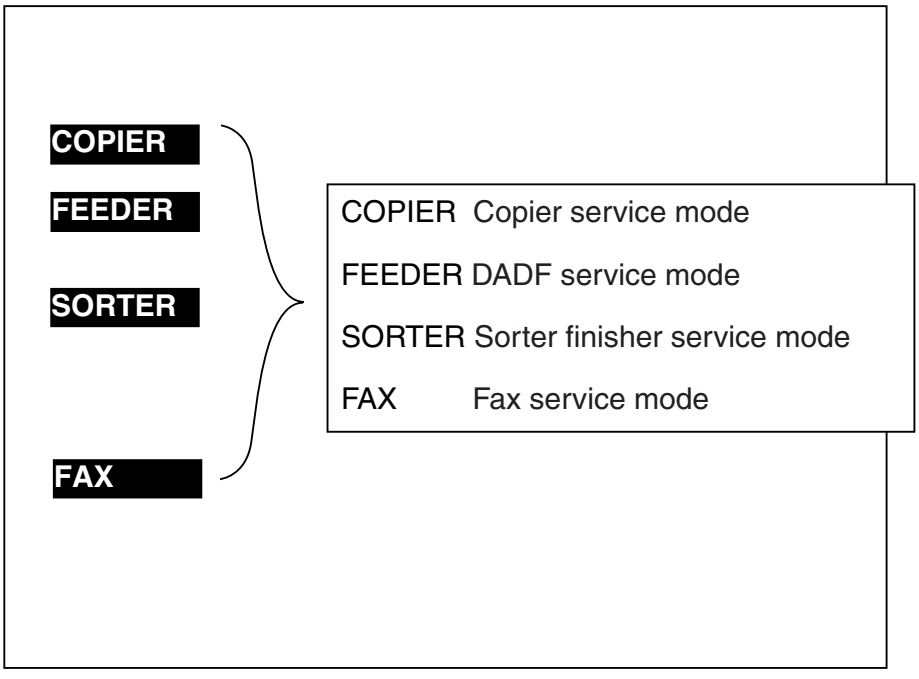
1.2 Electrical systems: EEPROM clear
Document tray width adjustment
Sensor level adjustment (sensitivity adjustment)
Registration position adjustment
Double sided registration position adjustment

For adjustments using the dipswitches on the ADF controller board, refer to Chapter Five, 5.3 Dipswitch functions.

1.1 Mechanical systems

1.1.1 Service mode selection

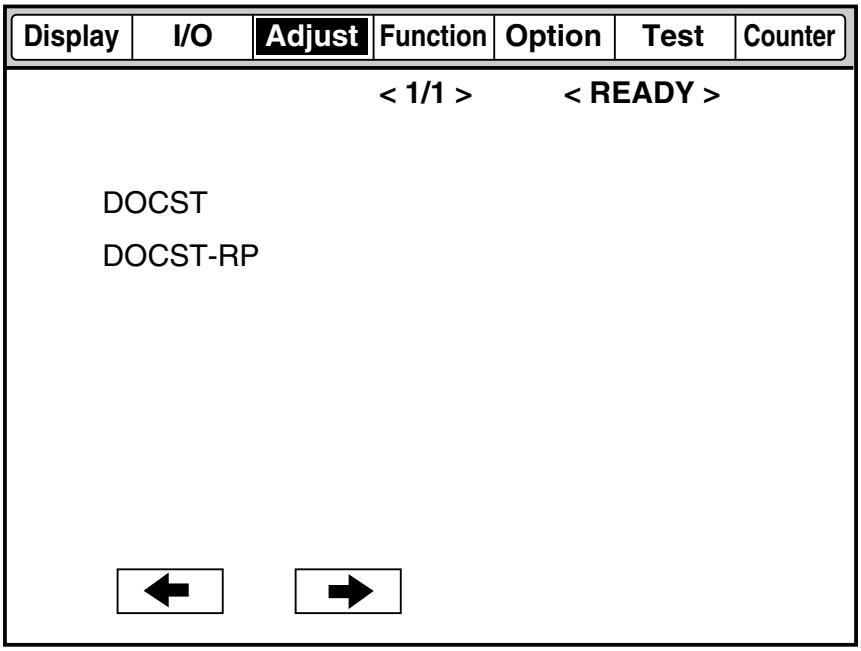
1) Press the user mode key ' ' on the control panel.
2) Press numeric keys '2' and '8' simultaneously.
3) Press the user mode key' '.
   The following window appears in the display.



F05-101-01

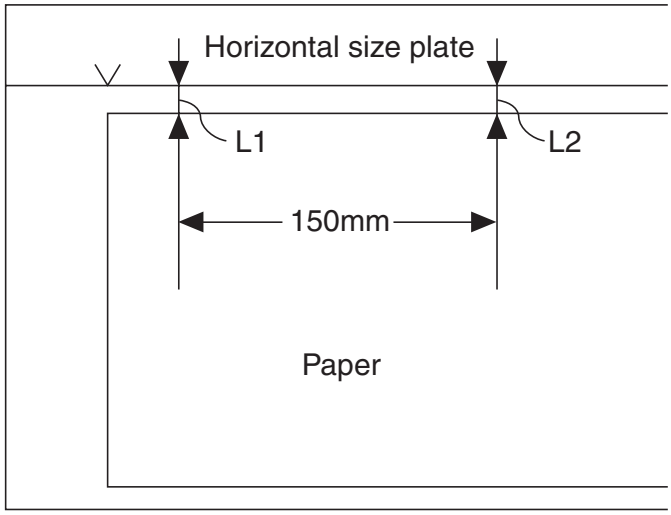
1.1.2 Document skew adjustment

1) Enter service mode.
2) Select FEEDER > ADJUST > DOCST.



F05-101-02

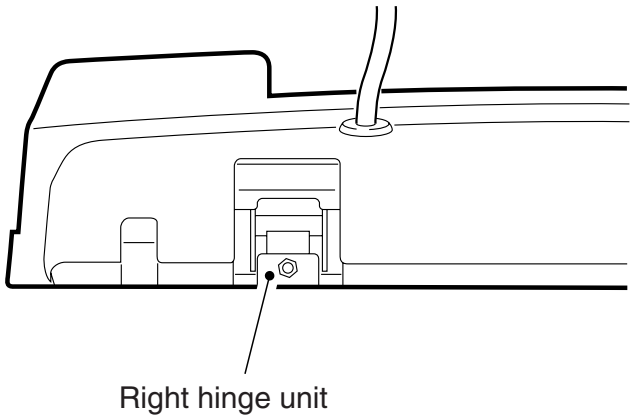
3) Place a single sheet (A3 or 11"x 17') on the document tray and press OK. The document is fed onto the copyboard glass and stops.
4) Open the ADF and check the position of the document on the copyboard glass. Check that the difference between L1 and L2, as illustrated below, is within 1mm.



*L1 can be anywhere on the paper.

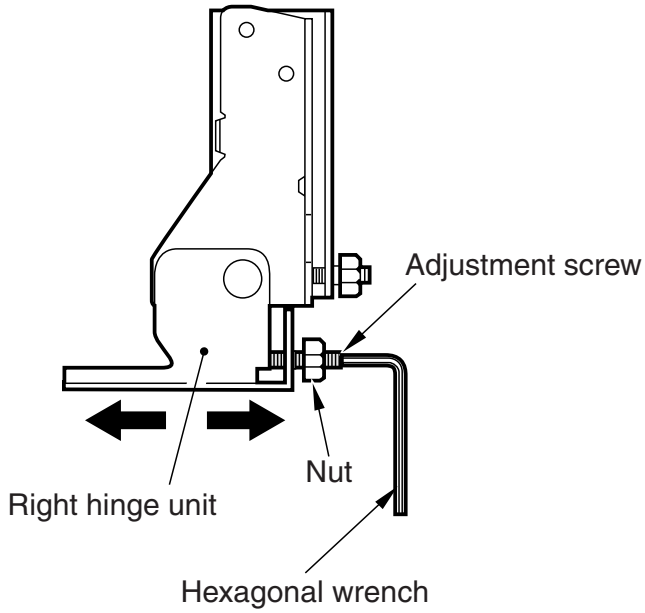
F05-101-03

5) If the gap is not within standard, loosen the nut at the back of the right hinge unit.



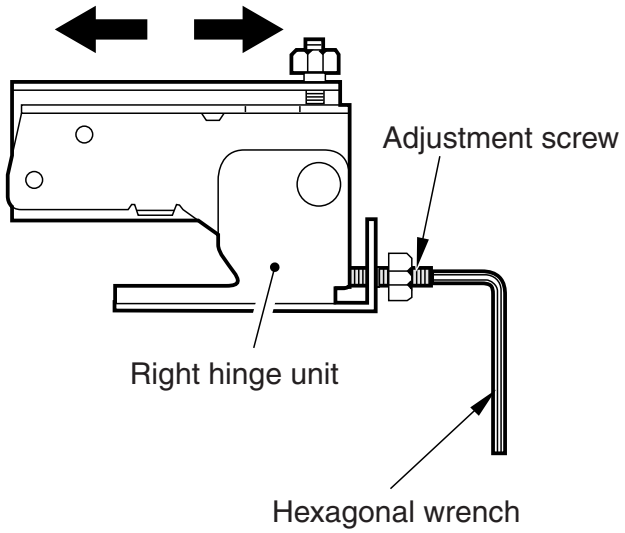
Use a 7mm diameter spanner to loosen the nut.

F05-101-04



F05-101-05

6) Rotate the (hexagonal) adjustment screw and adjust so that the L1 to L2 gap is less than 1mm.



F05-101-06

Relationship between L1 and L2 and the rotation direction of the adjustment screw.

Rotation direction	Relationship
Clockwise	L1< L2
Anticlockwise	L1> L2*

(The adjustment screw should be rotated a maximum of two times.)

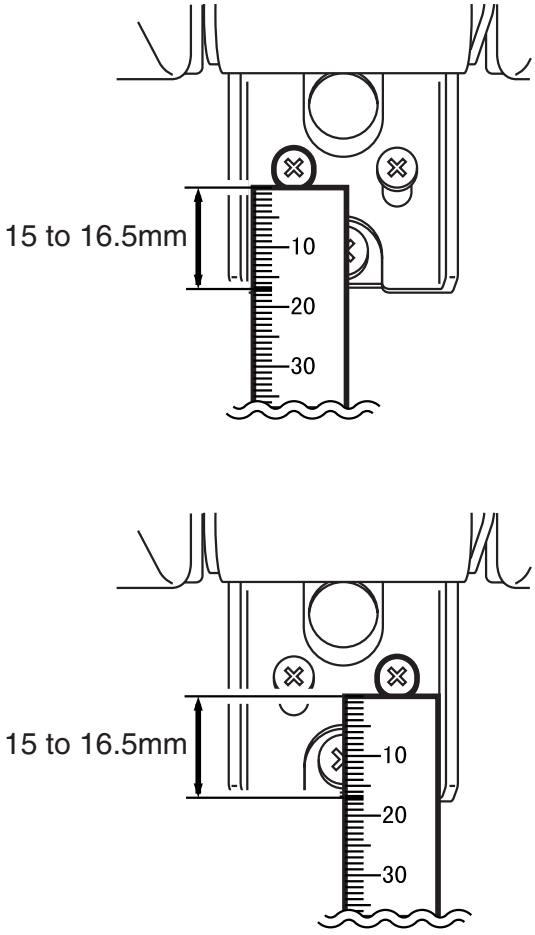
*: In this case, the ADF will not move by the rotation of the adjustment screw alone. One the screw has been rotated, move the ADF by hand.

T05-101-01

7) After adjustment, tighten the nut and secure the adjustment screw.

1.1.3 Right hinge unit skew adjustment

1) Open the ADF.
2) Check that the gap between the two right hinge unit screws and the end of the hinge is within specification.
   Spec: 15 to 16.5mm



F05-101-07

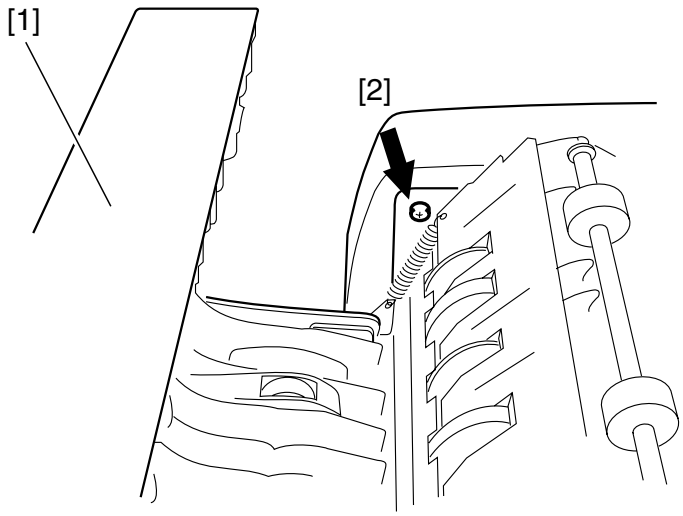
3) If the screws and the end of the hinge are not within specification, perform the document skew adjustment steps 5) to 7).

If the gap between the screws and the end of the hinge unit is out of spec, it may cause a jam because of a malfunction of the inlet flapper at the reverse delivery unit, thus, make sure to adjust the gap within the specification.

1.1.4 Reverse delivery flapper position adjustment

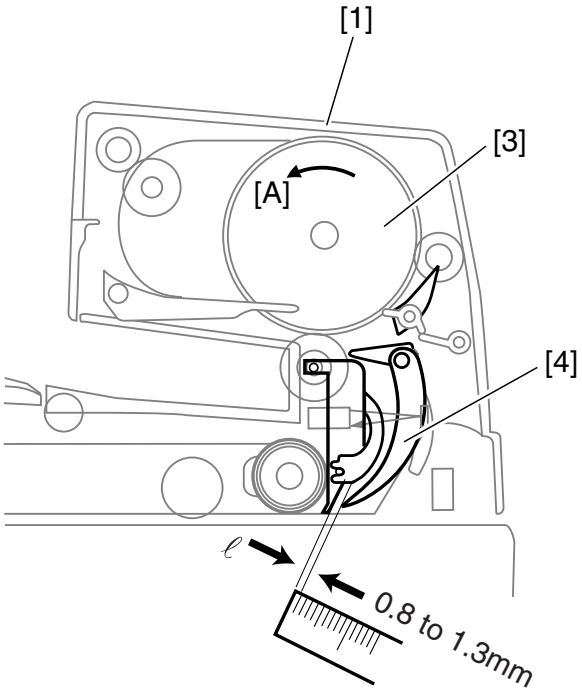
In the event of a jam or Z-folded paper in the double sided feed assembly, follow these procedures to adjust the position of the reverse delivery flapper.

1) Remove the main unit front cover by removing the four screws. (→ 1. Basic configuration > A. Outer covers)
2) Open the reverse delivery unit cover [1] and the loosen the screw [2] as illustrated here.



F05-101-08

3) Open the ADF carefully. From the opened reverse delivery unit cover, rotate the reverse delivery roller [3] counter-clockwise [A] and adjust the position of the reverse delivery flapper [4] so that it is as per the illustration below.



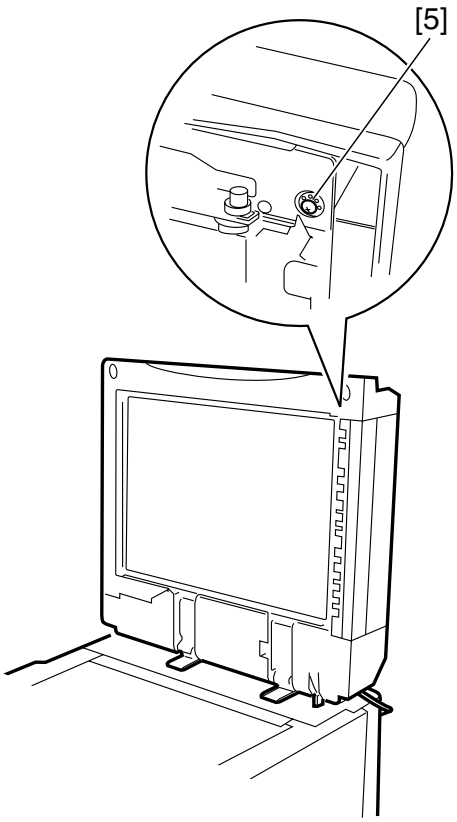
F05-101-09

4) If ℓ is not within specification, rotate the adjustment screw [5] and adjust the position of the reverse delivery flapper.
   · If the value is too narrow, rotate the screw clockwise.
   · If the value is too wide, rotate the screw counter-clockwise.
   Spec: ℓ = 0.8 to 1.3mm (with width gap gauge)

If the value is not within spec., the following problems may occur. Always be sure to keep this value within spec.

· Less than 0.8mm,
  double sided documents become vulnerable to skew.
· Greater than 1.3mm,
  documents where the leading edge dips down are more vulnerable to being caught in the reverse inlet assembly.

5) Tighten the reverse delivery unit screw [2] and close the reverse delivery unit cover [1].
6) Attach the main unit front cover.



F05-101-10

1.2 Electrical systems

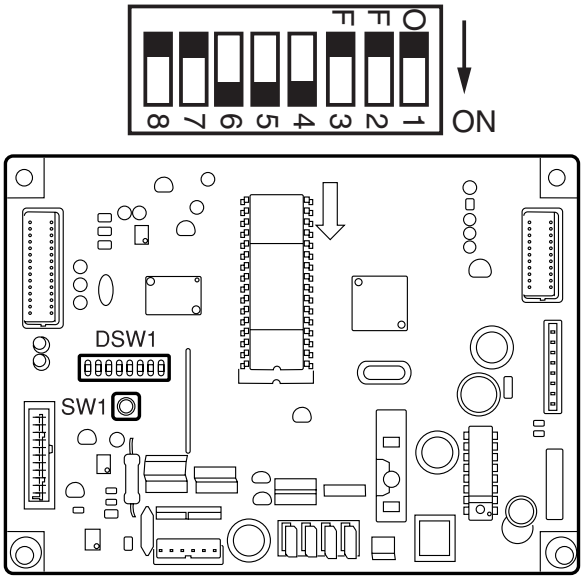
1.2.1 Action to be taken when replacing main component parts

Major components	Action to be taken
ADF controller PCB	1) EEPROM clear 2) Document tray width adjustment (A/B, inch) 3) Sensor level adjustment 4) Registration position adjustment 5) Double sided registration position adjustment
Final document detection sensor (U504) Document set sensor (U503) Pre-registration sensor (U502) Reverse outlet sensor (U505)	1) Sensor level adjustment
Document width detection dial (U508)	1) Document tray width adjustment

T05-102-01

1.2.2 EEPROM clear

1) Remove the ADF controller cover and set dipswitch bits 4, 5 and 6 ON.
2) Open the pickup unit cover.



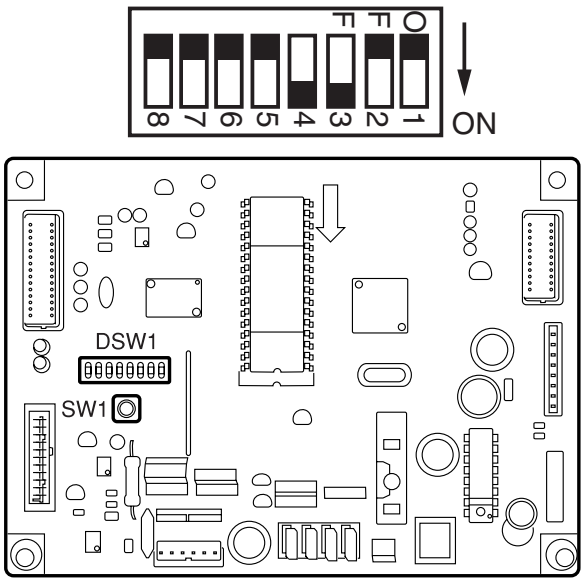
F05-102-01

3) Hold down the push switch and turn the copier power OFF/ ON.
   (This clears the EEPROM backup.)
4) Check that LED 2 is lit.
5) Close the pickup unit cover and turn all dipswitch (DSW1) bits OFF.
6) Turn the copier power OFF/ ON again.

When installing a new ADF controller PCB, first clear the EEPROM.

1.2.3 Document tray width adjustment (A/B type, inch type)

1) Se the following paper types in the document tray.
   · For A/B: A4
   · For inch: LTR
   Adjust the slide guide to the width of the paper.
2) Remove the ADF controller cover and set dipswitch (DSW1) bits 3 and 4 ON and then press the push switch (SW1).



F05-102-02

3) Check that LED1 is ON.
4) Adjust the slide guide with as follows.
   · For A/B: A4
   · For inch: LTR
5) Press the push switch (SW1).
6) Check that LED2 is ON.
7) Press the push switch (SW1).
8) Set all bits on the dipswitch (DSW1) OFF.

1.2.4 Sensor level adjustment (sensitivity adjustment)

This adjustment is to be carried out when replacing the ADF controller board, document set sensor (U503), final document detection sensor (U504), pre-registration sensor (U502), reverse outlet sensor (U505).

1) Stick an all black piece of paper over the final document detection sensor on the document tray.

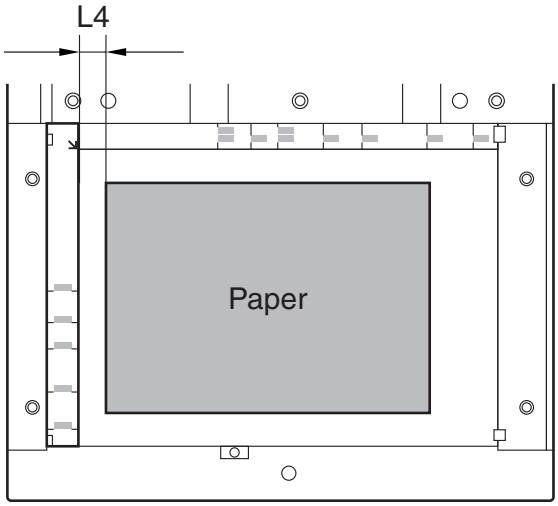
Make sure the black paper is not over the document set sensor.

2) Close the ADF and enter service mode FEEDER > FUNCTION > SENS-INT.
3) Press 'OK'.
   About 15 seconds later, the document detection LED will flash twice, the display will change from SERVICE to READY. This means that the automatic adjustment is completed.

While the automatic adjustment is being carried out, the display will read SERVICE in the upper right corner.

1.2.5 Registration position adjustment

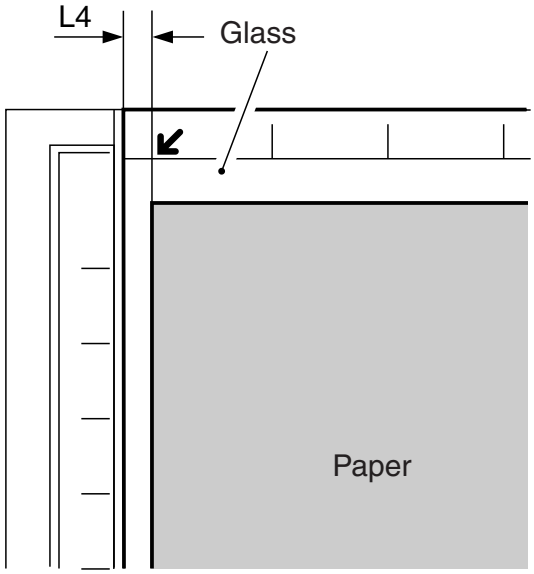
1) Enter service mode FEEDER > ADJUST > DOCST.
2) Set one sheet of paper on the document tray (A3 or 11”x 17”) and press OK twice. The document is brought to the document glass and then stops.
3) Open the ADF main unit and check the position where the document has come to rest.
<DADF-K1>



Spec: 0 ± 1mm

F05-102-03

<DADF-B1>



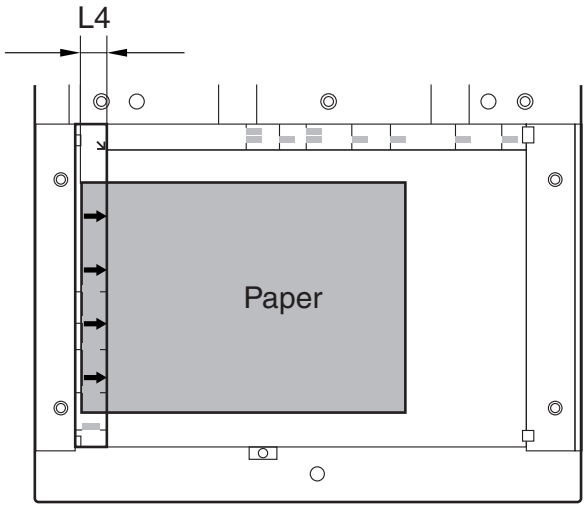
Spec: 11.0 ± 1mm

F05-102-04

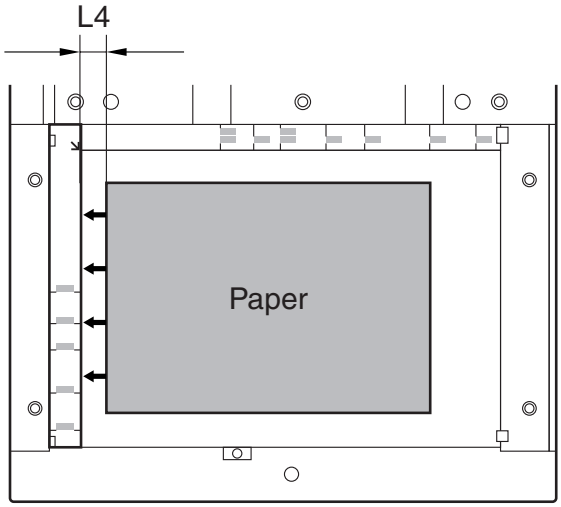
4) Close the ADF gently and press OK.
The document on the copyboard glass is delivered.

If the document is removed from the copyboard glass while adjustments are being made, a jam error will be displayed. Always let the paper be delivered as per the procedures.

5) Use the numeric keys to enter the value of the direction in which the shift is to be made. The programmed value is entered by a pulse count. (One pulse = 0.34mm) If the document is to the left of the arrow, set a larger value. If the document is to the right, set a lower value.
<DADF-K1>



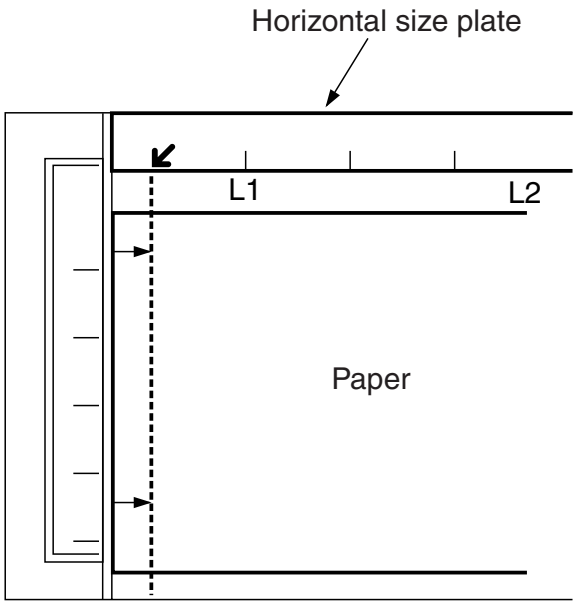
Increase the value of DOCST



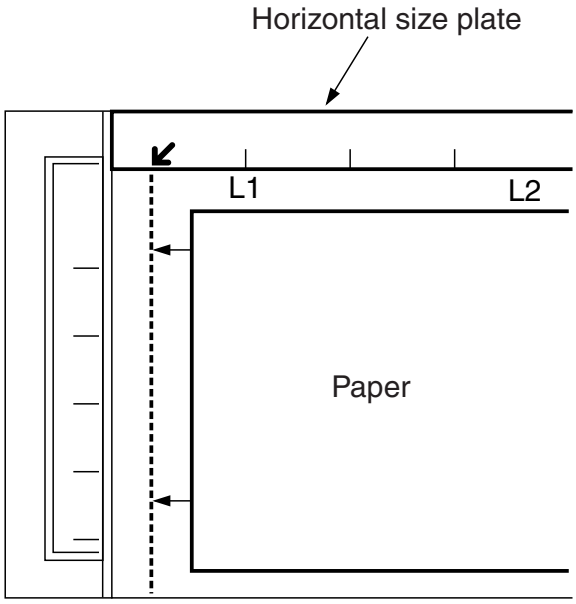
Decrease the value of DOCST

F05-102-05

<DADF-B1>



Increase the value of DOCST



Decrease the value of DOCST

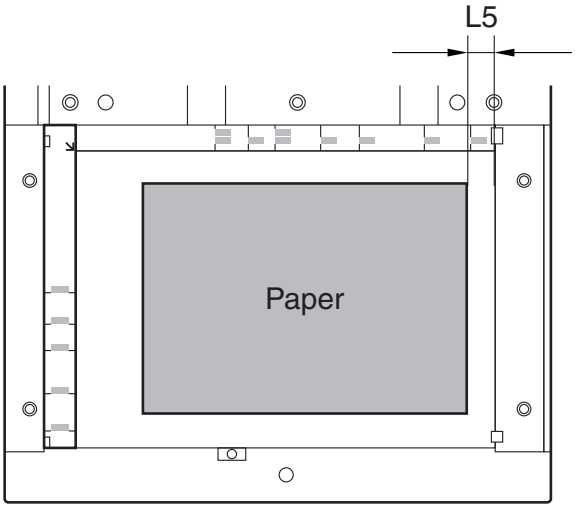
F05-102-06

6) Once again, set one sheet of paper on the document tray (A3 or 11”x 17”) and press OK twice.
   The document is brought to the document glass and then stops.
7) Open the ADF main unit and check the position where the document has come to rest.
8) Close the ADF gently and press OK.
   The document on the copyboard glass is delivered.

It is the action of delivering the paper from the copyboard glass that causes the settings to be stored. Always let the paper be delivered as per the procedures.

1.2.6 Double sided registration position adjustment

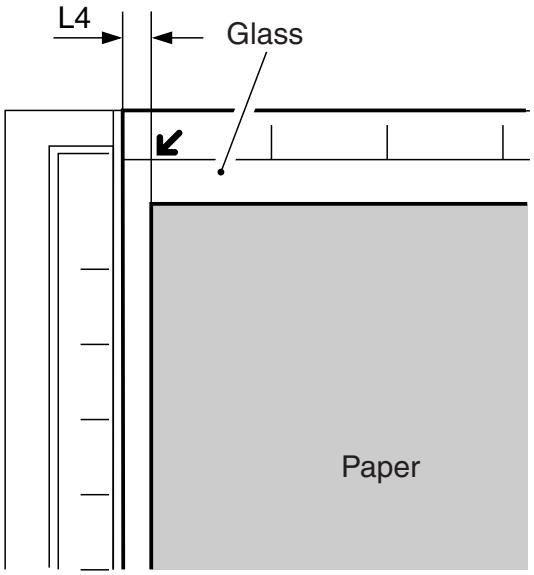
1) Select service mode > FEEDER > ADJUST > DOCST-RP (DOCST-R).
   (The following procedures for DADF-B1 are the same as in 1.2.5 Registration position adjustment, steps 2) to 8).)
2) Set one sheet of paper on the document tray (A3 or 11”x 17”) and press OK twice.
   The document is brought to the document glass and then stops.
3) Open the ADF main unit and check the position where the document has come to rest.
   <DADF-K1>



Spec: 12 ± 1.5mm
L5 is the gap between the rear end of the glass and the trailing edge of the document.

F05-102-07

<DADF-B1>



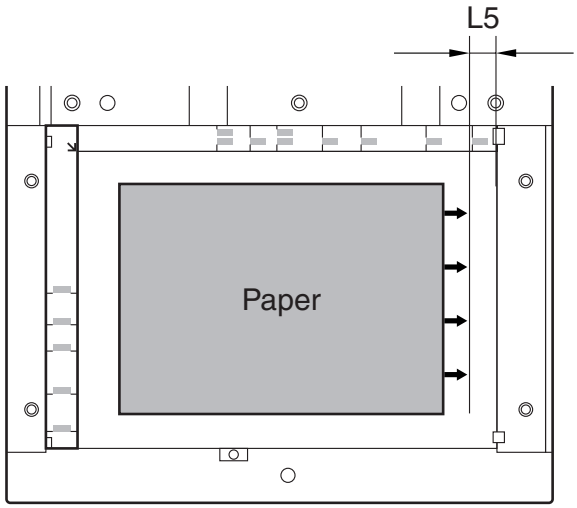
Spec: 11.0 ± 1mm
L4 is the gap between the front end of the glass and the leading edge of the document.

F05-102-08

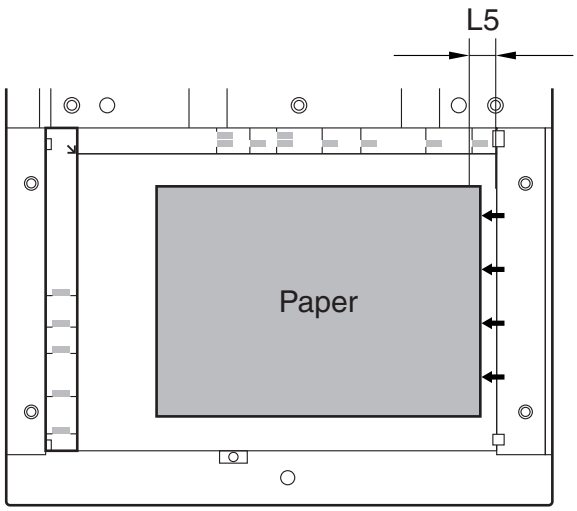
4) Close the ADF gently and press OK.
   The document on the copyboard glass is delivered.
5) Use the numeric keys to enter the value of the direction in which the shift is to be made.
   The programmed value is entered by a pulse count. (One pulse = 0.34mm)

<DADF-K1>

If the document is to the left of the arrow, set a larger value. If the document is to the right, set a lower value.



Decrease the value of DOCST

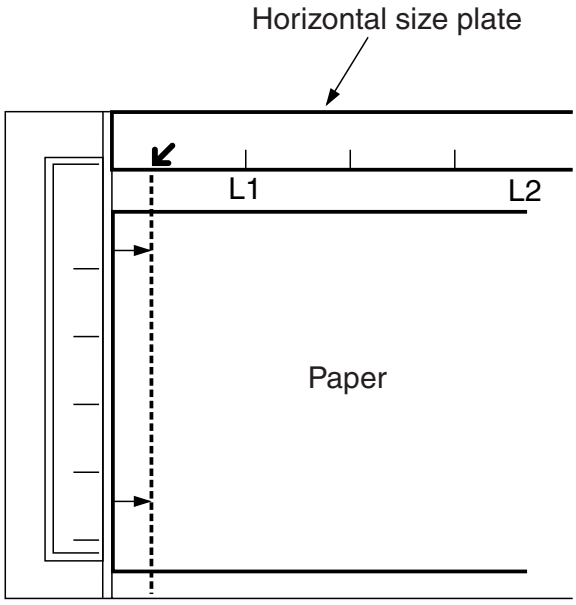


Increase the value of DOCST

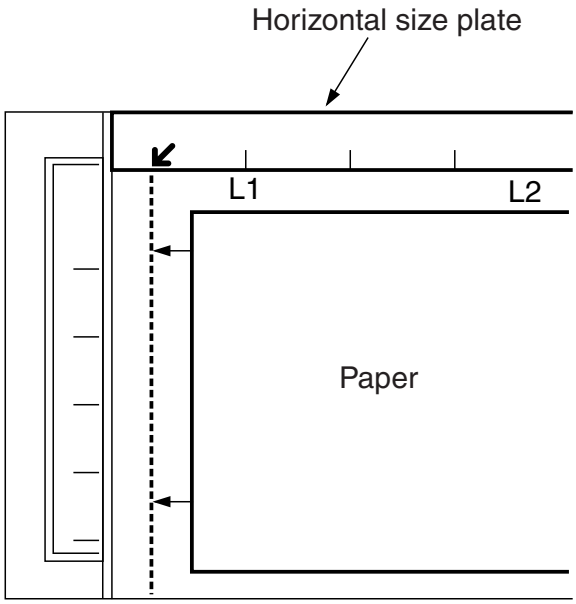
F05-102-09

<DADF-B1>

If the document is to the left of the arrow, set a larger value. If the document is to the right, set a lower value.



Increase the value of DOCST



Decrease the value of DOCST

F05-102-10

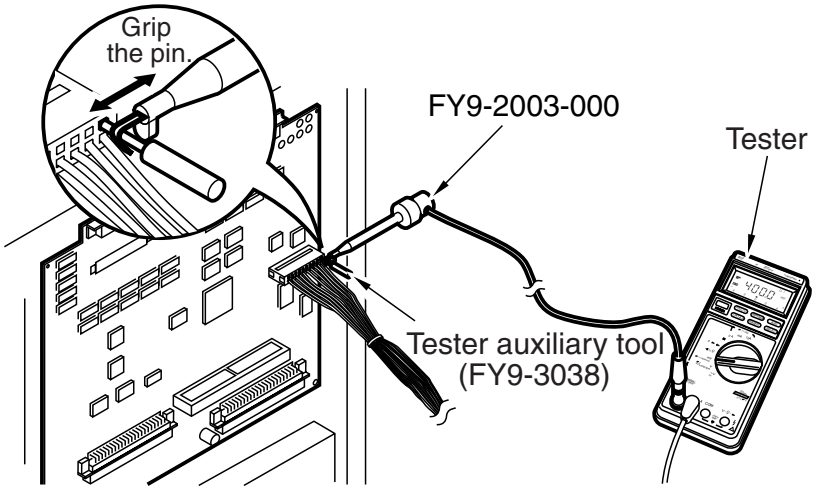
6) Once again, set one sheet of paper on the document tray (A3 or 11"x 17") and press OK twice.
   The document is brought to the document glass and then stops.
7) Open the ADF main unit and check the position where the document has come to rest.
8) Close the ADF gently and press OK.
   The document on the copyboard glass is delivered.

2 Malfunction countermeasures

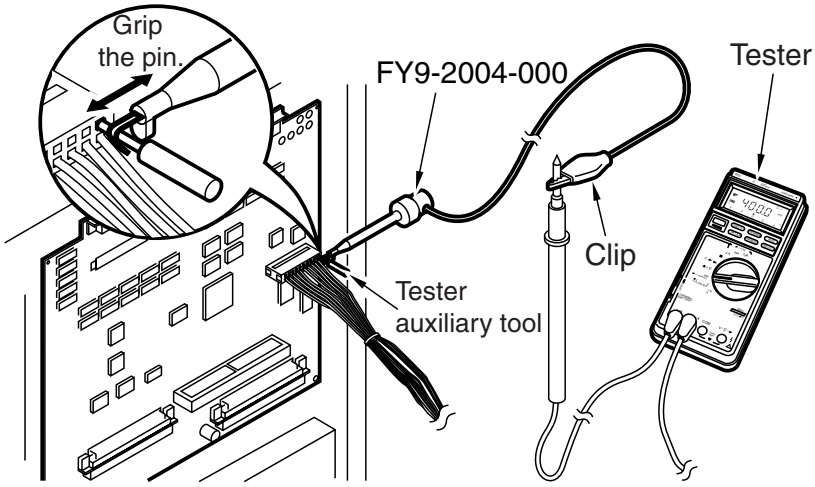
In order to improve the connectivity of the connectors (J6, J7) on the PCBs of this unit, tester leads cannot be inserted directly into the connectors. Therefore, you will need the tester auxiliary tool (FY9-3038-000/ FY9-3039-000). This tool is to be used when checking connectors J6 and J7 on the ADF controller PCB as part of malfunction countermeasures.

1) Set the digital multi-meter range to DC.
2) Touch the ADF controller PCB GNC (0V, DC) with the tester lead.
3) Use the tester auxiliary tool as illustrated below.

[Connection method 1]



[Connection method 2]



F05-200-01

2.1 Countermeasure procedures for operation malfunctions

In some cases, in order to check operations, the mode will need to be initiated by dipswitch settings on the ADF controller PCB. If nothing happens when the push switch is pressed, quickly turn OFF the power.

2.1.1 E400/E712 display

---

1) Is the problem resolved by switching the power OFF/ON?

YES: Finished (Check the wiring between the copier's image processor PCB and the ADF controller PCB.)

Wiring

2) Set the test range to DC (V). Is the voltage around 24V when the leads of the tester are applied as shown below?

	+ lead	- lead
1	J2-1	J2-2
2	J1-6	J1-7

NO: the wiring of the power supply from the copier.

ADF controller PCB

3) Is the problem resolved by replacing the ADF controller PCB?

YES: Finished

NO: Replace the copier's image processor PCB.

2.1.2 E402 display

Feed motor clock sensor (SR1)

1) Set the digital range to DC (V). Apply the + lead to connector J6A-2 on the ADF controller PCB and the –lead to connector J6A1. When the feed belt is rotated very slightly, does the voltage change back and forth from 5V to 0V?

NO: Check the wiring from the feed motor clock sensor to the ADF controller PCB. If the wiring is OK, replace the feed motor clock sensor.

Damage to gears, belts, and other drive related parts

2) Do the gears, motors and belts move smoothly when the feed belt is rotated forwards and backwards?

NO: Check the gears and belts.

Feed motor (M2)

3) Set the digital range to DC (V). Apply the + lead to connector J5-4 on the ADF controller PCB and the –lead to connector J5-3. Set bits 2,5,6,7 ON and press the push switch. When the ADF open/close detection lever is pressed, does the tester display read around 24V?

■ To stop the operation,
- press the push switch.
When the operation is finished, set all bits OFF.

YES: Check the wiring from the feed motor to the ADF controller PCB. If the wiring is OK, replace the feed motor.

NO: Replace the ADF controller PCB.

2.1.3 E404 display

Reverse delivery motor clock sensor (SR7)

1) Set the digital range to DC (V). Apply the + lead to connector J7B-5 on the ADF controller PCB and the –lead to connector J7B-4. When the clock cover or the reverse delivery cover is opened and the reverse roller turned slowly by hand, does the voltage change back and forth from 5V to 0V?

NO: Check the wiring from the reverse delivery motor clock sensor to the ADF controller PCB. If the wiring is OK, replace the reverse delivery motor clock sensor.

Damage to gears, belts, and other drive related parts

2) Do the gears, motors and belts move smoothly when the reverse delivery cover is opened and the reverse roller is rotated forwards and backwards?

NO: Check the gears and belts.

Reverse delivery motor (M3)

3) Set the digital range to DC (V). Apply the + lead to connector J9-1 on the ADF controller PCB and the –lead to connector J9-2 Set bits 2,5,6,7 ON and press the push switch. When the ADF open/close detection lever is pressed, does the tester display read around 24V?

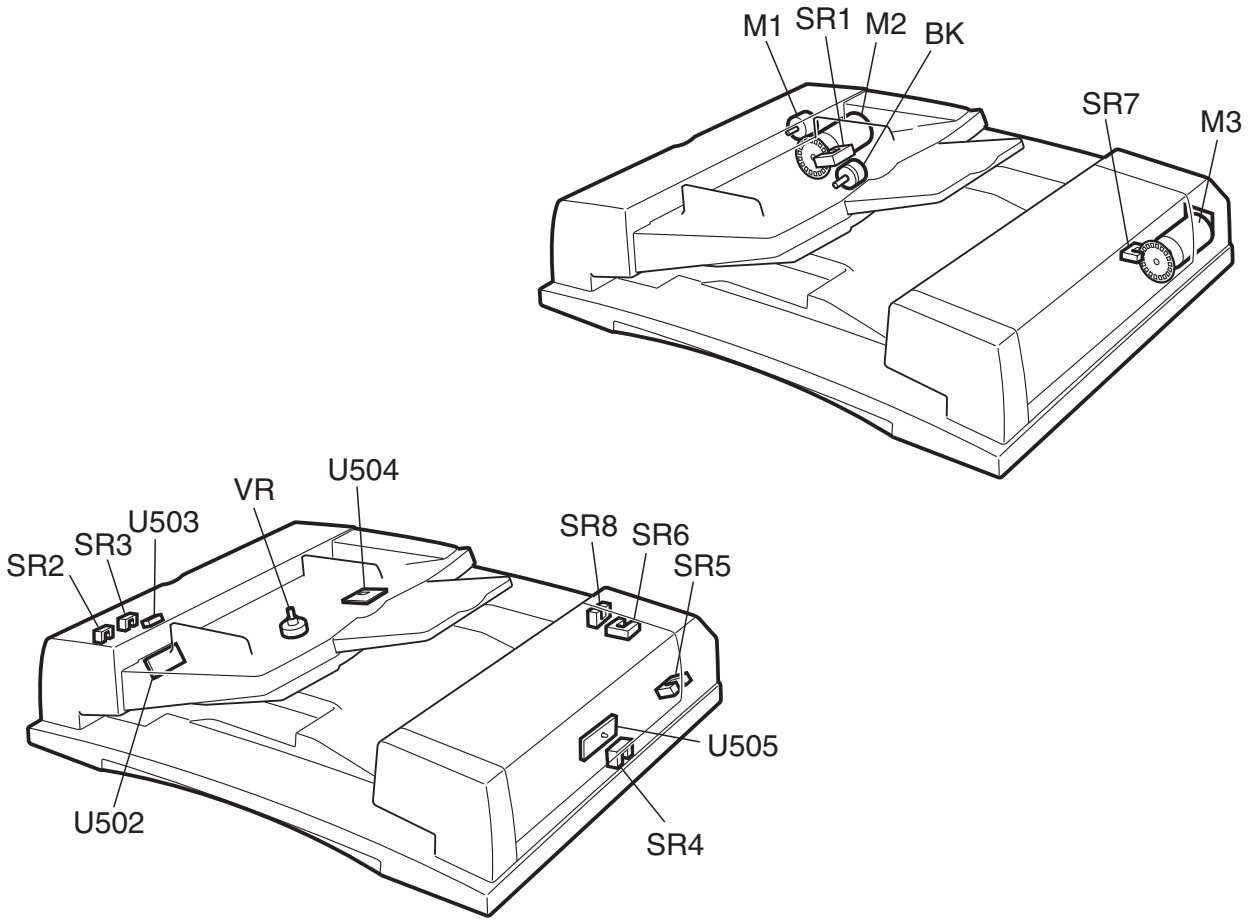
■ To stop the operation,
- press the push switch.
When the operation is finished, set all bits OFF.

YES: Check the wiring from the reverse delivery motor to the ADF controller PCB. If the wiring is OK, replace the reverse delivery motor.

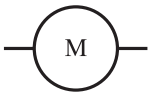
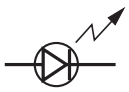
NO: Replace the ADF controller PCB.

3 Layout of electrical components

3.1 Motors, solenoids and sensors

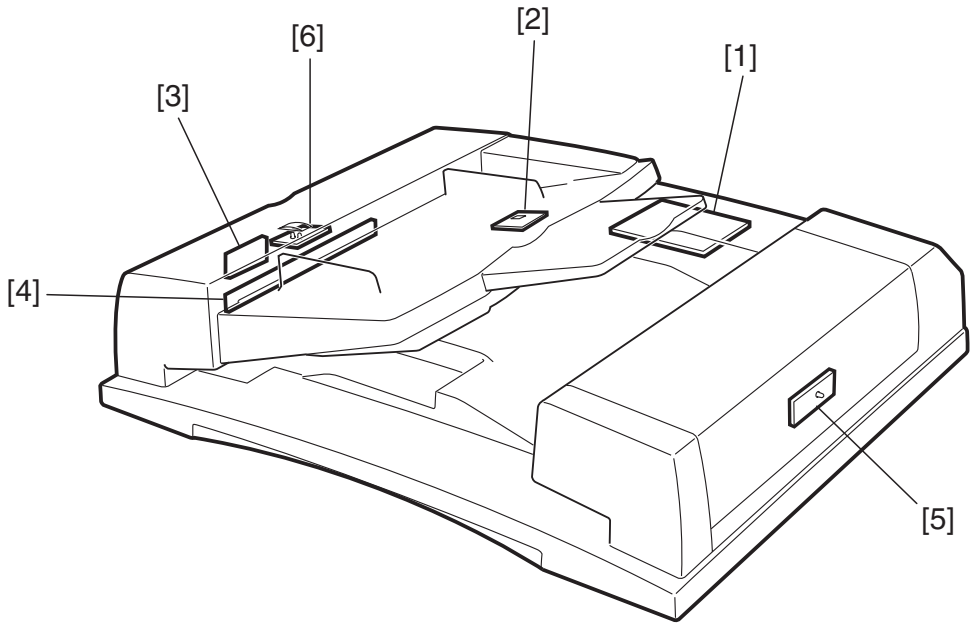


F05-301-01

Symbol	Name	Notation	Function
	Motor	M1	Separation motor
		M2	Feed motor
		M3	Reverse delivery motor
	Brake	BK	Feed motor brake
	Variable resistor	VR	Document width detection dial (volume)
	Photo transistor	U502	Pre-registration sensor
		U503	Document set sensor
		U504	Final document detection sensor
		U505	Reverse outlet sensor
	Photo interrupter	SR1	Feed motor clock sensor
		SR2	Pickup unit cover sensor
		SR3	Separation sensor
		SR4	Reverse delivery inlet sensor
		SR5	Reverse delivery registration sensor/delivery sensor
		SR6	ADF open/close sensor
		SR7	Reverse delivery motor clock sensor
		SR8	Reverse delivery unit cover sensor
	LED	LED301	Document set display
		LED302	

T05-301-01

3.2 Circuit boards



F05-302-01

Symbol	Name
[1]	ADF controller PCB
[2]	Document final detection sensor (U504) board
[3]	Document set sensor (U503) board
[4]	Pre-registration sensor (U502) board
[5]	Reverse outlet sensor (U505) board
[6]	Document set display board

T05-302-01

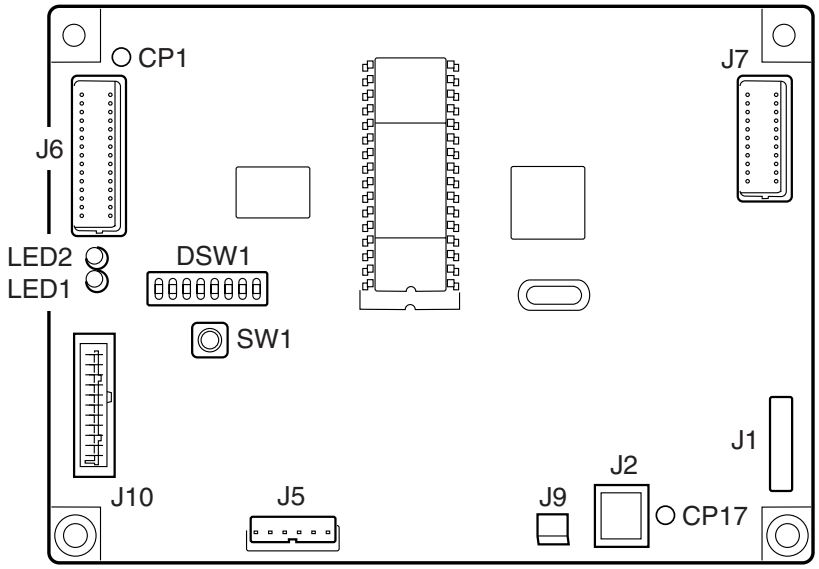
4 Variable resistors (VR) LEDs and check pins specific to printed circuit boards

Of the variable resistors (VR), LEDs and check pins mounted in this unit, only those that will need service in the field are listed here.

Some of the VR and check pins listed are for factory use and their adjustment requires special tools and instruments and a very high level of precision. These components should not be touched in the field.

4.1 ADF controller PCB

Check pins on the ADF controller PCB



F05-401-01

Check pin No.	Check contents
CP1	GND
CP17	GND

T05-401-01

· Normal operating mode

	LED1 status	LED2 status
ADF not operating	Flashes every 100msec.	Out
Error generated	Flashes alternately every 150msec.	
Alarm generated	Flashes alternately every 800msec.	
Jam occurred	Flashes alternately every 400msec.	
Other	Out	

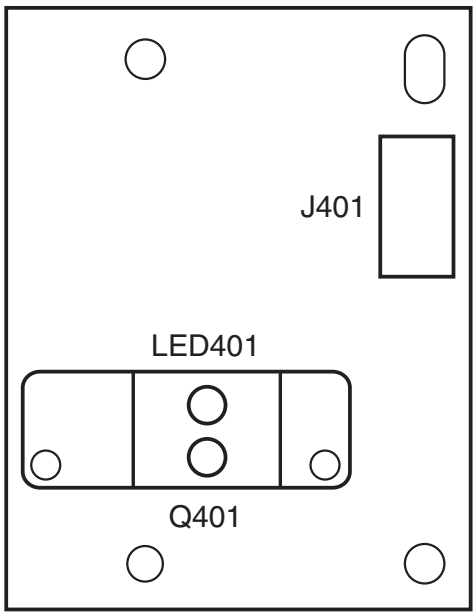
T05-401-02

· DIPSW test mode

For the test mode LED lighting spec., see Chapter Five, 5.3 Dipswitch functions.

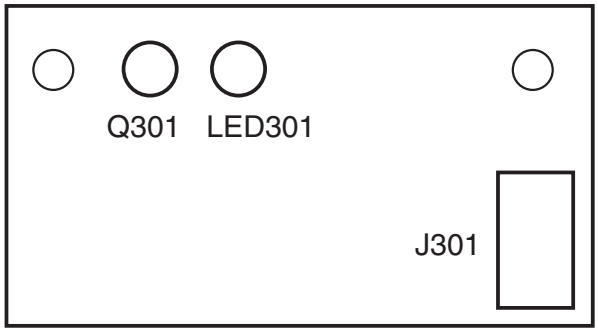
Note that, with some LED, even in normal status, leak current will cause them to emit a little light, even when they are in fact off.

4.2 Sensor boards



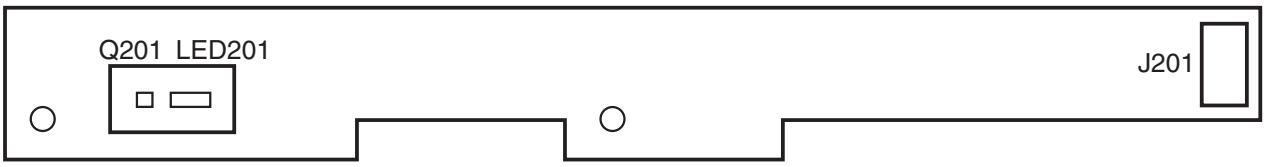
(Final document detection sensor board)

F05-402-01



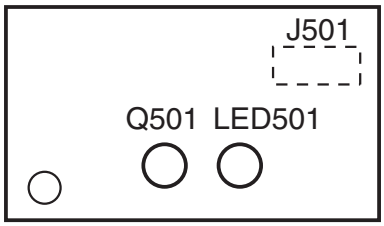
(Document set sensor board)

F05-402-02



(Pre-registration sensor board)

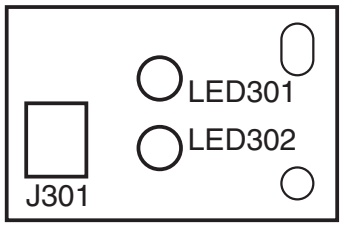
F05-402-03



(Reverse outlet sensor board)

F05-402-04

4.3 Display boards



(Document set display LED board)

F05-403-01

LED No.	Display contents
LED301	Document set display
LED301	Document set display

T05-403-01

5 Service modes and dipswitches

5.1 Overview

This unit has test modes that can be programmed and operated from the service mode, and modes that are operated by the dipswitches on the ADF controller PCB.

The executable test modes are listed below. Operations that can be carried out from the copier's service mode are done from the service mode.

For details on dipswitches, see Chapter Five, 5.3 Dipswitch functions.

Item	Service mode		Dipsw
Sensor level adjustment	◯	FEEDER > FUNCTION > SENS-INIT	◯
Document tray width adjustment	-		◯
First side registration position adjustment	◯	FEEDER > ADJUST > DOCST	◯
Double (second) side registration position adjustment	◯	FEEDER > ADJUST > DOCST-RP	◯
	-		◯
Pickup and delivery step operation			
Continuous pickup operation	-		◯
Pickup operation (without document)	-		◯
Separation roller cleaning	◯*	FEEDER > FUNCTION > DBLT-CLN	◯
	◯**	FEEDER > FUNCTION > SPRL-CLN	
Lifter descend	-		◯
Lifter ascend	-		◯
I/O	◯	COPIER > I/O > FEEDER	-
EEPROM clear	-		◯
Counter	◯	COPIER > COUNTER > FEEDER	-
Display size of document detected in ADF	◯	FEEDER > DISPLAY > FEEDSIZE	-
Mixed AB/ inch size document detection ON/ OFF	◯	FEEDER > OPTION > SIZE-SW	-
Document size detection for irregular sized documents ON/ OFF	◯	FEEDER > OPTION > SCAN-SEL	-
Final document detection sensor invalid	-		◯
Final document detection sensor check mode	-		◯
Registration roller cleaning	◯		◯
ADF quiet scanning mode	◯**		-

◯: operation or display available
-: operation or display available
*: DADF-B1 only
**: DADF-K1 only

T05-501-01

Not that, with this unit mounted, the service mode COPIER > OPTION > BODY > DACE-DWN is not available on the copier.

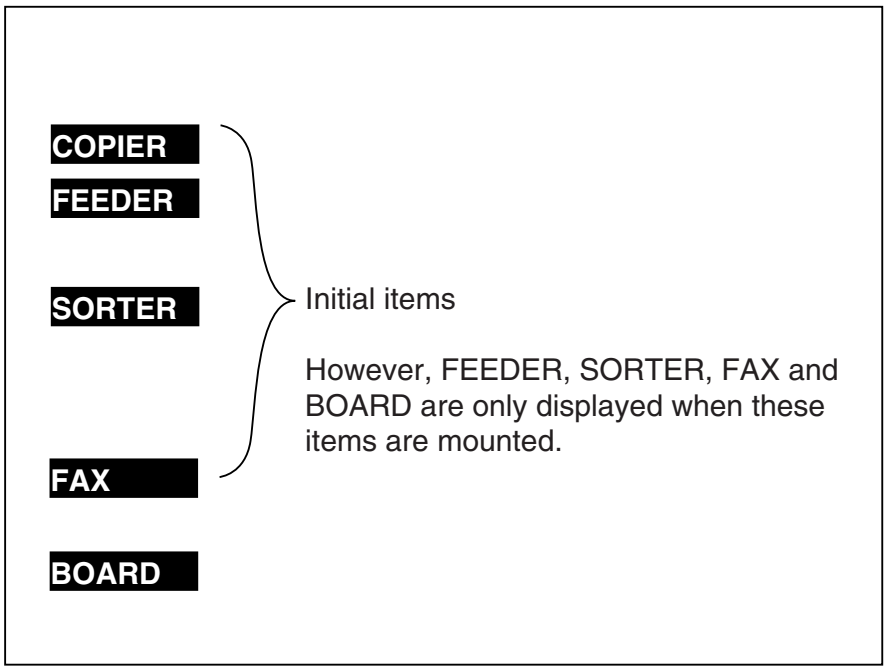
5.2 Service modes

For details on the basic operations of the service modes, refer to the service manual of the copier.

5.2.1 How to enter service mode

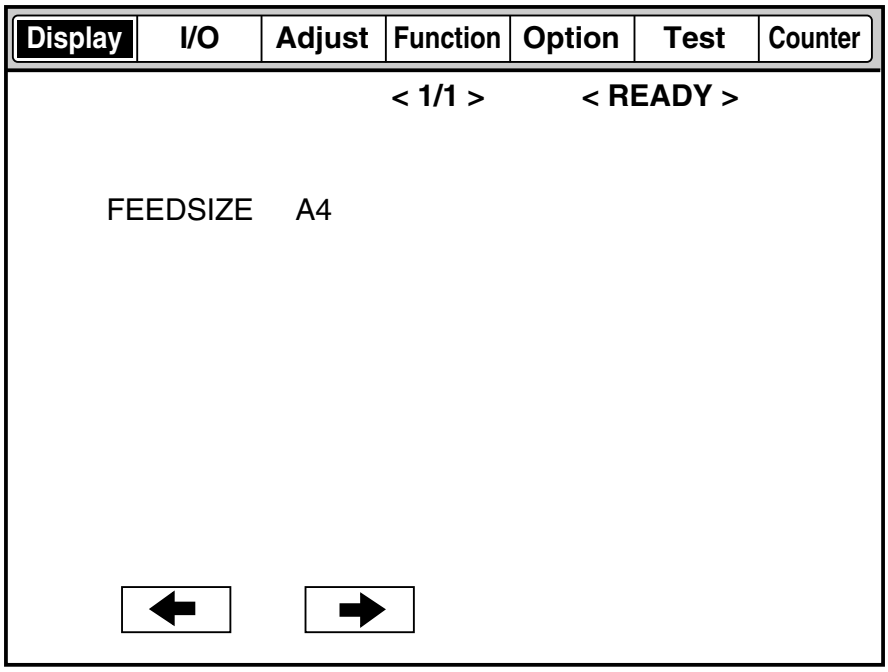
1) Press the user mode key ' ' on the copier control panel.
2) Press numeric keys '2' and '8' simultaneously.
3) Press the user mode key ' ' again.

To enter the service mode of this unit, select FEEDER from the display below.



F05-502-01

5.2.2 FEEDER



F05-502-02

FEEDER items list

Main item	Sub item	Mode outline
DISPLAY	FEEDSIZE	Displays size of document detected on ADF.
ADJUST	DOCST	Adjustment of document stop position for upper feed.
	DOCST-RP	Adjustment of document stop position for lower feed.
FUNCTION	SENS-INT	ADF sensor automatic sensitivity adjustment (initialization adjustment)
	DBLT-CLN	ADF separation roller cleaning mode
OPTION	SIZE-SW	AB/INCH size mixed document detection ON/OFF
	SCAN-SEL	Document detection for irregular sized documents ON/OFF

Under FEEDER, there are no I/O, TEST or COUNTER modes. I/O mode can be checked from COPIER > I/O > FEEDER.

DISPLAY

FEEDSIZE

The document size detected by the ADF in the previous job is displayed as a paper size. If the ADF has not been used after the power has been switched OFF/ON, the display will read "-----"
Display sample: A4, LTR

ADJUST

DOCST

Reg istration position adjustment

■ Operation

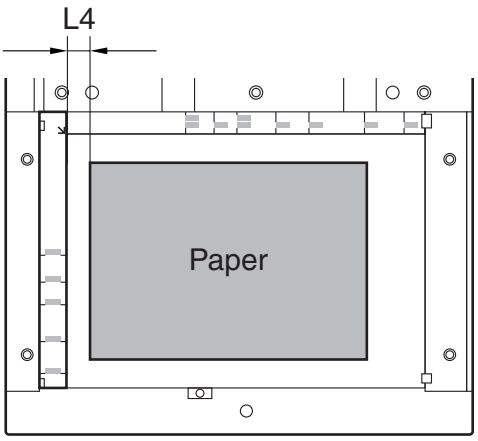
1. Checking the document stop position (adjustment performed in step 2)
   1) Select this mode.
   2) Place a document on the ADF document tray and press OK twice.
   3) The document is carried to the copyboard and stops.
   4) Open the ADF and check the position of the document on the copyboard.
      If the document is to the left of the arrow, increase the value.
      If the document is to the right of the arrow, decrease the value.
   5) Close the ADF, press OK and the document will be delivered.
      The document must be allowed to be delivered. If the document is removed by hand, a jam warning will be displayed.

      Spec: Stop position L4 = 11.0 ± 1mm (DADF-B1)
      L4 = 0 ± 1mm (DADF-K1)

      L4 is the distance from the edge of the glass to the document edge.

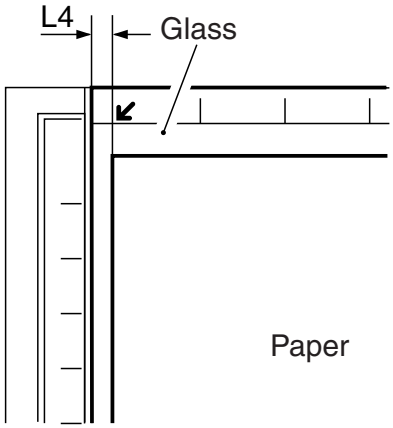
FEEDER > ADJUST

<DADF-K1>



F05-502-03

<DADF-B1>



F05-502-04

2. Document stop position adjustment
   1) Place a document on the ADF document tray.
   2) Enter the value checked in procedure 1 from the control panel and press the OK key.
   3) After a few seconds, the document is fed automatically.
   4) Close the ADF and press the OK key and the document will be ejected.
      The programmed values become valid by the ejection of the document, so remember to press OK and have the document ejected.

Remarks **Unit: 0.34mm** **Default: 0**

Note: To clear any jam resulting from this operation, open and close the ADF and the reverse assembly cover.

DOCST-RP*
DOCST-R**

Adjusting the document stop (of the second side) in double sided pickup.

* DADF-B only

** DADF-K1 only

· Operation

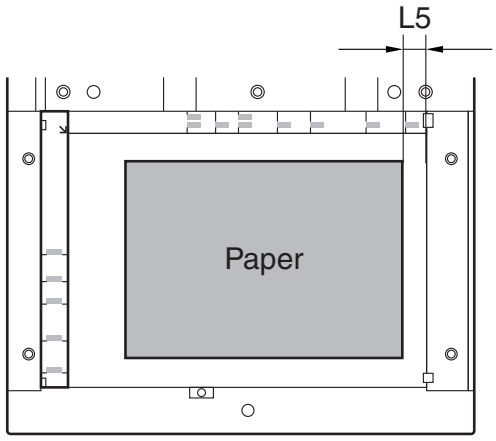
<DADF-B1>

The operating method is the same as for DOCST. However, as this operation is to adjust the document stop position in double sided pickup, the paper feed path is different.

<DADF-K1>

1) Place a document (A3 or 11"x 17') on the ADF document tray and press OK twice.
   The document is carried to the copyboard and stops.
2) Close the ADF gently and check that the gap at L5 in the illustration below is within specification.

<DADF-K1>



Specification: 12 ± 1.5mm

L5 is the distance from the rear edge of the glass to the trailing edge of the document.

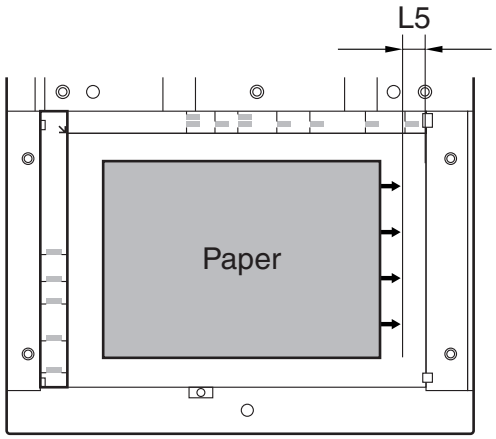
F05-502-05

3) Close the ADF gently and press OK.
   The document on the copyboard glass is ejected.
4) Use the numeric keys to enter the direction in which the position is to be moved. The value is entered based on the pulse count. (1 pulse = 0.34mm)

FEEDER > ADJUST

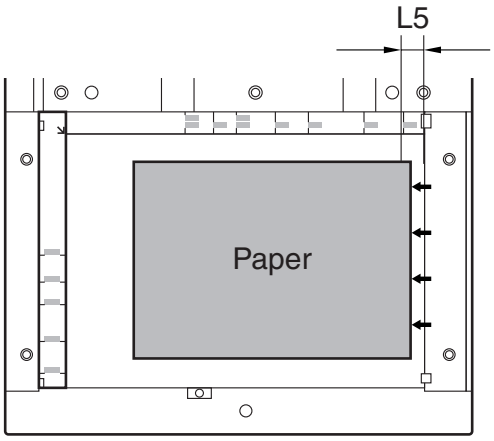
<DADF-K1 >

If the document is further to the left than the specification stop position, reduce the value, if it is further to the right, increase the value.



Reduce the DOCST value

F05-502-06



Increase the DOCST value

F05-502-07

5) Once more, place a document (A3 or 11”x 17”) on the document tray. Press OK twice.
   The document is fed onto the document glass and stops.
6) Gently close the ADF and the check that L4 and L5 in the illustrations are within specification.
7) Gently close the ADF and press OK.
   The document is automatically ejected.
   Note
   The programmed values become valid by the ejection of the document, so remember to press OK and have the document ejected.

Remarks **Unit: 0.34mm** **Default: 0**

FUNCTION

SENS-INT

Sensor level adjustment (initialization adjustment)
This mode should be carried out when replacing the ADF controller PCB, the document set sensor, the pre-registration sensor, the final document detection sensor or the reverse outlet sensor. However, when replacing the ADF controller PCB, there is a further procedure that needs to be carried out.

1) Stick an all black piece of paper over the final document detection sensor on the document tray. Make sure the black paper is secure and cannot move. (Make sure the black paper is not over the document set sensor.)
2) Select the item and press OK.
   In about 15 seconds, the document detection LED flashes twice.
   During the automatic adjustment, the service mode window reads SERVICE in the top right corner.
3) The mode will finish in a few seconds.
   The operation is finished when the service mode window changes from SERVICE to READY.

Remarks: **Refer to the dipswitch functions table.**

DBLT-CLN*
SPRT-CLN** Separation roller cleaning mode

*DADF-B1 only
**DADF-K1 only

■ Operation procedure

1) Select DBLT-CLN (SPRT-CLN>).
2) Place a blank sheet of paper on the document try and set it by pushing it slightly in the feed direction.
   There is no need for the paper to be soaked in any solvent.
3) Press OK and the paper will be fed in part way and the separation rollers will be made to idle rotate. Hold the paper so that it is not fed through the machine.
4) The operation stops automatically in about 5 seconds.
5) Check that the display in the upper right of the window changes from SERVICE to READY. Open the pickup unit cover and pull out the paper. When the display reads READY, the test mode is finished.

Remarks: **Refer to the dipswitch functions table.**

COPIER > OPTION

REG-CLN**

Registration roller cleaning mode **DADF-K1 only

■ Procedure

1) Select REG-CLN.
2) Close the ADF and check that the pickup unit cover, reverse delivery unit cover are closed and then press OK.
3) Open the pickup unit cover and lightly press down on the registration roller with a piece of lint-free paper or cloth wet with alcohol. (The registration roller will rotate for 40 seconds and then stop.)
4) The rotation can be stopped by any of the following methods.
   · Close the pickup unit cover.
   · Open the reverse delivery unit cover.
   · Open the ADF.

OPTION

SIZE-SW

This switch toggles between detection or non detection of mixed AB and INCH sized documents.

'0': OFF Mixed document detection is not performed.
'1': ON Mixed document detection is performed.

Remarks: **Default: 0**

SCAN-SEL

Switches document size detection for irregular sized documents in the ADF ON/ OFF.

'0': OFF Irregular document size detection is not performed.
'1': ON Irregular document size detection is performed.

Remarks: **Default: 0**

5.2.3 I/O display

1) Enter service mode.
2) Press COPIER, I/O and select FEEDER. The bit No. display in the table below is as follows.

e.g. P001 0000000
bit 7 bit 0

The I/O display will not change while paper is passing through the ADF.

<DADF-B1>

Address	Bit	Notation	Display content	Remarks
P001	Bit 0	SR5	Reverse deliver registration sensor	1: ON
(Input)	Bit 1	SR4	Reverse delivery inlet sensor	1: ON
	Bit 2	SR3	Separation sensor	0: ON
	Bit 3		-	
	Bit 4		-	
	Bit 5		-	
	Bit 6		-	
	Bit 7		-	
P002	Bit 0-7		-	
(for Development use)				
P003	Bit 0	U505	Reverse outlet sensor	0: ON
(Input)	Bit 1	U502	Pre-registration sensor	0: ON
	Bit 2	U503	Document set sensor	0: ON
	Bit 3	U504	Final document detection sensor	1: ON
	Bit 4		-	
	Bit 5		-	
	Bit 6		-	
	Bit 7		-	
P004	Bit 0		-	
(Input)	Bit 1	SR1	Feed motor clock sensor	Toggles between 0 and 1 as the motor rotates.
	Bit 2	SR7	Reverse delivery motor clock sensor	Toggles between 0 and 1 as the motor rotates.
	Bit 3		-	
	Bit 4		-	
	Bit 5		-	
	Bit 5		-	
	Bit 7		-	

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COPIER > I/O

Address	Bit	Notation	Display content	Remarks
P005	Bit 0 to 7		-	
(for Development use)				
P008	Bit 0		-	
(Input)	Bit 1		-	
	Bit 2		Push switch 1	1: ON
	Bit 3	SR8	Reverse delivery unit cover sensor	0: OPEN
	Bit 4	SR2	Pickup unit cover sensor	0: OPEN
	Bit 5	SR6	ADF open/ close sensor	0: OPEN
	Bit 6		-	
	Bit 7		-	
P009	Bit 0to7		-	
(for Development use)				
P010	Bit 0		DIPSW-1	
(Input)	Bit 1		DIPSW-2	
	Bit 2		DIPSW-3	
	Bit 3		DIPSW-4	
	Bit 4		DIPSW-5	
	Bit 5		DIPSW-6	
	Bit 6		DIPSW-7	
	Bit 7		DIPSW-8	

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<DADF-K1>

Address	Bit	Notation	Display content	Remarks
P001	Bit 0	SR5	Reverse delivery registration sensor	1: ON
(Input)	Bit 1	SR4	Reverse delivery inlet sensor	1: ON
	Bit 2	SR3	Separation sensor	1: ON
	Bit 3		-	-
	Bit 4		-	-
	Bit 5		-	-
	Bit 6		-	-
	Bit 7		-	-
P002	Bit 0 to 7		-	
(for Development use)				

T05-502-03

COPIER > I/O

Address	Bit	Notation	Display content	Remarks
P003	Bit 0	U505	Reverse outlet sensor	1: ON
(Input)	Bit 1	U502	Pre-registration sensor	1: ON
	Bit 2	U503	Document set sensor	1: ON
	Bit 3	U504	Final document detection sensor	1: ON
	Bit 4		-	
	Bit 5		-	
	Bit 6		-	
	Bit 7		-	
P004	Bit 0		-	-
(Input)	Bit 1	SR1	Feed motor clock sensor	Toggles between 0 and 1 as the motor rotates.
	Bit 2	SR7	Reverse delivery motor clock sensor	Toggles between 0 and 1 as the motor rotates.
	Bit 3		-	
	Bit 4		-	
	Bit 5		-	
	Bit 6		-	
	Bit 7		-	
P005 (for Development use)	Bit 0 to 7		-	
P006	Bit 0		Separation motor reverse rotation	1: ON
(Output)	Bit 1		Separation motor forward rotation	1: ON
	Bit 2		Separation motor PWM	1: ON
	Bit 3		-	-
	Bit 4		Feed motor PWM	1: ON
	Bit 5		Brake	1: ON
	Bit 6		Delivery motor PWM	1: ON
	Bit 7		-	
P007	Bit 0		-	-
(Output)	Bit 1		Document display LED	1: Lit
	Bit 2		LED1	0: Lit (flashes when there is no paper passing through the unit.)
	Bit 3		LED2	0: Lit
	Bit 4		Feed motor reverse rotation	1: ON
	Bit 5		Feed motor forward rotation	1: ON
	Bit 6		Delivery motor reverse rotation	1: ON
	Bit 7		Delivery motor forward rotation	1: ON

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COPIER > I/O

Address	Bit	Notation	Display content	Remarks
P008	Bit 0		-	-
(Input)	Bit 1		-	-
	Bit 2		Push switch	1: ON
	Bit 3	SR8	Reverse delivery unit cover sensor	0: OPEN
	Bit 4	SR2	Pickup unit cover sensor	0: OPEN
	Bit 5	SR6	ADF open/ close sensor	0: OPEN
	Bit 6		-	-
	Bit 7		-	-
P009	Bit 0 to 7		-	-
(for Development use)				
P010	Bit 0		DIPSW1	1: ON
(Input)	Bit 1		DIPSW2	1: ON
	Bit 2		DIPSW3	1: ON
	Bit 3		DIPSW4	1: ON
	Bit 4		DIPSW5	1: ON
	Bit 5		DIPSW6	1: ON
	Bit 6		DIPSW7	1: ON
	Bit 7		DIPSW8	1: ON

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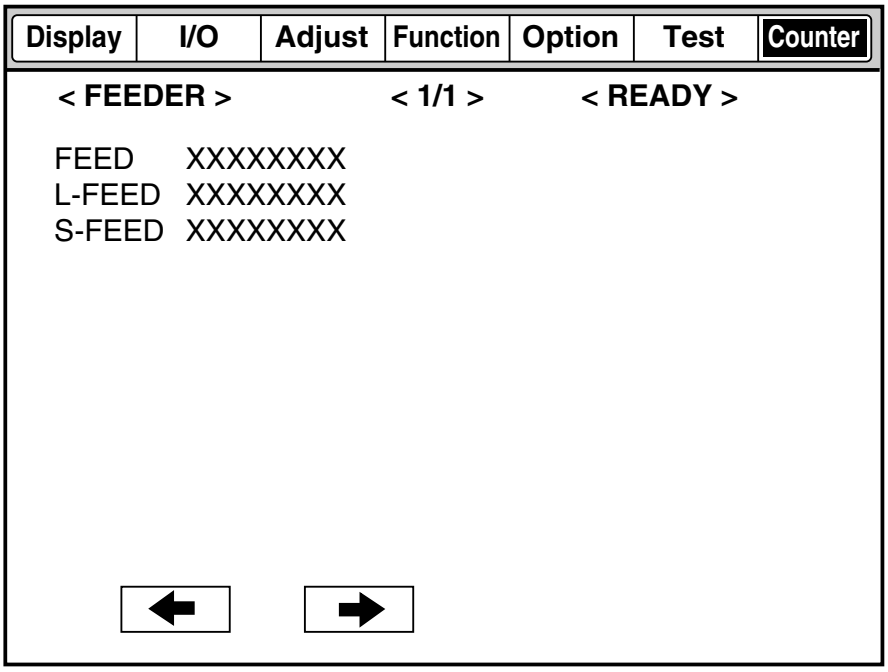
5.2.4 COUNTER

The counter that displays the number of sheets picked up by the unit is displayed by the following mode. The counter should be referred to when carrying out periodic maintenance.

COPIER > COUNTER > FEEDER



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FEED: Displays the number of sheets picked up.
The number of sheets scanned can be displayed with COPIER > COUNTER > SCANNER > SC=TTL.

L-FEED: Displays the number of large sized sheets picked up.* *Only displayed for DADF-B1.

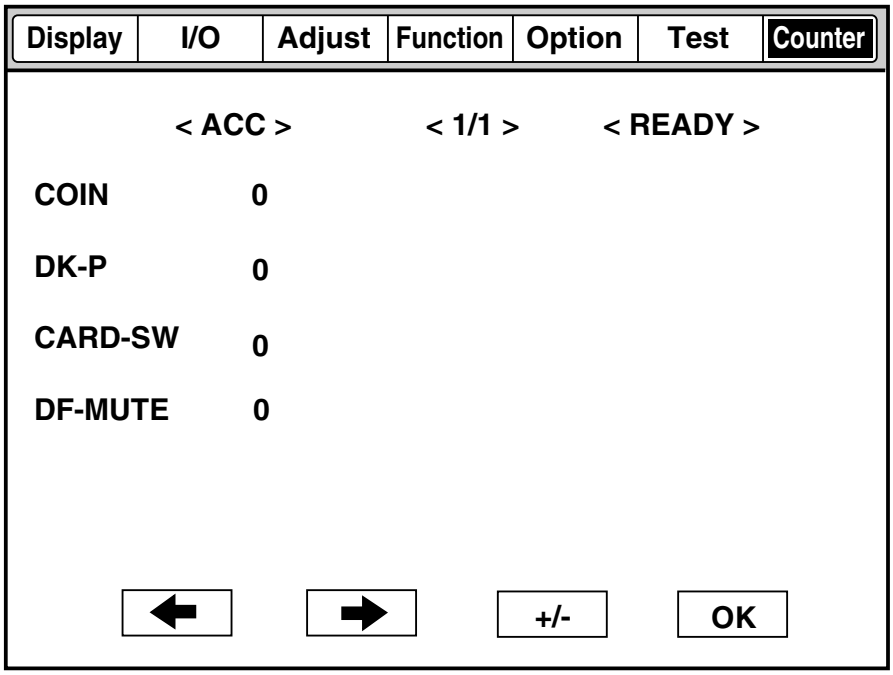
S-FEED: Displays the number of small sized sheets picked up. *

COPIER > OPTION

5.2.5 OPTION (ACC)

The operating noise generated while the unit is scanning can be reduced with the following service mode.

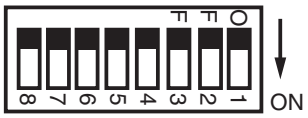
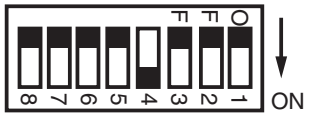
COPIER > OPTION > ACC > DF-MUTE



F05-502-09

5.3 Dipswitch functions

The dipswitch (DSW1) functions of the ADF controller PCB are as follows.

Purpose	DSW1 settings	Contents
Normal settings		Normal operation status is when all bits are OFF.
Sensor level adjustment		Used to adjust the sensor levels of the final document detection sensor, document set sensor, pre-registration sensor, reverse outlet sensor.

1) Set Bit 4 ON and press the push switch.
2) Close the reverse delivery cover and place a piece of black paper on the final document sensor.

Set the black paper so that it does not cover the document sensor. (Make sure that the document set sensor LED does not display.)

3) Open the pickup unit cover and then close it again.
   The sensor adjustment begins in about 3 seconds.
4) A few seconds later, the document detection LED will flash twice and then continue lit.
   Check the sensor adjustment status by LED1 and 2 on the ADF controller PCB.
   <LED1>
   After flashing at 300msec. intervals, continues off for 2 sec. and then repeats the sequence.

No. of flashes*	Sensor
1	Reverse outlet sensor
2	Pre-registration sensor
3	Document set sensor
4	Final document detection sensor

*: Relationship between number of flashes and sensors

<LED2> ON: Sensor is normal
OFF: Sensor is abnormal

5) Press the push switch to progress to the adjustment of the next sensor.
   As the push switch is pressed, the sensors are scrolled through in the order 1 → 2 → 3 → 4.
6) Once all adjustments are completed, set Bit 5 ON and check that the document set display LED is off.
7) Set all bits OFF.

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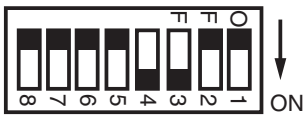
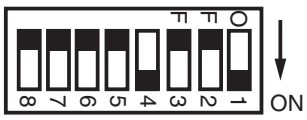
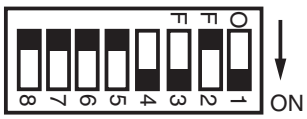
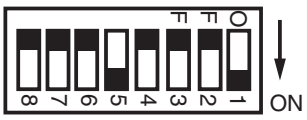
Purpose	DSW1 settings	Contents
Document tray adjustment		1) Set bits 3 and 4 ON. 2) Set the document tray to the following sizes and press the push switch. · A/B: A4 · Inch: LTR 3) Set the document tray to the following sizes and press the push switch. · A/B: A4R · Inch: LTRR 4) Press the push switch (SW1) again and set all bits OFF.
Registration position adjustment		1) Set bits 1 and 4 ON. 2) Press the push switch and close the ADF. 3) Place a document on the document tray. (After about 3 seconds, the document will be fed onto the copyboard glass and will stop.) 4) Open the ADF and check the document stop position. If the document is to the left of the ???, set Bit 5 ON. If it is to the right, set Bit 6 ON. Press the push switch the number of times you want to adjust. (Each push will shift 0.34mm) 5) When the ADF is closed, the document will automatically be ejected. 6) After adjustment, set all Bits OFF.
Double sided registration adjustment		1) Set bits 1, 3 and 4 ON. 2) Subsequent steps are the same as for 'Double sided registration adjustment'.
Pickup and delivery step operation		■ Used to make the ADF alone pickup and eject documents. 1) Set bits 1 and 5 ON. 2) Press the push switch and close the ADF. 3) Place a document on the document tray. (After about 3 seconds, the document will be fed onto the copyboard glass and will stop.) 4) When the ADF is closed, the document will automatically be ejected. 5) After adjustment, set all Bits OFF.

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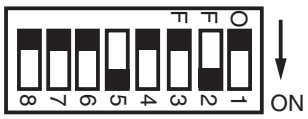
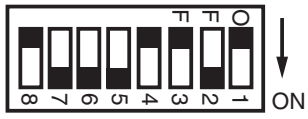
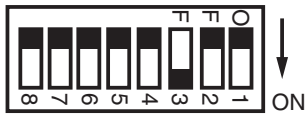
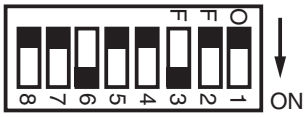
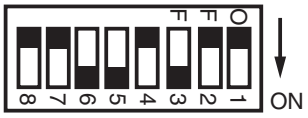
Purpose	DSW1 settings	Contents
Pickup and delivery continuous operation		■ Used to make the ADF alone pickup and eject documents. 1) Set bits 1 and 5 ON. 2) Press the push switch and close the ADF. 3) Place a document on the document tray. (After about 3 seconds, the document will be fed onto the copyboard glass and will stop.) 4) When all the pages are gone, the operation stops and the mode is quit.. 5) After checking the operation, set all Bits OFF
Pickup and delivery operation (no paper)		■ Used to check operations without using paper. 1) Set bits 2, 5, 6, 7 ON. 2) Press the push switch and close the ADF. 3) After about 3 seconds, the pickup and delivery operations start. 4) After checking the operation, set all Bits OFF
Separation roller cleaning		■ Used to clean the separation roller. 1) Set bit 3 ON. 2) Press the push switch and close the ADF. 3) Place a piece of paper on the document tray, holding down the paper at both ends. (The separation roller begins to rotate.) 4) Holding the paper with both hands, let the roller idle rotate. 5) After 5 seconds, when the separation roller stops, take out the paper. 6) Open the ADF and set all bits OFF.
Pickup roller ascend (Lifter descend)		1) Set bits 3, 6 ON. 2) Press the push switch and close the ADF. 3) The separation roller will rotate forward and the pickup roller will ascend (the lifter will descend). 4) After about two seconds, the separation motor will stop. 5) After checking the operation, set all Bits OFF
Pickup roller descend (Lifter ascend)		1) Set bits 3, 5, 6 ON. 2) Press the push switch and close the ADF. 3) The separation roller will rotate in reverse and the pickup roller will descend (the lifter will ascend). 4) After about two seconds, the separation motor will stop. 5) After checking the operation, set all Bits OFF

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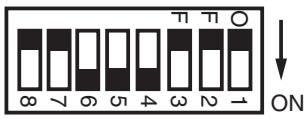
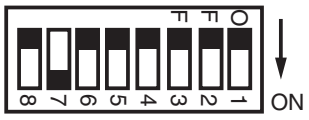
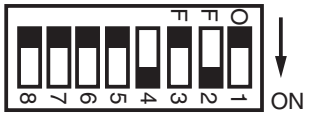
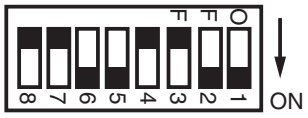
Purpose	DSW1 settings	Contents
EEPROM clear		1) Set bits 4, 5, 6 ON. 2) Leave the pickup unit cover open. 3) Hold down the push switch and turn the copier power OFF/ ON.. (This clears the EEPROM on the ADF controller PCB.) 4) LED2 comes ON. 5) After checking the operation, set all Bits OFF 6) Turn the copier power OFF.
Final document detection sensor invalid		■ Used to treat malfunctions of the final document detection sensor. 1) Set bit 7 ON. 2) The final document detection sensor will become invalid. 3) After checking the operation, set all Bits OFF
Final document detection sensor operation check mode		■ Used to check whether the final document sensor is emitting light properly or not. (Normally, light is emitted when the START key is pressed.) 1) Set bits 2 and 4 ON. 2) While the push switch is being pressed down, light is emitted from the sensor. The tester checks the light emission at this time. 3) Press the push switch again to quit this mode. 4) After checking the operation, set all Bits OFF
Registration roller cleaning mode		■ This is used to clean paper dust and dirt from the registration roller. 1) Set bits 1, 2, 5, 6 ON. 2) Press the push switch and make sure the document detection LED is ON. 3) Close the ADF and check that the pickup unit cover, reverse delivery unit cover are closed. 4) Open the pickup unit cover and press lightly on the registration roller with a piece of lint free paper or cloth wet with alcohol. (The registration roller will rotate for about 40 seconds and then stop.) 5) The rotation can be stopped by any of the following methods. · Close the pickup unit cover. · Open the reverse delivery unit cover. · Open the ADF. 6) After cleaning, set all bits OFF.

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6 Auto diagnosis

6.1 ADF auto diagnosis

This unit has an auto diagnosis function that allows the unit's status to be checked by the microcomputer on the ADF controller PCB. If diagnosis is carried out and an abnormality found, the control panel on the copier will display the error message.

E400

Main cause	Failure in data communication with copier
Detection method	Constant monitoring. Failure judged if there is no communication with the copier for more than 5 seconds.

E402

Main cause	Feed motor (M2) not rotating. Feed motor clock sensor (SR1) failure.
Detection method	A failure is judged if there is no feed motor encoder pulse detected after 300msec. after the feed motor d rive signal comes ON.

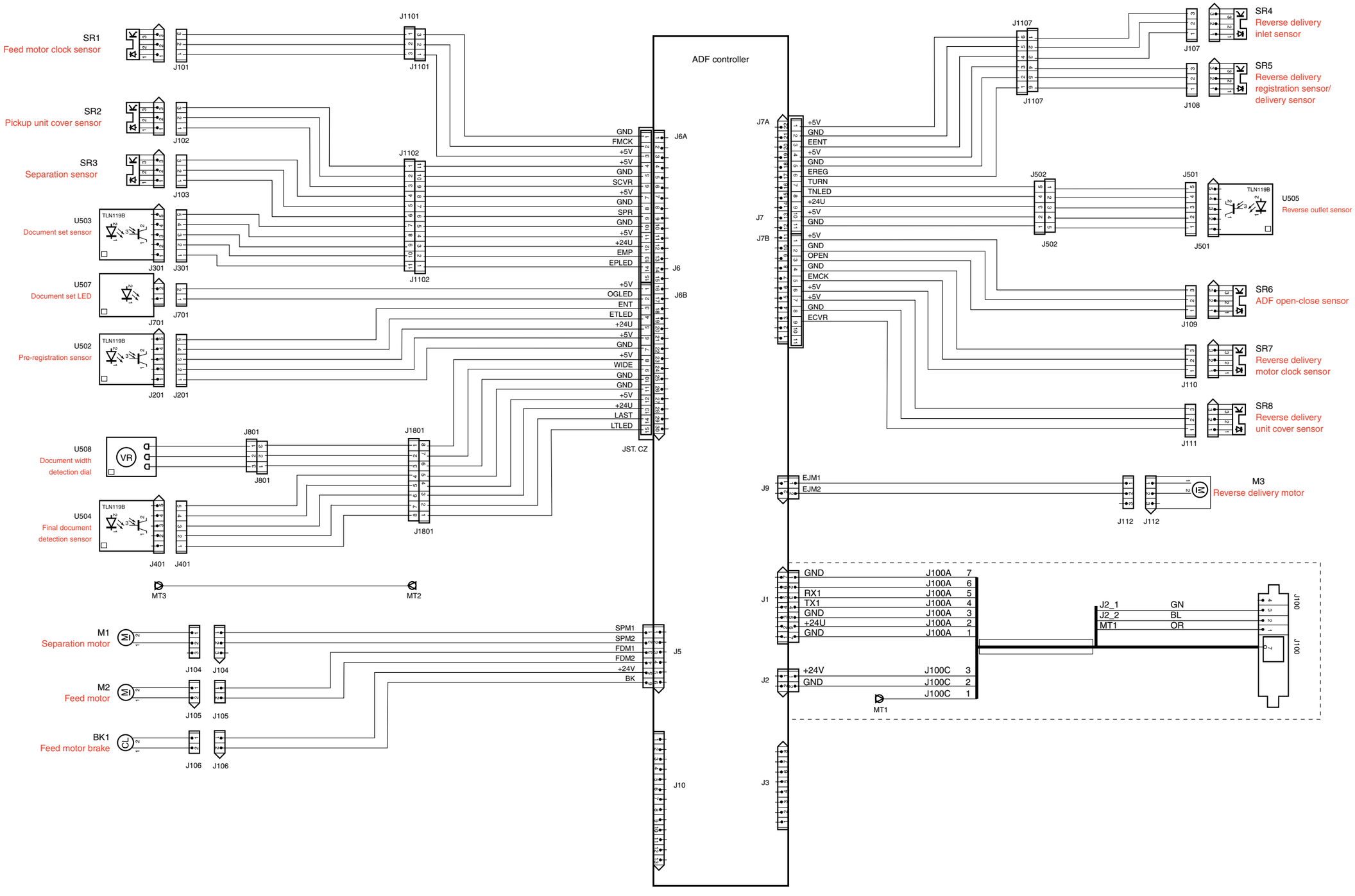
E404

Main cause	Reverse delivery motor (M3) not rotating. Reverse delivery motor clock sensor (SR7) failure.
Detection method	A failure is judged if there is no reverse delivery motor encoder pulse detected after 300msec. after the reverse delivery motor d rive signal comes ON.

1. When auto diagnosis begins, it can be cleared by turning the power to the copier OFF and ON.
2. Even if the ADF is broken, a document can still be copied by opening the ADF and placing the document on the copyboard.

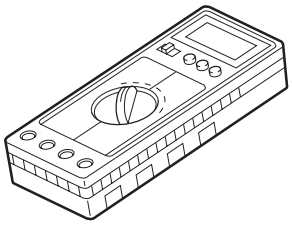
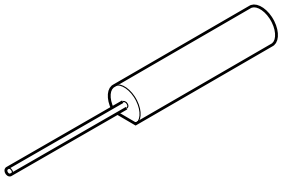
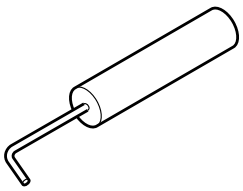
APPENDIX

1 DADF general circuit diagram



2 Special tools

Special, non-standard tools that may be required to perform service on the unit are as shown below.

No.	Tool name	Tool number	Illustration	Rank	Use/ Notes
1	Digital multi meter	FY9-2002-000		A	Electrical checks, etc. · Used with a laser power checker to adjust laser light output.
2	Tester auxiliary pin	FY9-3038-000		A	To help with electrical checks.
3	Tester auxiliary pin (large)	FY9-3039-000		A	To help with electrical check.

REF.

Rank
A: Every service engineer should have one.
B: There should be one among every five or so service engineers.
C: There should be one in each workshop.

3 Solvents and lubricants

No.	Name	Use	Composition	Remarks
1	Byukkurin	Cleaning e.g. glass, plastic, rubber, outer covers	Hydrocarbon fluoride, alcohol, interfacial active agents, water	· Do not use near naked flame · Procure locally. · Alternatives CI, IPA (Isopropyl alcohol)
2	Lubricant	Drive assemblies Swing assemblies	Silicon oil	· Perm lube G2 (made by Nihon Koyu) Tool No: CK-0551 (20g)

Prepared by
Office Imaging Products Device Quality Assurance Center
CANON INC.
Printed in Japan

REVISION 0 (APR. 1999) (21767)
REVISION 1 (JAN. 2003) (36850/37904)

5-1, Hakusan 7-chome, Toride-shi, Ibaraki 302-8501 Japan

 CANON DADF-B1/K1 REV.1 JAN. 2003 PRINTED IN JAPAN (IMPRIME AU JAPON)

This publication is printed on 100% recycled paper.

Canon

PRINTED IN JAPAN (IMPRIME AU JAPON) 0103ABX.XX-X