Service Manual

Finisher, Sorter, DeliveryTray
Saddle Finisher-T2

Canon

Feb 21 2005

Application

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

Corrections

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

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Caution

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

Symbols Used

This documentation uses the following symbols to indicate special information:

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

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.

   In the diagrams, ▮▮▮▮ represents the path of mechanical drive; where a signal name accompanies the symbol , the arrow ⟶ indicates the direction of the electric signal.

   The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.

2. In the digital circuits, '1'is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low".(The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.

   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine."

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Chapter 1 Specifications

Chapter 2 Functions

Chapter 3 Parts Replacement Procedure

Chapter 4 Maintenance

Chapter 5 Error Code

Chapter 1 Specifications

Contents

1.1 Product Specifications

1.1.1 Finisher Unit

0009-2527

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Item	Specifications
Stacking method	Escape tray: fixed type Trays 1 and 2: Independently move up and down
Stacking orientation	Face up Face down
Stacking size*1	A3, A4, A4R, A5R, B4, B5, B5R, 279 mm x 432 mm (11 x 17), LGL, LTR, LTRR, STMTR, others
Paper weight	64g/m2 to 200g/m2
Modes	Non sort:Escape tray :Trays 1 and 2 Sort: Trays 1 and 2 Staple: Trays 1 and 2
Stacking capacity*2, *3	Escape tray: Non sort Large size: 43 mm high (125 sheets) Small size: 43 mm high (250 sheets) Tray 1: Non sort Large size: 96 mm high (650 sheets) Small size: 188 mm high (1300 sheets) Tray 2: Non sort Large size: 96 mm high (650 sheets) Small size: 243 mm high (1700 sheets) Small size: 347 mm high (2450 sheets)*4 Tray 1: Staple sort Large size: 96 mm high/50 sets Small size: 188 mm high/100 sets Tray 2: Staple sort

Item	Specifications
	Large size: 96 mm high/50 sets
	Small size: 188 mm high/100 sets
Mixed stacking capac-ity	Size mixing:
	Escape tray: 43 mm high
	Tray 1 and 2: 96 mm high (650 sheets)
	Stapling:
	96 mm high/50 sets
	Mode mixing:
	Large size: 96 mm high/50 sets
	Small size: 188 mm high/100 sets
Stapling	By rotating cam
Stapling capacity	Small size: 50 sheets
	Large size: 30 sheets

*1 Feed direction: 139.7 to 420.0 mm: cross feed direction: 98.4 to 297.0 mm
*2 Equivalent of 80g/m2 paper.
*3 Alignment accuracy and stacking capacity for stacks of 1700 or more sheets are not specified.
*4 This applies when sheets (A4, B5, or LTR) of the same size are stacked in the non-sort mode.
*5 Stacking capacity is not guaranteed.
*6 The paper thickness is 5.5 mm or less.

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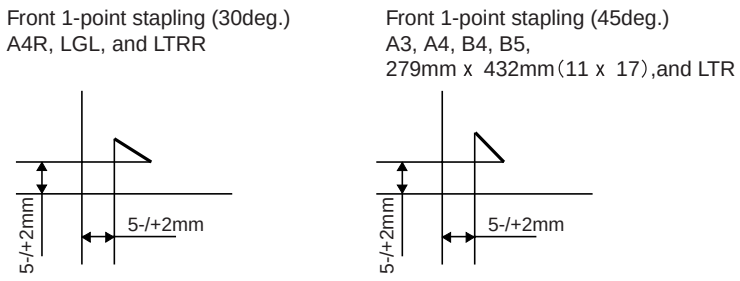
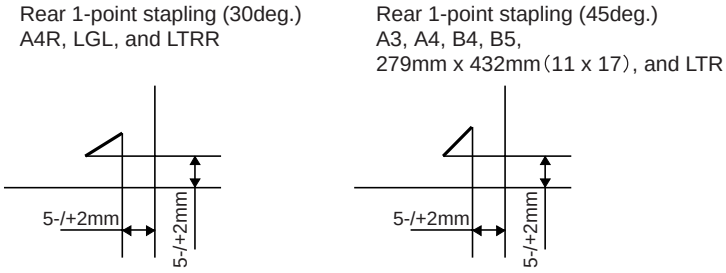
Item	Specifications	Remarks
Staple supply	Special staple cartridge (5000 staples)	
Staple detection	Provided	0 to 20 remaining staples
Manual stapling	Not provided	
Stapling size	Front 1-point stapling (30 deg.)	

Item	Specifications	Remarks
	A4R, LGL, LTRR	
	Front 1-point stapling (45 deg.)	
	A3, B4, A4, B5, 279mm x 432mm (11 x 17), LTR	
	Rear 1-point stapling (30 deg.)	
	A4R, LGL, LTRR	
	Rear 1-point stapling (45 deg.)	
	A3, B4, A4, B5, 279mm x 432mm (11 x 17), LTR	
	2-point stapling	
	A3, A4, A4R, B4, B5, 279mm x 432mm (11 x 17), LGL, LTR, LTRR	
Paper detection	Provided	
Control panel	Not provided	
Display	Not provided	
Dimensions	W:649(761) x D:656 x H:1108mm	If within parentheses, with the tray extended.
Weight	Approx. 70.5 kg	
Power supply	From host machine (24VDC)	
Maximum power consumption	7.5 W or less during standby/114 W or less operating	

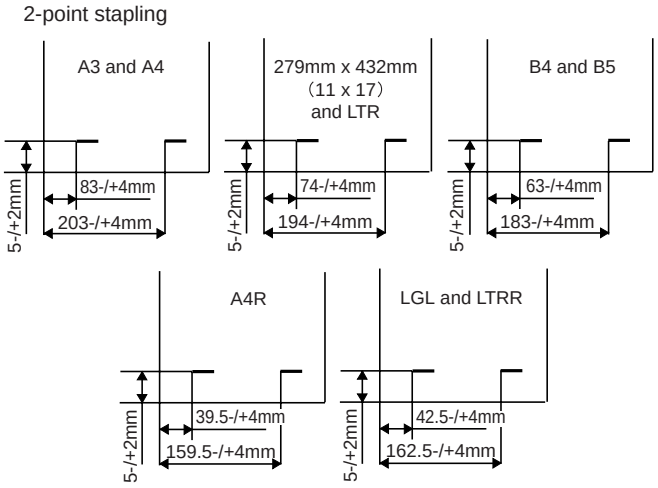
<Stapling Positions>



F-1-1



F-1-2



F-1-3

1.1.2 Saddle Stitcher Unit

0009-2528

T-1-3

Item	Specifications
Stapling method	Center binding (double folding)
Paper size	A3, B4, A4R, 279mm x 432mm (11 x 17), LGL, LTRR
Capacity*1	81g/m2 to 90g/m2: 1 to 10 sheets
	64g/m2 to 80g/m2: 1 to 15 sheets
Paper weight*2	Plain paper: 64g/m2 to 90g/m2 Material for cover: 64g/m2 to 200g/m2

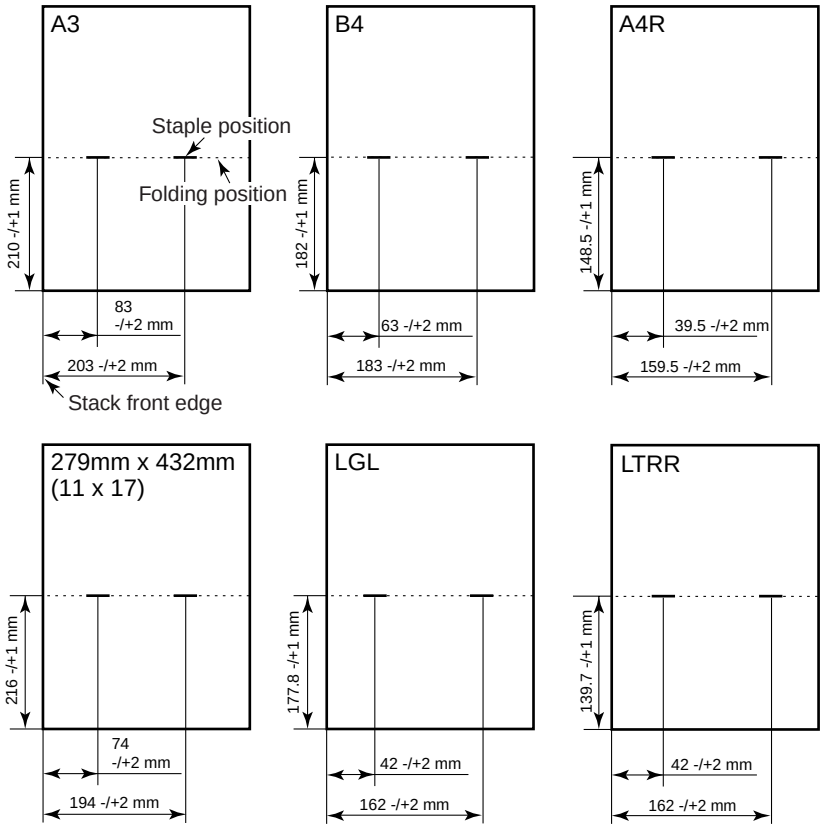
Item	Specifications
Stacking capacity	Plain paper(64g/m2 to 90g/m2) 1 to 5 sheets; 25 copies 6 to 10 sheets; 15 copies 11 to 15 sheets; 10 copies
Stapling position	2 points (center distribution; fixed interval)
Staple accommoda-tion	2000 staples
Staple supply	Special cartridge
Staples	Special staple (Staple-D3)
Staple detection	Provided
Manual stapling	Not provided
Folding method	Roller contact
Folding mode	Double folding
Folding position	Paper center
Position adjustment	Provided
Power supply	From finisher unit (24VDC)

*1 Cover mode; including 1 cover page.

*2 Special paper, postcards, transparencies, or elongation size can not be handled

*1 Cover mode; including 1 cover page.
*2 Special paper, postcards, transparencies, or elongation size can not be handled.

<Staple and Folding Position>


A3
Staple position
Folding position
210 -/+1 mm
83
-/+2 mm
203 -/+2 mm
Stack front edge
B4
182 -/+1 mm
63 -/+2 mm
183 -/+2 mm
A4R
148.5 -/+1 mm
39.5 -/+2 mm
159.5 -/+2 mm
279mm x 432mm
(11 x 17)
216 -/+1 mm
74
-/+2 mm
194 -/+2 mm
LGL
177.8 -/+1 mm
42 -/+2 mm
162 -/+2 mm
LTRR
139.7 -/+1 mm
42 -/+2 mm
162 -/+2 mm

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1.2 Names of Parts

1.2.1 External View

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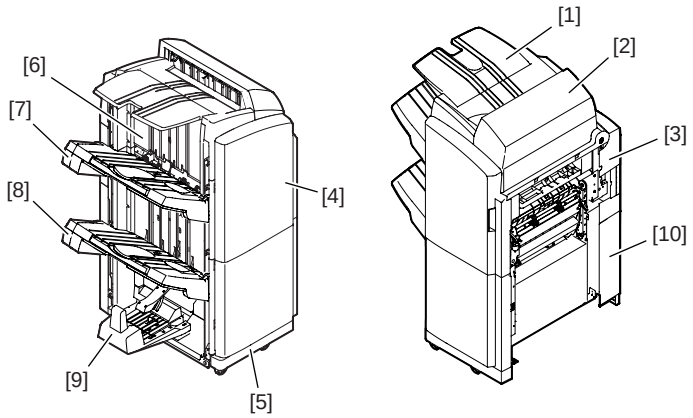


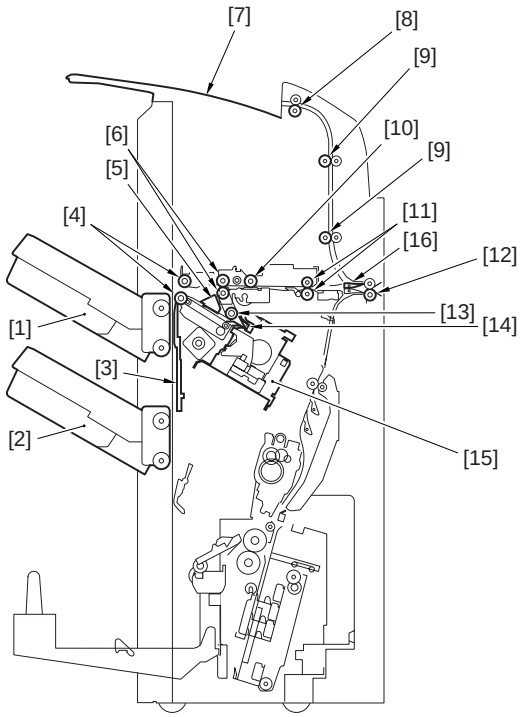
F-1-5

T-1-4

[1] Escape tray	[6] Grate-shaped upper guide
[2] Escape door	[7] Tray 1
[3] Rear upper cover	[8] Tray 2
[4] Front door	[9] Saddle delivery tray
[5] Foot cover	[10] Rear lower cover

1.2.2 Cross Section (Finisher Unit)

0009-2530



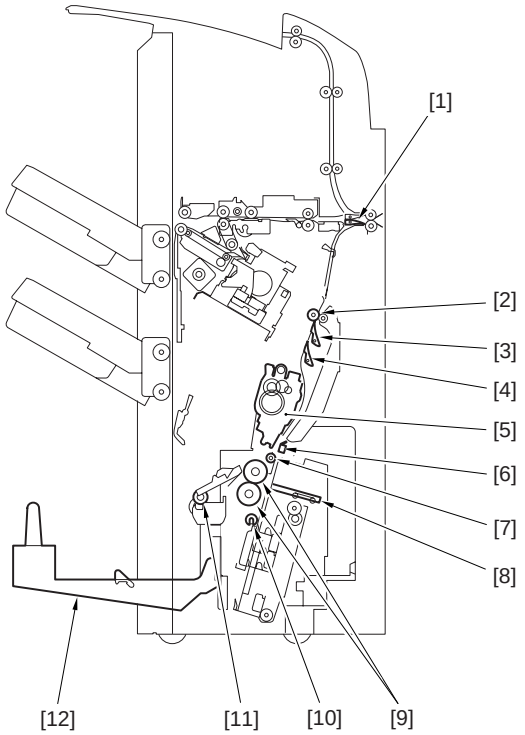
F-1-6

T-1-5

[1] Tray 1	[9] Escape feed roller
[2]Tray 2	[10] Buffer roller
[3] Shutter	[11] Feed roller
[4] Stack delivery roller	[12] Inlet roller
[5] Aligning plate	[13] Return roller
[6] 1st delivery roller	[14] Rear end assist guide
[7] Escape tray	[15] Stapler
[8] Escape delivery roller	[16] Escape inlet flapper

1.2.3 Cross Section (Saddle Stitcher Unit)

0009-2531



F-1-7

T-1-6

[1] Saddle inlet flapper	[7] Holding roller
[2] Saddle inlet roller	[8] Paper pushing plate
[3] No.1 flapper	[9] Paper folding roller
[4] No.2 flapper	[10] Crescent roller
[5] Stitcher (front, rear)	[11] Saddle delivery roller
[6] Stitcher mount	[12] Saddle delivery tray

Chapter 2 Functions

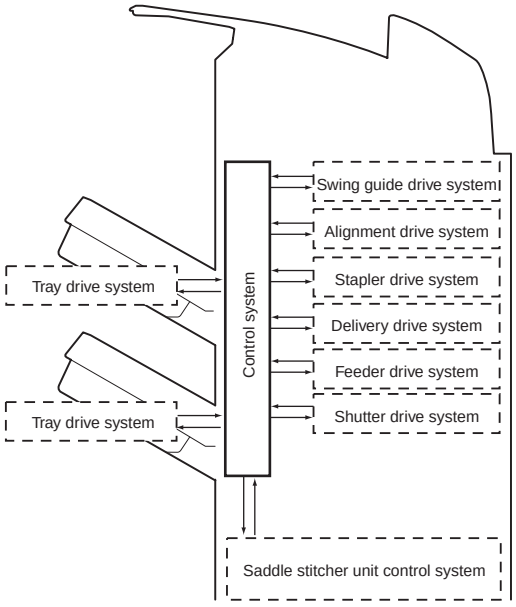
Contents

2.1 Basic Operation

2.1.1 Basic Operation (Finisher Unit)

0009-2533

The finisher is designed to deliver copies arriving from its host machine, and its modes of delivery include simple stacking, job offset, and staple.
All operations involved in these modes are controlled by the finisher controller PCB, according to the appropriate commands from the host machine.
In the case of the Saddle Finisher, copies from the host machine may be routed to the saddle stitcher unit.



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Memo: The term job offset refers to shifting each sorting job, separating a single stack into several stacks.

2.1.2 Overview of the Electrical Circuitry (Finisher Unit)

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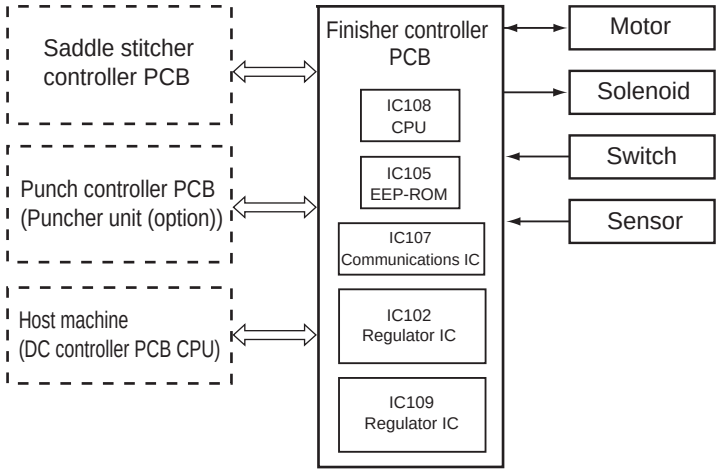
The finisher's sequence of operation is controlled by the finisher controller PCB. The finisher controller PCB is a 16-bit microprocessor (CPU), and is used for communication with the host machine (serial) in addition to controlling the finisher's sequence of operations.
The finisher controller PCB responds to the various commands coming from the host machine through a serial communications line to drive solenoids, motors, and other loads. In addition, it communicates the finisher's various states (information on sensors and switches) to the host machine through a serial communications circuit.
In the case of the Saddle Finisher, the finisher controller PCB not only communicates with the saddle stitcher controller PCB but also communicates the saddle stitcher unit's various states (information on sensors and switches) to the host machine.

The ICs used on the finisher controller PCB are designed for the following:
<IC108 (CPU)>
Controls sequence of operations.
Contains sequence programs.
<IC105 (EEP-ROM)>
Backs up adjustment values.
Backs up initial setting data.
<IC107 (communications IC)>
Communicates with the host machine and the saddle stitcher unit.
<IC102 (regulator IC)>
Generates 5V.
<IC109 (regulator IC)>
Generates 3.3V.

The following figure shows the flow of signals between the finisher and the options controller.

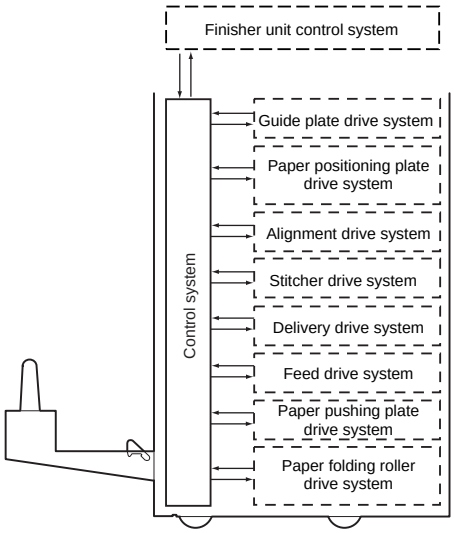


F-2-2

2.1.3 Basic Operation (Saddle Stitcher Unit)

0009-2535

The unit "stitches" (2 points) a stack of sheets delivered by the finisher unit and folds it in two for delivery. All these operations are controlled by the saddle stitcher controller PCB in
response to commands from the host machine via the finisher unit.



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2.1.4 Overview of the Electrical Circuitry (Saddle Stitcher Unit) 0009-2536

The sequence of operations used for the saddle stitcher is controlled by the saddle stitcher controller PCB. The saddle stitcher controller PCB has a microprocessor. This microprocessor is used to control the sequence of operations and to handle serial communications with the finisher controller PCB, driving solenoids and motors in response to the various commands from the finisher controller PCB.

The saddle stitcher controller PCB is also used to communicate the state of various sensors and switches to the finisher controller PCB in serial.

The functions of the major ICs mounted on the saddle stitcher controller PCB are as follows:

<IC7 (CPU)>

Controls the sequence of operations.

Contains the sequence program.

<IC8 (communications IC)>

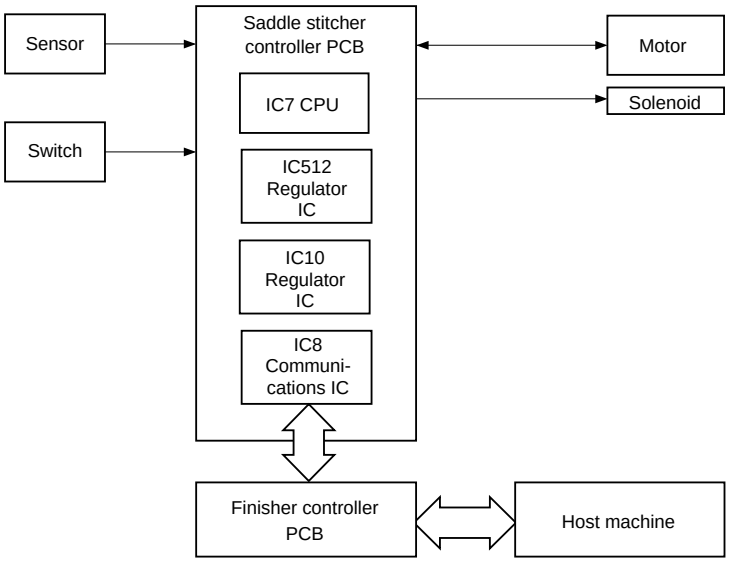
Communicates with the finisher unit.

<IC512 (regulator IC)>

Generates 5V.

<IC10 (regulator IC)>

Generates 3.3V.


Sensor
Switch
Saddle stitcher controller PCB
IC7 CPU
IC512 Regulator IC
IC10 Regulator IC
IC8 Communi-cations IC
Motor
Solenoid
Finisher controller PCB
Host machine

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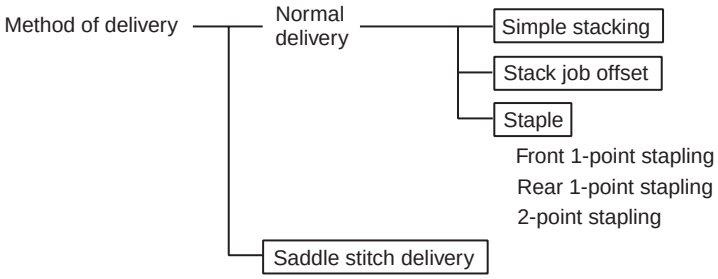
2.2 Feed Drive System

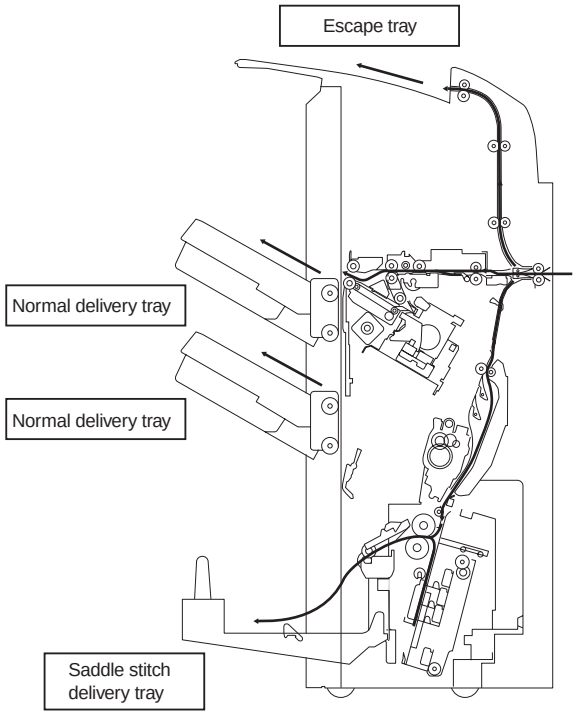
2.2.1 Overview

0009-2537

This product consists of the Finisher unit and the Saddle Stitcher unit.
The Finisher unit simply stacks sheets delivered from a host machine, offsets a stack job, or staples and delivers the sheets to the trays according to commands delivered from a host machine.
The Saddle Stitcher unit carries in, aligns, and stitches sheets delivered from the host machine, and then feeds the resulting stack. After these operations, it folds a stack of sheets and delivers it to the delivery trays of the Saddle Stitcher unit.
There are four delivery methods.



F-2-5



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2.2.2 Constraction of the Control System (Finisher Unit) 0009-2538

The copy sent from the host machine is delivered to the ejection tray, escape tray, or processing tray according to the ejection type. Job offset or stapling is performed, according to the instruction from the host machine, for copy delivered to the staple tray.

When ejecting from the processing tray, rear end assist guide is used in addition to the stack ejection roller to eject the stack.

The feed motor (M101), stack ejection motor (M102), rear end assist motor (M109), escape feed motor (M112), and inlet motor (M113) are step motors. These motors are rotated forward or backward by the microcomputer (CPU) in the finisher controller PCB.

The following three sensors are provided in the copy delivery path to detect the arrival or passing of copies.

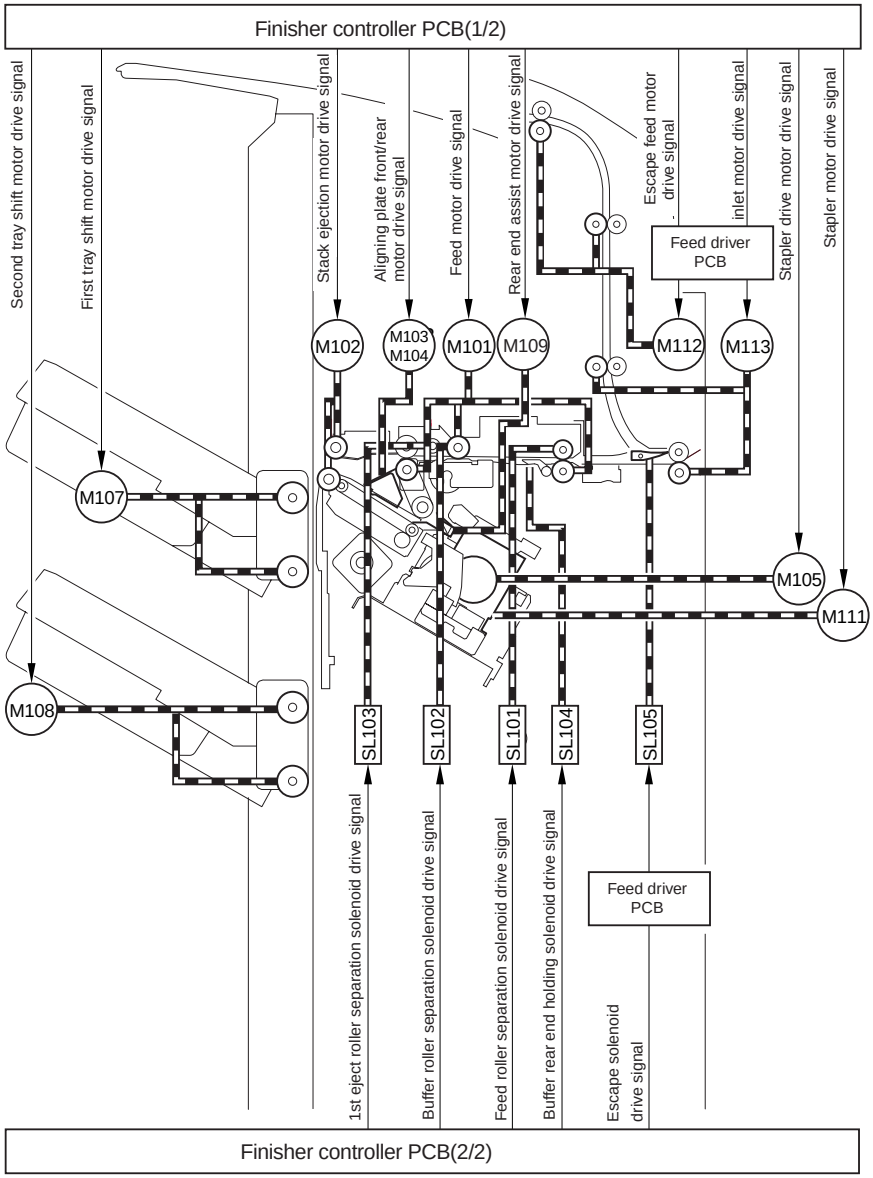
- Inlet sensor (PI103)
- Delivery path sensor (PI104)
- Escape tray path sensor (PI118)

Also, each ejection tray has sensors to detect the presence of copy on the tray.

First tray paper sensor (PI111)

Second tray paper sensor (PI112)

If the copy does not reaches or passes each sensor within prescribed time, the finisher controller PCB determines that the jam has occurred and stops the operation. Then it notifies the host machine that a jam has occurred. When all of the doors are closed after fixing the jam, the finisher checks whether copy is detected by any of the above three sensors (inlet sensor, delivery path sensor, escape tray path sensor). If any of the sensors detects a copy, the finisher determines that the jam is not fixed and sends jam processing signal to the host machine once more.


Finisher controller PCB(1/2)
Second tray shift motor drive signal
First tray shift motor drive signal
Stack ejection motor drive signal
Aligning plate front/rear motor drive signal
Feed motor drive signal
Rear end assist motor drive signal
Escape feed motor drive signal
Inlet motor drive signal
Stapler drive motor drive signal
Stapler motor drive signal
Feed driver PCB
M102
M103
M104
M101
M109
M112
M113
M107
M105
M111
M108
SL103
SL102
SL101
SL104
SL105
1st eject roller separation solenoid drive signal
Buffer roller separation solenoid drive signal
Feed roller separation solenoid drive signal
Buffer rear end holding solenoid drive signal
Escape solenoid drive signal
Feed driver PCB
Finisher controller PCB(2/2)

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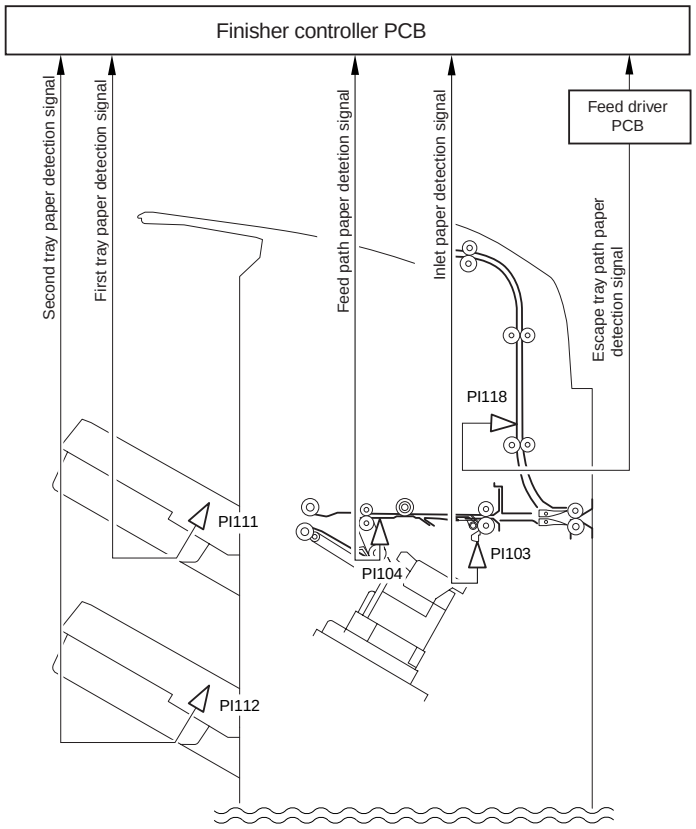

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2.2.3 Paper Delivery Path (Finisher Unit)

0009-2539

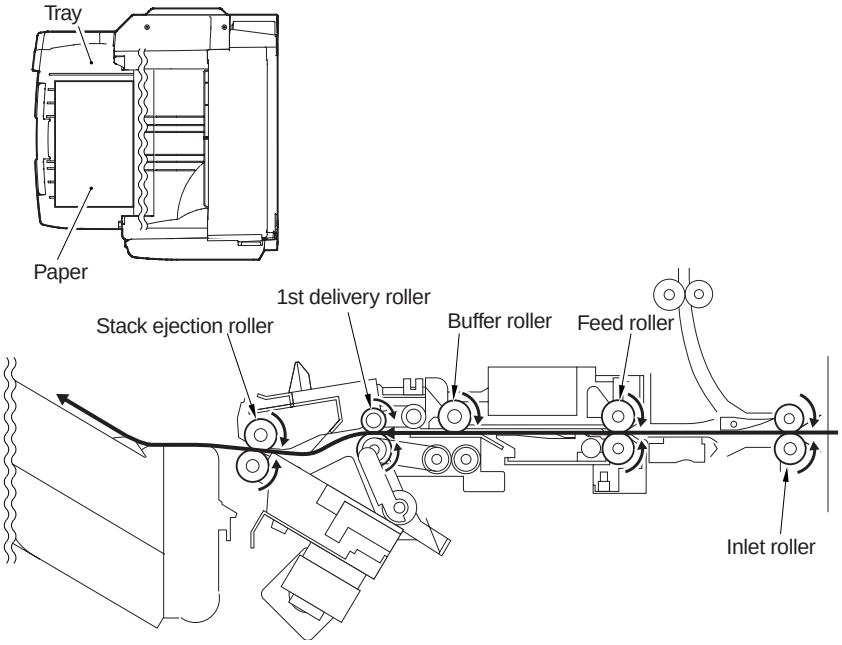
<Overview>

There are three ejection paths to tray 1 and 2 depending on the ejection processing.There is only one paper ejection path to the escape tray.

<Straight Ejection (Destination: Tray 1/ Tray 2)>

When the equipment is set to non-sort, all copies are ejected through the following path.

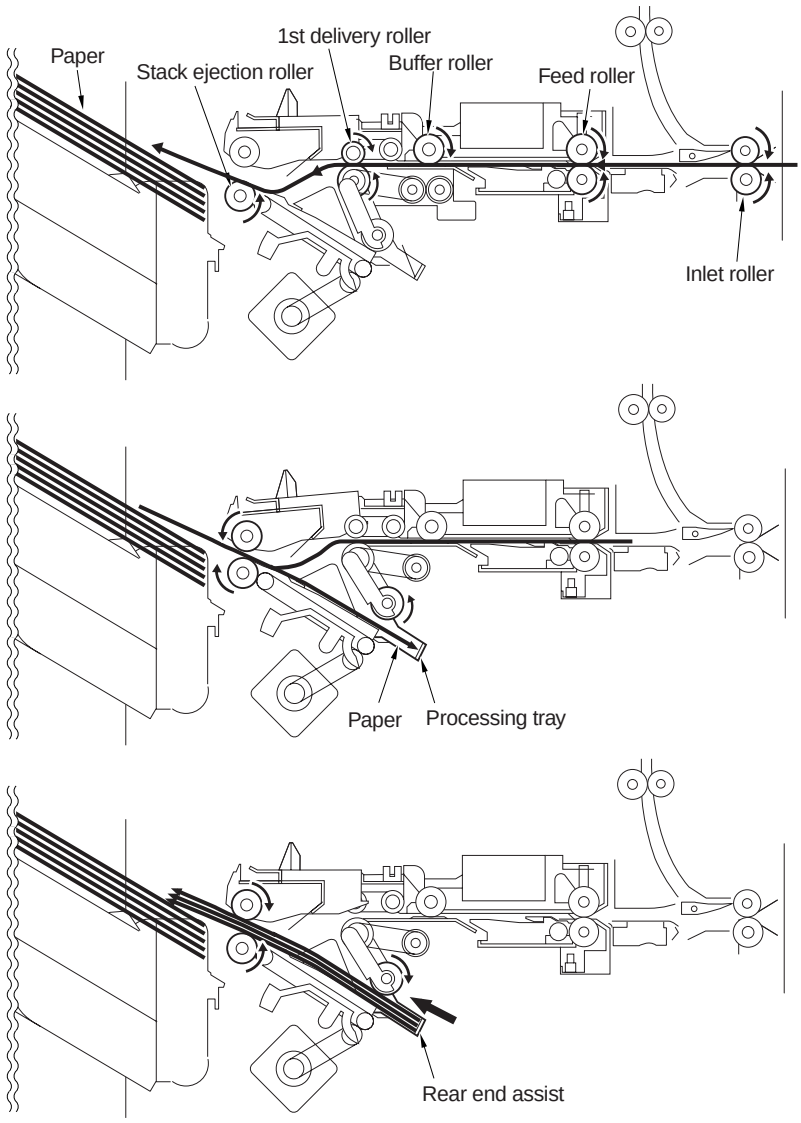
Stack ejection roller



F-2-9

<Processing Tray Path (Destination: Tray 1/ Tray 2)>

This is the copy ejection path when the equipment is set to sort for paper size other than A4, B5, or LTR or when set to staple sort. Copies are delivered to the processing tray for aligning and stapling. Then they are ejected using the rear end assist.



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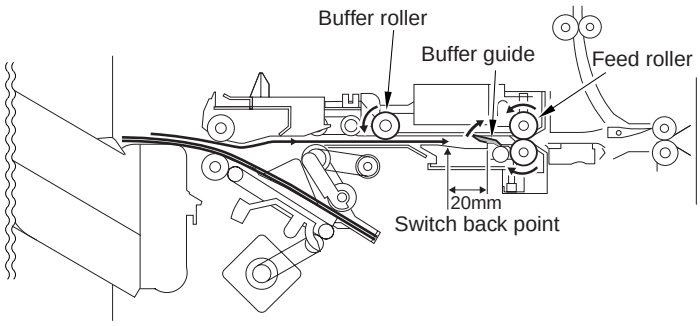
<Buffer/Processing Tray Path (Destination: Tray 1/ Tray 2)>

This is the copy ejection path when the equipment is set to sort for A4, B5, or LTR paper size. Feed two sheets of paper to buffer (two or three sheets if 2-point stapling). Then they are aligned and stapled in the processing tray and ejected. Even while stapling or offset is being performed, simultaneous stack ejection, which simultaneously ejects copies delivered to the buffer and post processed stack in the processing tray, is performed because copies are received continuously from the host machine. The stack delivered from the buffer is ejected to the processing tray and the stack processed in the processing tray is ejected to the tray.

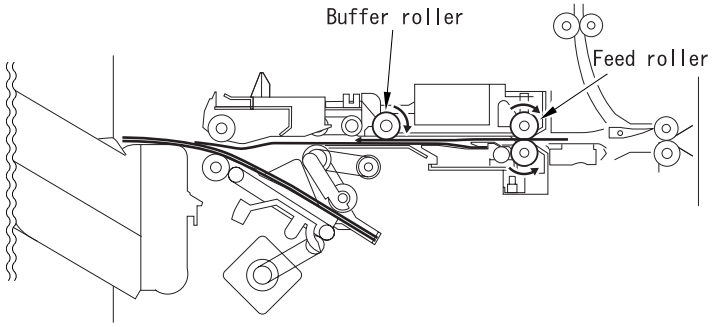
Simultaneous stack ejection operation is described below for two A4 copies between stacks when the equipment is set to sort.

1) When the 1st paper reaches the switchback point, it is sent to the buffer unit and the rear end of the paper is held by the buffer guide.



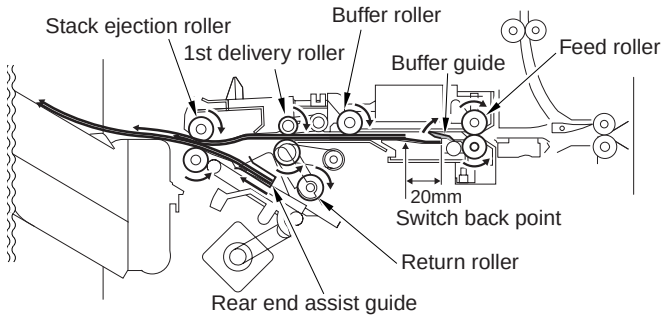
F-2-11

2) When the first copy is delivered to the buffer, the second copy is delivered from the host machine.



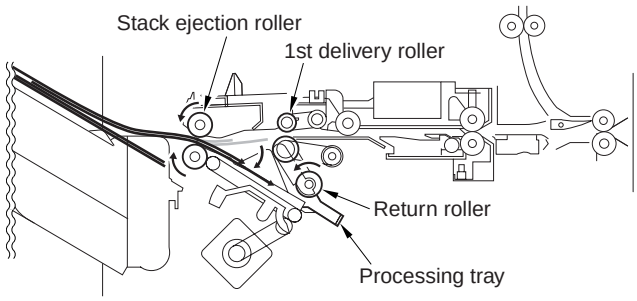
F-2-12

3) The first delivery roller descends and works together with the stack delivery roller to deliver the 1st and 2nd paper toward the processing tray. At the same time, the stack in the processing tray is delivered toward the delivery tray by the return roller and rear end assist guide.



F-2-13

4) When the stack in the processing tray is delivered to the delivery tray and the rear end of the 1st and 2nd paper exits the 1st delivery roller, the 1st and 2nd paper are delivered toward the processing tray by the stack delivery roller and return roller.



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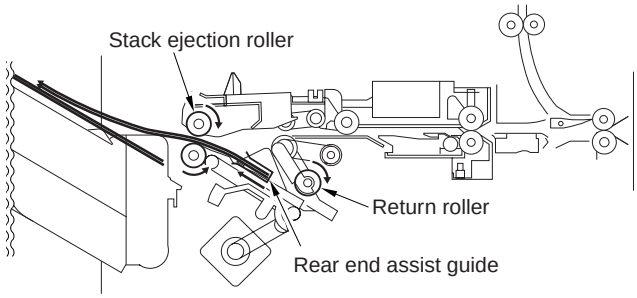
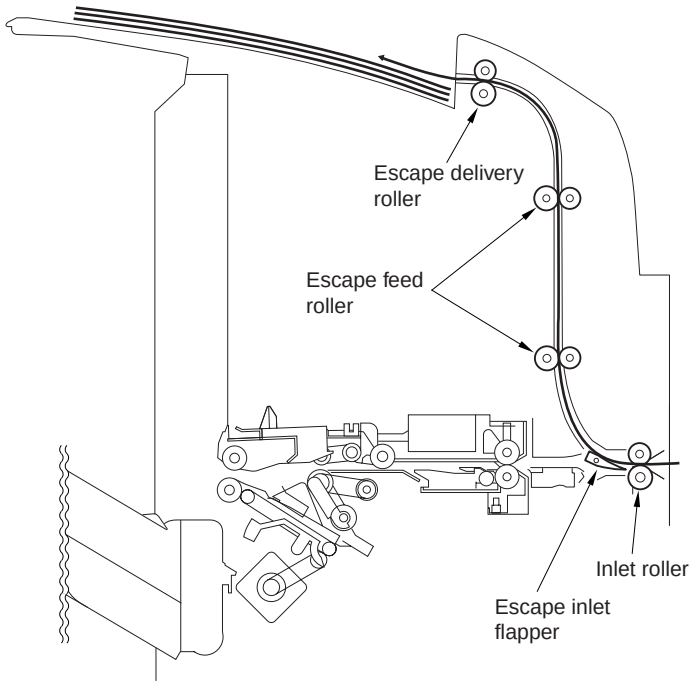
5) The 1st and 2nd paper delivered to the processing tray are aligned and then delivered to the delivery tray.



F-2-15

<Escape Ejection (Destination: Escape Tray)>

When the escape tray is specified as the destination of paper ejection in the non-sort mode, the paper delivered from the host machine to the finisher is rerouted to the path shown below by the escape inlet flapper and ejected to the escape tray.



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2.2.4 Constraction of the Control System (Saddle Stitcher Unit) 0009-2540

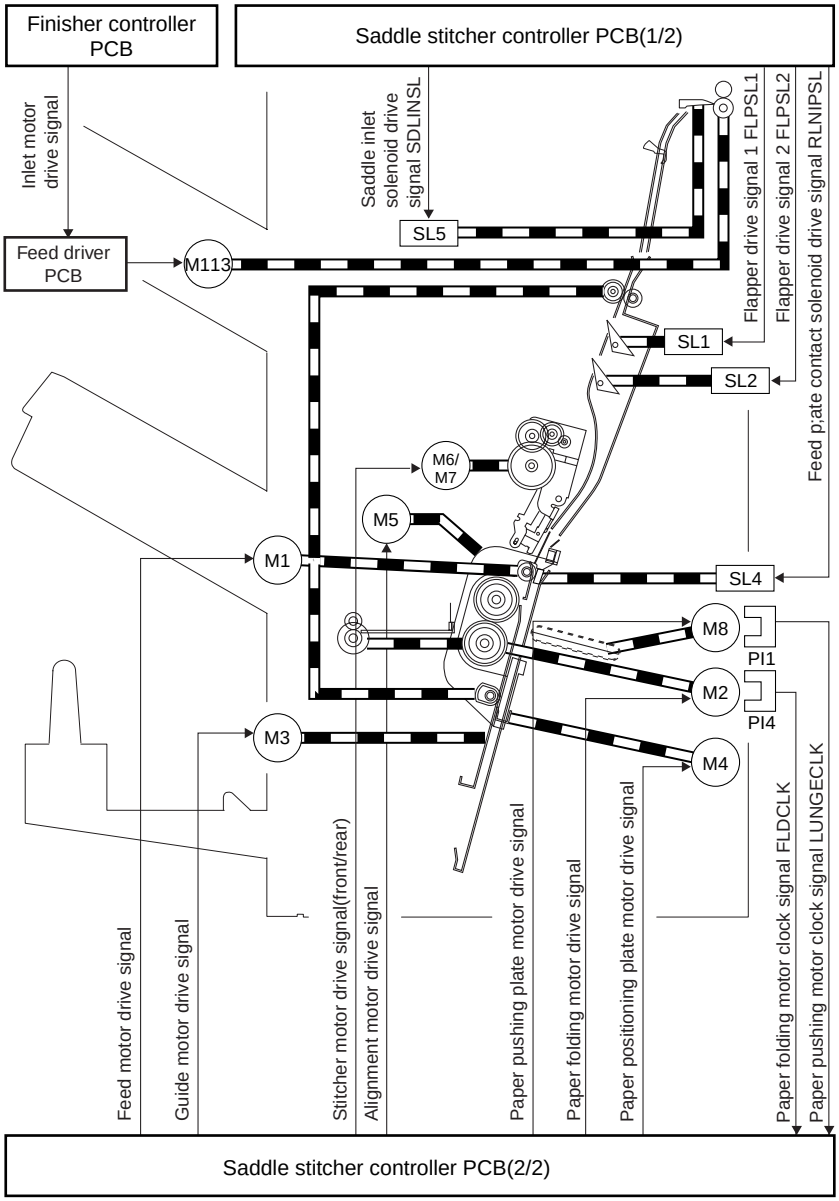
The paper output mechanism serves to keep a stack of sheets coming from the finisher in place for the next steps (stapling, folding).

The paper inlet is equipped with the No.1 flapper and the No.2 flapper, which operate to configure the paper path to suit the size of paper. The paper positioning plate is kept in wait at a predetermined location to suit the size of paper. The paper positioning plate is driven by the paper positioning plate motor (M4), and the position of the plate is identified in reference to the number of motor pulses coming from the paper positioning plate home position sensor (PI7). A sheet moved by the inlet roller is handled by the feed rollers and the crescent roller and held in a predetermined position. The feed plate serve to move sheets by coming into contact with or moving away from sheets as needed.

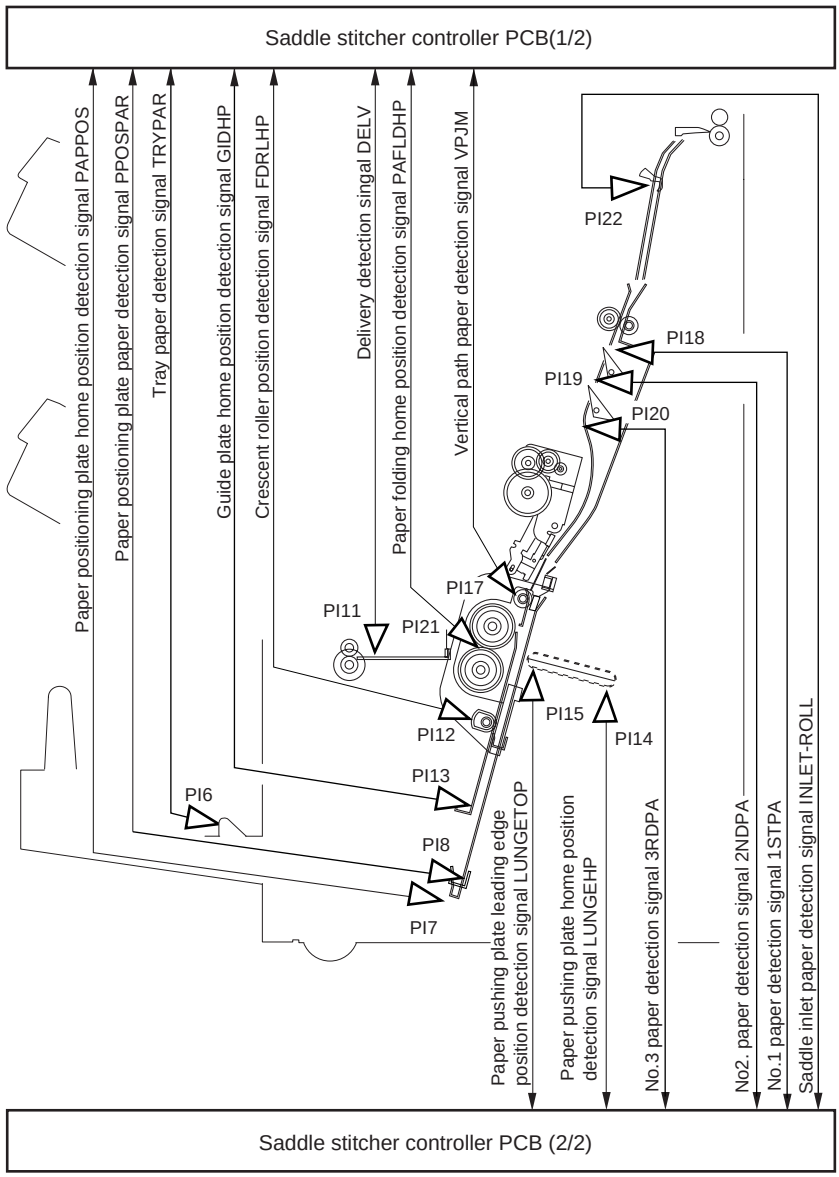
The alignment plates put the stack into order each time a sheet is output. The alignment plates are driven by the alignment motor (M5), whose position is identified in reference to the number of motor pulses coming from the alignment plate home position sensor (PI5).

To prevent interference between paper and the paper folding rollers when the paper is being output, the folding rollers are designed to be covered by a guide plate. The guide plate moves down before paper is folded so as to expose the paper folding rollers.

The inlet is equipped with the No.1, No.2 and No.3 paper sensors (PI18, PI19, PI20) each suited to a specific paper size, and the paper positioning plate is equipped with a paper positioning plate paper sensor (PI8).


Finisher controller PCB
Saddle stitcher controller PCB(1/2)
Inlet motor drive signal
Feed driver PCB
M113
Saddle inlet solenoid drive signal SDLINSL
SL5
Flapper drive signal 1 FLPSL1
Flapper drive signal 2 FLPSL2
Feed p;ate contact solenoid drive signal RLNIPSL
SL1
SL2
M6/ M7
M5
M1
SL4
M8
PI1
M2
PI4
M3
M4
Feed motor drive signal
Guide motor drive signal
Stitcher motor drive signal(front/rear)
Alignment motor drive signal
Paper pushing plate motor drive signal
Paper folding motor drive signal
Paper positioning plate motor drive signal
Paper folding motor clock signal FLDCLK
Paper pushing motor clock signal LUNGECLK
Saddle stitcher controller PCB(2/2)

F-2-17

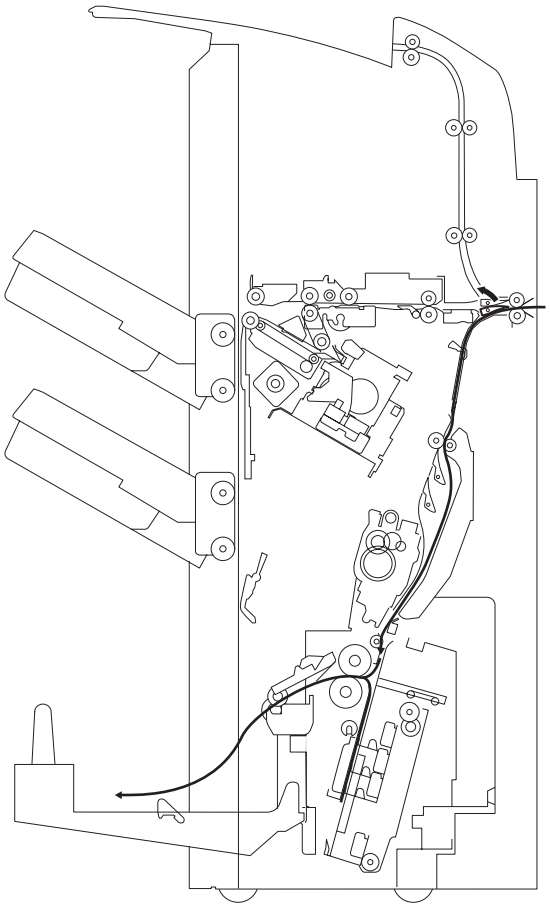


F-2-18

2.2.5 Paper Delivery Path (Saddle Stitcher Unit)

0009-2541

A copy arriving in the finisher from the host machine is routed to the saddle stitcher by the saddle inlet flapper. The saddle stitcher executes stitching and saddling operations on the copy and then delivers it to the saddle stitcher tray.



F-2-19

2.2.6 Basic Operation (Saddle Stitcher Unit)

0009-2542

<Receiving Sheets>

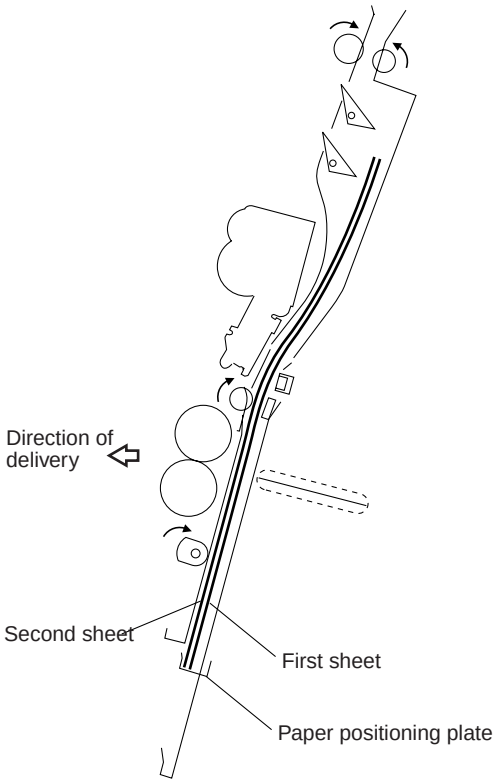
The stitcher unit receives sheets from the finisher unit and outputs them inside the vertical path in vertical orientation.

The vertical path, while sheets are being output, is configured by two paper deflecting plates.

The position of the sheets being output is set by the paper positioning plate so that the center of the stack matches the stapling/folding position.

Sheets coming later are output closer to the delivery slot, and the volume of paper that may be output is as follows:

15 sheets (maximum of 14 sheets of 80g/m2 + 1 sheet of 200g/m2)

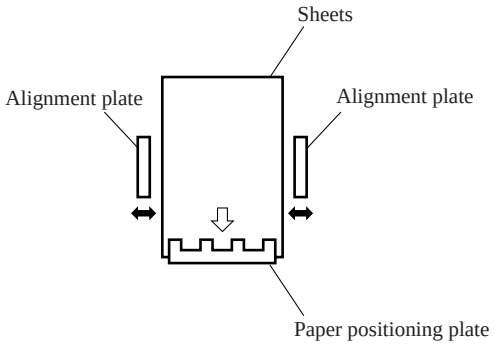


F-2-20

<Aligning the Sheets>

The alignment plates operate to put the sheets in order each time a sheet of paper is output to the vertical path assembly. The alignment plates are mounted at the edge of the vertical path assembly.

The alignment plates also operate after stapling to prepare the stack for delivery.



F-2-21

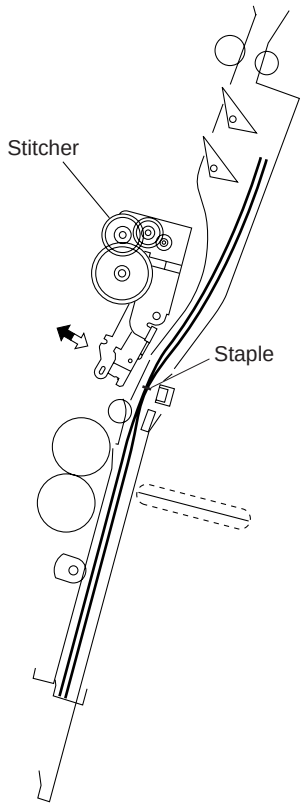
<Stitching>

When all sheets have been output, the two stitchers stitch the stack. The stitchers are positioned so that they face the center of a stack.

The two stitchers are not operated simultaneously so as to prevent the paper from wrinkling between two staples and to limit the load on the power supply.

If only one sheet of paper arrives from the host machine, stitching does not take place and the sequence goes to the

next operation (stack feeding).

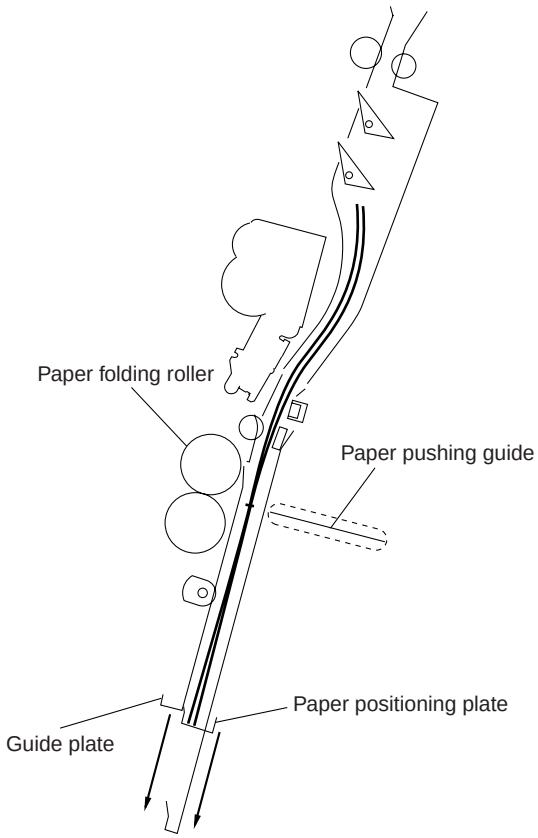


F-2-22

<Feeding the Stack>

The unit folds the stitched stack of sheets, and then feeds it to the point of delivery. This point is where the center of the stack, i.e., stapling position, matches the height of the paper pushing plate and the paper folding roller nip.

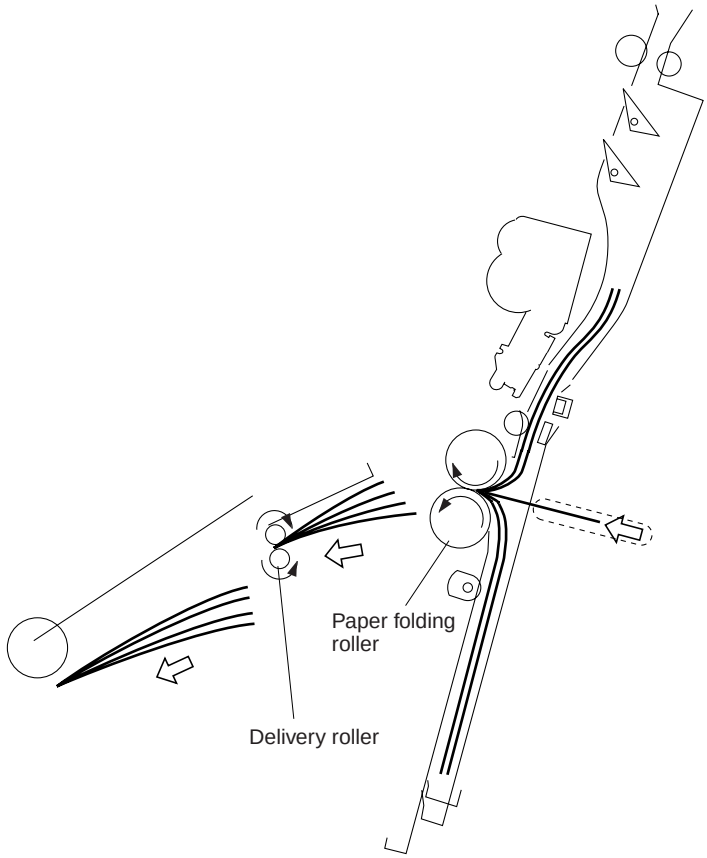
The stack is moved forward by operating the paper positioning plate. When the plate is operated, the guide plate which has been covering the paper folding rollers, also moves down so that the paper folding rollers directly face the stack.



F-2-23

<Folding/Delivering the Stack>

The paper pushing plate pushes against the center of the stack to move it in the direction of the paper folding rollers. In response, the paper folding rollers pick the stack along its center and fold it in two. The paper folding rollers together with the delivery roller then move the stack along to output it on the delivery tray.



F-2-24

2.2.7 Controlling the Inlet Flappers

0009-2543

<Overview>

The two flappers mounted at the paper inlet are operated to configure the feed path according to the size of paper. The flappers are used to enable the following:

1. To detect the passage of the trailing edge of the paper being moved by an appropriate sensor.
2. To prevent the following sheet from butting against the top of the existing stack,

The following table shows the relationship between sensors and paper sizes.

T-2-1

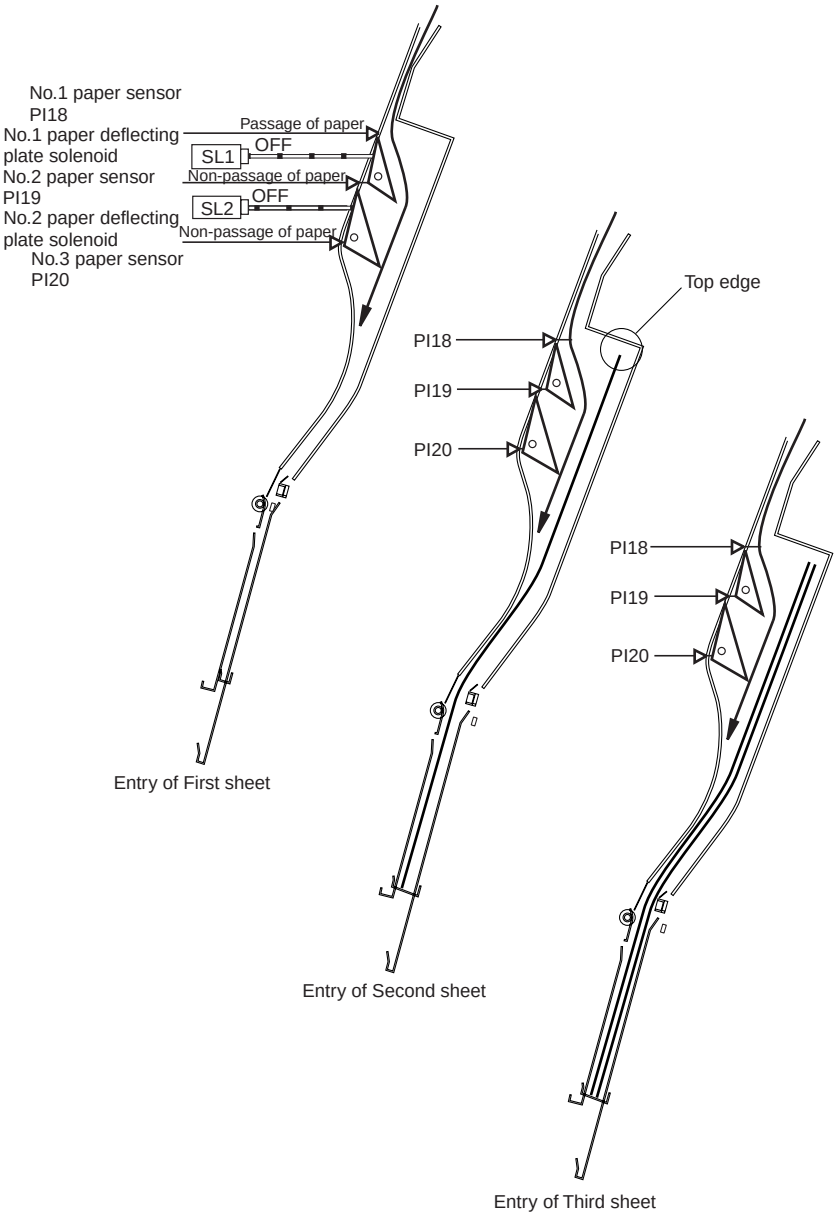
SENSOR	**A3/279mm x 432mm (11 x 17)**	**B4/LGL**	**A4R/ LTRR**
No.1 paper sensor (PI18)	Used	Used	Used
No.2 paper sensor (PI19)	Not used	Used	Used
No.3 paper sensor (PI20)	Not used	Not used	Used

Each flapper is driven by its own solenoid.
The following table shows the relationship between solenoids and paper sizes.

T-2-2

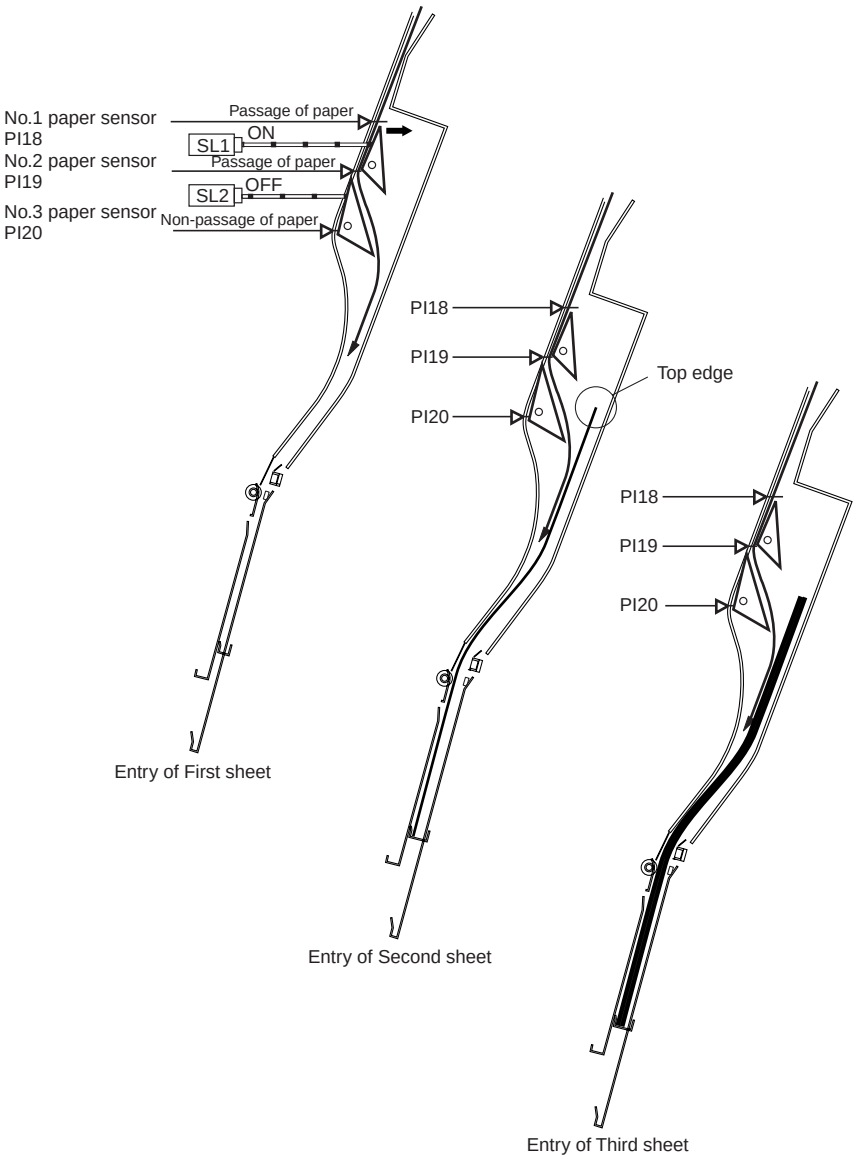
Solenoid	**A3/279mm x 432mm (11 x 17)**	**B4/ LGL**	**A4R/ LTRR**
No.1 paper deflecting solenoid (SL1)	OFF	ON	ON
No.2 paper deflecting solenoid (SL2)	OFF	OFF	ON

<A3/279mm x 432mm (11" x 17") Paper Path (3 sheets)>



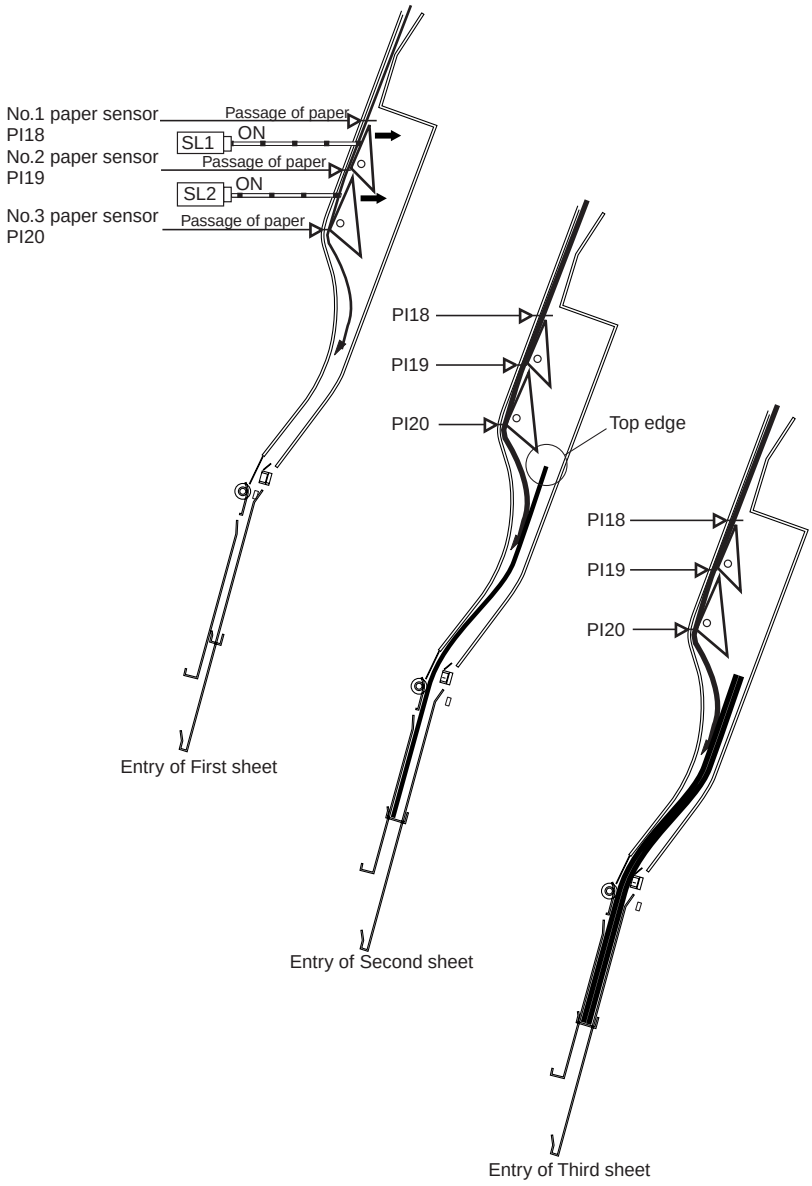
F-2-25

<B4/LGL Paper Path (3 sheets)>



F-2-26

<A4R/LTRR Paper Path (3 sheets)>



F-2-27

2.2.8 Controlling the Movement of Sheets

0009-2544

When the leading edge of a sheet has moved past the inlet flapper, the intermediate feed roller and the crescent roller start to move the sheet forward.

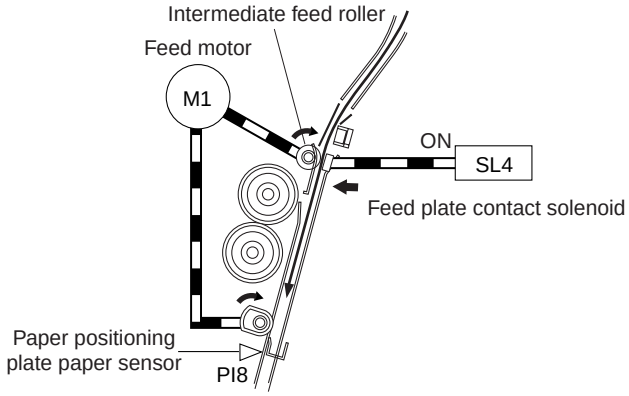
The intermediate feed roller is normally not in contact with the path bed. When the leading edge of a sheet reaches the intermediate feed roller contact section, the feed plate contact solenoid (SL4) causes the roller to come into contact with the path bed so as to move the sheet. The contact is broken as soon as the leading edge of the sheet reaches the paper positioning

plate. This series of operations is executed each time a sheet arrives.

When the leading edge of the first sheet reaches the paper positioning plate, the paper positioning plate paper sensor (PI8) turns ON. The arrival of the second and subsequent sheets will not be checked since the first sheet will still be

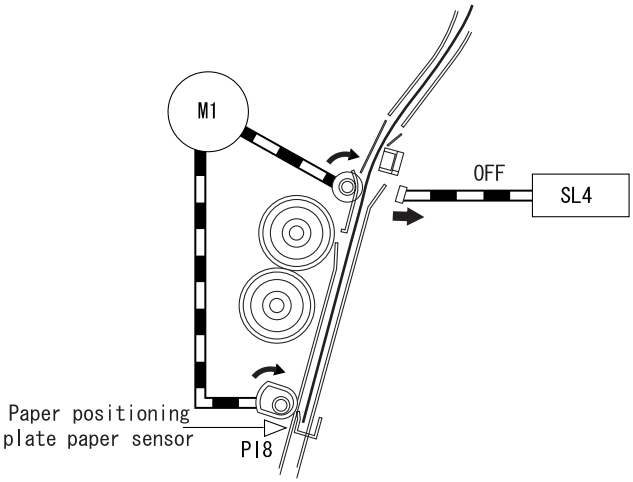
over the sensor.
The crescent roller keeps rotating while sheets are being output, butting the leading edge of each sheet against the paper positioning plate, and ultimately, keeping the leading edge of the stack in order.
The alignment motor (M5) drives the alignment plates for each sheet so as to put both left and right edges of the sheet in order.

1) The solenoid turns ON while paper is being moved so that the feed plate comes into contact.



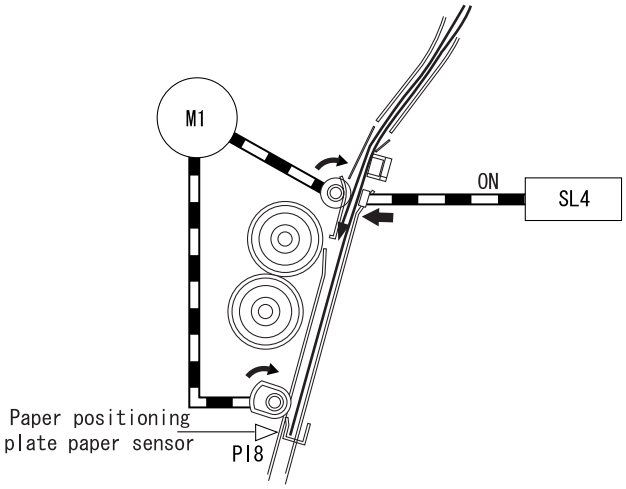
F-2-28

2) The solenoid turn OFF when the paper butts against the paper positioning plate. The feed motor continues to rotate.



F-2-29

3) The solenoid turns ON when the next sheet arrives, and the feed plate comes into contact.



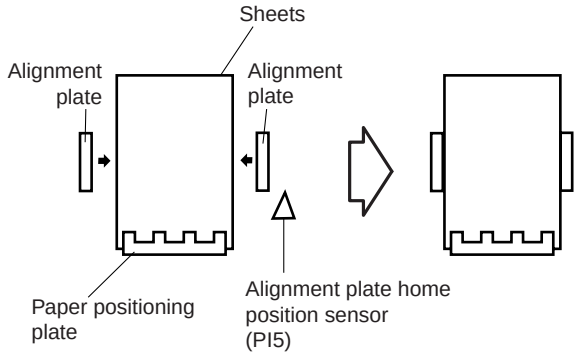
F-2-30

2.2.9 Controlling the Aligning the Sheets

0009-2545

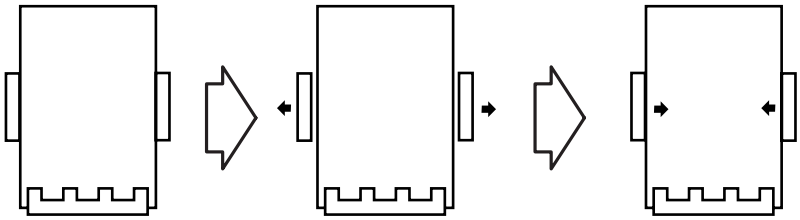
The alignment motor (M5) drives the alignment plates each time a sheet is output, putting both left and right edges of the sheet in order. The alignment plate motor is a 4-phase stepping motor. The position of the alignment plate is identified in reference to the number of motor pulses from the alignment plate home position sensor (PI5).
The following briefly describes what takes place when the saddle stitching mechanism operates on two sheets.

1) When the first sheet has been output, the alignment plates butt against the left and right edges of the stack (first alignment). The alignment plates leave the home position in advance and remain in wait at points 10 mm from the edges of the stack.



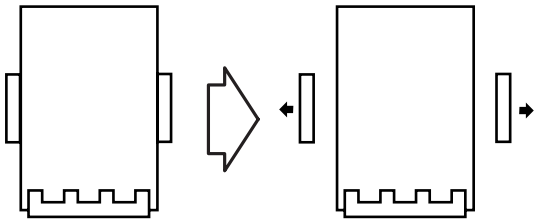
F-2-31

2) The alignment plates move away from the edges of the stack over a short distance and then butt against the edges once again (Second alignment).



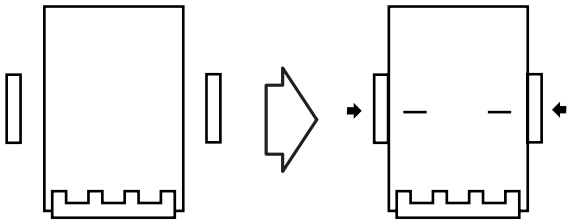
F-2-32

3) The alignment plates escape to points 10 mm from the edge of the stack.



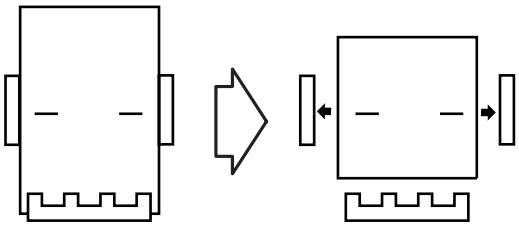
F-2-33

4) When the following stack arrives, steps 1 through 3 above are repeated.
5) The alignment plates butt against the stack once again, during which stitching takes place.



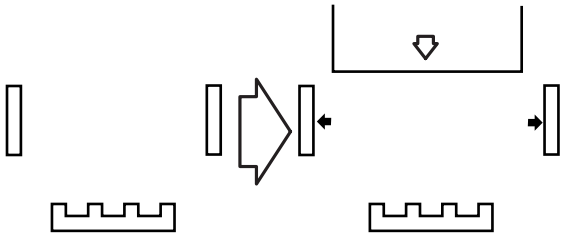
F-2-34

6) The alignment plates escape to points 10 mm from the edges of the stack, after which folding and delivery take place.

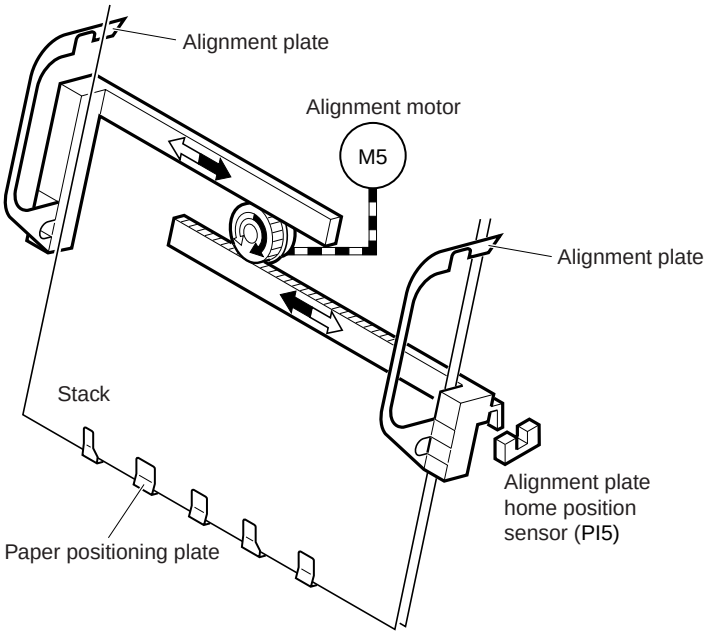


F-2-35

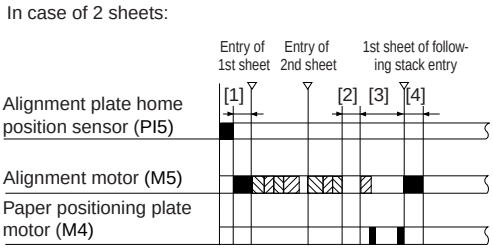
7) When the first sheet of the following stack reaches the No.1 paper sensor, the guide moves to a point 10 mm from the edge of the stack to be ready for the next alignment operation.



F-2-36



F-2-37



F-2-38

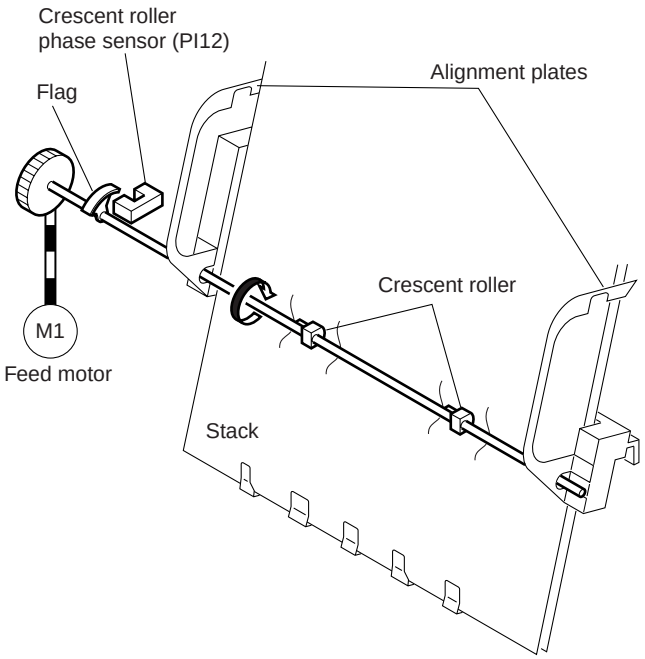
2.2.10 Controlling the Phase of the Crescent Roller

0009-2546

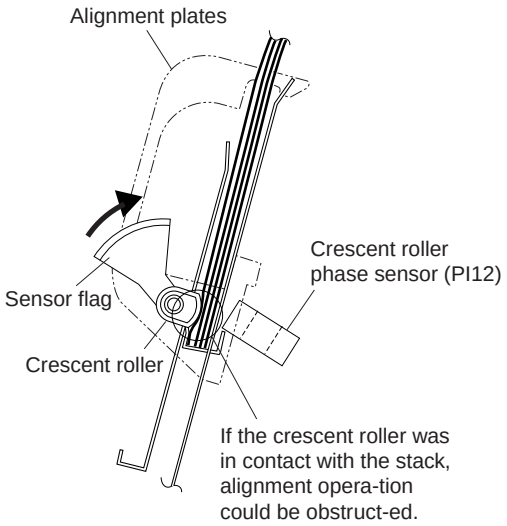
If alignment was executed with the crescent roller in contact with the stack of sheets, the resulting friction against

the roller causes the stack to move inappropriately. To prevent this problem, the phase of the roller is identified and used to determine the timing of alignment.

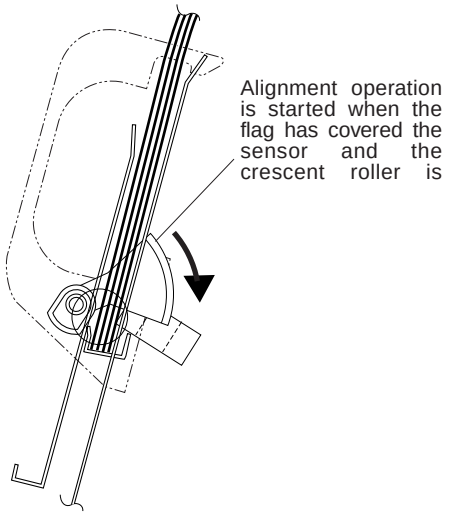
The phase of the crescent roller is identified by the crescent roller phase sensor (PI12). The flag for the crescent roller phase sensor is mounted to the crescent roller shaft. The flag will leave the sensor while the roller shaft rotates, turning the sensor ON or OFF, enabling the assumption that the crescent roller is positioned at the opposite side of the stack. The alignment plates are operated to correspond with this change in the state of the sensor.



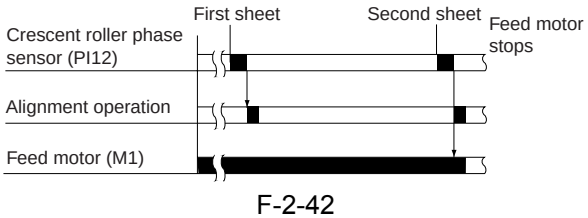
F-2-39



F-2-40



F-2-41



F-2-42

2.2.11 Overview of Folding Operation

0009-2547

The paper folding mechanism consists of a guide plate, paper folding rollers, paper pushing plate, and paper positioning plate.

The guide plate is used to cover the folding rollers while sheets are output so as to prevent sheets from coming into contact with the folding rollers during output. Before the stack is folded, the guide plate moves down to enable the folding rollers to operate.

The following shows the names and the functions of the motors and sensors used by the paper folding mechanism:

T-2-3

Motor	Function
Paper folding motor (M2)	Drives the folding roller.
Paper pushing plate motor (M8)	Drives the paper pushing plate.

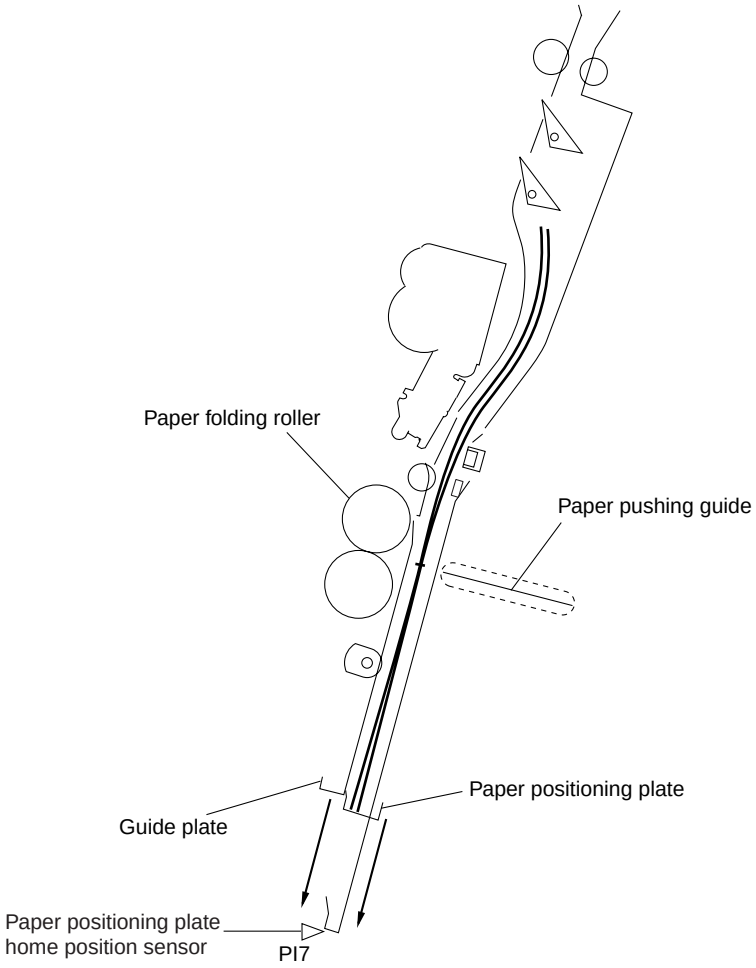
T-2-4

Sensor	Function
Paper pushing plate motor clock sensor (PI1)	Detects the paper pushing plate motor clock.
Paper folding motor clock sensor (PI4)	Detects the paper paper folding motor clock.
Tray paper sensor (PI6)	Detects the presence/absence of a stack of sheets in the saddle delivery tray.
Delivery sensor (PI11)	Detects the paper delivery.
Paper pushing plate home position sensor (PI14)	Detects the paper pushing plate home position.
Paper pushing plate top position sensor (PI15)	Detects the paper pushing plate leading edge position.
Vertical path paper sensor (PI17)	Detects the presence/absence of paper after removal of a jam.
Paper folding home position sensor (PI21)	Detects the paper folding home position.

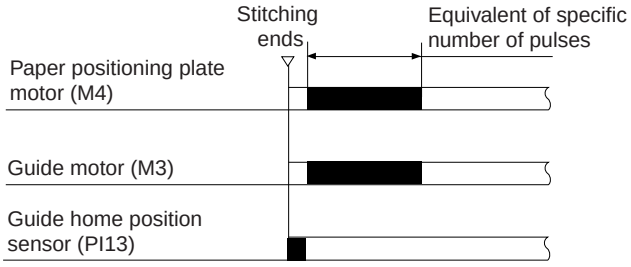
2.2.12 Controlling the Movement of Stacks

0009-2548

When a stack has been stitched (2 points), the paper positioning plate lowers so that the stack will move to where the paper folding rollers come into contact with the stack and where the paper pushing plate is located. The position of the paper positioning plate is controlled in reference to the number of motor pulses coming from the paper positioning home position sensor (PI7).
At the same time as the paper positioning plate operates, the guide plate lowers so that folding may take place.



F-2-43



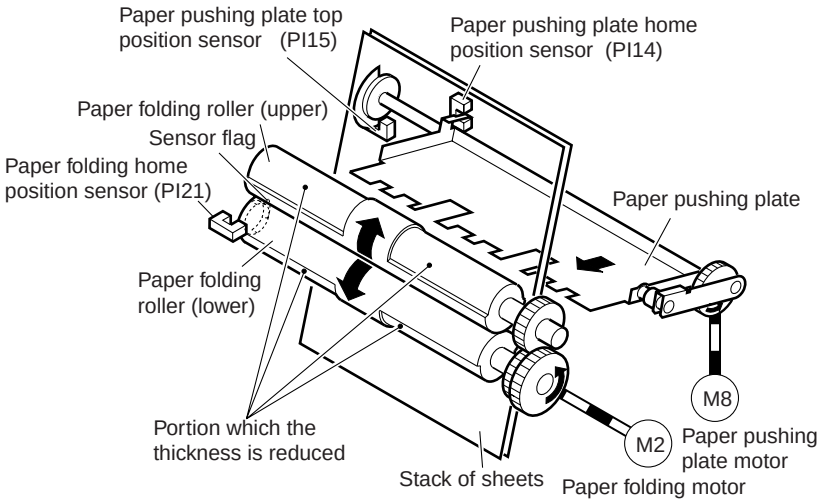
F-2-44

2.2.13 Folding a Stack

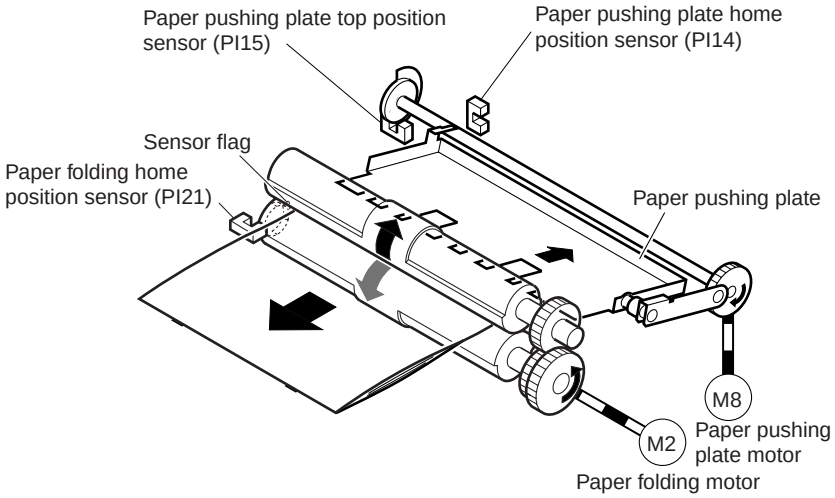
0009-2549

A stack is folded by the action of the paper folding rollers and the paper pushing plate.
The paper pushing plate pushes against the center of a stack toward the roller contact section. The paper pushing plate starts at its home position and waits at the leading edge position until the stack has been drawn to the paper folding roller and is gripped for a length of 10 mm. When the paper folding roller has gripped the stack for a length of about 10 mm, the paper pushing plate motor starts to rotate once again, and the paper pushing plate returns to its home

position. The stack gripped in this way by the paper folding roller is drawn further by the paper folding roller and then is moved by the delivery roller to the paper tray.
The thickness of the paper folding rollers is reduced at a half of their periphery except the center area.
At the other half of the periphery, where the thickness is not reduced, the paper folding roller (upper) and the paper folding roller (lower) contact each other tightly, and paper starts to be folded at this position. The upper and lower rollers feed paper while folding it. Also, these rollers stop at this position.
At the half periphery where the thickness is reduced, the paper folding roller (upper) and the paper folding roller (lower) do not contact each other except at the center, so they only feed paper to prevent paper from being wrinkled.
The paper folding start position and stop position of the paper folding rollers are controlled by the number of motor pulses delivered from the paper foldimg home position sensor (P121).

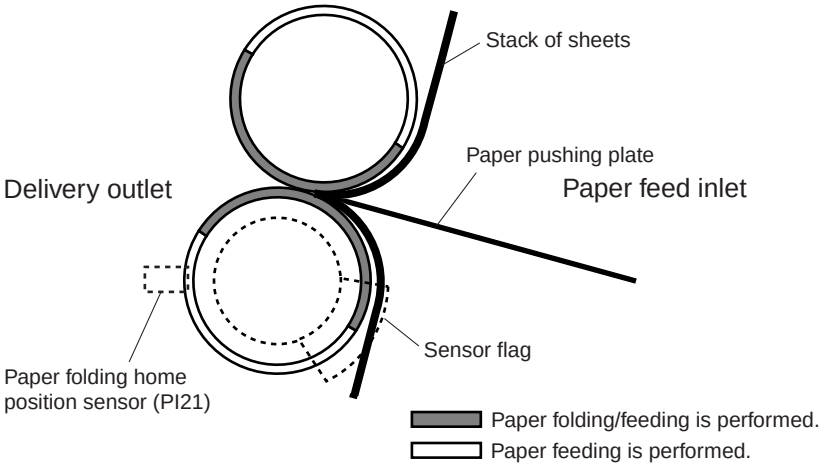


F-2-45



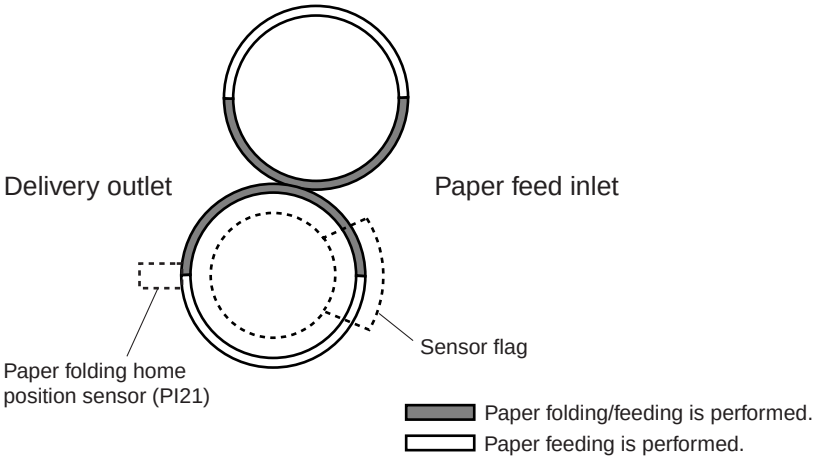
F-2-46

[Paper folding start position]

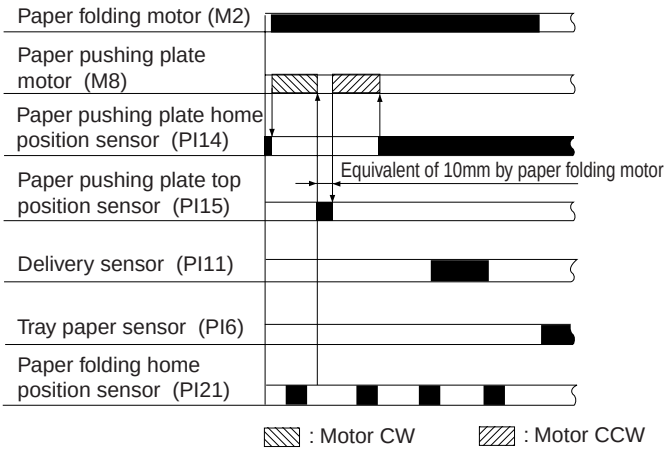


F-2-47

[Paper folding roller stop position]



F-2-48



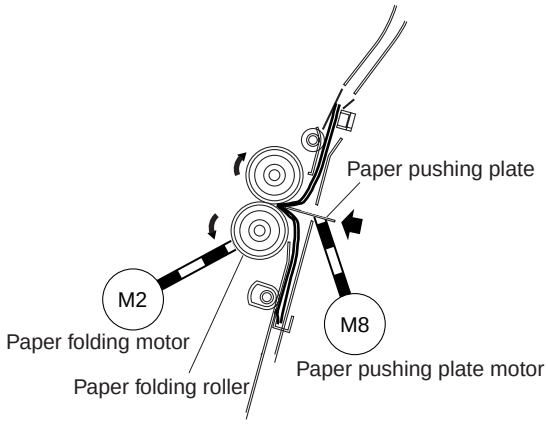
F-2-49

2.2.14 Double Folding a Stack

0009-2550

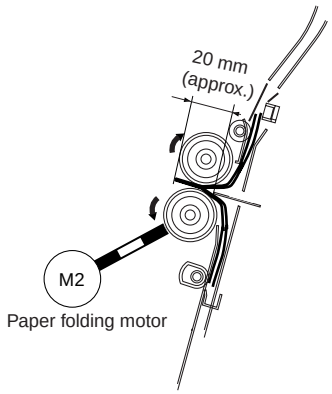
Folding is made twice for every sheet, to fold a set of copies consisting of 10 or more A4R or LTR-R sheets or to fold a set of copies consisting of from 3 to 9 A3 or 279 mm x 432 mm (11" x 17") sheets.
The paper folding rollers rotate in reverse for an equivalent of 20 mm after gripping the stack for a length of 20 mm, enabling the paper folding rollers to apply an increased degree of pressure along the crease on the stack. Then, the paper folding rollers rotate normally, and the paper pushing plate returns to its home position while the stack is being delivered.
This way, a stack requiring a large force may properly be folded with less pressure.

1) The paper pushing plate pushes the stack in the direction of the paper folding rollers.



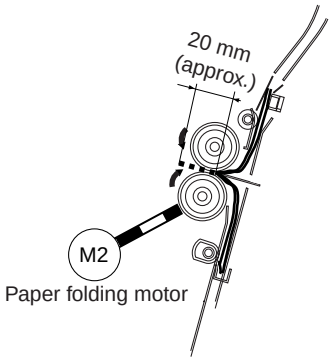
F-2-50

2) The paper folding rollers grip the stack for a length of about 20 mm.



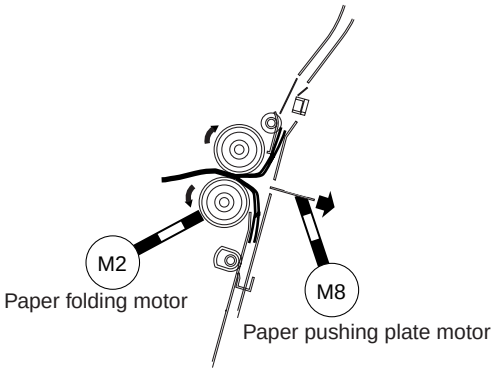
F-2-51

3) The paper folding rollers rotate in reverse, pushing back the stack for a length of about 20 mm (reverse feeding).

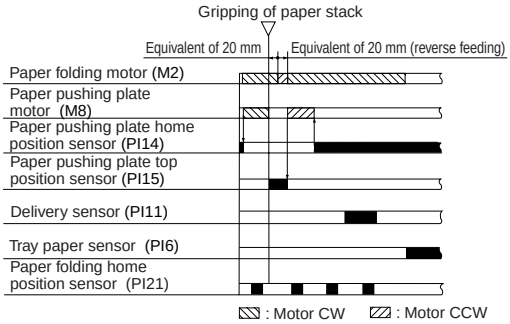


F-2-52

4) The paper folding rollers rotate again, feeding out the stack. The paper pushing plate returns to its home position.



F-2-53


Gripping of paper stack
Equivalent of 20 mm
Equivalent of 20 mm (reverse feeding)
Paper folding motor (M2)
Paper pushing plate motor (M8)
Paper pushing plate home position sensor (PI14)
Paper pushing plate top position sensor (PI15)
Delivery sensor (PI11)
Tray paper sensor (PI6)
Paper folding home position sensor (PI21)
: Motor CW
: Motor CCW

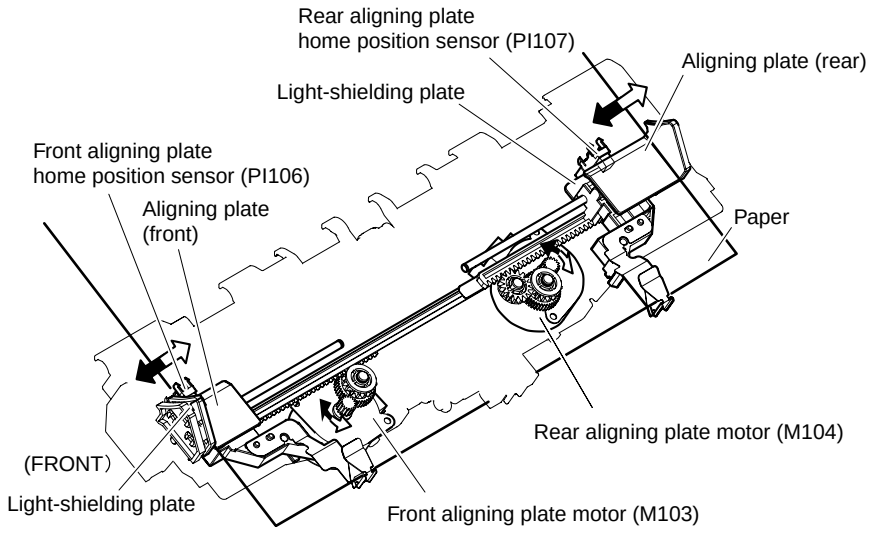
F-2-54

2.3 Intermediate Process Tray Assembly

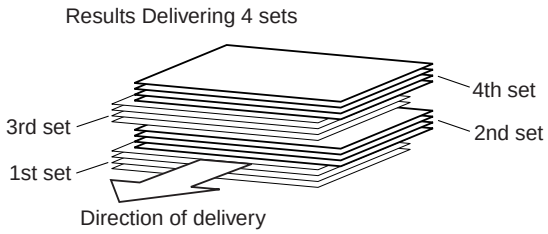
2.3.1 Stack Job Offset

0009-2513

Job offset operation offsets paper stack to the front or rear when ejecting to sort the paper stack.
The forward/backward movement of the copy delivered to the processing tray is controlled by the front aligning plate and rear aligning plate.
The aligned copies are stapled or ejected according to the signal from the host machine.
When the power is turned on, the finisher controller PCB drives the aligning plate front motor (M103) and aligning plate rear motor (M104) to return the two aligning plates to home position.
The name and function of motors and sensors used by the stack job offset function are shown below.



F-2-55



F-2-56

T-2-5

Motor	Function
Aligning plate front motor (M103)	Aligns paper in processing tray to the front

Motor	Function
Aligning plate rear motor (M104)	Aligns paper in processing tray to the rear
Swing motor (M106)	Moves the swing guide up/down
Rear end assist motor (M109)	Carry the stack end during stack ejection

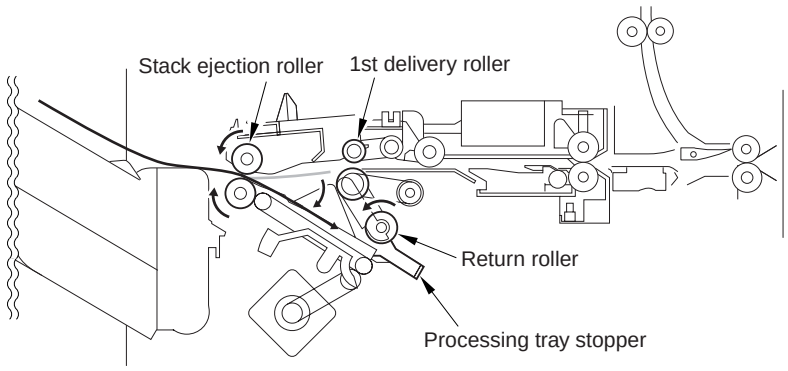
T-2-6

Sensor	Function
Swing guide HP sensor (PI105)	Detects the swing guide home position
Aligning plate front HP sensor (PI106)	Detects the aligning plate front home position
Aligning plate rear HP sensor (PI107)	Detects the aligning plate rear home position
Rear end assist HP sensor (PI109)	Detects the rear end assist home position

2.3.2 Processing Tray Paper Stacking Operation

0009-2514

When the rear end of the paper exits the 1st delivery roller, the paper is delivered to the processing tray by the stack delivery roller and return roller and then pushed against the processing tray stopper.

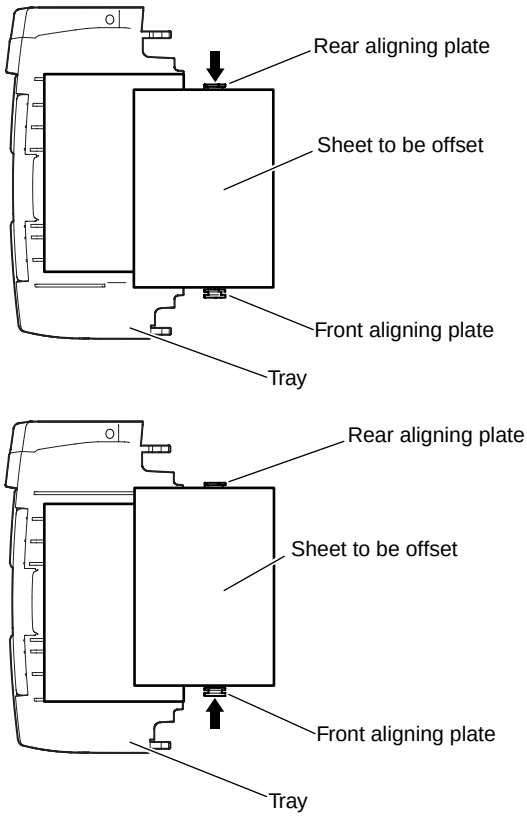


F-2-57

2.3.3 Offset Operation

0009-2515

Each sheet is pulled forward or backward using the front aligning plate and the rear aligning plate.
The offset operation is performed each time a sheet is pulled onto the processing tray.

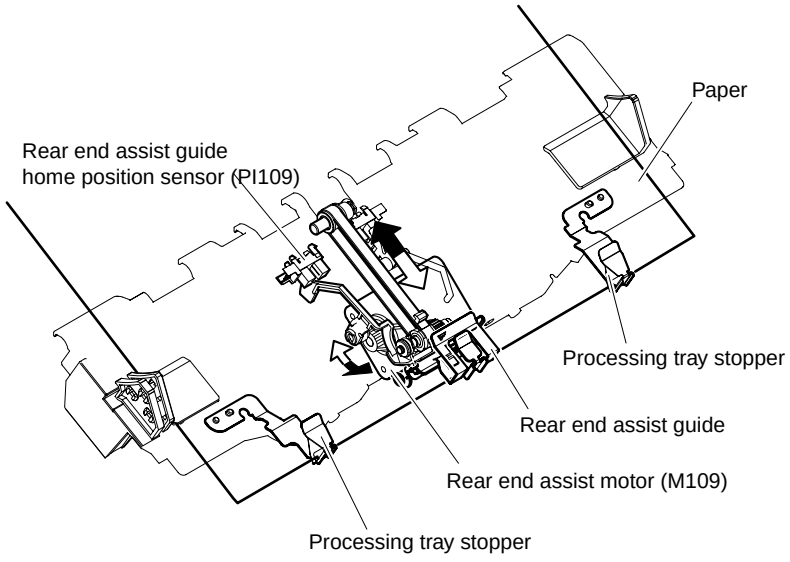


F-2-58

2.3.4 Rear End Assist Operation

0009-2516

In order to improve stacking performance when ejecting copies delivered to the processing tray, a rear end assist guide is used in addition to the stack ejection roller to support the rear end of the stack during stack ejection.

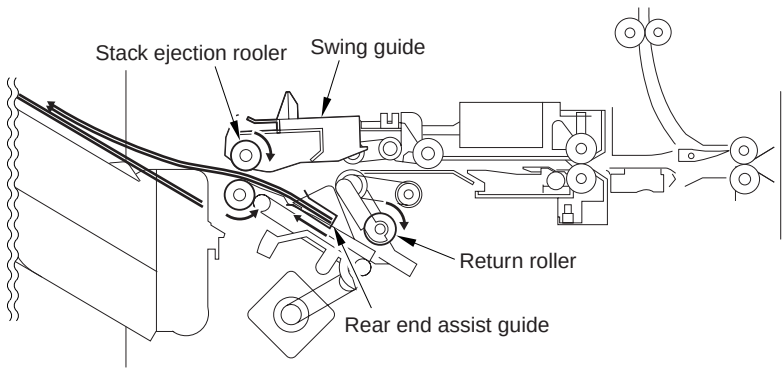


F-2-59

2.3.5 Stack Delivery Operation

0009-2517

The stack is ejected each time three large size sheets*1 or five small size sheets*2 are offset on the processing tray. The swing motor turns and the swing guide descends. This causes the upper/lower stack delivery rollers to hold the stack. The stack delivery motor turns the stack delivery roller and return roller. At the same time, the rear end assist guide is started by the rear end assist motor and the stack held by the stack delivery rollers is delivered in the ejection direction. The rear end assist guide stops once it reaches the prescribed position and returns to home position when the rear end assist motor is reversed. Then the stack delivery motor starts and ejects the stack with the upper/lower stack delivery rollers.



F-2-60

*1 Varies from 1 to 4 sheets depending on the number of original. (ex: When the number of original is 10, copy stack are ejected in the order of 3 sheets, 3 sheets and 4 sheets.) In case for the thick paper, copy stack always consists of 2 sheets.

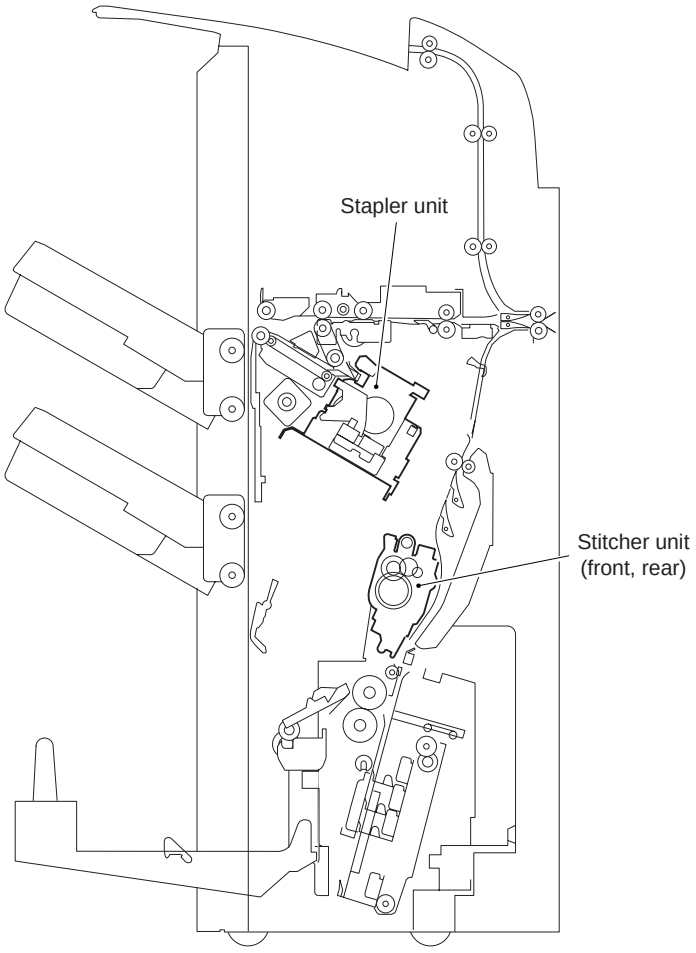
*2 Varies from 1 to 6 sheets depending on the number of original. (ex: When the number of original is 7, copy stack are ejected in the order of 5 sheets and 2 sheets.)

2.4 Staple Operation

2.4.1 Overview

0009-2551

This product is equipped with two Staplers.
While the Stapler unit of the Finisher unit provides 1-point front stapling, 1-point rear stapling, and 2-point stapling, the Stitcher unit of the Saddle Stitcher unit provides 2-point center stapling.



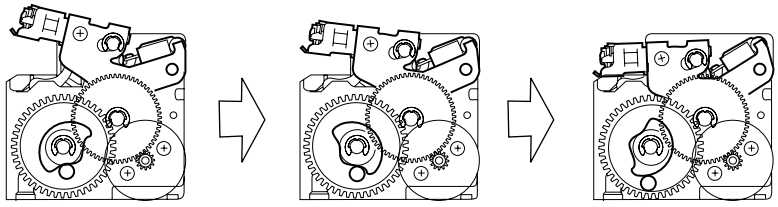
F-2-61

2.4.2 Stapler Unit

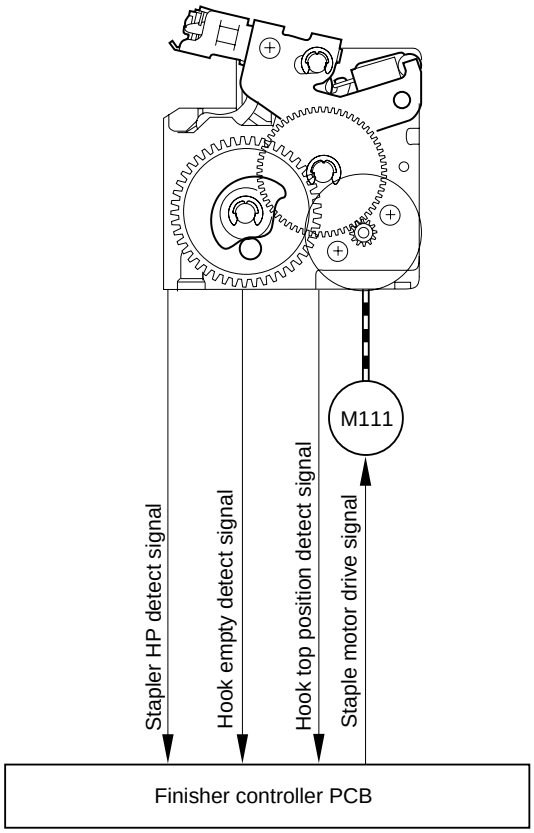
0009-2519

The staple motor (M111) is used to perform stapling operation. This motor rotates the cam one turn for stapling. The home position of this cam is detected by the staple home position sensor (PI50).
The staple motor is rotated in the forward or reverse direction under the control of the macro computer (IC108) on the finisher controller PCB.
When the staple home position sensor is OFF, the finisher controller PCB rotates the staple motor in the forward direction until the sensor turns ON, allowing the staple cam to the original position.
The staple sensor (PI52) is used to detect presence/absence of a staple cartridge in the machine and presence/absence

of staples in the cartridge.
The staple edging sensor (PI51) is used to determine whether staples are pushed up to the top of the staple cartridge. The finisher controller circuit does not drive the staple motor (M111) unless the staple safety switch (MSW104) is ON. This assures safety in case where you happen to put your finger in the stapler.



F-2-62



F-2-63

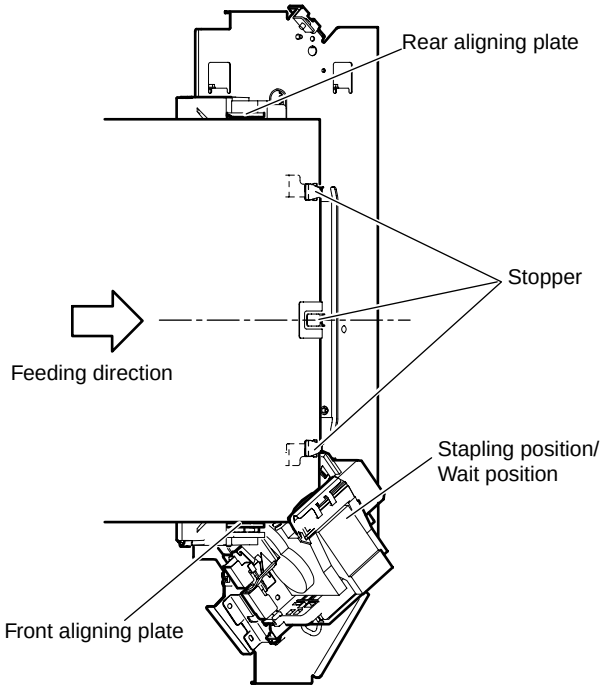
2.4.3 Shifting the Stapler Unit

0009-2520

The stapler unit is shifted by the stapler shift motor (M105). The home position is detected by the stapler shift home position sensor (PI110). When there is a staple command from the host machine, the stapler shifts to the staple ready position, which depends on the stapling position and paper size.
The stapler unit waits at the following points when staple mode is selected:

<Front 1-Point Stapling>

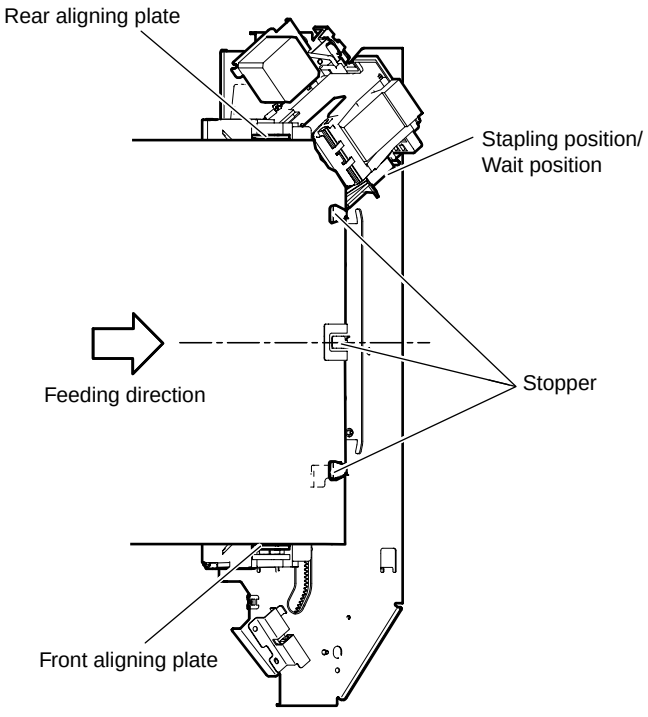
The position is the same as the stapling position.



F-2-64

<Rear 1-Point Stapling>

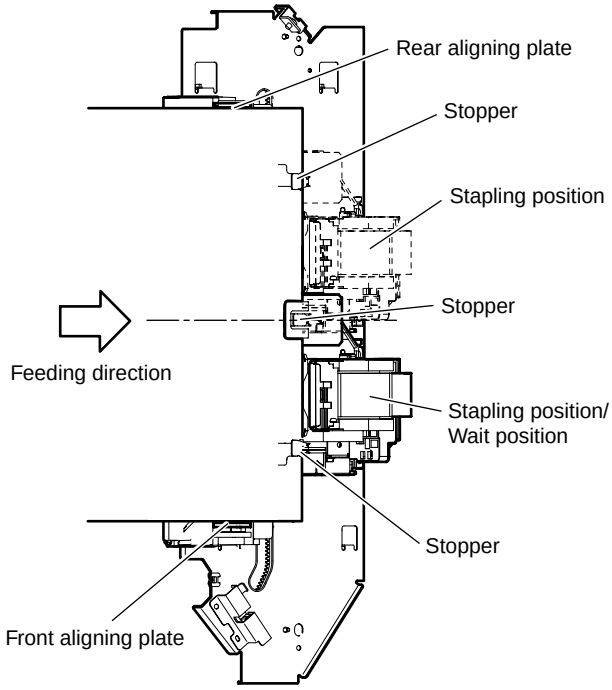
The position is the same as the stapling position.



F-2-65

<2-Point Stapling>

The stapler waits at the paper front end side staple position. The stapling sequence is first near side and then far side.



F-2-66

2.4.4 Stapling Operation

0009-2521

<Overview>

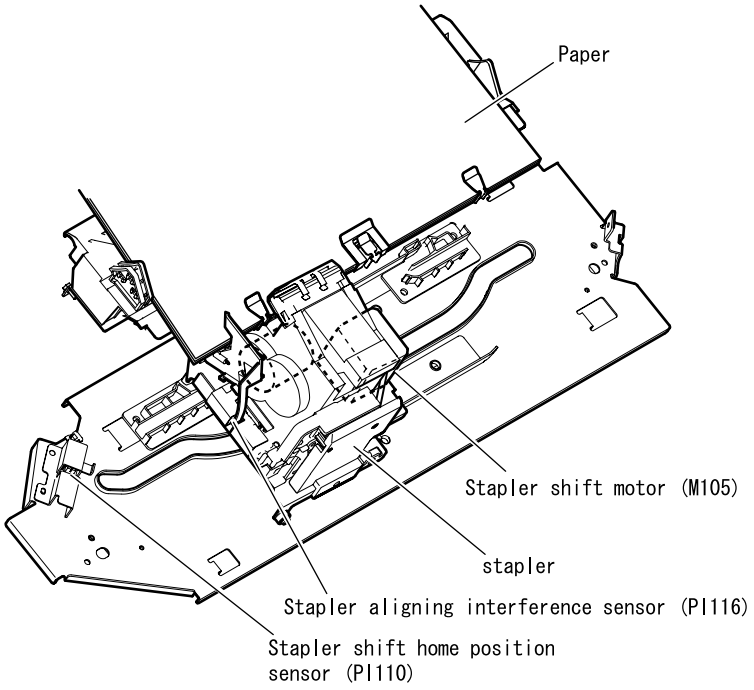
Stapling operation staples the prescribed number of copies with the stapler unit.

The staple position depends on the staple mode and paper size.

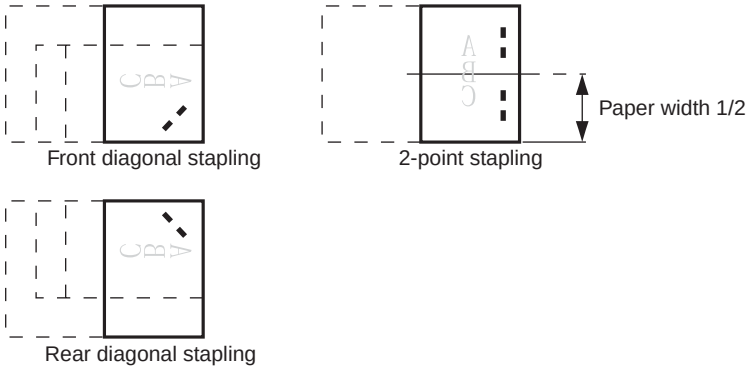
Whether the staple unit is at home position or not is detected by the stapler shift home position sensor (PI110).

The stapler unit is equipped with a stapler alignment interference sensor (PI116). The staple motor (M111) operation is prohibited when the stapler alignment interference sensor (PI116) is ON. This is to prevent stapling at the stopper and damaging the stopper when the stapler shift motor (M105) is incorrectly adjusted.

When the power is turned on, the finisher controller PCB drives the stapler shift motor (M105) to return the stapler unit to home position. If the stapler unit is already at home position, it waits in that state.



F-2-67



F-2-68

T-2-7

Sensor	Symbol	Connector	Function	Remarks
Stapler shift home position sensor	PI110	J721A-15	Detects the home position for the stapler moving back and forth.	-

Sensor	Symbol	Connector	Function	Remarks
Stapler alignment interference sensor	PI116	J720-3	Staple prohibited area detection	-
Staple home position sensor	PI50	J720-5	Detects the home position for the stapling operation.	In the stapler
Staple edging sensor	PI51	J720-6	Detects the staple top position.	In the stapler
Staple sensor	PI52	J720-7	Detects presence or absence of staples in the cartridge.	In the stapler

T-2-8

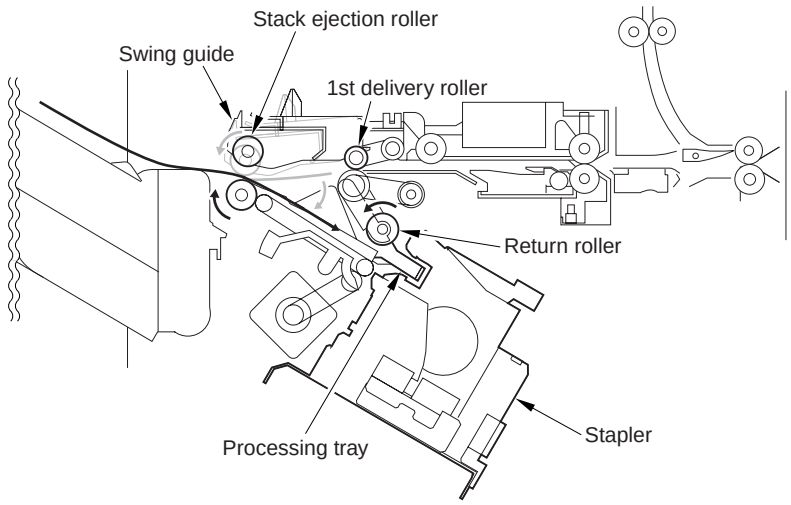
Function	Motor	Symbol	Remarks
Moves the stapler.	Stapler shift motor	M105	-
Performs stapling operation.	Staple motor	M111	-

<First Sheet>

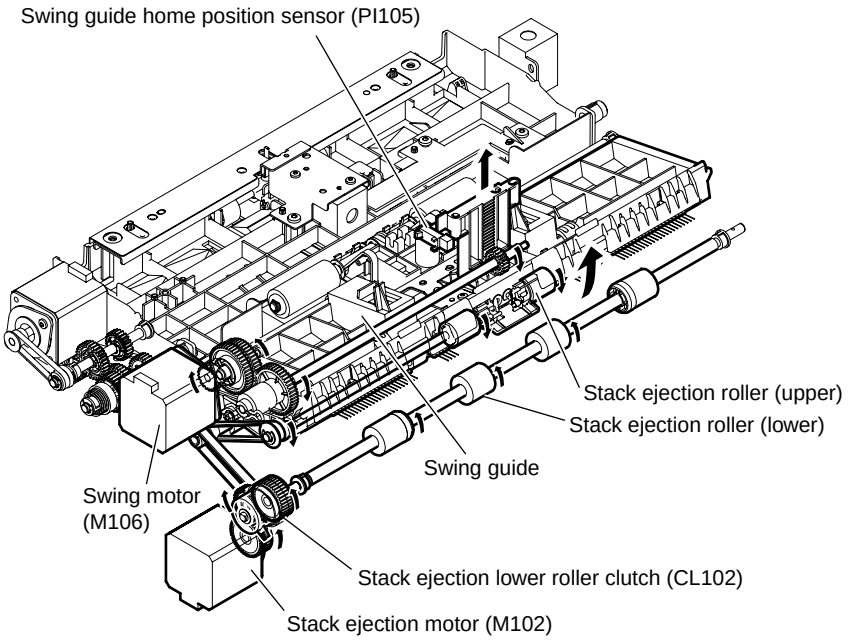
The finisher controller PCB moves the stapler according to the specified stapling position.

When the rear end of the first sheet passes the 1st delivery roller, the finisher controller PCB stops the stack delivery motor (M102) and then rotates it in reverse. The stack delivery motor rotates the stack delivery roller and return roller and delivers the paper to the processing tray. The paper in the processing tray is detected by the processing tray paper sensor (PI108). When the paper is delivered to the processing tray, the swing motor (M106) starts and raises the swing guide. When the swing guide home position sensor (PI105) detects the rising of the swing guide, the swing guide motor stops and holds the swing guide at the raised position.

After the processing tray paper sensor detects the paper, the aligning motor (M103/M104) starts and aligns the paper.



F-2-69



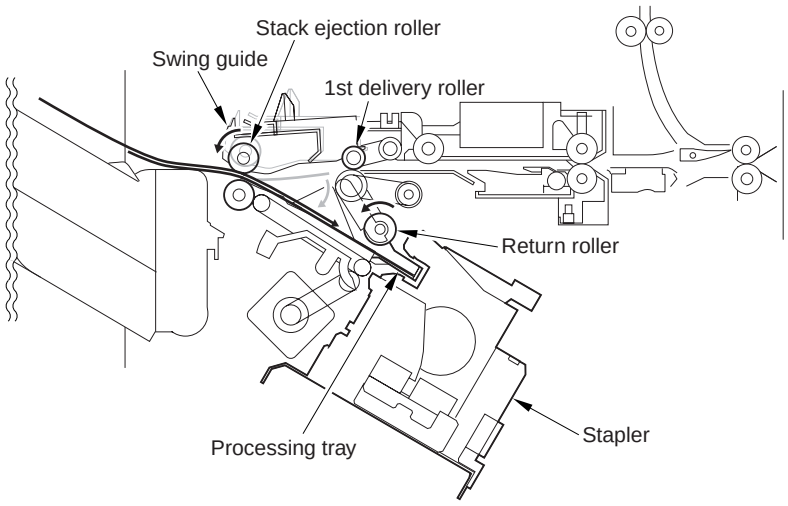
F-2-70

<Second and Subsequent Sheets>

The finisher controller PCB starts the swing motor (M106) and lowers the swing guide when the rear end of the 2nd paper passes the 1st delivery roller. The stack delivery motor is reversed. The stack delivery motor rotates the stack delivery roller (upper) and return roller and sends the paper to the processing tray. At this point, the stack delivery roller (lower) does not rotate because the stack ejection lower roller clutch (CL102) is disengaged. The paper in the processing tray is detected by the processing tray paper sensor (PI108).

When the paper is delivered to the processing tray, the swing motor (M106) starts and raises the swing guide. When the swing guide home position sensor (PI105) detects the rising of the swing guide, the swing guide motor stops and holds the swing guide at the raised position.

After the processing tray paper sensor detects the paper, the aligning motor (M103/M104) starts and aligns the paper.

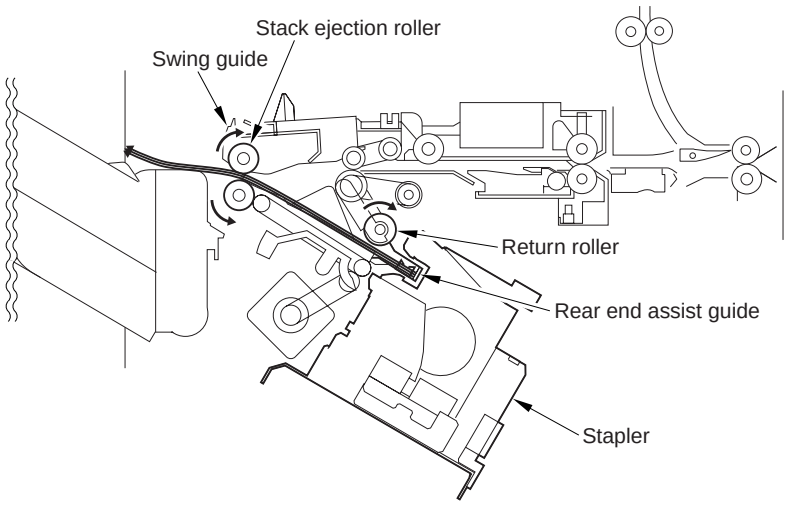


F-2-71

<Last Sheet>

When alignment of the last sheet completes, the finisher controller PCB moves the aligning plate to alignment position with the aligning motor (M103/M104) (with the paper held with the aligning plate). Then the finisher controller PCB staples at the specified staple position.

After stapling, the finisher controller PCB starts the swing motor (M106) and lowers the swing guide. Then the stack is ejected by the stack delivery roller, return roller, and rear endassist guide.



F-2-72

2.4.5 Stitcher Unit

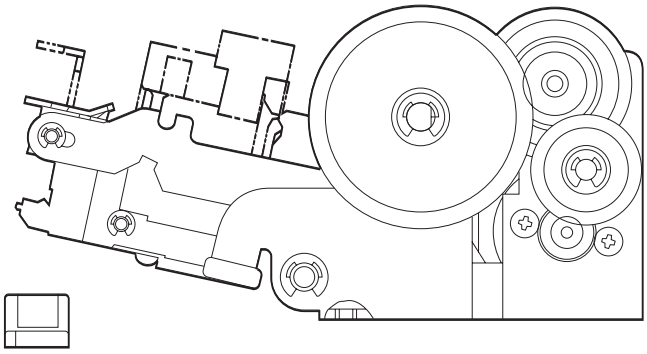
0009-2552

The stitcher base unit consists of two stitchers and stitcher bases.

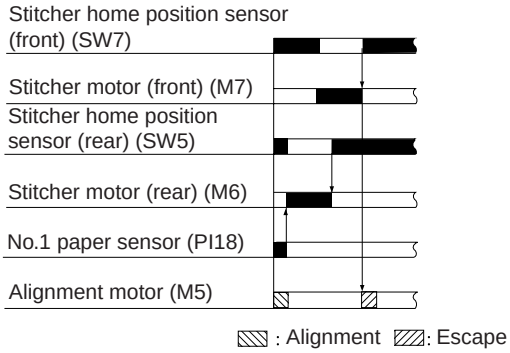
The stitchers are fixed in position, and are not designed to slide or swing.

Stitching is executed by driving the rotary cam by the stitcher motor (M7, M6). The front and rear stitcher units are operated with a time delay so as to prevent wrinkling of paper and to limit the load applied to the power supply. (A

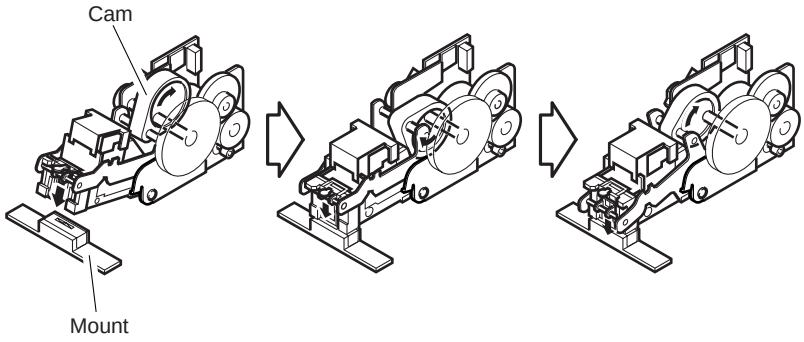
time delay for initiating the stitcher motor startup current helps decrease the load on the power supply.)
The stitcher home position sensor (SW7, SW5) is used to monitor the movement of the rotary cam, enabling identification of individual stitcher operations. The presence/absence of staples inside the staple cartridge fitted to the stitcher is detected by the staple sensor (SW6, SW4).
The alignment plates keep both edges of the stack in place while stitching takes place.



F-2-73



F-2-74



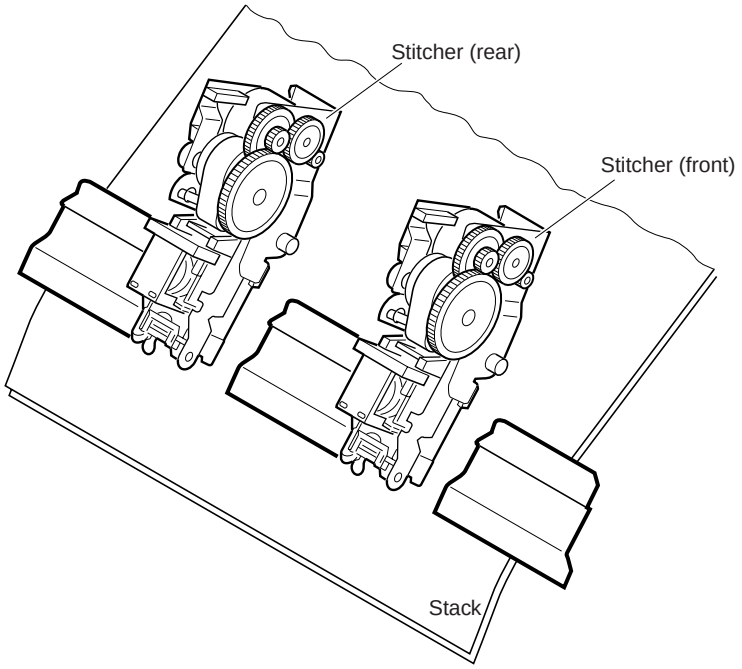
F-2-75

2.4.6 Stitching Operation

0009-2553

To enable stitching at two locations on a stack, two stitcher units (front, rear) are used. Each stitcher unit is equipped with a stitcher motor (M7, M6) for drive, a stitcher home position sensor (SW7, SW5) for detection of position and

a staple sensor (SW6, SW4) for detection of the presence/absence of staples.
The stitcher base is designed so that it may be drawn out to the front from the saddle stitcher for replacement of the staple cartridge or removal of a staple jam. The stitcher unit in sensor (PI16) is used to make sure that the stitcher base is properly fitted to the saddle stitcher.
Safety switches are not mounted for the stitcher unit (front, rear), as the location does not allow access by the user.



F-2-76

2.5 Stack Tray Operation

2.5.1 Tray Operation

0009-2522

This equipment has three delivery trays. The upper tray is called escape tray, the middle tray is called tray 1, and the lower tray is called tray 2.

The escape tray is fixed and tray 1 and tray 2 can move up and down independently.

The escape tray has an escape tray full detector sensor (PI119). When the escape tray becomes full, the finisher controller PCB notifies the host machine to that effect.

The finisher controller PCB controls the vertical movement of tray 1 and tray 2 by changing the drive direction of the tray 1 shift motor (M107) and tray 2 shift motor (M108) (incorporating a motor driver PCB).

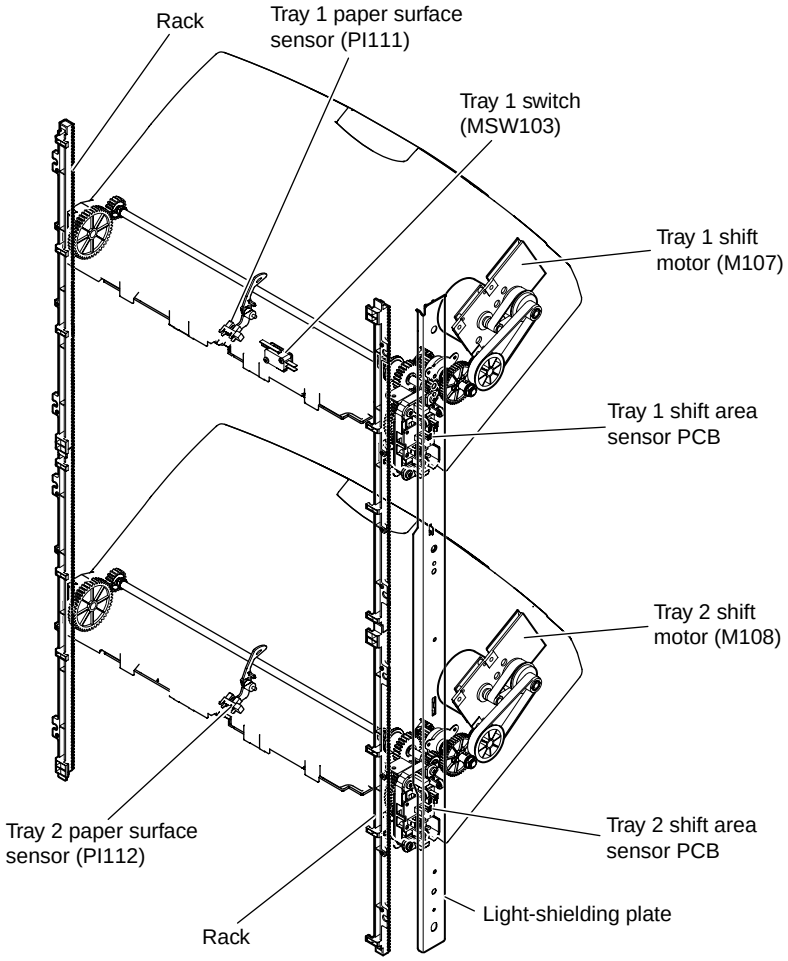
Tray 1 paper sensor (PI111) and tray 2 paper sensor (PI112) are provided to detect the presence of the paper stacked on tray 1 and tray 2.

The home position of tray 1 is detected by the tray 1 paper surface sensor (PI114) and the home position of tray 2 is detected by the tray 2 paper surface sensor (PI115) 1. The home position is the top surface of the paper if paper is already stacked on the tray, or the position where the edge of the tray is detected if no paper is stacked. The tray 2 paper surface sensor (PI120) 2 detects the paper surface when 651 or more sheets are stacked in tray 2. When the power is turned on, the finisher controller PCB drives the tray 1 shift motor (M107) and tray 2 shift motor (M108) to return the tray 1 and tray 2 to their home positions. If either tray is already at the home position, it is moved out of the home position once and then returned to the home position again. If both tray 1 and tray 2 are at their home positions, this operation is performed for tray 2 and then for tray 1. If the tray specified by the host machine is tray 2, the finisher controller PCB raises the tray so that tray 2 is at the delivery port.

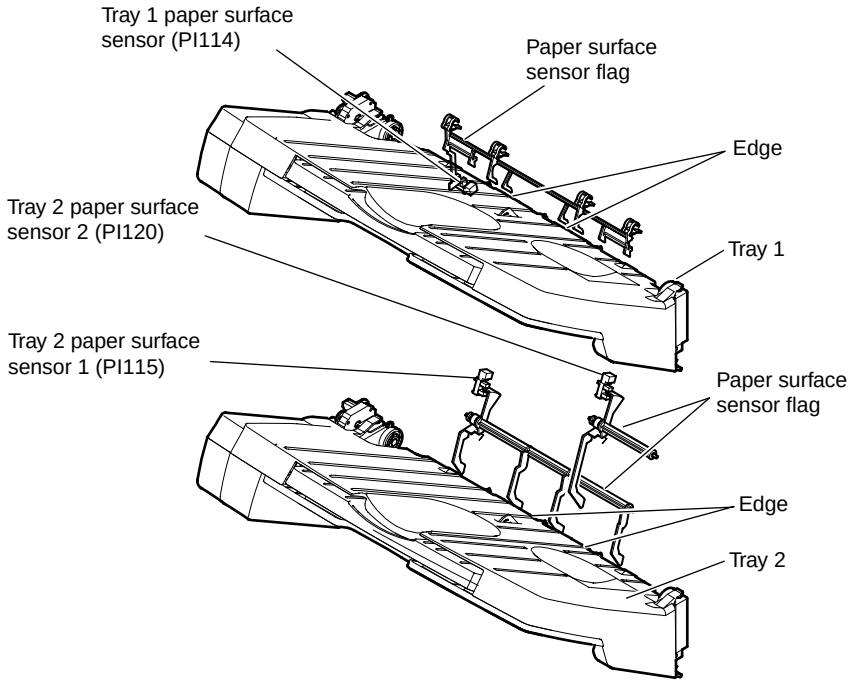
When paper is stacked on either tray, the tray 1 shift motor (M107) or tray 2 shift motor (M108) is driven a prescribed number of pulses to lower the tray. Then the tray returns to the home position to prepare for the next stack.

The upper and lower limits of the tray are detected by three area sensors (PS981, PS982, and PS983) on the tray 1 and tray 2 shift area sensor PCB. The finisher controller PCB stops driving the tray 1 shift motor (M107) and tray 2 shift motor (M108) upon detection of the upper or lower limit of the tray. Also, the ON/OFF combinations of the area sensors (PS981, PS982, PS983) are used to detect over-stacking according to the stack height for large size and mixed stacking.

The finisher controller PCB stops supplying +24V to the tray 1 shift motor (M107) and stops the finisher operation when tray 1 closing detect switch (MSW103) turns ON.


Rack
Tray 1 paper surface sensor (PI111)
Tray 1 switch (MSW103)
Tray 1 shift motor (M107)
Tray 1 shift area sensor PCB
Tray 2 shift motor (M108)
Tray 2 paper surface sensor (PI112)
Tray 2 shift area sensor PCB
Light-shielding plate
Rack

F-2-77



F-2-78

T-2-9

Detected items	Tray 1 shift area sensor PCB		
	Area sensor 1(PS983)	Area sensor 2(PS982)	Area sensor 3(PS981)
Tray 1 upper limit	OFF	ON	ON
Stack count 650 sheet limit exceeded	ON	OFF	OFF
Stack count 1300 sheet limit exceeded	ON	ON	OFF
Tray 1 lower limit	ON	ON	ON

T-2-10

Detected items	Tray 2 shift area sensor PCB		
	Area sensor 1(PS983)	Area sensor 2(PS982)	Area sensor 3(PS981)
Tray 2 upper limit	OFF	ON	OFF
Stack count 650 sheet limit exceeded	ON	OFF	OFF
Stack count 1700 sheet limit exceeded	ON	ON	ON
Stack count 2450 sheet limit exceeded	OFF	ON	ON

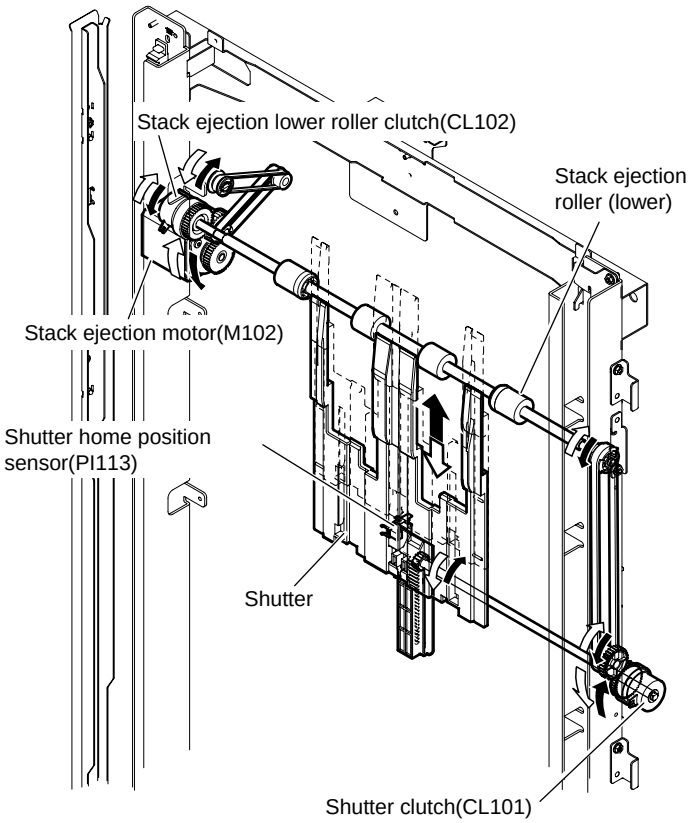
Detected items	Tray 2 shift area sensor PCB		
	Area sensor 1(PS983)	Area sensor 2(PS982)	Area sensor 3(PS981)
Tray 2 lower limit (finisher)	ON	OFF	ON
Tray 2 lower limit (saddle finisher)	OFF	OFF	ON

* The symbol for the area sensor of each PCB is same because tray1/tray 2 shift area sensor PCBs are the same board.

2.5.2 Shutter Operation

0009-2523

When tray 1 passes the delivery section with paper already stacked, the stacked paper may get caught by the delivery section. A shutter is provided at the delivery section to prevent this. The shutter closes when tray 1 passes the delivery section. This is performed even when no paper is stacked.
When the shutter clutch (CL101) and stack ejection lower roller clutch (CL102) are ON, the shutter moves up (close) when the stack ejection motor (M102) turns forward and moves down (open, delivery enabled) when the motor turns backward.
The open/close of the shutter is detected by the shutter home position sensor (PI113).



F-2-79

2.6 Detecting Jams

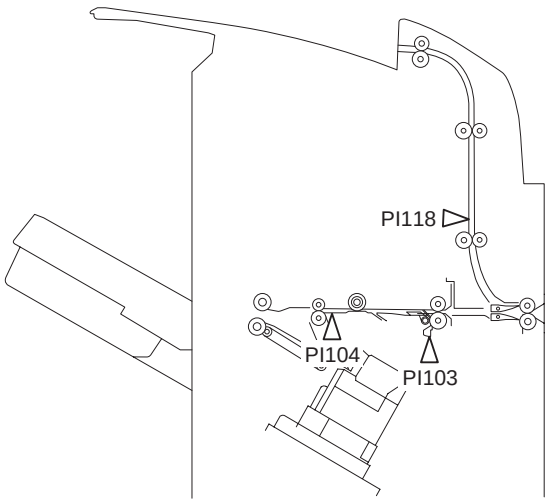
2.6.1 Detecting Jams (Finisher Unit)

0009-2524

The following sensors are used to detect the presence of paper and to determine that paper is delivered properly.
- Inlet sensor (PI103)
- Delivery sensor (PI104)
- Escape tray path sensor (PI118)

A jam is identified by checking whether paper is present at each sensor at the timing programmed in the memory of the microcomputer (CPU) on the finisher controller PCB.

When the CPU identifies a jam, it suspends the finisher's delivery operation and informs the host machine DC controller of the presence of a jam. When all doors are closed after the paper jam is removed, the finisher checks whether paper is detected by the above three sensors (inlet sensor and tray 1 delivery sensor). If the sensors detect paper, the finisher determines that paper jam is not completely removed and sends a jam removal signal to the host machine once more.



F-2-80

T-2-11

Jam Type	Sensor	Jam Condition	Code
Inlet sensor delay	PI103	When the inlet sensor (PI103) does not detect paper after a prescribed time (distance) has elapsed since receiving a delivery signal from the host machine.	1001
Inlet sensor stationary	PI103	When paper does not exit the inlet sensor (PI103) after delivering for a prescribed time (distance) after the inlet sensor (PI103) detected paper.	1101

Jam Type	Sensor	Jam Condition	Code
Feed path sensor delay	PI104	When the feed path sensor (PI104) does not detect paper after prescribed time (distance) has elapsed since the inlet sensor (PI103) detected paper.	1004
Feed path sensor stationary	PI104	When paper does not exit the feed path sensor (PI104) after delivering for a prescribed time (distance) after the delivery sensor (PI104) has detected paper.	1104
Escape tray path sensor delay	PI118	When the escape tray path sensor (PI118) does not detectpaper after a prescribed time (distance) haselapsed since reception of a delivery signal from the host machine	1003
Escape tray path sensor stationary	PI118	When paper does not exit the escape tray path sensor (PI118)after a prescribed time (distance) has elapsed since this sensor detected paper.	1103
Timing		When the tray 1 or tray 2 loading position has not been changed at reception of a delivery signal from the host machine, or when the reception interval of the delivery signal from the host machine is shorter than the paper processing time by 150 ms or more.	1200
Staple	PI50	When the staple motor (M1111) is rotated forward, the staple home position sensor (PI5) does not turn back ON after a prescribed time has elapsed after it goes OFF, and the staple home position sensor (PI50) becomes ON within prescribed time after the staple motor (M1111) is rotated backward. * Replace the stapler unit when the staple home position sensor (PI50) becomes faulty since it is built in the stapler unit.	1500
Power-on	PI103, PI104, PI118	When paper is detected by the inlet sensor (PI103), the delivery path sensor (PI104), or the escape tray path sensor (PI118) during power on.	1300
Door open	PI102, MSW101	When the front cover open/close sensor (PI102) or the front cover close detect switch (MSW101) detects that the cover is opened.	1400

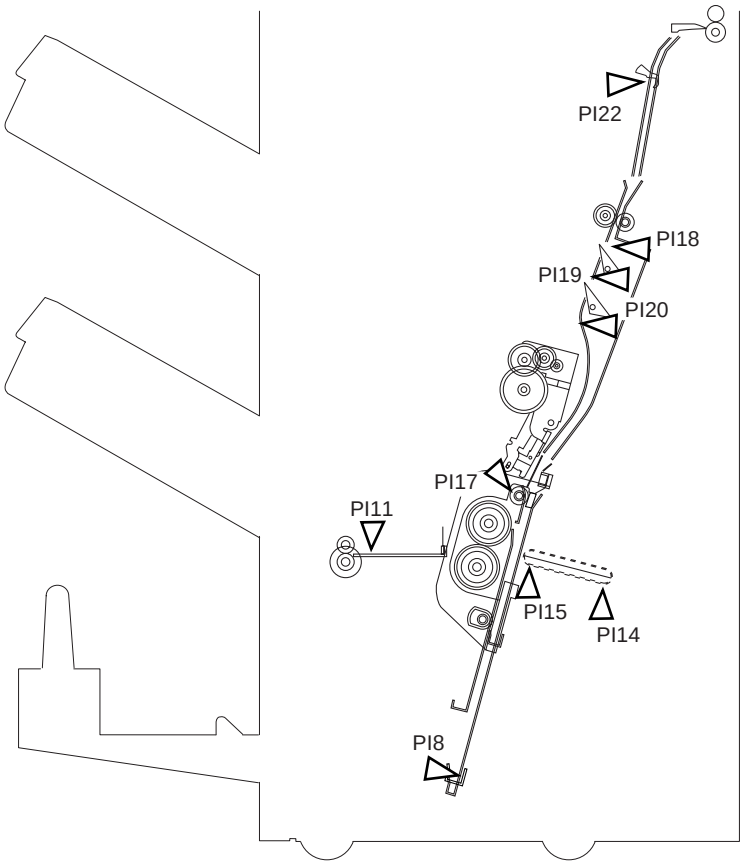
2.6.2 Detecting Jams (Saddle Stitcher Unit)

0009-2554

The saddle stitcher unit identifies any of the following conditions as a jam, and sends the jam signal to the host

machine. In response, the host machine may stop copying operation and indicate the presence of a jam on its control panel.

When all doors are closed after the user has removed the jam, the saddle stitcher unit checks whether the vertical path paper sensor (PI17) has detected the presence of paper. If the sensor has detected paper, the unit will identify the condition as being faulty jam removal and send the jam signal to the host machine once again.



F-2-81

T-2-12

No.	Sensor
PI11	Delivery sensor
PI17	Vertical path paper sensor
PI18	No.1 paper sensor
PI19	No.2 paper sensor
PI20	No.3 paper sensor
PI22	Saddle inlet sensor

T-2-13

Jam Type	Sensor	Jam Condition	Code
Inlet delay	PI22	When the saddle inlet sensor (PI22) does not detect paper after a prescribed time (distance) has elapsed since receiving a saddle delivery request from the Finisher.	1793
Inlet stationary	PI22	When paper does not exit the saddle inlet sensor (PI22) after feeding for a prescribed amount with the feed motor (M1) after the saddle inlet sensor (PI22) detected the leading edge of the paper.	17A3
Feeding delay	PI18	When the 1st paper sensor (PI18) does not detect paper after prescribed time (distance) has elapsed since the saddle inlet sensor (PI22) detected the leading edge of the paper.	1791
Feeding stationary	PI18,PI19, PI20	When paper does not exit the 1st paper sensor (PI18), 2nd paper sensor (PI19), and 3rd paper sensor (PI20) after feeding for a prescribed amount with the feed motor (M1) after the 1st paper sensor (PI18) has detected the leading edge of the paper.	17A1
Delivery delay	PI11	When delivery sensor (PI11) cannot detect the paper after feeding the stack for a prescribed amount with the paper folding motor (M2) after completing paper pushing motion with the paper pushing plate.	1792
Delivery stationary	PI11,PI17	When stack does not exit the delivery sensor (PI11) after feeding the stack for a prescribed amount with the paper folding motor (M2) after detecting the leading edge of the paper with the delivery sensor (PI11). When stack does not exit the vertical path paper sensor (PI17) after feeding the stack for a prescribed amount with the paper folding motor (M2) after detecting the stack with the delivery sensor (PI11).	17A2
Stitcher staple	SW7,SW5	When stitch motors (M7/M6) are rotated forward and the stitch home position sensors (SW7/SW5) do not turn ON within 0.4 seconds after they are turned OFF and the motors are rotated backward and the sensors turn ON within 0.4 seconds.	1786

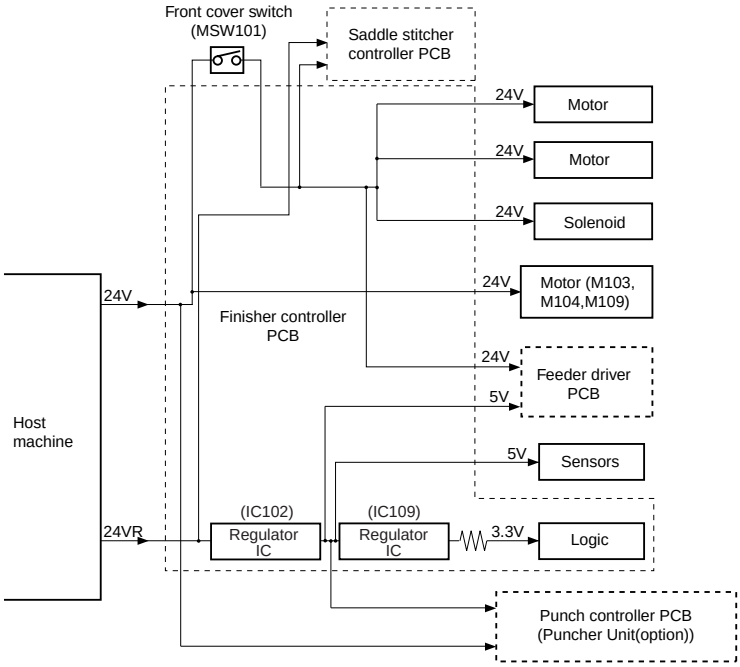
Jam Type	Sensor	Jam Condition	Code
Power-on	PI8,PI11, PI17,PI18, PI19,PI20, PI22	When paper is detected by one of the sensor on the paper sensor PCB (1st paper sensor (PI18), 2nd paper sensor (PI19), 3rd paper sensor (PI20)), vertical path paper sensor (PI17), delivery sensor (PI11), paper positioning plate paper sensor (PI8), or saddle inlet sensor (PI22) during power ON.	1787
Door open	PI3,PI9, PI102	When the delivery cover sensor (PI13) or inlet cover sensor (PI19) detects that the cover is opened during operation. When the front cover sensor (PI102) detects cover open with paper present on the processing tray while the device is not operating.	1788

2.7 Power Supply

2.7.1 Power Supply Route (Finisher Unit)

0009-2555

When the power of the host machine is turned on, 24 VDC is supplied from the host machine to the finisher controller PCB through two power supply lines. 24 VDC supplied through one power supply line is used to drive motors and solenoids. 24 VDC supplied through the other power supply line is converted into 5VDC by the regulator IC (IC102) on the finisher controller PCB and then used to drive the sensors on the PCB. Furthermore, it is converted into 3.3 VDC by the regulator IC (IC109) on the finisher controller PCB and then used to drive the ICs on the PCB. Both are also supplied from the finisher controller PCB to the saddle stitcher controller PCB.
If the Puncher unit, which is an optional, is installed, they are supplied to the punch controller PCB as well.
24VDC for specific motor drives is cut off when the front cover switch (MSW101) is open. This is not applied to the optional puncher unit and some other motors.
A block diagram of power supply is shown below.



F-2-82

2.7.2 Protection Function (Finisher Unit)

0009-2556

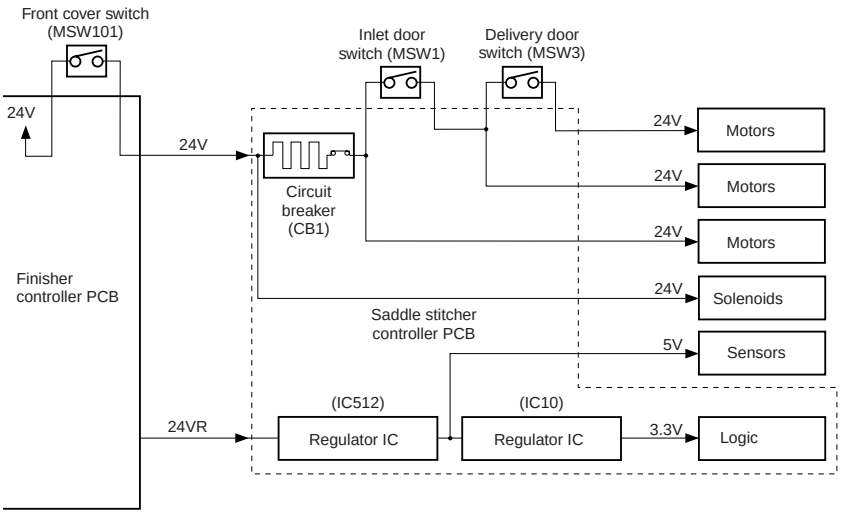
The 24 VDC for motor and solenoid drive has a fuse or motor driver with over-current protection function for over-current protection.

2.7.3 Power Supply Route (Saddle Stitcher Unit)

0009-2557

When the power switch of the host machine is turned on with the door closed, 24 VDC is supplied from the finisher controller PCB to the saddle stitcher via two power supply lines.

24 VDC supplied through one power supply line is used to drive motors and solenoids. The 24 VDC power for solenoids is supplied from the finisher controller circuit PCB without passing through protection mechanisms such as microswitches. The 24 VDC for motors is not supplied if any of the two door switches of the saddle stitcher unit is open.
24 VDC supplied through the other power supply line is converted into 5 VDC by the regulator IC (IC512) on the saddle stitcher controller PCB, used to drive sensors, converted into 3.3 VDC by the regulator IC (IC10) on the saddle stitcher controller PCB, and then used to drive the ICs on the PCB.



F-2-83

2.7.4 Protection Function (Saddle Stitcher Unit)

0009-2558

The 24 VDC power supply used for motors and solenoids is equipped with a circuit breaker (CB1). The 24V power supply used to drive the guide motor (M3), alignment motor (M5), and the paper positioning plate motor (M4) is equipped with a fuse designed to blow when an overcurrent flows.

Chapter 3 Parts Replacement Procedure

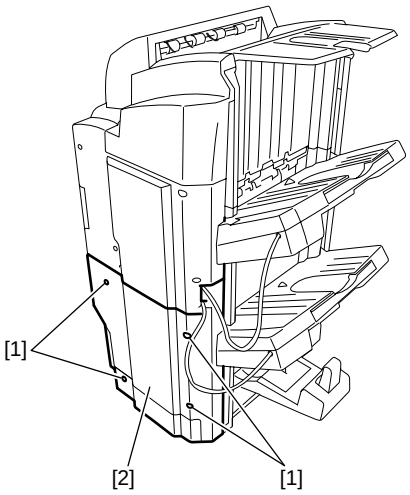
Contents

3.1 External Covers

3.1.1 Rear Lower Cover

3.1.1.1 Removing the Rear Lower Cover 0009-3556

1) Remove four screws [1] and remove the rear lower cover [2].

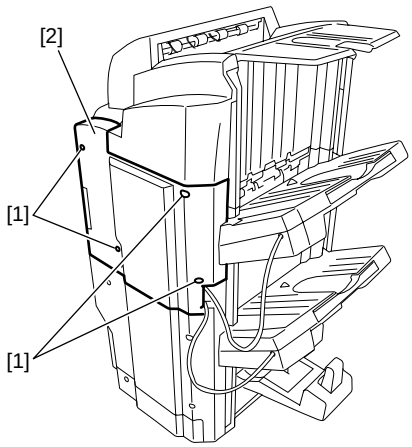


F-3-1

3.1.2 Rear Upper Cover

3.1.2.1 Removing the Rear Upper Cover 0009-3555

1) Remove four screws [1] and remove the rear upper cover [2].

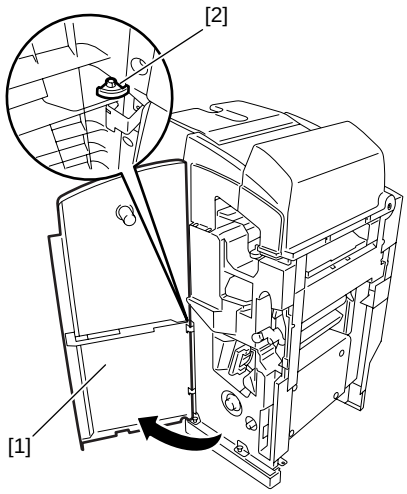


F-3-2

3.1.3 Grate-shaped Upper Guide

3.1.3.1 Removing the Front Door 0009-4444

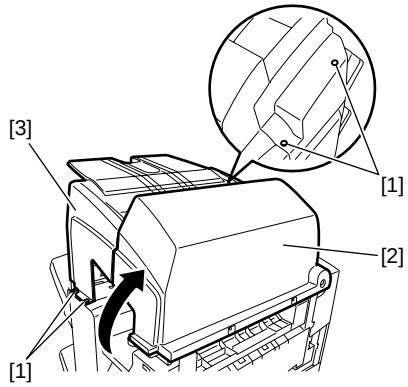
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-3

3.1.3.2 Removing the Escape Tray Cover 0009-4406

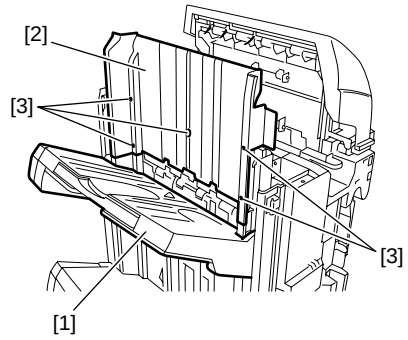
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-4

3.1.3.3 Removing the Grate-shaped Upper Guide 0009-3571

1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].

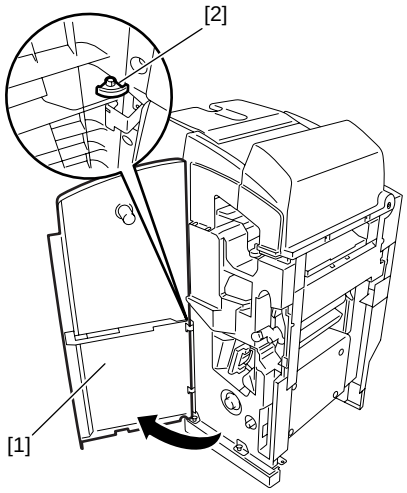


F-3-5

3.1.4 Grate-shaped Lower Guide

3.1.4.1 Removing the Front Door 0009-4445

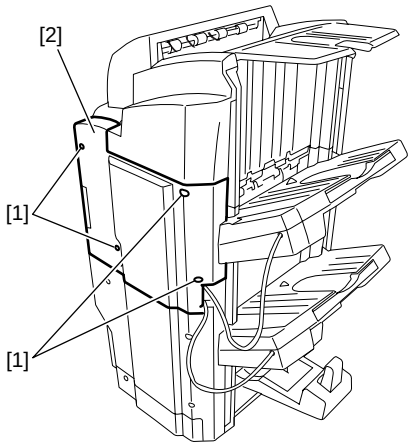
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-6

3.1.4.2 Removing the Rear Upper Cover 0009-3619

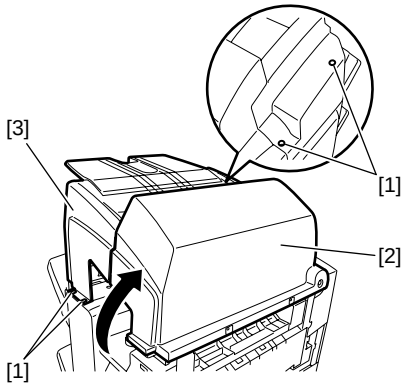
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-7

3.1.4.3 Removing the Escape Tray Cover 0009-4410

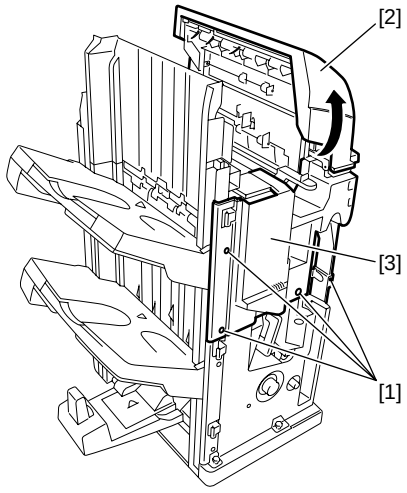
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-8

3.1.4.4 Removing the Front Inside Upper Cover 0009-3622

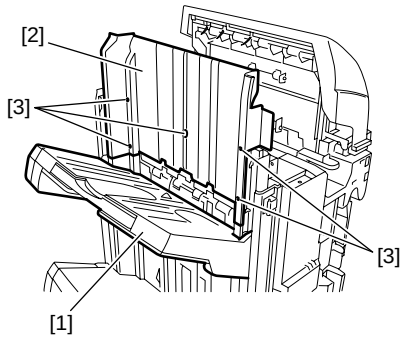
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-9

3.1.4.5 Removing the Grate-shaped Upper Guide 0009-3623

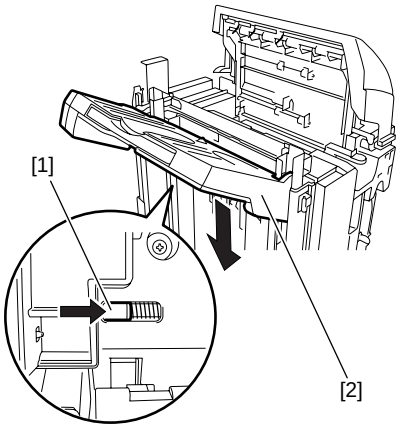
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-10

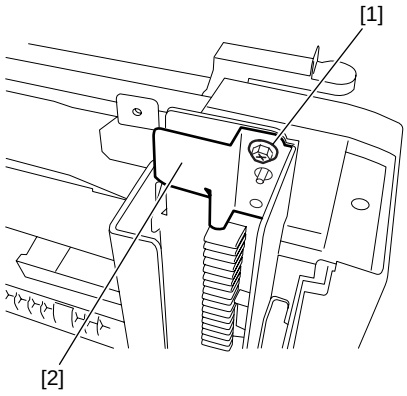
3.1.4.6 Removing the Tray 1 0009-3624

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



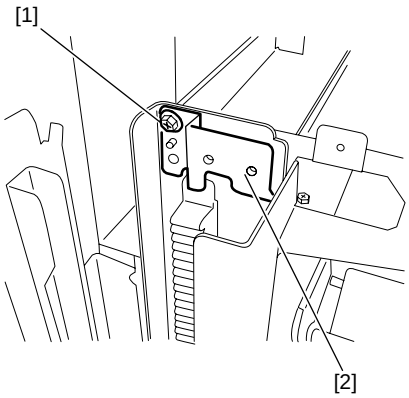
F-3-11

1) Remove the screw [1] and remove the stopper [2] at the front.



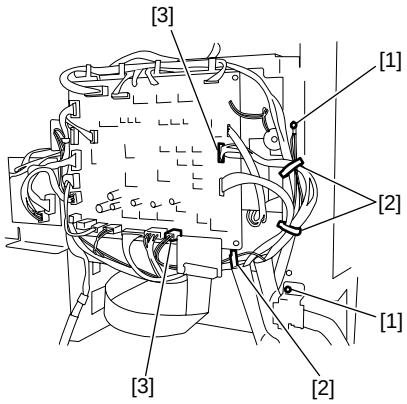
F-3-12

2) Remove the screw [1] and remove the stopper [2] at the back.



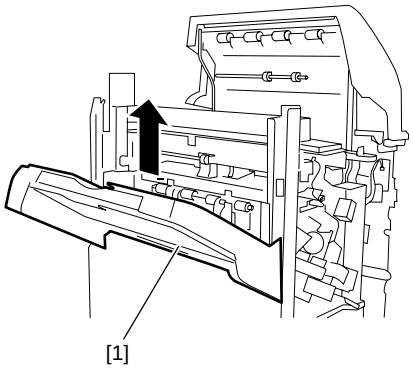
F-3-13

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



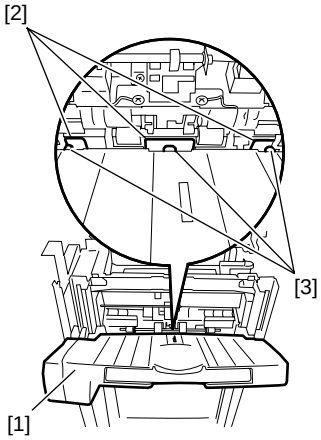
F-3-14

4) Lift tray 1 [1] to remove it.



F-3-15

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

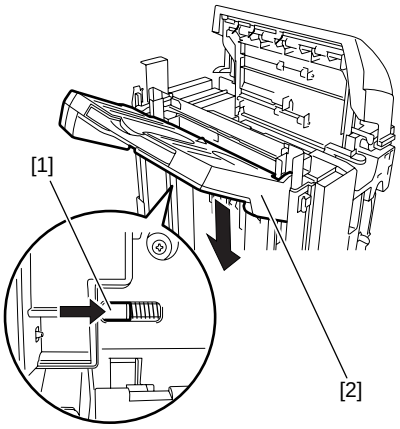


F-3-16

3.1.4.7 Removing the Tray 2 0009-3625

⚠When moving the tray down to attach it, you need

to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



F-3-17

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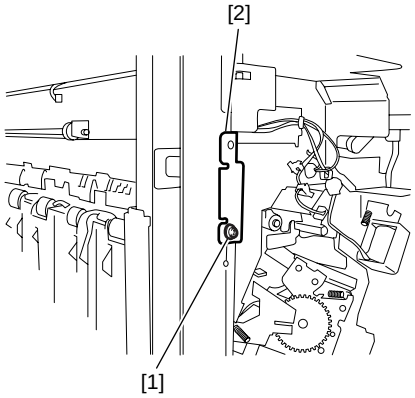
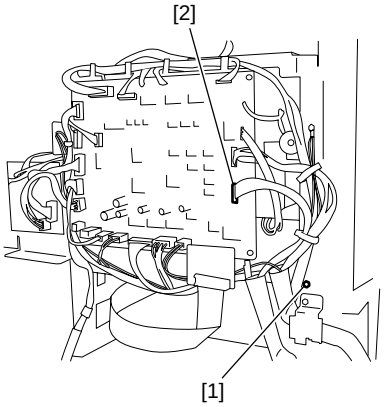
1) Remove screw [1] and remove the stopper [2].



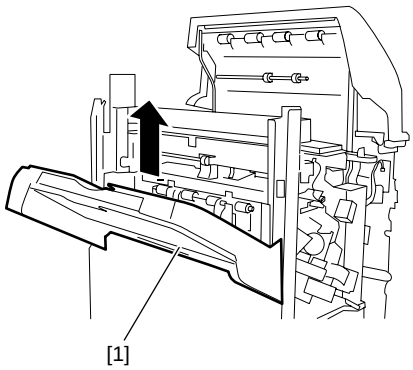
F-3-18

2) Remove the screw [1] and disconnect the connector [2].



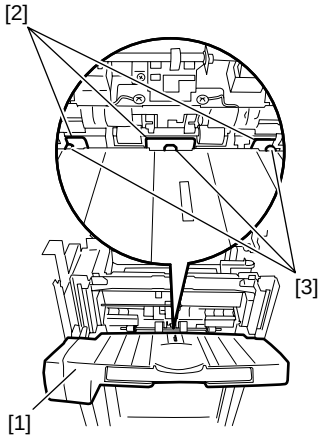
F-3-19

3) Lift tray 2 [1] to remove it.



F-3-20

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

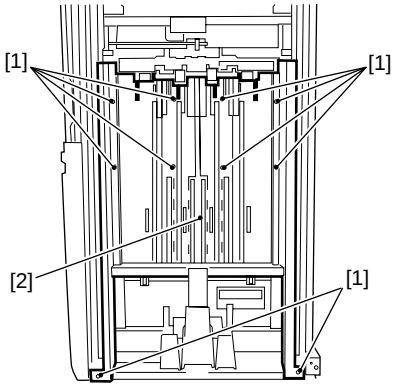


F-3-21

3.1.4.8 Removing the Grate-shaped Lower Guide 0009-3626

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.

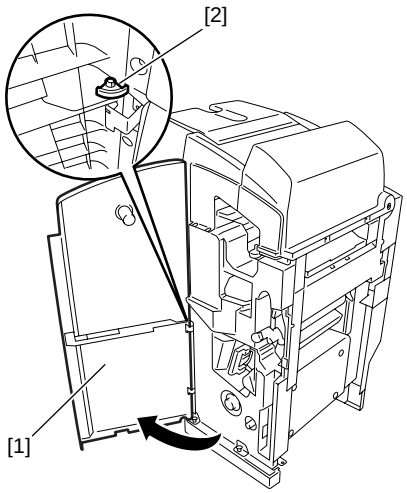


F-3-22

3.1.5 Front Inside Upper Cover

3.1.5.1 Removing the Front Door 0009-4447

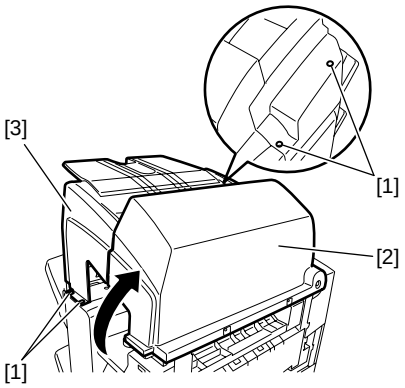
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-23

3.1.5.2 Removing the Escape Tray Cover 0009-4411

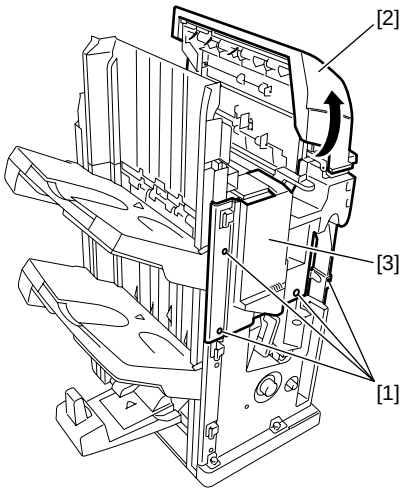
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-24

3.1.5.3 Removing the Front Inside Upper Cover 0009-3558

1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].

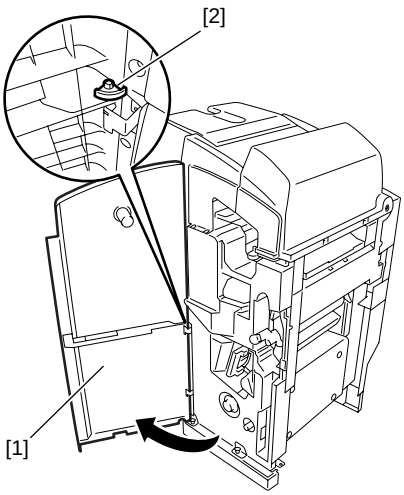


F-3-25

3.1.6 Front Inside Lower Cover

3.1.6.1 Removing the Front Door 0009-4448

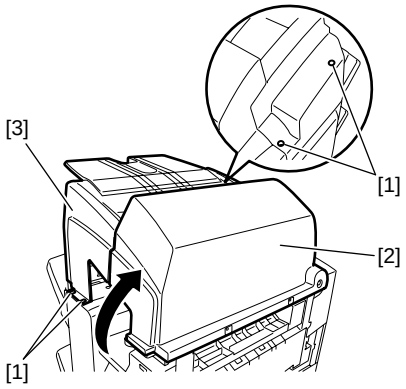
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-26

3.1.6.2 Removing the Escape Tray Cover 0009-4412

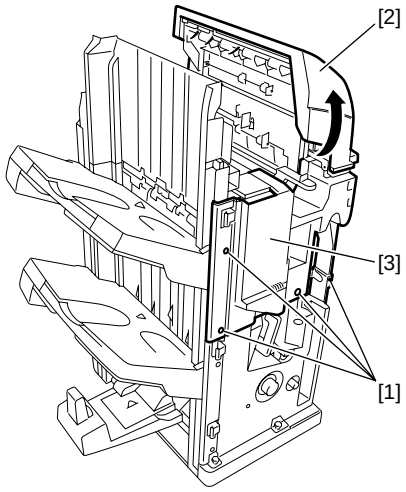
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-27

3.1.6.3 Removing the Front Inside Upper Cover 0009-3565

1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].

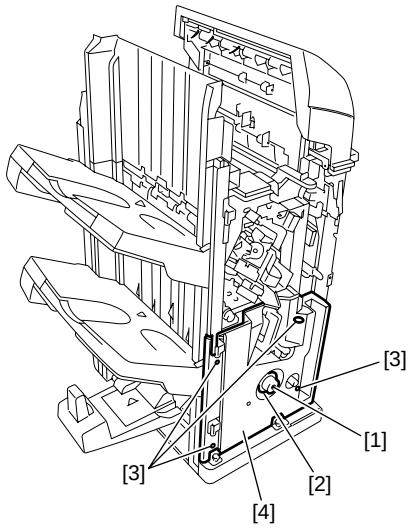


F-3-28

3.1.6.4 Removing the Front Inside Lower Cover 0009-3561

1) Remove screw [1] and then remove the roller knob [2].
2) Remove four screws [3] and remove the front inside

lower cover [4].

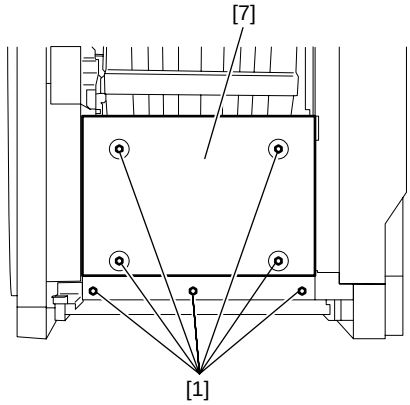


F-3-29

3.1.7 PCB Cover

3.1.7.1 Removing the PCB Cover 0009-3629

1) Remove seven screws [1] and remove the PCB cover [2].



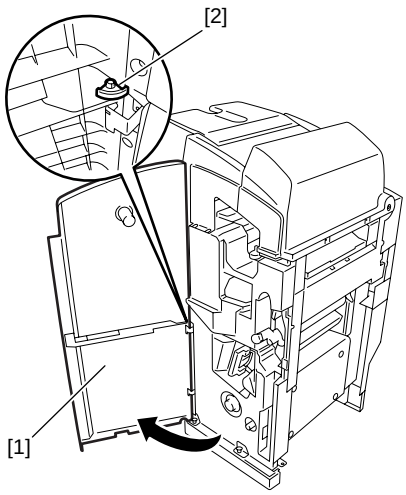
F-3-30

3.1.8 Front Door

3.1.8.1 Removing the Front Door 0009-4443

1) Open the front door [1] and remove the clip [2].

2) Lift the front door [1] to remove.

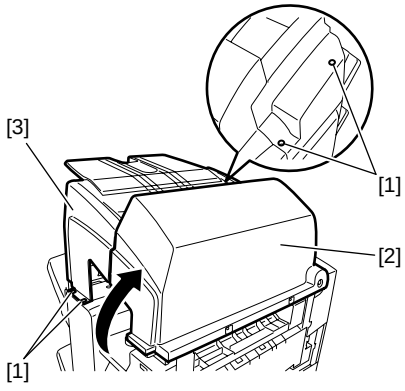


F-3-31

3.1.9 Escape Tray Cover

3.1.9.1 Removing the Escape Tray Cover 0009-4402

1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



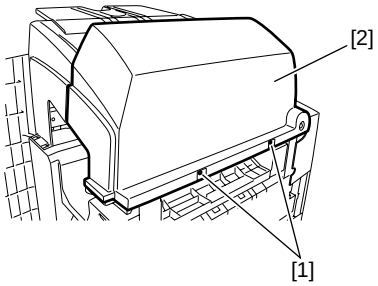
F-3-32

3.1.10 Escape Door

3.1.10.1 Removingh the Escape Door 0009-4397

1) Open the front door.

2) Remove two screws [1] and remove the escape door [2].



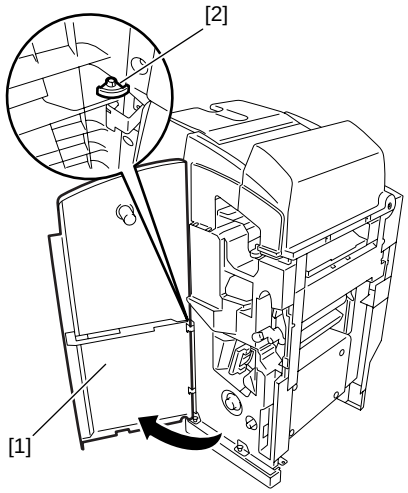
F-3-33

3.2 Drive System

3.2.1 Stapler

3.2.1.1 Removing the Front Door 0009-4449

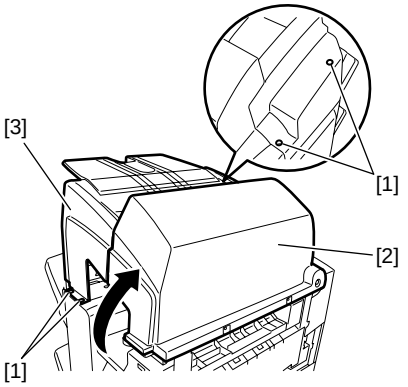
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-34

3.2.1.2 Removing the Escape Tray Cover 0009-4414

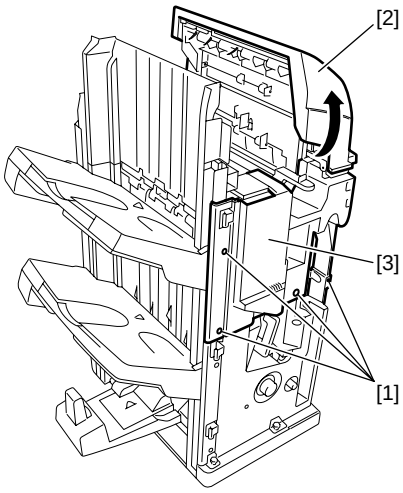
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-35

3.2.1.3 Removing the Front Inside Upper Cover 0009-3634

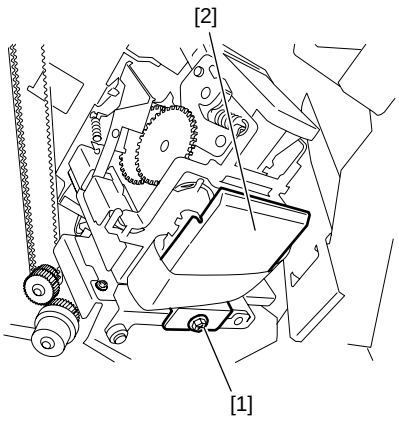
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-36

3.2.1.4 Removing the Stapler 0009-3631

1) Pull out the stapler, remove screw [1], and remove the PCB cover [2].

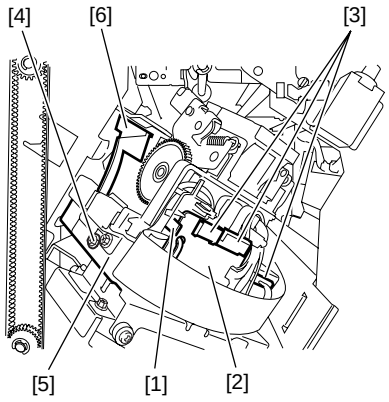


F-3-37

2) Release the claw [1] and remove the PCB [2].
3) Disconnect three connectors [3].
4) Remove screw [4] and remove the stapler together with the stapler base [5].

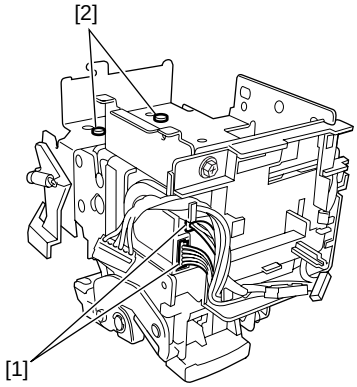
⚠When removing, be careful not to damage the flag

[6].



F-3-38

5) Turn the stapler over, disconnect two connectors [1], remove two screws [2], and remove the stapler from the stapler base.

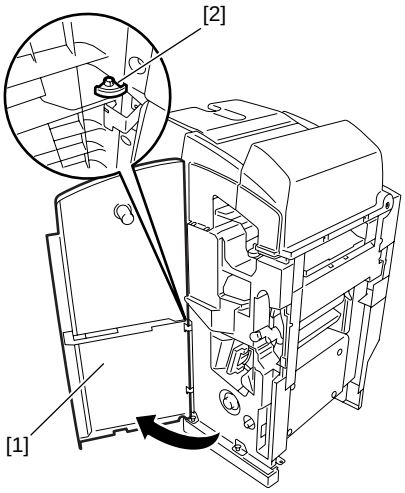


F-3-39

3.2.2 Swing Unit

3.2.2.1 Removing the Front Door 0009-4450

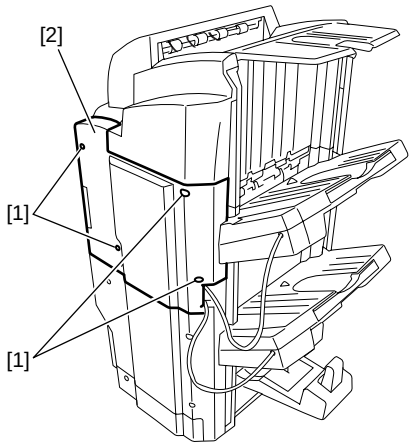
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-40

3.2.2.2 Removing the Rear Upper Cover 0009-3662

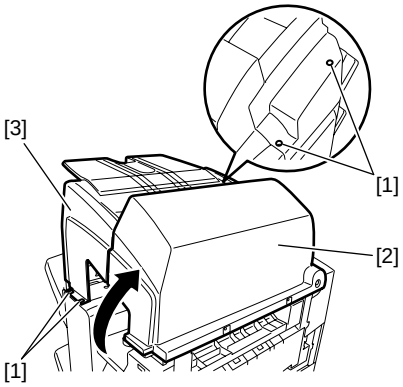
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-41

3.2.2.3 Removing the Escape Tray Cover 0009-4415

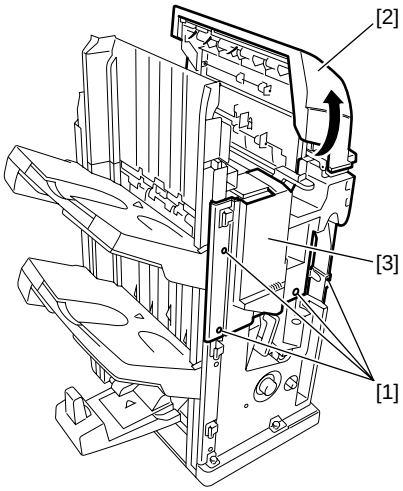
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-42

3.2.2.4 Removing the Front Inside Upper Cover 0009-3664

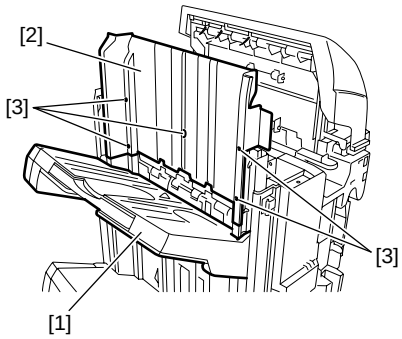
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-43

3.2.2.5 Removing the Grate-shaped Upper Guide 0009-3665

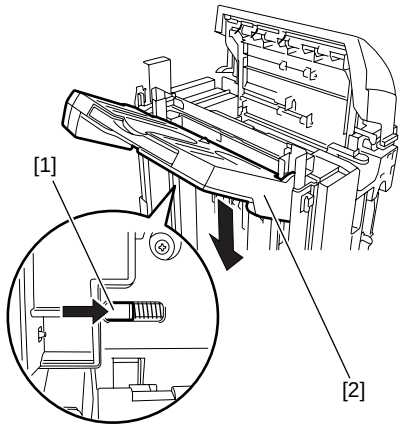
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-44

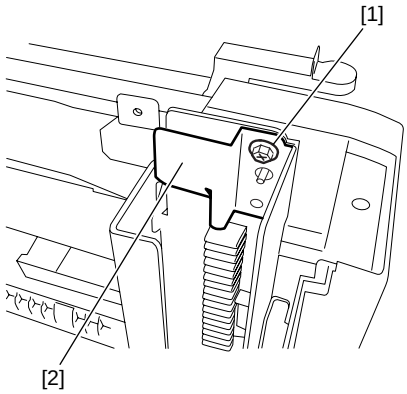
3.2.2.6 Removing the Tray 1 0009-3666

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



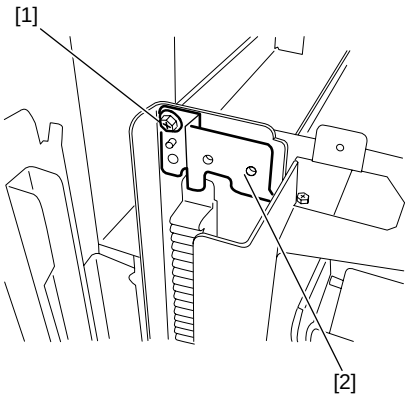
F-3-45

1) Remove the screw [1] and remove the stopper [2] at the front.



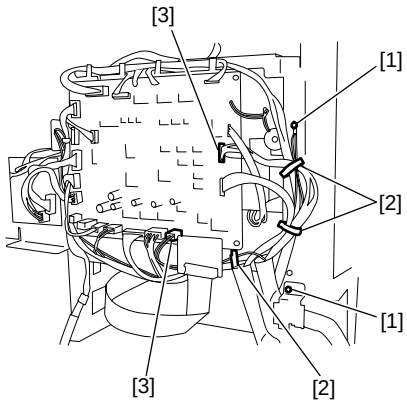
F-3-46

2) Remove the screw [1] and remove the stopper [2] at the back.



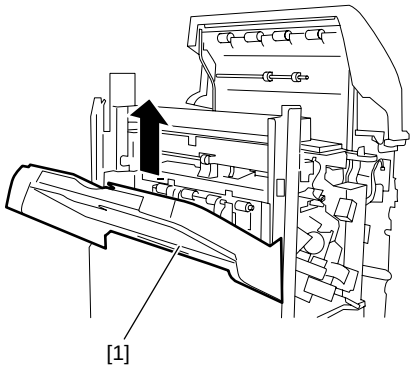
F-3-47

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



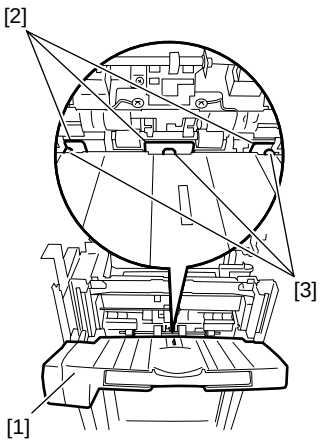
F-3-48

4) Lift tray 1 [1] to remove it.



F-3-49

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

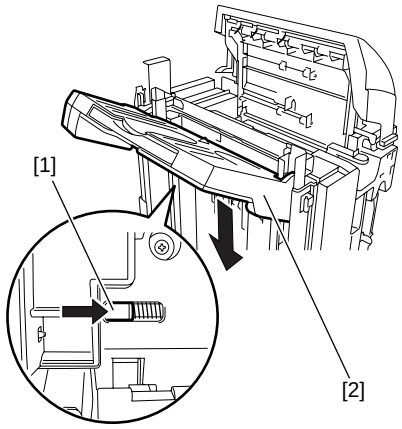


F-3-50

3.2.2.7 Removing the Tray 2 0009-3668

⚠When moving the tray down to attach it, you need

to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



F-3-51

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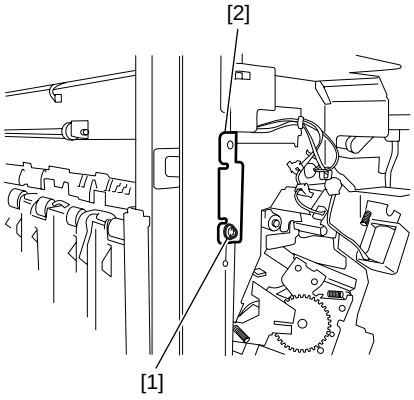
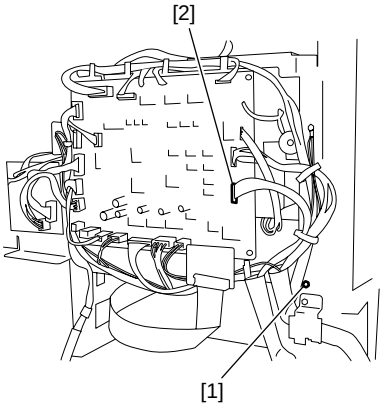
1) Remove screw [1] and remove the stopper [2].



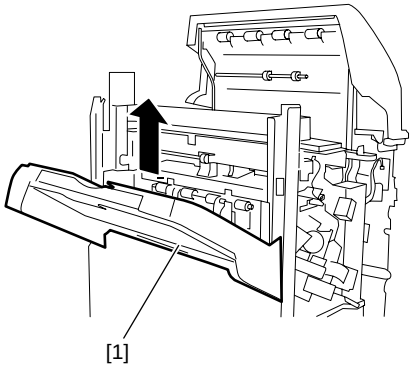
F-3-52

2) Remove the screw [1] and disconnect the connector [2].



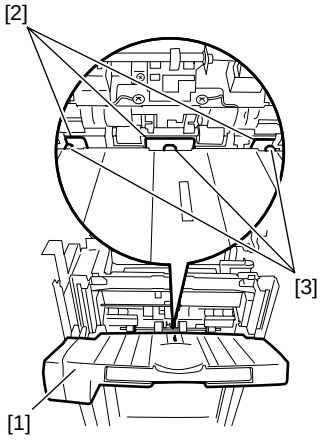
F-3-53

3) Lift tray 2 [1] to remove it.



F-3-54

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

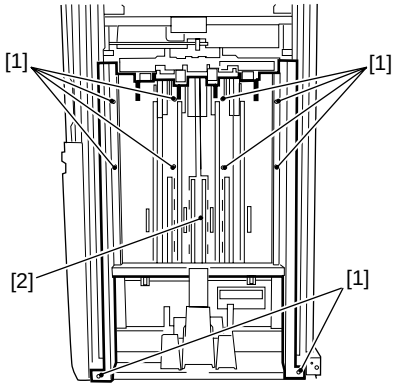


F-3-55

3.2.2.8 Removing the Grate-shaped Lower Guide 0009-3669

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.

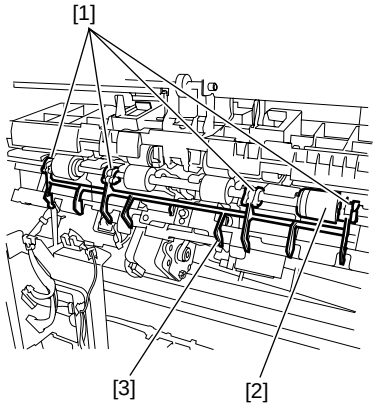


F-3-56

3.2.2.9 Removing the Processing Tray 0009-3670

1) Unfasten four snap fasteners [1] and remove the sensor flag [3] from the stack delivery roller [2].

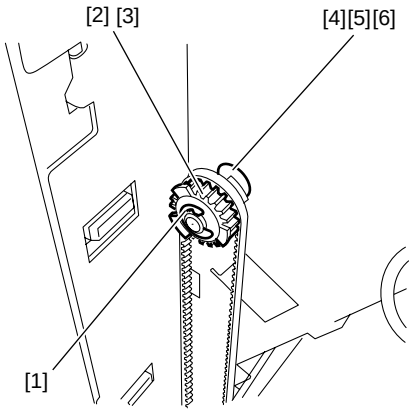
⚠Hold the snap fastener at the base when unfastening because the sensor flag arm can break easily. When fastening, insert the boss of the sensor flag snap fastener in the hole on the processing tray side.



F-3-57

2) Remove the stack delivery roller front side E ring [1], gear [2], parallel pin [3], E ring [4], washer [5], and bearing [6].

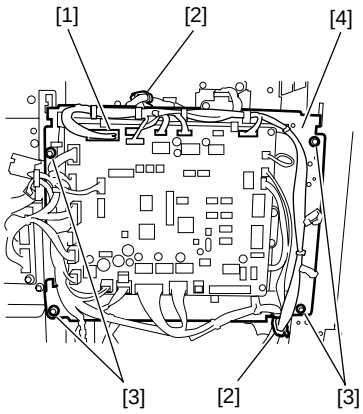
⚠The parallel pin [3] drops when the gear [2] is removed. Be careful not to loose it.



F-3-58

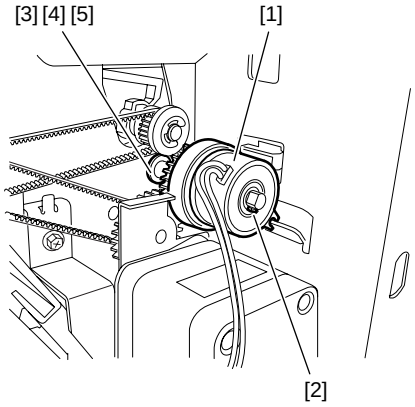
3) Remove all finisher controller PCB connectors[1] and remove the harness from two clamp [2].

4) Remove four screws [3] and remove the finisher controller PCB [4].



F-3-59

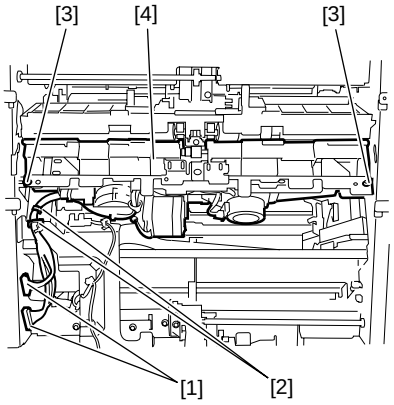
5) Release the claw [1] of the stack delivery roller rear side clutch [2] and remove the clutch [2].
6) Remove the E ring [3], washer [4], and bearing [5] and remove the stack delivery roller.



F-3-60

7) Disconnect two connectors [1] and remove harness from the clamp and edge saddle [2].
8) Remove two screws [3] and pull out the processing tray [4] in the paper delivery direction.

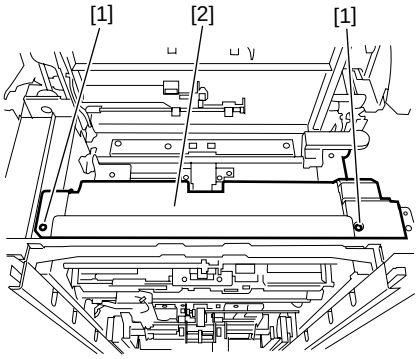
⚠When removing parts inside the processing tray, be careful not to exert force on the aligning plate (front/rear) or the rear end stopper plate.



F-3-61

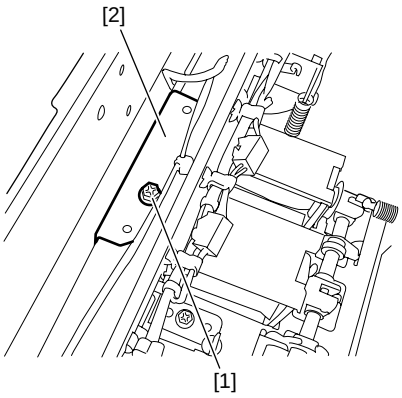
3.2.2.10 Removing the Swing Unit 0009-3658

1)Remove two screws [1] and remove the solenoid cover [2].



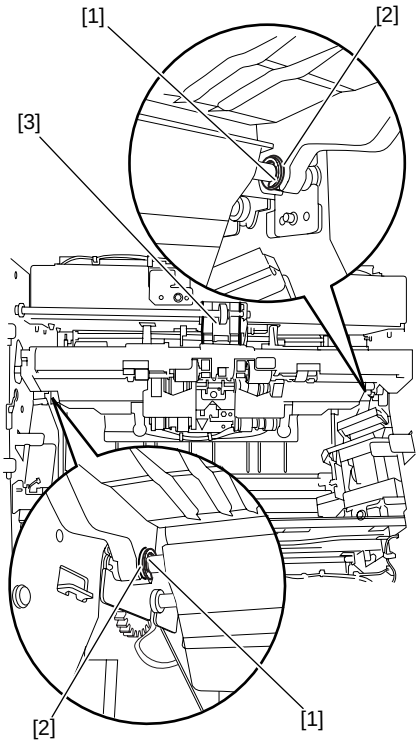
F-3-62

2) Remove screw [1] and pull up the swing pressure guide [2].



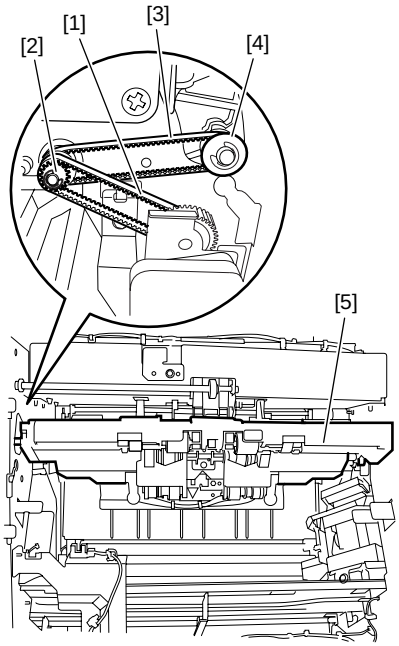
F-3-63

3) Remove two E rings [1] at the joint between the swing unit and the return roller unit and then slide the two return roller unit collars [2] inside.
4) Unhook the swing pressure rack [3] from the swing unit center hook.



F-3-64

5) Remove the belt [1] from the gear [2], remove the belt [3] from the gear [2] and gear [4], and pull out the swing unit [5] from the delivery direction.

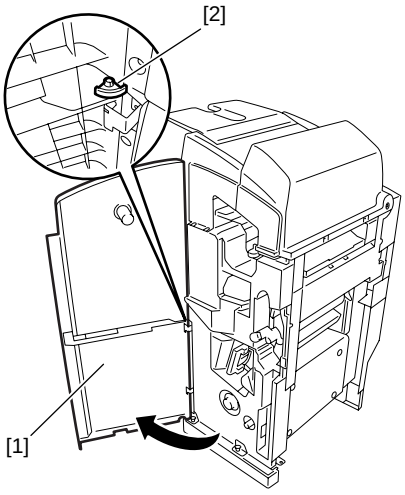


F-3-65

3.2.3 Saddle Unit

3.2.3.1 Removing the Front Door 0009-4451

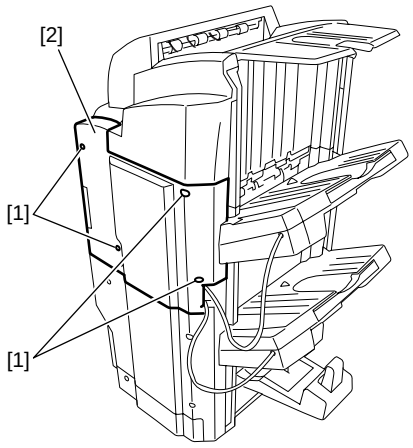
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-66

3.2.3.2 Removing the Rear Upper Cover 0009-3766

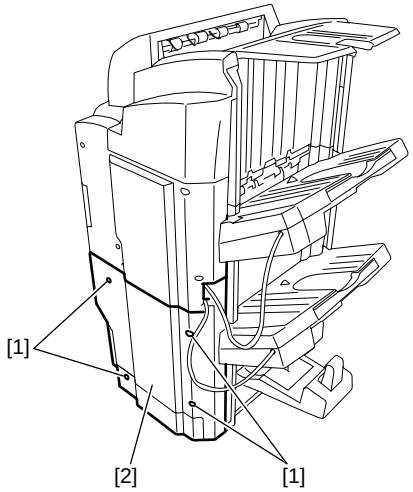
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-67

3.2.3.3 Removing the Rear Lower Cover 0009-3767

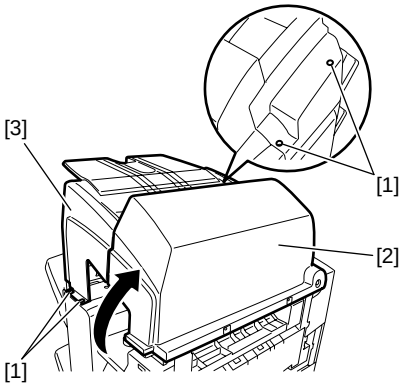
1) Remove four screws [1] and remove the rear lower cover [2].



F-3-68

3.2.3.4 Removing the Escape Tray Cover 0009-4416

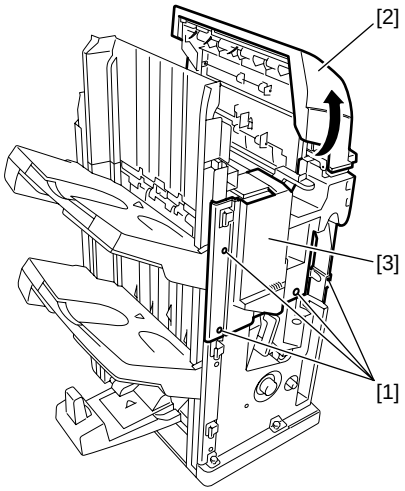
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-69

3.2.3.5 Removing the Front Inside Upper Cover 0009-3769

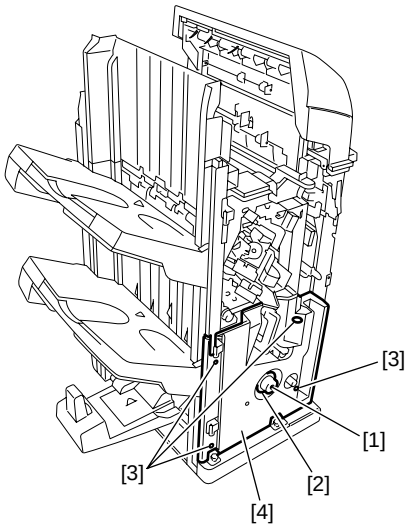
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-70

3.2.3.6 Removing the Front Inside Lower Cover 0009-3770

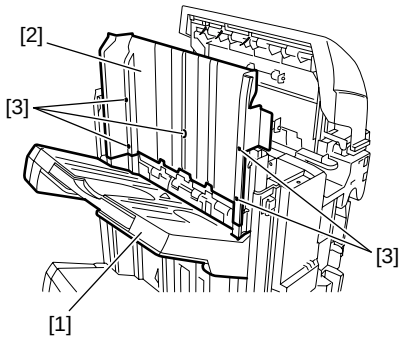
1) Remove screw [1] and then remove the roller knob [2].
2) Remove four screws [3] and remove the front inside lower cover [4].



F-3-71

3.2.3.7 Removing the Grate-shaped Upper Guide 0009-3771

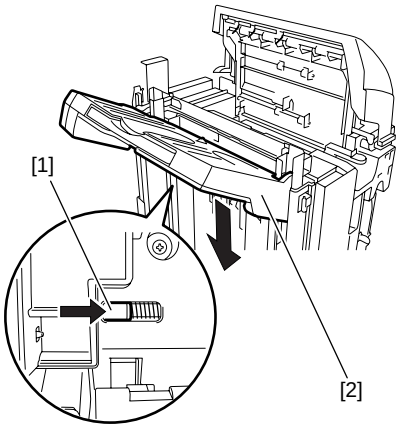
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-72

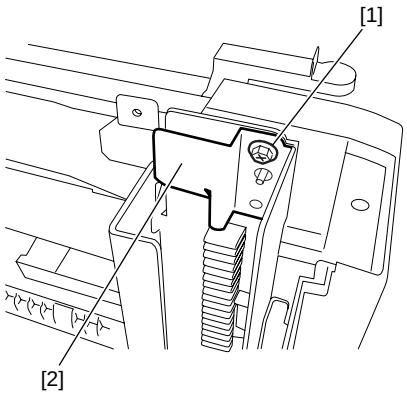
3.2.3.8 Removing the Tray 1 0009-3772

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



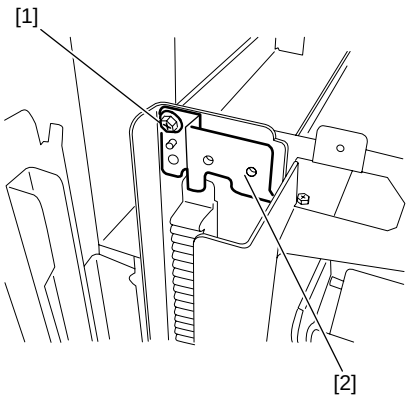
F-3-73

1) Remove the screw [1] and remove the stopper [2] at the front.



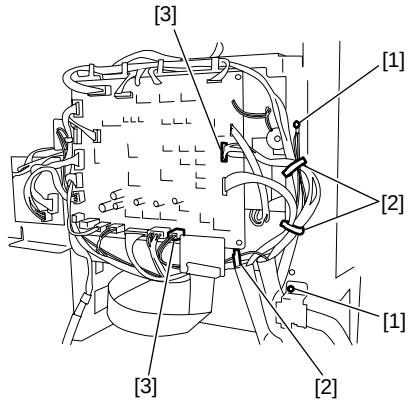
F-3-74

2) Remove the screw [1] and remove the stopper [2] at the back.



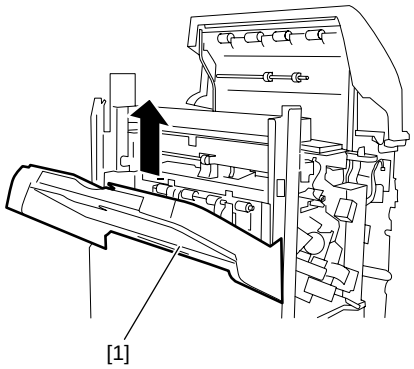
F-3-75

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



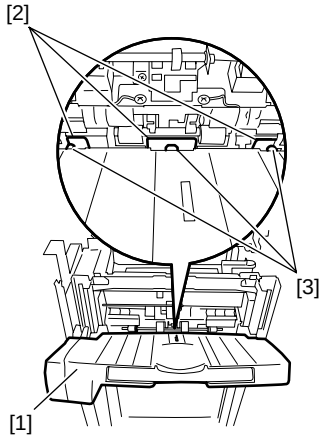
F-3-76

4) Lift tray 1 [1] to remove it.



F-3-77

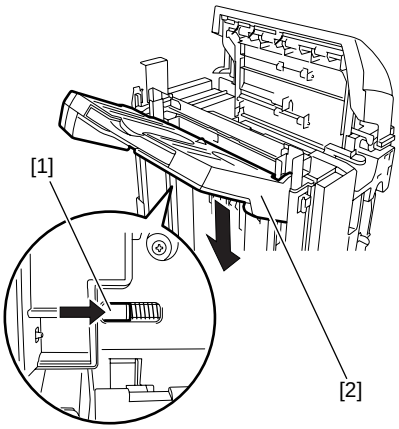
⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.



F-3-78

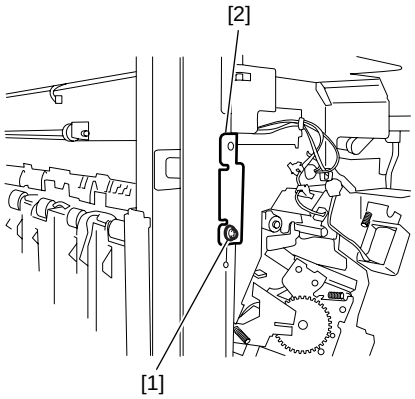
3.2.3.9 Removing the Tray 2 0009-3773

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



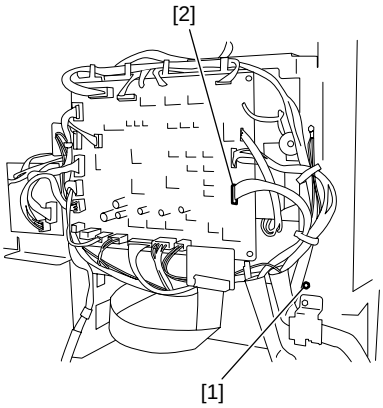
F-3-79

1) Remove screw [1] and remove the stopper [2].



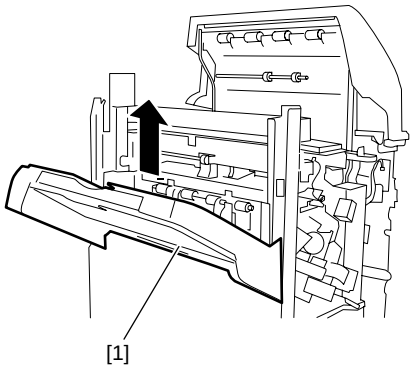
F-3-80

2) Remove the screw [1] and disconnect the connector [2].



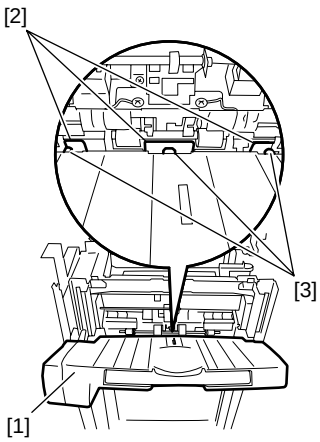
F-3-81

3) Lift tray 2 [1] to remove it.



F-3-82

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

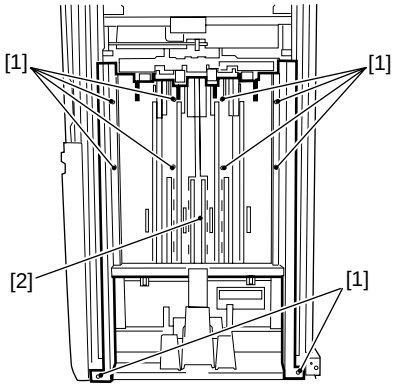


F-3-83

3.2.3.10 Removing the Grate-shaped Lower Guide 0009-3774

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

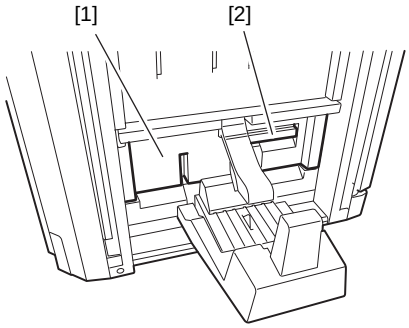
⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.



F-3-84

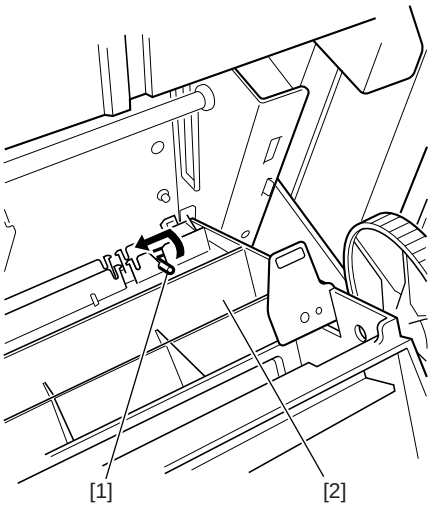
3.2.3.11 Removing the Saddle Delivery Tray Unit 0009-3775

1) Lift the saddle delivery tray unit [1] open/close lever [2] and open the saddle delivery tray unit.



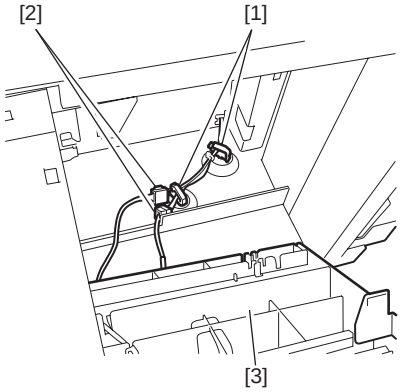
F-3-85

2) Remove the door axis [1] in the direction of the arrow and pull out the saddle delivery tray unit [2] toward the front.



F-3-86

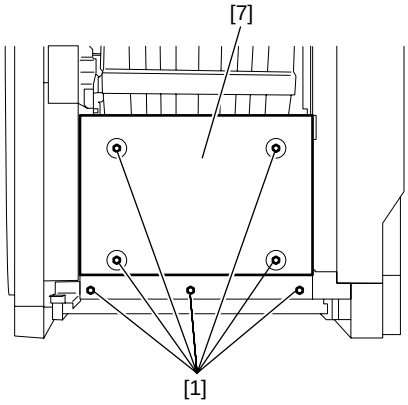
3) Remove the harness from two clamps [1].
4) Remove two connectors [2] and remove the saddle delivery tray unit [3].



F-3-87

3.2.3.12 Removing the PCB Cover 0009-3776

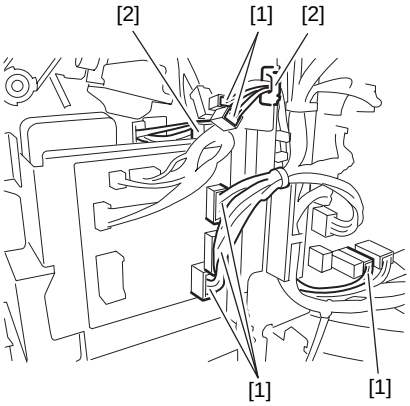
1) Remove seven screws [1] and remove the PCB cover [2].



F-3-88

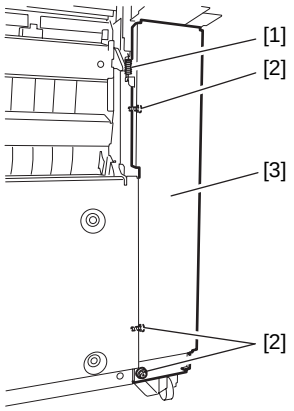
3.2.3.13 Removing the Escape Unit 0009-4486

1) Disconnect six connectors [1] and remove the harness from two clamps [2] and harness guide.



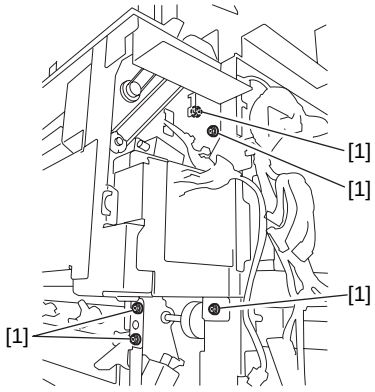
F-3-89

2) Remove the spring [1] and three screws [2] and remove the saddle belt cover [3].



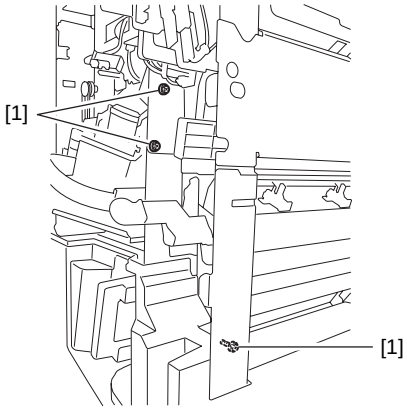
F-3-90

3) Remove five screws [1] at the back of the escape unit.



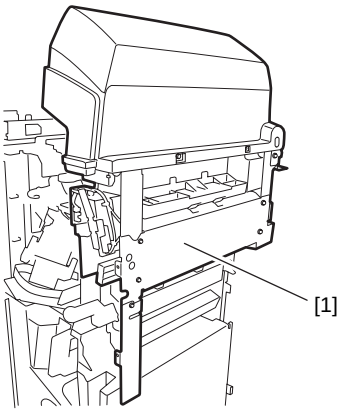
F-3-91

4) Remove three screws [1] at the front of the escape unit.



F-3-92

5) Lift the escape unit [1] slightly and remove it.

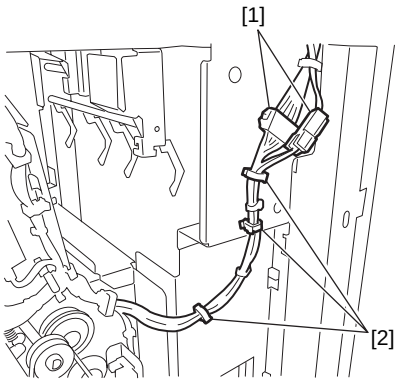


F-3-93

3.2.3.14 Removing the Saddle Unit

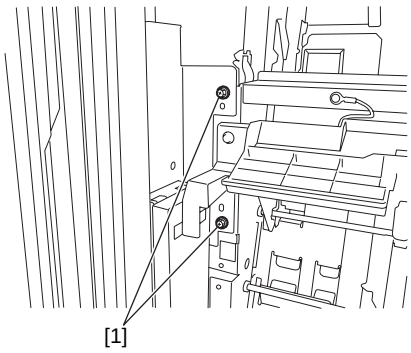
0009-3764

1) Disconnect two connectors [1] and remove the harness from three clamps [2].



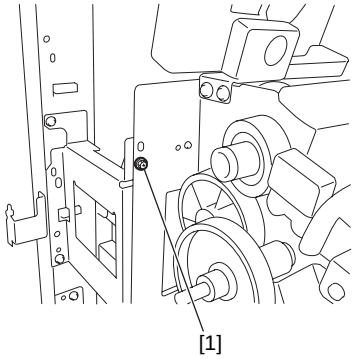
F-3-94

2) Remove two screws [1].



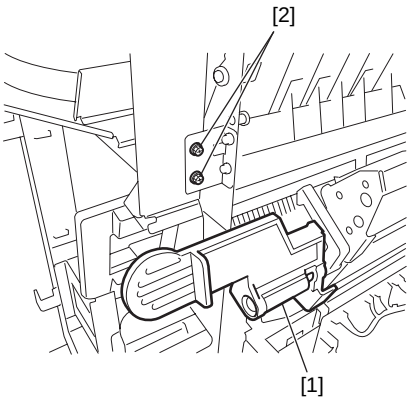
F-3-95

3) Remove the screw [1].



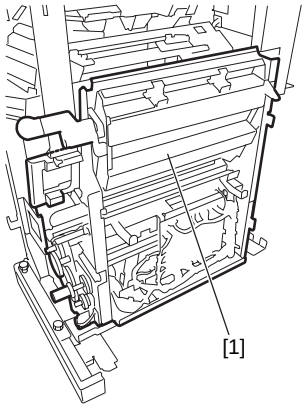
F-3-96

4) Open the saddle door [1] and remove two screws [2].



F-3-97

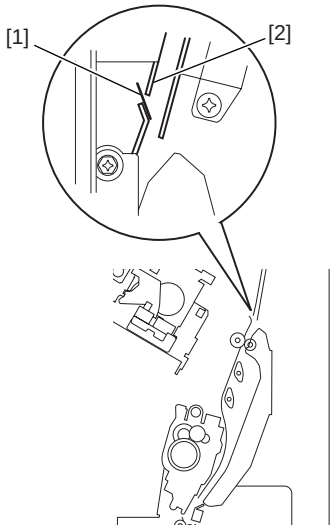
5) Remove the saddle unit [1] from the paper feeding side.



F-3-98

⚠When installing the saddle unit, install so that the Mylar [1] at the front upper side of the saddle is on the outside of the delivery guide plate [2] as shown in the figure.

Delivery fault will occur if it goes inside.

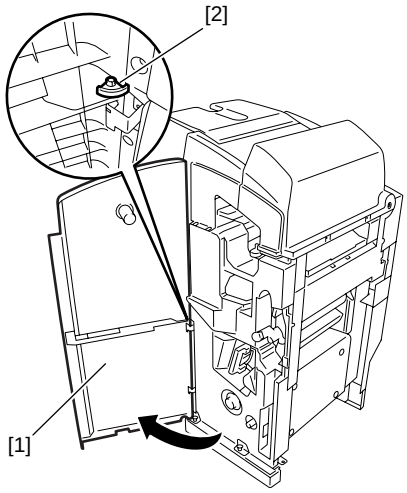


F-3-99

3.2.4 Stitcher Mount Unit

3.2.4.1 Removing the Front Door 0009-4452

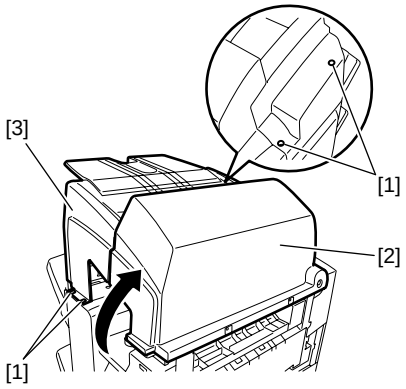
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-100

3.2.4.2 Removing the Escape Tray Cover 0009-4417

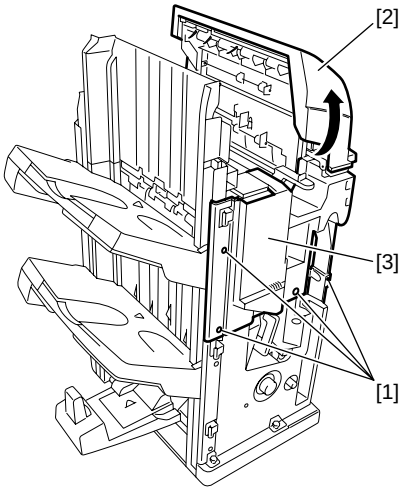
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-101

3.2.4.3 Removing the Front Inside Upper Cover 0009-4154

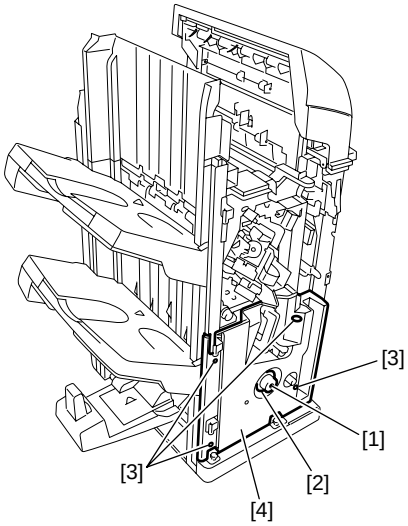
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-102

3.2.4.4 Removing the Front Inside Lower Cover 0009-4155

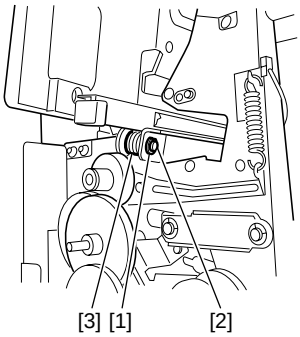
1) Remove screw [1] and then remove the roller knob [2].
2) Remove four screws [3] and remove the front inside lower cover [4].



F-3-103

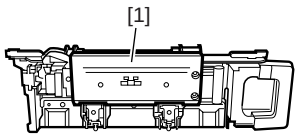
3.2.4.5 Removing the Stitcher Mount Unit 0009-4151

1) Remove the E ring [1], shaft [2], and roller [3].



F-3-104

2) Pull out the stitcher mount unit [1] to the front.

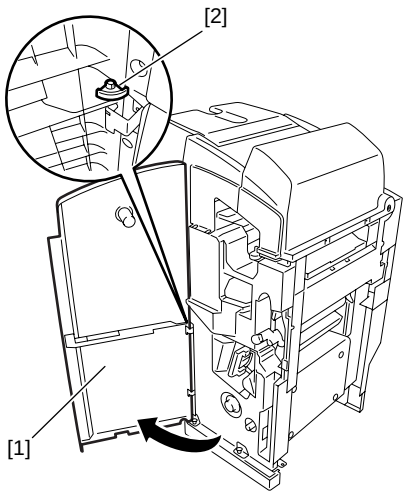


F-3-105

3.2.5 Positioning Plate Unit

3.2.5.1 Removing the Front Door 0009-4453

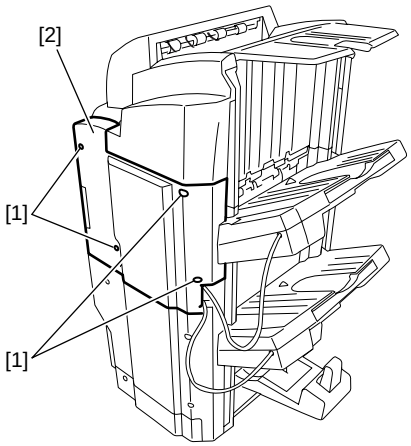
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-106

3.2.5.2 Removing the Rear Upper Cover 0009-4128

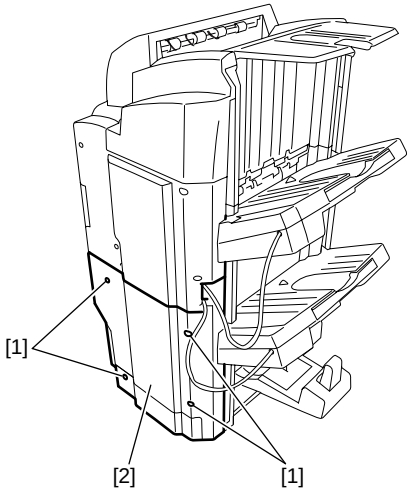
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-107

3.2.5.3 Removing the Rear Lower Cover 0009-4129

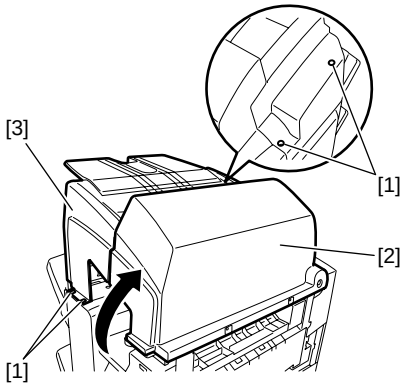
1) Remove four screws [1] and remove the rear lower cover [2].



F-3-108

3.2.5.4 Removing the Escape Tray Cover 0009-4418

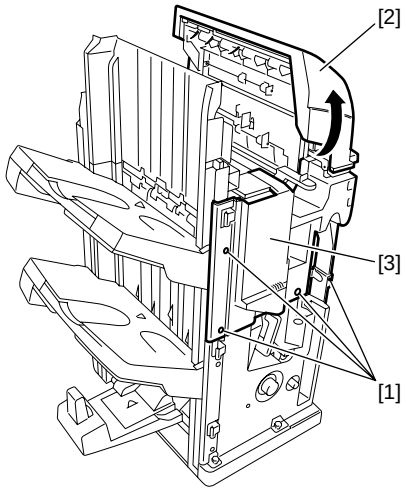
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-109

3.2.5.5 Removing the Front Inside Upper Cover 0009-4131

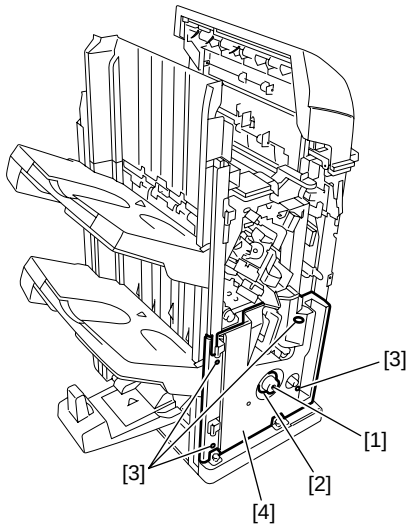
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-110

3.2.5.6 Removing the Front Inside Lower Cover 0009-4132

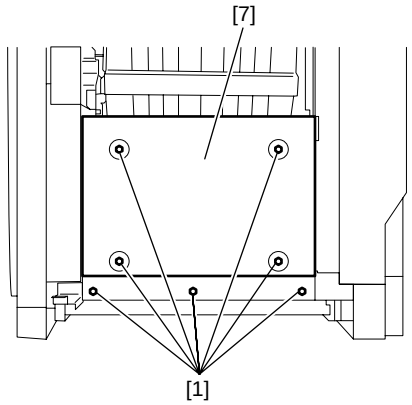
1) Remove screw [1] and then remove the roller knob [2].
2) Remove four screws [3] and remove the front inside lower cover [4].



F-3-111

3.2.5.7 Removing the PCB Cover 0009-4133

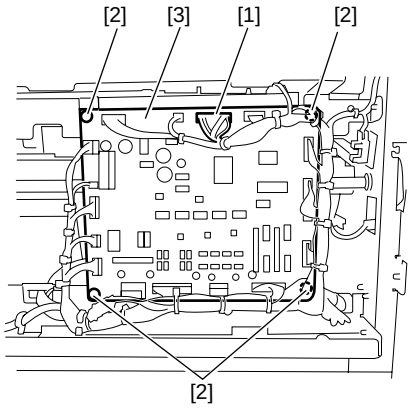
1) Remove seven screws [1] and remove the PCB cover [2].



F-3-112

3.2.5.8 Removing the Saddle Stitcher Controller PCB 0009-4134

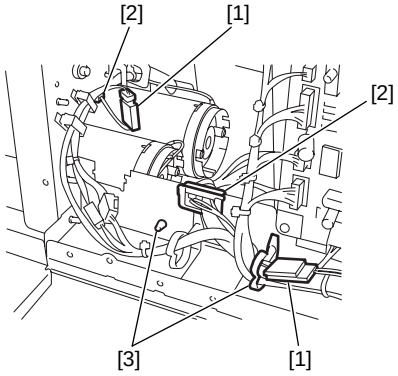
1) Remove the all connectors [1] and four screws [2], and remove the saddle stitcher controller PCB [3].



F-3-113

3.2.5.9 Removing the Positioning Plate Unit 0009-4125

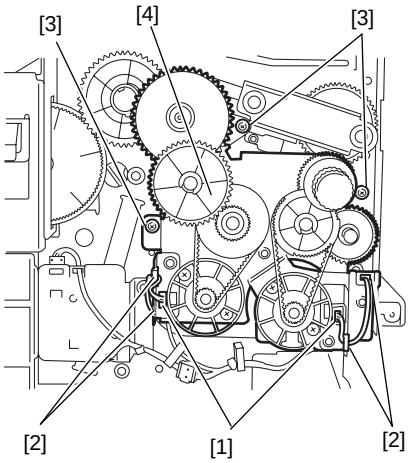
1) Disconnect two connectors [1] and remove the harness from the two edge saddles [2] and two clamps [3].



F-3-114

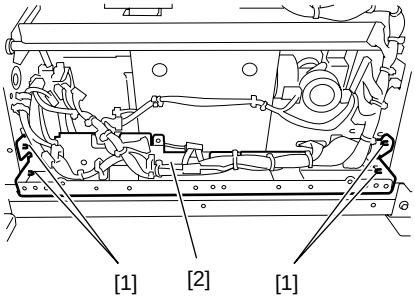
2) Disconnect two connectors [1] and remove the harnesses from five edge saddles [2].

3) Remove three screws [3] and remove the paper folding/pushing motor base [4].



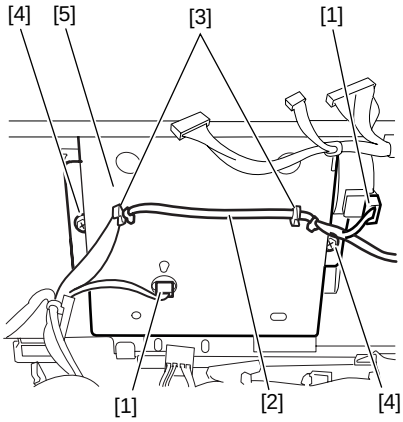
F-3-115

4) Remove four screws [1] and remove the stay [2]. The edge saddle harness of the stay need not be removed.



F-3-116

5) Disconnect two connectors [1] and remove the harness [2] from two clamps [3].
6) Remove two screws [4], shift the positioning plate unit [5] forward once, and then pull it out from the paper feeding side.



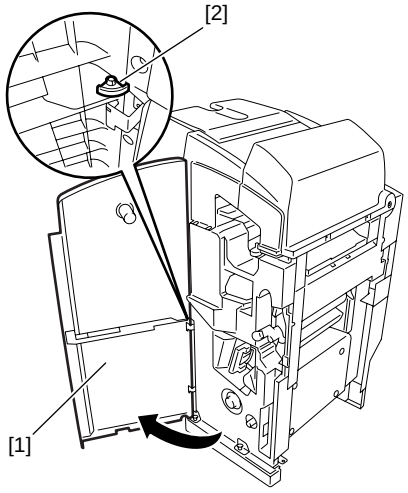
F-3-117

3.3 Document Feeding System

3.3.1 Process Tray Assembly

3.3.1.1 Removing the Front Door 0009-4454

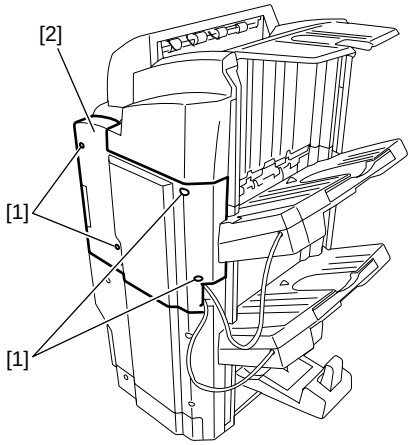
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-118

3.3.1.2 Removing the Rear Upper Cover 0009-3646

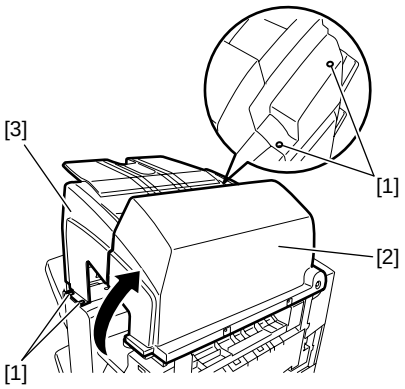
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-119

3.3.1.3 Removing the Escape Tray Cover 0009-4419

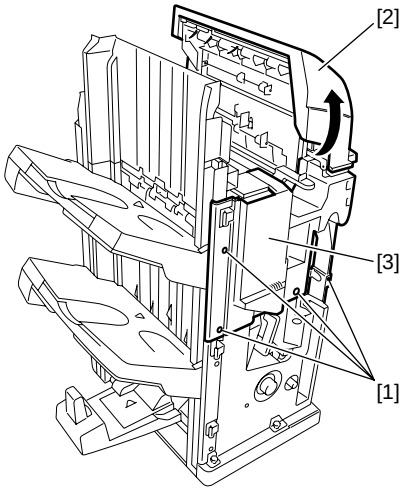
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-120

3.3.1.4 Removing the Front Inside Upper Cover 0009-3648

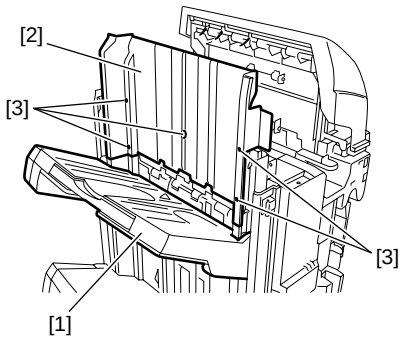
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-121

3.3.1.5 Removing the Grate-shaped Upper Guide 0009-3651

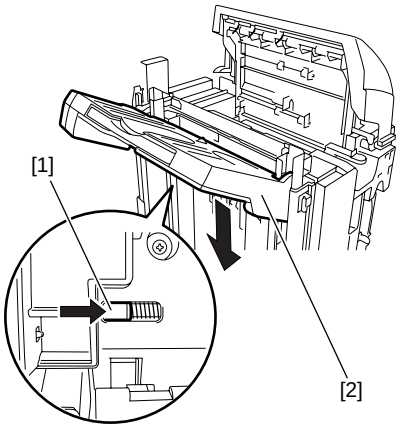
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-122

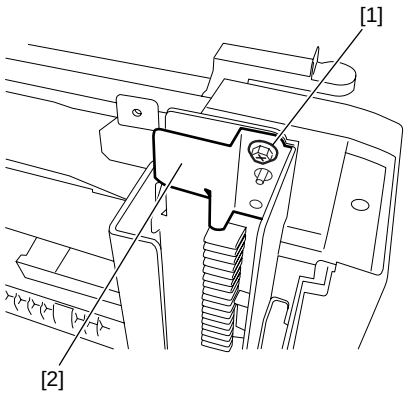
3.3.1.6 Removing the Tray 1 0009-3652

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



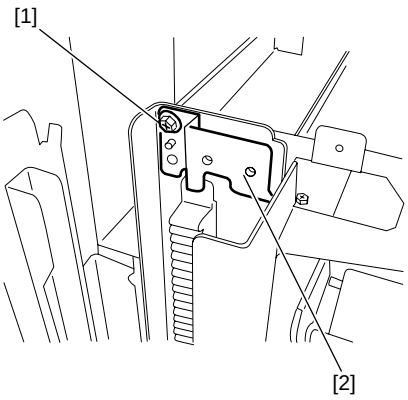
F-3-123

1) Remove the screw [1] and remove the stopper [2] at the front.



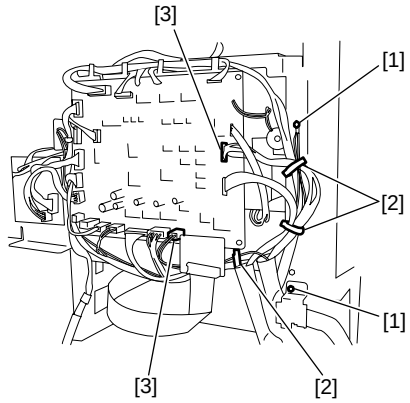
F-3-124

2) Remove the screw [1] and remove the stopper [2] at the back.



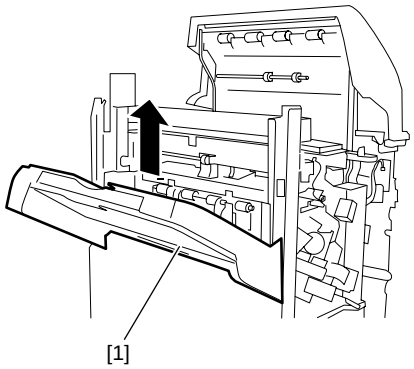
F-3-125

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



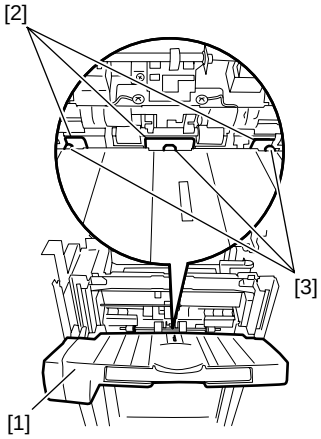
F-3-126

4) Lift tray 1 [1] to remove it.



F-3-127

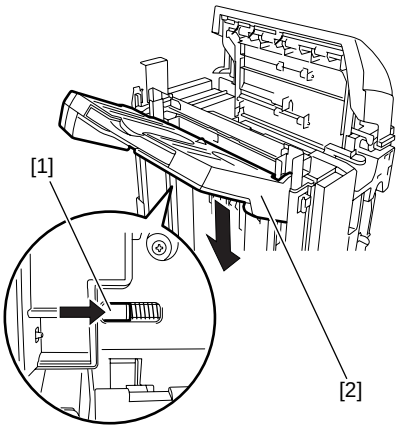
⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.



F-3-128

3.3.1.7 Removing the Tray 2 0009-3653

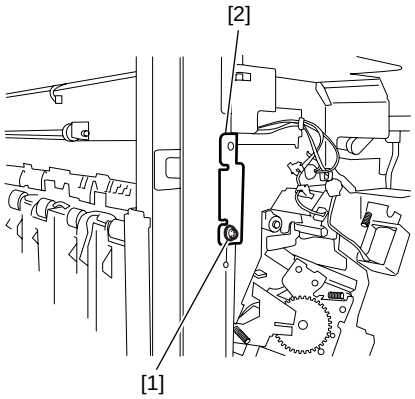
⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



F-3-129

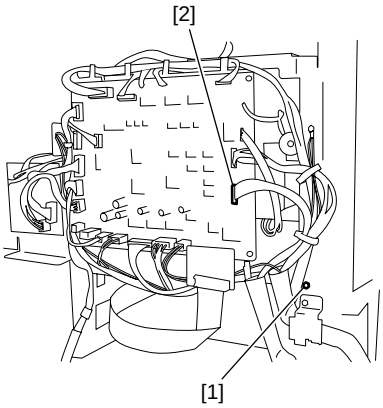
---

1) Remove screw [1] and remove the stopper [2].



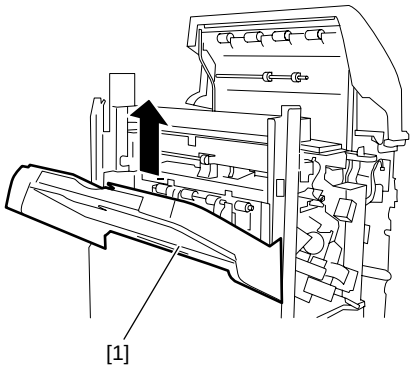
F-3-130

2) Remove the screw [1] and disconnect the connector [2].



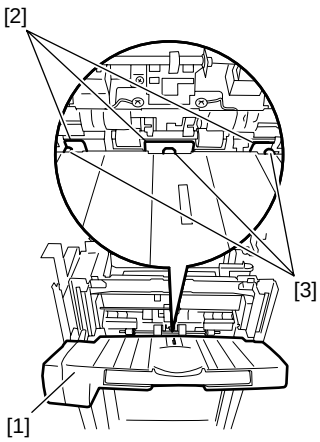
F-3-131

3) Lift tray 2 [1] to remove it.



F-3-132

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

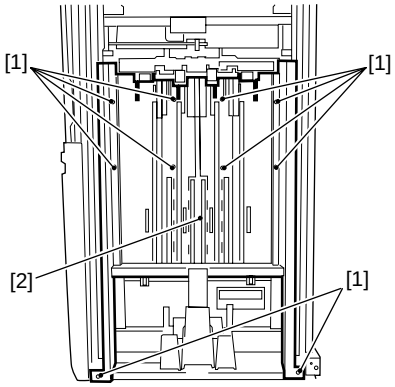


F-3-133

3.3.1.8 Removing the Grate-shaped Lower Guide 0009-3654

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.

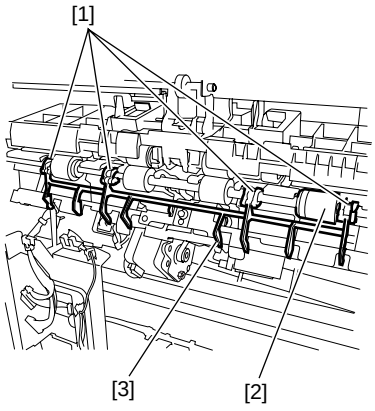


F-3-134

3.3.1.9 Removing the Processing Tray 0009-3636

1) Unfasten four snap fasteners [1] and remove the sensor flag [3] from the stack delivery roller [2].

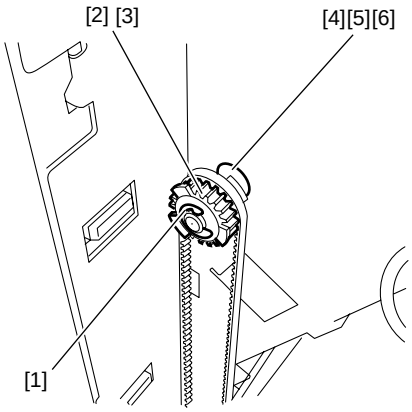
⚠Hold the snap fastener at the base when unfastening because the sensor flag arm can break easily. When fastening, insert the boss of the sensor flag snap fastener in the hole on the processing tray side.



F-3-135

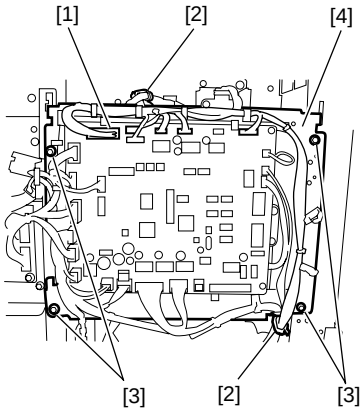
2) Remove the stack delivery roller front side E ring [1], gear [2], parallel pin [3], E ring [4], washer [5], and bearing [6].

⚠The parallel pin [3] drops when the gear [2] is removed. Be careful not to loose it.



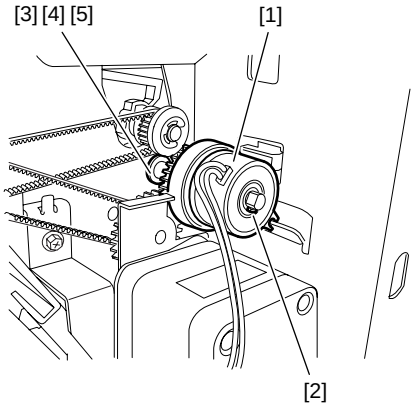
F-3-136

3) Remove all finisher controller PCB connectors[1] and remove the harness from two clamp [2].
4) Remove four screws [3] and remove the finisher controller PCB [4].



F-3-137

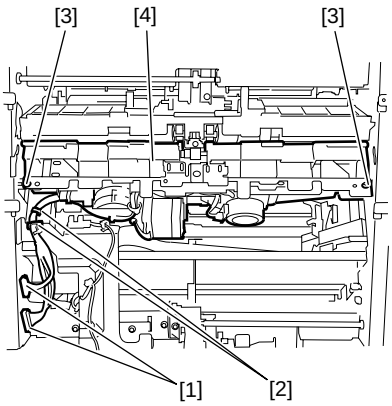
5) Release the claw [1] of the stack delivery roller rear side clutch [2] and remove the clutch [2].
6) Remove the E ring [3], washer [4], and bearing [5] and remove the stack delivery roller.



F-3-138

7) Disconnect two connectors [1] and remove harness from the clamp and edge saddle [2].
8) Remove two screws [3] and pull out the processing tray [4] in the paper delivery direction.

⚠When removing parts inside the processing tray, be careful not to exert force on the aligning plate (front/rear) or the rear end stopper plate.

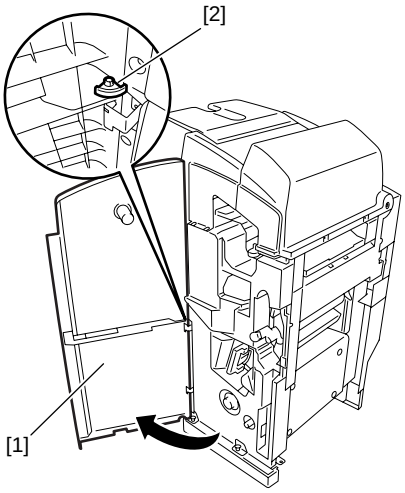


F-3-139

3.3.2 Tray 1

3.3.2.1 Removing the Front Door 0009-4456

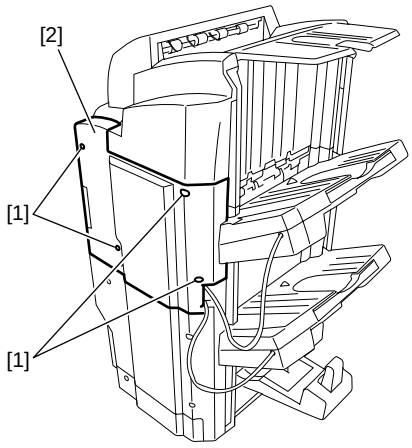
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-140

3.3.2.2 Removing the Rear Upper Cover 0009-3586

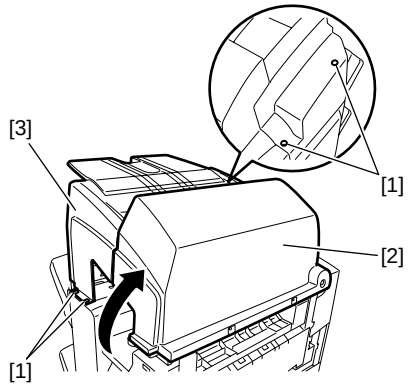
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-141

3.3.2.3 Removing the Escape Tray Cover 0009-4426

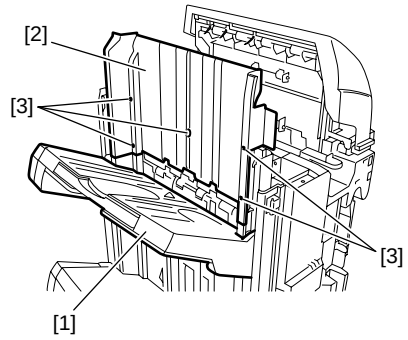
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-142

3.3.2.4 Removing the Grate-shaped Upper Guide 0009-3612

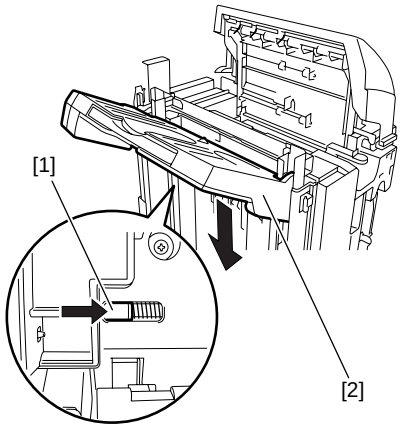
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-143

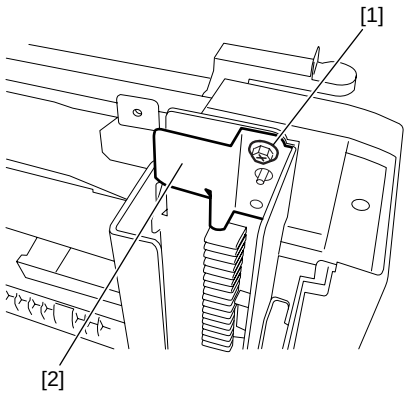
3.3.2.5 Removing the Tray 1 0009-3577

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



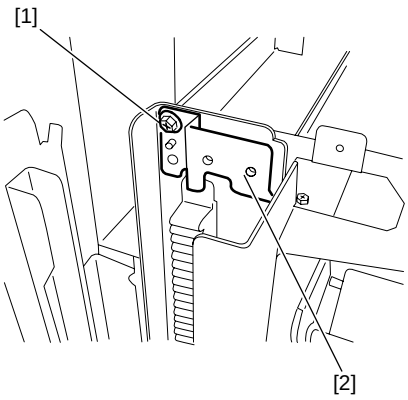
F-3-144

1) Remove the screw [1] and remove the stopper [2] at the front.



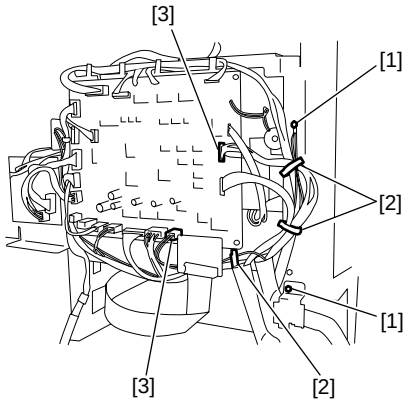
F-3-145

2) Remove the screw [1] and remove the stopper [2] at the back.



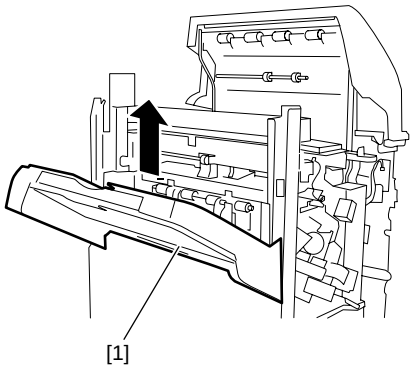
F-3-146

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



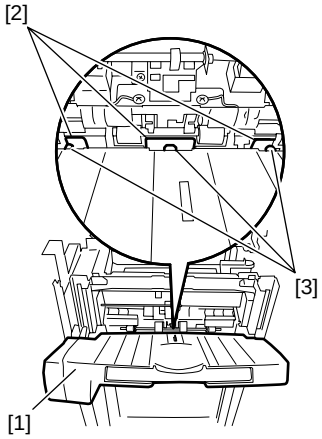
F-3-147

4) Lift tray 1 [1] to remove it.



F-3-148

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

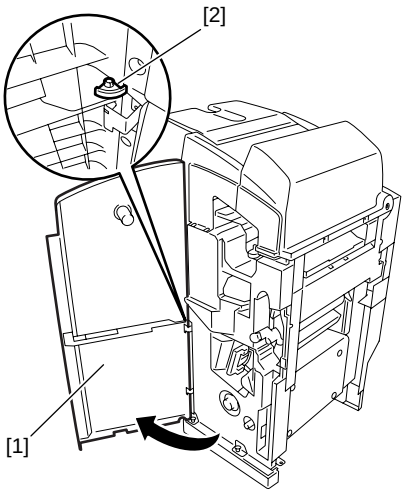


F-3-149

3.3.3 Tray 2

3.3.3.1 Removing the Front Door 0009-4457

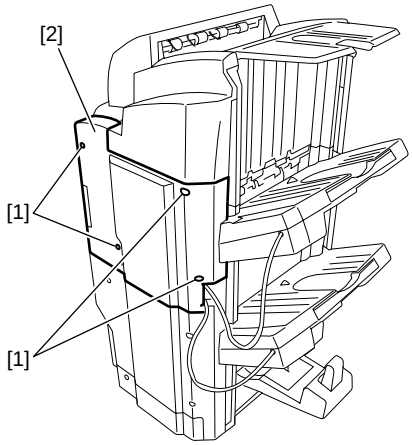
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-150

3.3.3.2 Removing the Rear Upper Cover 0009-3609

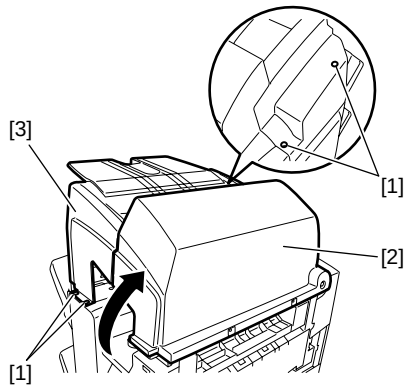
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-151

3.3.3.3 Removing the Escape Tray Cover 0009-4427

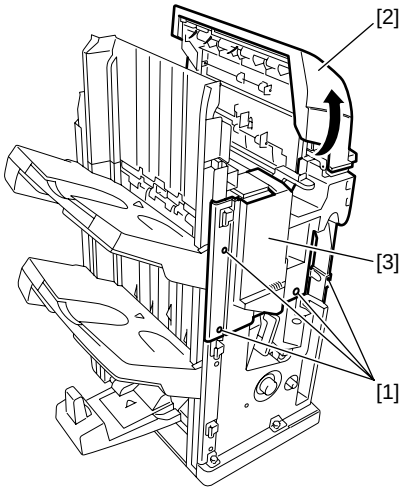
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-152

3.3.3.4 Removing the Front Inside Upper Cover 0009-3614

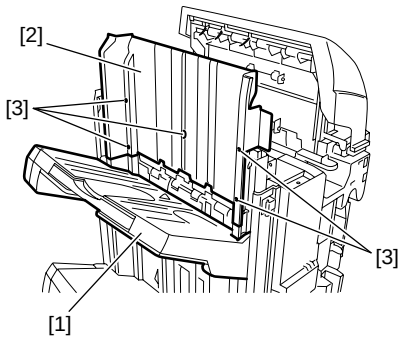
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-153

3.3.3.5 Removing the Grate-shaped Upper Guide 0009-3615

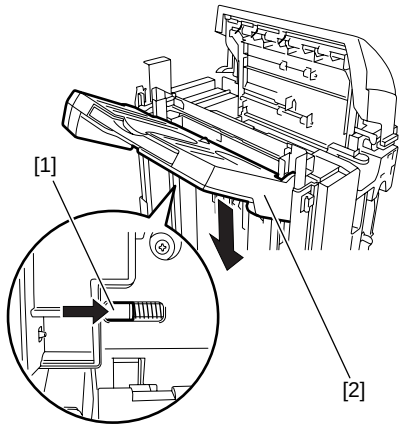
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-154

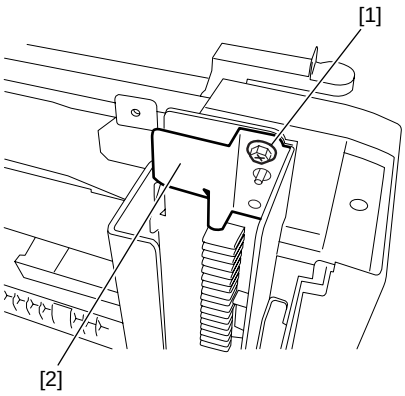
3.3.3.6 Removing the Tray 1 0009-3595

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



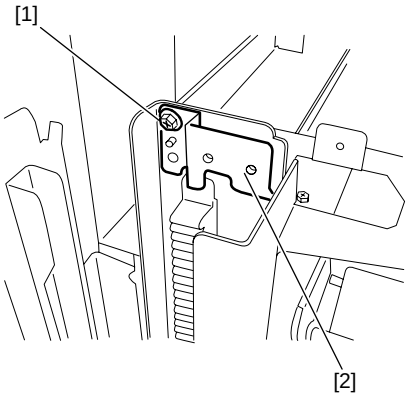
F-3-155

1) Remove the screw [1] and remove the stopper [2] at the front.



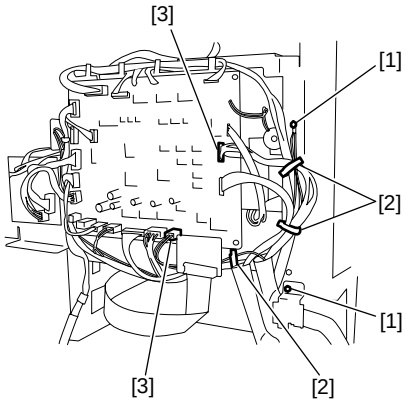
F-3-156

2) Remove the screw [1] and remove the stopper [2] at the back.



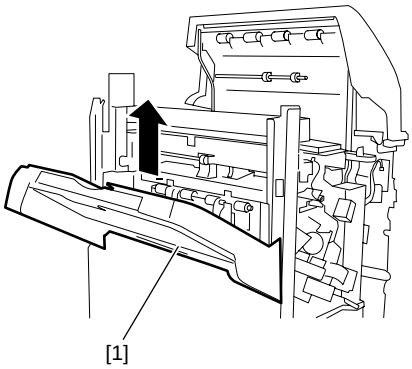
F-3-157

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



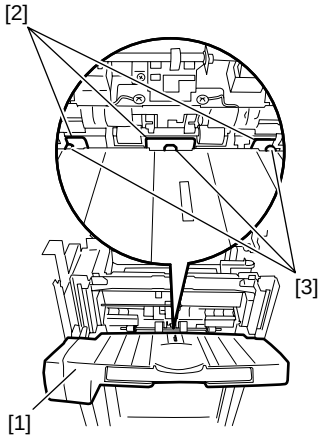
F-3-158

4) Lift tray 1 [1] to remove it.



F-3-159

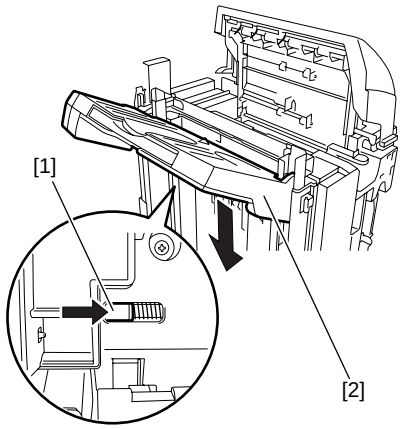
⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.



F-3-160

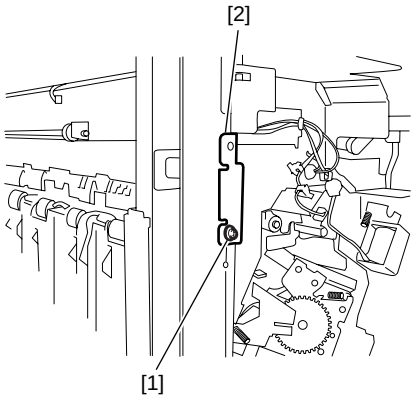
3.3.3.7 Removing the Tray 2 0009-3589

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



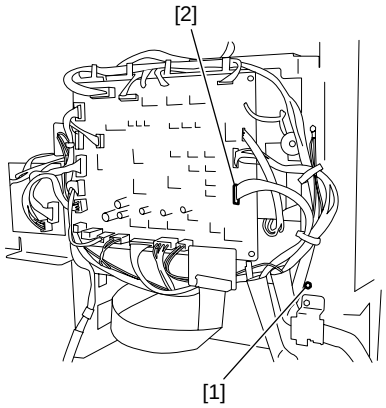
F-3-161

1) Remove screw [1] and remove the stopper [2].



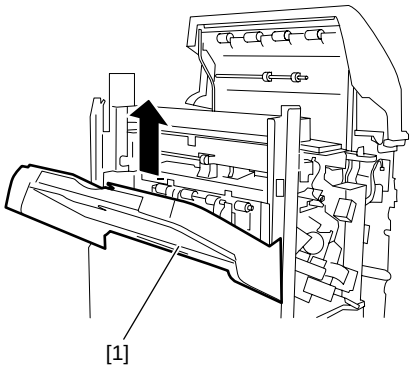
F-3-162

2) Remove the screw [1] and disconnect the connector [2].



F-3-163

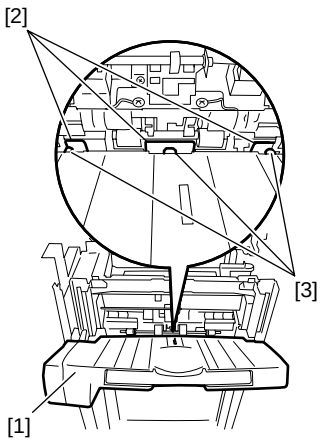
3) Lift tray 2 [1] to remove it.



F-3-164

⚠When installing the tray, be careful not to twist the

tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

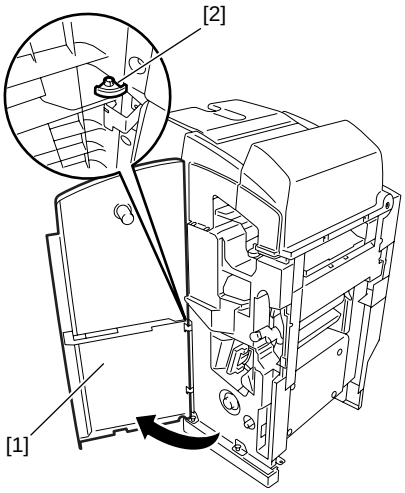


F-3-165

3.3.4 Buffer Roller

3.3.4.1 Removing the Front Door 0009-4458

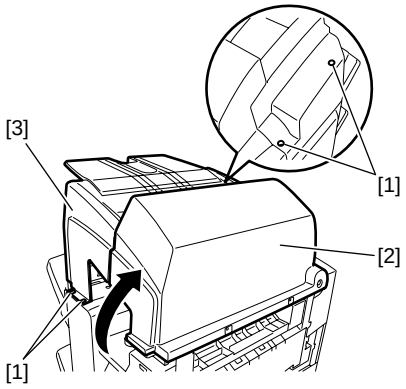
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-166

3.3.4.2 Removing the Escape Tray Cover 0009-4428

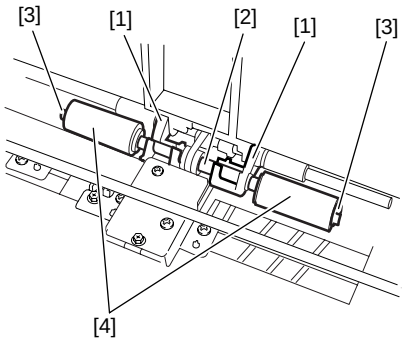
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-167

3.3.4.3 Removing the Buffer Roller 0009-4156

1) Remove the buffer roller axis [2] from two arms [1].
2) Remove two clips [3] and remove two buffer rollers [4].

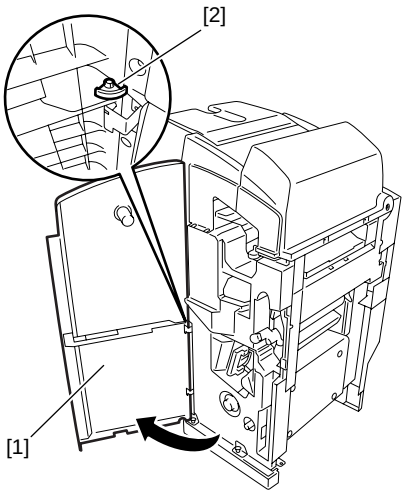


F-3-168

3.3.5 Return Roller

3.3.5.1 Removing the Front Door 0009-4459

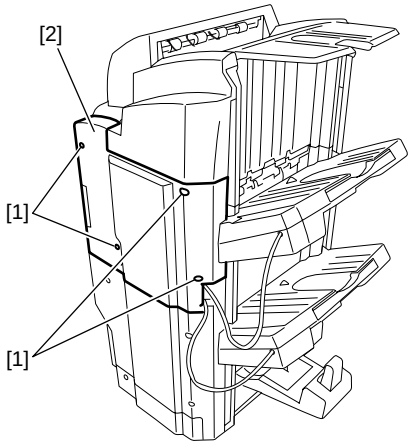
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-169

3.3.5.2 Removing the Rear Upper Cover 0009-3711

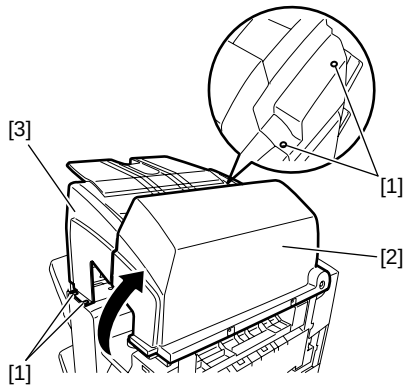
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-170

3.3.5.3 Removing the Escape Tray Cover 0009-4429

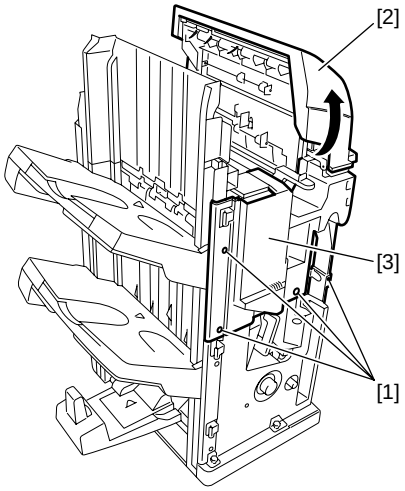
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-171

3.3.5.4 Removing the Front Inside Upper Cover 0009-3713

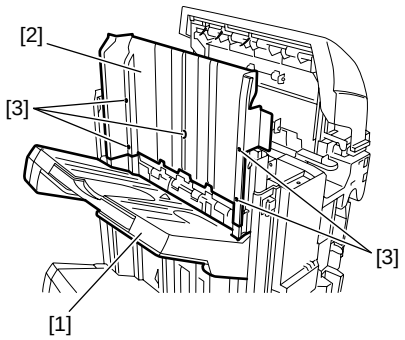
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-172

3.3.5.5 Removing the Grate-shaped Upper Guide 0009-3714

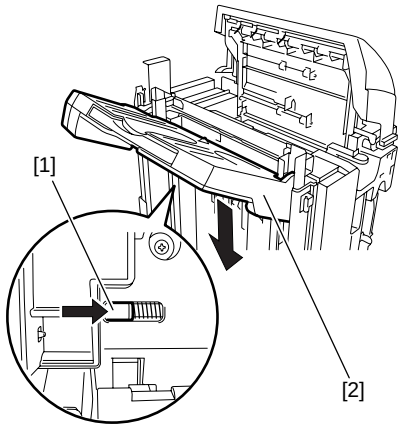
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-173

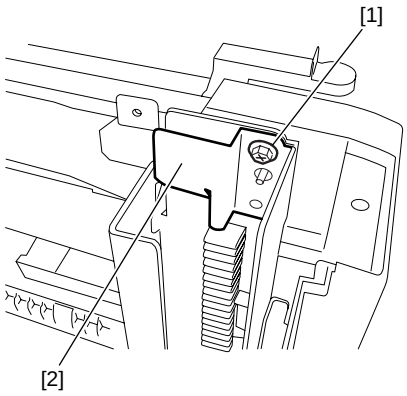
3.3.5.6 Removing the Tray 1 0009-3715

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



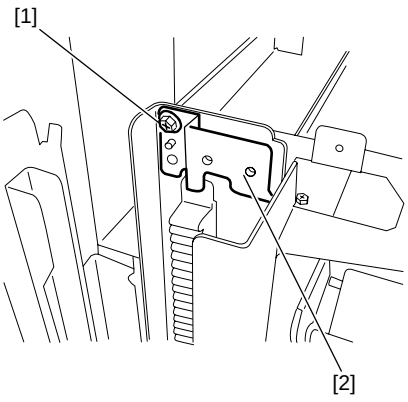
F-3-174

1) Remove the screw [1] and remove the stopper [2] at the front.



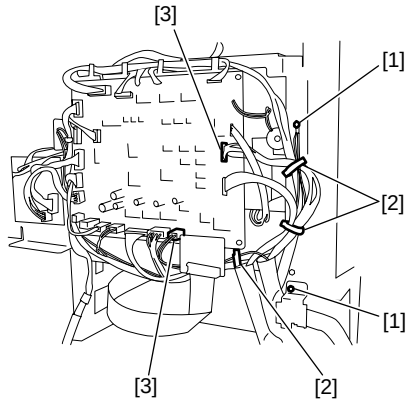
F-3-175

2) Remove the screw [1] and remove the stopper [2] at the back.



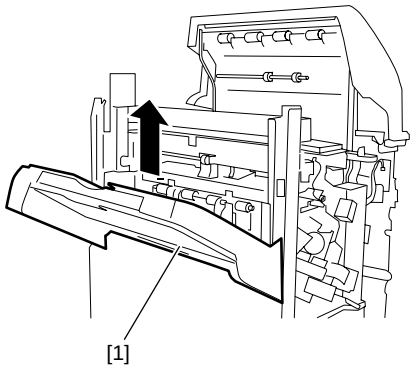
F-3-176

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



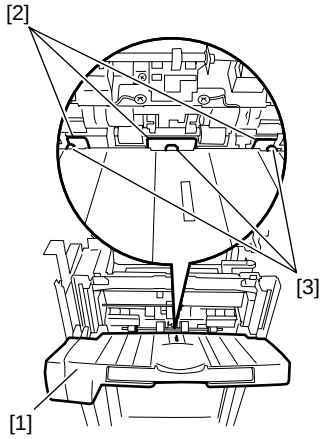
F-3-177

4) Lift tray 1 [1] to remove it.



F-3-178

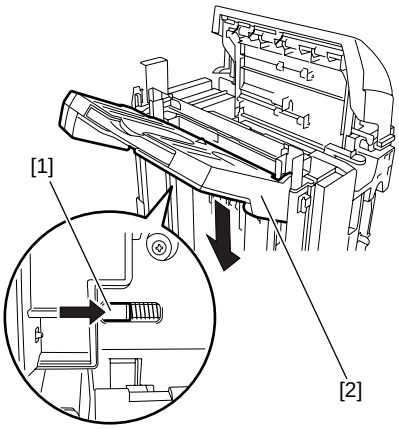
⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.



F-3-179

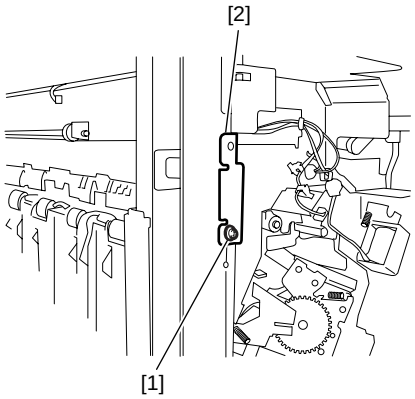
3.3.5.7 Removing the Tray 2 0009-3716

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



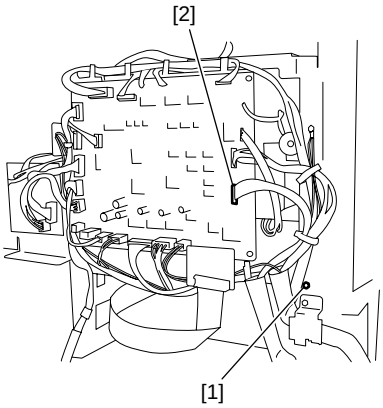
F-3-180

1) Remove screw [1] and remove the stopper [2].



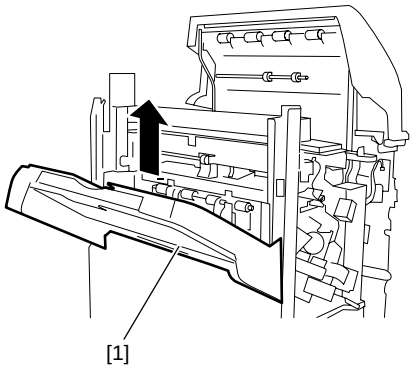
F-3-181

2) Remove the screw [1] and disconnect the connector [2].



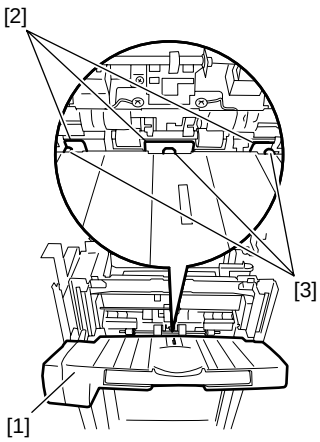
F-3-182

3) Lift tray 2 [1] to remove it.



F-3-183

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

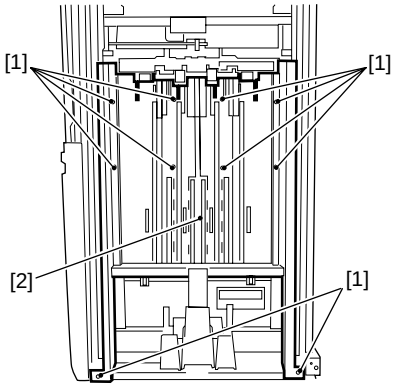


F-3-184

3.3.5.8 Removing the Grate-shaped Lower Guide 0009-3718

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.

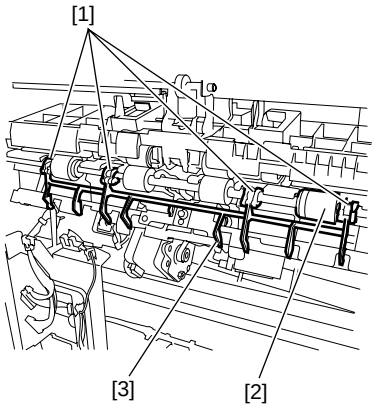


F-3-185

3.3.5.9 Removing the Processing Tray 0009-3719

1) Unfasten four snap fasteners [1] and remove the sensor flag [3] from the stack delivery roller [2].

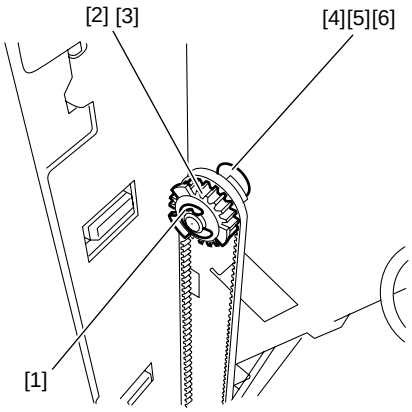
⚠Hold the snap fastener at the base when unfastening because the sensor flag arm can break easily. When fastening, insert the boss of the sensor flag snap fastener in the hole on the processing tray side.



F-3-186

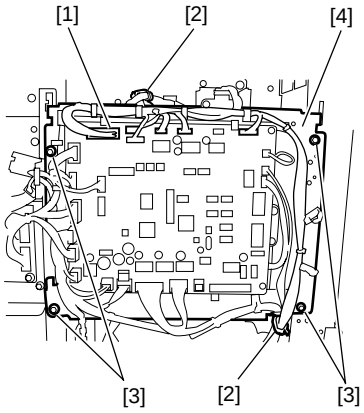
2) Remove the stack delivery roller front side E ring [1], gear [2], parallel pin [3], E ring [4], washer [5], and bearing [6].

⚠The parallel pin [3] drops when the gear [2] is removed. Be careful not to loose it.



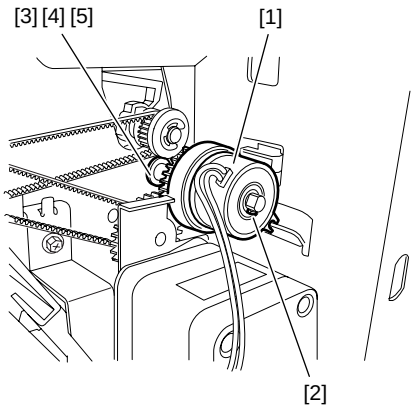
F-3-187

3) Remove all finisher controller PCB connectors[1] and remove the harness from two clamp [2].
4) Remove four screws [3] and remove the finisher controller PCB [4].



F-3-188

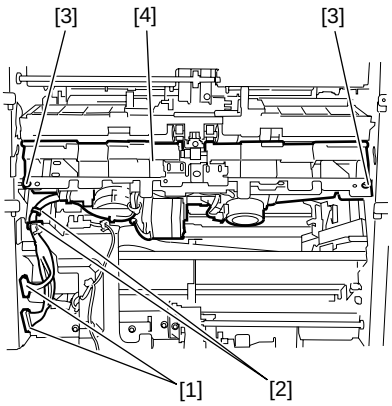
5) Release the claw [1] of the stack delivery roller rear side clutch [2] and remove the clutch [2].
6) Remove the E ring [3], washer [4], and bearing [5] and remove the stack delivery roller.



F-3-189

7) Disconnect two connectors [1] and remove harness from the clamp and edge saddle [2].
8) Remove two screws [3] and pull out the processing tray [4] in the paper delivery direction.

⚠When removing parts inside the processing tray, be careful not to exert force on the aligning plate (front/rear) or the rear end stopper plate.



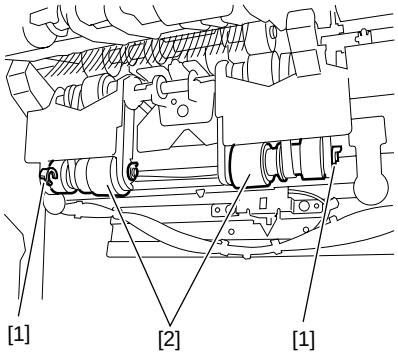
F-3-190

3.3.5.10 Removing the Return Roller 0009-3709

⚠The return roller is subjected to special production processing known as "aging" to prevent possible increases in its feeding power. Do not clean the return roller. Cleaning (with water, for example), will increase its feed power, ultimately causing feeding faults.
Moreover, be sure to avoid touching the surface of the return roller when mounting it to the machine.

1) Remove two clips [1] of the return roller axis.
2) Pull out the return roller axis and remove two return rollers [2] together with collar.
3) Separate the return roller and collar.

⚠Note the direction when installing the return roller.
Front side : Black
Rear side : White
The paper will not stack properly if it is installed in the wrong direction.

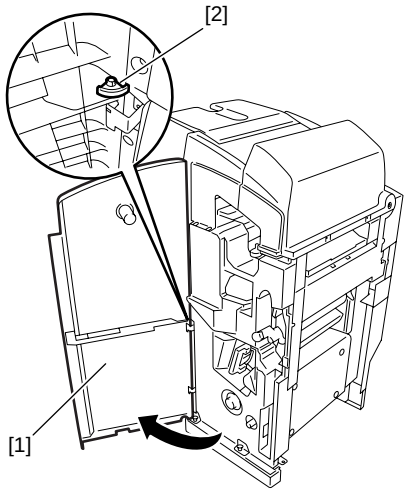


F-3-191

3.3.6 Return Roller Unit

3.3.6.1 Removing the Front Door 0009-4462

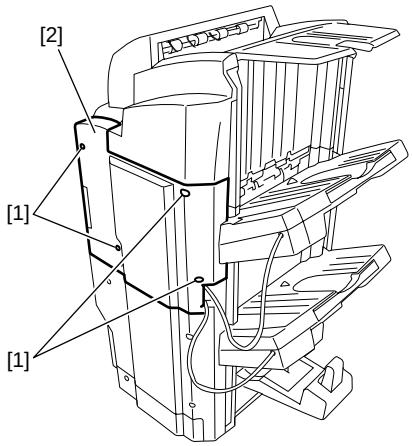
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-192

3.3.6.2 Removing the Rear Upper Cover 0009-3684

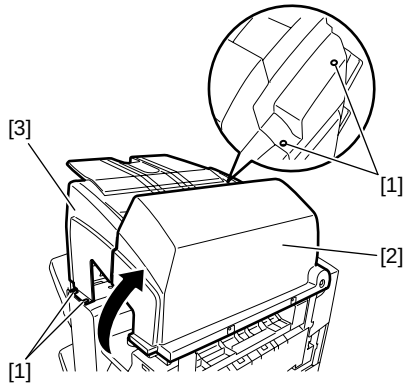
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-193

3.3.6.3 Removing the Escape Tray Cover 0009-4430

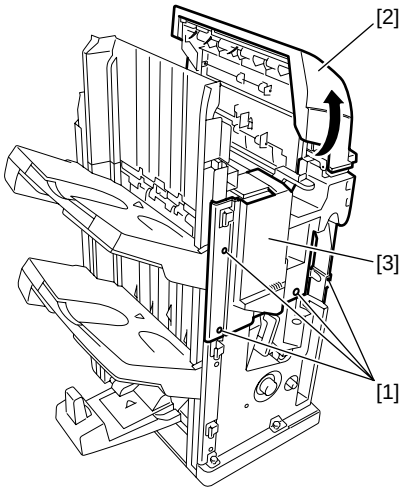
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-194

3.3.6.4 Removing the Front Inside Upper Cover 0009-3687

1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].

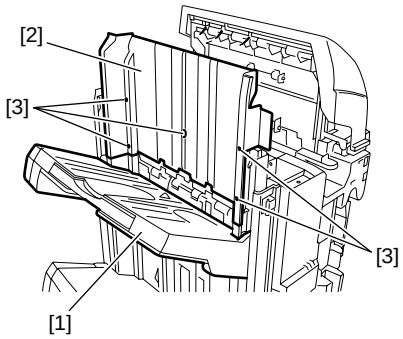


F-3-195

3.3.6.5 Removing the Grate-shaped Upper Guide 0009-3688

1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").

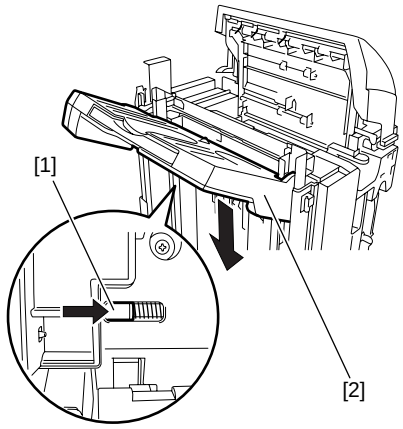
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-196

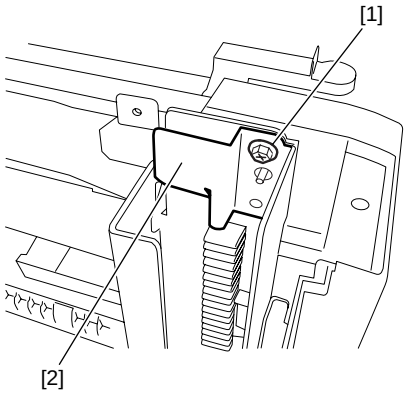
3.3.6.6 Removing the Tray 1 0009-3689

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



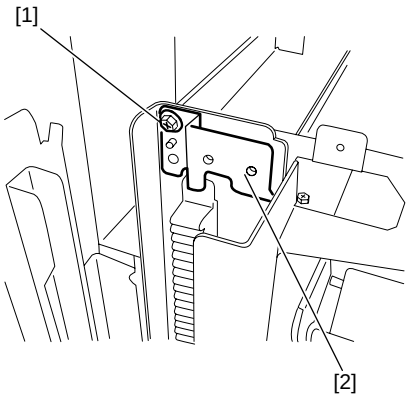
F-3-197

1) Remove the screw [1] and remove the stopper [2] at the front.



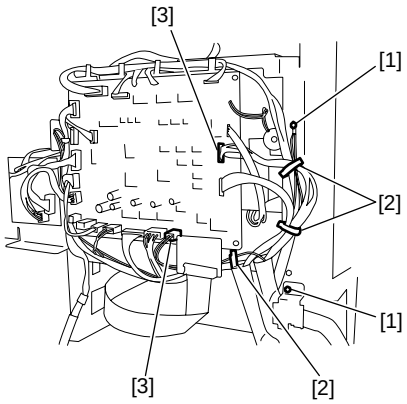
F-3-198

2) Remove the screw [1] and remove the stopper [2] at the back.



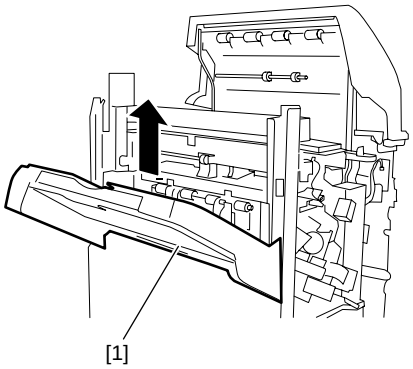
F-3-199

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



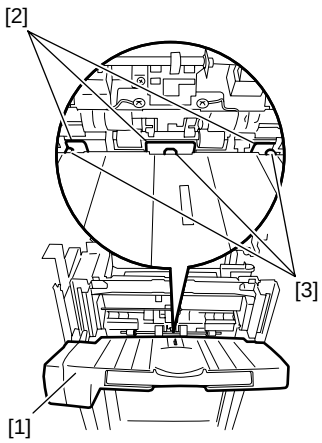
F-3-200

4) Lift tray 1 [1] to remove it.



F-3-201

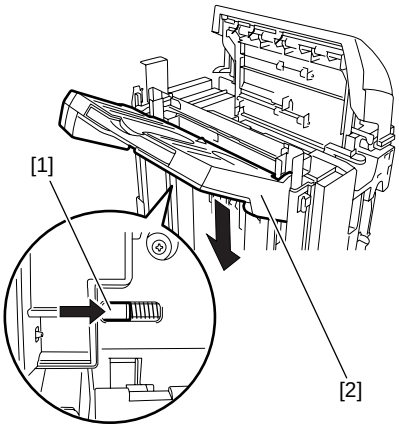
⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.



F-3-202

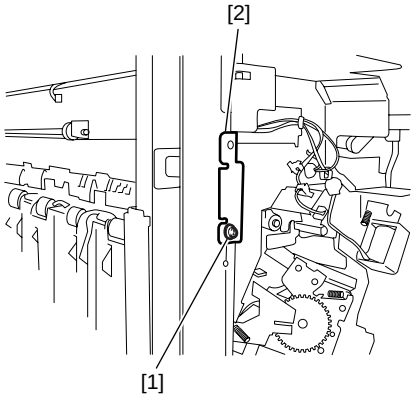
3.3.6.7 Removing the Tray 2 0009-3690

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



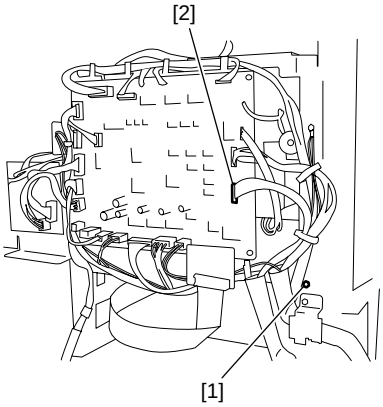
F-3-203

1) Remove screw [1] and remove the stopper [2].



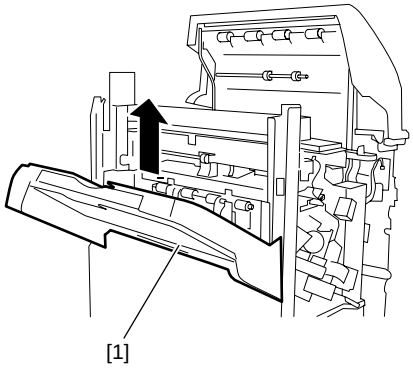
F-3-204

2) Remove the screw [1] and disconnect the connector [2].



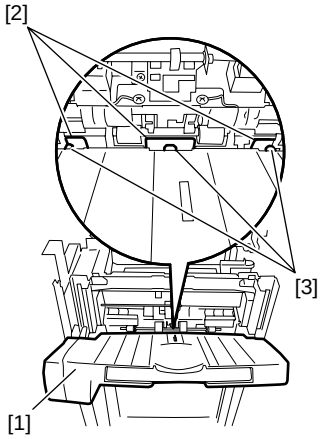
F-3-205

3) Lift tray 2 [1] to remove it.



F-3-206

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

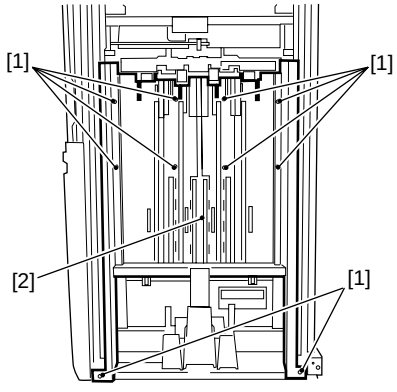


F-3-207

3.3.6.8 Removing the Grate-shaped Lower Guide 0009-3691

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

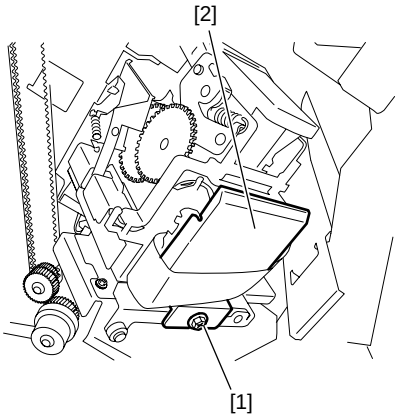
⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.



F-3-208

3.3.6.9 Removing the Stapler 0009-3692

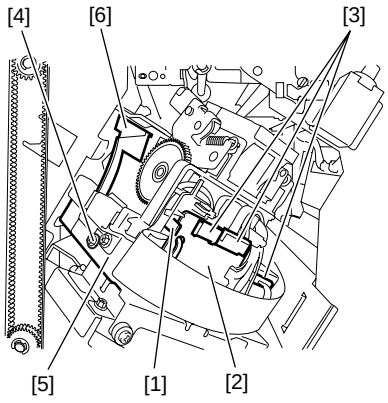
1) Pull out the stapler, remove screw [1], and remove the PCB cover [2].



F-3-209

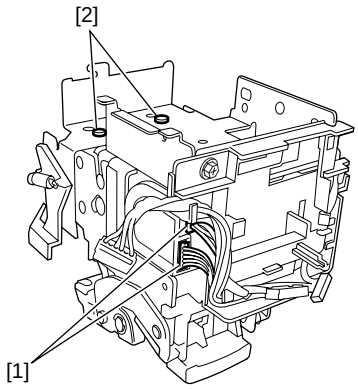
2) Release the claw [1] and remove the PCB [2].
3) Disconnect three connectors [3].
4) Remove screw [4] and remove the stapler together with the stapler base [5].

⚠When removing, be careful not to damage the flag [6].



F-3-210

5) Turn the stapler over, disconnect two connectors [1], remove two screws [2], and remove the stapler from the stapler base.

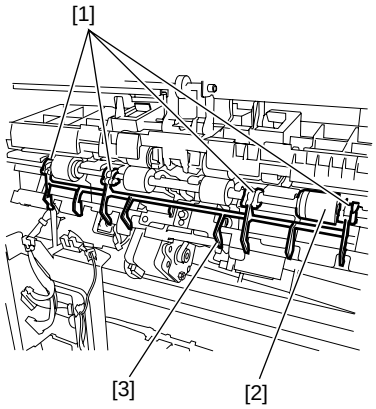


F-3-211

3.3.6.10 Removing the Processing Tray 0009-3693

1) Unfasten four snap fasteners [1] and remove the sensor flag [3] from the stack delivery roller [2].

⚠Hold the snap fastener at the base when unfastening because the sensor flag arm can break easily. When fastening, insert the boss of the sensor flag snap fastener in the hole on the processing tray side.

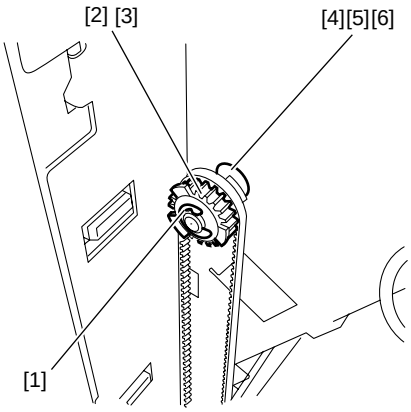


F-3-212

2) Remove the stack delivery roller front side E ring [1], gear [2], parallel pin [3], E ring [4], washer [5], and bearing [6].

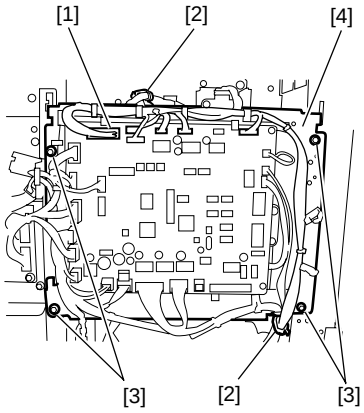
⚠The parallel pin [3] drops when the gear [2] is

removed. Be careful not to loose it.



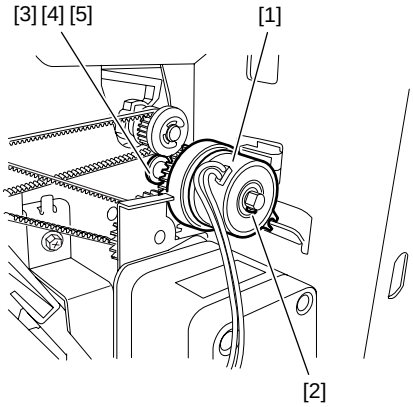
F-3-213

3) Remove all finisher controller PCB connectors[1] and remove the harness from two clamp [2].
4) Remove four screws [3] and remove the finisher controller PCB [4].



F-3-214

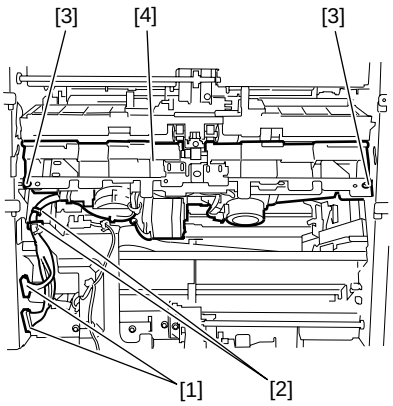
5) Release the claw [1] of the stack delivery roller rear side clutch [2] and remove the clutch [2].
6) Remove the E ring [3], washer [4], and bearing [5] and remove the stack delivery roller.



F-3-215

7) Disconnect two connectors [1] and remove harness from the clamp and edge saddle [2].
8) Remove two screws [3] and pull out the processing tray [4] in the paper delivery direction.

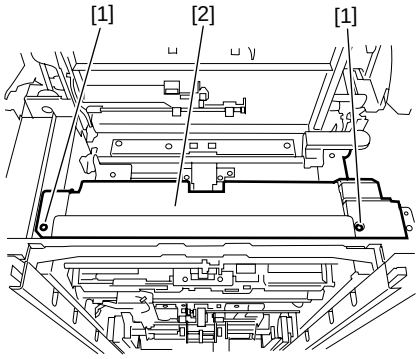
⚠When removing parts inside the processing tray, be careful not to exert force on the aligning plate (front/rear) or the rear end stopper plate.



F-3-216

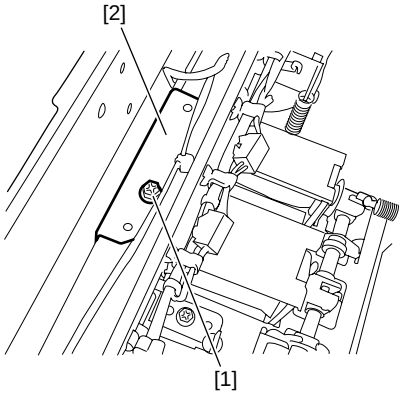
3.3.6.11 Removing the Swing Unit 0009-3695

1)Remove two screws [1] and remove the solenoid cover [2].



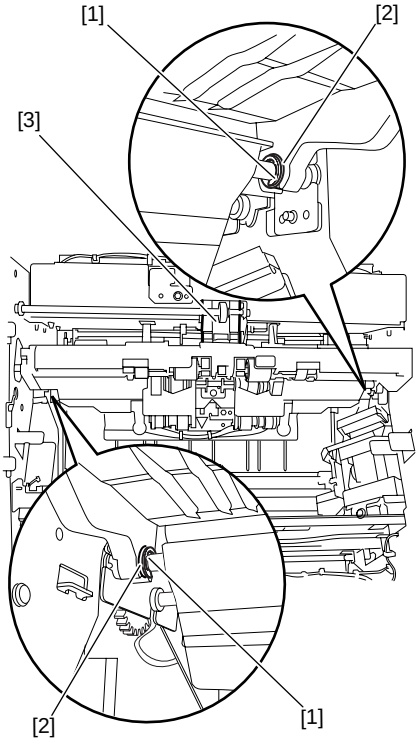
F-3-217

2) Remove screw [1] and pull up the swing pressure guide [2].



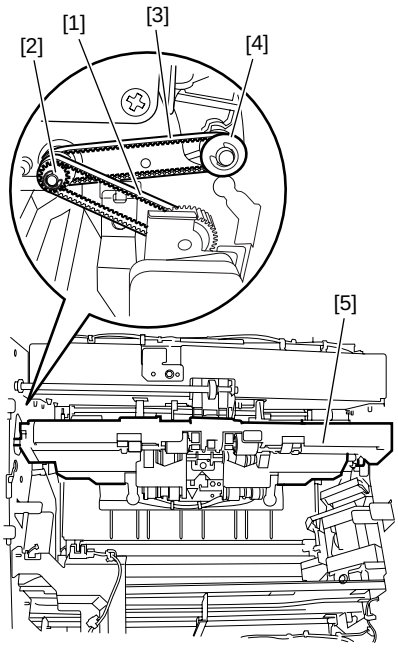
F-3-218

3) Remove two E rings [1] at the joint between the swing unit and the return roller unit and then slide the two return roller unit collars [2] inside.
4) Unhook the swing pressure rack [3] from the swing unit center hook.



F-3-219

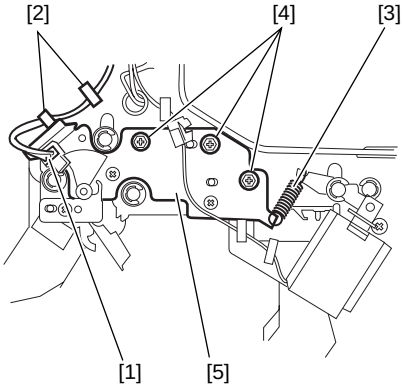
5) Remove the belt [1] from the gear [2], remove the belt [3] from the gear [2] and gear [4], and pull out the swing unit [5] from the delivery direction.



F-3-220

3.3.6.12 Removing the Return Roller Unit 0009-3679

1) Remove the return roller unit front side connector [1] and remove the harness from two clamps [2].
2) Remove the spring [3] and three screws [4] and pull out the return roller unit [5] from the front side.

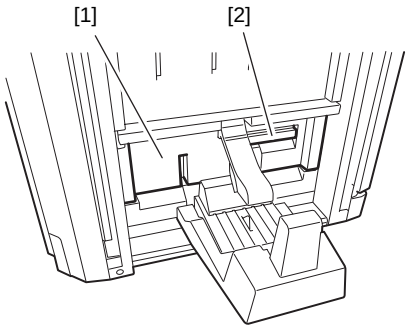


F-3-221

3.3.7 Saddle Delivery Tray Unit

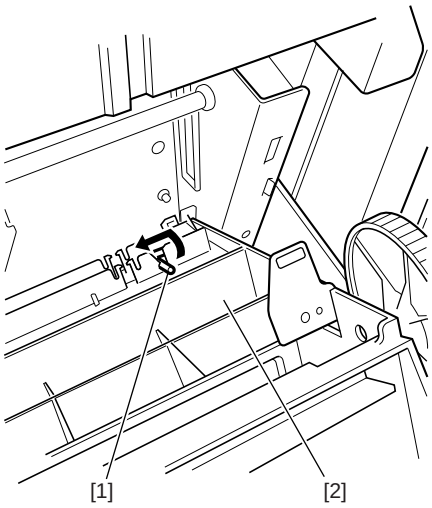
3.3.7.1 Removing the Saddle Delivery Tray Unit 0009-3751

1) Lift the saddle delivery tray unit [1] open/close lever [2] and open the saddle delivery tray unit.



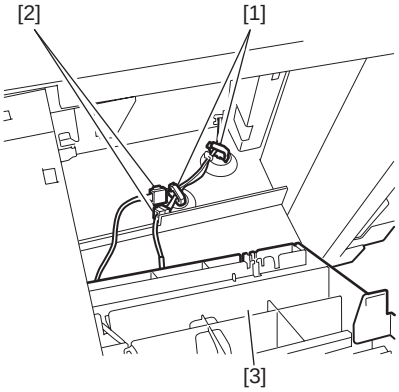
F-3-222

2) Remove the door axis [1] in the direction of the arrow and pull out the saddle delivery tray unit [2] toward the front.



F-3-223

3) Remove the harness from two clamps [1].
4) Remove two connectors [2] and remove the saddle delivery tray unit [3].

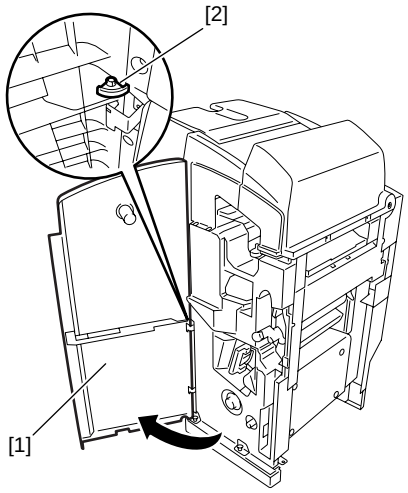


F-3-224

3.3.8 Upper Delivery Guide

3.3.8.1 Removing the Front Door 0009-4463

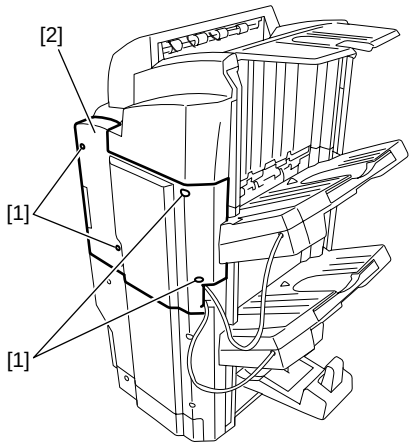
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-225

3.3.8.2 Removing the Rear Upper Cover 0009-4090

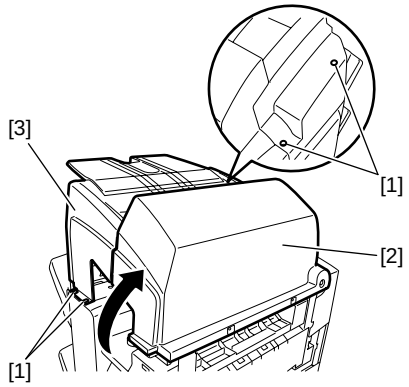
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-226

3.3.8.3 Removing the Escape Tray Cover 0009-4431

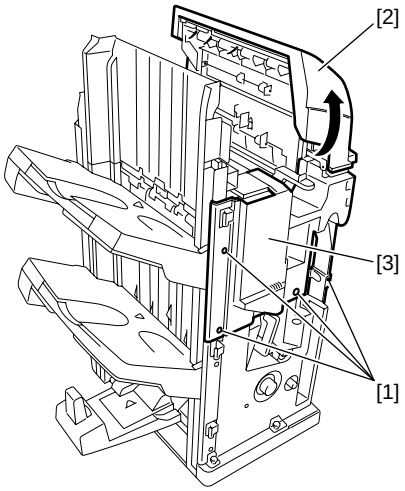
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-227

3.3.8.4 Removing the Front Inside Upper Cover 0009-4092

1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].

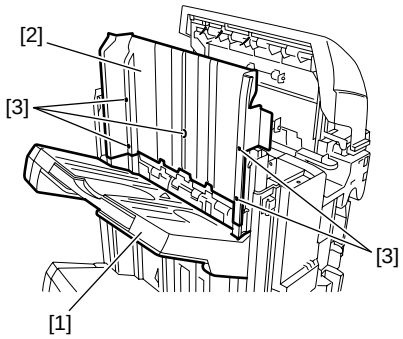


F-3-228

3.3.8.5 Removing the Grate-shaped Upper Guide 0009-4093

1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").

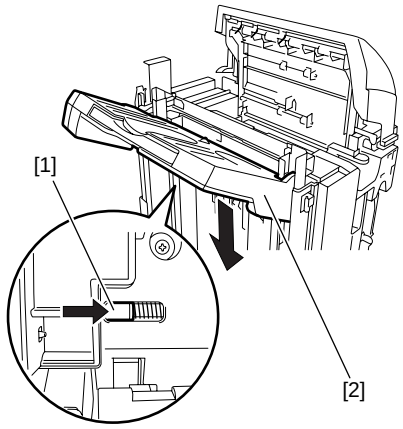
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-229

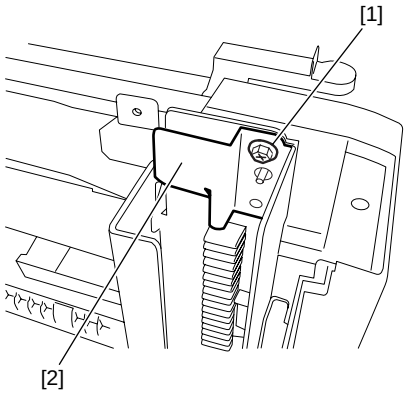
3.3.8.6 Removing the Tray 1 0009-4094

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



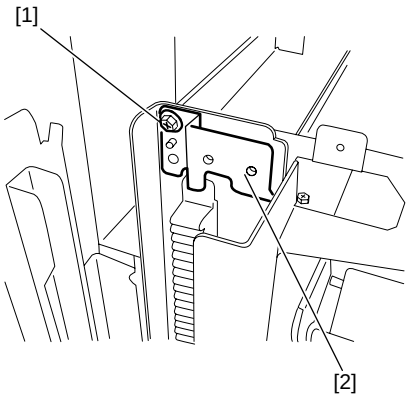
F-3-230

1) Remove the screw [1] and remove the stopper [2] at the front.



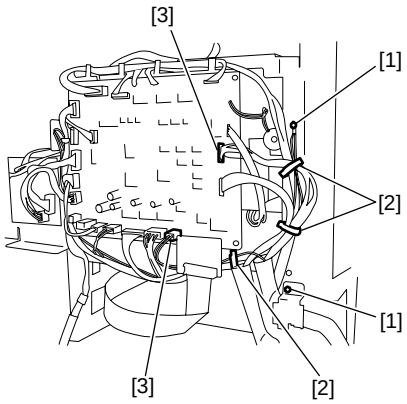
F-3-231

2) Remove the screw [1] and remove the stopper [2] at the back.



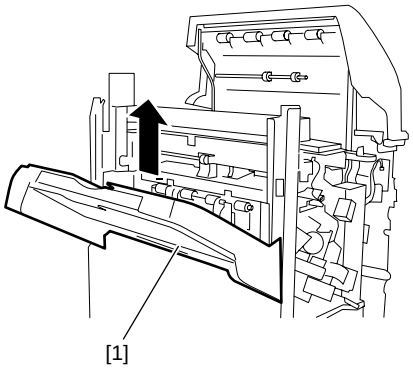
F-3-232

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



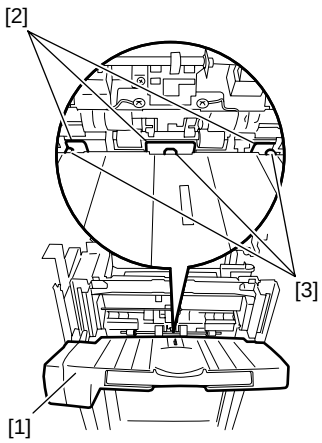
F-3-233

4) Lift tray 1 [1] to remove it.



F-3-234

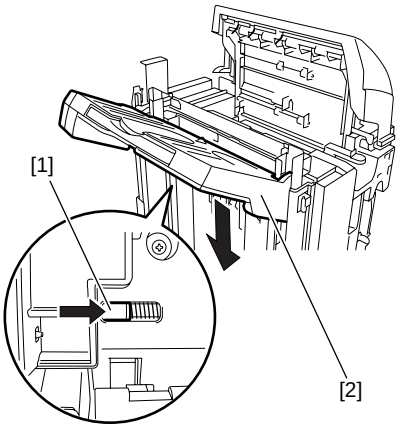
⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.



F-3-235

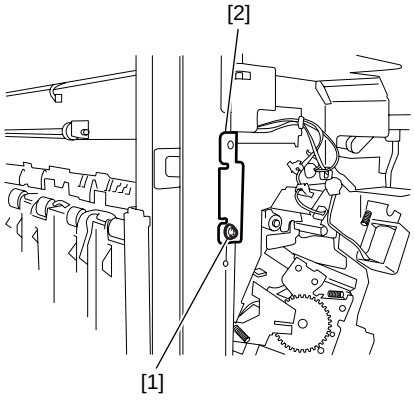
3.3.8.7 Removing the Tray 2 0009-4095

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



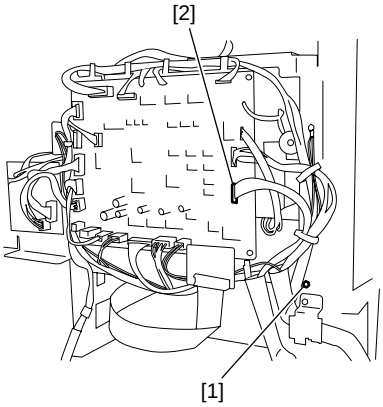
F-3-236

1) Remove screw [1] and remove the stopper [2].



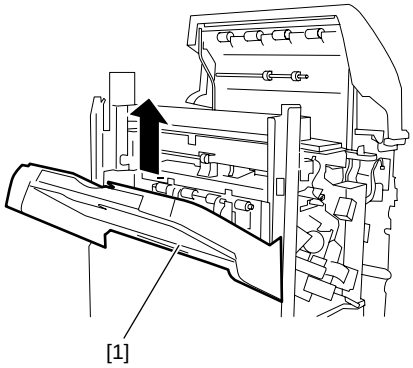
F-3-237

2) Remove the screw [1] and disconnect the connector [2].



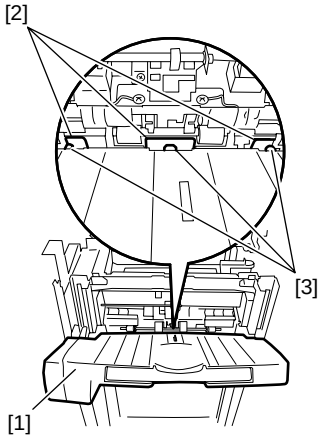
F-3-238

3) Lift tray 2 [1] to remove it.



F-3-239

⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

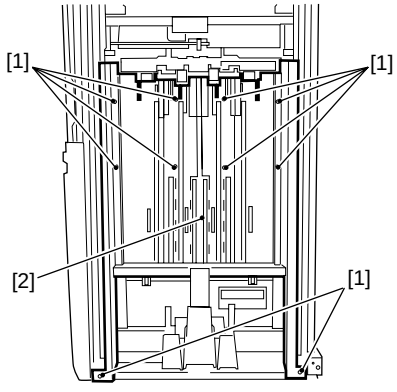


F-3-240

3.3.8.8 Removing the Grate-shaped Lower Guide 0009-4096

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

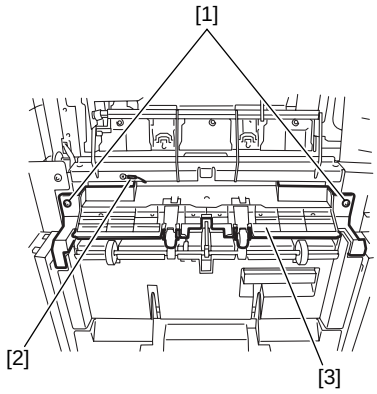
⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.



F-3-241

3.3.8.9 Removing the Upper Delivery Guide 0009-4088

1) Remove two screws [1] and ground wire [2] and remove the upper delivery guide [3].

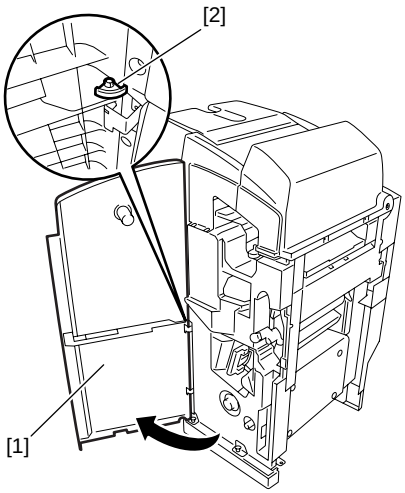


F-3-242

3.3.9 Paper Folding Roller

3.3.9.1 Removing the Front Door 0009-4466

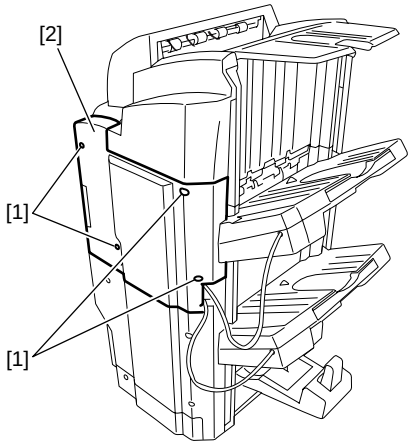
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-243

3.3.9.2 Removing the Rear Upper Cover 0009-4099

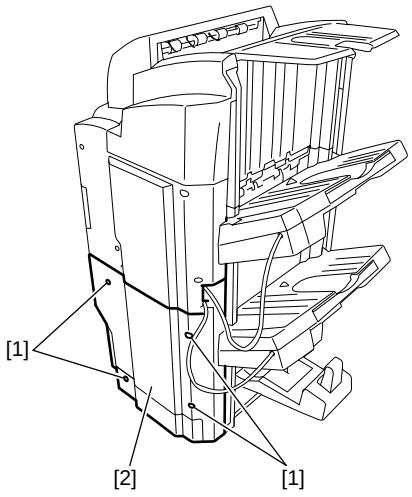
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-244

3.3.9.3 Removing the Rear Lower Cover 0009-4100

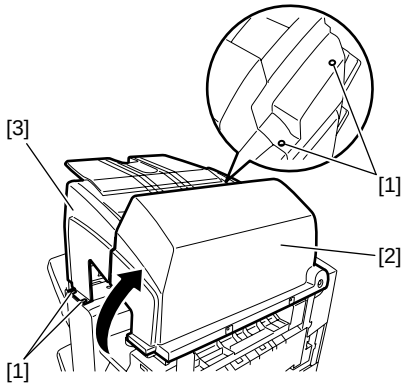
1) Remove four screws [1] and remove the rear lower cover [2].



F-3-245

3.3.9.4 Removing the Escape Tray Cover 0009-4439

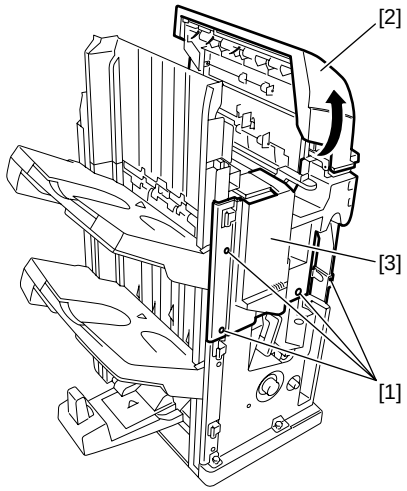
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-246

3.3.9.5 Removing the Front Inside Upper Cover 0009-4103

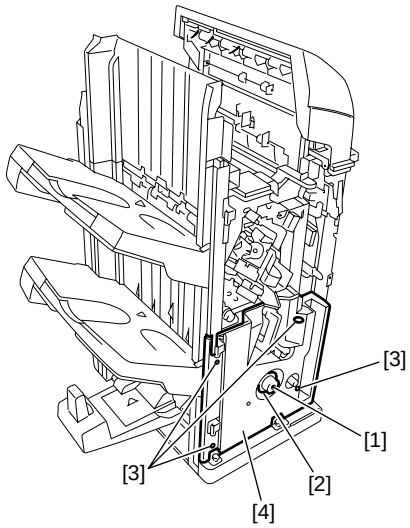
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-247

3.3.9.6 Removing the Front Inside Lower Cover 0009-4104

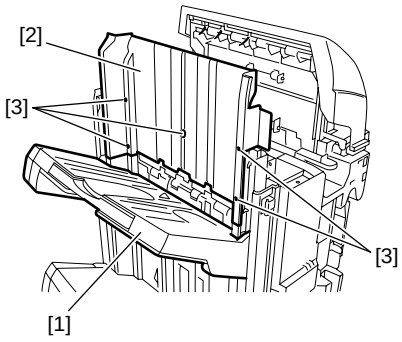
1) Remove screw [1] and then remove the roller knob [2].
2) Remove four screws [3] and remove the front inside lower cover [4].



F-3-248

3.3.9.7 Removing the Grate-shaped Upper Guide 0009-4105

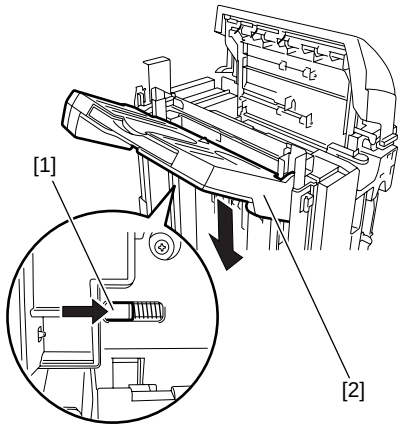
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-249

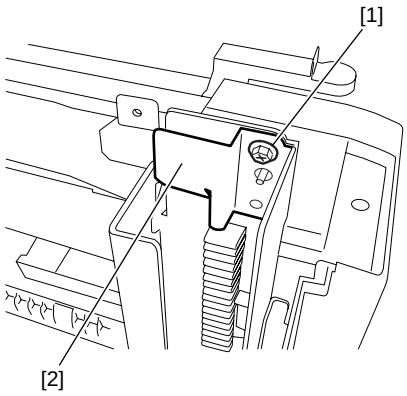
3.3.9.8 Removing the Tray 1 0009-4106

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



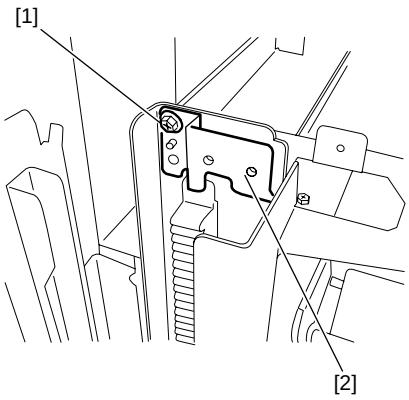
F-3-250

1) Remove the screw [1] and remove the stopper [2] at the front.



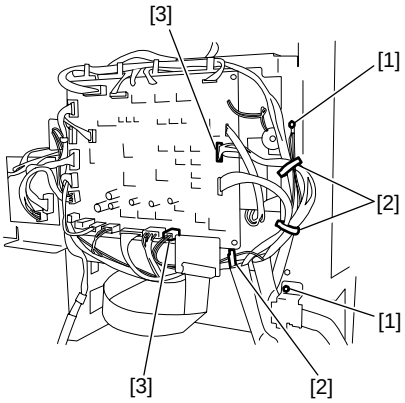
F-3-251

2) Remove the screw [1] and remove the stopper [2] at the back.



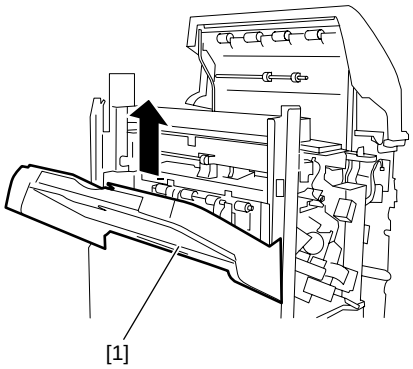
F-3-252

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



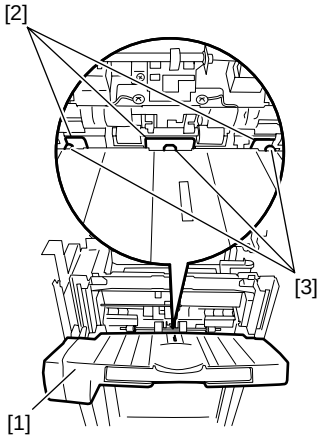
F-3-253

4) Lift tray 1 [1] to remove it.



F-3-254

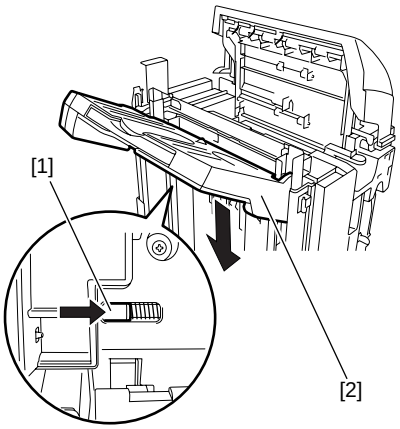
⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.



F-3-255

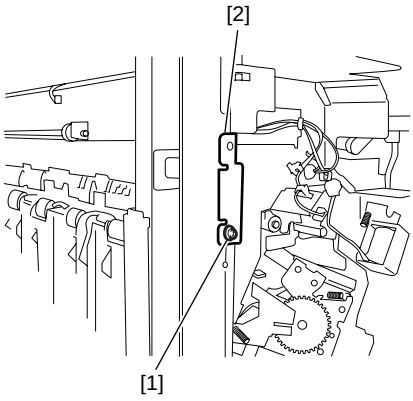
3.3.9.9 Removing the Tray 2 0009-4107

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



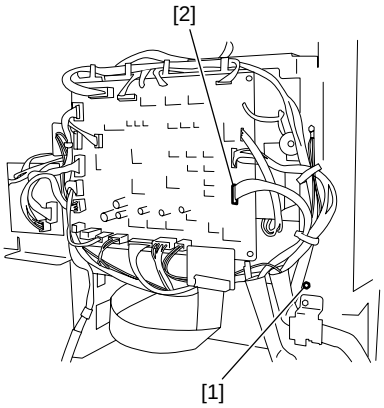
F-3-256

1) Remove screw [1] and remove the stopper [2].



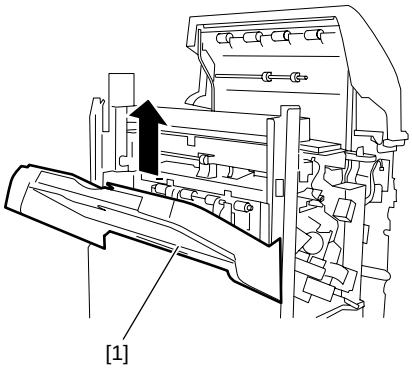
F-3-257

2) Remove the screw [1] and disconnect the connector [2].



F-3-258

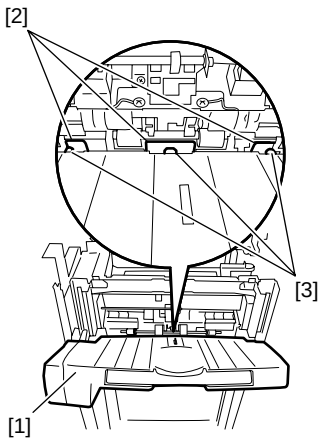
3) Lift tray 2 [1] to remove it.



F-3-259

⚠When installing the tray, be careful not to twist the

tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

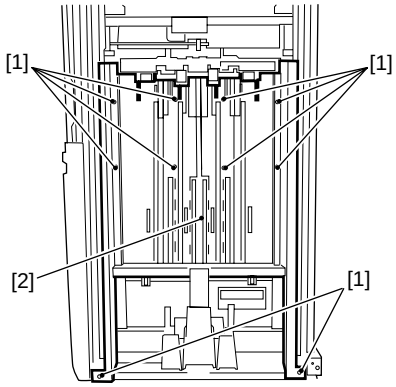


F-3-260

3.3.9.10 Removing the Grate-shaped Lower Guide 0009-4108

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

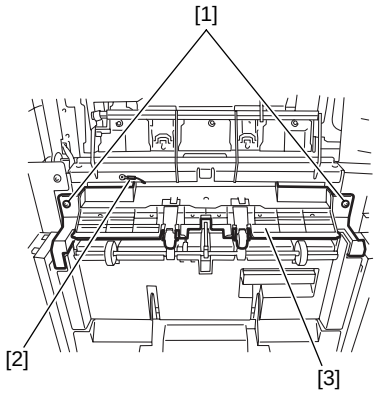
⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.



F-3-261

3.3.9.11 Removing the Upper Delivery Guide 0009-4109

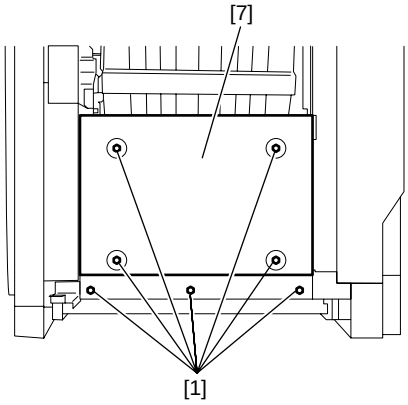
1) Remove two screws [1] and ground wire [2] and remove the upper delivery guide [3].



F-3-262

3.3.9.12 Removing the PCB Cover 0009-4110

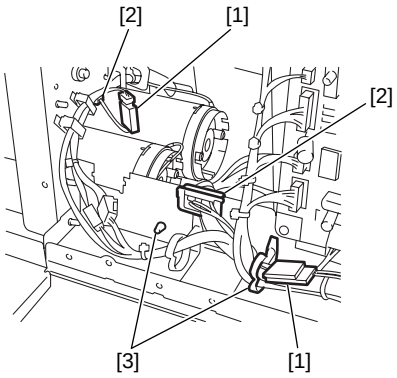
1) Remove seven screws [1] and remove the PCB cover [2].



F-3-263

3.3.9.13 Removing the Paper Folding Roller 0009-4112

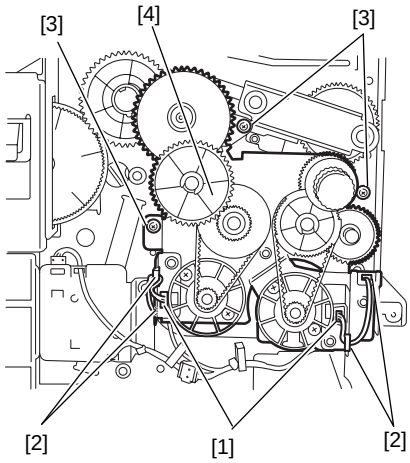
1) Disconnect two connectors [1] and remove the harness from two edge saddles [2] and two clamps [3].



F-3-264

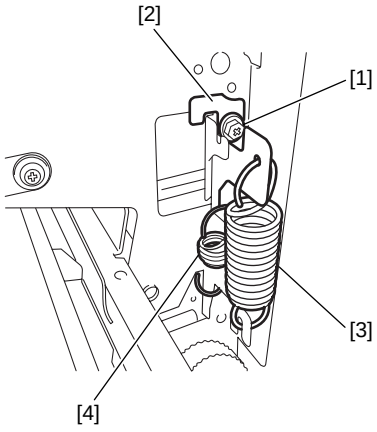
2) Disconnect two connectors [1] and remove the harness from five edge saddles [2].

3) Remove three screws [3] and remove the paper folding/paper pushing motor base [4].



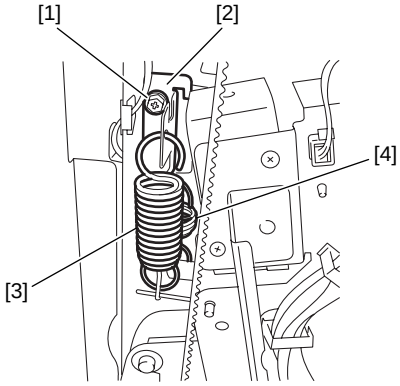
F-3-265

4) Remove the screw [1], remove the spring retaining plate [2], and remove the front tension spring [3] and the smaller tension spring [4].



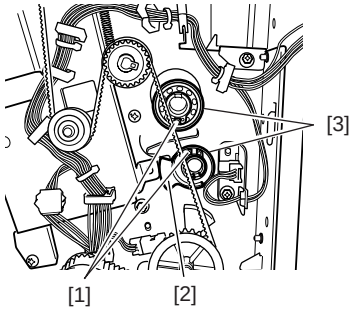
F-3-266

5) Remove the screw [1], remove the spring retaining plate [2], and remove the rear tension spring [3] and the smaller tension spring [4].



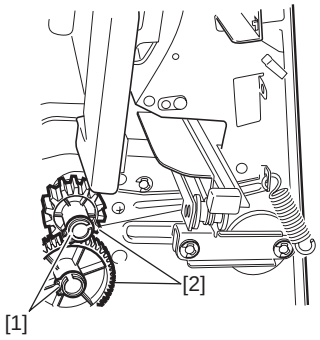
F-3-267

6) Remove the two C-rings [1] at the rear, and remove the sensor flag [2] and two bearings [3].



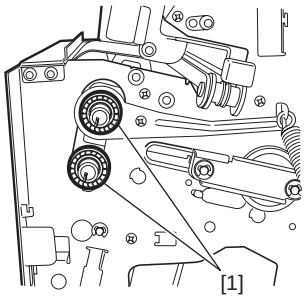
F-3-268

7) Remove the two C-rings [1] at the front and remove the two gears [2].



F-3-269

8) Remove the two bearings [1].

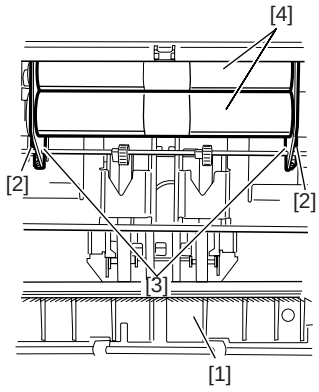


F-3-270

9) Open the saddle delivery tray [1].

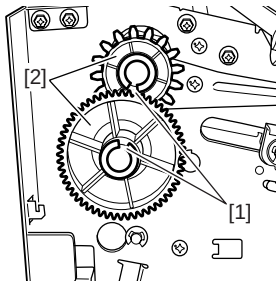
10) Remove two screws [2] and remove the two aligning plates [3].

11) Slide the two paper folding rollers [4] to the front, and then pull it out in the delivery direction.



F-3-271

⚠When installing, attach the gear [2] so that the grooves [1] of the paper folding rollers face each other and align the phase.

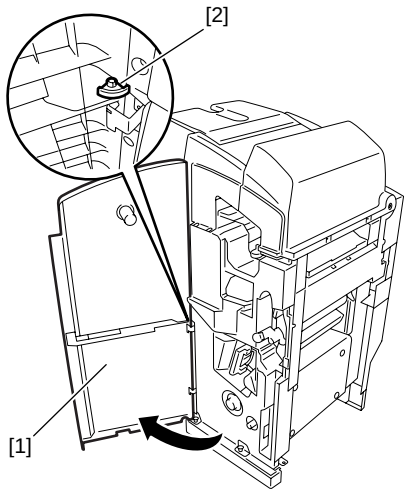


F-3-272

3.3.10 Escape Unit

3.3.10.1 Removing the Front Door 0009-4478

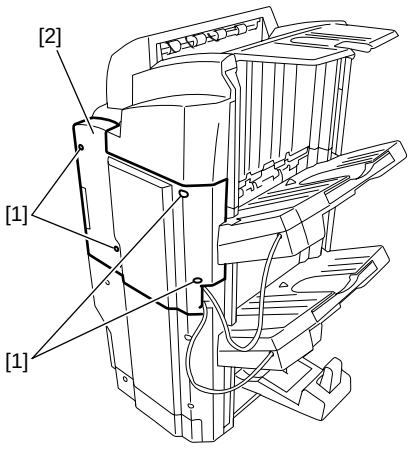
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-273

3.3.10.2 Removing the Rear Upper Cover 0009-4480

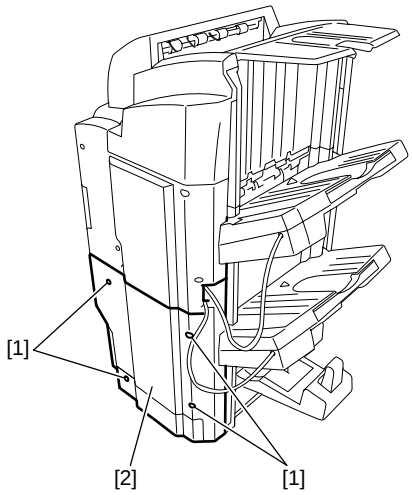
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-274

3.3.10.3 Removing the Rear Lower Cover 0009-4481

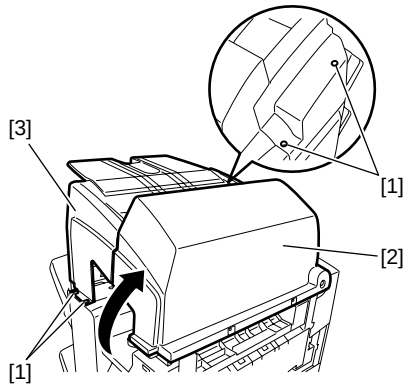
1) Remove four screws [1] and remove the rear lower cover [2].



F-3-275

3.3.10.4 Removing the Escape Tray Cover 0009-4482

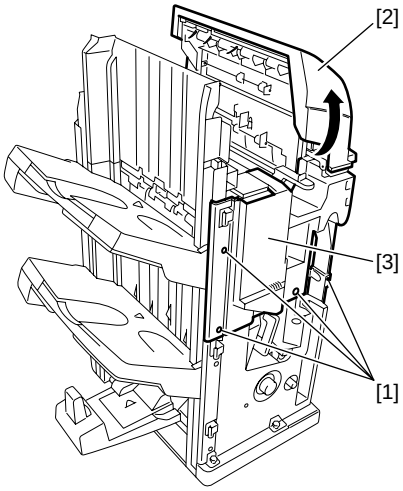
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-276

3.3.10.5 Removing the Front Inside Upper Cover 0009-4483

1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].

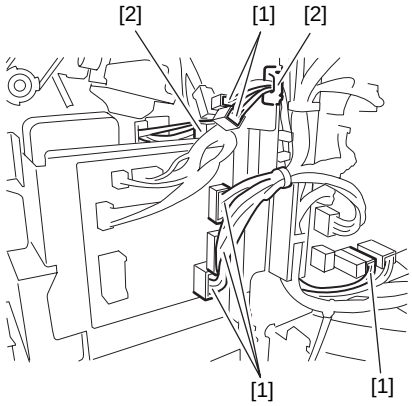


F-3-277

3.3.10.6 Removing the Escape Unit

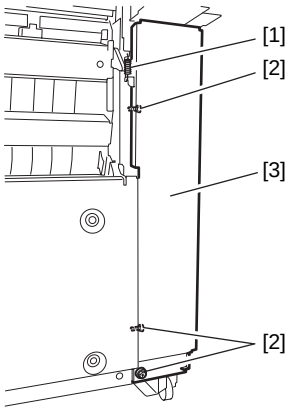
0009-4484

1) Disconnect six connectors [1] and remove the harness from two clamps [2] and harness guide.



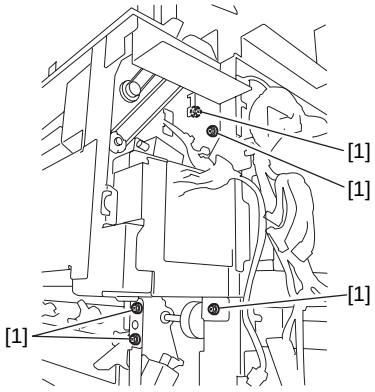
F-3-278

2) Remove the spring [1] and three screws [2] and remove the saddle belt cover [3].



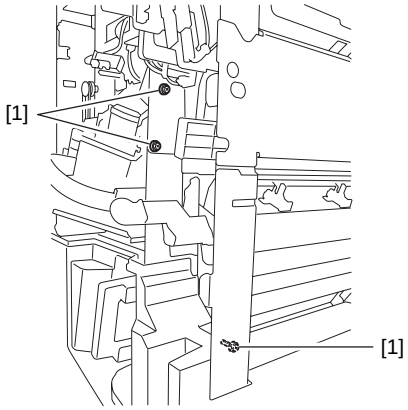
F-3-279

3) Remove five screws [1] at the back of the escape unit.



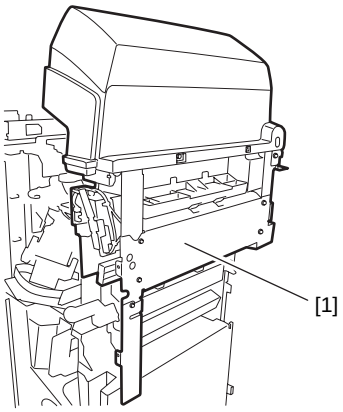
F-3-280

4) Remove three screws [1] at the front of the escape unit.



F-3-281

5) Lift the escape unit [1] slightly and remove it.

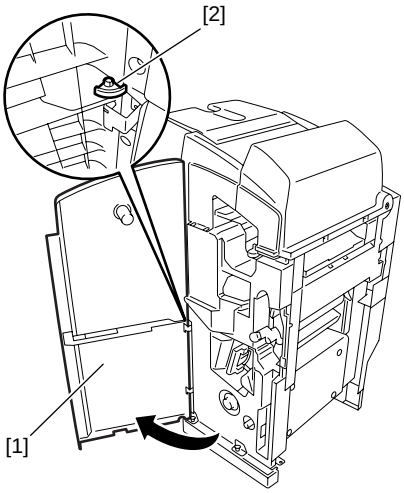


F-3-282

3.3.11 Escape Door Unit

3.3.11.1 Removing the Front Door 0009-4471

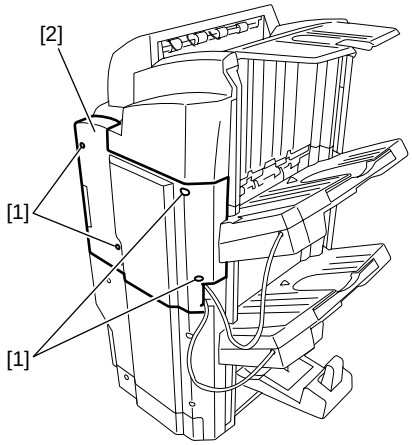
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-283

3.3.11.2 Removing the Rear Upper Cover 0009-4472

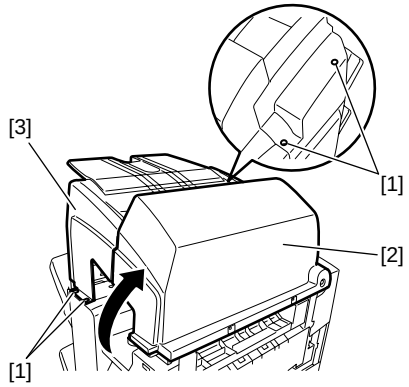
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-284

3.3.11.3 Removing the Escape Tray Cover 0009-4473

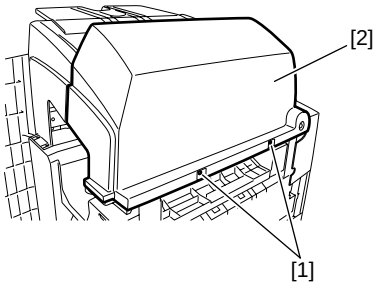
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-285

3.3.11.4 Removing the Escape Door 0009-4474

1) Open the front door.
2) Remove two screws [1] and remove the escape door [2].

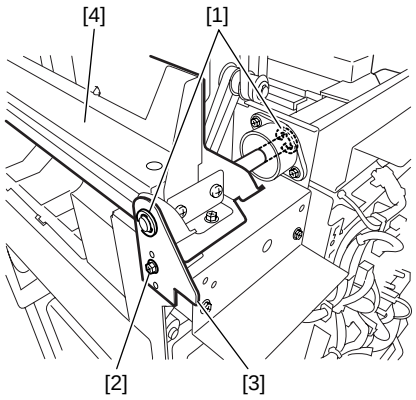


F-3-286

3.3.11.5 Removing the Escape Door Unit

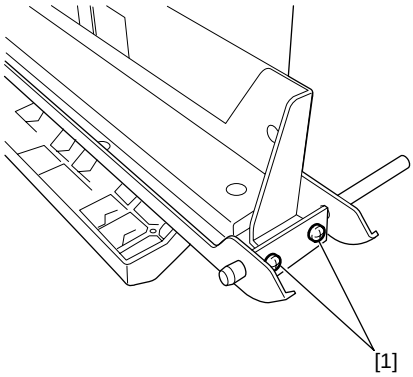
0009-4477

1) Remove two E-rings [1].
2) Remove screw and remove the escape unit support plate [3].
3) Open the escape door unit [4] and remove the escape door unit.



F-3-287

⚠Do not remove the two screws [1] securing escape door shaft.



F-3-288

3.4 Electrical System

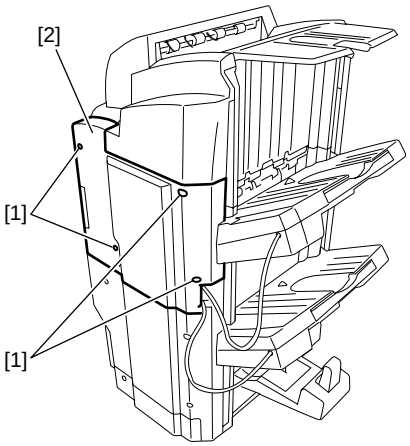
3.4.1 Finisher Controller PCB

3.4.1.1 Finisher Controller PCB

3.4.1.1.1 Removing the Rear Upper Cover

0009-4160

1) Remove four screws [1] and remove the rear upper cover [2].

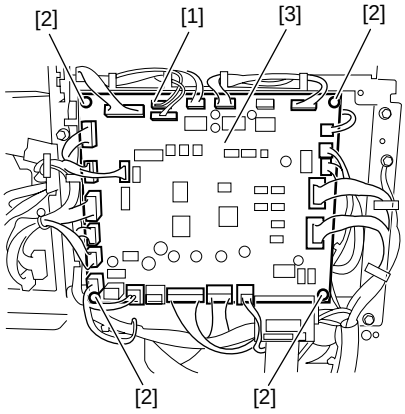


F-3-289

3.4.1.1.2 Removing the Finisher Controller PCB

0009-4159

1) Disconnect all connectors [1] on the finisher controller PCB.
2) Remove four screws [2] and remove the finisher controller PCB [3].



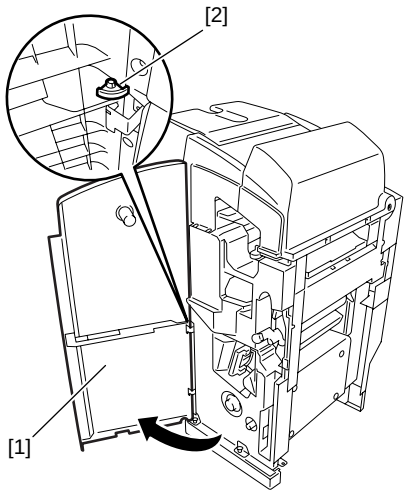
F-3-290

3.4.2 Static Charge Eliminator 1

3.4.2.1 Removing the Front Door

0009-4467

1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.

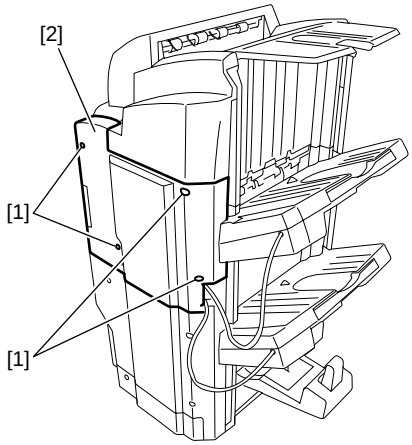


F-3-291

3.4.2.2 Removing the Rear Upper Cover

0009-3700

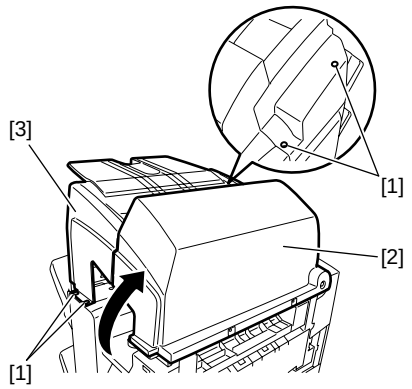
1) Remove four screws [1] and remove the rear upper cover [2].



F-3-292

3.4.2.3 Removing the Escape Tray Cover 0009-4440

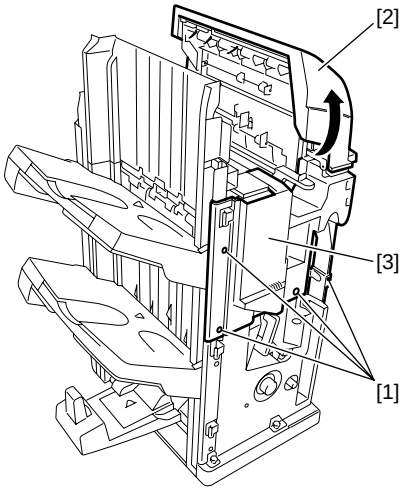
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-293

3.4.2.4 Removing the Front Inside Upper Cover 0009-3702

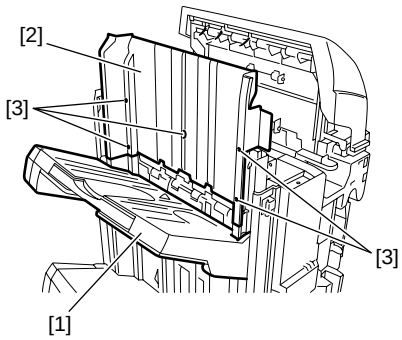
1) Remove four screws [1], open the escape door [2], and then remove the front inside upper cover [3].



F-3-294

3.4.2.5 Removing the Grate-shaped Upper Guide 0009-3703

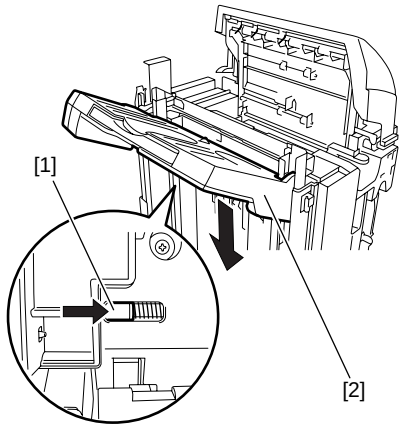
1) Lower tray [1] below the grate-shaped upper guide [2] (For how the tray is moved, see the steps under "Removing the Tray 1.").
2) Remove five screws [3] and remove the grate-shaped upper guide [2].



F-3-295

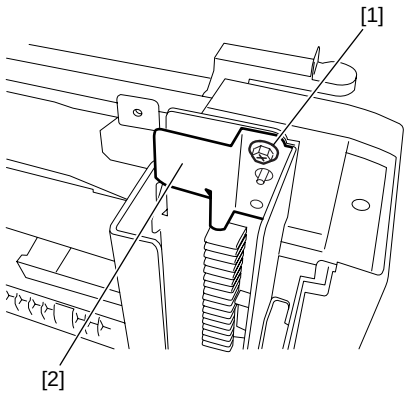
3.4.2.6 Removing the Tray 1 0009-3704

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



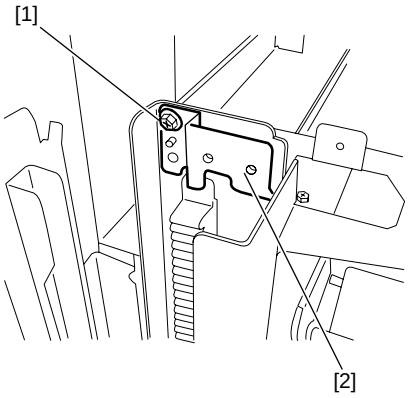
F-3-296

1) Remove the screw [1] and remove the stopper [2] at the front.



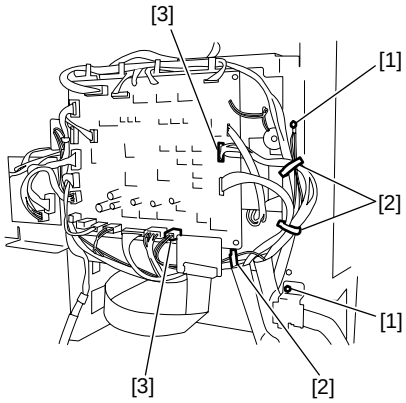
F-3-297

2) Remove the screw [1] and remove the stopper [2] at the back.



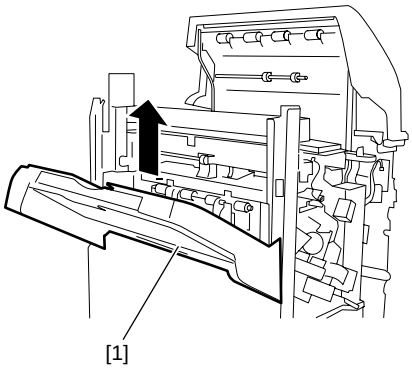
F-3-298

3) Remove two screws [1], open three harness retainers [2], and disconnect two connectors [3].



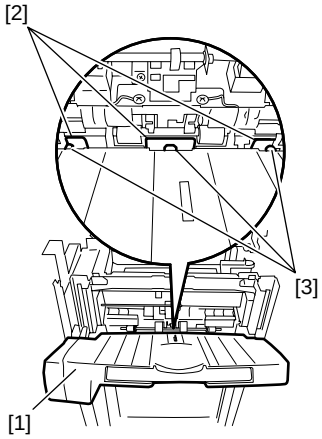
F-3-299

4) Lift tray 1 [1] to remove it.



F-3-300

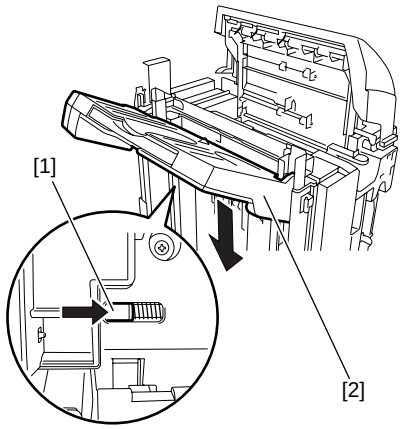
⚠When installing the tray, be careful not to twist the tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.



F-3-301

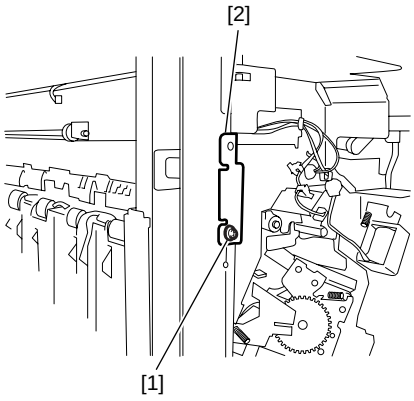
3.4.2.7 Removing the Tray 2 0009-3705

⚠When moving the tray down to attach it, you need to push the tray lift motor gear [1] to the front (using a screwdriver or the like) to release the clutch. However, when the clutch is released, the tray [2] drops by its own weight. Be sure to hold the tray with your hand when releasing the clutch.



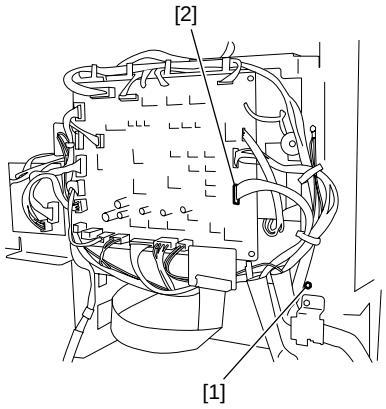
F-3-302

1) Remove screw [1] and remove the stopper [2].



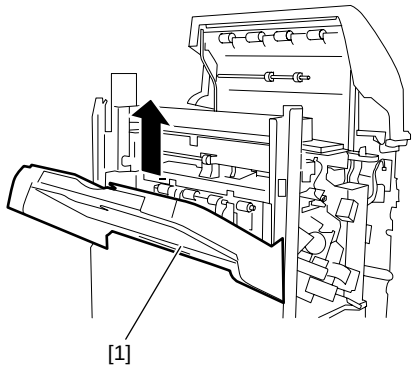
F-3-303

2) Remove the screw [1] and disconnect the connector [2].



F-3-304

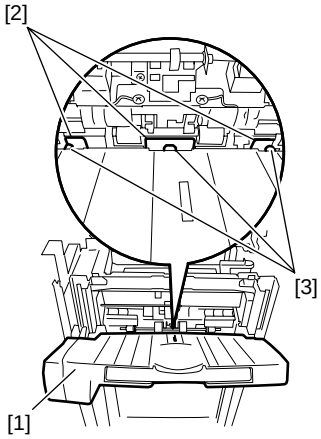
3) Lift tray 2 [1] to remove it.



F-3-305

⚠When installing the tray, be careful not to twist the

tray cable. To prevent the gear phase from shifting due to the front and rear rails, the tray must be attached horizontally. Lower the tray [1] to the position shown in the figure and compare the heights of the shutter guide top edges [2] with those of the tray projections [3] at the front and rear to check that the tray is attached horizontally. If their heights are not the same, remove the tray and then attach it again.

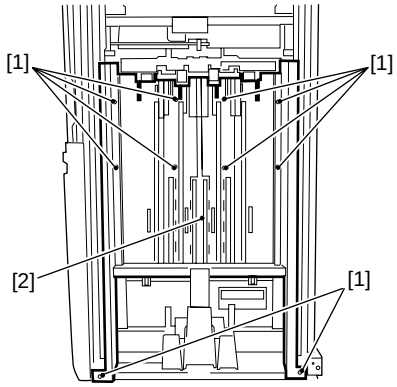


F-3-306

3.4.2.8 Removing the Grate-shaped Lower Guide 0009-3706

1) Remove ten screws [1] and remove the grate-shaped lower guide [2].

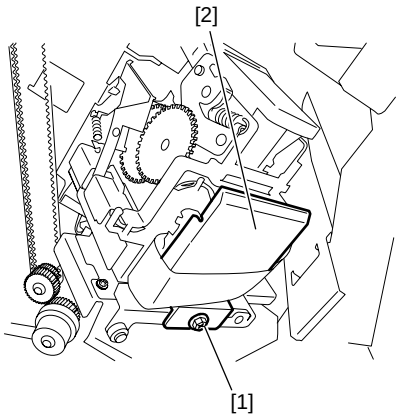
⚠When replacing, be careful not to hook the grate-shaped lower guide to the sensor flag arm on the delivery side.



F-3-307

3.4.2.9 Removing the Stapler 0009-3707

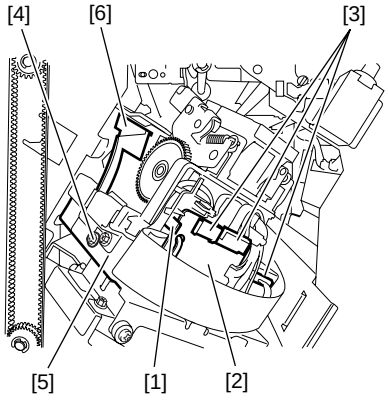
1) Pull out the stapler, remove screw [1], and remove the PCB cover [2].



F-3-308

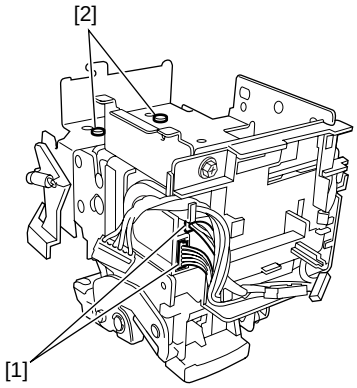
2) Release the claw [1] and remove the PCB [2].
3) Disconnect three connectors [3].
4) Remove screw [4] and remove the stapler together with the stapler base [5].

⚠When removing, be careful not to damage the flag [6].



F-3-309

5) Turn the stapler over, disconnect two connectors [1], remove two screws [2], and remove the stapler from the stapler base.

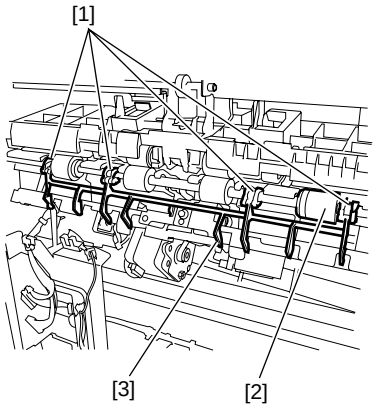


F-3-310

3.4.2.10 Removing the Processing Tray 0009-3708

1) Unfasten four snap fasteners [1] and remove the sensor flag [3] from the stack delivery roller [2].

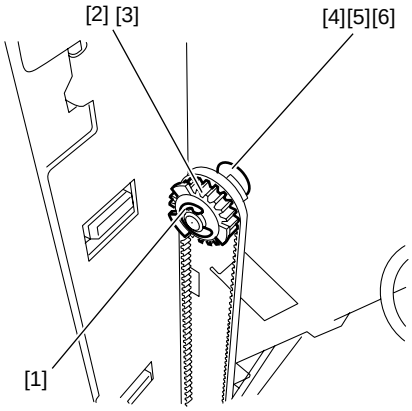
⚠Hold the snap fastener at the base when unfastening because the sensor flag arm can break easily. When fastening, insert the boss of the sensor flag snap fastener in the hole on the processing tray side.



F-3-311

2) Remove the stack delivery roller front side E ring [1], gear [2], parallel pin [3], E ring [4], washer [5], and bearing [6].

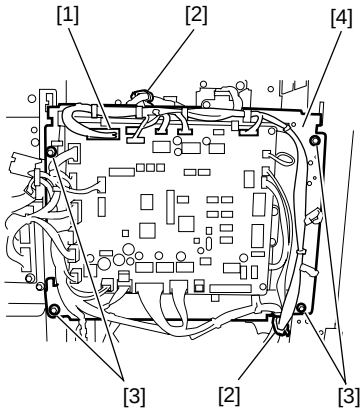
⚠The parallel pin [3] drops when the gear [2] is removed. Be careful not to loose it.



F-3-312

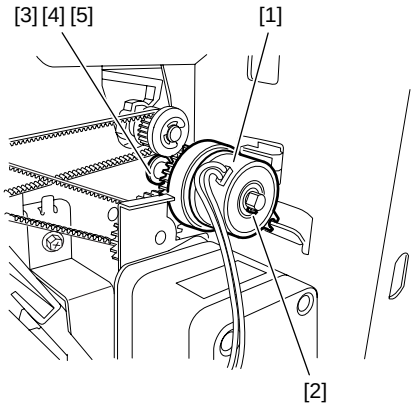
3) Remove all finisher controller PCB connectors[1] and remove the harness from two clamp [2].

4) Remove four screws [3] and remove the finisher controller PCB [4].



F-3-313

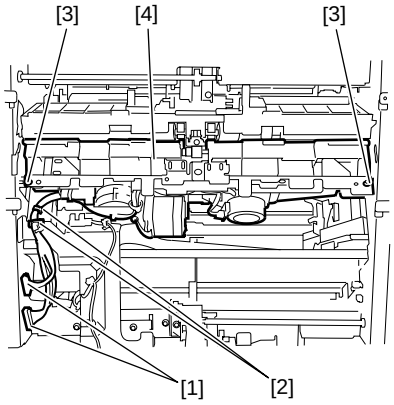
5) Release the claw [1] of the stack delivery roller rear side clutch [2] and remove the clutch [2].
6) Remove the E ring [3], washer [4], and bearing [5] and remove the stack delivery roller.



F-3-314

7) Disconnect two connectors [1] and remove harness from the clamp and edge saddle [2].
8) Remove two screws [3] and pull out the processing tray [4] in the paper delivery direction.

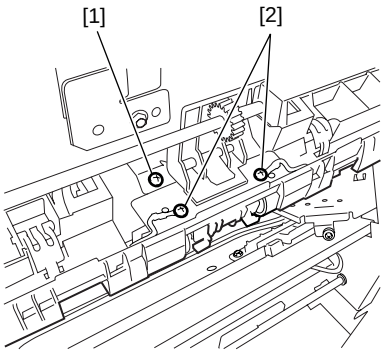
⚠When removing parts inside the processing tray, be careful not to exert force on the aligning plate (front/rear) or the rear end stopper plate.



F-3-315

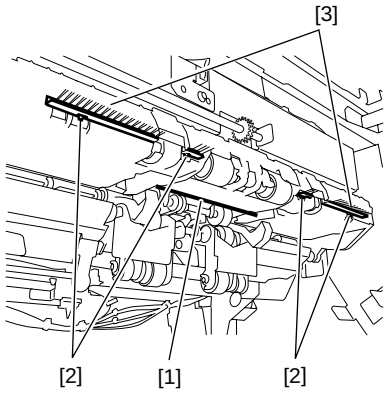
3.4.2.11 Removing the Swing Unit Static Charge Eliminator 0009-3697

1) Remove the screw [1] securing the static charge eliminator at the center of the swing unit.
2) Remove two screws [2] securing the ground of the delivery side static charge eliminator.



F-3-316

3) Pull out the static charge eliminator [1] at the center of the swing unit from the bottom.
4) Remove the four claws [2] securing the delivery side static charge eliminator and remove the two static charge eliminators [3].

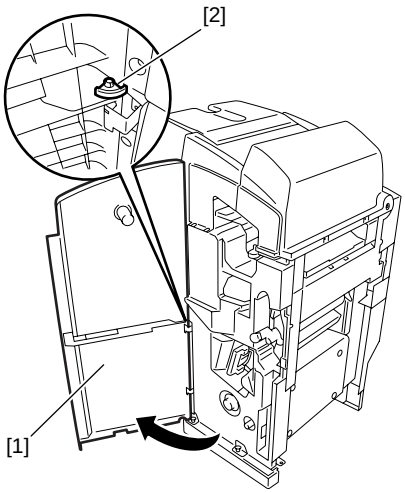


F-3-317

3.4.3 Static Charge Eliminator 2

3.4.3.1 Removing the Front Door 0009-4469

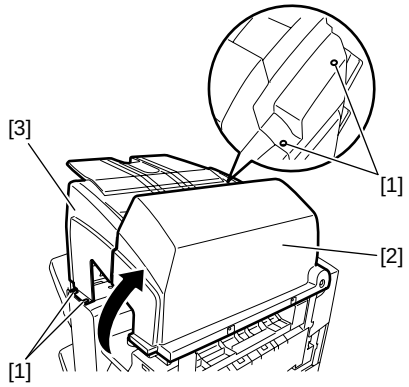
1) Open the front door [1] and remove the clip [2].
2) Lift the front door [1] to remove.



F-3-318

3.4.3.2 Removing the Escape Tray Cover 0009-4441

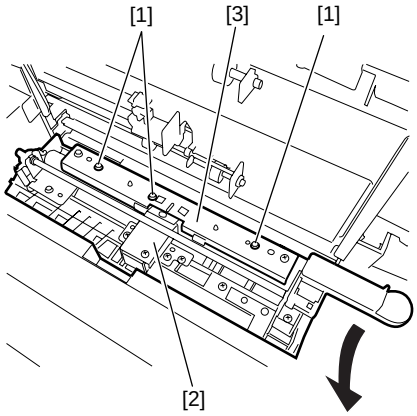
1) Remove four screws [1], open the escape door [2], and then remove the escape tray cover [3].



F-3-319

3.4.3.3 Removing the Inlet Static Charge Eliminator 0009-4161

1) Remove three screws [1], open the delivery door [2], and remove the inlet static charge eliminator [3].

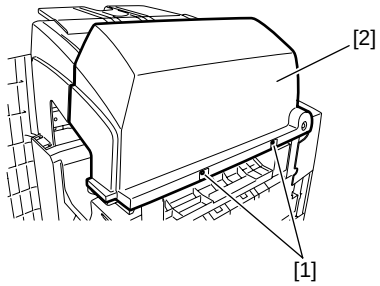


F-3-320

3.4.4 Static Charge Eliminator 3

3.4.4.1 Removing the Escape Door 0009-4400

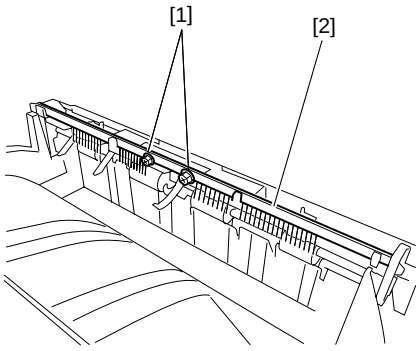
1) Open the front door.
2) Remove two screws [1] and remove the escape door [2].



F-3-321

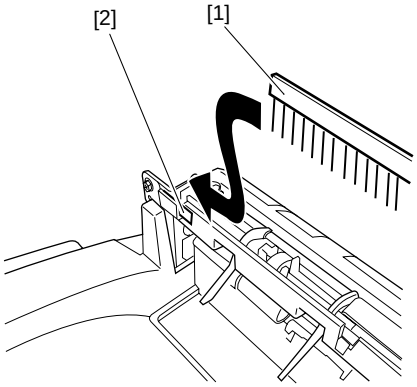
3.4.4.2 Removing the Escape Delivery Static Charge Eliminator 0009-4175

1) Remove two screws [1] and remove the escape delivery static charge eliminator [2].



F-3-322

⚠A ground plate [1] is provided in the area where the escape delivery static charge eliminator [2] is mounted. When mounting the escape delivery static charge eliminator [2], insert it in the lateral direction.

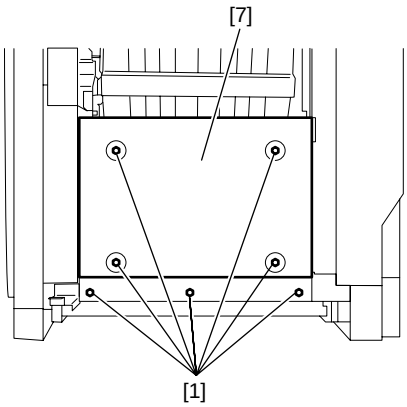


F-3-323

3.4.5 Saddle Stitcher Controller PCB

3.4.5.1 Removing the PCB Cover 0009-4124

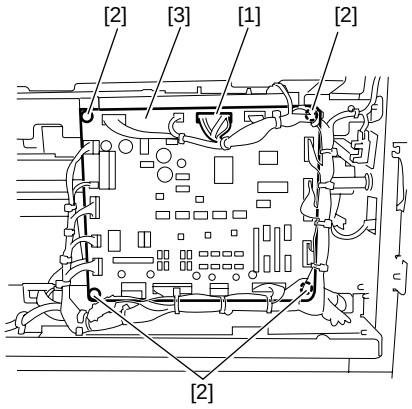
1) Remove seven screws [1] and remove the PCB cover [2].



F-3-324

3.4.5.2 Removing the Saddle Stitcher Controller PCB 0009-4123

1) Remove the all connectors [1] and four screws [2], and remove the saddle stitcher controller PCB [3].



F-3-325

Chapter 4 Maintenance

Contents

4.1 User Maintenance

4.1.1 User Maintenance (Finisher Unit)

0009-2559

T-4-1

No.	Item	Timing
1	Staple cartridge replacement	When prompted (indicator on host machine control panel)

4.1.2 User Maintenance (Saddle Stitcher Unit)

0009-2570

T-4-2

No.	Item	Timing
1	Staple cartridge replacement	When prompted (indicator on host machine control panel)

4.2 Maintenance and Inspection

4.2.1 Periodically Replaced Parts

4.2.1.1 Periodically Replaced Parts (Finisher Unit) 0009-2560

The Finisher unit does not have parts that must be replaced on a periodical basis.

4.2.1.2 Periodically Replaced Parts (Saddle Stitcher Unit) 0009-2571

The Saddle stitcher unit does not have parts that must be replaced on a periodical basis.

4.2.2 Durables

4.2.2.1 Durables (Finisher Unit) 0009-2561

Some of the parts of the machine may need to be replaced one or more times because of wear or tear during the machine's warranty period. Replace them as necessary.

T-4-3

No.	Name	No.	Quantity	Approx. life	As of November, 2004 Remark
1	Stapler	FM2-0665-000	1	500,000 times	1 cartridge lasts approximately 5,000 times
2	Delibery static charge eliminator (L)	FC5-3667-000	1	1,000,000 sheets	
3	Delibery static charge eliminator (R)	FC5-5571-000	1	1,000,000 sheets	
4	Inlet static charge eliminator	FL2-0822-000	1	1,000,000 sheets	

No.	Name	No.	Quantity	Approx. life	As of November, 2004 Remark
5	Swing guide inside static charge eliminator	FL2-0817-000	1	1,000,000 sheets	
6	Buffer roller	FC5-3442-000	2	1,000,000 sheets	
7	Return roller (Rear)	FC5-3457-000	1	1,000,000 sheets	Color;White
8	Return roller (Front)	FC5-6873-000	1	1,000,000 sheets	Color;Black

4.2.2.2 Durables (Saddle Stitcher Unit) 0009-2572

Some of the parts of the machine may need to be replaced one or more times because of wear or tear during the machine's warranty period. Replace them as necessary.

T-4-4

No.	Name	No.	Quantity	Approx. life	As of November, 2004 Remark
1	Stitcher	FL2-0846-000	2	100,000 times	1 cartridge lasts approximately 2,000 times

4.2.3 Periodical Servicing

4.2.3.1 Periodical Servicing (Finisher Unit) 0009-2562

Does not have parts that must be serviced on a periodical basis.

4.2.3.2 Periodical Servicing (Saddle Stitcher Unit) 0009-2573

Does not have parts that must be serviced on a periodical basis.

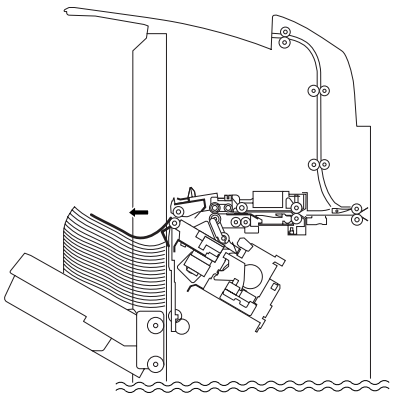
4.3 Adjustment

4.3.1 Basic Adjustment

4.3.1.1 Upward Curl Mode 0009-2563

a. Outline

Paper tends to curl upward in certain conditions, preventing normal delivery/stacking. (See the following figure.)



F-4-1

If such is the case,

1) Turn over the stack of paper inside the paper source (e.g., cassette). If doing so makes the upward curling worse than before, turn back over the stack. If the paper still develops upward curl and, thus, fails to deposit itself normally, try enabling the upward curl mode item.

b. Enabling the Upward Curl Mode

1) Turn off the host machine.

2) Set the bits of SW104 on the finisher controller PCB as follows:

F-4-2

3) Turn on the host machine.

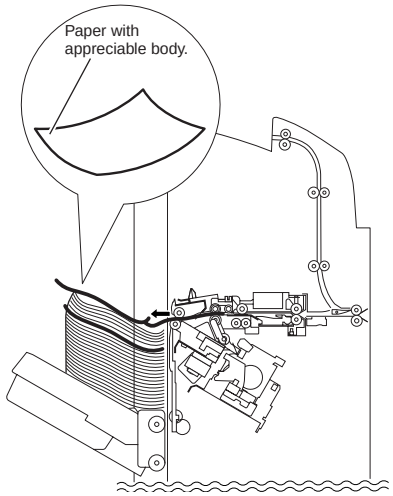
- When this mode item is enabled, the machine changes the speed of its stack delivery roller to ensure proper stacking.
- When this mode item has been enabled, changes in conditions (e.g., the use of paper with little curl or paper with downward curl) can cause improper stacking. In this regard, it is very important to study the type of paper that is most often used by the user before enabling this mode item.

4.3.1.2 Special Curl Mode 0009-2564

a. Outline

If paper with irregular curl is deposited*, its edges can block the delivery slot of the finisher, pushing forward the exiting stack when the next sheet arrives. (See the following figure.)

*LDR size only (mainly, Boise Cascade; 75 g/m2 in weight).



F-4-3

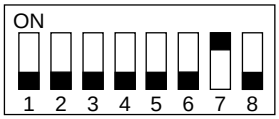
If this is the case,

1) Turn over the stack of paper inside the source (i.e., cassette). If paper starts to curl more than before, turn back over the stack. If the curling is not corrected as a result, try enabling the special curl mode item.

b. Enabling Special Curl Mode

1) Turn off the host machine.

2) Set the bits of SW104 on the finisher controller PCB as follow:



F-4-4

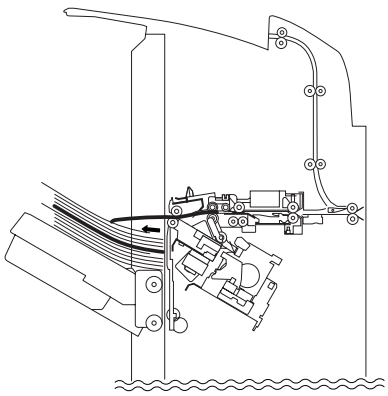
3) Turn on the host machine.

- When this mode item is enabled, the paper surface detection mechanism is executed for every sheet of paper (instead of every 5 sheets) and the timing at which the delivery tray is moved down is advanced so that the paper will be stacked properly.
- When this mode item has been enabled, changes in conditions (e.g., the use of paper with little curl) can prevent proper stacking. In the light of this, be sure to check the type of paper most frequently used by the user before enabling this mode item.

4.3.1.3 Downward Curl Mode 0009-2565

a. Outline

Paper tends to curl downward in certain conditions, preventing normal delivery/stacking. (See the following figure.)



F-4-5

If such is the case,

1) Turn over the stack of paper inside the paper source (e.g., cassette). If doing so makes the downward curling worse than before, turn back over the stack. If the paper still develops downward curl and, thus, fails to deposit itself normally, try enabling the downward curl mode item.

b. Enabling the Downward Curl Mode

1) Turn off the host machine.

2) Set the bits of SW104 on the finisher controller PCB as follows:

F-4-6

3) Turn on the host machine.

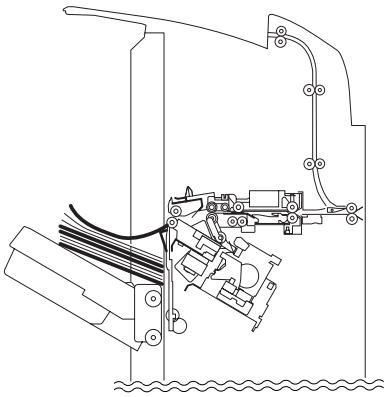
- When this mode item is enabled, the machine changes the speed of its stack delivery roller to ensure proper stacking.
- When this mode item has been enabled, changes in conditions (e.g., the use of paper with little curl or paper with upward curl) can cause improper stacking. In this regard, it is very important to study the type of paper that is most often used by the user before enabling this mode item.

4.3.1.4 Heavy Paper Upward Curl Mode 0009-2566

a. Outline

Depending on the selected paper handling mode and the condition of paper*, upward curl can develop and prevent the machine from stacking the paper properly. (See the following figure.)

*For instance, heavy paper cover mode and single-side binding are selected, and the front/back cover is LDR and 157 g/m2 or more.



F-4-7

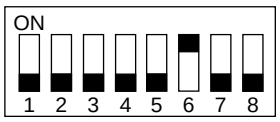
If this is the case,

1) Turn over the stack of paper in the source (i.e., cassette). If doing so has caused the paper to curl more than before, turn back over the stack. If the curling is still appreciable and the machine fails to stack the paper properly, try enabling heavy paper upward curl mode.

b. Enabling Heavy Paper Upward Curl

1) Turn off the host machine.

2) Set the bits of SW104 on the finisher controller PCB as follows:



F-4-8

3) Turn on the host machine.

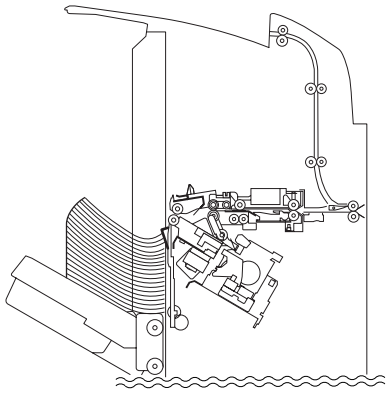
- When this mode item is enabled, the machine changes its operation it executes after the start of stack edging, thus ensuring that the paper will be stacked properly.
- When this mode item has been enabled, changes in conditions (e.g., the use of paper with little curl or delivery of paper with downward curl) can prevent the machine from stacking the paper properly. It is important, therefore, to be sure of the type of paper used by the user before enabling this mode item.

4.3.1.5 Stack Delivery Mode 0009-2567

a. Outline

Depending on the selected paper handling mode*, condition of paper, and environment, the trailing edge of paper can rain against the stacking wall and prevent the machine from stacking it correctly (also causing it to prematurely detect an over-stack condition; see the following figure).

*For instance, in stack delivery mode other than when the stack consists of 6 or fewer sheets of small-size paper.



F-4-9

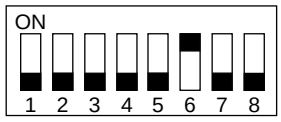
If this is the case,

1) Turn over the stack of paper inside the source (e.g., cassette). If doing so has made upward curling worse than before, turn back over the stack. If the upward curling still causes the machine to fail to stack the paper correctly, try enabling stack delivery mode:

b. Enabling Stack Delivery Mode

1) Turn off the host machine.

2) Set the bits of SW104 on the finisher controller PCB as follows:



F-4-10

3) Turn on the host machine.

- When this mode item is enabled, the machine changes its operation it executes after stack edging to make sure that the paper will be stacked correctly.
- After this mode items has been enabled, changes in conditions (e.g., the use of paper with little upward curl or delivery of paper with downward curl) can prevent the machine from correctly stacking paper. In this light, it is very important to check the type of paper the user most often uses before enabling this mode item.

4.3.1.6 Offset Stack Mode 0009-4798

a. Outline

Depending on the paper condition, paper can curl and the machine can fail to deliver/stack it properly in the small size offset mode.

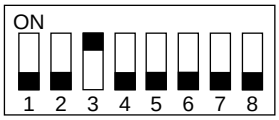
If this is the case,

1) Turn over the stack of paper in the source cassette. If doing so has caused the paper to curl much more than before, turn back over the stack. If the machine still fails to stack paper due to large curl, try enabling the offset stack mode.

b. Enabling the Offset Stack Mode

1) Turn off the host machine.

2) Set the bits of SW104 on the finisher controller PCB as follows:



F-4-11

3) Turn on the host machine.

- When this mode has been enabled, the stack delivery is performed without buffering and the speed of the stack delivery roller is changed to an appropriate one to ensure proper stacking.
- If paper with little curl is delivered after this mode has been enabled, the change in condition can cause improper stacking. In the light of this, be sure to check the type of paper that is most frequently used by the user before enabling this mode.

4.3.1.7 Saddle Delivery Tray Limitless Mode 0009-4821

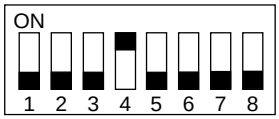
a. Outline

The user who uses the saddle mode continuously is allowed to stack saddles continuously irrespective of the sheet stacking capacity even if the number of saddles that can be stacked is exceeded.

b. Enabling the Saddle Delivery Tray Limitless Mode

1) Turn off the host machine.

2) Set the bits of SW104 on the finisher controller PCB as follows:



F-4-12

3) Turn on the host machine.

- When this mode has been enabled, stacking can be continued even after the number of saddles that can be stacked is exceeded.

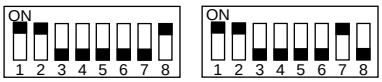
4.3.2 Adjustment at Time of Parts Replacement

4.3.2.1 Adjusting the Alignment Position 0009-2568

Perform this adjustment after replacing the finisher controller PCB or when the alignment position must be changed for some reason.

1) Remove the rear upper cover of the finisher unit.

2) Check that the power of the host machine is off and set SW104 on the finisher controller PCB as follows according to the paper used for adjustment.



F-4-13

3) Turn on the power of the host machine.

4) Press SW103 on the finisher controller PCB.

When SW103 is pressed, the swing guide opens and the alignment plate moves to prescribed position.

5) Place ten sheets of A4/LTR paper between the alignment plates and push them against the stopper.

6) Press SW101 or SW102 on the finisher controller PCB and push the alignment plate against the paper.

When SW101 is pressed, alignment plate moves 0.42 mm forward.

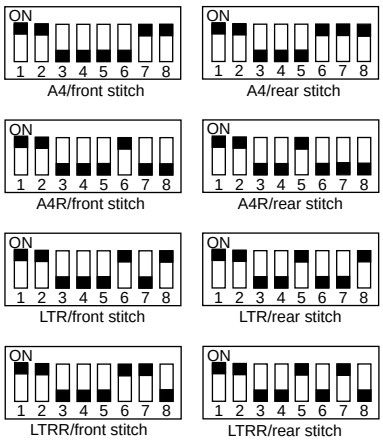
When SW102 is pressed, alignment plate moves 0.42 mm backward.

7) When adjustment is complete, remove paper and press SW103 on the finisher controller PCB once to

store the adjustment in memory.
8) Turn off all bits of finisher controller PCB SW104.
9) Turn off the power of the host machine and install the rear upper cover of the finisher unit.

4.3.2.2 Adjusting the Staple Position 0009-2569

Perform this adjustment after replacing the finisher controller PCB or when the staple position must be changed for some reason. This adjustment adjusts the front/rear stitches with A4/A4R when the paper used for adjustment is AB type and with LTR/LTRR when the paper is INCH type.
1) Remove the rear upper cover of the finisher unit.
2) Check that the host machine power is off and set SW104 on the finisher controller PCB as follows according to paper/stitch position used for adjustment.



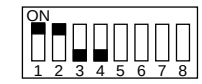
F-4-14

3) Turn on the host machine power.
4) Press SW103 on the finisher controller PCB.
When SW103 is pressed, the swing guide opens and the alignment plate moves to prescribed position.
5) Place a sheet of paper between the alignment plates, push it against the stopper, and push the rear edge of the paper against the rear alignment plate.
If the gap between the front alignment plate and front edge of the paper is 1 mm or greater, end staple position adjustment and repeat staple position adjustment after completing alignment plate adjustment.
6) Press SW103 on the finisher controller PCB once to staple. However, remove the stapled paper manually to verify the staple position because it is not ejected.
7) Press SW103 on the finisher controller PCB once.
8) If the staple position is correct, insert a sheet of paper between the aligning plates and push it against the stopper, push the far end edge of the paper to the rear aligning plate, and press SW103 once (stapling action/store adjustment value) and proceed to step 11).
9) To adjust the staple position, press SW101 or SW102 on the finisher controller PCB and adjust the staple position.
When SW101 is pressed, staple position moves 0.49 mm forward.
When SW102 is pressed, staple position moves 0.49 mm backward.
10) Repeat steps 5) and 6) and check that the staple position is adjusted correctly.
11) Turn off all bits of SW104 on the finisher controller PCB.
12) Turn off the power of the host machine and install the rear cover of the finisher unit.

4.3.2.3 Adjusting the Folding Position 0009-2574

The folding position is adjusted by changing setting of bits 6 through 8 of SW504 on the saddle stitcher controller PCB to match the stitching position (adjusting the distance over which the paper positioning plate is moved to the folding position from the stitching position).
If you have replaced the saddle stitcher controller PCB, be sure to set the new SW504 so that the settings will be the same as those on the old DIPSW1. Perform this adjustment if, for any reason, you must change the folding position.
1) Check that the power of the host machine is off and separate the finisher from the host machine. If the optional puncher unit is installed, remove it from the finisher.
2) Remove the PCB cover and set bits 1 through 4 of

SW504 on the saddle stitcher con-troller PCB as follows:

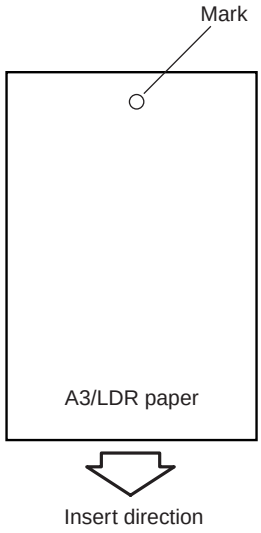


Do not change bits 5 through 8.

F-4-15

3) Remove the rear cover, open the inlet cover of the saddle stitcher unit and tape the actuator of inlet cover sensor (PI9) and inlet door switch (MSW1).

4) Before inserting the paper, mark the top of the paper. You will be using two sheets of A3 or LDR paper.



F-4-16

5) Turn on the power of the host machine.

6) Press SW1 on the saddle stitcher controller PCB so that the feed motor (M1) starts to rotate. (Press SW1 three seconds or more if LDR paper is used.)

7) Open the inlet cover and insert two sheets of paper. Push them in by hand until the front edge of the sheets push against the paper positioning plate.

8) Close the inlet cover.

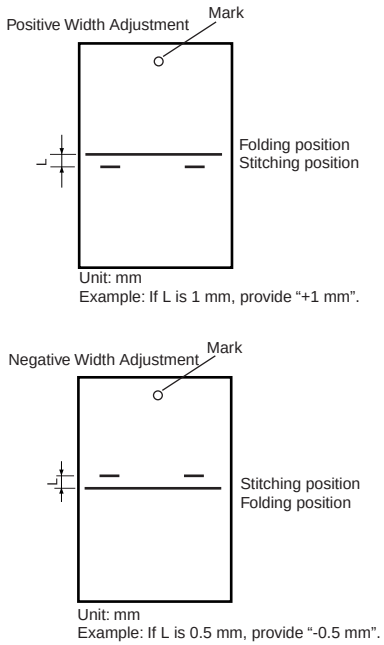
9) Press SW1 on the saddle stitcher controller PCB.

The saddle stitcher unit will "stitch" the sheets, and fold and deliver the stack automatically.

10) Measure the distance (L) between the stitching position and the folding position. Then perform "positive width adjustment" or "negative width adjustment" to suit the relationship between the stitching position and the folding position.

If the stitching position is below the folding position, perform "positive width adjustment."

If the stitching position is above the folding position, perform "negative width adjustment."



F-4-17

11) Change the settings of bits 6 through 8 on SW504 referring to the following table.

If the width adjustment is 0

The stitching position and the folding position match, requiring no change.

If for "positive width adjustment"

Set SW504 so that the difference resulting from subtraction of the interval from the appropriate setting in the above figure is provided.

Example: If SW504 is currently set to +2 and the interval is +1 mm, set SW504 to reflect -2.

If for "negative width adjustment"

Set SW504 so that the sum resulting from addition of the interval from the appropriate setting in the above fingure is provided.

Example: If SW504 is currently set to -1 and the interval is -0.5mm, set SW504 to reflect +1.

T-4-5

SW504 bit settings			Setting (in units of 0.5 mm)
Bit 6	Bit 7	Bit 8	
OFF	ON	ON	+3
OFF	ON	OFF	+2
OFF	OFF	ON	+1
OFF	OFF	OFF	0
ON	OFF	ON	-1
ON	ON	OFF	-2
ON	ON	ON	-3

Do not use the following setting.

T-4-6

Bit 6	**Bit 7**	**Bit 8**
ON	OFF	OFF

12) Set SW504 bits 1 to 4 to OFF.

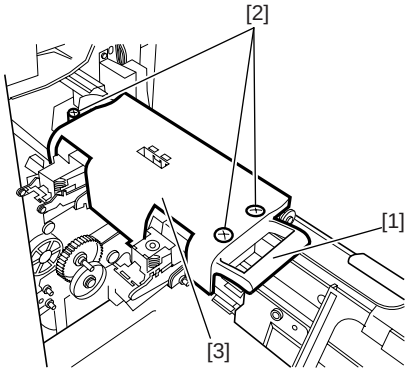
4.3.2.4 Adjusting the Stitching Position (adjusting center stitching) 0009-2575

Use the host machine user mode to perform this adjustment.

4.3.2.5 Adjusting the Stitcher Unit 0009-2576

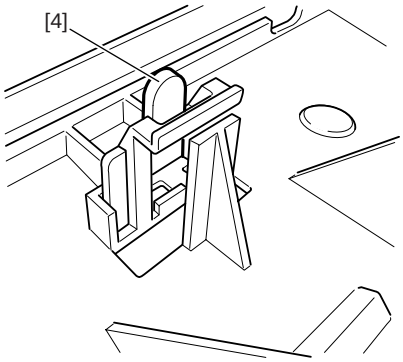
1) Open the front door.

2) Pull out the stitcher mount unit to the front, then pull out the stitcher towards yourself and then pull up the stitcher.
3) Remove three screws [2] and remove the stitcher cover [3].



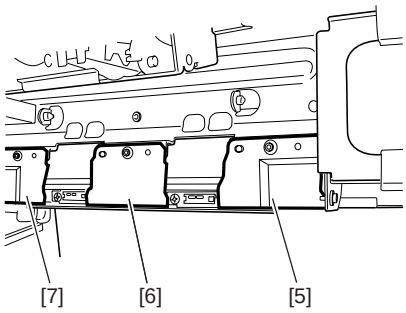
F-4-18

4) Remove the stitcher positioning tool [4] from the back of the cover.



F-4-19

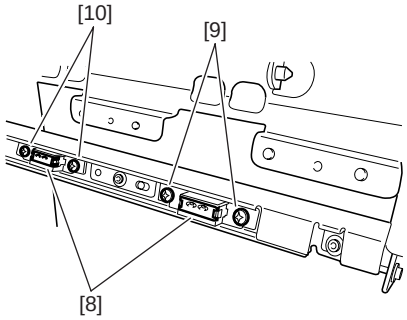
5) To adjust the front stitcher, remove the front guide plate [4] and center guide plate [6]. To adjust the rear stitcher, remove the center guide plate [6] and the rear guide plate [7]. (one screw each)



F-4-20

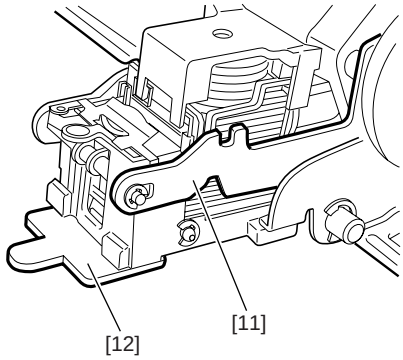
6) To adjust the front stitcher, loosen the two screws [9] on the stitcher mount [8]. To adjust the rear stitcher, loosen the two screws [10] on the stitcher

mount [8].



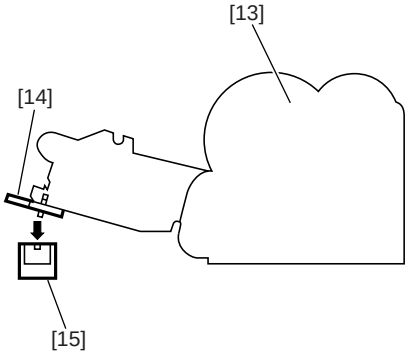
F-4-21

7) Insert the tool [12] into the staple slot of the stitcher [11].



F-4-22

8) Tilt the stitcher, and turn the stitcher gear [13] to match the recess of the tool [14] and the mount [15] and then tighten the screws on the mount [15] to secure.



F-4-23

4.4 Troubleshooting

4.4.1 Error Code

4.4.1.1 E500;Communication error 0009-2588

Finisher controller PCB/Host machine DC controller PCB

1) Does it improve when the host machine power switch is turned OFF/ON?

YES : End

Wiring

2) Is the wiring between the finisher controller PCB and host machine DC controller PCB normal?

NO : Repair the wiring.

Finisher controller PCB/Host machine DC controller PCB

3) Does it improve when the finisher controller PCB and host machine DC controller PCB are replaced?

YES : End

4.4.1.2 E503;Saddle stitcher unit communication error 0009-4872

Finisher controller PCB/Saddle stitcher controller PCB

1) Does it improve when the host machine power switch is turned OFF/ON?

YES : End

Wiring

2) Is the wiring between the finisher controller PCB and saddle stitcher controller PCB normal?

NO : Repair the wiring.

Finisher controller PCB/Saddle stitcher controller PCB

3) Does it improve when the finisher controller PCB and saddle stitcher controller PCB are replaced?

YES : End

4.4.1.3 E505;Backup RAM error 0009-2589

Finisher controller PCB

1) Does it improve when the host machine power switch is turned OFF/ON?

YES : End

2) Does it improve when the alignment position or the staple position is ajusted?

YES: End

3) Does it improve when the finisher controller PCB are replaced?

YES: End

4.4.1.4 E514;Rear end assist motor error 0009-2590

Rear end assist guide home position sensor (PI109)

1) Check the rear end assist guide home position sensor. Does the sensor operate normally?

NO : Replace the sensor.

Wiring

2) Is the wiring between the finisher controller PCB and rear end assist motor normal?

NO : Repair the wiring.

Rear end assist mechanism

3) Is there any abnormality in the rear end assist mechanism?

YES : Repair the rear end assist mechanism.

Rear end assist motor (M109)/Finisher controller PCB

4) Does it improve when the rear end assist motor is replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.5 E530;Front aligning plate motor error 0009-2591

Front aligning plate home position sensor (PI106)

1) Check the front aligning plate home position sensor. Does the sensor operate normally?

NO : Replace the sensor.

Wiring

2) Is the wiring between the finisher controller PCB and front aligning plate motor normal?

NO : Repair the wiring.

Front aligning plate

3) Is there any mechanical trapping in the path of the aligning plate?

YES : Repair the mechanism.

Front aligning plate motor (M103)/Finisher controller PCB

4) Does it improve when the front aligning plate motor is replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.6 E531;Staple motor error 0009-2592

Wiring

1) Is the wiring between the finisher controller PCB and stapler normal?

NO : Repair the wiring.

Stapler/Finisher controller PCB

2) Does it improve when the stapler is replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.7 E532;Stapler shift motor error 0009-2593

Stapler

1) Is the stapler caught in the way of its travel route and is the sensor flag of the stapler alignment interference sensor (PI116) activated when power is ON?

YES : Manually move the stapler to the position where the sensor flag is not activated.

Stapler drive home position sensor (PI110)

2) Check the stapler drive home position sensor. Does it operate normally?

NO : Replace the sensor.

Wiring

3) Is the wiring between the finisher controller PCB and stapler shift motor normal?

NO : Repair the wiring.

Stapler shift base

4) Is there mechanical trapping in the path of the stapler shift base?

YES : Repair the mechanism.

Stapler shift motor (M105)/Finisher controller PCB

5) Does it improve when the stapler shift motor is replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.8 E535;Swing motor error 0009-2594

Swing home position sensor (PI105)

1) Check the swing home position sensor. Does the sensor operate normally?

NO : Replace the sensor.

Wiring

2) Is the wiring between the finisher controller PCB and swing motor normal?

NO : Repair the wiring.

Swing mechanism

3) Is there any abnormality in the swing machanism?

YES : Repair the swing mechanism.

Swing motor (M106)/Finisher controller PCB

4) Does it improve when the swing motor is replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.9 E537;Rear aligning plate motor error 0009-2595

Rear aligning plate home position sensor (PI107)

1) Check the rear aligning plate home position sensor. Does the sensor operate normally?

NO : Replace the sensor.

Wiring

2) Is the wiring between the finisher controller PCB and rear aligning plate motor normal?

NO : Repair the wiring.

Rear aligning plate

3) Is there mechanical trapping in the path of the aligning plate?

YES : Repair the mechanism.

Rear aligning plate motor (M104)/Finisher controller PCB

4) Does it improve when the rear aligning plate motor is replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.10 E540;Tray 1 shift motor error 0009-2596

Tray 1 paper surface sensor (PI114)

1) Check the tray 1 paper surface sensor. Does it operate normally?

NO : Replace the sensor.

Tray 1 shift area sensor PCB

2) Check the tray 1 shift area sensors 1 to 3. Do the sensors operate normally?

NO : Replace the tray 1 shift area sensor PCB.

Wiring

3) Is the wiring between the finisher controller PCB and tray 1 shift motor normal?

NO : Repair the wiring.

Tray up/down mechanism

4) Is there any abnormality in the tray up/down mechanism?

YES : Repair the tray up/down mechanism.

Tray 1 shift motor (M107)/Finisher controller PCB

5) Does it improve when the tray 1 shift motor is replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.11 E542;Tray 2 shift motor error 0009-2600

Saddle delivery tray unit

1) Is the saddle delivery tray unit closed properly (not closed on one side)?

NO : Properly close the saddle delivery tray unit.

Tray 2 paper surface sensor 1 (PI115)/Tray 2 paper surface sensor 2 (PI120)

2) Check the tray 2 paper surface sensor 1 and the tray 2 paper surface sensor 2. Does it operate normally?

NO : Replace the sensor.

Tray 2 shift area sensor PCB

3) Check the tray 2 shift area sensors 1 to 3. Do the sensors operate normally?

NO : Replace the tray 2 shift area sensor PCB

Wiring

4) Is the wiring between the finisher controller PCB and tray 2 shift motor nor-mal?

NO : Repair the wiring.

Tray up/down mechanism

5) Is there any abnormality in the tray up/down mechanism?

YES : Repair the tray up/down mechanism.

Tray 2 shift motor (M108)/Finisher controller PCB

6) Does it improve when the tray 2 shift motor is replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.12 E584;Shutter malfunction 0009-2598

Shutter home position sensor (PI113)

1) Check the shutter home position sensor. Does the sensor operate normally?

NO : Replace the sensor.

Wiring

2) Is the wiring between the finisher controller PCB and stack ejection motor, and between the finisher controller PCB and shutter clutch normal?

NO : Repair the wiring.

Shutter mechanism

3) Is there any abnormality in the shutter mechanism?

YES : Repair the shutter mechanism.

Stack ejection motor (M102)/Shutter clutch (CL101)/Stack ejection lower roller clutch (CL102)/Finisher controller PCB

4) Does it improve when the stack ejection motor, the shutter clutch and the stack ejection lower cluch are replaced?

YES : End

NO : Replace the finisher controller PCB.

4.4.1.13 E5F0;Paper positioning plate motor error 0009-2601

Paper positioning plate home position sensor (PI7)

1) Check the paper positioning plate home position sensor. Is the sensor normal?

NO : Replace sensor.

Positioning plate drive mechanism

2) Is there a problem with the positioning plate drive mechanism?

YES : Repair the positioning plate drive mechanism.

Paper positioning plate motor (M4)/Saddle stitcher controller PCB

3) Is the problem solved by replacing the paper positioning plate motor?

YES : Complete.

NO : Replace saddle stitcher controller PCB.

4.4.1.14 E5F1;Paper folding motor error 0009-2602

Paper folding motor clock sensor (PI4)/Paper folding home position sensor (PI21)

1) Check the paper folding motor clock sensor and paper folding home positionsensor. Are the sensors normal?

NO : Replace sensor.

Paper folding roller drive mechanism

2) Is there a problem with the paper folding roller drive mechanism?

YES : Repair the paper folding roller drive mechanism.

Paper folding motor (M2)/Saddle stitcher controller PCB

3) Is the problem solved by replacing the paper folding motor?

YES : Complete.

NO : Replace saddle stitcher controller PCB.

4.4.1.15 E5F2;Guide motor error 0009-2603

Guide home position sensor (PI13)

1) Check the guide home position sensor. Does the sensor operate normally?
NO : Replace the sensor.

Guide plate drive mechanism

2) Is there any abnormality in the guide plate drive machanism?
YES : Repair the guide plate drive mechanism.

Guide Motor (M3)/Saddle stitcher controller PCB

3) Does it improve when the guide motor is replaced?
YES : End
NO : Replace the saddle stitcher controller PCB.

4.4.1.16 E5F3;Aligning motor error 0009-2604

Aligning plate home position sensor (PI5)

1) Check the aligning plate home position sensor. Does the sensor operate nor-mally?
NO : Replace the sensor.

Aligning plate drive mechanism

2) Is there any abnormality in the aligning plate drive mechamism?
YES : Repair the aligning plate drive mechamism.

Aligning motor (M5)/Saddle stitcher controller PCB

3) Does it improve when the aligning motor is replaced?
YES : End
NO : Replace the saddle stitcher controller PCB.

4.4.1.17 E5F4;Stitcher (rear) error 0009-2605

Installing the stitcher (rear)

1) Are the stitcher (rear) and mount installed properly?
NO : Install them properly.

Stitcher home position sensor (rear) (SW5)

2) Check the stitcher home position switch. Does the switch operate normally?
NO : Replace the stitcher.

Stitcher motor (rear) (M6) / Saddle sticher controller PCB

3) Does it improve when the stitcher is replaced?
YES : End
NO : Replace the saddle stitcher controller PCB.

4.4.1.18 E5F5;Stitcher (front) error 0009-2606

Installing the stitcher (front)

1) Are the stitcher (front) and mount installed properly?
NO : Install them properly.

Stitcher home position sensor (front) (SW7)

2) Check the stitcher home position switch. Does the switch operate normally?
NO : Replace the stitcher.

Stitcher motor (front) (M7) / Saddle sticher controller PCB

3) Does it improve when the stitcher is replaced?

YES : End

NO : Replace the saddle stitcher controller PCB.

4.4.1.19 E5F6;Paper pushing plate motor error 0009-2608

Paper pushing plate home position sensor (PI14)/Paper pushing plate top position sensor (PI15)/Paper pushing plate motor clock sensor (PI1)

1) Check the sensors. Do the sensors operate normally?

NO : Replace the sensors.

Paper pushing plate drive mechanism

2) Is there any abnormality in the paper pushing plate drive mechanism?

YES : Repair the paper pushing plate drive mechanism.

Paper pushing plate motor (M8)/Saddle stitcher controller PCB

3) Does it improve when the paper pushing plate motor is replaced?

YES : End

NO : Replace the saddle stitcher controller PCB.

4.4.1.20 E5F9;Micro switch error 0009-2610

Front cover switch (MSW101)/Inlet door switch (MSW1)/Delivery door switch (MSW3)

1) Check the switches. Do the switches operate normally?

NO : Replace the switches.

Power supply and wiring

2) Measure the voltage between J704-1 (+) and J704-3 (-) of the finisher controller PCB. Is the voltage 24V?

NO : Replace the finisher controller PCB.

3) Is the wiring between J704 of the finisher controller PCB and J1 of the saddle stitcher controller normal?

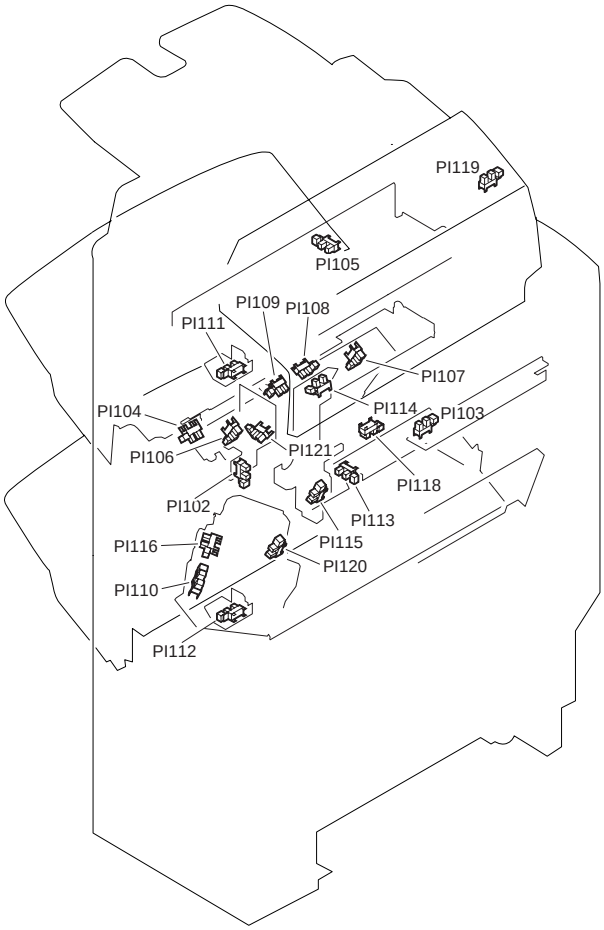
NO : Repair the wiring.

YES : Replace the saddle stitcher controller PCB.

4.5 Outline of Electrical Components

4.5.1 Sensors (Finisher Unit)

0009-2613



F-4-24

T-4-7

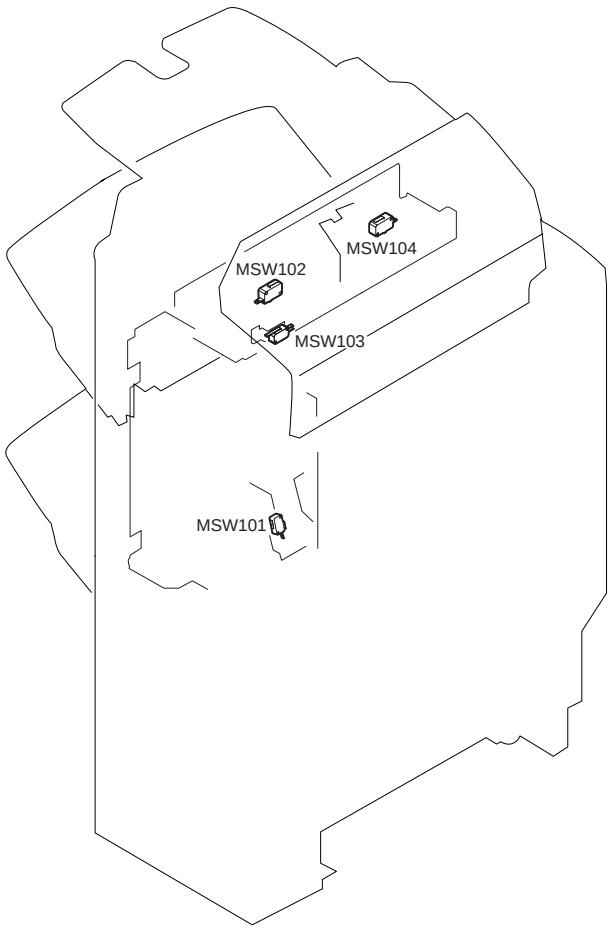
Ref.	Name	Description	Parts No.	Jam	Error
PI102	Front cover sensor	Detects front cover open/ close	WG8-5593	1400/ 1788	
PI103	Inlet sensor	Detects paper in inlet	WG8-5509	1001/ 1101/ 1200/ 1300	

Ref.	Name	Description	Parts No.	Jam	Error
PI104	Feed path sensor	Detects paper in feed path	WG8-5509	1004/ 1104/ 1300	
PI105	Swing guide HP sensor	Detects swing guide HP	WG8-5509		E535
PI106	Front aligning plate HP sensor	Detects aligning plate front HP	WG8-5593		E530
PI107	Rear aligning plate HP sensor	Detects aligning plate front HP	WG8-5593		E537
PI108	Processing tray sensor	Detects paper in processing tray	WG8-5593		
PI109	Rear end assist HP sensor	detects rear end assist HP	WG8-5593		E514
PI110	Stapler shift HP sensor	Detects stapler HP	WG8-5509		E532
PI111	Tray 1 paper sensor	Detects paper on tray 1	WG8-5593		
PI112	Tray 2 paper sensor	Detects paper on tray 2	WG8-5593		
PI113	Shutter HP sensor	Detects shutter HP	WG8-5509		E584
PI114	Tray 1 paper surface sensor	Detects paper surface on tray 1	WG8-5593		
PI115	Tray 2 paper surface sensor 1	Detects paper surface on tray 2	WG8-5593		
PI116	Stapler alignment interference sensor	Detects stapler alignment interference	WG8-5509		E532
PI118	Escape tray path sensor	Detect paper in escape tray path	WG8-5593		
PI119	Escape tray full sensor	Detects paper full in escape tray	WG8-5593		
PI120	Tray 2 paper surface sensor 2	Detects 1700 sheets in tray 2	WG8-5593		
PI121	Escape door sensor	Detects escape door open/ close	WG8-5593		

Ref.	Stapler PCB 2	Stapler PCB 1	Feed driver PCB	Finisher controller PCB
PI102			J887 / J886A	J708B
PI103				J712
PI104				J731
PI105				J731
PI106				J721B
PI107				J721B
PI108				J721B
PI109				J721B
PI110				J721A
PI111				J718B
PI112				J719B
PI113				J721A
PI114				J721A
PI115				J721A
PI116	J994 / J993	J992 / J991		J720
PI118			J887 / J886A	J708B
PI119			J887 / J886A	J708B
PI120				J721A
PI121			J887 / J886A	J708B

4.5.2 Microswitches (Finisher Unit)

0009-2614



F-4-25

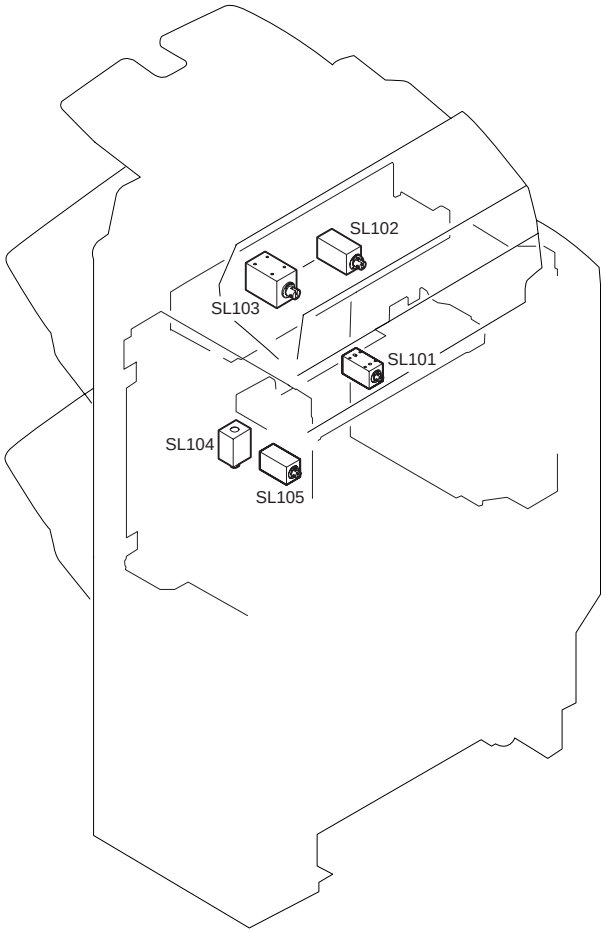
T-4-9

Ref.	Name	Description	Parts No.	Jam	Error	Finisher controller PCB
MSW101	Front cover switch	Detects front cover close	FH7-6379	1400	E5F9	J707
MSW102	Swing guide switch	Detects swing guide open	FH7-6379			J714
MSW103	Tray 1 switch	Detects tray 1	FH7-6377			J715

Ref.	Name	Description	Parts No.	Jam	Error	Finisher controller PCB
MS W104	Staple safety switch	Detects swing guide open	FH7-6379			J714

4.5.3 Solenoids (Finisher Unit)

0009-2615



F-4-26

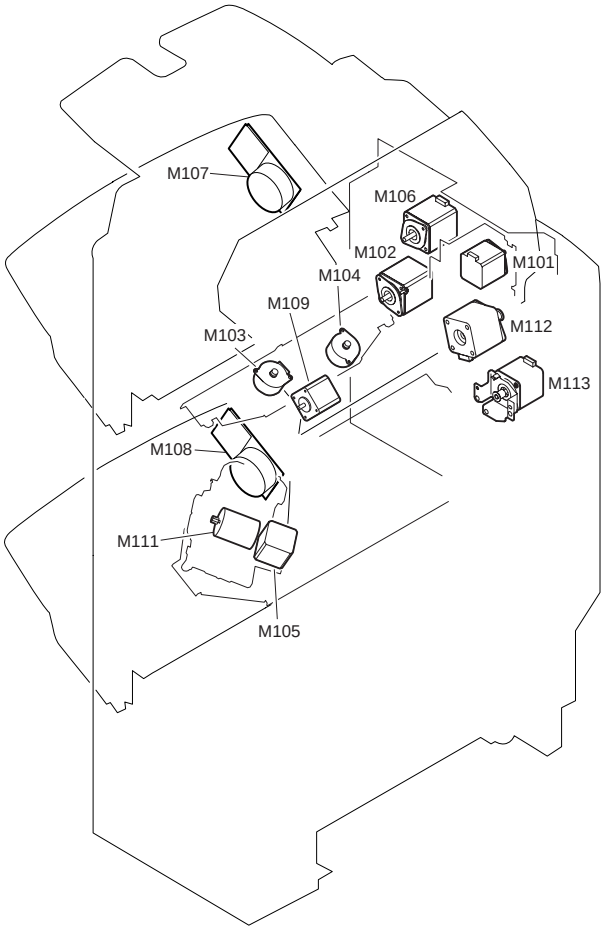
T-4-10

Ref.	Name	Parts No.	Feed driver PCB	Finisher controller PCB
SL 101	Feed roller separation solenoid	FL2-0811		J713
SL 102	Buffer roller separation solenoid	FL2-0813		J713

Ref.	Name	Parts No.	Feed driver PCB	Finisher controller PCB
SL 103	1st delivery roller separation solenoid	FL2-0812		J713
SL 104	Buffer rear end holding solenoid	FL2-0821		J713
SL 105	Escape solenoid	FH6-5089	J889 / J881B	J705B

4.5.4 Motors (Finisher Unit)

0009-2616



F-4-27

T-4-11

Ref.	Name	Parts No.	Error
M101	Feed motor	FH5-1034	
M102	Stack ejection motor	4K1-1106	E584

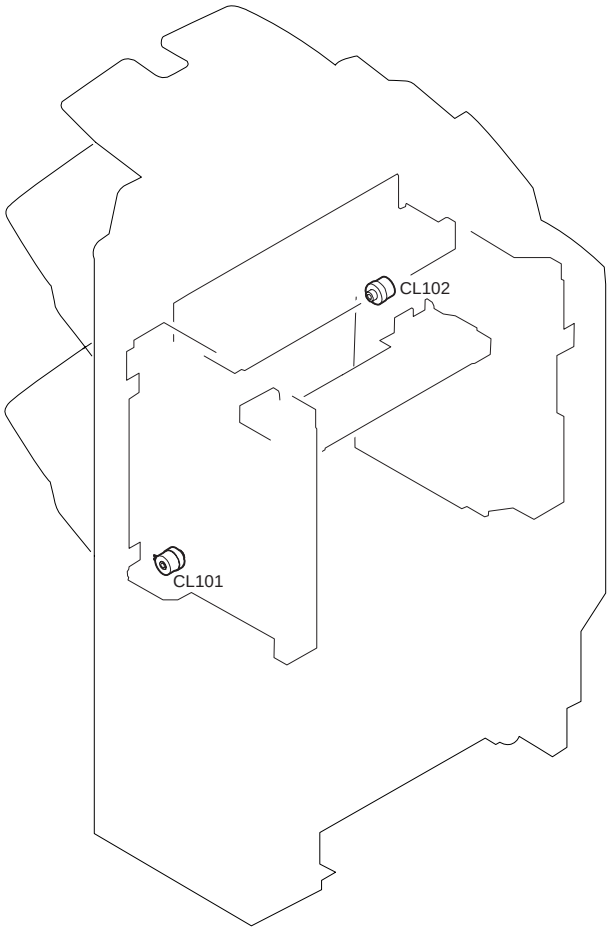
Ref.	Name	Parts No.	Error
M103	Front aligning plate motor	FH5-1040	E530
M104	Rear aligning plate motor	FH5-1040	E537
M105	Stapler shift motor	FH5-1037	E532
M106	Swing motor	FH5-1036	E535
M107	Tray 1 shift motor	4K1-1102	E540
M108	Tray 2 shift motor	4K1-1102	E542
M109	Rear end assist motor	FH5-1039	E514
M111	Stapler motor	FM2-0665	E531
M112	Escape feed motor	4K1-1105	
M113	Inlet motor	FH5-1043	

T-4-12

Ref.	Stapler PCB 2	Stapler PCB 1	Feed driver PCB	Finisher controller PCB
M101				J709
M102				J717
M103				J722
M104				J722
M105	J995 / J993	J992 / J991		J720
M106				J711
M107				J718A
M108				J719A
M109				J722
M111	J994,995 / J993	J992 / J991		J720
M112			J888 / J886A	J708A
M113			J883 / J881A	J705A

4.5.5 Clutches (Finisher Unit)

0009-2617



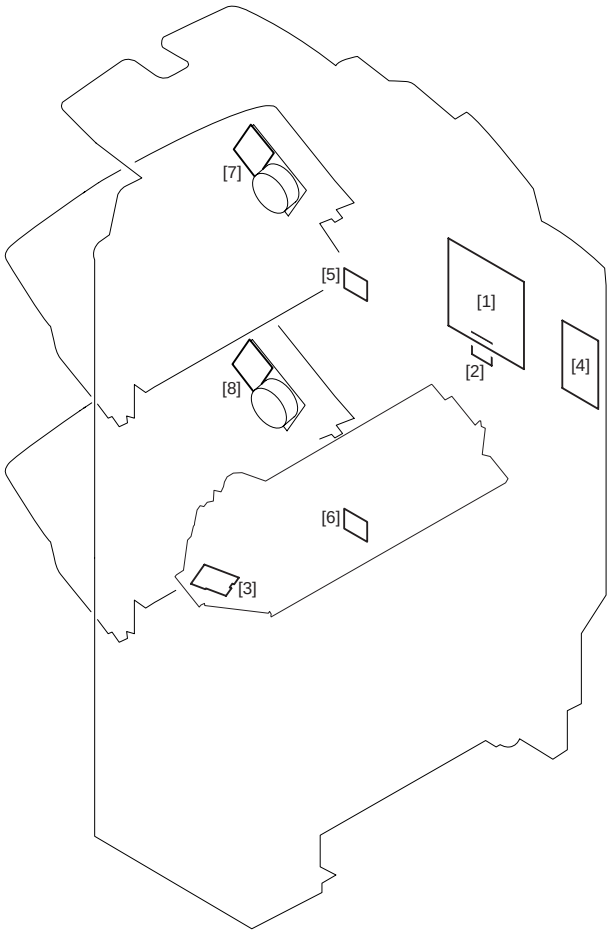
F-4-28

T-4-13

Ref.	Name	Parts No.	Error	Finisher controller PCB
CL101	Shutter clutch	FH6-5101	E584	J732
CL102	Stack ejection lower roller clutch	FH6-5101	E584	J716

4.5.6 PCBs (Finisher Unit)

0009-2618



F-4-29

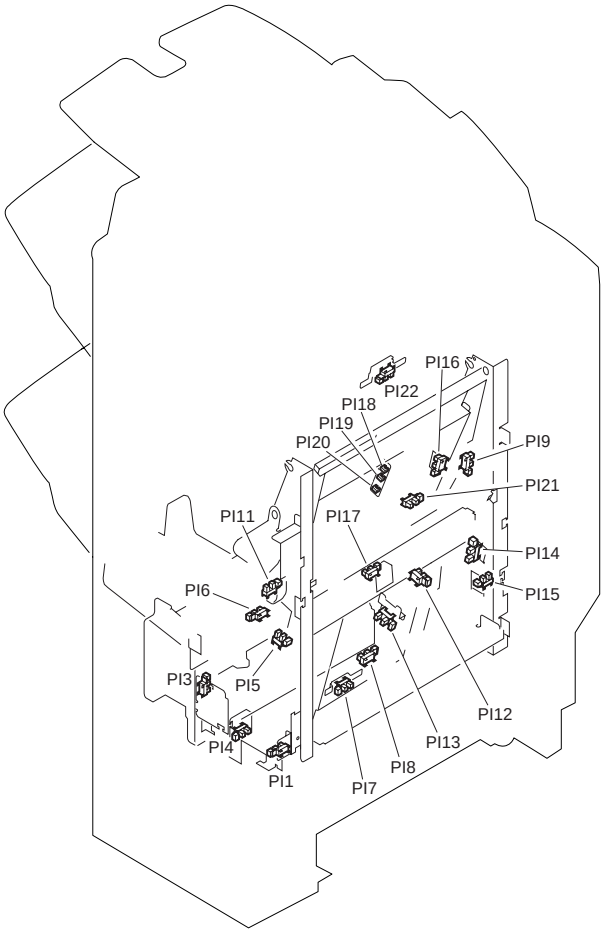
T-4-14

Ref.	Name	Parts No.	Error
[1]	Finisher controller PCB	4G1-1487	
[2]	Stapler PCB 1	FM2-1426(CABLE, STAPLE CONNECTING ASS'Y)	E531/ E532
[3]	Stapler PCB 2	FM2-1426(CABLE, STAPLE CONNECTING ASS'Y)	E531/ E532
[4]	Feed driver PCB	4G1-1488	
[5]	Tray 1 shift area sensor PCB	FG3-2886	E540
[6]	Tray 2 shift area sensor PCB	FG3-2886	E542
[7]	Tray 1 shift motor PCB	4K1-1102	E540

Ref.	Name	Parts No.	Error
[8]	Tray 2 shift motor PCB	4K1-1102	E542

4.5.7 Sensors (Saddle Stitcher Unit)

0009-2646



F-4-30

T-4-15

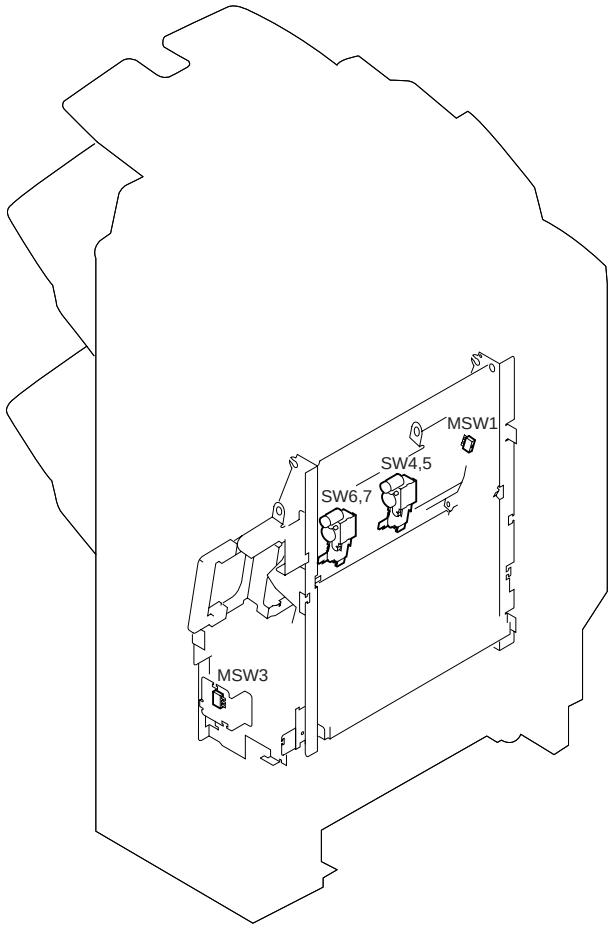
Ref.	Name	Description	Parts No.	Jam	Error	Saddle stitcher controller PCB
PI1	Paper pushing plate motor clock sensor	Detects paper pushing plate motor clock	FK2-0149		E5F6	J11
PI3	Delivery cover sensor	Detects delivery cover open	WG8-5593	1788		J11

Ref.	Name	Description	Parts No.	Jam	Error	Saddle stitcher controller PCB
PI4	Paper folding motor clock sensor	Detects paper folding motor clock	FK2-0149		E5F1	J11
PI5	Alignment plate HP sensor	Dtects alignment plate HP	WG8-5593		E5F3	J11
PI6	Tray paper sensor	Detects paper on tray	WG8-5593			J6
PI7	Paper positioning plate HP sensor	Dtects paper positioning plate HP	WG8-5593		E5F0	J6
PI8	Paper positioning plate paper sensor	Detects paper on paper positioning plate	WG8-5593	1787		J6
PI9	Inlet cover sensor	Detects inlet cover open	WG8-5593	1788		J10
PI11	Delivery sensor	Detects paper ejection	WG8-5593	1792/ 17A2/ 1787		J9
PI12	Crescent roller phase sensor	Detects crescent roller phase	WG8-5593			J9
PI13	Guide HP sensor	Detects guide HP	WG8-5593		E5F2	J9
PI14	Paper pushing plate HP sensor	Detects paper pushing plate HP	WG8-5593		E5F6	J9
PI15	Paper pushing plate top position sensor	Detects paper pushing plate top position	WG8-5593		E5F6	J9
PI16	Stitcher unit IN sensor	Detects stitcher unit storage	WG8-5593			J13
PI17	Vertical path paper sensor	Detects paper in vertical path	WG8-5593	17A2/ 1787		J13
PI18	No.1 paper sensor	Detects paper (No.1; on paper sensor PCB)	FG3-3106	1791/ 17A1/ 1787		J10
PI19	No.2 paper sensor	Detects paper (No.2; on paper sensor PCB)	FG3-3106	17A1/ 1787		J10

Ref.	Name	Description	Parts No.	Jam	Error	Saddle stitcher controller PCB
PI20	No.3 paper sensor	Detects paper (No.3; on paper sensor PCB)	FG3-3106	17A1/ 1787		J10
PI21	Paper folding HP sensor	Detects paper fold HP	WG8-5593		E5F1	J18
PI22	Saddle inlet sensor	Detects saddle inlet paper	WG8-5593	1793/ 17A3/ 1787		J21

4.5.8 Microswitches (saddle Stitcher Unit)

0009-2647



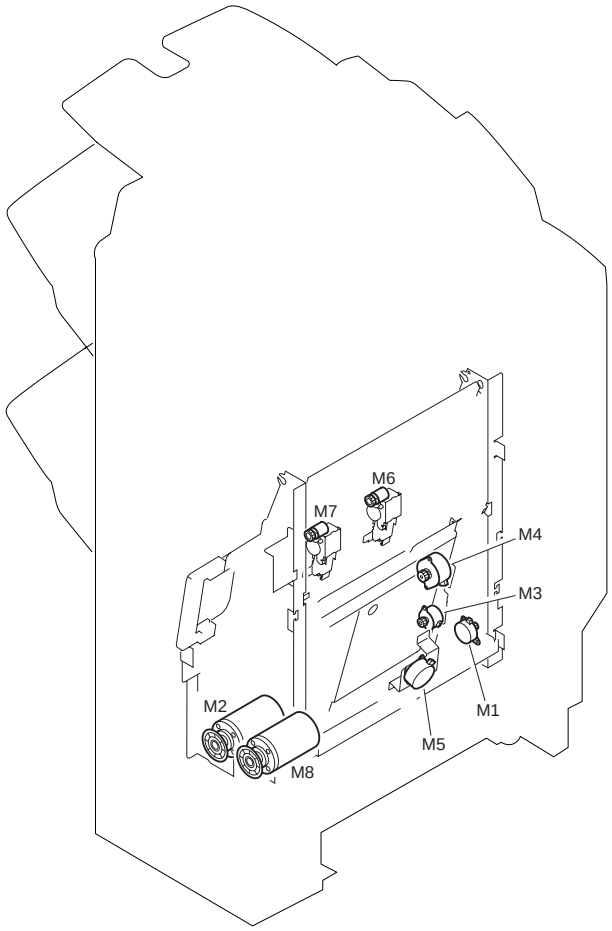
F-4-31

T-4-16

Ref.	Name	Description	Parts No.	Jam	Error	Saddle stitcher controller PCB
MSW1	Inlet door switch	Detects inlet door open	WC4-5128		E5F9	J4
MSW3	Delivery door switch	Detects delivery door open	WC4-5128		E5F9	J4
SW4	Staple sensor (rear)	Detects presence of staples (rear)	FL2-0846-000 (STAPLER UNIT)			J8
SW5	Stitcher HP sensor (rear)	Detects stitching HP (rear)	FL2-0846-000 (STAPLER UNIT)	1786	E5F4	J8
SW6	Staple sensor (front)	Detects presence of staples (front)	FL2-0846-000 (STAPLER UNIT)			J8
SW7	Stitcher HP sensor (front)	Detects stitching HP (front)	FL2-0846-000 (STAPLER UNIT)	1786	E5F5	J8

4.5.9 Motors (Saddle Stitcher Unit)

0009-2648



F-4-32

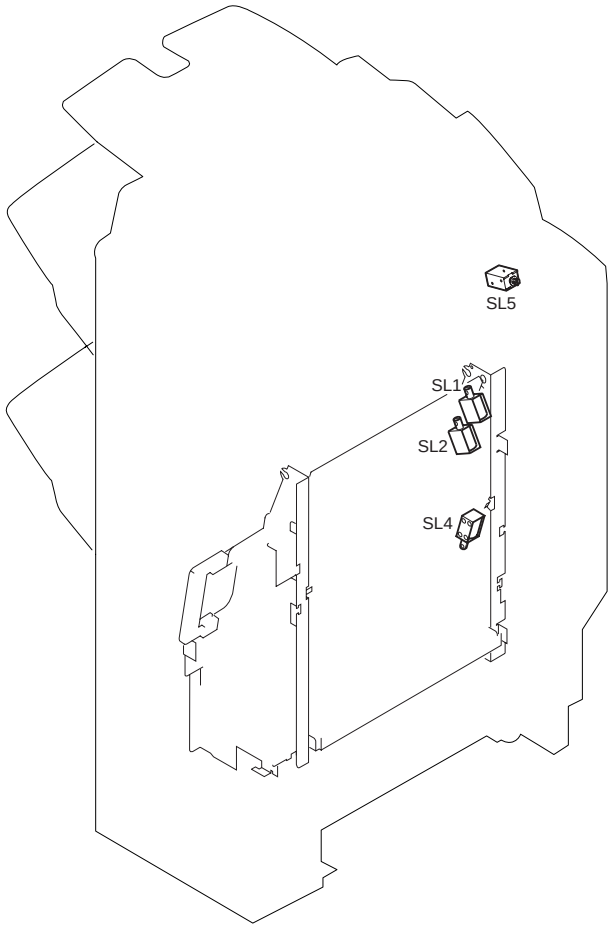
T-4-17

Ref.	Name	Parts No.	Error	Saddle stitcher controller PCB
M1	Feed motor	FH5-1042		J5
M2	Paper folding motor	FH5-1068	E5F1	J23
M3	Guide motor	4K1-1103	E5F2	J12
M4	Paper positioning plate motor	4K1-1104	E5F0	J7
M5	Alignment motor	4K1-1103	E5F3	J7
M6	Stitcher motor (rear)	FL2-0846(STAPLER UNIT)	E5F4	J8
M7	Stitcher motor (front)	FL2-0846(STAPLER UNIT)	E5F5	J8

Ref.	Name	Parts No.	Error	Saddle stitcher controller PCB
M8	Paper pushing plate motor	FH5-1068	E5F6	J23

4.5.10 Solenoids (Saddle Stitcher Unit)

0009-2649



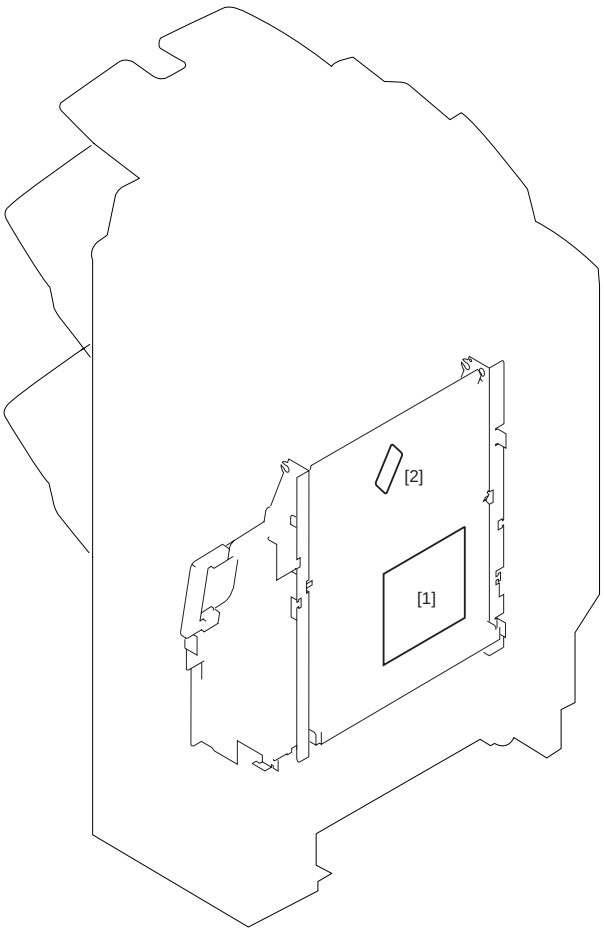
F-4-33

T-4-18

Ref.	Name	Parts No.	Saddle stitcher controller PCB
SL1	No.1 paper deflecting solenoid	FH6-5089	J15
SL2	No.2 paper deflecting solenoid	FH6-5089	J15
SL4	Feed plate contact solenoid	FH6-5090	J15
SL5	Saddle inlet solenoid	FH6-5089	J19

4.5.11 PCBs (Saddle Stitcher Unit)

0009-2650



F-4-34

T-4-19

Ref.	Name	Parts No.
[1]	Saddle stitcher controller PCB	4G1-1489
[2]	Paper sensor PCB	FG3-3106

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

4.6.1 Overview

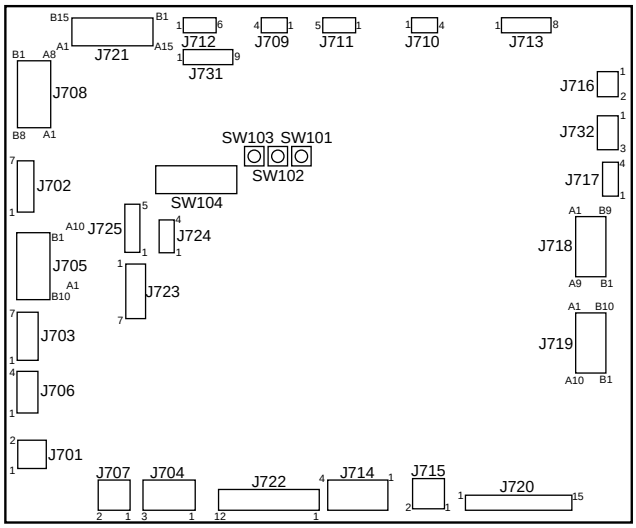
0009-2619

Of the LEDs and check pins used in the machine, those needed during servicing in the field are discussed.

⚠Do not touch the check pins not found in the list herein. They are exclusively for factory use, and require special tools and a high degree of accuracy.

4.6.2 Finisher Controller PCB

0009-2620



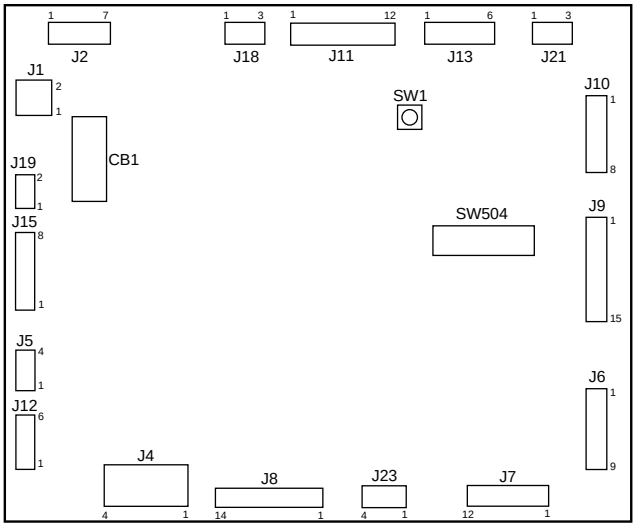
F-4-35

T-4-20

Switch	Switch Function
SW101	Used for making adjustments to the alignment position/stapling position.
SW102	Used for making adjustments to the alignment position/stapling position.
SW103	Used to start operation for alignment position adjustment/stapling position adjustment.
SW104	Used to start operation for alignment position adjustment/stapling position adjustment.

4.6.3 Saddle Stitcher Controller PCB

0009-2651



F-4-36

T-4-21

Switch	Function
SW504,Bit 1 to 2	Starts correction of discrepancy between stitching position and folding position.
SW504,Bit 6 to 8	Stores corrected settings for stitching position and folding position.
SW1	Starts correction of discrepancy between stitching position and folding position.

4.7 Upgrading

4.7.1 Upgrading (Finisher Unit)

0009-2621

Overview

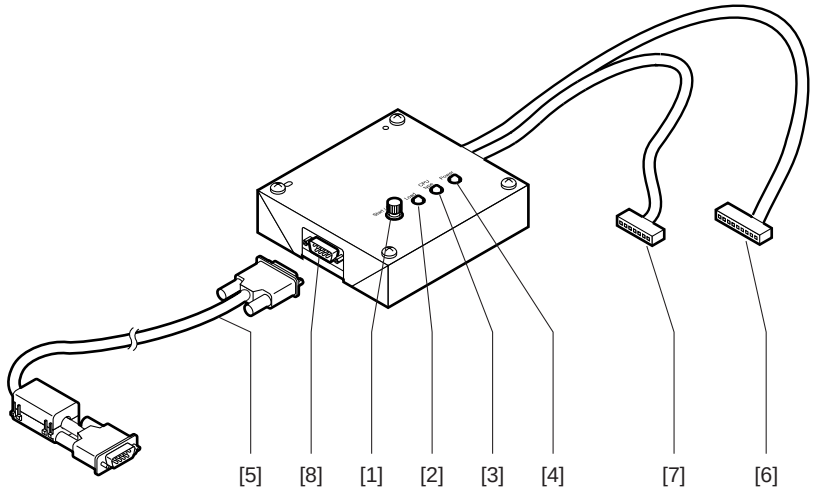
A flash ROM is used for the IC108 (CPU) of the Finisher unit. To upgrade this IC, the downloader PCB (FY9-2034) is used. The operating instructions for it are given below.

How to Use the Downloader PCB (FY9-2034)

1.When to Use the Downloader PCB

The downloader PCB is used when upgrading the CPU (IC108) of the Finisher Controller PCB.

2.Member part of the downloader PCB



F-4-37

T-4-22

No.	Description	Function
[1]	START/STOP key	A key to be pressed when you start or stop download
[2]	LOAD LED	To be lit when download is available.
[3]	Model LED	To be lit when the Finisher is connected.
[4]	Power LED	To be lit when power is supplied from the Finisher to the downloader PCB
[5]	RS-232C cable (straight full wiring; 9 pins)	A cable to connect the downloader PCB and a PC.Be sure to connect the cable in a way that its ferrite core comes to the PC side.
[6]	Cable A (9 pins) Length: approx. 70cm	A cable to connect the downloader PCB and other products

No.	Description	Function
[7]	Cable B (9 pins)Length: approx. 50cm	A cable to connect the downloader PCB and the Finisher
[8]	RS-232C connector	A connector to connect an RS-232C cable to the downloader PCB

3. Necessary Tool

The following item needs to be prepared for download.

Computer (PC)

Prerequisite: The download tool (Ver. 3.11E or higher) must be downloaded to the PC.

4. Download Procedures

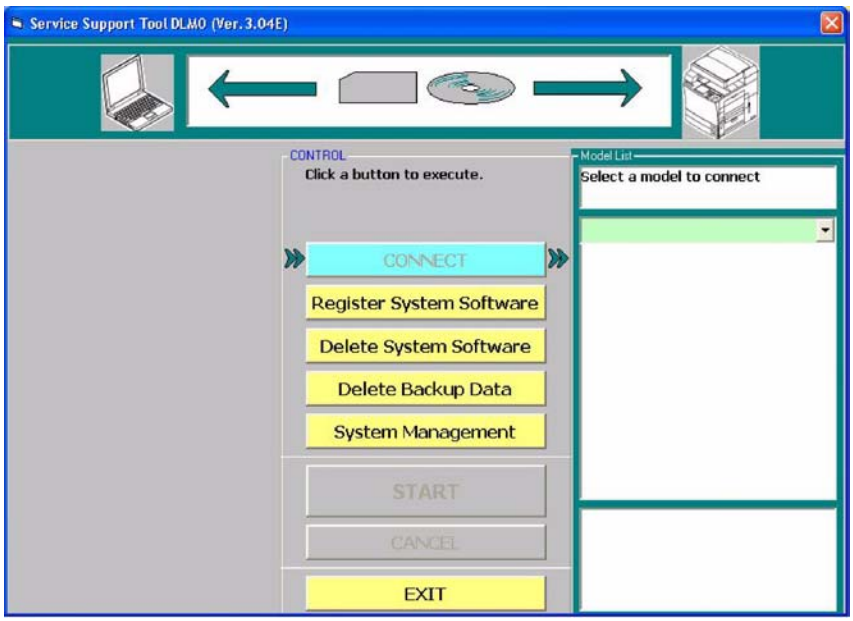
a. Registering ROM data

1) Store ROM data to be downloaded in the 'C:\ServTool\NewROM' folder.

2) Start up the Service Support Tool.

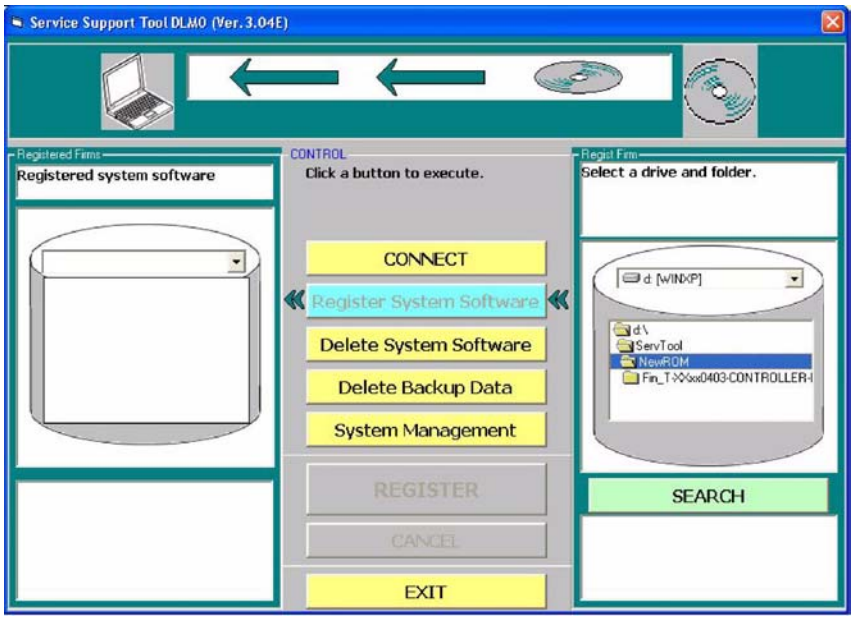
C:\ProgramFiles\Service Support Tool\bpchost.exe

3) Select [Register System Software].



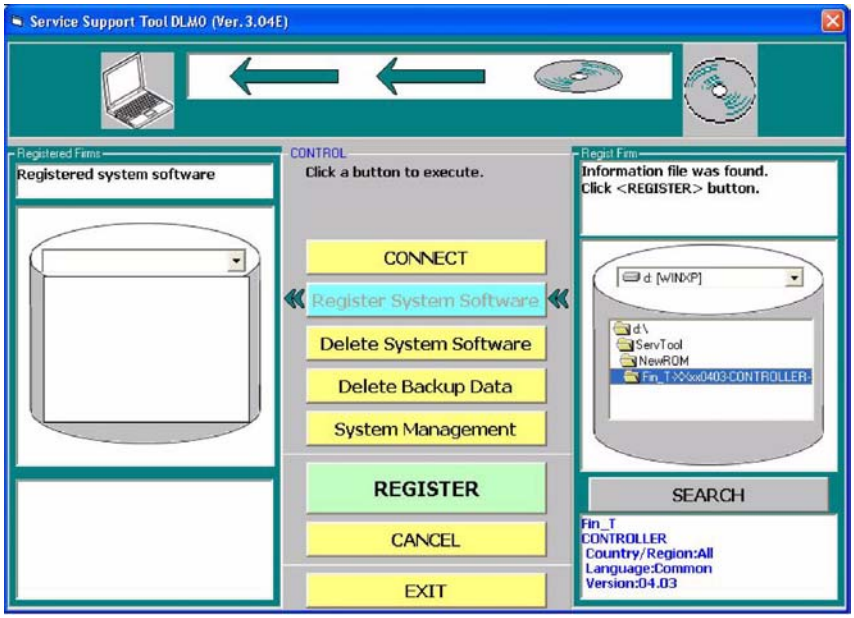
F-4-38

4) Select the data inside the NewROM folder



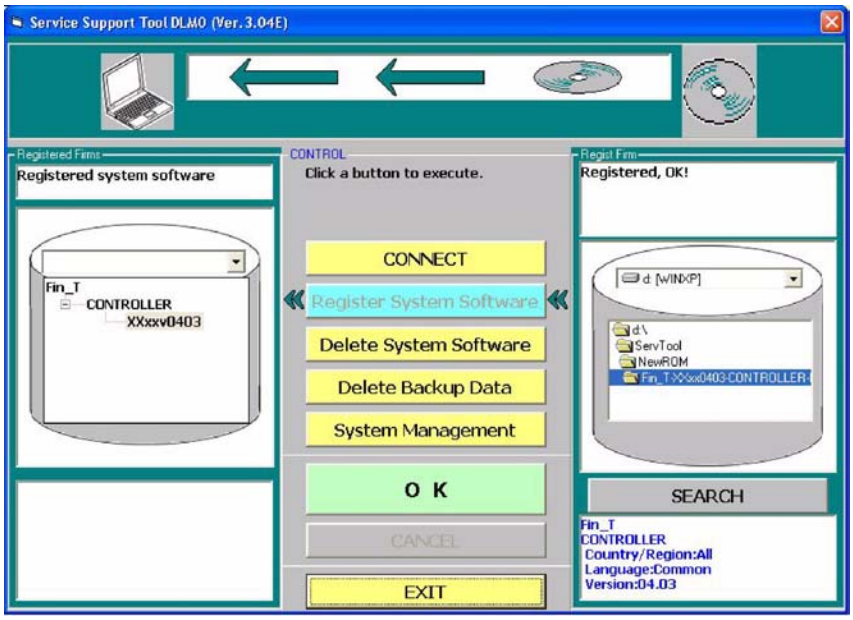
F-4-39

5) Select [Register].



F-4-40

6) Select [OK] and register the data.



F-4-41

b. Connection to the Finisher

1) Turn off the power of the host machine.

2) Remove the rear upper cover of the Finisher.

3) Insert the cable B to J723 on the Finisher controller PCB.

4) Connect the RS-232C cable to the RS-232C connectors of the circuit board and the PC.

5) Turn on the power of the host machine.

c. Download

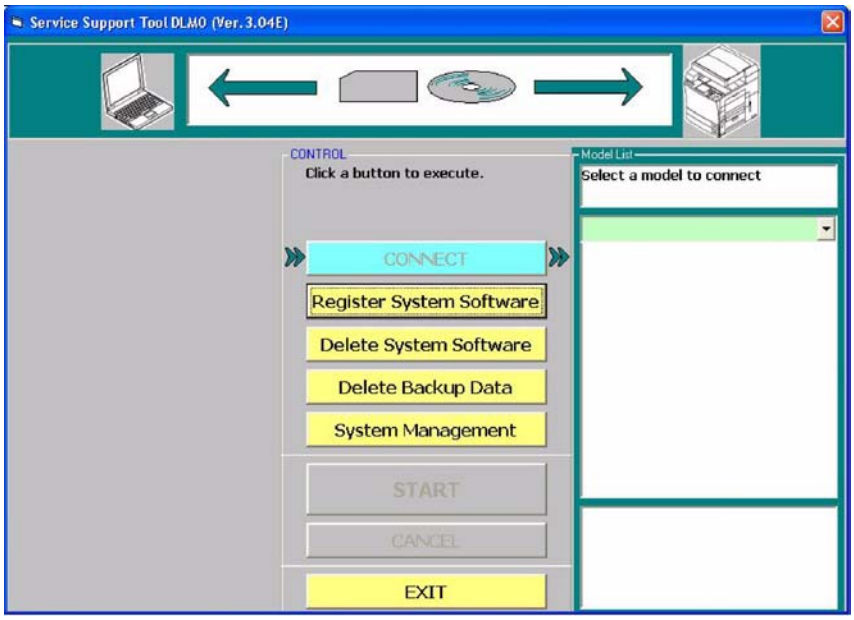
⚠The error code E713 might occur during download. It does not affect the download operation and its results.

---

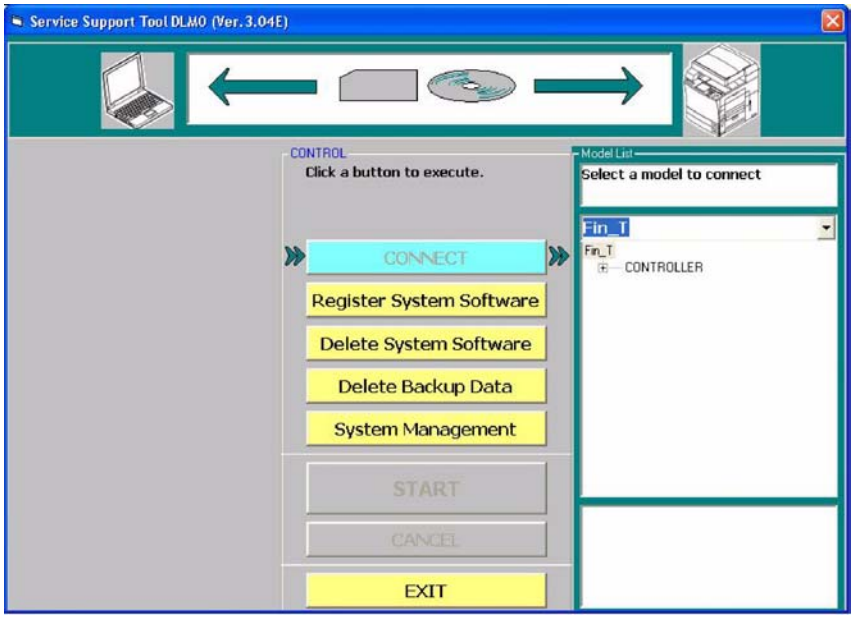
1) Start up the Service Support Tool.

C:\ProgramFiles\Service Support Tool\bpchost.exe

2) Select the type of host machine.



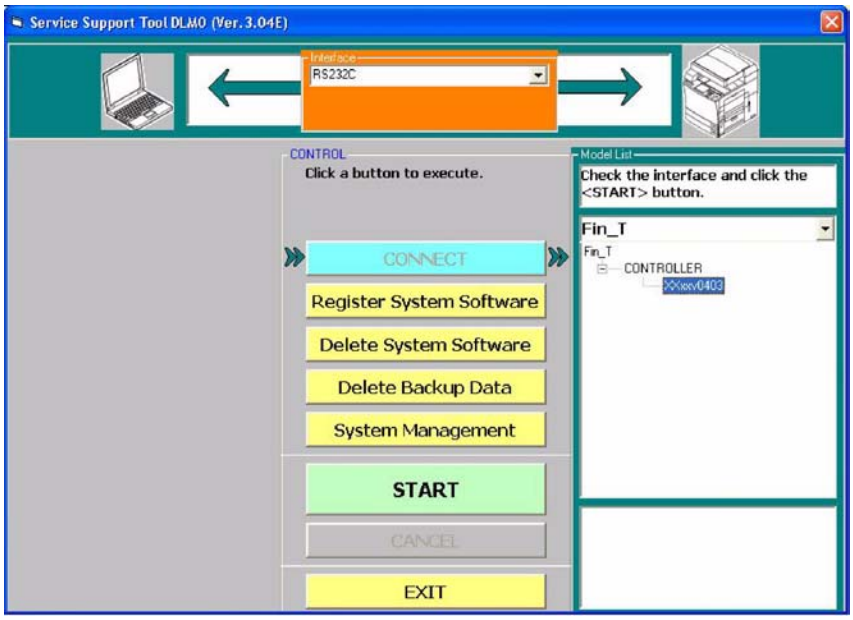
F-4-42



F-4-43

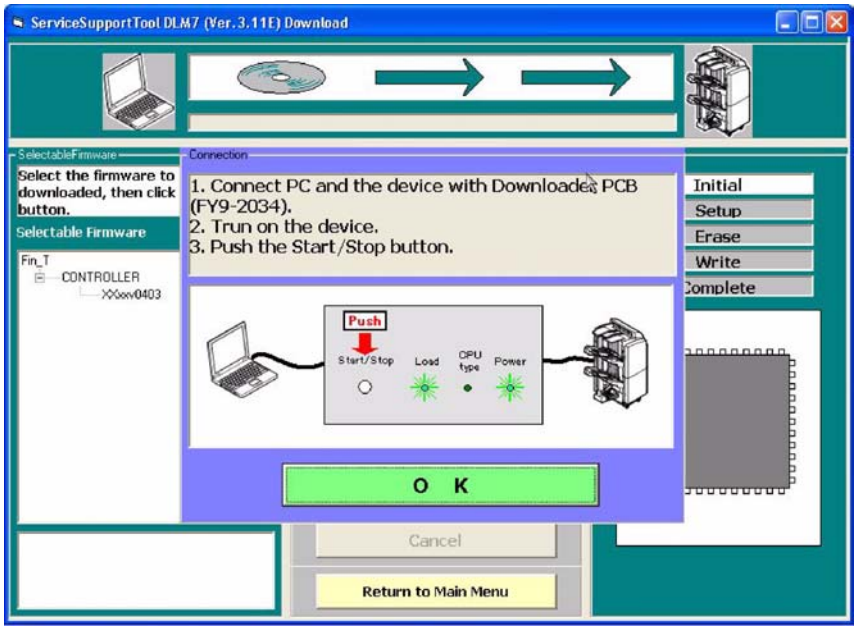
3) Press the START/STOP key of the downloader PCB.
LOAD LED is lit.

4)Select the data and press [START].



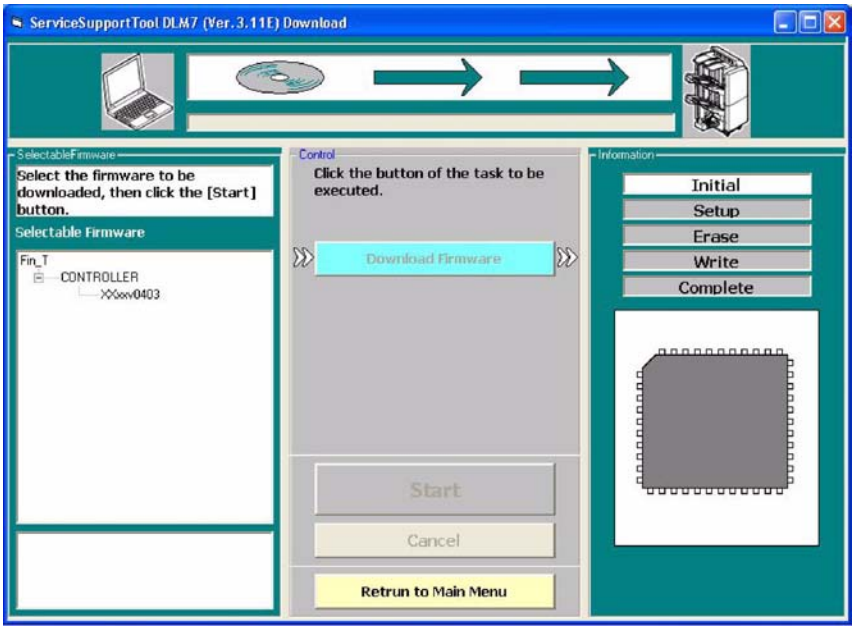
F-4-44

5) Follow the instructions on the screen to prepare for downloading.
A press on [OK] will bring up the next screen.



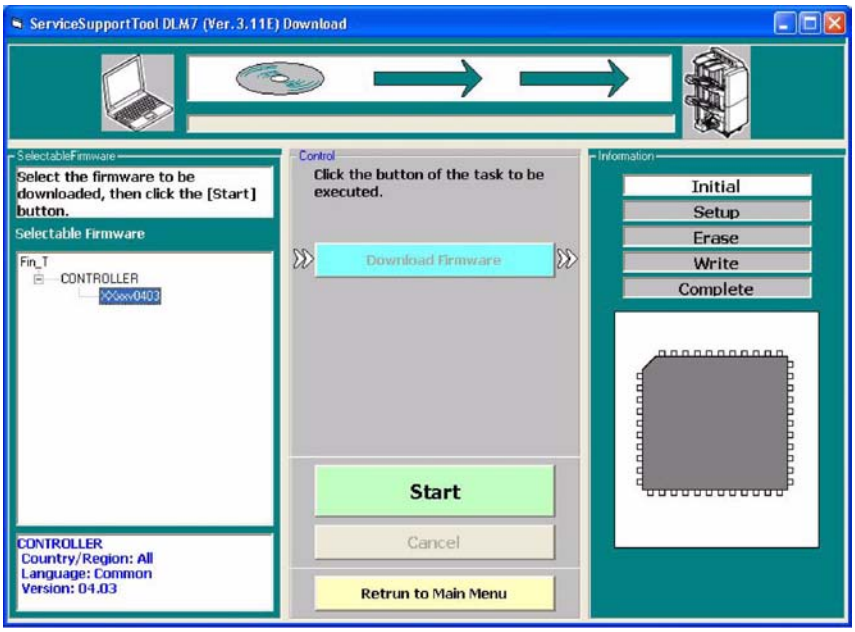
F-4-45

6) Select the data to download.



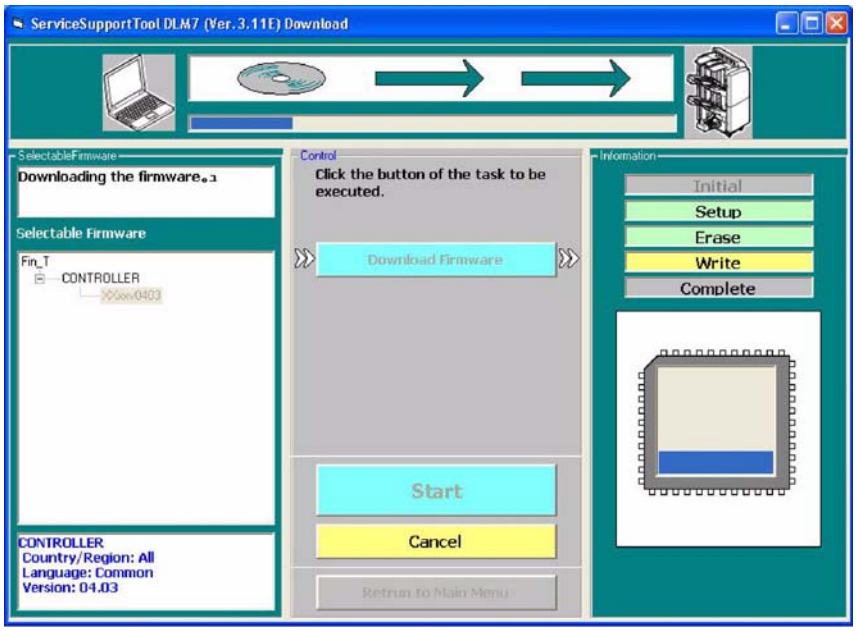
F-4-46

7) Press [START] to start downloading.



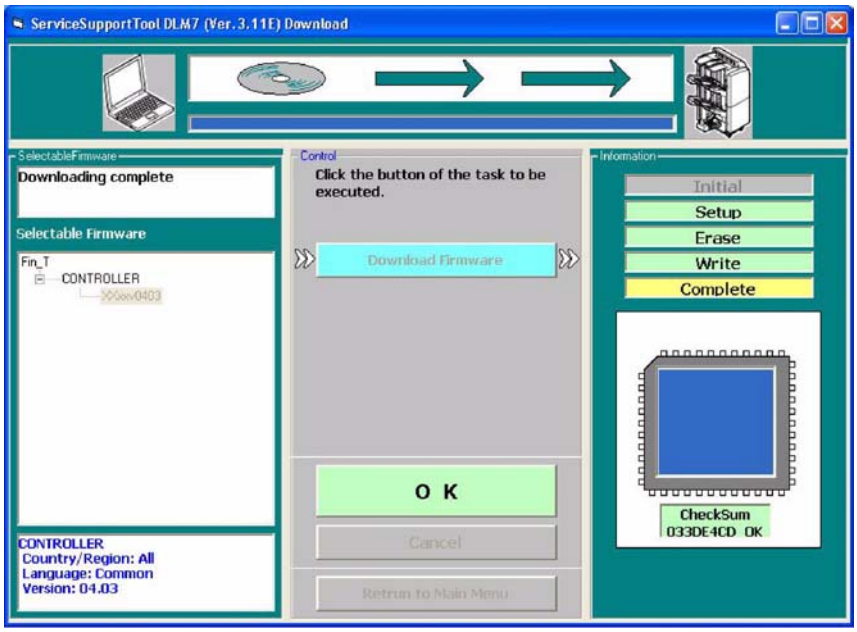
F-4-47

8) Press [START] so that the computer and the downloader PCB will start downloading the program.



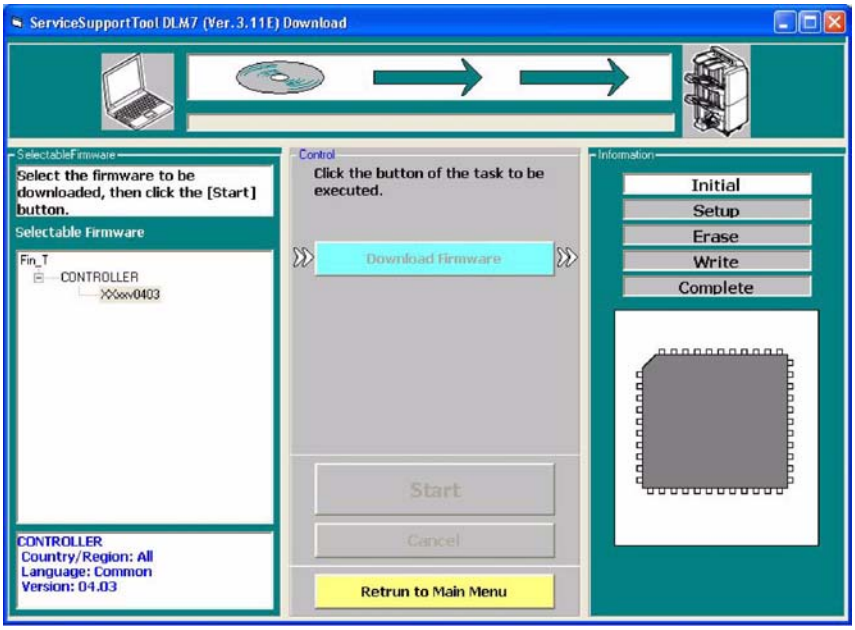
F-4-48

9) If downloading ended normally, press [OK].



F-4-49

10)Return to the main menu and finish the download.



F-4-50

5. Release of Connection

1) Press the START/STOP key of the downloader PCB.

LOAD LED is turned off.

2) Turn off the power of the host machine.

3) Disconnect the cable B from the Finisher.

4) Mount the rear upper cover to the Finisher.

5) Turn on the power of the host machine.

6. Checking the Operation

1)Check to make sure that the finisher operates normal.

4.7.2 Upgrading (Saddle Stitcher Unit)

0009-2652

Overview

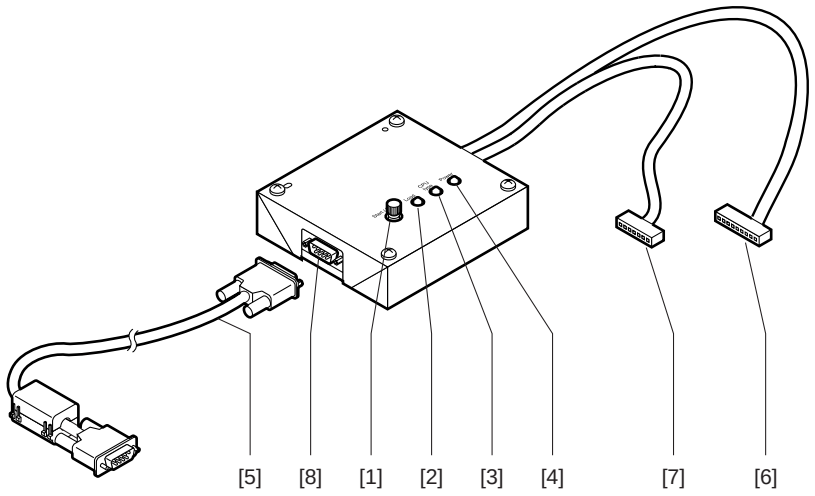
A flash ROM is used for the IC7 (CPU) of the Saddle stitcher unit. To upgrade this IC, the downloader PCB (FY9-2034) is used. The operating instructions for it are given below.

How to Use the Downloader PCB (FY9-2034)

1.When to Use the Downloader PCB

The downloader PCB is used when upgrading the CPU (IC7) of the Saddle stitcher Controller PCB.

2.Member part of the downloader PCB



F-4-51

T-4-23

No.	Description	Function
[1]	START/STOP key	A key to be pressed when you start or stop download
[2]	LOAD LED	To be lit when download is available.
[3]	Model LED	To be lit when the Finisher is connected.
[4]	Power LED	To be lit when power is supplied from the Finisher to the downloader PCB
[5]	RS-232C cable (straight full wiring; 9 pins)	A cable to connect the downloader PCB and a PC.Be sure to connect the cable in a way that its ferrite core comes to the PC side.
[6]	Cable A (9 pins) Length: approx. 70cm	A cable to connect the downloader PCB and other products
[7]	Cable B (9 pins)Length: approx. 50cm	A cable to connect the downloader PCB and the Finisher
[8]	RS-232C connector	A connector to connect an RS-232C cable to the downloader PCB

3. Necessary Tool

The following item needs to be prepared for download.

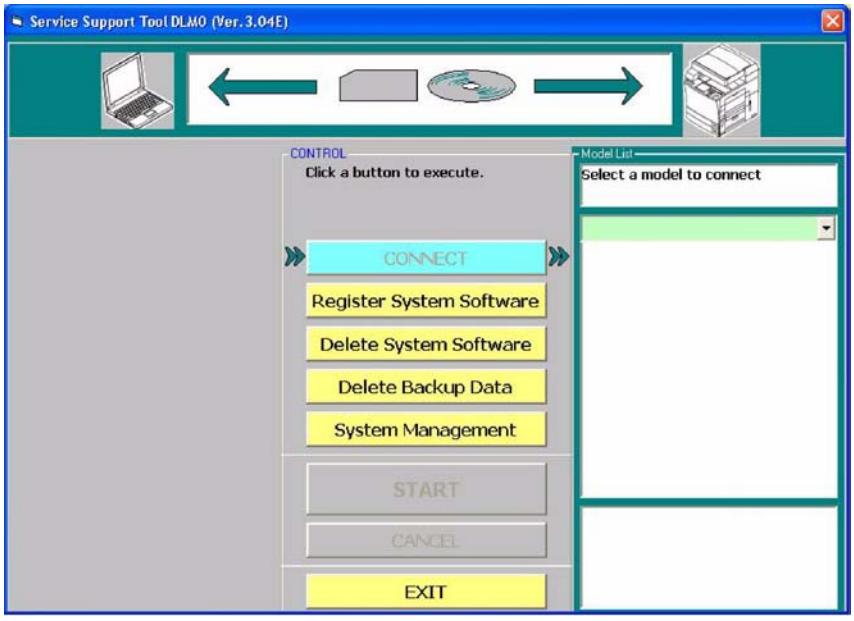
Computer (PC)

Prerequisite: The download tool (Ver. 3.11E or higher) must be downloaded to the PC.

4. Download Procedures

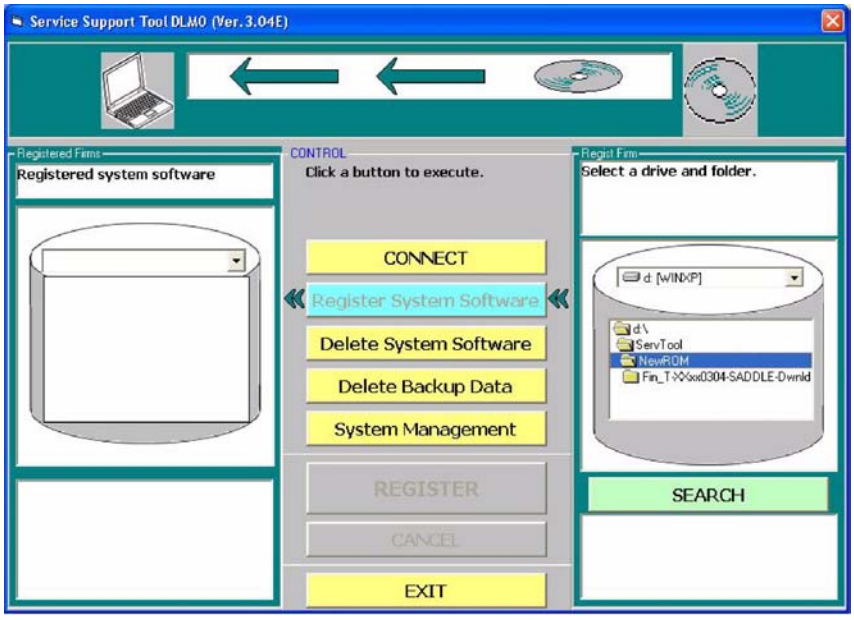
a. Registering ROM data

1) Store ROM data to be downloaded in the 'C:\ServTool\NewROM' folder.
2) Start up the Service Support Tool.
C:\ProgramFiles\Service Support Tool\bpchost.exe
3) Select [Register System Software].



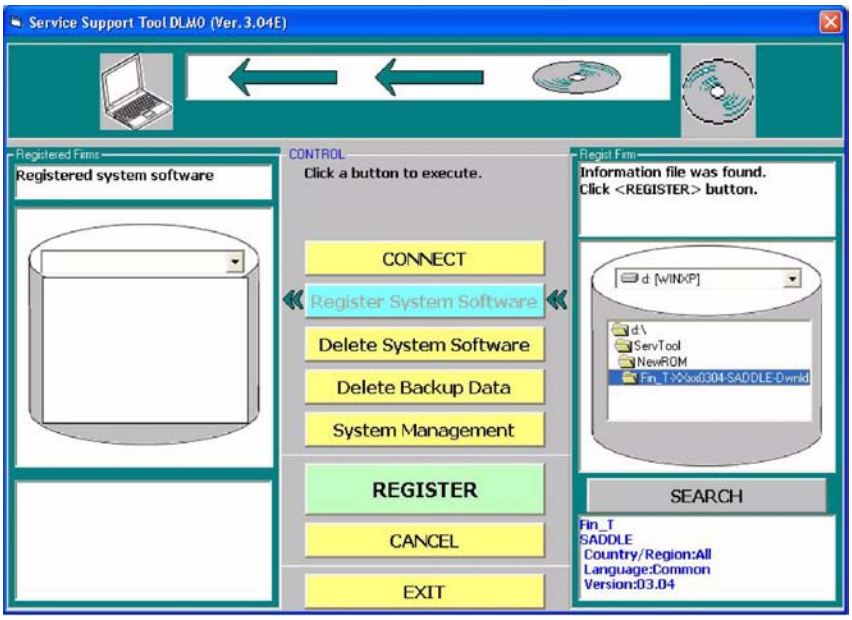
F-4-52

4) Select the data inside the NewROM folder.



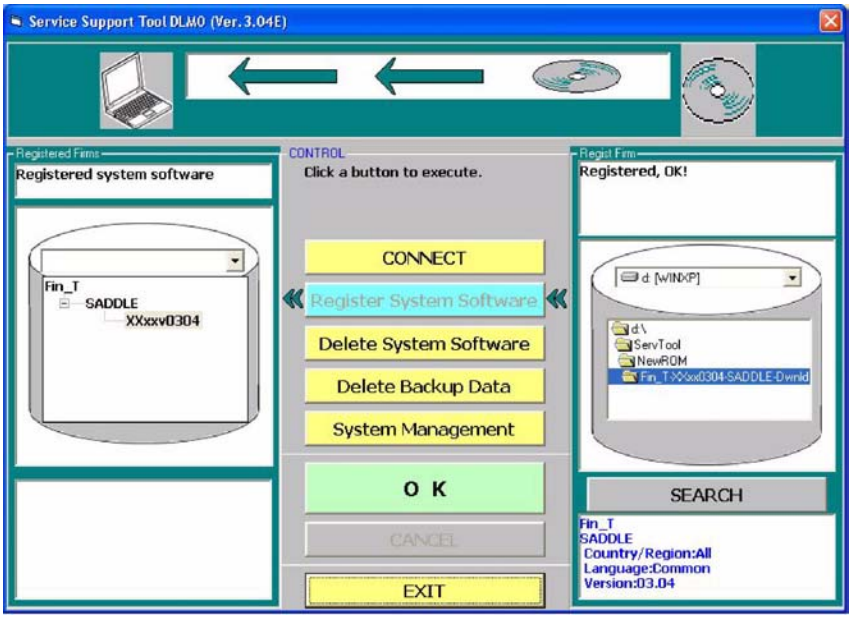
F-4-53

5) Select [Register].



F-4-54

6) Select [OK] and register the data.



F-4-55

b. Connection to the Finisher

1) Turn off the power of the host machine.

2) Detach the finisher from the host machine, and remove the PCB cover of the finisher.

3) Insert the cable B to J22 on the Saddle stitcher controller PCB.

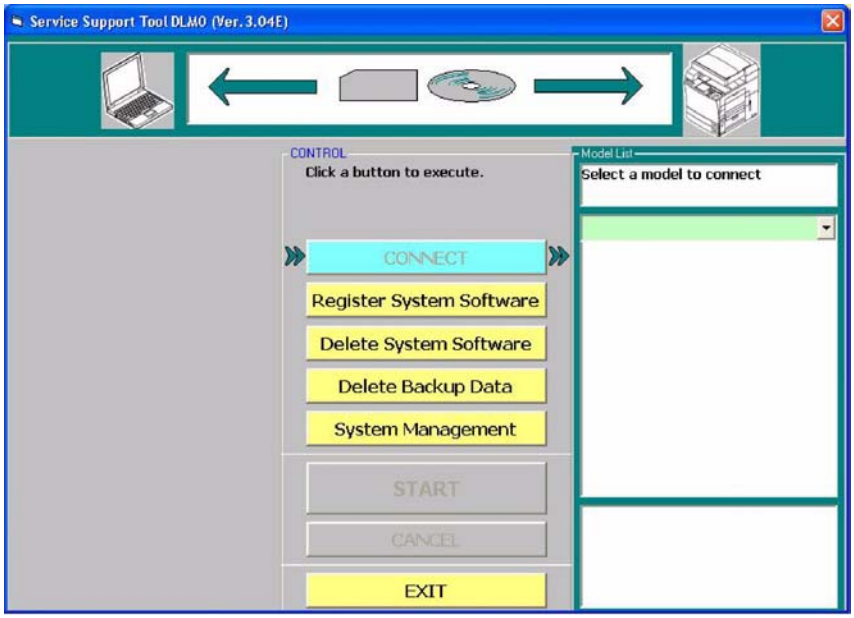
4) Connect the RS-232C cable to the RS-232C connectors of the circuit board and the PC.

5) Turn on the power of the host machine.

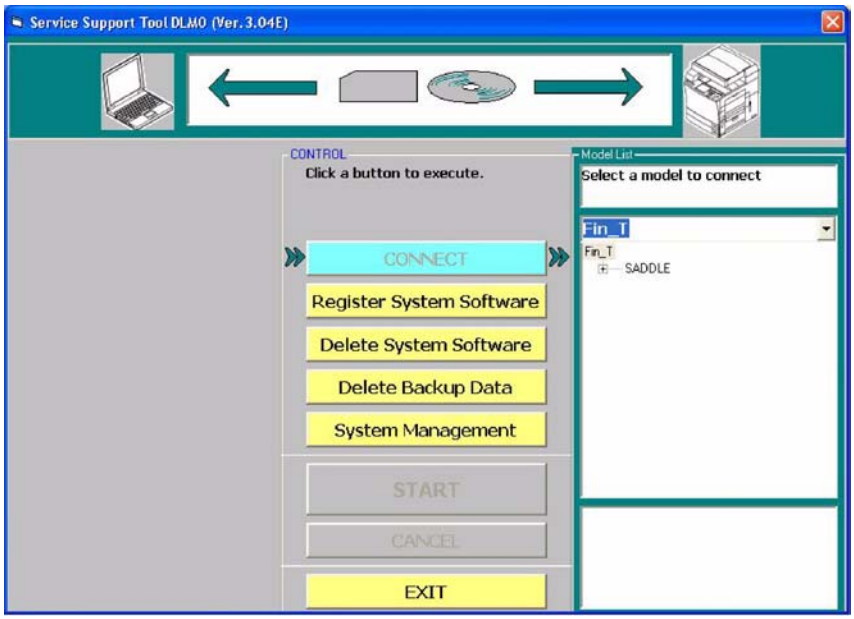
c. Download

⚠The error code E503 might occur during download. It does not affect the download operation and its results.

1) Start up the Service Support Tool.
C:\ProgramFiles\Service Support Tool\bpchost.exe
2) Select the type of host machine.



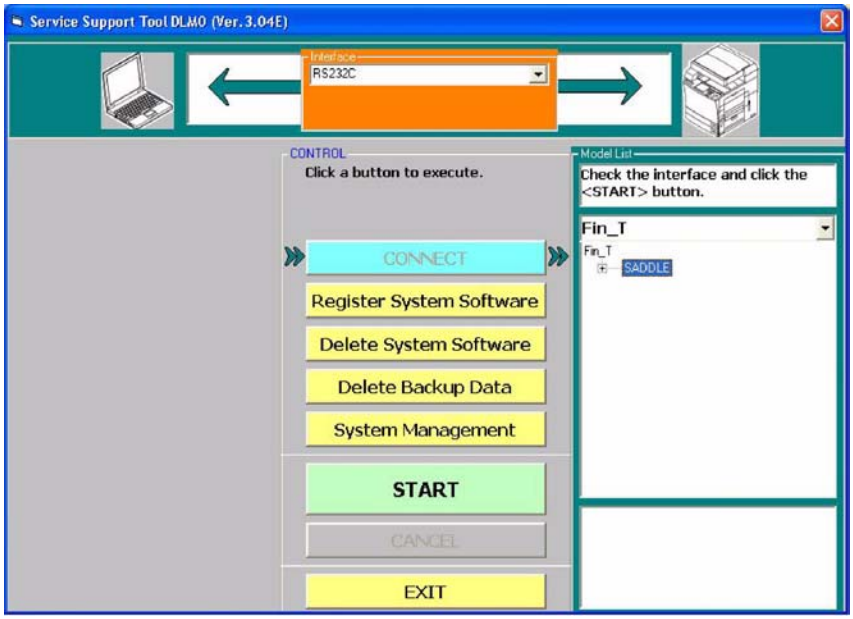
F-4-56



F-4-57

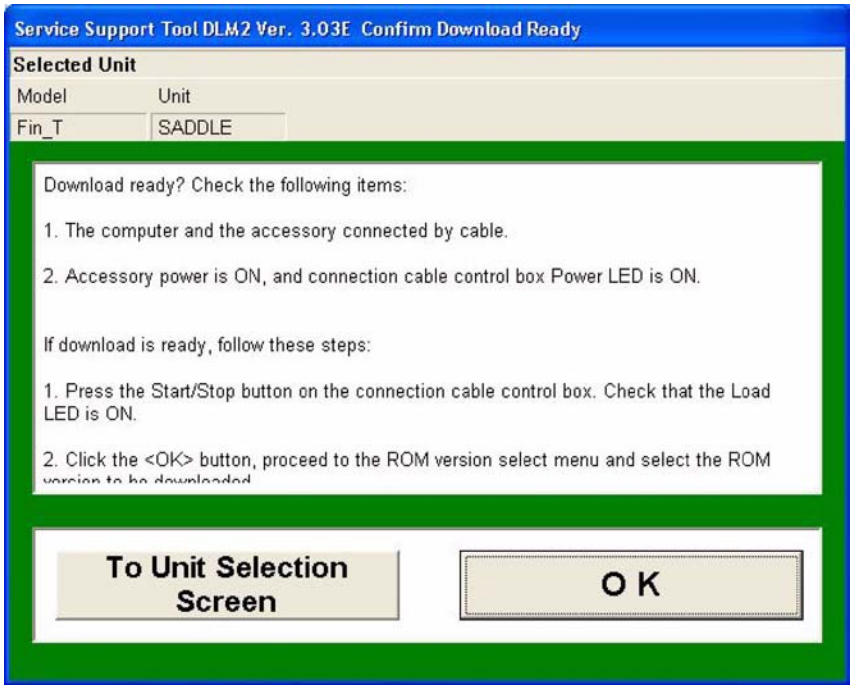
3) Press the START/STOP key of the downloader PCB.
LOAD LED is lit.

4)Select the data and press [START].



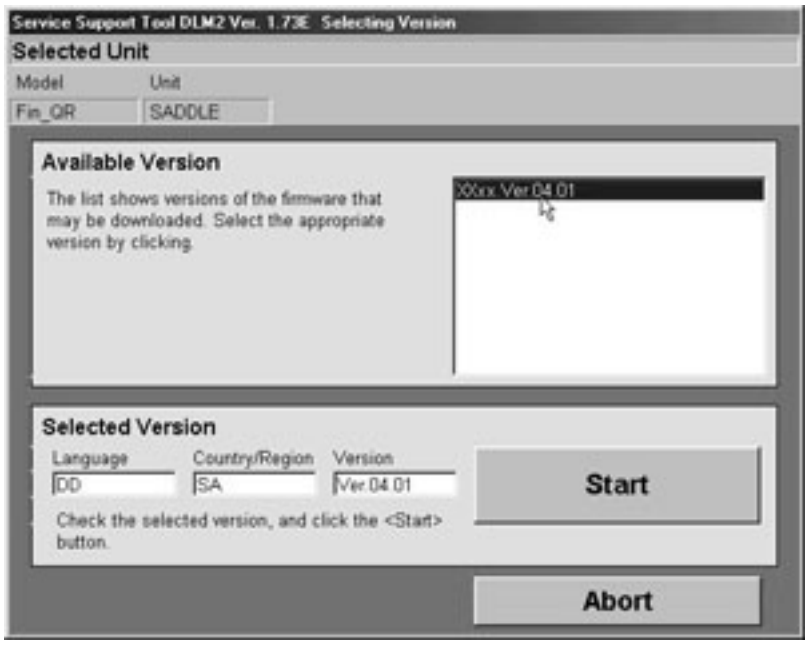
F-4-58

5) Follow the instructions on the screen to prepare for downloading.
A press on [OK] will bring up the next screen.



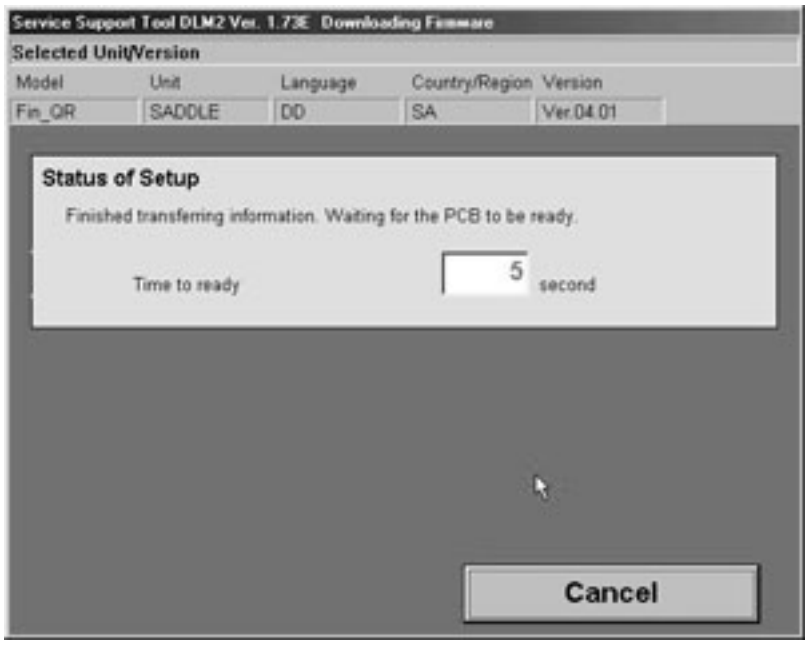
F-4-59

6) Select the version of the ROM to download.



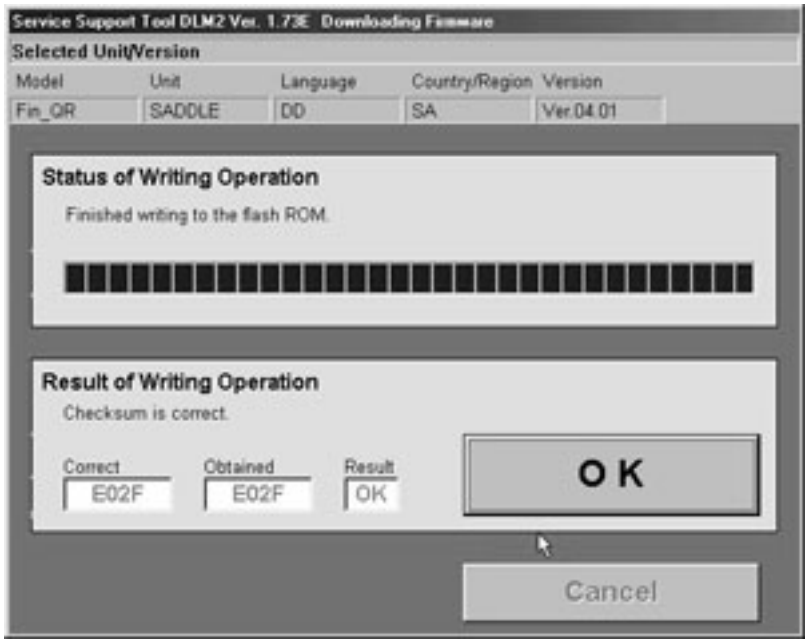
F-4-60

7) Press [Start] so that the computer and the downloaded PCB will start downloading the program.



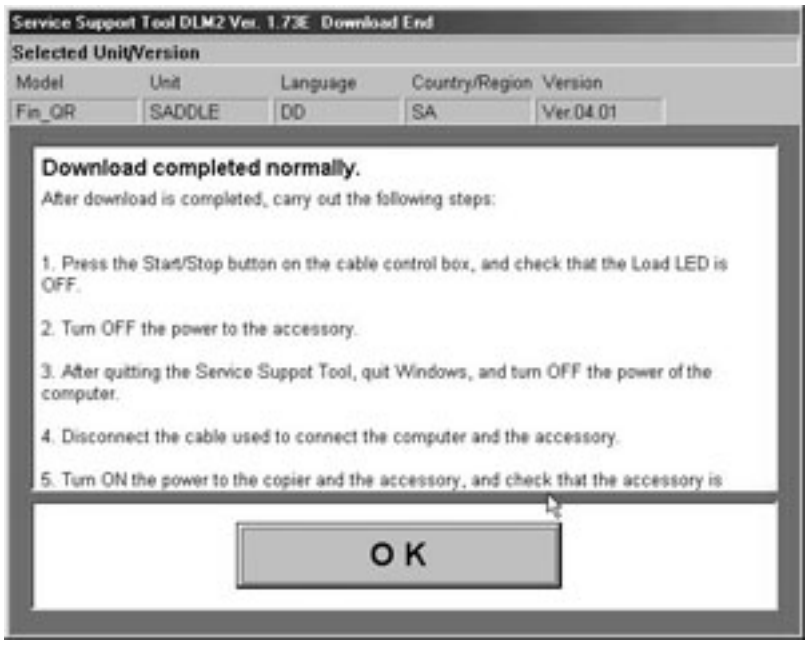
F-4-61

8) If downloading ended normally, press [OK].



F-4-62

9) End the session as instructed on the screen.



F-4-63

5. Release of Connection

1) Press the START/STOP key of the downloader PCB.

LOAD LED is turned off.

2) Turn off the power of the host machine.

3) Disconnect the cable B from the Finisher.

4) Put the PCB cover back to the finisher, and attach the finisher to the host machine.
5) Turn on the power of the host machine.

6. Checking the Operation
1)Check to make sure that the finisher operates normal.

4.8 Service Tools

4.8.1 Solvents and Oils

0009-2622

T-4-24

No.	Name	Description	Composition	Remarks
1	Vic Clean	Cleaning: e.g., glass, plastic, rubber parts, external covers	Hydrocarbon(fluorine family) Alcohol Surface activating agent Water	Do not bring near fire. Procure locally. Isopropyl alcohol may be substituted.
2	Lubricant	Sliding units	Silicone oil	MOLYKOTE EM30-L

Chapter 5 Error Code

Contents

5.1 Overview

5.1.1 Overview

0009-2669

The CPU on the machine's finisher controller PCB is equipped with a mechanism to check the machine condition as needed; when it detects a fault, the machine communicates the fact to the host machine in the form of a code and a detail code.
The host machine indicates the code on its control panel. (The detail code may be checked in the host machine's service mode.)

5.2 User Error Code

5.2.1 Staple is absent

0009-2670

T-5-1

Error Description	Condition	Detection timing	Machine operation	Resetting
Staple is absent	The staple cartridge has run out of staples.	Always monitored	Normal operation can be continued. However, whether to operate or not depends on the instruction from the host machine.	Replace the staple cartridge; or, set it correctly.

5.2.2 Stapler safety protection function activated

0009-2672

T-5-2

Error Description	Condition	Detection timing	Machine operation	Resetting
Stapler safety protection function activated	Stapler safety protection function was activated.	When starting staple operation.	Stop staple motor (M41).	Stack ejection without stapling.

5.2.3 Stack tray overstacking

0009-2673

T-5-3

Error Description	Condition	Detection timing	Machine operation	Resetting
Stack tray over-stacking	The number of sheets on the ejection tray has exceeded the stackable sheet or set count.	After ejecting the sheet/set exceeding the limit.	Normal operation will continue.	Remove paper from ejection tray.

5.2.4 Staple is absent (Saddle Stitcher Unit)

0009-2698

T-5-4

Error Description	Condition	Detection timing	Machine operation	Resetting
Staple is absent	The staple cartridge has run out of staples.	Always monitored	Normal operation will continue. However, operation is subject to instruction from host machine.	Replace the staple cartridge; or, set it correctly.

5.2.5 Mixed paper sizes (Saddle Stitcher Unit)

0009-2699

T-5-5

Error Description	Condition	Detection timing	Machine operation	Resetting
Mixed paper sizes	Sheets of different sizes are output in the holding area.	When the sheet that causes the fault is output to the holding area.	Stitching is prohibited. Alignment is prohibited.	Remove the sheets from the holding area.

5.2.6 Stack exceeded (Saddle Stitcher Unit)

0009-2700

T-5-6

Error Description	Condition	Detection timing	Machine operation	Resetting
Stack exceeded	The stack of sheets on the output tray exceeds the maximum number of sheets that can be stacked.	When output of the sheet that cause an excess is output on the output tray.	Normal operation is continued.	Remove the stack of sheets from the tray.

5.2.7 Stitching capacity error (Saddle Stitcher Unit)

0009-2701

T-5-7

Error Description	Condition	Detection timing	Machine operation	Resetting
Stitching capacity error	The number of sheets in the holding area has exceeded 15.	When the sheet that causes an excess is output to the holding area.	Stitching is prohibited.	Remove the sheets from the holding area.

5.3 Service Error Code

5.3.1 E500

0009-2677

T-5-8

Code	Detail	Error Description	Detection timing
E500	0001	Communication error	The communication with the host machine is interrupted.

5.3.2 E503

0009-2694

T-5-9

Code	Detail	Error Description	Detection timing
E503	0002	Communication error	The communication with the saddle stitcher is interrupted.

5.3.3 E505

0009-2678

T-5-10

Code	Detail	Error Description	Detection timing
E505	0001	Backup RAM	The checksum for the finisher controller PCB has an error when the power is turned on.

5.3.4 E514

0009-2679

T-5-11

Code	Detail	Error Description	Detection timing
E514	8001	Rear end assist motor(M109)/ Rear end assist homeposition sensor (PI109)	The stapler does not leave the rear end assist home position when the rear end assist motorhas been driven for 3 seconds.
	8002		The stapler does not return to the rear end assist home position when the rear end assist motor has been driven for 3 seconds.

5.3.5 E530

0009-2681

T-5-12

Code	Detail	Error Description	Detection timing
E530	8001	Aligning plate frontmotor (M103)/ Aligning plate fronthome position sensor(PI106)	The aligning plate does not return to aligning plate front home position sensor when the alignment plate front motor has been driven for 4 seconds.
	8002		The aligning plate does not leave the aligningplate front home position sensor when thealignment plate front motor has been driven for 4 seconds.

5.3.6 E531

0009-2683

T-5-13

Code	Detail	Error Description	Detection timing
E531	8001	Staple motor(M111)/ Staple home position detect sensor(PI50)	The stapler does not return to the staple home position when the staple motor has been driven for 0.5 sec.
	8002		The stapler does not leave the staple home positionwhen the staple motor has been driven for 0.5 sec.

5.3.7 E532

0009-2684

T-5-14

Code	Detail	Error Description	Detection timing
E532	8001	Stapler shift motor(M105)/ Stapler shift homeposition sensor (PI110)	The stapler does not leave the stapler shifthome position when the stapler shift motor hasbeen driven for 5 seconds.
	8002		The stapler does not return to the stapler shift home position when the stapler shift motor has been driven for 20 seconds. The stapler is caught in the way of its travel route and the sensor flag of the stapler alignment interference sensor is activated:

5.3.8 E535

0009-2686

T-5-15

Code	Detail	Error Description	Detection timing
E535	8001	Swing motor (M106)/Swing home positionsensor (PI105)	The stapler does not return to the swing home position when the swing motor has bee driven for 3 seconds.
	8002		The stapler does not leave the swing home position when the swing motor has been driven for 3 seconds.

5.3.9 E537

0009-2688

T-5-16

Code	Detail	Error Description	Detection timing
E537	8001	Aligning plate rear motor (M104)/ Aligning plate rear home position sensor(PI107)	The aligning plate does not leave the aligning plate rear home position sensor when the alignment plate rear motor has been driven for 4 seconds.
	8002		The aligning plate does not return to aligning plate rear home position sensor when the alignment plate rear motor has been driven for 4 seconds.

5.3.10 E540

0009-2689

T-5-17

Code	Detail	Error Description	Detection timing
E540	8001	Tray 1 shift motor(M107)/ Tray 1 shift area sensor PCB	If the tray does not return to home position when the tray 1 shift motor is driven for 20 seconds. If the tray does not move to other area when tray 1 shift motor is driven for 4 seconds.
	8002		- The dangerous area is reached before the tray 1 paper surface sensor detects paper surface during the paper surface detection operation.- A discontinuous area is detected during tray operation.
	8003		- The tray 1 closing detect switch is activated while the tray 1 is operating.
	8004		- Clock signal input cannot be detected when the tray 1 shift motor has been driven for 0.2 second.
	8005		- The lock detection signal turns OFF 150 ms after the lock detection signal turned ON.
	8006		- The lock detection signal does not turn ON when the tray 1 shift motor has been driven for 1 second.
	8007		- The lock detection signal does not turn OFF when the tray 1 shift motor is at a stop.

5.3.11 E542

0009-2690

T-5-18

Code	Detail	Error Description	Detection timing
E542	8001	Tray 2 shift motor (M108)/ Tray 2 shift area sensor PCB	If the tray does not return to home position when the tray 2 shift motor is driven for 20 seconds. If the tray does not move to other area when tray 2 shift motor is driven for 4 seconds.
	8002		- The upper limit area is reached before the tray 2 paper surface sensor 1 detects the paper surface during paper surface detection operation.- A discontinuous area is detected during tray operation.- During evacuation operation, arrival at the area beyond the tray 2 paper surface sensor 2 is detected before this sensor detects paper surface.
	8004		- Clock signal input cannot be detected when the tray 2 shift motor has been driven for 0.2 second.
	8005		- The lock detection signal turns OFF 150 ms after the lock detection signal turned ON.
	8006		- The lock detection signal does not turn ON when the tray 2 shift motor has been driven for 1 second.
	8007		- The lock detection signal does not turn OFF when the tray 2 shift motor is at a stop.

5.3.12 E584

0009-2692

T-5-19

Code	Detail	Error Description	Detection timing
E584	8001	Stack ejection motor (M102)/ Shutter open/ close clutch (CL101)/ Shutter home position sensor (PI113)/Stack ejection lower roller clutch (CL102)	The stapler does not leave the shutter home position when the stack ejection motor has been driven for 3 seconds.
	0002		The stapler does not return to the shutter home position when the stack ejection motor has been driven for 3 seconds.

5.3.13 E5F0

0009-2702

T-5-20

Code	Detail	Error Description	Detection timing
E5F0	8001	Paper positioning plate motor (M4)/Paper positioning plate home position sensor (PI7)	The paper positioning plate home positio sensor does not turn ON when the paper positioning plate motor has been driven for 1500 pulses.
	8002		The paper positioning plate home position sensor does not turn OFF when the paper positioning plate motor has been driven for 300 pulses.

5.3.14 E5F1

0009-2703

T-5-21

Code	Detail	Error Description	Detection timing
E5F1	8001	Paper fold motor (M2)/ Paper fold motor clock sensor (PI4)/ Paper fold home position sensor (PI21)	The number of pulses detected by the paper fold motor clock sensor is less than standard value.
	8002		The status of the paper fold home position sensor does not change when the paper fold motor has been driven for 3 seconds.

5.3.15 E5F2

0009-2704

T-5-22

Code	Detail	Error Description	Detection timing
E5F2	8001	Guide motor (M3)/Guide home position sensor (PI13)	The guide home position sensor does not turn ON when the guide motor has been driven for 700 pulses.
	8002		The guide home position sensor does not turn OFF when the guide motor has been driven for 50 pulses.

5.3.16 E5F3

0009-2705

T-5-23

Code	Detail	Error Description	Detection timing
E5F3	8001	Aligning motor (M5)/ Aligning plate home position sensor (PI5)	The aligning plate home position sensor does not turn ON when the aligning plate motor has been driven for 500 pulses.
	8002		The aligning plate home position sensor does not turn OFF when the aligning plate motor has been driven for 50 pulses.

5.3.17 E5F4

0009-2706

T-5-24

Code	Detail	Error Description	Detection timing
E5F4	8001	Stitch motor (rear)(M6)/ Stitching home position sensor (rear)(SW5)	The stitching home position sensor does not turn ON when the stitch motor (rear) has been driven backward for 0.5 sec.
	8002		The stitching home position sensor does not turn OFF when the stitch motor (rear) has been driven forward for 0.5 sec.

5.3.18 E5F5

0009-2707

T-5-25

Code	Detail	Error Description	Detection timing
E5F5	8001	Stitch motor (front)(M7)/ Stitching home position sensor (front)(SW7)	The stitching home position sensor does not turn ON when the stitch motor (front) has been driven forward for 0.5 sec.
	8002		The stitching home position sensor does not turn OFF when the stitch motor (front) has been driven backward for 0.5 sec.

5.3.19 E5F6

0009-2708

T-5-26

Code	Detail	Error Description	Detection timing
E5F6	8001	Paper pushing plate motor (M8)/Paper pushing plate home position sensor(PI14)/ Paper pushing plate leading edge position sensor (PI15)/ Paper pushing plate motor clock sensor(PI1)	The paper pushing plate home position sensor does not turn ON when the paper pushing plate motor has been driven for 0.3 sec.
	8002		The paper pushing plate home position sensor does not turn OFF when the paper pushing plate motor has been driven for 80 ms.
	8003		The number of pulses detected by the paper pushing plate motor clock sensor is less than standard value.
	8004		The paper pushing plate leading edge position sensor does not turn OFF when the paper pushing plate motor has been driven for 80 ms.
	8005		The paper pushing plate leading edge position sensor does not turn ON when the paper pushing plate motor has been driven for 0.3 sec.

5.3.20 E5F9

0009-2711

T-5-27

Code	Detail	Error Description	Detection timing
E5F9	8001	Inlet door switch(MSW1) /Ejection door switch(MSW3) /Front cover close detect switch (MSE101)	The inlet door switch is in open state when all covers are closed.
	8002		The ejection door switch is in open state when all covers are closed.
	8003		The front cover close detect door switch is in open state when all covers are closed.

5.3.21 Temporary Functional Limit

0009-2712

1. Overview

The machine has a feature to temporarily enter the limited operation mode to perform only paper delivery, when an error is encountered. The machine can continue to operate in this limited mode until the error is removed.

In the limited operation mode, stapling, alignment, and punching (only applicable when equipped with optional puncher unit) are not performed, while the inlet sensor (PI103), escape tray path sensor (PI118), and feed path sensor (PI104) remain enabled to detect any jam.

2. Operation

1) When the host machine has started up, use service mode or user mode as follows:

1-a) Service Mode

Set '1' for the following: SORTER>OPTION>MD-SPRTN.

1-b) User Mode

Press [limit function mode]; when a Confirmation screen has appeared, press [yes].

3) Turn off and then on the main power switch of the host machine.

3. Communication with the Host Machine

1) When the main power switch is turned on, the DC controller PCB will communicate to the main controller PCB that a functional limit has been imposed. The control panel will indicate that a functional limit has been imposed on the finisher.

2) The DC controller PCB backs up information on the functional limit.

3) Each time pickup occurs, the main controller PCB communicates the presence of a functional limit to the DC controller PCB.

4) The DC controller PCB executes control only on delivery operation.

Functional Limit and Error Code	
E514	Rear end assist motor error
E530	Front aligning plate motor error
E531	Staple motor error
E532	Stapler shift motor error
E535	Swing motor error
E537	Rear aligning plate motor error
E540	Tray 1 shift motor error
E542	Tray 2 shift motor error
E5F0	Paper positioning plate motor error
E5F1	Paper folding motor error
E5F2	Guide motor error
E5F3	Aligning motor error
E5F4	Stitcher (rear) error
E5F5	Stitcher (front) error
E5F6	Paper pushing plate motor error
E5F9	Micro switch error
E590	Punch motor error
E591	Scrap full detector sensor error
E592	Trailing edge/Horizontal registration sensor error
E593	Horizontal registration motor error

* E590 to E593 are when equipped puncher unit (option).

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