

Inner Booklet Trimmer-A1

Service Manual



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Explanation of Symbols

The following symbols are used throughout this Service Manual.

Symbols	Explanation	Symbols	Explanation
	Check.		Remove the claw.
	Check visually.		Insert the claw.
	Check the noise.		Use the bundled part.
	Disconnect the connector.		Push the part.
	Connect the connector.		Plug the power cable.
	Remove the cable/wire from the cable guide or wire saddle.		Turn on the power.
	Set the cable/wire to the cable guide or wire saddle.		
	Remove the screw.		
	Tighten the screw.		

The following rules apply throughout this Service Manual:

- 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.

- 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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General Circuit Diagram -----	6-2

Safety Precautions

■ Notes Before it Works Serving

Notes Before it Works Serving

 Caution:

When servicing, be sure to follow the specified procedure. Before starting the service work, be sure to turn off the host machine and finisher and unplug the finisher.

 Caution:

Never turn off the host machine or finisher during downloading. If you do so, this equipment may become inoperative.

1

Product Outline

- Features
- Specifications
- Names of Parts



Features

High-quality Trimming

Enables high-quality trimming of the fore edge of a booklet.

Compact Design

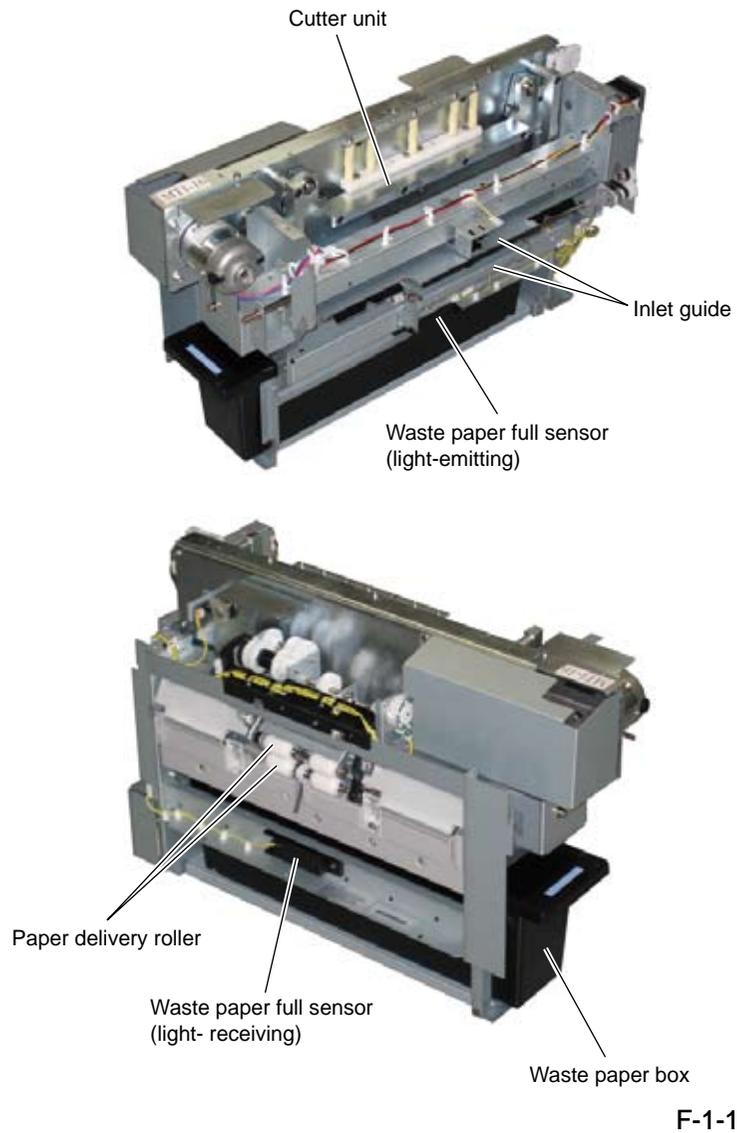
Installable in the finisher, requiring a small room.

Specifications

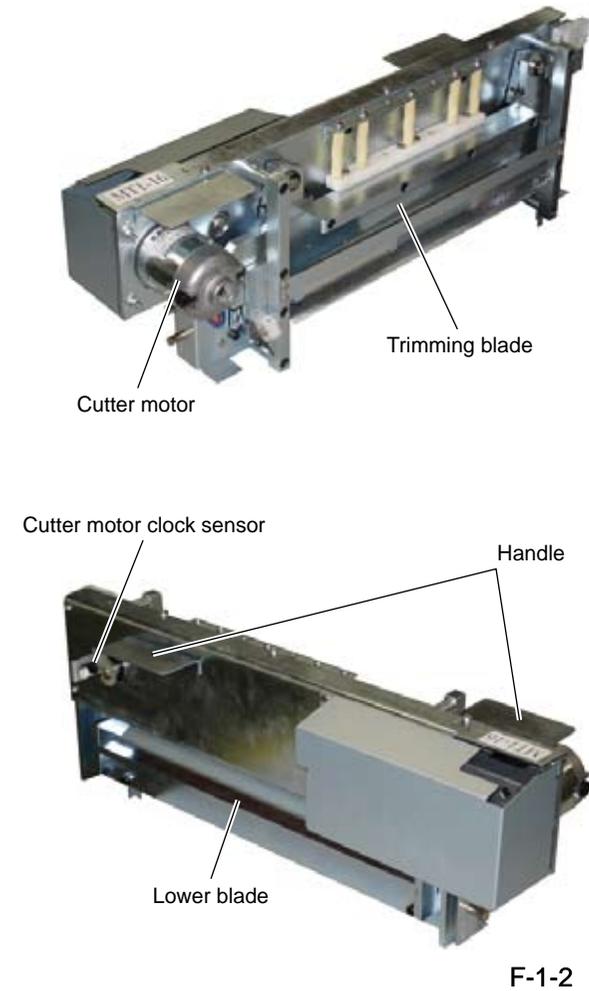
Type	Fore edge trimmer with reciprocating upper blade
Maximum number of sheets that can be trimmed	40 sheets
Paper weight	52 g/m2 to 300 g/m2
Sizes of paper that can be trimmed	A3, B4, A4R, 11" x 17", LGL, LTRR, 13" x 19" (330.2 x 482.6 mm), 12" x 18" (304.8 x 457.2 mm), or 12 5/8" x 17 3/4" (320 x 450 mm), and Irregular Size (8 1/4" x 11" to 13" x 19 1/4" (210 x 279.4 mm to 330.2 x 487.7mm))
Waste paper box capacity	1,500 sheets (Trimming width: 20 mm (80 g/m2))
Dimensions	251(W) x 624.6(D) x 402.6 (H) mm
Weight	Approx. 32 kg
Power supply	Powered from saddle finisher

Names of Parts

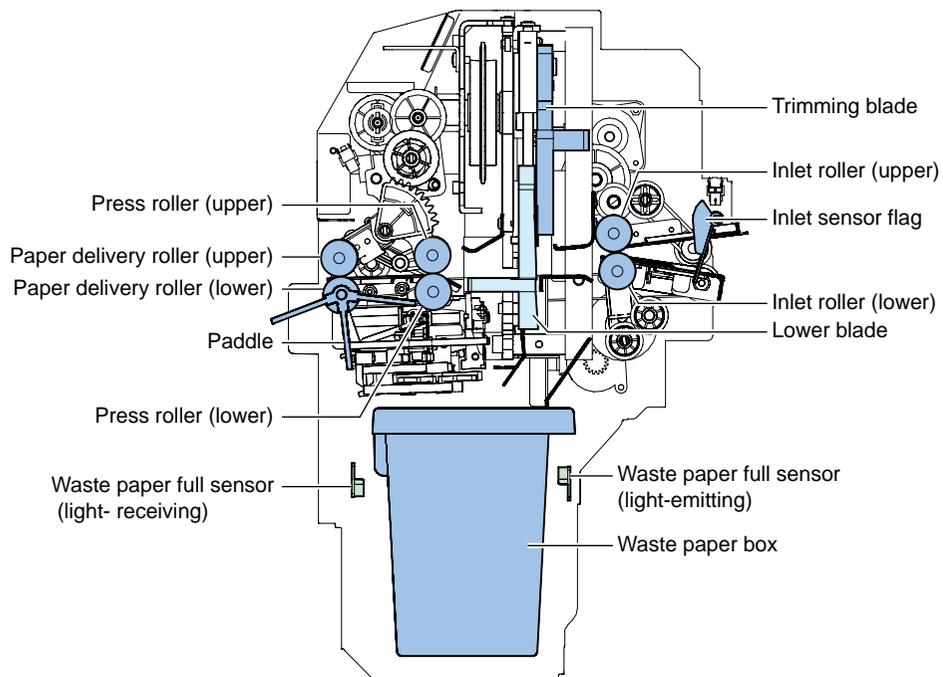
External View (Trimmer Unit Frame and Cutter Unit)



External View (Cutter Unit)



Cross Section



F-1-3

2

Technology

■ Basic Configuration

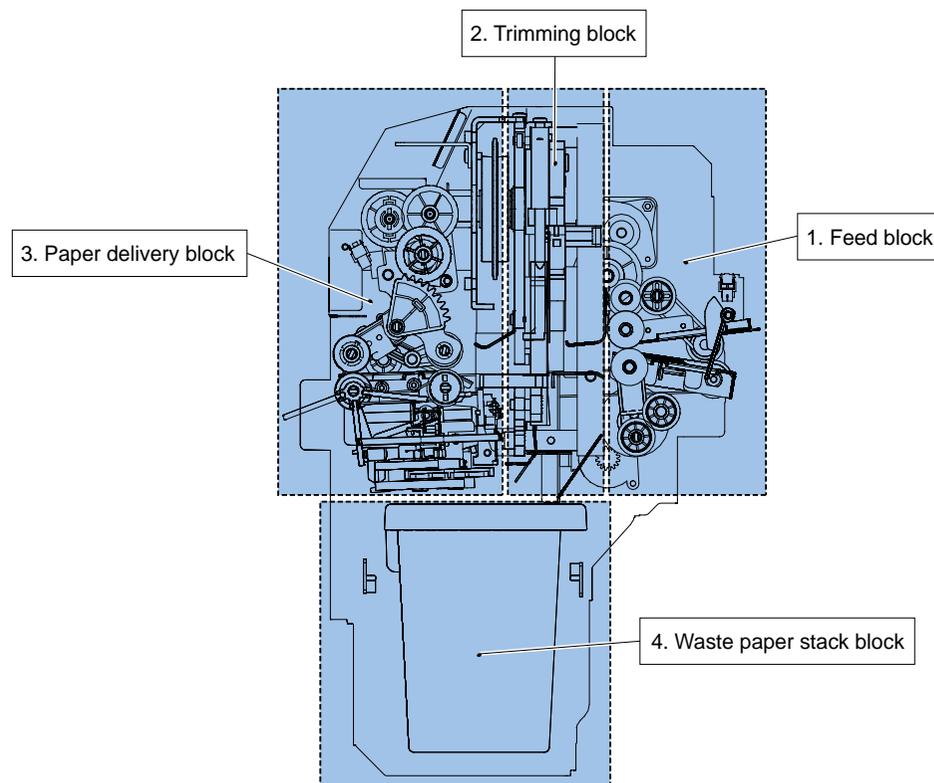


Basic Configuration

Functional Configuration

This equipment is mainly consists of a feed block, trimming block, paper delivery block, and waste paper stack block.

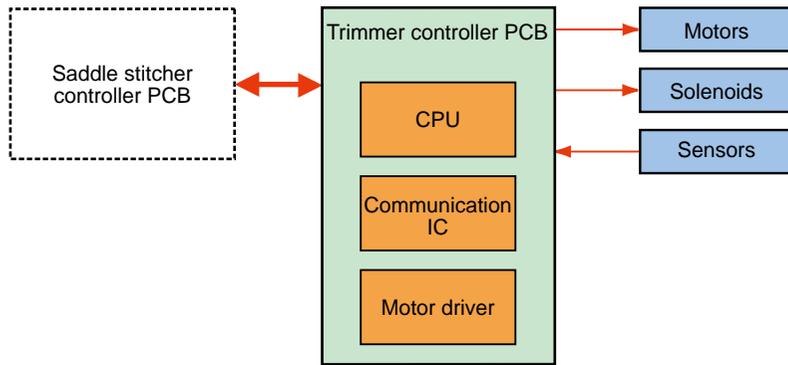
Feed block [1]	Receives the booklet stitched by the saddle stitcher, and then delivers it to the next block.
Trimming block [2]	Trims the fore edge of the stitched booklet. * When trimming is not done, the booklet just passes through the trimming block.
Paper delivery block [3]	Applies pressure on the press rollers during transfer, delivery, registration, and trimming of the stitched booklet. * When trimming is not done, registration of the booklet is not done either.
Waste paper stack block [4]	Collects the waste paper generated when fore edges of booklets are trimmed.



F-2-1

Overview of Electrical Circuitry

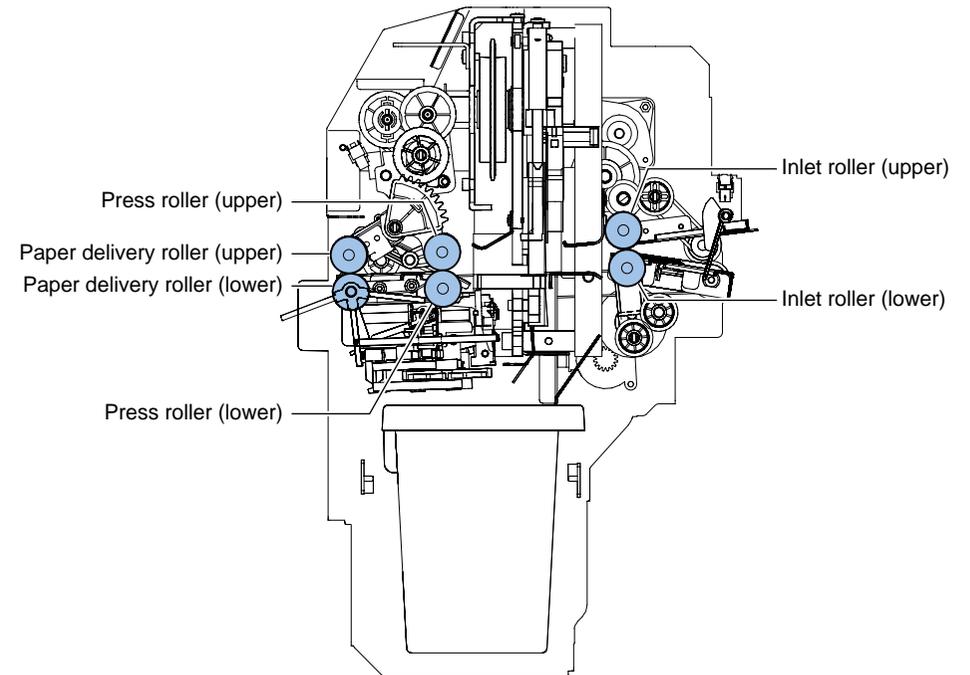
The operation sequence of this machine is controlled by the trimmer controller PCB.



F-2-2

Component Configuration

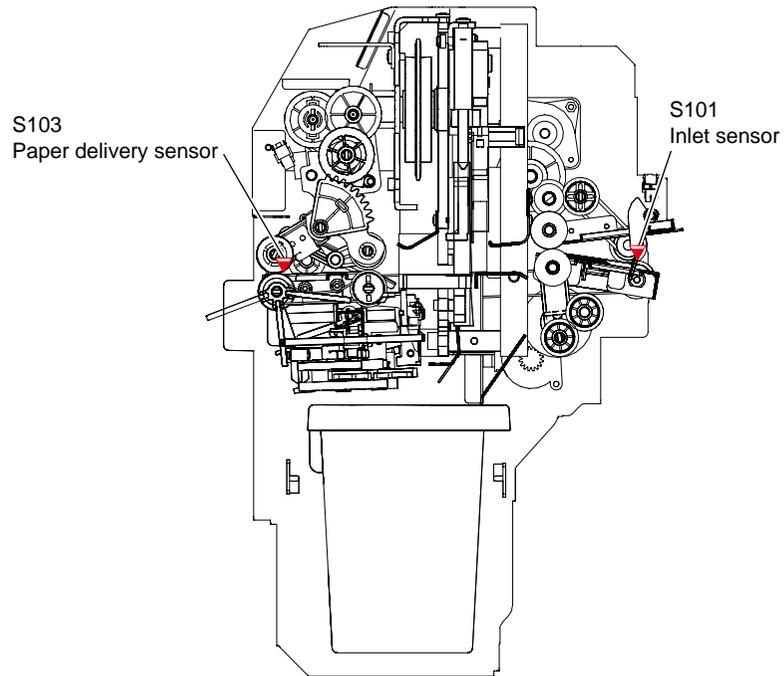
Roller Layout



F-2-3

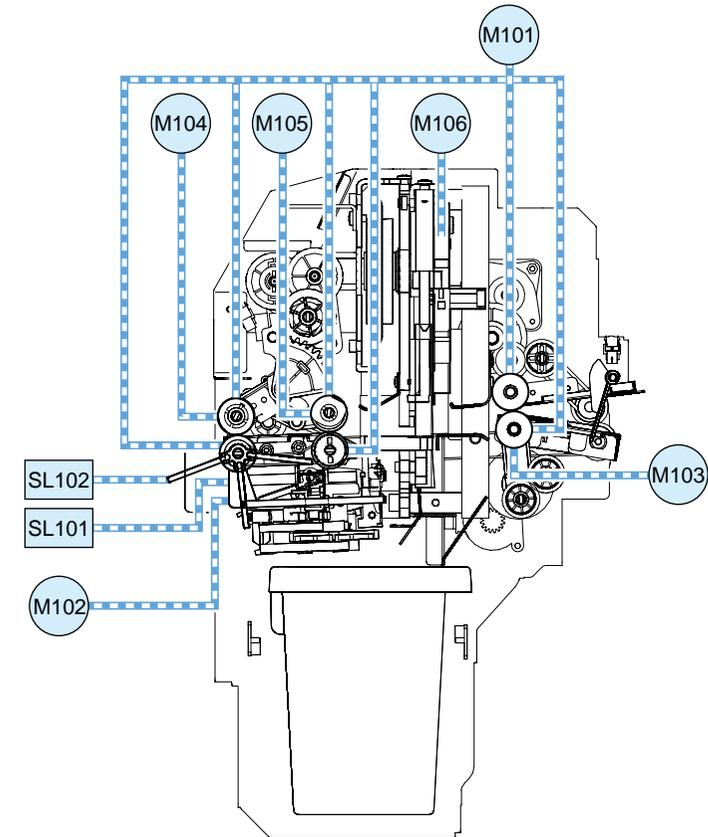
Sensor Layout

Only the optical sensors on the feed path are shown below.



F-2-4

Drive Configuration



F-2-5

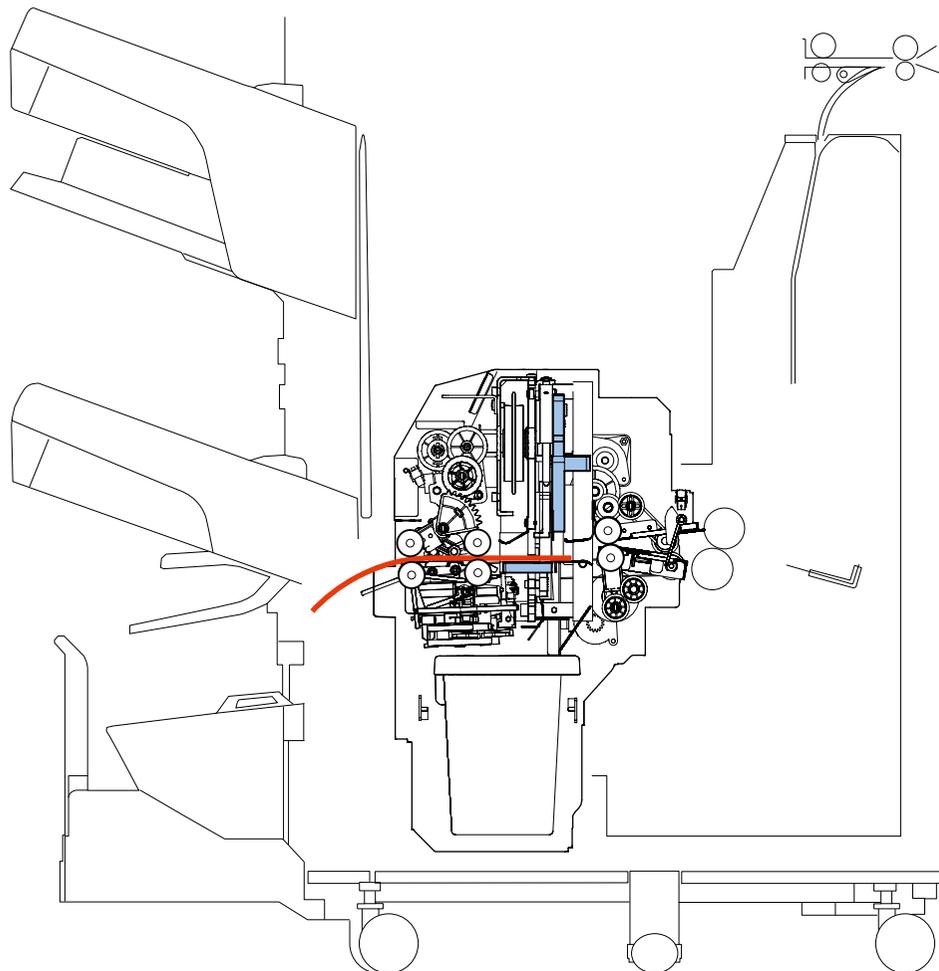
M101: Feed motor
 M102: Registration motor
 M103: Front estrangement motor
 M104: Rear estrangement motor

M105: Press motor
 M106: Cutter motor
 SL101: Stopper solenoid
 SL102: Paddle solenoid

Basic Operation Outline

This equipment trims the fore edge of the stitched booklet, and then delivers the booklet to the saddle delivery tray.

This equipment is optionally available and installed in the feed path inside the saddle finisher. When the booklet stitched by the saddle stitcher is fed to this equipment, registration is performed to be prepared for trimming. After this, the booklet is trimmed with it held down by press rollers and then delivered to the saddle delivery tray. These operations are controlled by the trimmer controller PCB.



F-2-6

Controls

Overview

This unit is installed between the saddle unit and saddle delivery tray of the saddle finisher. It stops the center bound booklet for a moment to trim the fore edge.

The booklet loaded from the saddle unit is fed by the inlet roller. When the leading edge of the media (back of the booklet) reaches a prescribed location, the booklet is stopped for a moment and registered. Then it is fed to the trim position and the fore edge of the booklet is trimmed.

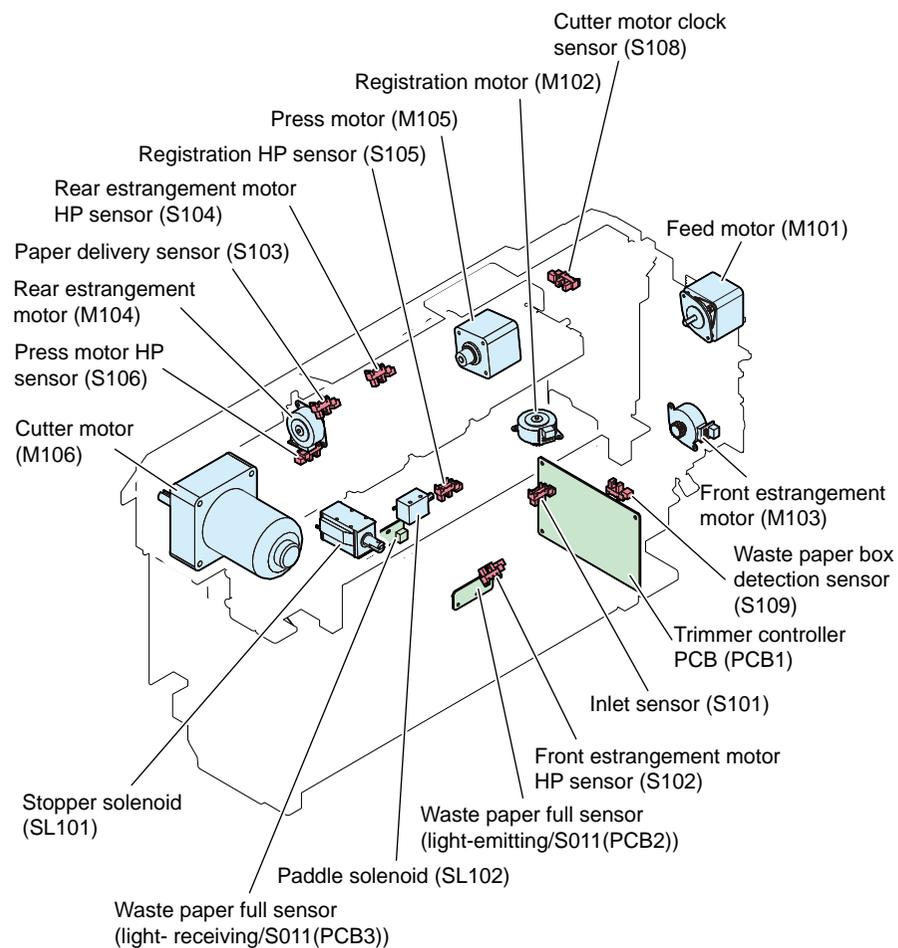
The name and role of motors, solenoids, and sensors used for trimming are shown below.

Motor	Function	Reference
Feed motor (M101)	Drives the inlet roller, press roller, and paper delivery roller (feed booklet)	4-21
Registration motor (M102)	Drives the registration unit (register the booklet)	4-20
Front estrangement motor (M103)	Drives the inlet roller (roller estrangement)	4-22
Rear estrangement motor (M104)	Drives the paper delivery roller (roller estrangement)	4-22
Press motor (M105)	Drives the press roller (press booklet)	4-21
Cutter motor (M106)	Drives the trimming blade (trim booklet)	-

Solenoid	Function	Reference
Stopper solenoid (SL101)	Drives the registration guide (lifts the registration plate)	4-19
Paddle solenoid (SL102)	Drives the paddle clutch lever (registers the booklet)	4-17

Sensor	Function	Reference
Inlet sensor (S101)	Detects booklet feeding	-
Front estrangement motor HP sensor (S102)	Detects the inlet roller home position	-
Paper delivery sensor (S103)	Detects booklet feeding	-
Rear estrangement motor HP sensor (S104)	Detects the paper delivery roller home position	-
Registration HP sensor (S105)	Detects the registration unit home position	-
Press motor HP sensor (S106)	Detects the press roller home position	-
Cutter motor clock sensor (S108)	Detects the cutter motor clock	-
Waste paper box detection sensor (S109)	Detects the waste paper box	

Sensor	Function	Reference
Waste paper full sensor (light-emitting/S011(PCB2))	Detects when waste paper is full	4-24
Waste paper full sensor (light-receiving/S011(PCB3))		4-25



F-2-7

Construction of the Control System

The booklet is fed by the inlet roller, press roller, and paper delivery roller.

Each roller is driven by the feed motor (M101).

The feed block is equipped with inlet rollers and the lower inlet roller is separated by the front estrangement motor (M103) in order to prepare for feeding of the center bound booklet. The home position of the inlet roller is detected by the front estrangement motor HP sensor (S102).

The feeding of the booklet at the feed block is detected by the inlet sensor (S101).

The trimming block consists of trimming blade and lower blade.

The trimming blade is driven by the cutter motor (M106). The cutter motor (M106) trims by lifting the trimming blade while drawing an arc. The home position of the trimming blade is the same as the stop position of the cutter motor (M106). In order to accurately stop the cutter motor (M106) which is a DC motor, the cutter motor clock sensor (S108) counts the prescribed number of clocks to stop the cutter motor (M106).

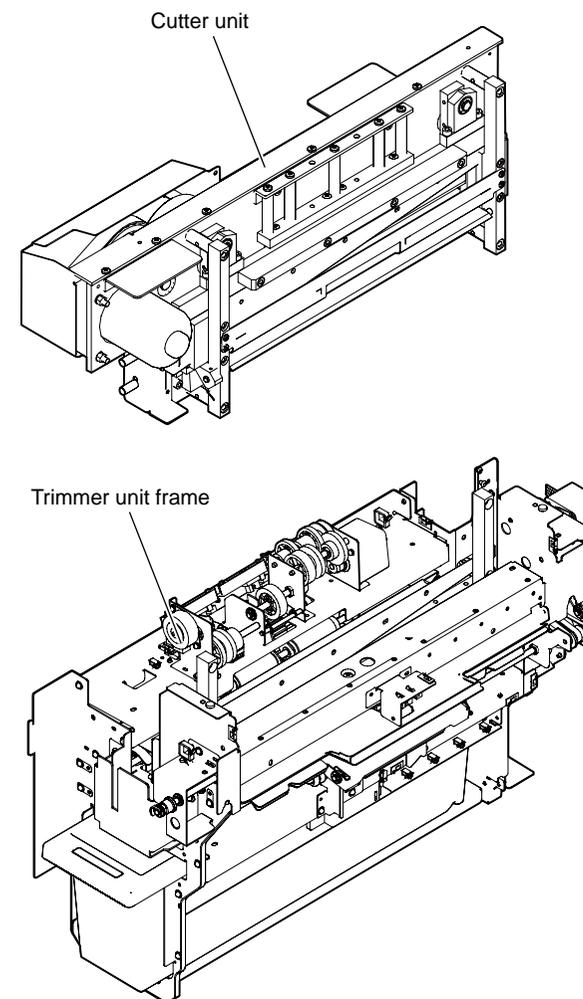
The paper delivery block consists of registration unit, press roller, and paper delivery roller.

The registration unit registers the booklet before trimming. The registration unit is driven by the registration motor (M102) and stopper solenoid (SL101). The home position of the registration unit is detected by the registration HP sensor (S105).

The press roller presses the booklet when trimming. The press motor (M105) lowers the upper press roller to press the booklet. The home position of the press roller is detected by the press motor HP sensor (S106).

The paper delivery roller performs separation when feeding as well as feeding/ejection of the booklet. The upper paper delivery roller is separated by the rear estrangement motor (M104) to prepare for feeding of the center bound booklet. The home position of the paper delivery roller is detected by the rear estrangement motor HP sensor (S104). The feeding/ejection of the booklet by the paper delivery block is detected by the paper delivery sensor (S103). In addition, the paper delivery roller shaft is equipped with a paddle and when the paddle clutch lever is released by the paddle solenoid (SL102), the rotation of the feed motor (M101) is conveyed to the paddle and rotates the paddle.

The waste paper stack block is equipped with a waste paper box detection sensor (S109) and a waste paper full sensor (S011). The waste paper box detection sensor (S109) detects the presence of the waste paper box. The paper waste generated by trimming is collected in the waste paper box. The filling of the waste paper box is detected by the waste paper full sensor (S011).

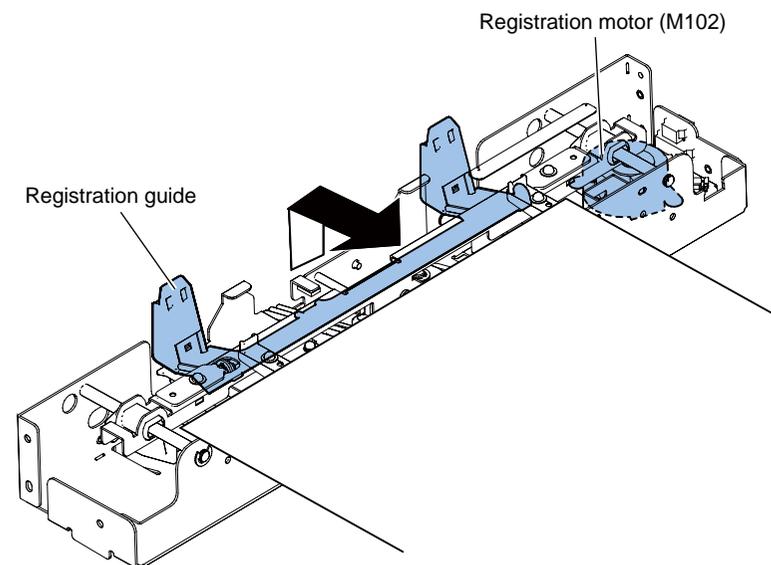


F-2-8

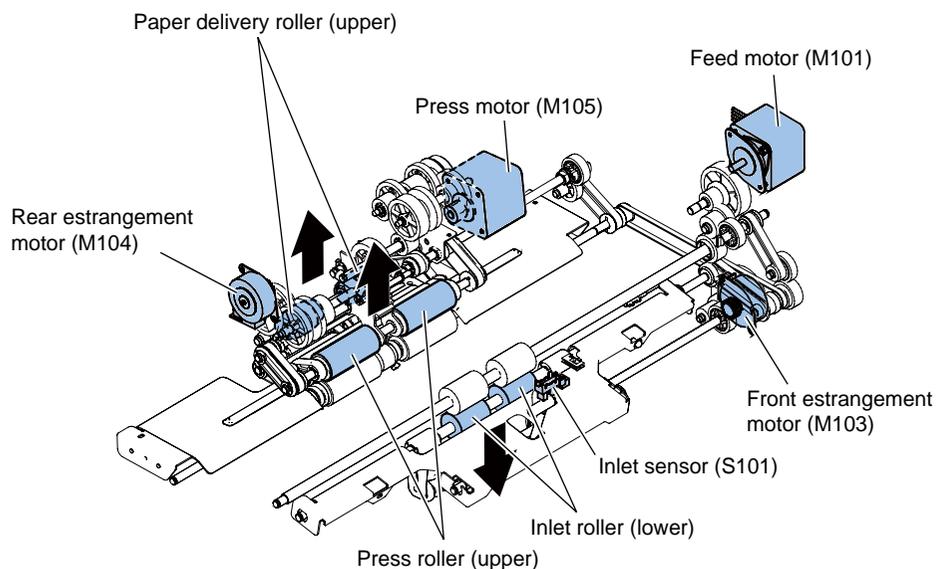
Registration operation

The sequence of registration operation is described below.

1. Drive the front estrangement motor (M103) before the center bound booklet is fed from the saddle unit to separate the inlet roller (lower).
2. Drive the feed motor (M101) when the booklet passed from the saddle unit reaches the inlet sensor (S101).
3. When the booklet reaches the inlet roller, drive the press motor (M105) and separate the press roller (upper). Then drive the front estrangement motor (M103) and press and feed the booklet with the inlet roller.
4. When the booklet reaches the trimming position, drive the rear estrangement motor (M104) and separate the paper delivery roller (upper). Also, drive the registration motor (M102) and move the registration unit to the registration start position. At the same time, drive the stopper solenoid (SL101) and lift the registration guide.
5. Feed the booklet to the registration start position and drive the front estrangement motor to separate the inlet roller (lower).
6. After separating the inlet roller, drive the registration motor (M102) to register.



F-2-10

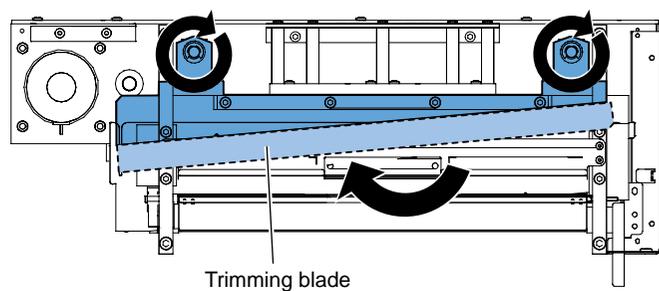


F-2-9

Trimming operation

The sequence of trimming operation is described below.

1. After registration completes, drive the press motor (M105) and press the booklet with the press roller. If the booklet is larger than A3, drive the rear estrangement motor and press the booklet with the paper delivery roller before pressing with the press roller because air must be released from the leading edge of the booklet (back of the booklet).
2. After pressing the booklet with the press roller, drive the registration motor (M102) and separate the registration unit from the booklet and then drive the stopper solenoid (SL101) to lower the registration guide.
3. After the registration guide is lowered, drive the feed motor (M101) and feed the booklet to the trimming position.
4. When the booklet reaches the trimming position, drive the cutter motor (M106) and trim the fore edge of the booklet.
At this time, drive the front estrangement motor (M103) to raise the inlet roller (lower) and drive the registration motor (M102) at the same time to return the registration unit to the home position.
5. After trimming the booklet, drive the feed motor (M101) and start paper ejection.
6. After feeding for a prescribed distance from the start of ejection operation, drive the rear estrangement motor (M104) to press the booklet with the eject roller and feed.
7. After the booklet passes the paper delivery sensor (S103), stop the feed motor (M101).



F-2-11

Servicing Work

■ Scheduled Servicing

When the endurance time of a part expires soon, replace and/or clean it as required.

Item	Part name	Expected service life	Qty	Operation	Reference
Periodically replaced parts	None				
Consumable parts	Scratch prevention sheet (front top)	120,000 sheets	1piece	Replacement	4-11
	Scratch prevention sheet (front bottom/rear bottom)	120,000 sheets	2pieces	Replacement	4-12, 4-12
	Cutter unit	50,000 sheets	1piece	Replacement	4-9
Periodically serviced parts	None				

3

Periodic Servicing

■ Periodic Service Works



Periodic Service Works

PR:Replacement (Periodically replaced parts) CR:Replacement (consumable parts) CL:Cleaning LU:Lubrication AD:Adjustment CH:Maintenance

As of March 2009

No.	Category	Part name	Part number	Qty	Interval	Remarks	Adjusted/ not adjusted	Counter	Reference
1	Trimmer unit frame	Scratch prevention sheet (front top)	FM4-0234	1	CR/ 120,000 booklet		None		4-11
2	Trimmer unit frame	Scratch prevention sheet (front bottom/rear bottom)	FM4-0231	2	CR/ 120,000 booklet		None		4-12, 4-12
3	Cutter unit	Cutter unit	FM4-0245	1	CR/ 50,000 booklet		None		4-9

4

Parts Replacement and Cleaning Procedure

- Removing this Equipment
- List of Parts
- Main Units
- Periodic Parts Replacement, Consumable Parts, and Cleaning Parts
- Solenoids
- Motors

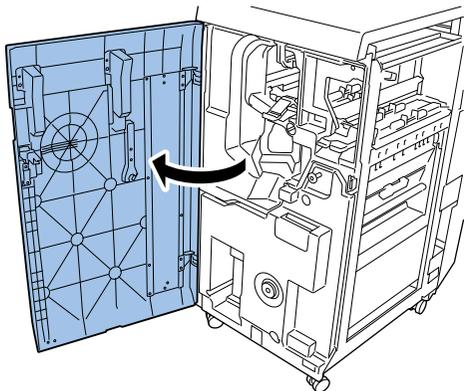
- Sensors
- PCBs



F-4-1

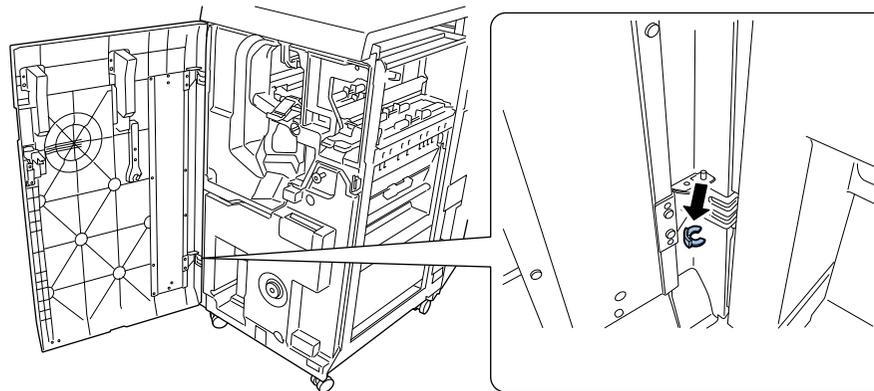
Removing this Equipment

1) Open the finisher front door.



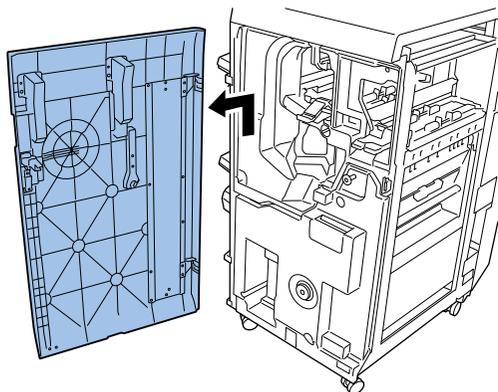
F-4-2

2) Remove the resin ring.



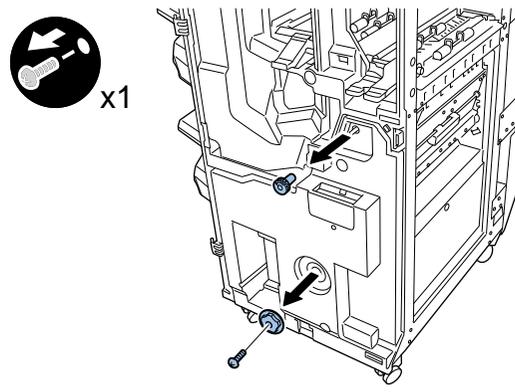
F-4-3

3) Remove the finisher front door in the direction of the arrow.



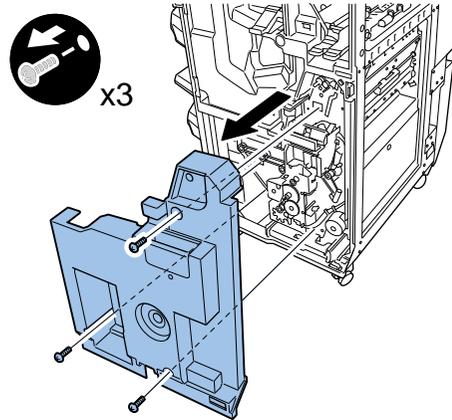
F-4-4

4) Remove the jam dial (top). Remove 1 screw and remove the jam dial (bottom).



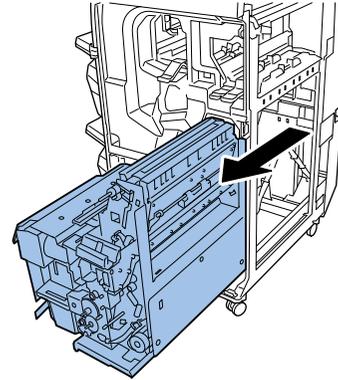
F-4-5

5) Remove 3 screws and remove the inner cover.



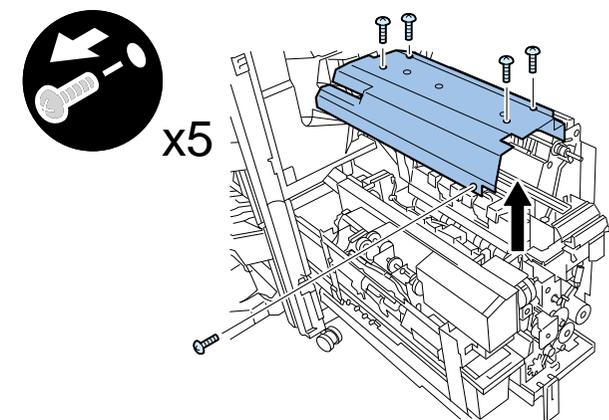
F-4-6

6) Pull out the saddle unit.



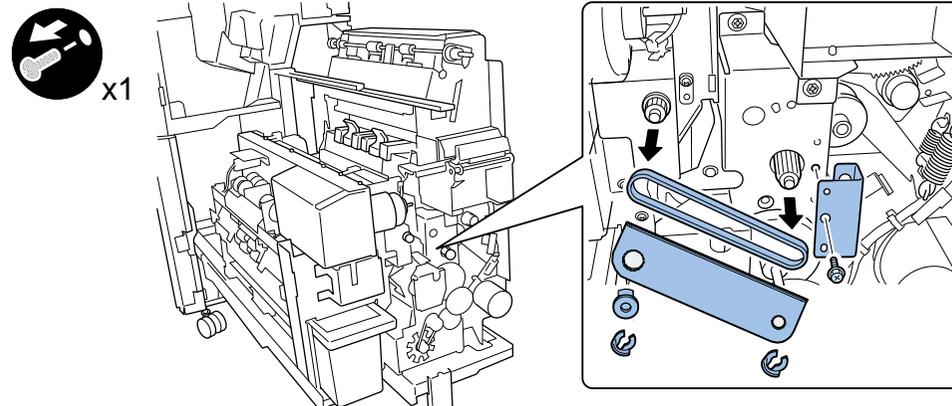
F-4-7

7) Remove 5 screws and remove the top cover.



F-4-8

8) Remove 1 screw and remove the steel plate. Remove 1 bearing and 2 resin rings. Remove the steel plate and remove the drive belt.



F-4-9

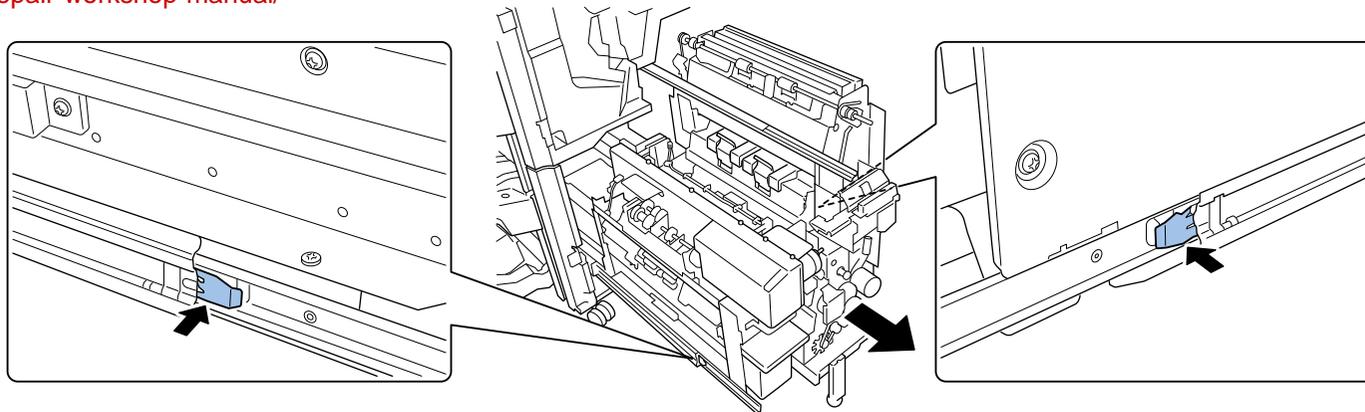
Note:

Be careful not to lose the parallel pin on the inside of the left side pulley.

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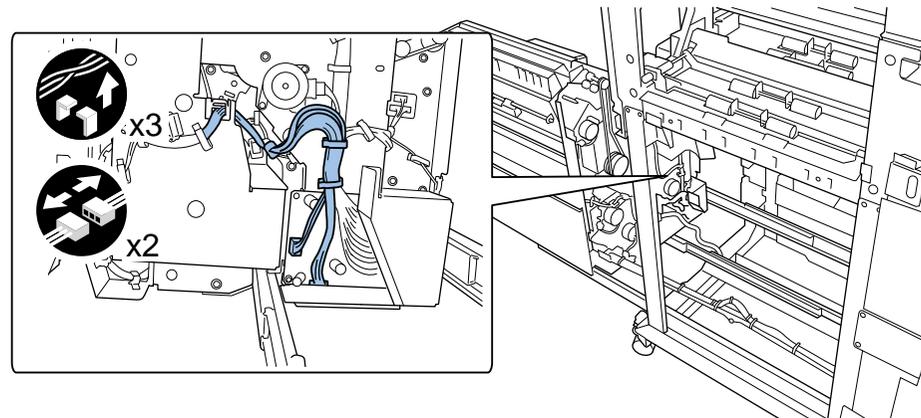
9) Pull down the saddle <https://www.arespairmanual.com/downloads/2007-canon-inner-booklet-trimmer-a1-service-repair-workshop-manual/> and prop the stopper comb down as shown in the direction of the arrow.

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10) Remove 2 connectors and remove cable from 3 locations of the wire saddle.



F-4-11

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