Portable Manual

Finisher, Sorter, DeliveryTray Finisher-U1



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.

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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.



Indicates an item intended to provide notes assisting the understanding of the topic in question.



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 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.
- Supplying the Inactine with power.

 In the digital circuits, 'l'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 Maintenance and Inspection

1.1 Periodically Replaced Parts

1.1.1 Periodically Replaced Parts

The machine does not have parts that need to be replaced on a periodical basis.

1.2 Durables

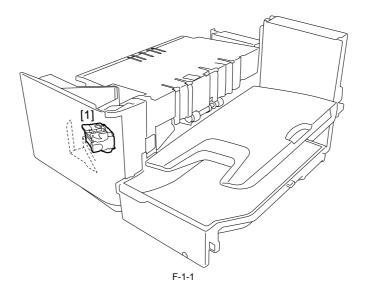
1.2.1 Durables

Some parts of the machine may require replacement once or more over the period of product warranty because of wear or damage. Replace them as needed by referring to the following table:

No.	Parts name	Parts No.	Q'ty	Life	Remarks
[1]	Stapler	4G3-0480-000	1	500,000 times	number of stapling operations



A The values in the above table are estimates only, and are subject to change depending on future data.



[1]Stapler

1.3 Periodical Servicing

1.3.1 Periodical Servicing

The machine does not have items that must be serviced on a periodical basis.

Chapter 2 Error Code

2.1 Service Error Code

2.1.1 Service Error Code

T-2-1

Display code	Detail Code	Main Cause/Symptom	Countermeasure			
E500	0001	Finisher communication error				
		Data communication could not be performed normally. It has been retried three times in vain.	- Check the connectors of the finisher controller PCB and DC controller PCB for normal connection Replace the finisher controller PCB Replace the DC controller PCB.			
E520	0001	- Offset motor or finisher controller PCB - Offset HP sensor failure	failure			
		- The offset motor was driven for 1000 ms in the HP sensor approach direction, but the offset HP sensor did not turn on.	- Check the connector of the offset HP sensor Check the connector of the offset motor Replace the offset HP sensor Replace the offset motor Replace the finisher controller PCB.			
	0002	- Offset motor or finisher controller PCB - Offset HP sensor failure	failure			
		- The offset motor was driven for 1000 ms in the HP sensor escape direction, but the offset HP sensor did not turn off.	- Check the connector of the offset HP sensor Check the connector of the offset motor Replace the offset HP sensor Replace the offset motor Replace the finisher controller PCB.			
E531	0001	- Staple unit failure - Staple HP sensor failure - Finisher controller PCB failure				
		- The staple home position was not left when 400 ms have lapsed since start of staple operation.	- Check the connector of the staple unit Replace the staple unit Replace the finisher controller PCB.			
	0002	- Staple unit failure - Staple HP sensor failure - Finisher controller PCB failure				
		- The staple home position had been left once, but it was not reached again when 400 ms have lapsed since start of staple operation. In addition, the staple home position could not be reached by performing reverse operation for 400 ms.	- Check the connector of the staple unit Replace the staple unit Replace the finisher controller PCB.			

Display code	Detail Code	Main Cause/Symptom	Countermeasure	
E540	0001	Standard tray shift motor or finisher cor Standard tray HP sensor failure Standard tray clock sensor failure Standard tray shift motor load failure	troller PCB failure	
		The standard tray was moved but the paper surface was not detected.	- Check the connector of the standard tray HP sensor Check the connector of the standard tray clock sensor Check the connector of the standard tray shift motor Replace the standard tray HP sensor Replace the standard tray clock sensor Replace the standard tray shift motor Replace the finisher controller PCB.	
	0002	Standard tray shift motor or finisher cor Standard tray HP sensor failure Standard tray clock sensor failure Standard tray shift motor load failure	troller PCB failure	
		Cannot move (to the pickup position) within the specified time.	- Check the connector of the standard tray HP sensor. - Check the connector of the standard tray clock sensor. - Check the connector of the standard tray shift motor. - Replace the standard tray HP sensor. - Replace the standard tray clock sensor. - Replace the standard tray shift motor. - Replace the finisher controller PCB.	
	0003	- Standard tray shift motor or finisher controller PCB failure - Standard tray HP sensor failure - Standard tray clock sensor failure - Standard tray shift motor load failure		
		The standard tray was operated, but it did not reach the sensor within 300 ms.	- Check the connector of the standard tray HP sensor. - Check the connector of the standard tray clock sensor. - Check the connector of the standard tray shift motor. - Replace the standard tray HP sensor. - Replace the standard tray clock sensor. - Replace the standard tray shift motor. - Replace the finisher controller PCB.	
	0005	- Standard tray shift motor or finisher controller PCB failure - Standard tray HP sensor failure - Standard tray clock sensor failure - Standard tray shift motor load failure		
		The encoder clock signal was not detected two or more times when the standard tray was operated for 300 ms.	- Check the connector of the standard tray HP sensor. - Check the connector of the standard tray clock sensor. - Check the connector of the standard tray shift motor. - Replace the standard tray HP sensor. - Replace the standard tray clock sensor. - Replace the standard tray shift motor. - Replace the finisher controller PCB.	

Display code	Detail Code	Main Cause/Symptom	Countermeasure
E542	0001	Optional tray motor or finisher controlle Optional tray HP sensor failure Optional tray clock sensor failure Optional tray shift motor load failure	er PCB failure
		The optional tray was operated, but the paper surface was not detected.	- Check the connector of the optional tray HP sensor. - Check the connector of the optional tray clock sensor. - Check the connector of the optional tray shift motor. - Replace the optional tray HP sensor. - Replace the optional tray clock sensor. - Replace the optional tray shift motor. - Replace the finisher controller PCB.
	0002	Optional tray motor or finisher controlle Optional tray HP sensor failure Optional tray clock sensor failure Optional tray shift motor load failure	
		Cannot move (to the pickup position) within the specified time.	- Check the connector of the optional tray HP sensor Check the connector of the optional tray clock sensor Check the connector of the optional tray shift motor Replace the optional tray HP sensor Replace the optional tray clock sensor Replace the optional tray shift motor Replace the finisher controller PCB.
	0003	Optional tray motor or finisher controlle Optional tray HP sensor failure Optional tray clock sensor failure Optional tray shift motor load failure	or PCB failure
		- The optional tray was moved upward, but it did not reach the HP sensor within 3000 ms.	- Check the connector of the optional tray HP sensor Check the connector of the optional tray clock sensor Check the connector of the optional tray shift motor Replace the optional tray HP sensor Replace the optional tray clock sensor Replace the optional tray shift motor Replace the finisher controller PCB.
	0005	Optional tray motor or finisher controlle Optional tray HP sensor failure Optional tray clock sensor failure Optional tray shift motor load failure	er PCB failure
		- The encoder clock signal was not detected two or more times when the optional tray was operated for 300 ms.	- Check the connector of the optional tray HP sensor Check the connector of the optional tray clock sensor Check the connector of the optional tray shift motor Replace the optional tray HP sensor Replace the optional tray clock sensor Replace the optional tray shift motor Replace the finisher controller PCB.
E575	0001	- Stack delivery motor or finisher control	
		- The stack delivery motor was driven for 2000 ms in the stack delivery direction (HP sensor approach direction), but the stack delivery HP sensor did not turn on.	 Check the connector of the stack delivery HP sensor. Check the connector of the stack delivery motor. Check the connector of the stack delivery HP sensor. Replace the stack delivery motor. Replace the finisher controller PCB.
	0002	- Stack delivery motor or finisher control - Stack delivery HP sensor failure	
		- The stack delivery motor was driven for 2000 ms in the HP sensor escape direction, but the stack delivery HP sensor did not turn off.	- Check the connector of the stack delivery HP sensor Check the connector of the stack delivery motor Check the connector of the stack delivery HP sensor Replace the stack delivery motor Replace the finisher controller PCB.

Display code	Detail Code	Main Cause/Symptom	Countermeasure
E584	0001	Shutter drive motor or finisher controlle Shutter open detection sensor failure Shutter clutch failure	r PCB failure
		- The shutter open sensor did not turn on when 1000 ms have lapsed since the shutter unit had performed open operation, resulting in incomplete open operation.	- Check the connector of the shutter open sensor Check the connector of the shutter clutch Check the connector of the shutter motor Replace the shutter open sensor Replace the shutter clutch Replace the shutter drive motor Replace the finisher controller PCB.
	0002	Shutter drive motor or finisher controlle Shutter open detection sensor failure Shutter clutch failure	r PCB failure
		- The shutter open sensor did not turn off when 1000 ms have lapsed since the shutter unit had performed close operation, resulting in incomplete close operation.	- Check the connector of the shutter open sensor Check the connector of the shutter clutch Check the connector of the shutter motor Replace the shutter open sensor Replace the shutter clutch Replace the shutter drive motor Replace the finisher controller PCB.

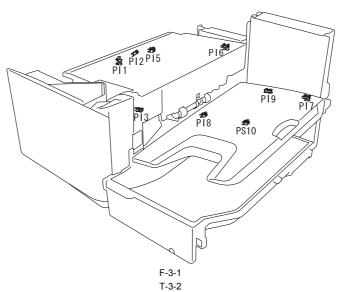
Chapter 3 Outline of Components

3.1 Outline of Electrical Components

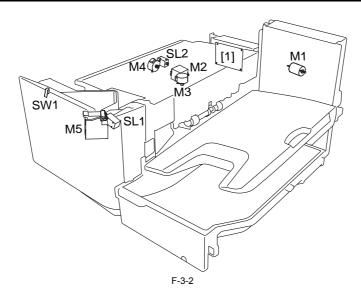
3.1.1 Outline of Electrical Components

T-3-1

Notation	Name	Parts No.	Finisher controller PCB	Jam cord
PI1	Stack edging HP sensor	WG8-5696	J903	1F81
PI2	Handing tray paper sensor	WG8-5696	J903	
PI3	Paper surface sensor	WG8-5696	J903	
PI5	Inlet sensor	WG8-5696	J904	1011 1121
PI6	Offset HP sensor	WG8-5696	J904	
PI7	Tray clock sensor	WG8-5696	J905	
PI8	Stack tray paper sensor	WG8-5696	J905	
P19	Tray 150 sensor	WG8-5696	J905	
PI10	Tray lower limit sensor	WG8-5696	J905	
-	Stapler HP sensor (built into stapler)	WG8-5696	J912	1506
-	Stapler staple sensor(built into stapler)	WG8-5696	J912	



Finisher Notation Name Part No. E cord Description controller PCB moves up/down the stack M1 Stack tray shift motor 4K1-4055 J906 540 M2 Feed motor 4H3-0086 J907 moves paper drives the stack edging M3 Stack edging motor 4H3-0084 4H3-0085 J909 520 M4 Offset motor drives the offset roller J912 M5 FM2-0665 531 Stapler motor drives the stapler J913 SW1 Front cover safety switch WC4-5236 cuts off the 24-v power J914 [1] Finisher controller PCB 4G3-0806 Paper retaining solenoid moves up/down the paper 4H3-0087 J910 SL2 4H3-0088 moves up/down the offset J911 Offset solenoid



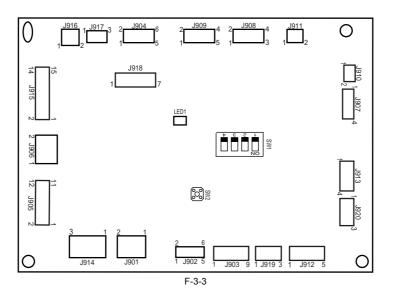
3.2 Variable Resistors (VR), Light-Emitting Diodes (LED), and Check Pins by PCB

3.2.1 Light-Emitting Diodes and Check Pins by PCB

Of the light-emitting diodes (LED) and check pins used in the machine, those needed in the field when servicing the machine are discussed herein.

ADo not use the variable resistors (VR) and check pins that are not discussed herein. A check using these will require the use of special tools/instruments and a high level of accuracy.

3.2.2 Finisher Controller PCB



SW1: Use it for mode setting SW2: Use it for adjustment and test start-up LED1:Use it for checking the operation

T-3-3

Connector		Target	
J1	power supply	-	
J2	communication	-	
	PI1	stack edging HP sensor	
J903	PI2	handing tray paper sensor	
	PI3	paper surface sensor	
J904	PI15	inlet sensor	
	PI16	offset HP sensor	
	PI7	tray clock sensor	
1005	PI8	stack tray paper sensor	
J905	PI9	tray 300 sensor	
	PI10	tray lower limit sensor	
J906	M1	stack tray shift motor	
J907	M2	feed motor	

J908	M3	stack feed motor
J909	M4	offset motor
J910	SL1	paper retainer solenoid
J911	SL2	offset solenoid
J912	-	stapler
J913	M5	stapler motor
J914	-	front cover safety switch
J915	-	option tray
J916	CL1	shutter clutch
J917	PI15	shutter open/closed sensor

3.2.3 Functions of the DIP Switch

The DipSW (SW1) function of the finisher controller PCB is as follows.

- After setting the DipSW (SW1), the check item is changed in order each time the PushSW (SW2) is pressed. Turn OFF all bits of the DipSW (SW1) after checking.

1. Checking operation of the stack tray unit



F-3-4

Points to check:

- 1) Initial operation of the stack tray is executed.
- (*1) Operation differs depending on initial status
 2) Initial operation of the option tray is executed. (When the option tray is attached.)
- (*1) Operation differs depending on initial status

 3) The stack tray moves to the bottom position (standby position at the time of replacing the offset roller).
- (*1) Initial operation of the tray
- When the tray stops at the home position: The tray moves down by 20mm. Then, the tray moves back to the home position with a press of the PushSW (SW2).
- When the tray stops at other than the home position: The tray moves to the home position.

2.Non-paper aging



F-3-5

Points to check:

- 1) The stack tray moves to the home position, and initial operations of the stack delivery slider and offset roller are executed.
 2) After the feeder motor is driven in the feeding direction, copying is executed with the following conditions: Shift mode, 2 sheets in A4 size, 4 sets (8 copies in total)
- 3) The copying operation ends.

3. Checking operation of the feeder unit



F-3-6

Points to check:

- 1) The pickup solenoid is turned ON.
- (*1) Operation differs depending on initial status
 2) The feeder motor is driven at 137mm/s in the feeding direction.
- 3) The speed of the feeder motor is increased to 230mm/s.
- 4) The speed of the feeder motor is increased to 600mm/s.
- 5) The feeder motor is driven by 50mm in the feeding direction, and stops.
 6) The feeder motor is driven by 40mm in the backward direction, and stops.
- 7) The feeder motor is driven at 230mm/s in the backward direction.
- 8) The feeder motor stops.9) The pickup solenoid is turned OFF.

- 10) Shutter closing operation (When the option tray is set.)
 11) Shutter opening operation (When the option tray is set.)
 (*1) When the option tray is attached.
 The shutter is closed: The steps to open the shutter are performed.
- The shutter is opened: The stack delivery slider moves to the tray switching position.
- After either of the action above, the step 1) is performed. (*1) When the option tray is not attached.
- The stack delivery slider moves to the tray switching position.

After the action above, the step 1) is performed

4. Checking operation of the adjustment unit



F-3-7

Points to check:

- 1) The pickup solenoid is turned ON.
 2) Initial operation of the offset roller is executed. (*1)
- 3) The offset roller moves to the center of inside machine.
- 4) The offset roller moves by the adjusting quantity of the sheet width 210mm (A4R).
- 5) The offset roller moves to the center of inside machine.
- 6) The pickup solenoid is turned OFF.
 7) The clamp solenoid is turned ON.
 8) The clamp solenoid is turned OFF.

(*1) Initial operation
- If the PushSW (SW2) is pressed while the offset roller is in other than the home position, the offset roller returns to the home position. If the PushSW (SW2) is pressed while the offset roller is in the home position, the offset roller leaves the home position once, and returns.

5. Checking operation of the stack delivery unit



F-3-8

Points to check:

- 1) The pickup solenoid is turned ON.
- 2) Initial operation of the stack delivery unit is executed. (*1)
 3) The clamp solenoid is turned ON.
 4) The clamp solenoid is turned OFF.

- 5) The staple unit executes stapling.
- 6) Stack delivery is executed (to the standard tray). (*2)
- 7) The stack delivery unit moves to the tray switching position.
- 8) The pickup solenoid is turned OFF.
- (*1) Initial operation

 If the PushSW (SW2) is pressed while the stack delivery slider is in other than the home position, the stack delivery slider returns to the home position. If the PushSW (SW2) is pressed while the stack delivery slider is in the home position, the stack delivery slider leaves the home position once, and returns.
- (*2) Tray operation is executed in accordance with stack delivery. Therefore, selection of the standard tray is premised.

6.Software version number display



F-3-9

Software version is indicated by the LED1 on the DC controller. The LED1 flashes according to the following calculation:

- 1) 1 is subtracted from the version number.

- 2) Result of 1) is devided by 3.3) 1 is added to residual of 2).4) LED1 flashes number of times as the result of 3).

T-3-4

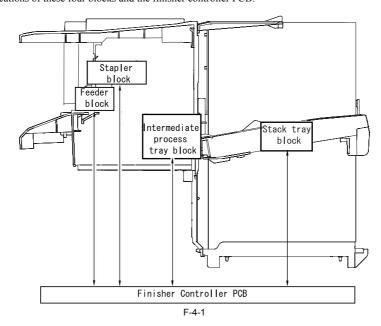
[Sample: Number of blinks]			
Number of times	Number of blinks		
1	1		
2	2		
3	3		
4	1		
Thereafter,repeats flashing once through 3 times			

Chapter 4 System Construction

4.1 Basic Construction

4.1.1 Overview

The finisher consists of four blocks: a stack tray, stapler, intermediate process tray, and feeder blocks. The following illustration shows locations of these four blocks and the finisher controller PCB.



4.1.2 Outline of Electric Circuits

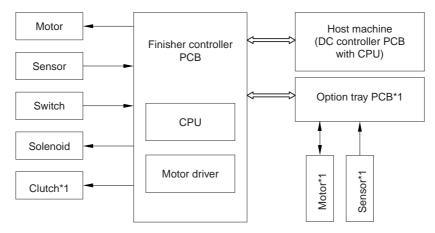
The operation sequence of the finisher is controlled by the finisher controller PCB.

The finisher controller PCB incorporates a 16-bit CPU to perform sequence control (and serial communication with the host machine).

The CPU on the finisher controller PCB incorporates a ROM that stores an operation sequence program.

The finisher controller PCB drives motors in response to the commands sent from the host machine via a serial communication line.

The finisher controller PCB also sends information about various sensors and switches to the host machine via the serial communication line.



*1: Only when option tray is installed

F-4-2

4.2 Product Specifications

4.2.1 Specifications

T-4-1

Item	Description	Remarks
Stack tray	1-stage tray (w/ extension tray for large-size paper)	Two-bin configuration can be used by attaching an option.
Stacking method	Stack tray lowering mechanism (1-bin self-running)	
Delivery method	Face-down	

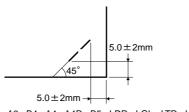
	Item	Description	Remarks	
Loadable paper	Longitudinal	139.7mm to 457mm		
size	Lateral	98.4mm to 320mm		
Stack paper size		64g/ to 200g/m2		
Paper sizes		A3, B4, A4R, B5, B5R, A5R, postcard, double postal card, 4-leaf postcard, custom size (182 x 140 mm to 292 x 432 mm), envelopes (Env. #4, COM10, Monarch, DL, 1SO-B5, ISO-C5) 64 g/m2 to 128 g/m2		
Media types		Plain paper, recycled paper, colored paper, punched paper, thick paper, secondary drawing copy, transparency, label sheet, postcard, double postal card, 4-leaf postcard, envelope		
Modes	Staple loading	A3,A4,A4R,B4,B5,LDR,LGL,LTR,LTRR		
	Non-staple loading	A3, A4, A4R, A5, A5R, B4, B5, B5R, LDR, LGL, LTR, LTRR, postcard, envelope		
	Stack offset loading	A3,A4,A4R,B4,B5,LDR,LGL,LTR,LTRR	- Shift amount 43.5 to 87 mm - Shift range 210 mm to 297 mm	
	Option tray	Non-sort, Sort A4/B5/A5/LTR/STMT/STMTR: 770 sheets (80 g/m2) or 26 mm A3/B4/A4R/B5R/LDR/LGL/LTRR: 150 sheets (80 g/m2) or 20 mm Staple Mode A4/B5/LTR: 30 sheets or 100 mm A3/B4/A4R/B5R/LDR/LGL/LTR-R: 30 sheets or 50 mm	Based on 80 g/m2	
Number of loadable sheets	Standard tray	Non-sort, Sort A4/B5/A5/LTR/STMT/STMTR: 200 sheets (80 g/m2) or 26 mm A3/B4/A4R/B5R/LDR/LGL/LTRR: 150 sheets (80 g/m2) or 20 mm Staple Mode A4/B5/LTR: 30 sheets or 26 mm A3/B4/A4R/LDR/LGL/LTR-R: 30 sheets or 20 mm	paper	
	Optional tray	Upper tray Small size: 26 mm in height Large size: 13 mm in height Lower tray Small size: 26 mm in height Large size: 13 mm in height		
	When optional trays are attached	A4, B5: 50 sheets (64-80 g/m2) A3, B4, A4R: 30 sheets 64-80 g/m2)		
Alignment range	Staple loading	Paper width: 210.0 mm to 297.0 mm		
	Non-staple loading	Paper width: 210.0 mm to 297.0 mm		
	Stack offset loading	Paper width: 210.0 mm to 297.0 mm		
Paper detection	Intermediate process tray	Attached		
	Stack tray	Attached		
Number of mixed sheets	Mixed-size	Height: Max. 50 mm	20 mm when the additional tray C1	
Mixed-staple Mixed-mode		Height: Max. 50 mm (Max. 30 booklets) Height: Max. 50 mm (Max. 30 booklets)	for finisher is installed (loadability is not assured).	
Operation panel		Not provided		
Display panel		Not provided		
Installation type		Built-in		
Dimensions		460mm(W)x520mm(D)x300mm(H)		
Weight		12kg		
Power supply		Power (24 V/13 V) is supplied from host machine.		
Maximum power consumption Power supply from host machine		Approx. 45 W or less		
Operating noise Host machine + DF + Finisher		YY . 1' . 2 ID (C.II)		
Operating noise		Host machine noise + 3 dB (full system)		

T-4-2

Item	Description	Remarks	
Stapling method	Stapling by rotary cam		l

Sizes of paper that can be stapled	1-point stapling	A3,A4,A4R,B4,B5,LDR,LG L,LTR,LTRR
Number of sheets that can be stapled	50 sheets of small-size paper, 30 sheets of large-size paper (Max.) 2 sheets of 128 g/m2 paper + 40 sheets of 80 g/m2 paper (small-size)	Paper thickness: 5.5 mm or less
Staple loading method	Replacement of dedicated staple sheet cartridge (5000 staples)	
No staple detection	Detected	
Manual stapling	Disabled	
Standby function	Provided	

-Stapling position (front 1-point)



A3 , B4 , A4 , A4R , B5 , LDR , LGL , LTR , LTR-R $\label{eq:f-4-3} \text{F-4-3}$

