FINISHER-E1

SERVICE MANUAL

REVSION 0

Canon

JAN. 1999 FY8-13FU-000

CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

IMPORTANT

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

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INTRODUCTION

This Service Manual contains basic data and figures for the Finisher-E1 needed to service the machine in the field.

Chapter 1 General Description introduces the finisher's features, specifications, and names of parts, and shows how to operate the finisher.
Chapter 2 Basic Operation discusses the principles of operation used for the finisher's mechanical and electrical systems. It also explains the timing at which these systems are operated.
Chapter 3 Mechanical System discusses how the finisher is constructed mechanically, and shows how it may be disassembled/assembled and adjusted.
Chapter 4 Maintenance and Inspection provides tables of periodically replaced parts and consumables and durables, together with a scheduled servicing chart.
Chapter 5 Troubleshooting provides tables of maintenance/inspection, standards/adjustments, and problem identification (image fault/malfunction).

Appendix contains diagrams showing electrical parts arrangement, tables of signals, tables of special tools, tables of solvents/oils, and a general timing chart.

For installation, see the Installation Procedure that comes with the finisher.

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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CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

CHAPTER 1

GENERAL DESCRIPTION

 CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. FEATURES

1. Small in Size, Light in Weight

- The finisher is designed as a small, light delivery device.

2. Mono-Frame

- The finisher is cased in a mono-frame, which has enabled reduction of the number of covers.

3. Sorting and Stapling by Stack Offset

- The finisher puts together stacks of sheets on its intermediary processing tray for offset sorting and stapling.

4. Stack Tray

- The finisher's stack tray is capable of holding as many as 1,000 sheets of small-size paper or 15 sheets of large-size paper.
  Further, it can hold as many as 30 sets of stapled stacks (each consisting of up to 30 sheets).

II. SPECIFICATIONS

A. Specifications

Item		Description		
Stacking		Stack tray (tray lift mechanisms, with intermediary tray fixed in position)		
Stacking mode	A/B	Face-down stacking		
	Inch	Face-up stacking (1-to-n mode)		
Stack paper size		A3, A4, A4R, A5, A5R, B4, B5, B5R, postcard		
		279x432 mm (11"x17"), LGL, LTR, LTRR, STMT, STMTR		
Paper weight		64 to 128 g/m^2		
Bins		Stack tray 1		
		Intermediary processing tray 1		
Modes		Staple stacking		
		Non-staple stacking		
		Non-staple offset stacking		
Stack tray capacity	No stapling	Small-size	1,000 sheets	Equivalent of 80 g/m^2 paper
		Medium-/large-size	500 sheets	
	Staple sorting	Small-size*1	30-sheet stack (30 sets max.)	
		Medium-size*2	20 stacks (30 sets max.)	
		Large-size*3	15 stacks (30 sets max.)	
Stacking width*4	Not stapled	139.7 to 297 mm		
	Stapled	210 to 297 mm (stapling not available for A5)		
Stacking size		A3, A4, A4R, A5, A5R, B4, B5, B5R		
		279 x 432 mm (11" x 17"), LGL, LTR, LTRR, STMT, STMTR		
Stapling size		A3, A4, A4R, B4, B5		
		279 x 432 mm (11" x 17"), LGL, LTR, LTRR		
Stack offset width*6		210 to 297 mm		
Offset width*5		20 mm		

Item	Description	
Stapling method	Punching by rotating cam	
Stapling position	1-point rear, slant (Figure 1-101)	
Stack thickness	Small-size	30 sheets max.
	Medium-size	20 sheets max.
	Large-size	15 sheets max.
Staple source	Special cartridge (3,000 staples)	
Staple	Special staple (Staple L1)	
Staple detection	Yes	
Manual stapling	No	
Paper detection	Yes	
Control panel	No (operated from copier)	
Display	None (display on copier)	
Dimensions (WxDxH)	553 x 574 x 362 mm	
Weight	12 kg for body; 3 kg for installation kit	
Power supply	24V (from copier)	
Maximum power consumption	40W or less	
Serial number	ZRZ	

*1 Small-size, i.e., A4, A4R, A5, A5R, B5, B5R, postcard, LTR, LTRR, STMT, and STMTR.
*2 Medium-size, i.e., B4 and LGL.
*3 Large-size, i.e., A3 and 279 x 432 mm (11" x 17").
*4 The width of paper that may be put into order in front/rear direction.
*5 The distance a stack is displaced during sorting.
*6 The width of paper that may be put into order during sorting.

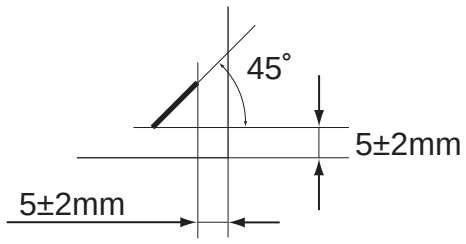
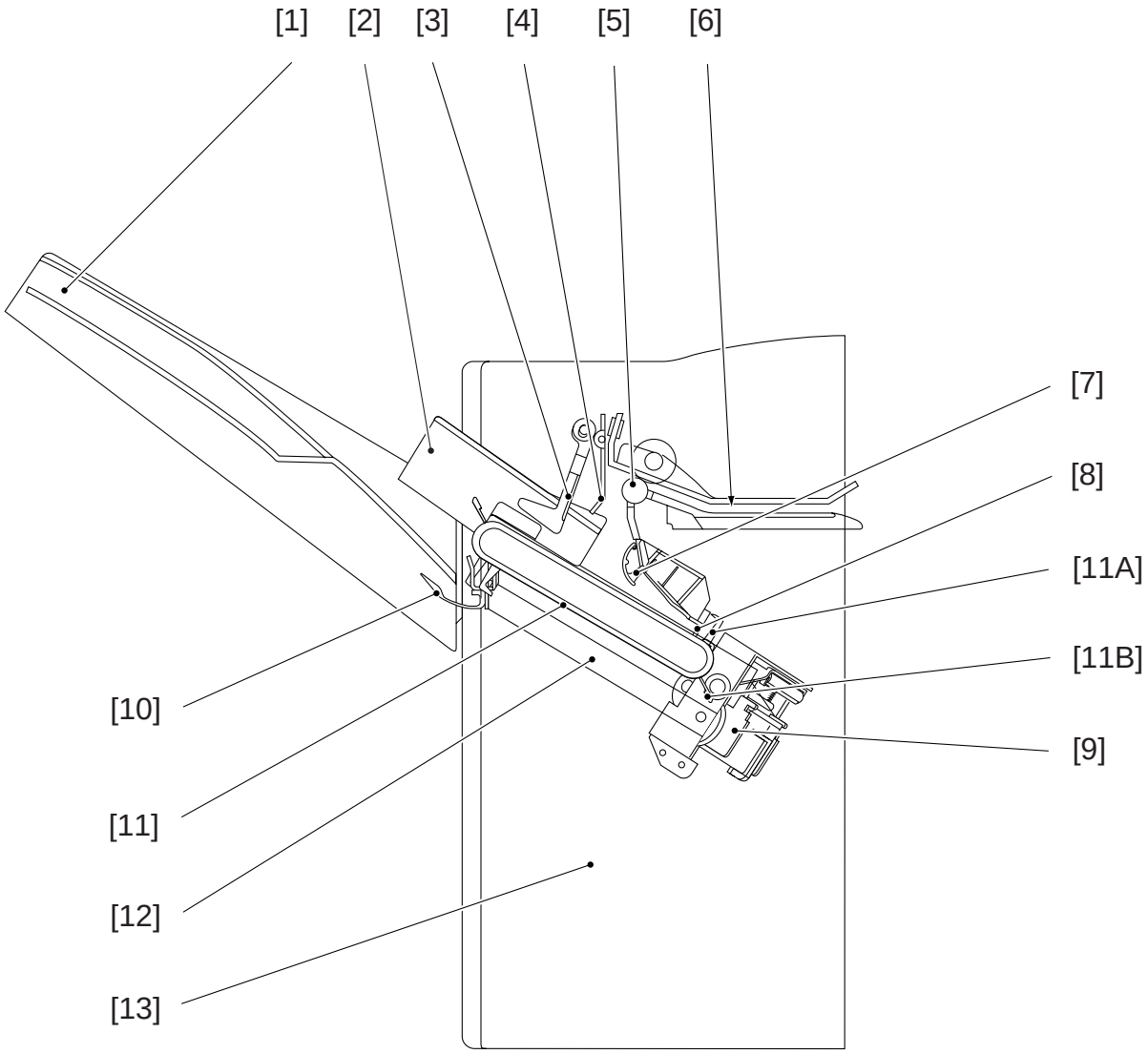


Figure 1-201 Stapling Positions

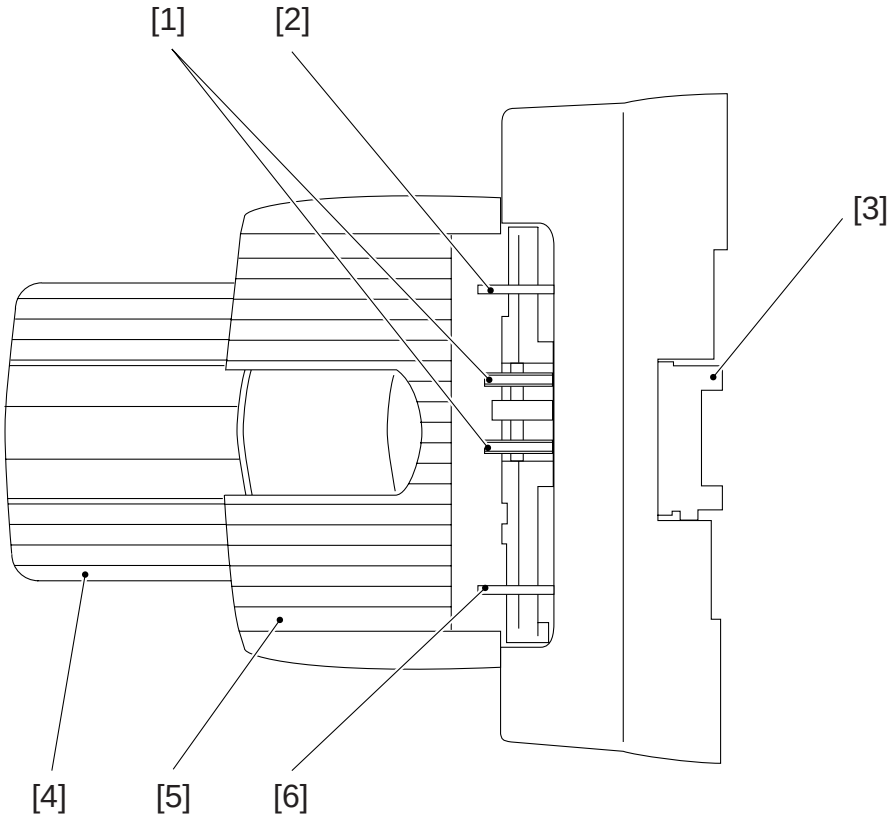
■ Cross Section



[1]	Stack tray	[9]	Stapler unit
[2]	Jogging plate (front, rear)	[10]	Paper holding lever
[3]	Paper feeding guide A	[11]	Stack delivery belt
[4]	Paper feeding guide B	[11A]	Stack delivery lever
[5]	Delivery roller	[11B]	Intermediary processing tray auxiliary plate
[6]	Paper path		
[7]	Returning roller	[12]	Intermediary processing tray
[8]	Stopper plate	[13]	Frame

Figure 1-202

■ Top View



[1] Stack delivery belt
[2] Rear jogging plate
[3] Grip
[4] Stack extension tray
[5] Stack tray
[6] Front jogging plate

Figure 1-203

III. OPERATING THE MACHINE

A. Removing Paper Jams

If the Jam indicator turns on to indicate the presence of a jam in the finisher, perform the following:

1) Grasping the grip, disconnect the finisher from the copier.

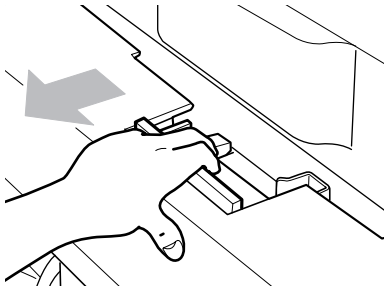


Figure 1-301

2) Remove the paper visible from the outside.

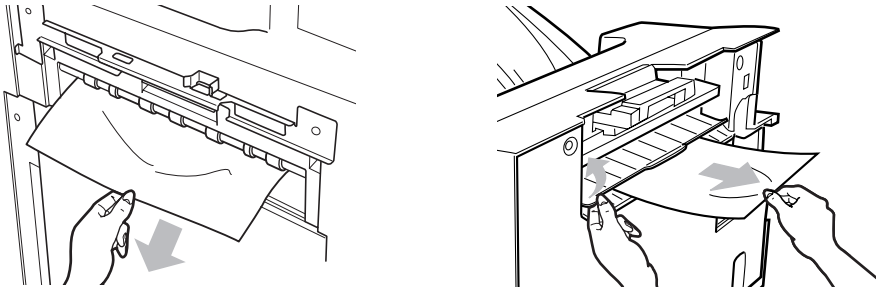


Figure 1-302

Caution:

Do not remove the paper from the intermediary processing tray before removing the jam.

3) Connect the finisher to the copier.

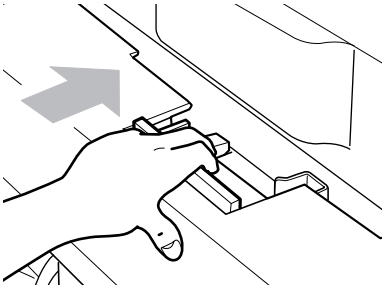


Figure 1-303

B. Supplying the Stapler Unit with Staples

If the Add Staples indicator turns on, perform the following:

1) Grasping the grip, disconnect the finisher from the copier.

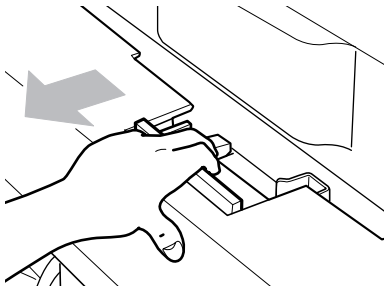


Figure 1-304

2) Pick the staple cartridge on its left and right sides (green), and pull it out.

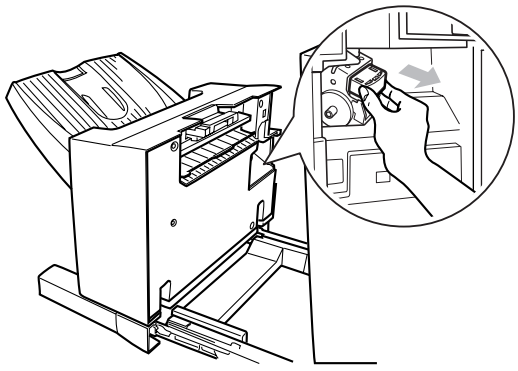


Figure 1-305

3) Pick the empty staple case on its left and right, and pull it off.

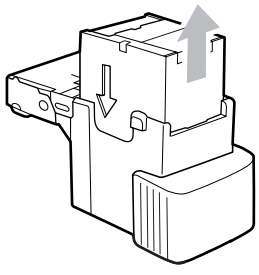


Figure 1-306

4) Set the new staple case.

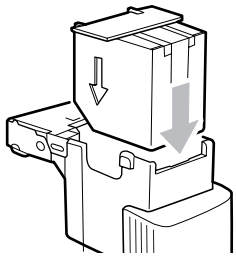


Figure 1-307

Reference:

No more than one staple case may be set. Be sure to use a staple cartridge specially designed for the machine.

5) Remove the seal used to hold the staples together by pulling it straight up.

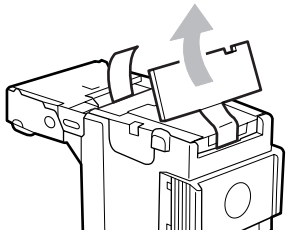


Figure 1-308

6) Fit the staple cartridge into the stapler unit.

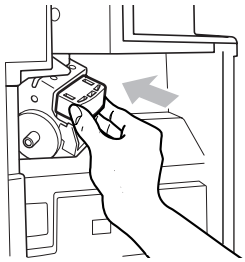


Figure 1-309

7) Connect the finisher to the copier.

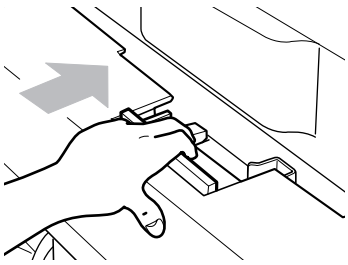


Figure 1-310

C. Removing a Staple Jam from the Stapler Unit

If the Staple Jam indicator turns on to indicate a staple jam in the stapler unit, perform the following:

1) Remove the paper waiting to be stapled from the processing tray.

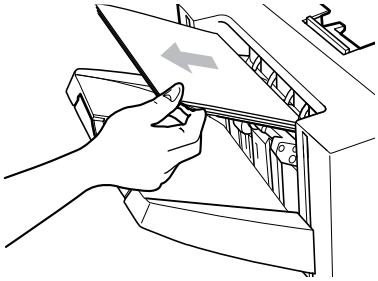


Figure 1-311

2) Grasping the grip, disconnect the finisher from the copier.

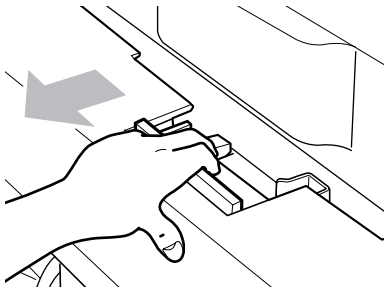


Figure 1-312

3) Pick the staple cartridge on its left and right (green), and pull it off.

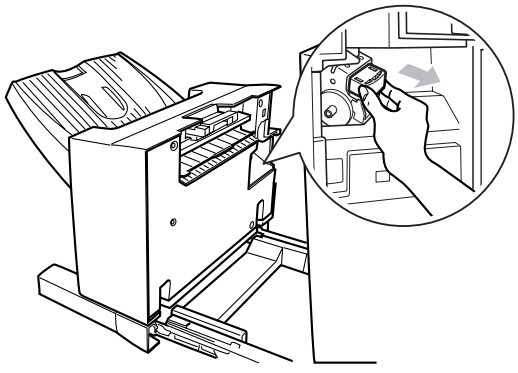


Figure 1-313

4) Shift down the staple cartridge.

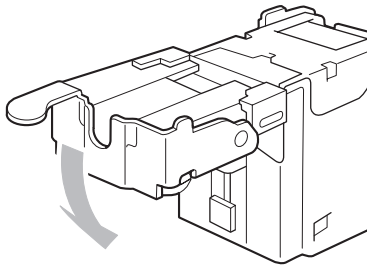


Figure 1-314

5) Remove all staples that slid out of the staple case.

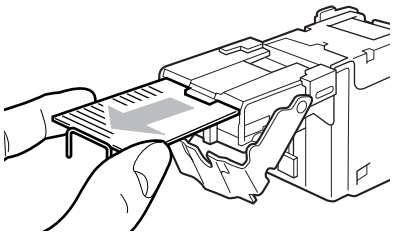


Figure 1-315

6) Shift the tab of the staple cartridge back to its initial position, and fit the staple cartridge into the stapler unit.

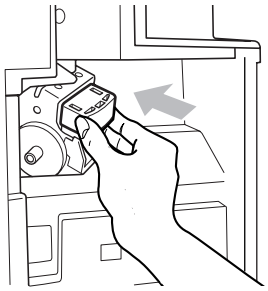


Figure 1-316

7) Connect the finisher to the copier.

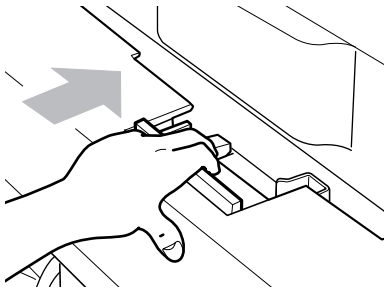


Figure 1-317

IV. MAINTENANCE BY THE USER

A. Maintenance by the User

No.	Item	Timing
1	Replacement of the staple cartridge	When prompted on the copier's display

Table 1-401

CHAPTER 2

BASIC OPERATION

 CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. BASIC CONSTRUCTION

A. Outline

The finisher consists of four blocks: intermediary processing tray assembly, stapler assembly, and stack tray assembly. Figure 2-101 is a functional diagram of the finisher.

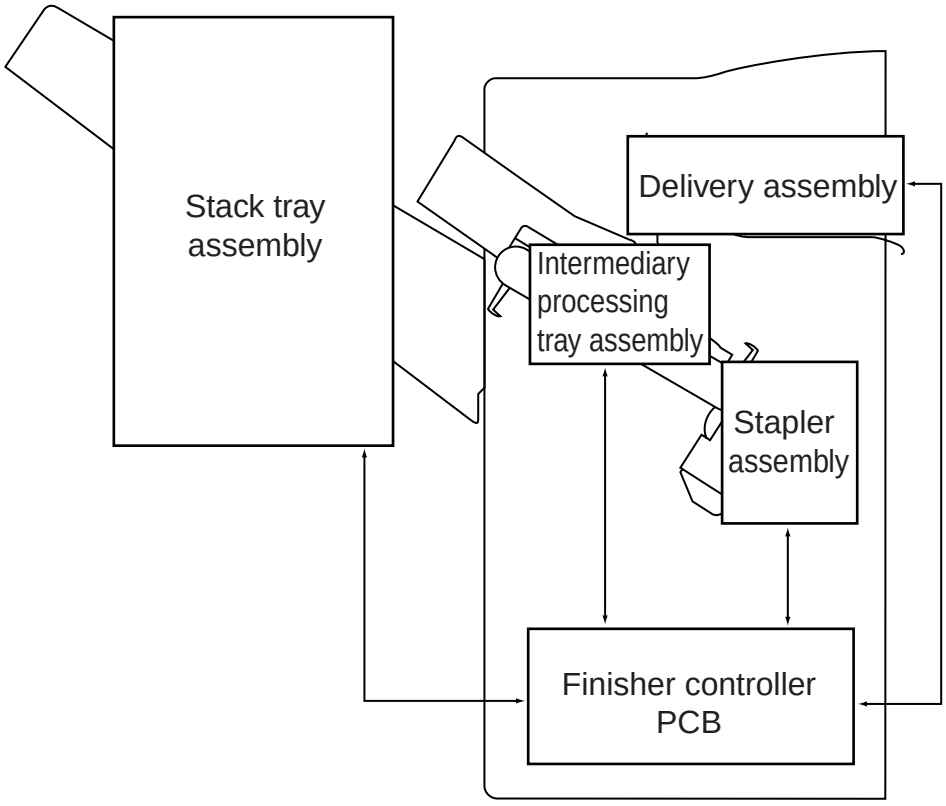


Figure 2-101

B. Outline of Electrical Circuitry

The finisher's operation sequences are controlled by the finisher controller PCB, which is a 32-bit CPU. The finisher controller PCB is also used to control communication (serial) with the copier.

The CPU on the finisher controller PCB is equipped with a built-in ROM used to store operation sequence programs.

The finisher controller PCB drives motors in response to various commands coming from the copier through serial communication lines. On the other hand, it communicates the state of each sensor and switch to the copier in serial mode of communication.

The ICs on the finisher controller PCB have the following functions:

- Q1 (CPU; w/ built-in flash ROM)
  Controls sequence.
  Stores sequence programs.
- Q2 (communication IC)
  Communicates with the copier (IPC II).
- Q8 (regulator IC)
  Generates 5 V used to drive sensors and logic system.

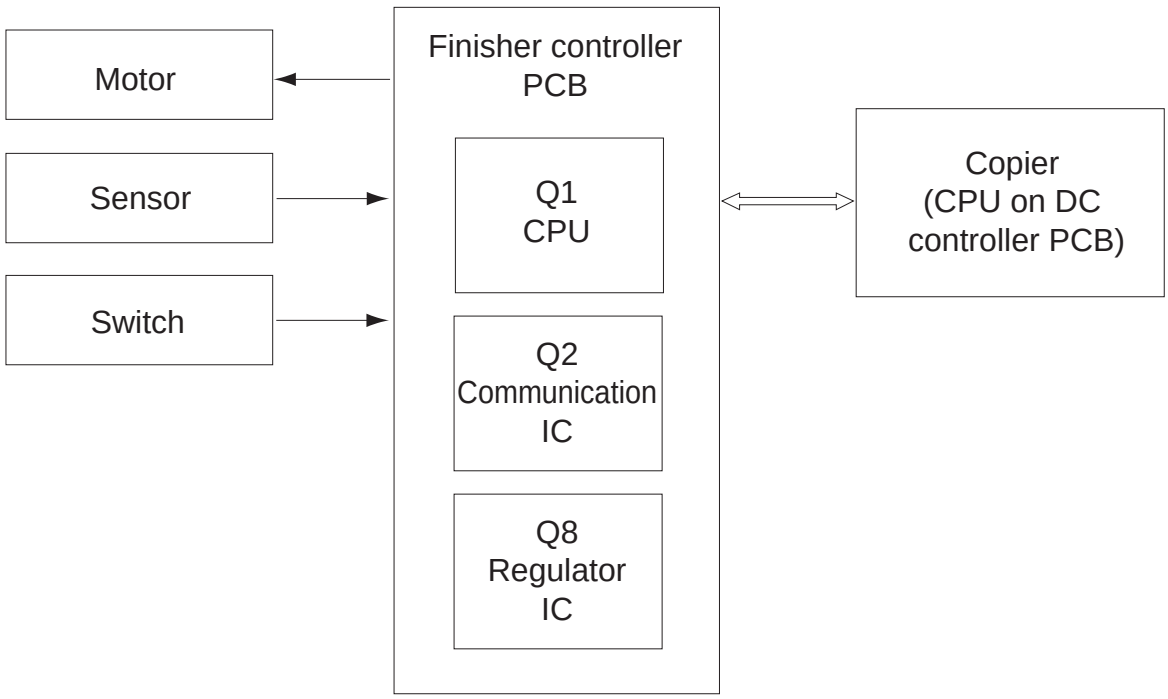


Figure 2-102

C. Inputs to and Outputs from the Finisher Controller PCB

- Inputs to the Finisher Controller PCB (1/2)

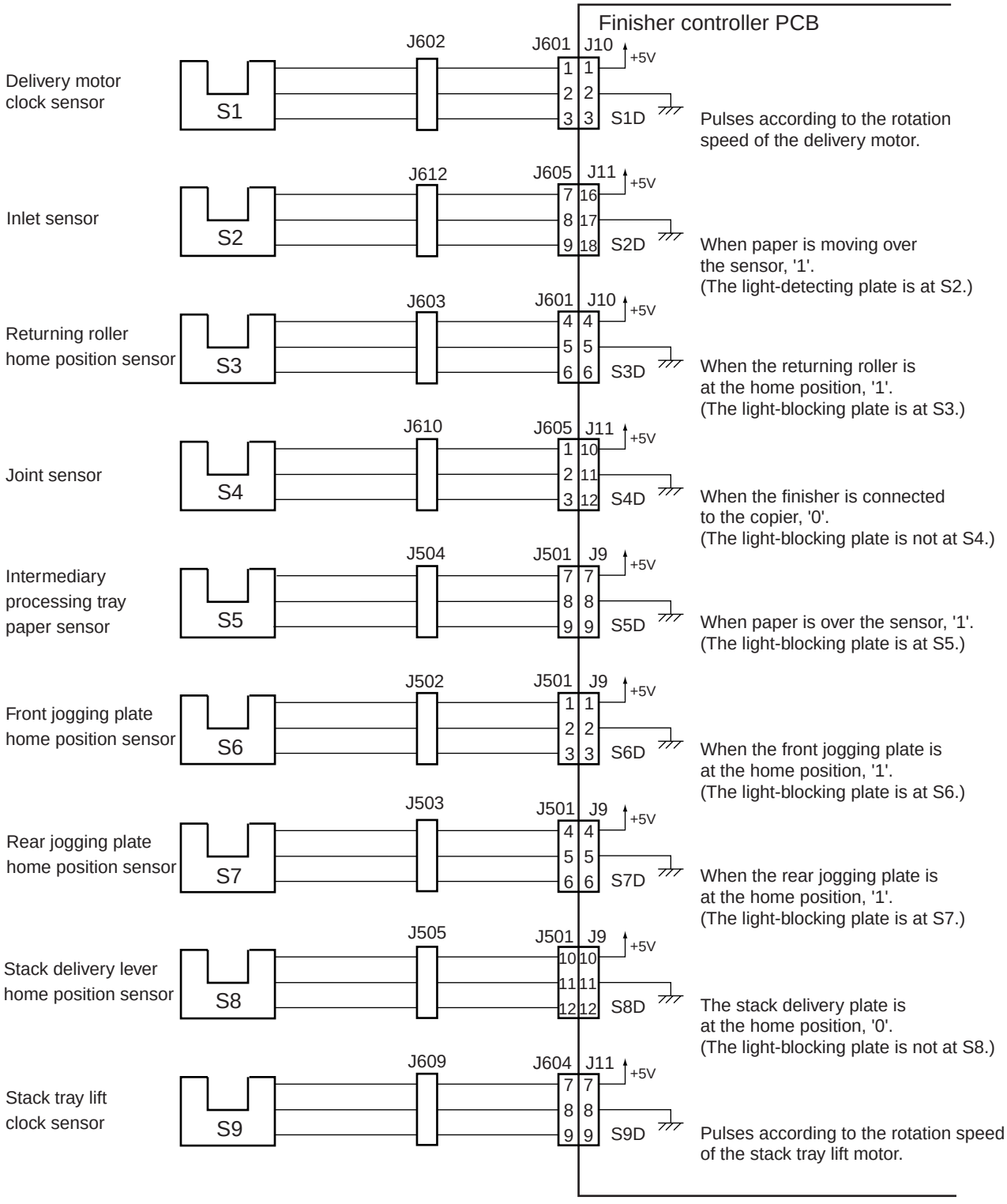


Figure 2-103

- Inputs to the Finisher Controller PCB (2/2)

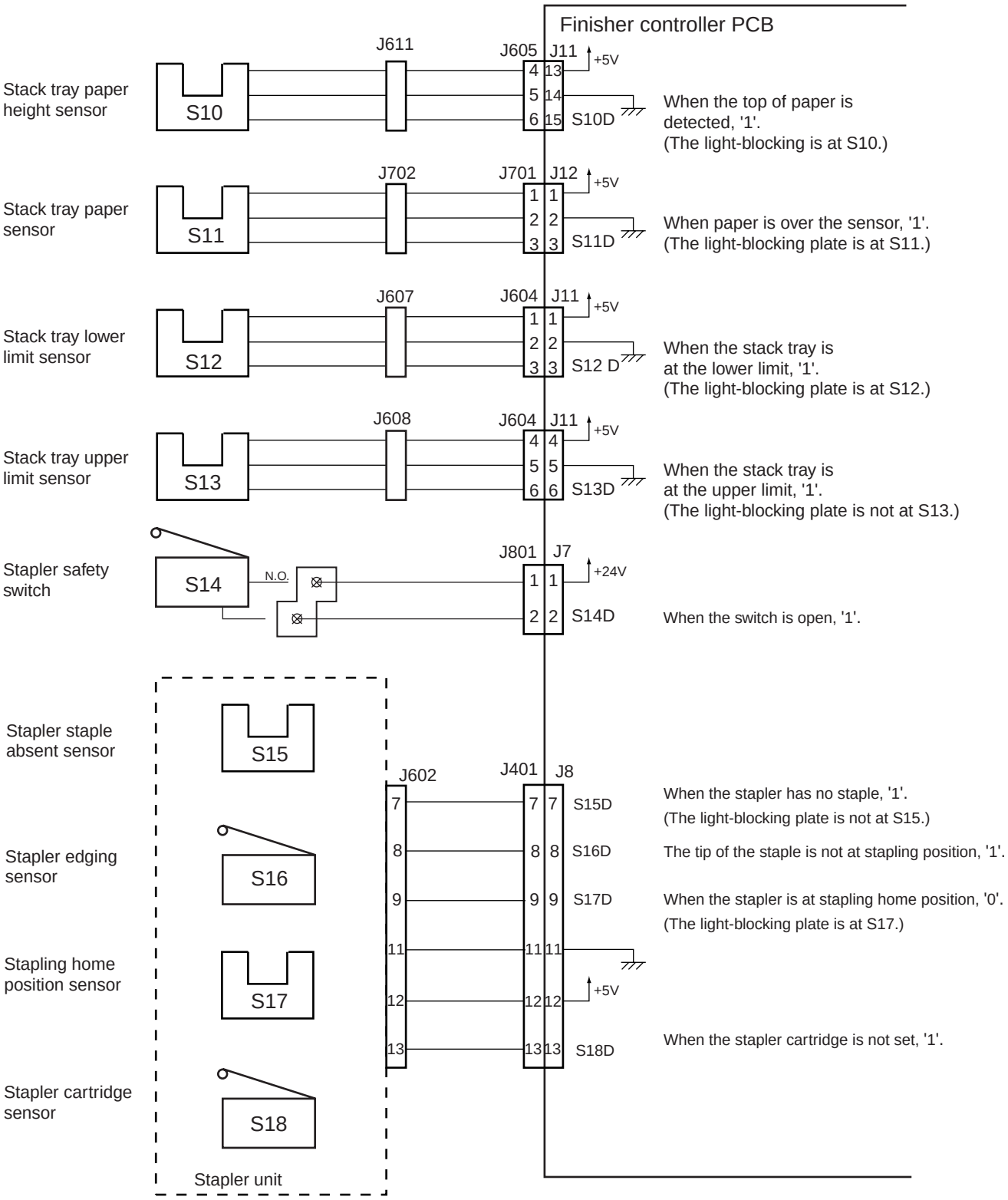


Figure 2-104

- Outputs of the Finisher Controller PCB

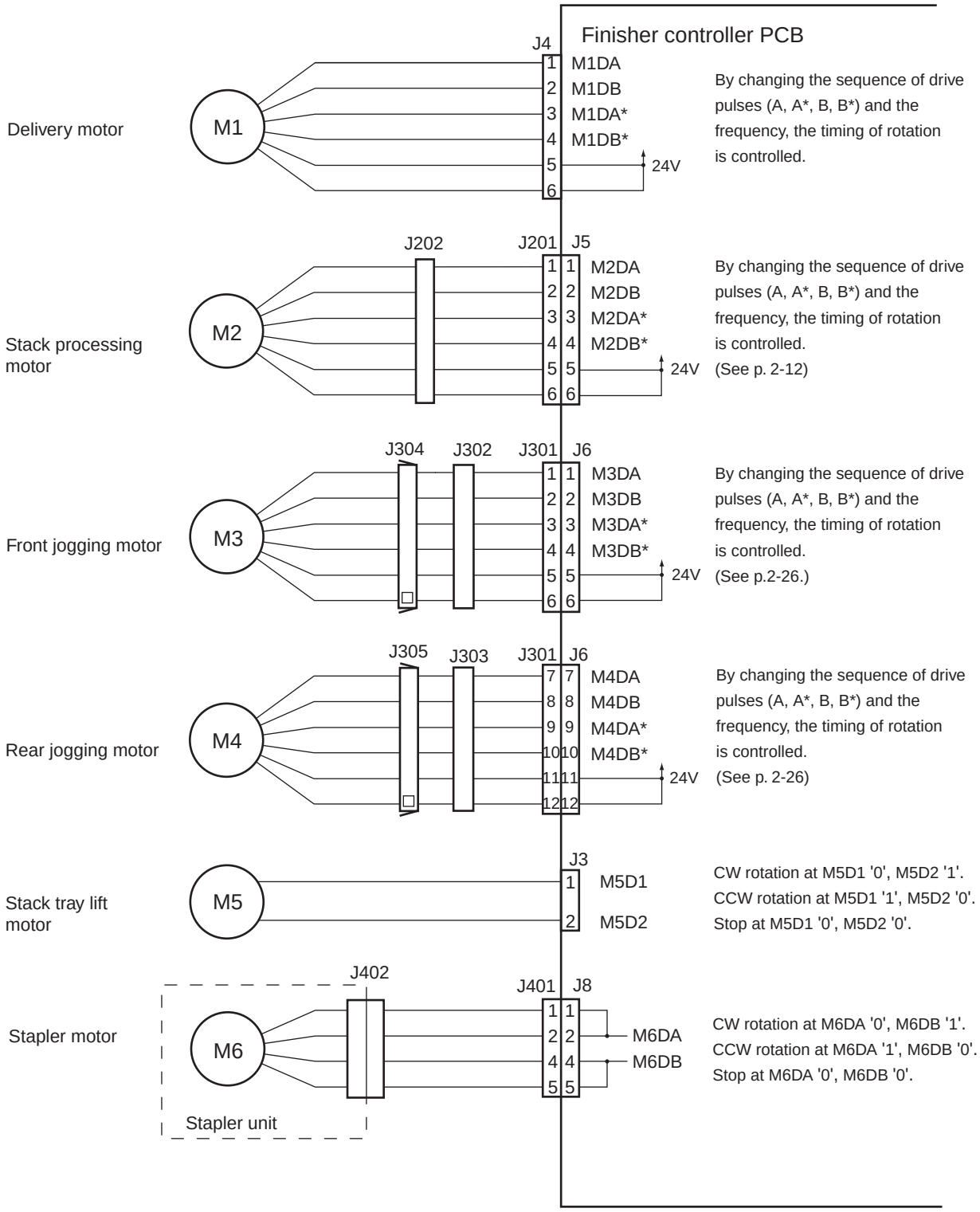


Figure 2-105

II. BASIC OPERATIONS

The finisher is designed to operate as follows:

1. Paper arrives from the copier.

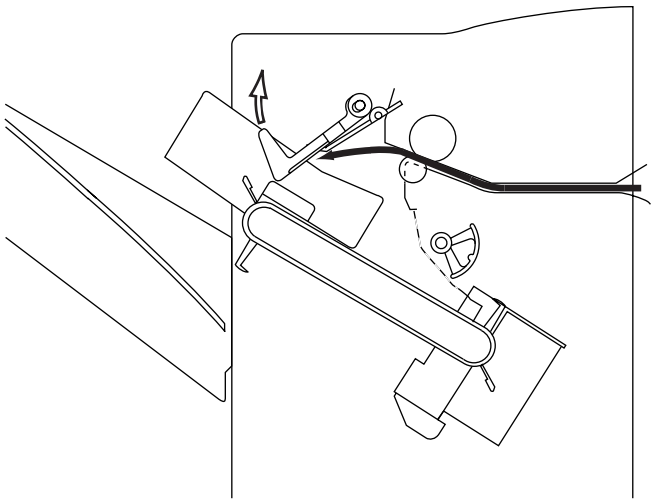


Figure 2-201

2. Paper reaches the intermediary processing tray.

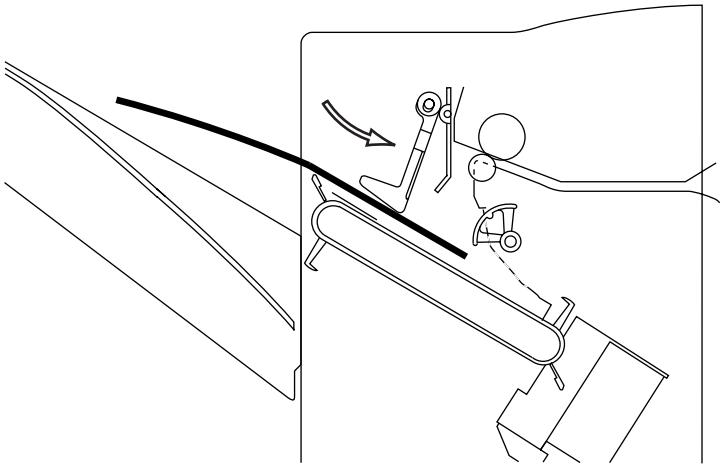


Figure 2-202

3. Paper is moved until it butts against the stopper plate by the work of the returning roller.

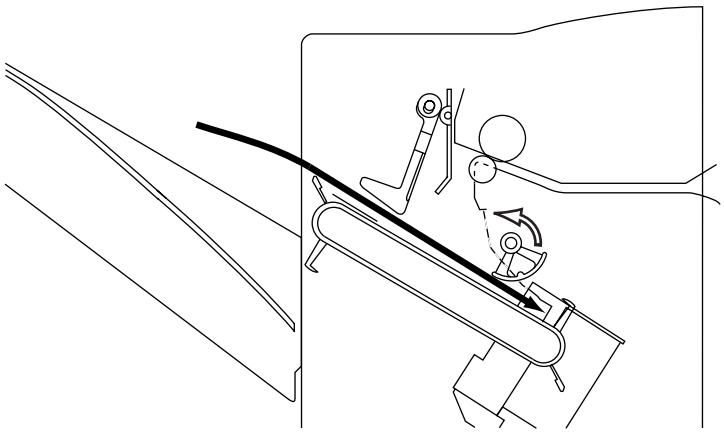


Figure 2-203

4. The paper is put into order by the work of the front/rear jogging plate.

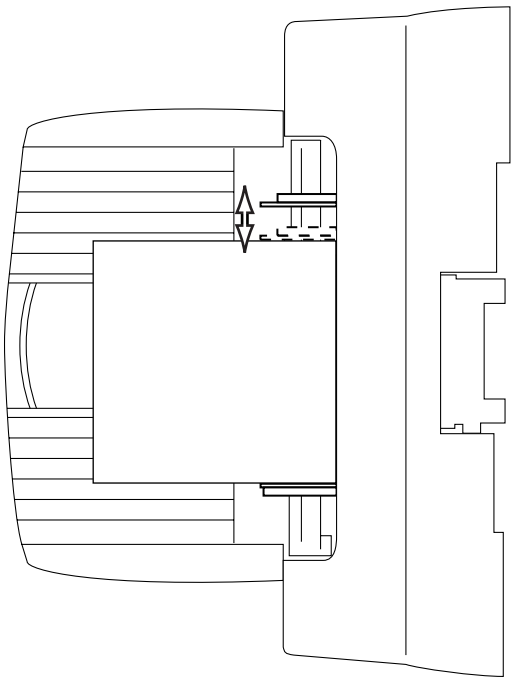


Figure 2-204

5. Operations 1 through 4 are repeated until a specific number of sheets have been stacked on the intermediary processing tray.
6. The sheets are stapled. (If stapling is selected.)

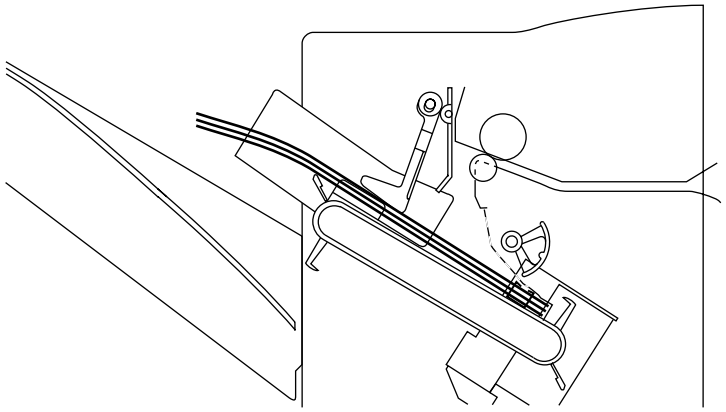


Figure 2-205

7. The stack on the intermediary processing tray is moved to the stack tray.

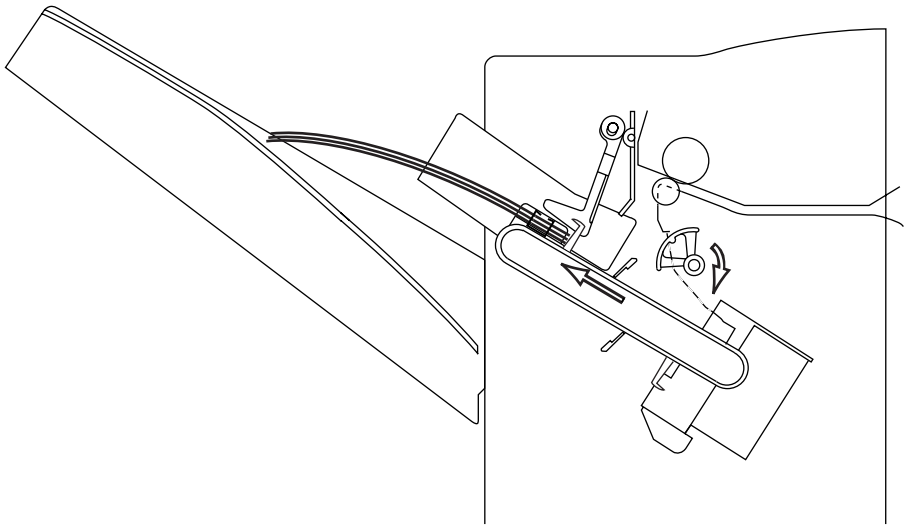


Figure 2-206

III. FEEDING DRIVE SYSTEM

A. Outline

Paper coming from the copier is sent to the intermediary processing tray, on which it is put into order and offset/stapled for delivery to the stack tray.

The machine detects jams using the inlet sensor (S2).

Figure 2-301 shows the construction of the feeding drive system.

Notation	Name
M1	Delivery motor
M2	Stack processing motor
S1	Delivery motor clock sensor
S2	Inlet sensor
S5	Intermediary processing tray paper sensor

Table 2-301

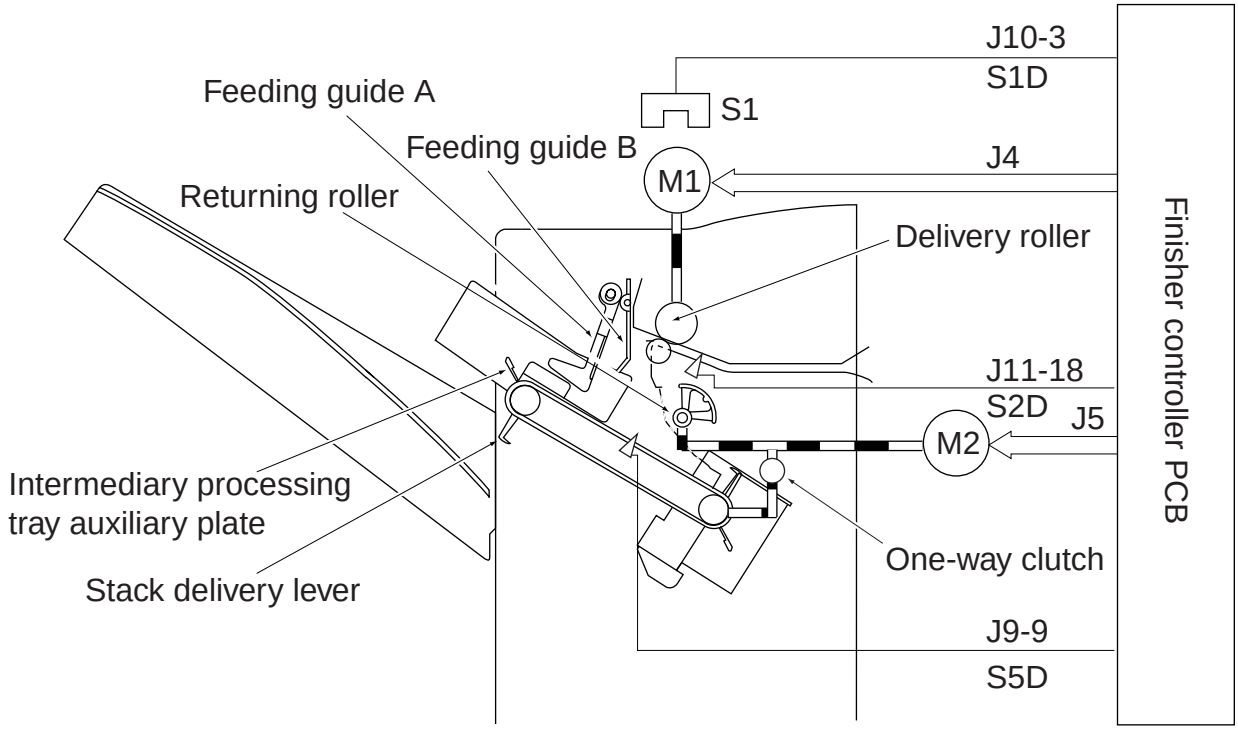


Figure 2-301

B. Delivery

Paper coming from the copier is sent to the intermediary processing tray by the work of the delivery motor (M1), and the movement of paper is monitored by the inlet sensor (S2).

The delivery slot of the machine is equipped with a feeding guide (A/B). The feeding guide A/B holds down the trailing edge of paper using its own weight so as to help move paper as far as the returning roller.

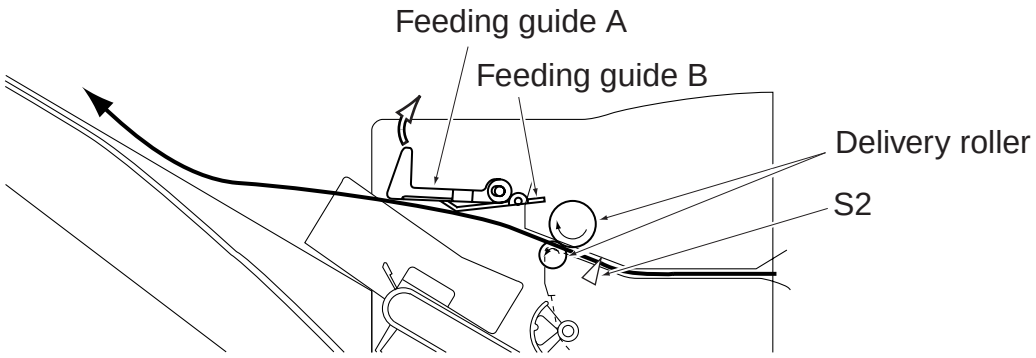


Figure 2-302

IV. INTERMEDIARY PROCESSING TRAY ASSEMBLY

A. Intermediary Processing Tray Operation

1. Outline

The intermediary processing tray is designed to organize sheets coming from the copier into a stack for offset and stapling operations.

The intermediary processing tray assembly consists of a returning roller and stack delivery belts, the latter of which are equipped with stack delivery levers and operate as a pair.

When paper reaches the intermediary processing tray, the intermediary processing tray paper sensor (S5) turns on.

When the copier is turned on, the stack processing motor (M2) is driven so as to move the returning roller and the stack processing belt to the home position.

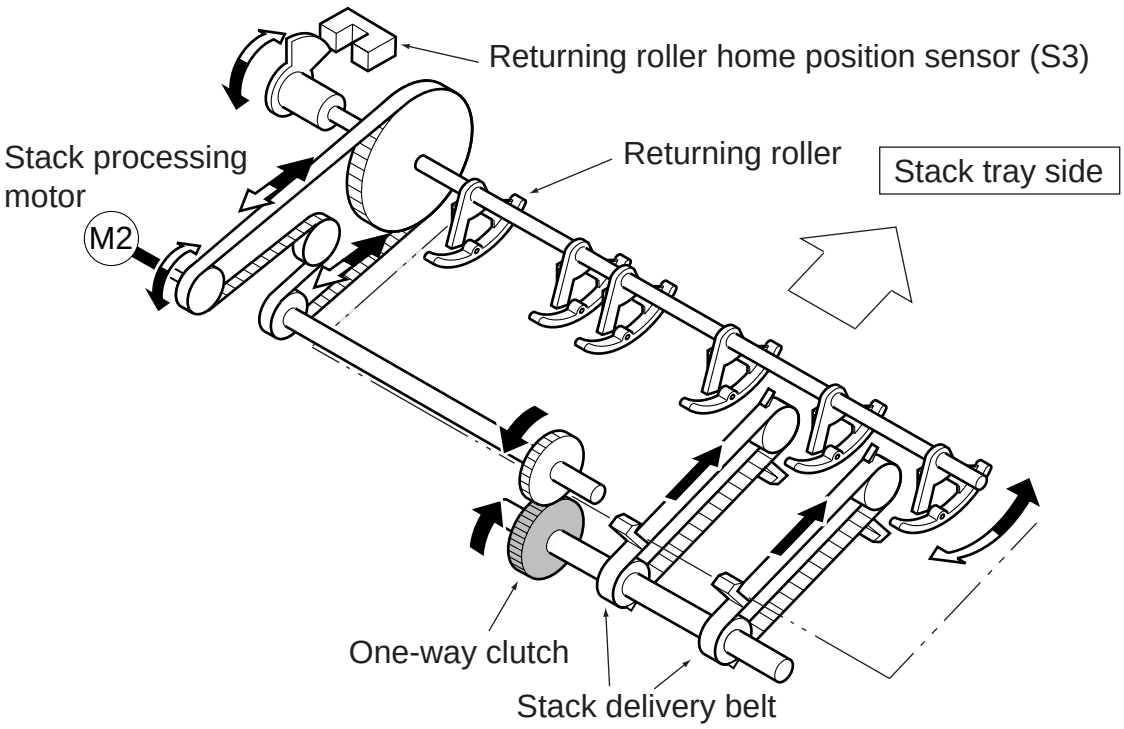


Figure 2-401

Motor direction	Drive	Arrow in Figure 2-401	Drive torque
Clockwise	Stack delivery belt Returning roller	➡	Strong
Counterclockwise	Returning roller	⇨	Weak

Table 2-401

2. Controlling the Stack Processing Motor (M2)

The stack processing motor (M2) is a 4-phase stepping motor.

The direction of rotation (clockwise/counterclockwise) and the speed of the motor are controlled by the phase of the pulse signals BUNDPINA and BUNDPINB from the CPU to Q16, which generates pulse signals A, A*, B, B* in response for control.

The motor torque is controlled based on combinations of current control signals BUNDCUR1 and BUNDCUR2 from the CPU to Q16.

The machine drives the motor using a high torque when rotating it clockwise (to drive the stack delivery belt); on the other hand, it drives the motor at a low torque when rotating it counterclockwise (to drive the returning roller).

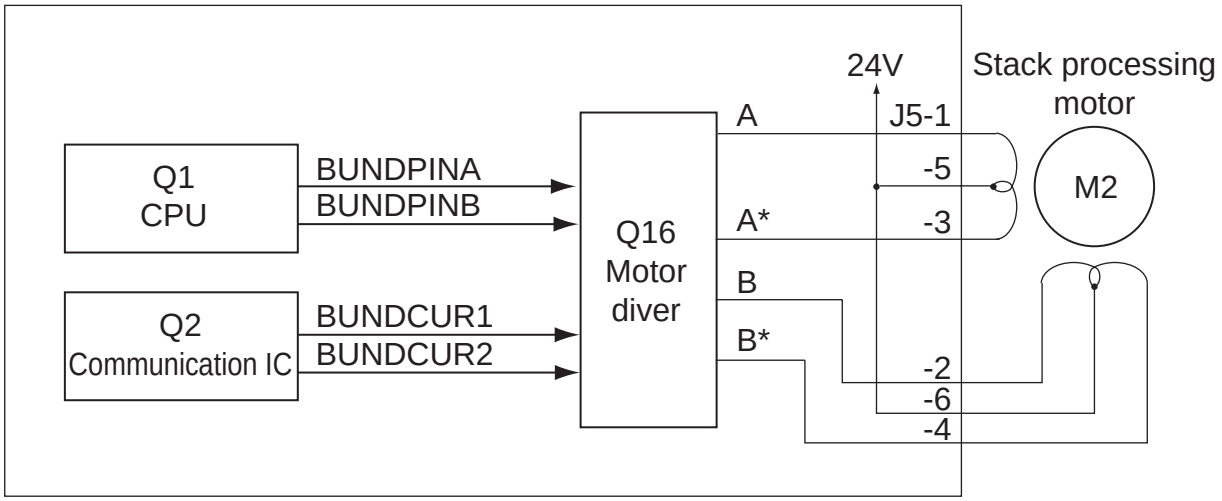


Figure 2-402

3. Stacking Limit on the Intermediary Processing Tray

The intermediary processing tray is capable of holding as may sheets of paper as are indicated in Table 2-402.

When a specific count is exceeded (copies or originals), as many sheets as indicated are put into order and offset on the intermediary processing tray; then, the stack is delivered to the stack tray to deal with the remaining number of sheets.

For offset, all sheets of the same stack are moved in the same direction.

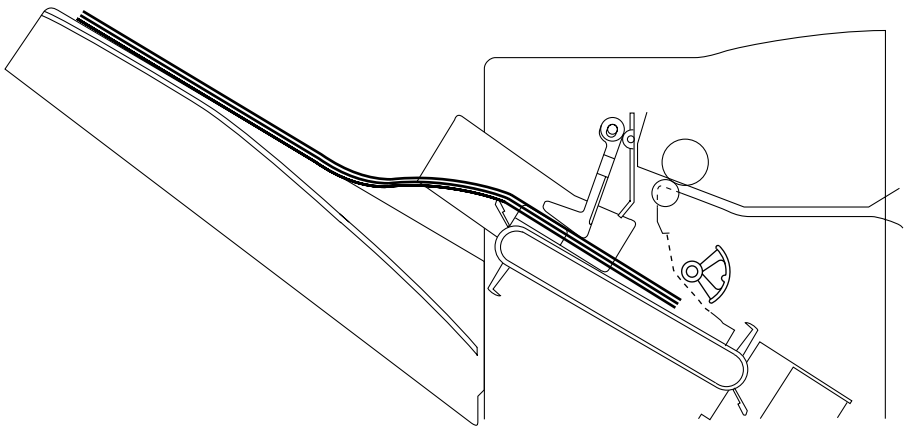
		Small-size	Medium-size	Large-size
Cassette		30	20	15
Paper deck				
Multifeeder	Stapled	30	20	15
	Not stapled	2		
Tracing paper mode		15		

Small-size: A4, A4R, A5, A5R, B5, B5R, postcard, LTR, LTRR, STMT, STMTR
Medium-size: B4, LGL
Large-size: A3, 279 x 432 mm (11" x 17")

Table 2-402

4. Tracing Paper Mode

When delivering tracing paper, the returning roller, jogging plates, or stapler are not driven. Further, delivery will not be on a stack basis, and paper processing is stopped on the intermediary processing tray.



The returning roller, stack delivery belt, and front/rear jogging plates are not driven.

Figure 2-403a

B. Returning Roller

1. Outline

The returning roller serves to butt paper from the copier against the stopper plate to correct its placement in feeding direction.

The returning roller is driven in clockwise direction when the stack processing motor rotates counterclockwise.

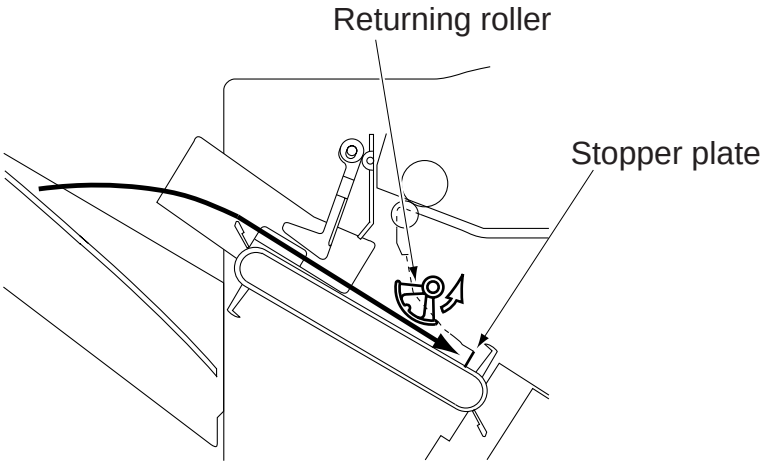


Figure 2-404

2. Outline of Operations

The returning roller operates as follows:

1. Paper arrives from the copier.

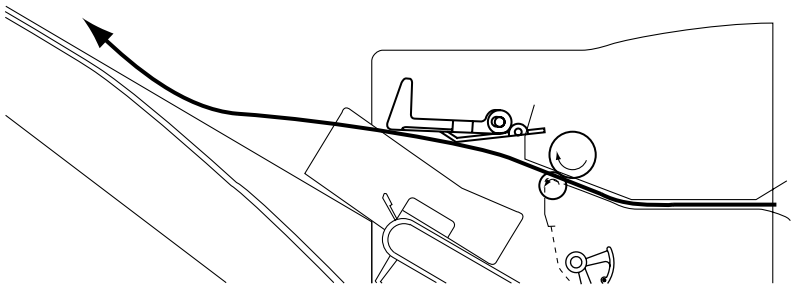


Figure 2-405a

2. The returning roller rotates clockwise to butt the paper reaching the intermediary processing tray against the stopper plate.

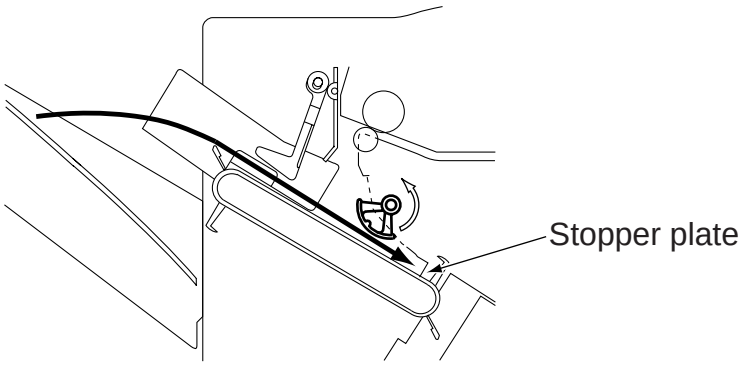


Figure 2-405b

3. The returning roller makes a single rotation, and waits in its home position. In the case of large-/medium-size paper, it waits where it will hold down paper in position.

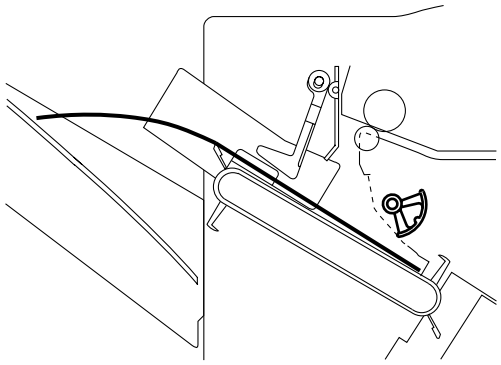


Figure 2-405c

4. When the next paper arrives from the copier, operations 1 and 2 are repeated to organize a stack.
   When the last sheet of each stack has been butted against the stopper plate, the returning roller moves past its home position and stops after making a 1/8 rotation.

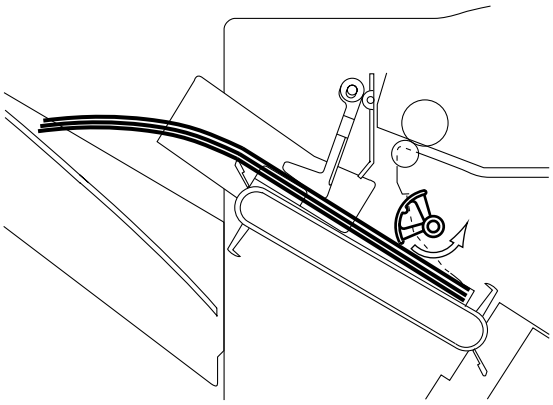


Figure 2-405d

5. When a single set has been put into order, the stack is delivered by the work of the stack delivery lever. At the same time, the returning roller rotates in the opposite direction.
   Since the returning roller has not been at the home position, no interference with the stack occurs. (See II.B. “Outline of Operations.”)

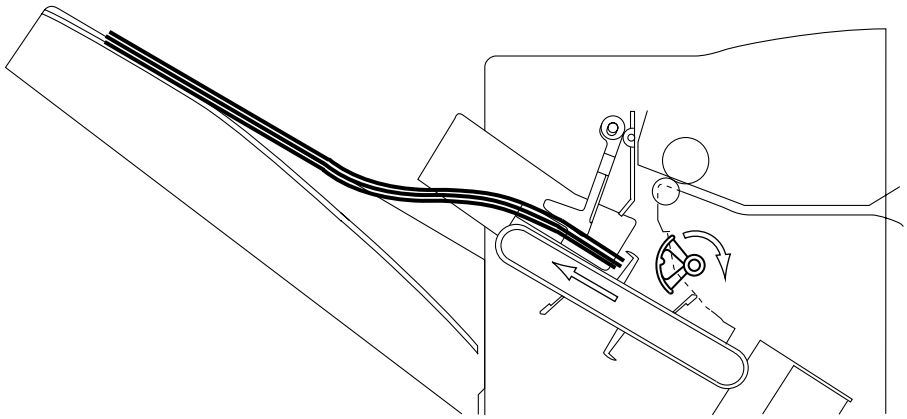


Figure 2-405e

6. The stack processing belt reaches its home position to end the delivery operation. At the same time, the returning roller stops at the home position.

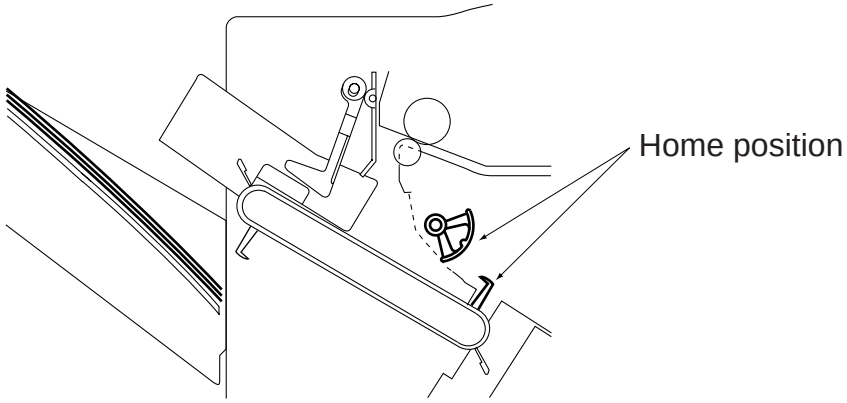


Figure 2-405f

7. Thereafter, operations 1 through 6 are repeated when the next sheet arrives for the next stack.

■ Holding Down Paper (manual feed, large-/medium-size paper)

In the case of manual pickup, the intermediary processing tray holds as many as two sheets. When large-size paper is fed manually, it tends to buckle, requiring the returning roller to hold it down until the next sheet arrives.

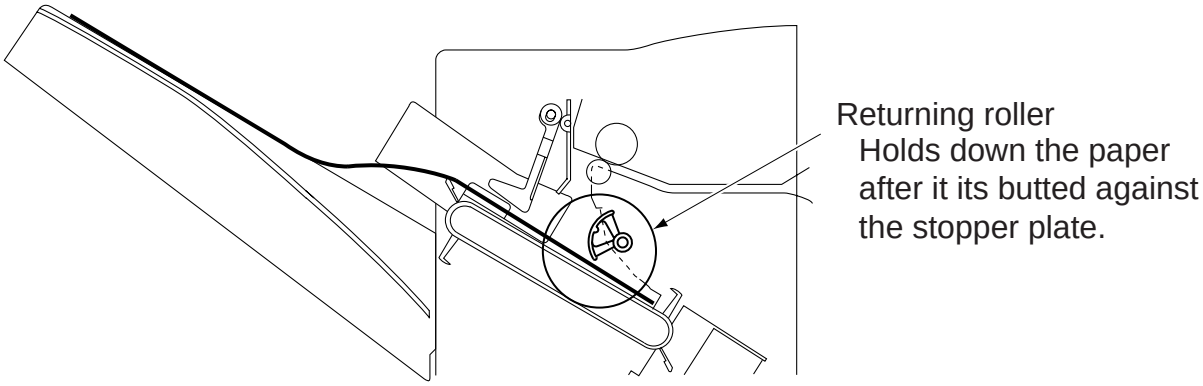
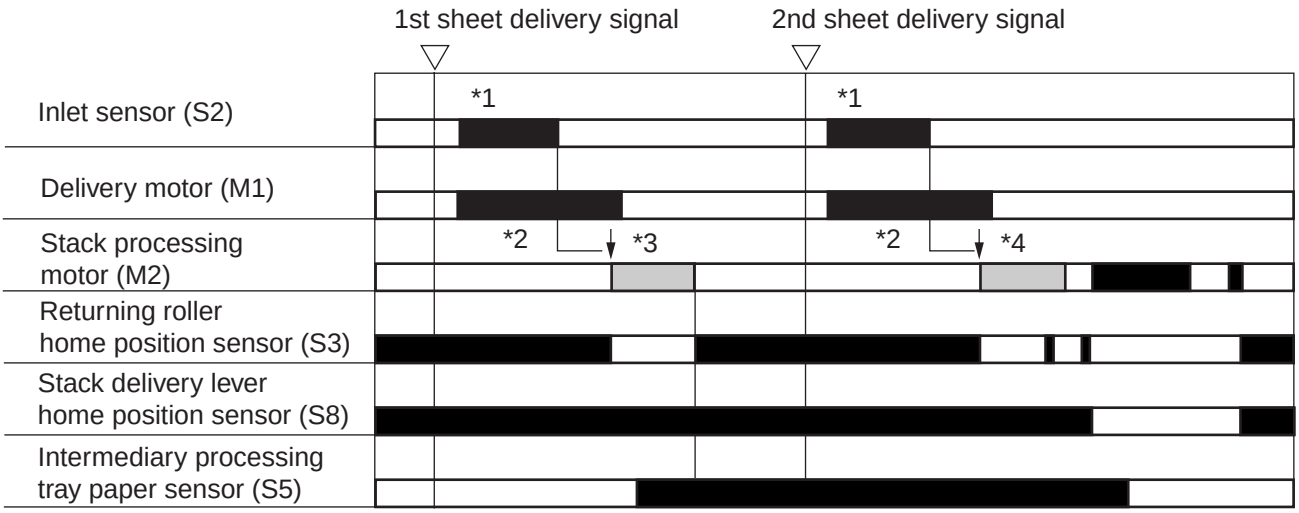


Figure 2-406

3. Sequence of Operations

(1) Normal



: CW rotation (stack delivery operation) : CCW (returning operation)

*1: Varies depending on the length of paper.
*2: 0.2 sec.
*3: 0.3 sec.
*4: To prevent interference with the stack during delivery, the returning roller is given a 1/8 turn after it has reached its home position.

Figure 2-407

(2) Holding Down Paper

: CW rotation (stack delivery operation) : CCW rotation (returing operation)

*1: A-B delivery (n number of stack, nth sheet)
*2: Varies depending on the length of paper.
*3: 0.2 sec.
*4: 0.3 sec; after returning operation, the returning roller is driven continuously and stopped where its end can hold down paper.
*5: Holds down paper.
*6: To prevent interference with the stack during delivery, the returning roller is given a 1/8 turn after it has reached its home position.

Figure 2-408

C. Driving the Stack Delivery Belt

1. Outline of Operations

The stack delivery belts are driven when the stack processing motor (M2) rotate clockwise, and two belts are designed to move in sync.

Each stack delivery belt is equipped with two stack delivery levers on opposite sides. A single stack is delivered for each half cycle of the belt movement.

When the copier is turned on, the stack processing motor (M2) is driven to set the stack delivery lever to its home position.

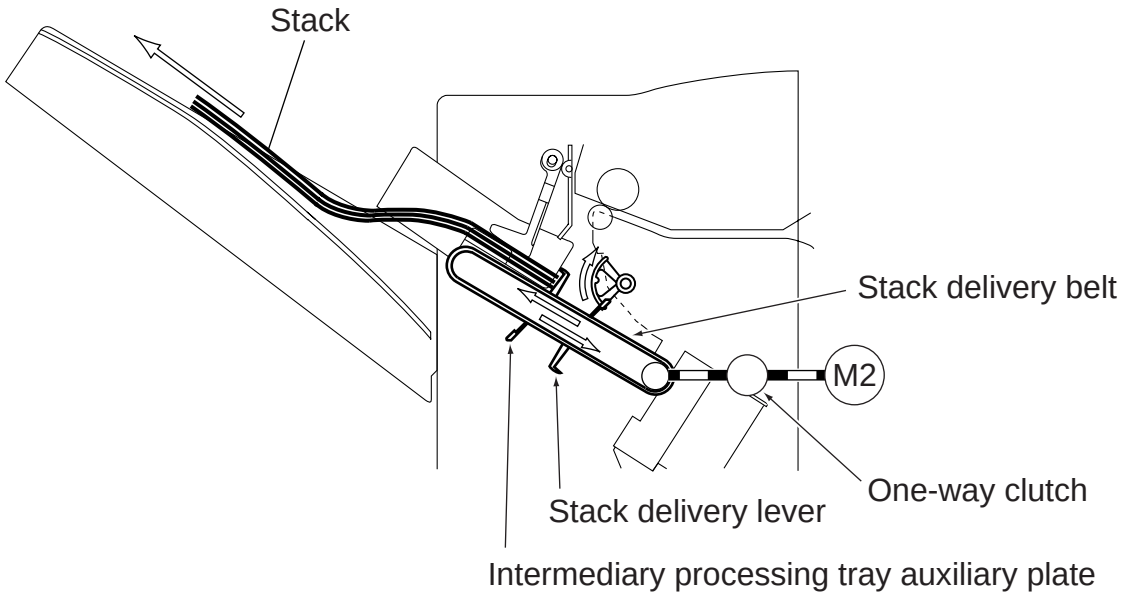


Figure 2-409

2. Outline of Operations

The stack delivery belt operates as follows:

1. When the copier's Copy Start key is pressed and a copy is delivered to the intermediary processing tray, the paper is butted against the stopper plate so that it is put into order. As many sheets as specified are stacked on the intermediary processing tray.

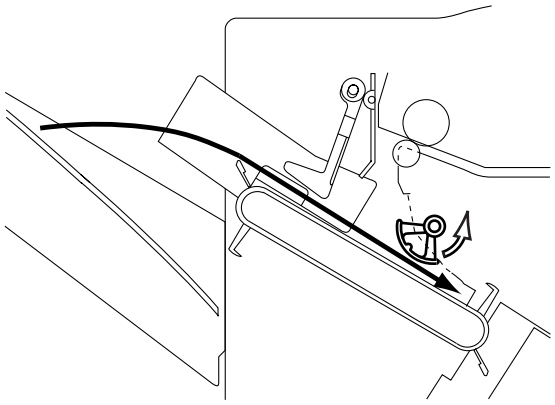


Figure 2-410a

2. The stack delivery belt is driven to move the stack in the direction of the stack tray with the help of the stack delivery lever.

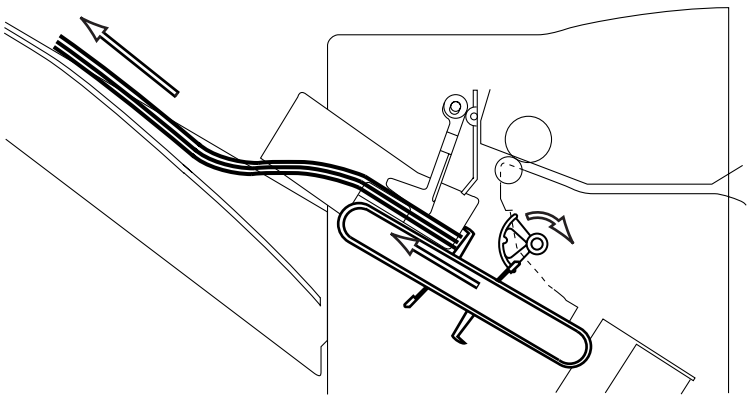


Figure 2-410b

3. The stack delivery belt is decelerated immediately before the stack is delivered to the stack tray, thereby avoiding disruption of the stack by impact.

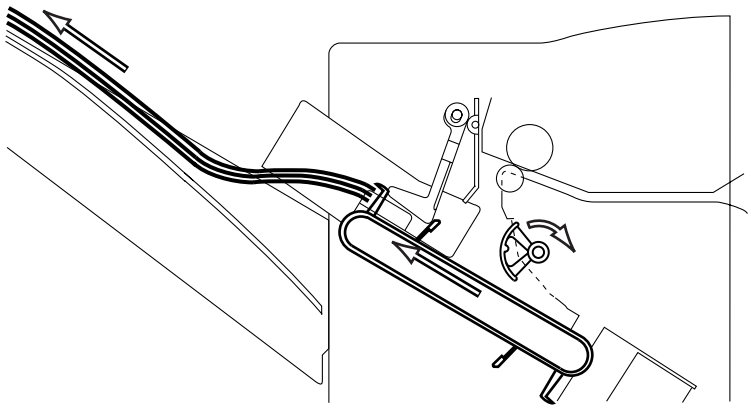


Figure 2-410c

4. The stack is delivered to the stack tray, and the lever stops in front of its home position.

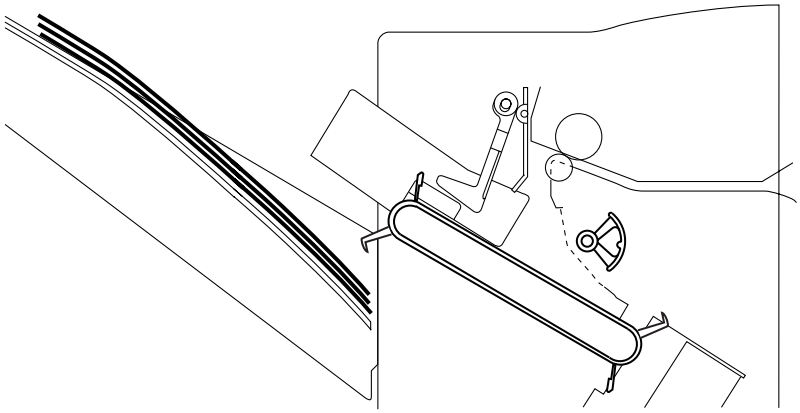


Figure 2-410d

5. When the stack tray has moved down, both stack delivery belt and returning roller move to the home position to wait for the next sheet.

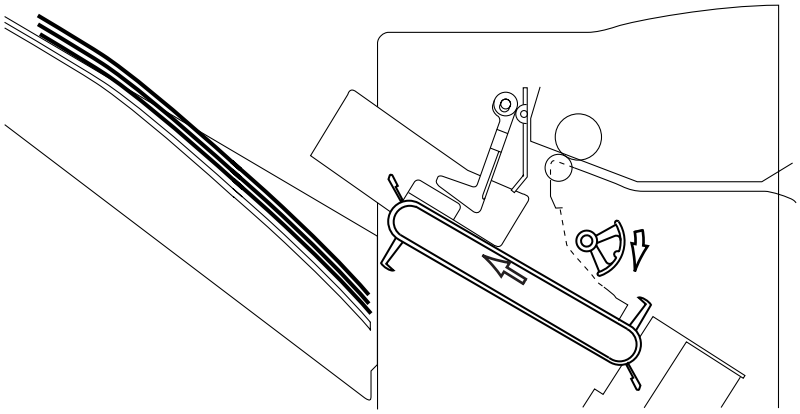
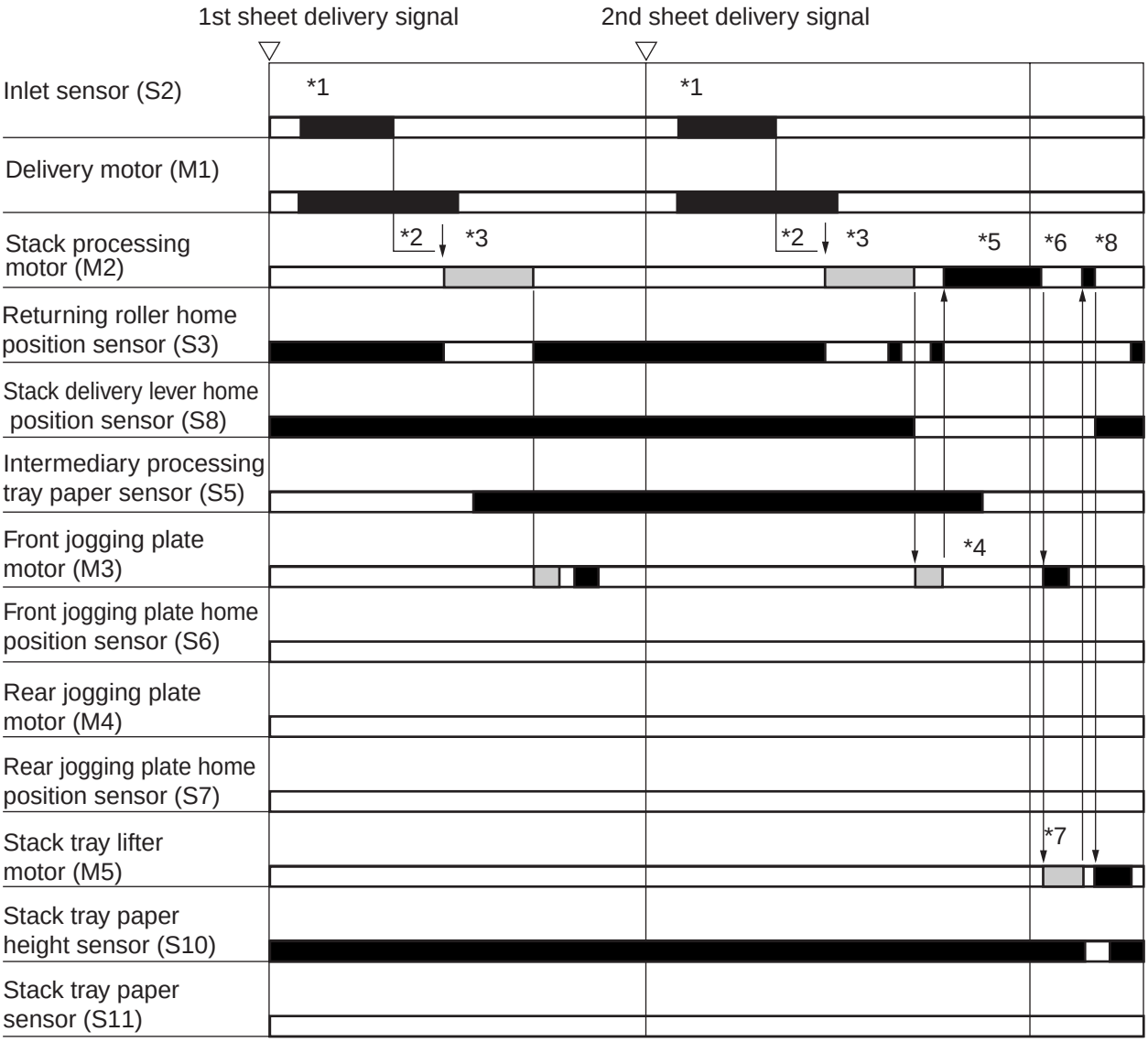


Figure 2-410e

3. Sequence of Operations

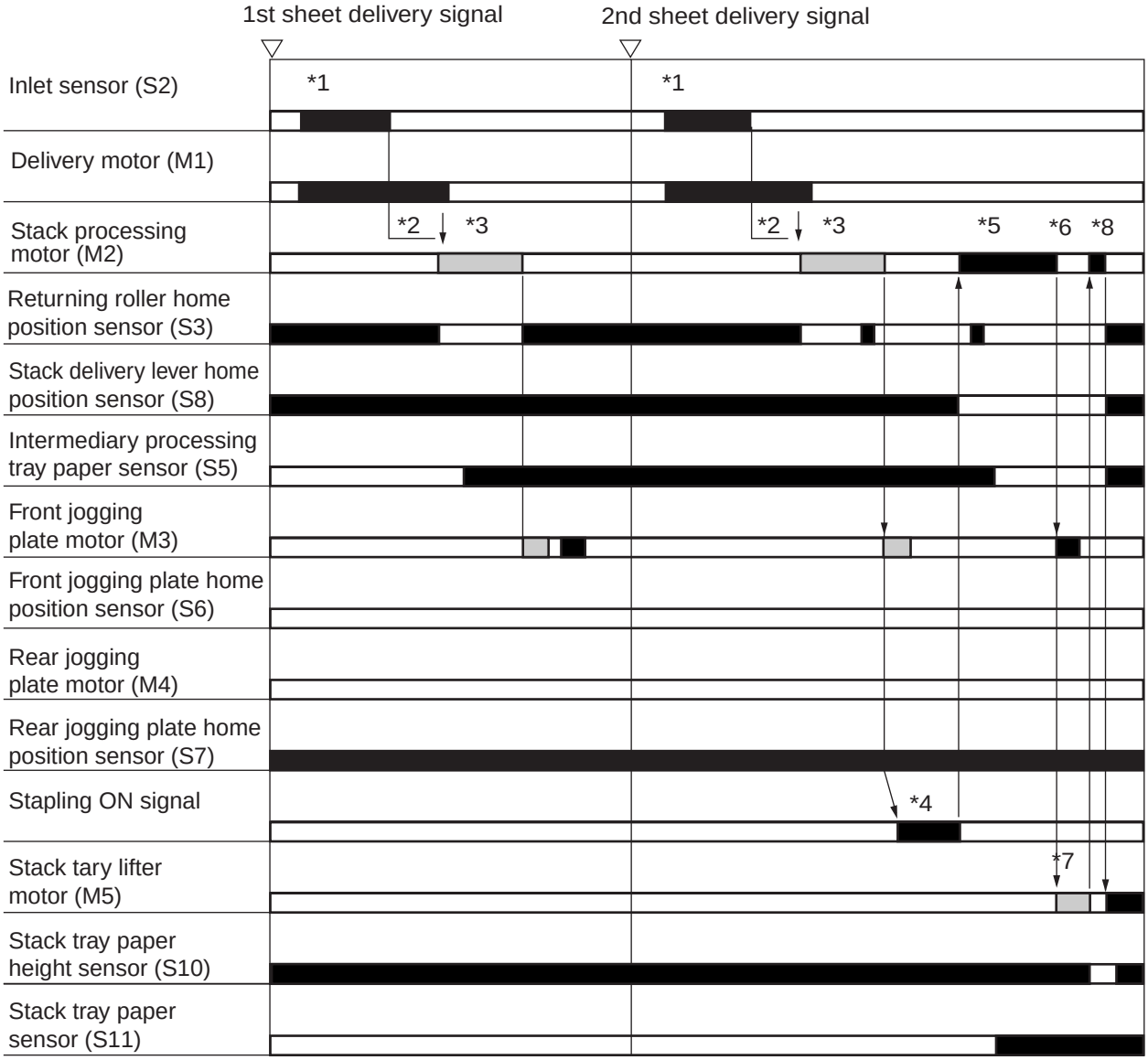


: CW rotation : CCW rotation

Stack processing motor: CW → stack delivery/CCW → returning operation
Front jogging plate motor: CW → move to front/CW → move to rear
Rear jogging plate motor: CW → move to rear/CCW → move to front
Stack tray lifter motor: CW → up/CCW - down

*1: Varies depending on the length of paper.
*2: 0.2 sec.
*3: 0.3 sec.
*4: Varies depending on the length of paper.
*5: 0.5 sec.
*6: Stops temporarily.
*7: Drives until the stack tray paper height sensor turns off.
*8: After the stack tray has moved up and stopped, driven until the stack delivery lever reaches its home position.

Figure 2-411a



: CW rotation : CCW rotation

Stack processing motor: CW → stack delivery/CCW → returning
Front jogging plate motor: CW → move to front/CCW → move to rear
Rear jogging motor: CW → move to front/CCW → move to front
Stack tray lifter motor: CW → move up/CCW → move down

*1: Varies depending on the length of paper.
*2: 0.2 sec.
*3: 0.3 sec.
*4: ON for 0.1 sec after the returning roller turns off
*5: 0.5 sec.
*6: Stops temporarily.
*7: Driven until the stack tray paper height sensor turns off.
*8: When the stack tray has moved up and stopped, driven until the stack delivery lever reaches its home position.

Figure 2-411b

D. Putting Sheets into Order and Offsetting Sheets

1. Outline

Sheets are put into order in breadthwise direction on the intermediary processing tray by the work of the front/rear jogging plate.

The front jogging plate is driven by the front jogging plate motor (M3), while the rear jogging plate is driven by the rear jogging plate motor (M4).

The front jogging plate home position sensor (S5) serves to find out whether the front jogging plate is at the home position; the rear jogging plate home position sensor (S7), on the other hand, serves to find out whether the rear jogging plate is at its home position.

Tables 2-403 and -404 show how sheets are put into order and possible sizes:

Mode	Operation
Non-sort	Offset (front)
Staple sort	Offset (rear)
Sort	Offset

Table 2-403

	Possible sizes
Small-size	A4, A4R, A5, A5R, B5, B5R LTR, LTRR, STMT, STMTR
Medium-size	B4 LGL
Large-size	A3 279mm x 432mm (11 x 17)

Table 2-404

Reference:

The finisher is initialized at the start of operation. As such, at power-on, the front/rear jogging plate is not moved even if it is not at the home position.

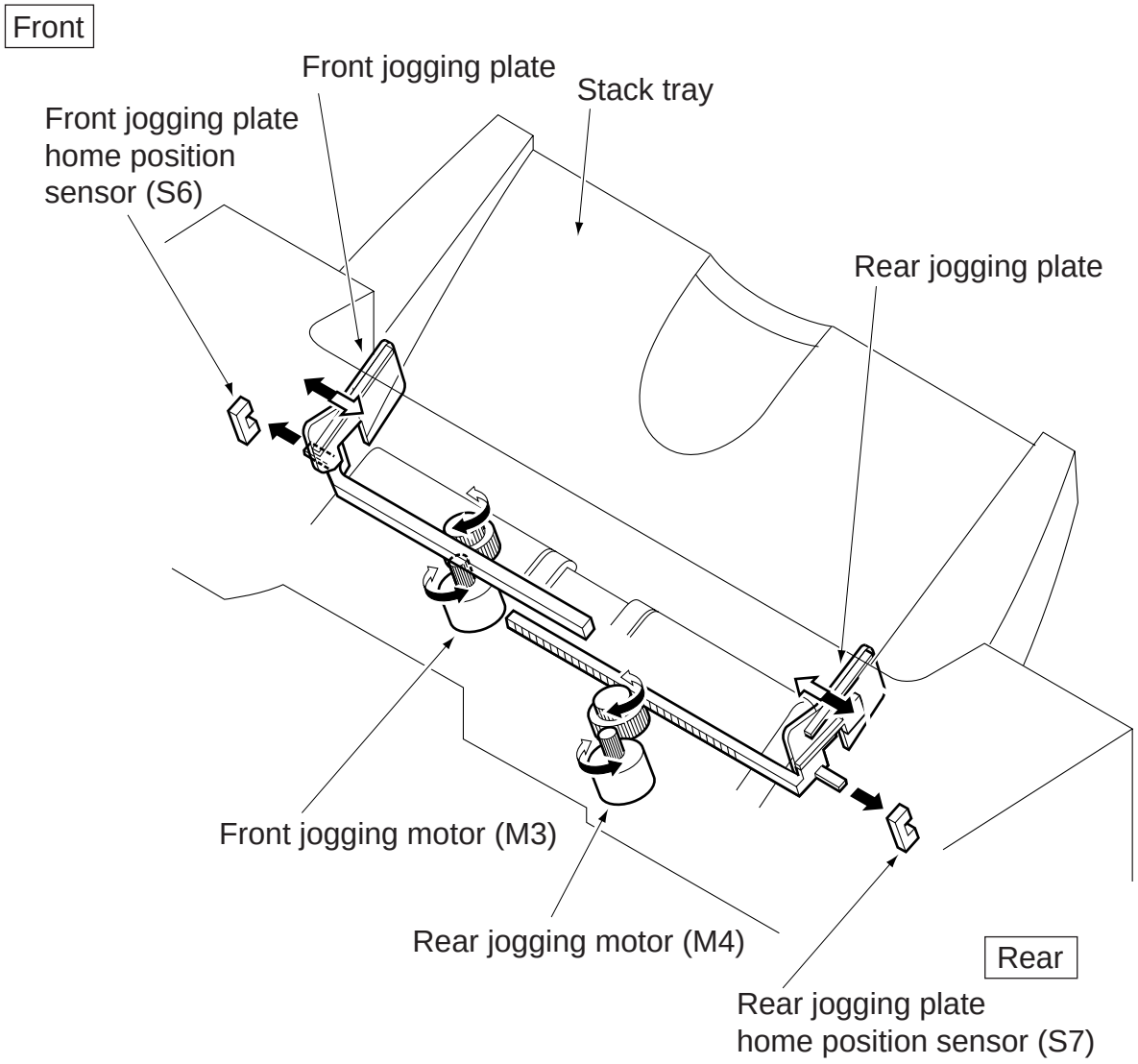


Figure 2-412

2. Controlling the Jogging Motor

Figure 2-419 is a diagram of the front jogging motor (M3) and the rear jogging motor (M4). Both motors are 4-phase stepping motors.

Q1 (CPU) and Q2 (communication IC) generate the following signals (Table 2-405) for control of the motors.

Function	Notation	Motor
Controls direction and speed of motor rotation	JOGPINA JOGPINB	Front jogging motor Rear jogging motor
Enables motor drive	FJOGPER BJOGPER	Front jogging motor Rear jogging motor
Switches drive current	FJOGCUR BJOGCUR	Front jogging motor Rear jogging motor

Table 2-405

Q1 controls the timing of JOGPINA and JOGPINB to suit the direction (clockwise/ counterclockwise) and speed of the motor.

Q1 generates either FJOGPER or BJOGPER depending on which motor to drive. When FJOGPER is generated, Q17 sends JOGPINA and JOGPINB to Q19 (motor driver IC) in response to FJOGPER.

Q19 generates 4-phase motor drive signals (FJOGA, FJOGB, FJOG_A, FJOB_B) in response to JOGPINA and JOGPINB. Likewise, Q17 sends JOGPINA and JOGPINB to Q21 (motor driver IC) in response to BJOGPER.

Q21 generates 4-phase motor drive signals (BJOGA, BJOGB, BJOG_A, BJOB_B) in response to JOGPINA and JOGPINB.

FJOGPER and BJOGPER are motor drive enable signal, and the motor in question is driven in response.

To keep the motor at rest, Q19 and Q21 continue to generate the phase signals they sent, thereby putting the motor on hold.

FJOGCUR and BJOGUR from Q2 are current switching signals (Table 2-406) sent to the motors.

State	Control current
Driving the motor	High-level current (high torque)
Keeping the motor on hold	Low-level current (low torque)

Table 2-406

Finisher controller PCB

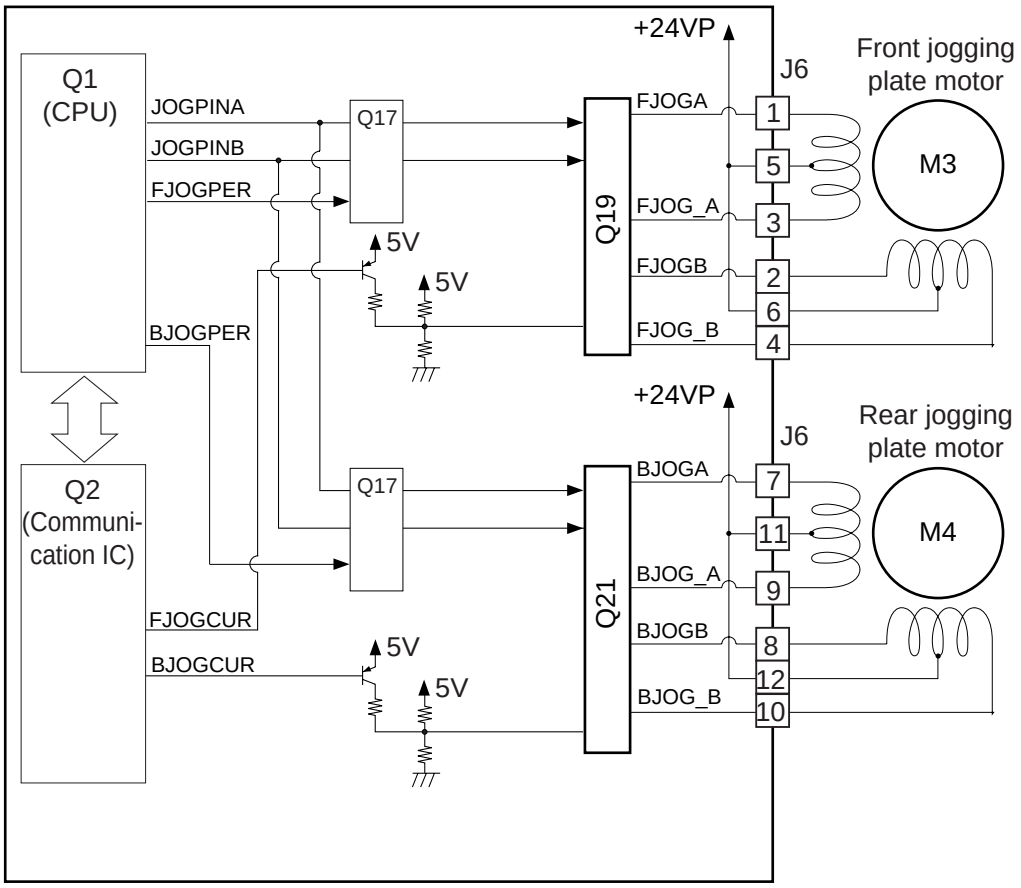


Figure 2-413

3. Rear Jogging (staple sort)

The machine's stapler is fixed in position at the rear so that they are put into order at the rear when staple mode is selected.

When the Copy Start key has been pressed and the copier has communicated the paper size, the rear jogging plate moves to the home position and the front jogging plate moves to a specific point* and kept in wait.

*Half of the width of the paper from the middle of the tray + 10 mm to the front.

Paper arriving from the copier is moved to the intermediary processing tray.

When paper has been deposited on the intermediary processing tray, the returning roller butts it against the stopper plate so that it is put into order in feeding direction. The paper is then moved to the stapling position, and put into order once again toward the rear by the work of the front jogging plate.

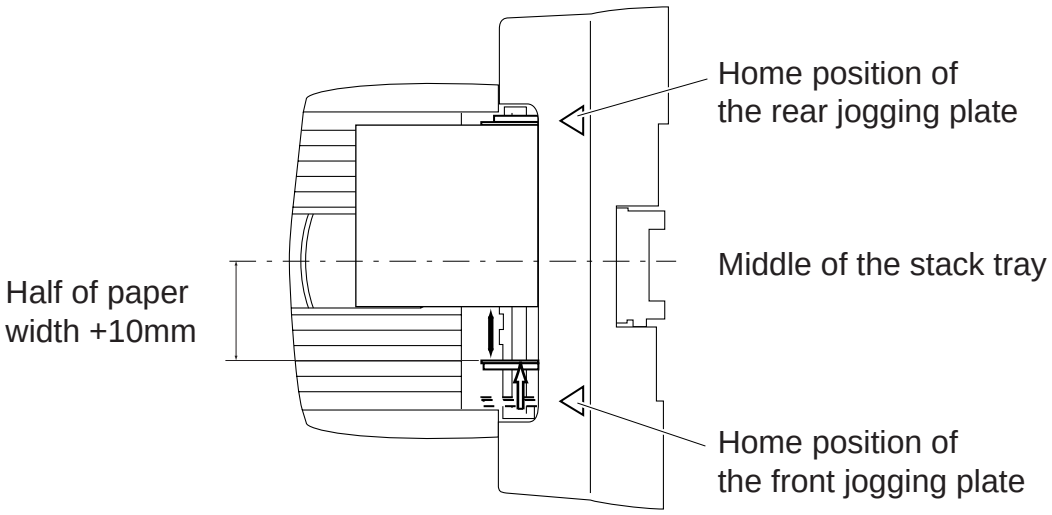


Figure 2-414a

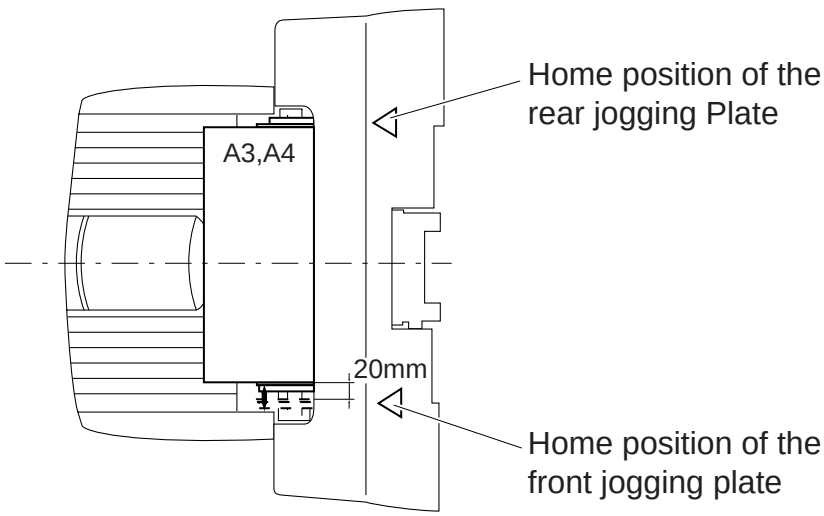


Figure 2-414b

4. Offset Jogging (non stapling)

a. Sort

In sort mode, the stack of sheets on the intermediary processing tray is moved so that it is put into order, called “offset operation.”

The distance of offset is 20 mm.

The direction of offset (front/rear) of each set is the opposite of the direction of offset used for the immediately preceding job. If it was offset to the front, the present job will be offset to the rear and vice versa.

When the paper size is communicated by the copier, the finisher controller PCB drives both the front and the rear jogging plates at the same time, thereby moving them to a specific point; i.e., width of paper placed in the middle of the stack tray + 10 mm on both sides (Figure 2-415a).

Sheets are put into order by driving either the front or the rear jogging plate. When they are put into order against the front, the rear jogging plate is moved to the edge of the stack; when sheets are put into order against the rear, the front jogging plate is moved to the edge of the stack.

If the paper is A4 or A3, however, the home position of the front jogging plate (if jogging is against the front) or of the rear jogging plate (if jogging is against the rear) will serve as the point of reference for offset operation. The jogging plate used (the rear jogging plate if jogging is against the front, or the front jogging plate if jogging is against the rear) is kept in wait at the home position.

The jogging plate is moved to the edge of the stack from its home position for jogging operation (Figure 2-415b).

If the number of sheets (copies or originals) is more than the maximum number of sheets the intermediary processing tray is designed to hold, as many sheets as allowed are delivered as a stack once; thereafter, the subsequent sheets are put into order in the same direction.

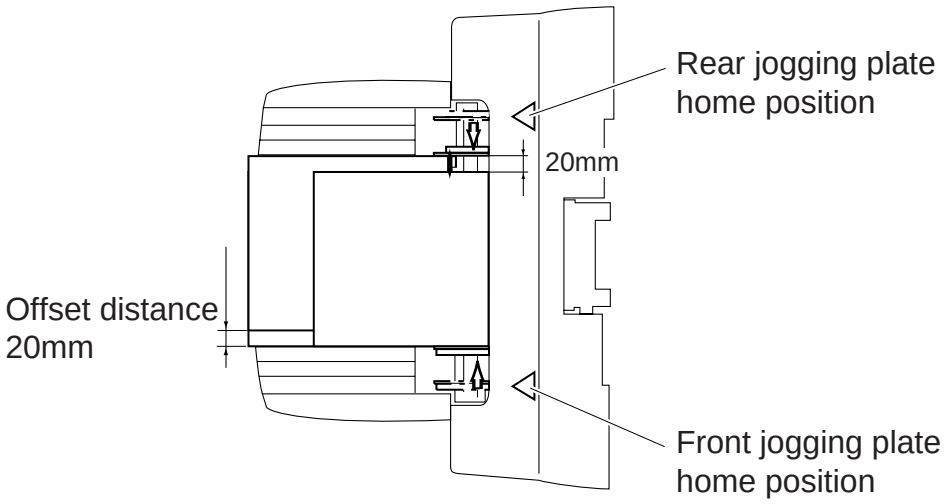


Figure 2-415a

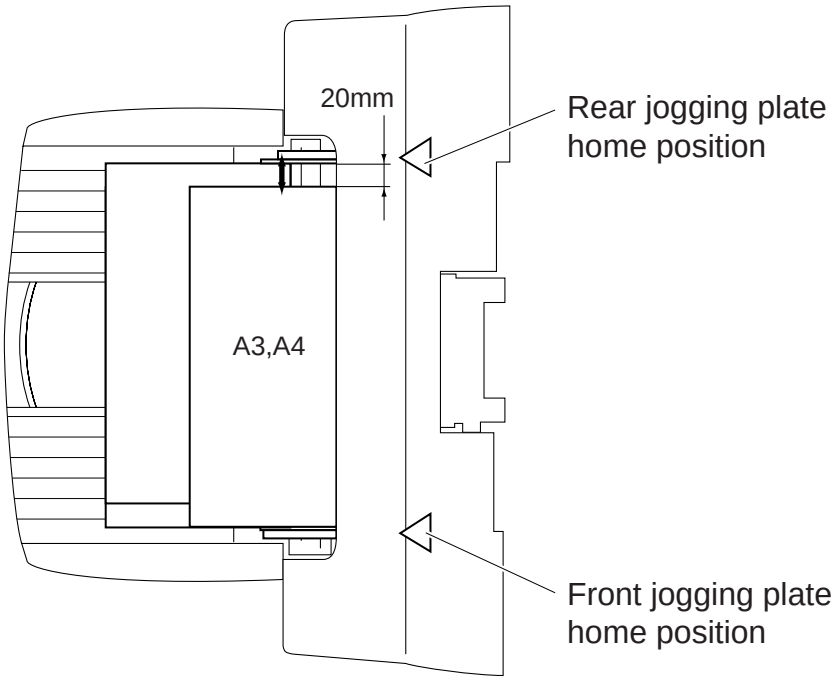


Figure 2-415b

b. Non-Sort

In non-sort mode sheets are put into order by butting against the front (offset to the front).

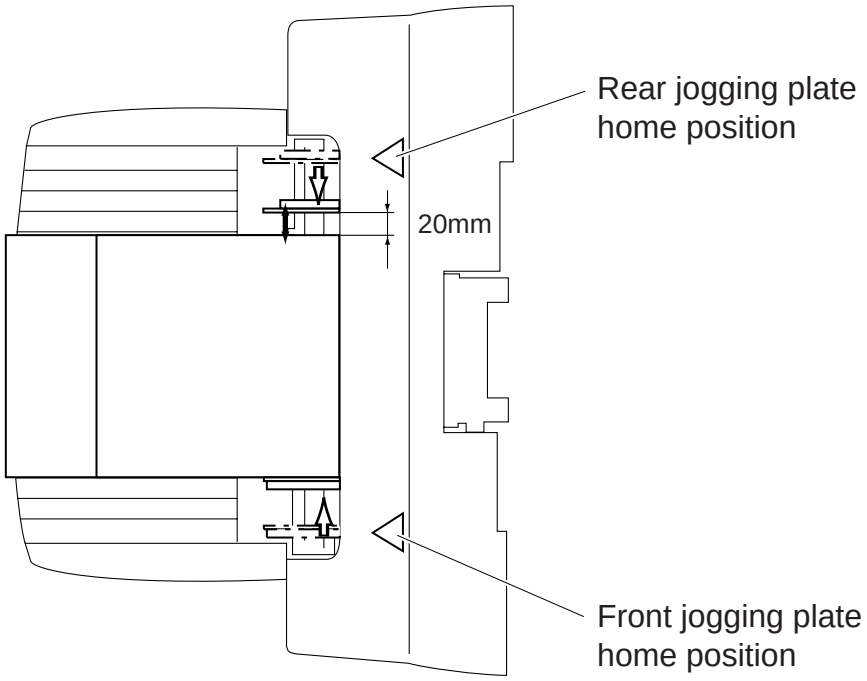


Figure 2416a

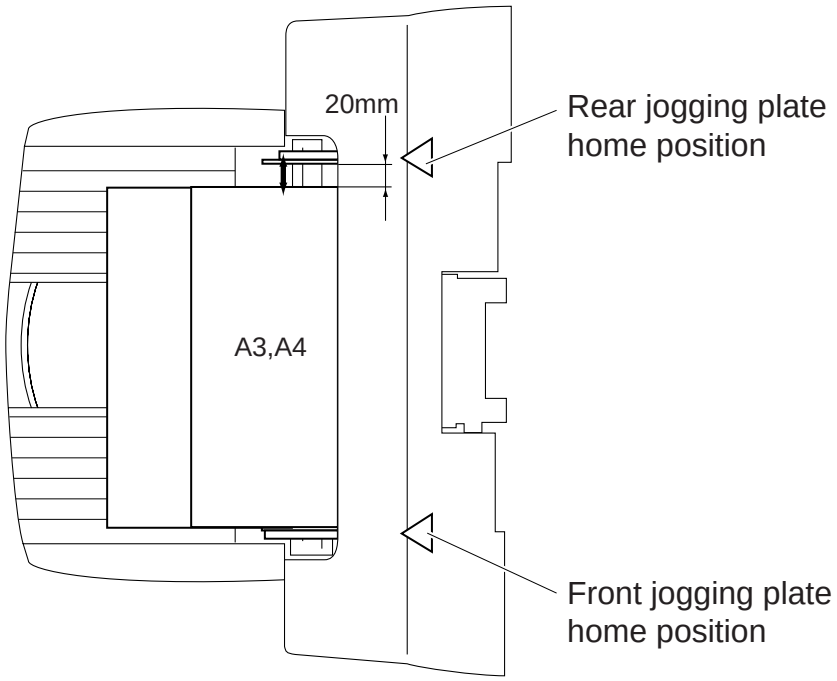


Figure 2-416b

5. Outline of Operations

a. Staple Sort

The machine operates as follows in staple sort mode:

1. The copier's Copy Start key is pressed.
   The copier communicates such data as on staple mode selection and paper size.
2. The front jogging plate moves from the home position to a specific position*.

*Half the width of paper from the middle of the stack tray + 10 mm toward the front.

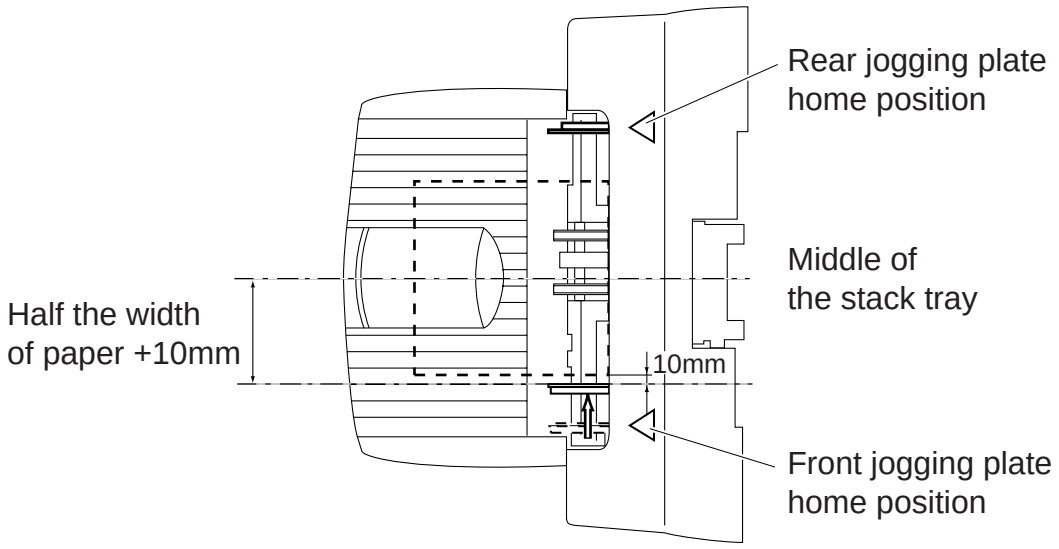


Figure 2-417a

3. Paper is deposited to the intermediary processing tray.

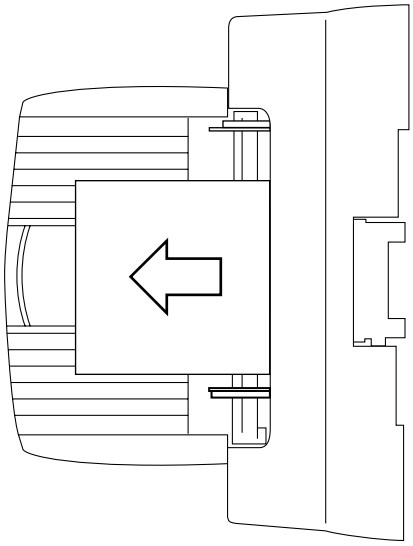


Figure 2-417b

4. The front jogging plate is driven, and is put into order.
5. The front jogging plate is returned to its position in operation 2.

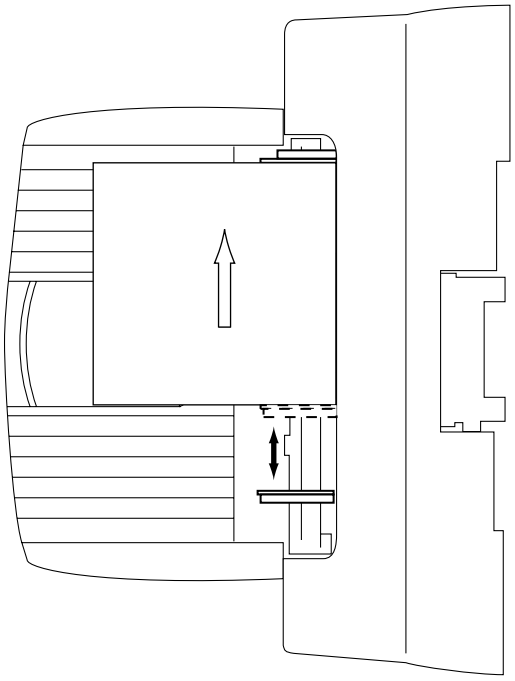


Figure 2-417c

6. For each delivery of paper, operations 3 through 5 are repeated.
7. When a single set has been put into order, stapling is started.
8. The stack processing belt is driven to move the stack to the stack tray.

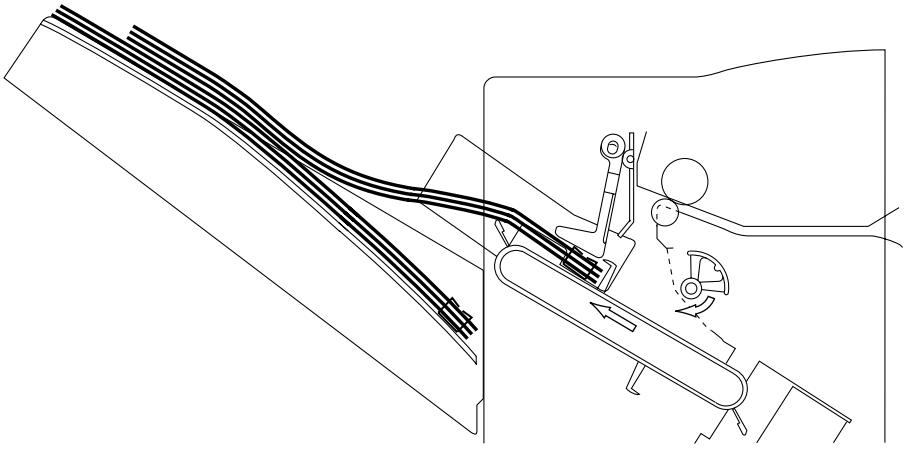


Figure 2-417d

9. The stack tray is moved up to a specific height.
10. Thereafter, operations 3 through 8 are repeated.

Reference:

If the number of originals is higher than the maximum number of sheets allowed on the intermediary processing tray, the stack is not stapled but is delivered to the stack tray. The remaining sheets will be handled in the same way without stapling.

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b. Offset Jogging

The machine operate as follows in offset jogging:
In non-sort mode, sheets are offset only against the front.

1. The copier's Copy Start key is pressed.
   The copier communicates such data as on sort mode selection and paper size.
2. The front/rear jogging plate is moved from the home position to a specific point*.

*Width of paper placed in the middle of the stack tray + 10 mm in both sides.

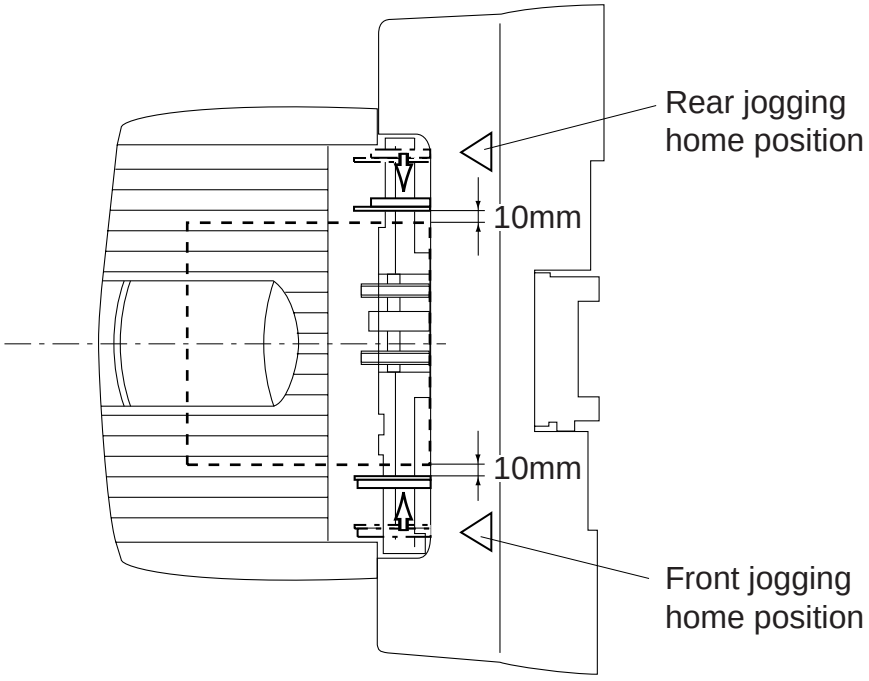


Figure 2-418a

3. The paper is deposited on the intermediary processing tray.

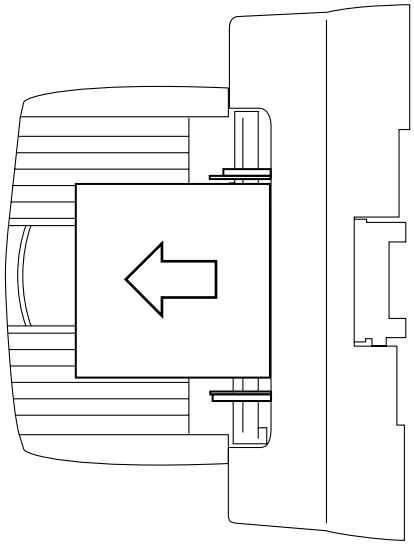


Figure 2-418b

4. The rear jogging plate is driven to jog the paper if jogging is against the front: if jogging is against the rear, the front jogging plate is driven.
5. The front or the rear plate is returned to its position in operation 2.

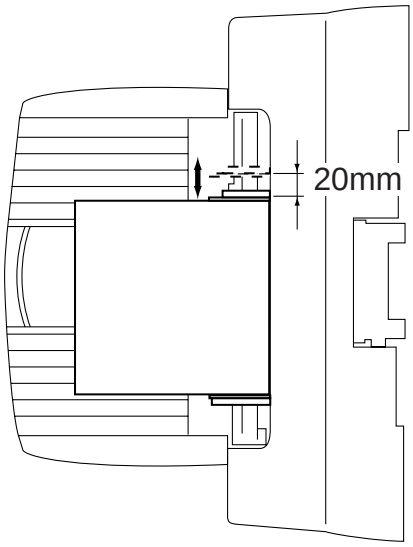


Figure 2-418c

6. For each delivery of paper, operations 3 through 5 are repeated.
7. The stack is delivered.
   a) If the number of originals is the maximum number of sheets allowed on the intermediary processing tray or fewer,
      Each set is delivered to the stack tray.
   b) If the number of originals is higher than the maximum number of sheets allowed on the intermediary processing tray,
      The stack on the intermediary processing tray is delivered to the stack tray. Thereafter, the remaining sheets are jogged in the same offset position and delivered to the stack tray.

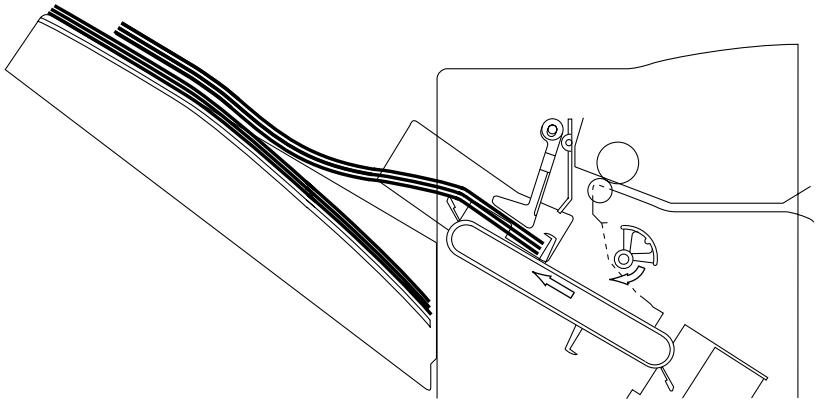


Figure 2-418d

8. The stack tray is moved up to a specific height.
9. Thereafter, operations 3 through 9 are repeated using alternately different jogging plates.

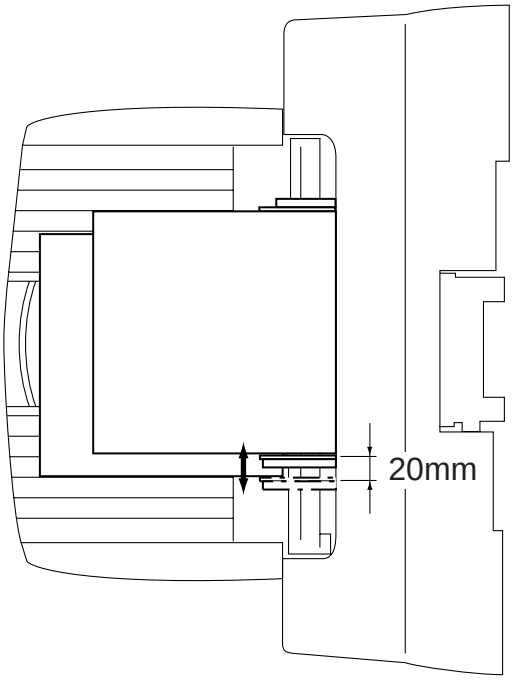
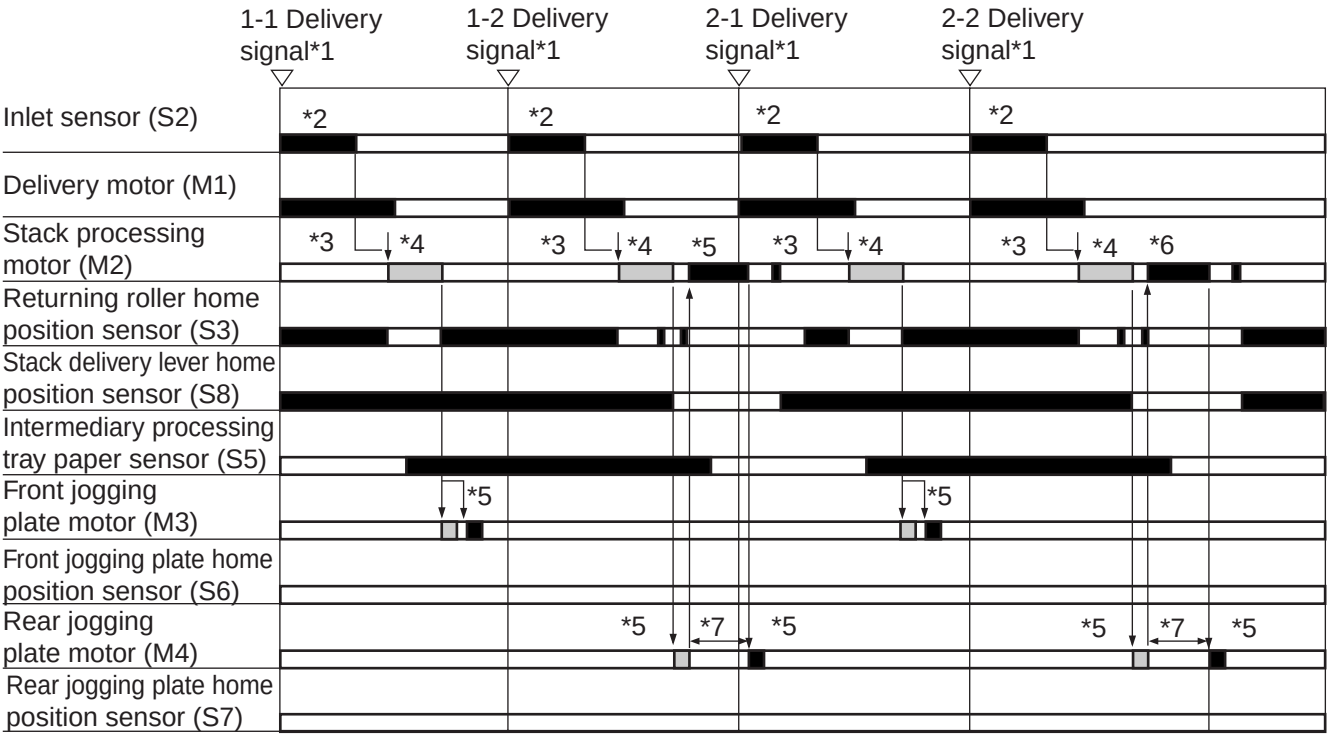


Figure 2-418e

5. Sequence of Operations

(1) Offset (2 originals, 2 sets)



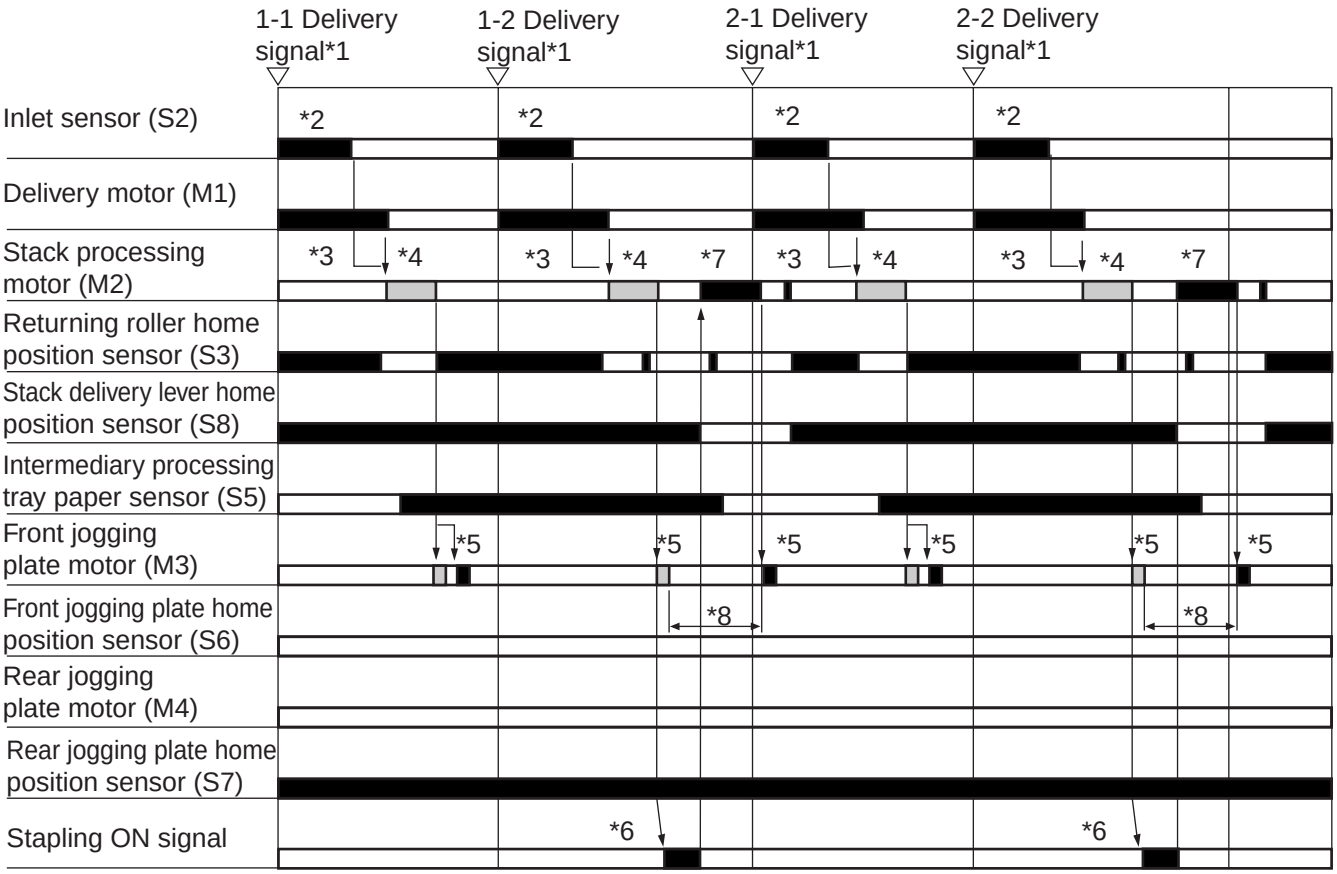
: CW rotation : CCW rotation

Stack processing motor: CW → stack delivery/CCW → returning
Front jogging plate motor: CW → move to front/CCW → move to rear
Rear jogging plate motor: CW → move to rear/CCW → move to front
Stack tray lifter motor: CW → move up/CCW → move down

*1: A-B delivery signal (n number of stack, nth sheet).
*2: Varies depending on the length of paper.
*3: 0.2 sec.
*4: 0.3 sec.
*5: Varies depending on the size of paper.
*6: 0.5 sec.
*7: Holds down the edge of paper until stack delivery ends.

Figure 2-419a

(2) Stapling (2 originals, 2 sets)



: CW rotation : CCW rotation

Stack processing motor: CW → stack delivery/CCW → returning
Front jogging plate motor: CW → move to front/CCW → move to rear
Rear jogging motor: CW → move to rear/CCW → move to front
Stack tray lifter motor: CW → moveup/CCW → move down

*1: A-B delivery signal (n number of stack, nth sheet).
*2: Varies depending on the length of paper.
*3: 0.2 sec.
*4: 0.3 sec.
*5: Varies depending on the size of paper.
*6: Turns on 100 msec after the returning roller turns off.
*7: 0.5 sec.
*8: Holds down the edge of paper until stapling and stack delivery end.

Figure 2-419b

V. STAPLING

1. Outline

The machine's stapler unit is fixed in position at the rear, and is not deigned to shift or swing.

The stapler unit staples at a single position only, and stapling is on the front side of a stack and from under.

The machine does not provide manual stapling or manual insertion stapling.

The size of paper and the thickness of each stack for stapling are as follows:

Paper size	Paper thickness (sheets)
A4, A4R, B5 LTR, LTR	30
B4 LGL	20
A3 279mm x 432mm (11 x 17)	15

Table 2-501

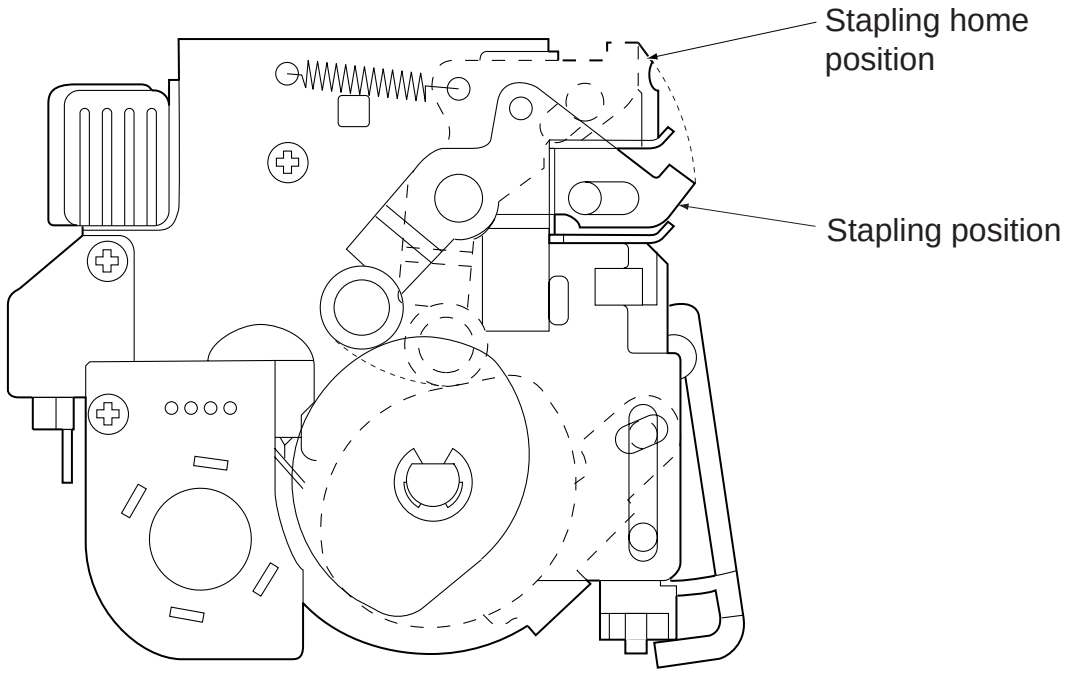


Figure 2-501

Reference:

If the number of sheets (copies or originals) is higher than the number of sheets allowed for stapling, the stack will not be stapled but will be delivered to the stack tray.

2. Stapling Unit

The motors and sensors associated with the stapler are as follows:

Notation	Name	SW/PI	Description	Remarks
M6	Stapler motor	–	Used to punch staples into sheets.	Inside the stapler unit
S14	Stapler safety sensor	SW	Used to protect the user.	Inside the stapler unit
S15	Stapler edging sensor	SW	Used to find out if the stapler unit is at a position for stapling. If not, causes the stapler to execute idle punching to enable stapling.	Inside the stapler unit
S16	Staple sensor	PI	Used to detect the staples reaming in the cartridge.	Inside the stapler unit
S17	Stapling home position sensor	PI	Used to detect the home position for stapling.	Inside the staple unit
S18	Stapler cartridge sensor	SW	Used to find out whether a cartridge is set inside the stapler unit.	Inside the stapler unit

SW: Microswitch
PI: Photointerrupter

Table 2-502

The stapler safety sensor (S14) is used to cut off power to the stapler motor in the event that a finger or the like is found in the stapler assembly.

Caution:

If staple mode is selected on the control panel with paper on the stack tray, the copier will be ready for copying while prompting the removal of paper.
If the Copy Start key is pressed without removing the paper, the paper may not be put into order or stapled correctly.

3. Controlling the Stapler Motor

Figure 2-502 is a diagram of the stapler motor (M6), which is a DC motor.

The direction of rotation is switched by the signals (Table 2-503) from the finisher controller PCB Q1 (CPU) to the motor drive circuit.

The power to the stapler motor (24 VP) can be cut off by the stapler safety switch (S14).

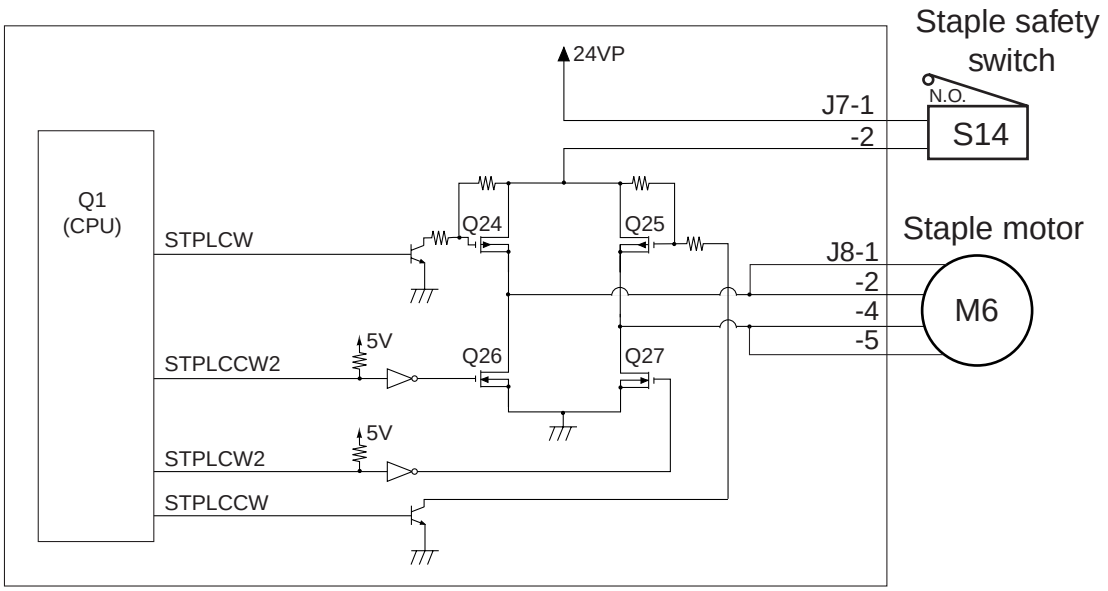


Figure 2-502

Direction	Output signal
Clockwise	STPLCW/STPCW2
Counterclockwise	STPLCCW/STPCCW2

Table 2-503

VI. OPERATIONS OF THE STACK TRAY

1. Moving Up and Down the Stack Tray

a. Outline

The machine is equipped with a stack tray, to which stacks which have been put into order and offset/stapled are delivered.

When paper is delivered to the stack tray, the stack tray paper sensor (S11) turns on.

The stack tray is moved up/down by the work of the stack tray lift motor (M5).

If the stack tray is not at the home position when the copier is turned on, the stack tray lift motor is driven to move the tray to the home position. (The home position of the stack tray is a point 12.5 mm above the point where the stack tray paper height sensor has detected the top of the stack tray.)

The position of the stack tray is monitored in reference to the number of clock pulses generated by the stack lift motor clock sensor since the stack tray paper height sensor (S10) has turned on.

The upper limit of the stack tray is checked by the stack tray upper limit sensor (S13), while the lower limit of the lower limit is checked by the lower limit sensor (S12). When the stack tray upper limit/lower limit turns on, the stack tray lift motor can be driven only in the direction opposite of the limit identified by the sensor in question.

The limit of sheets on the stack tray is detected by the paper height sensor and the lower limit sensor if the sheets are not stapled. If the sheets are stapled, the count of stacks is used in addition to the height of paper detected by the paper height sensor and the lower limit sensor. When the stack exceeds the height or the maximum number of sets, an overstacking condition will be identified and communicated to the copier.

	Parameters of identifying stacking limit
Not stapled	Height of the stack detected
Stapled	Height of the stack detected by paper height sensor and lower limit sensor or the number of sets

Tale 2-601

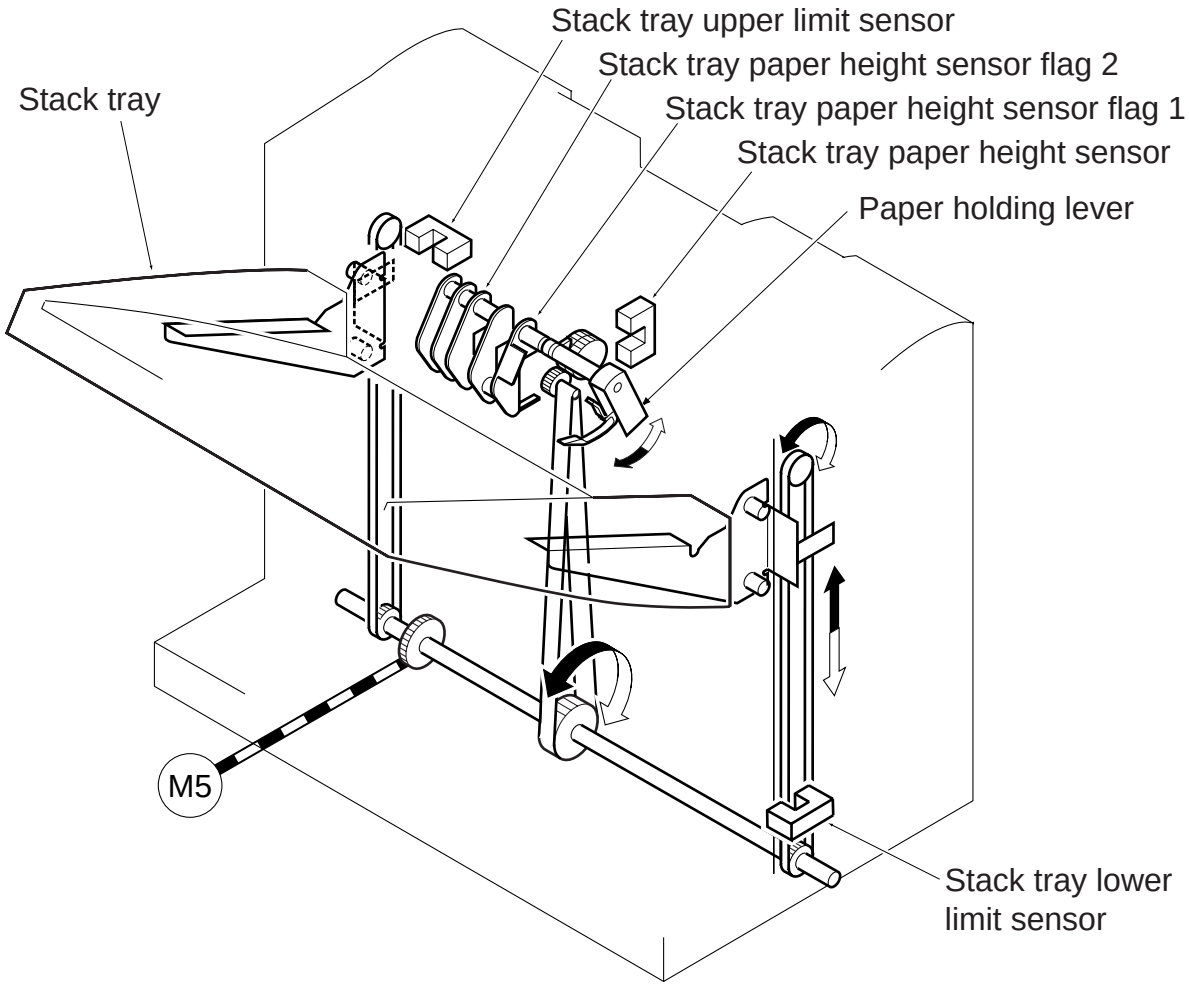


Figure 2-601

b. Moving Up and Down the Stack Tray

After a stack of sheets has been delivered, the stack tray moves down until the stack tray paper height sensor (S10) turns off and then stops; thereafter, it moves up to a point 12. 5 mm after the paper height sensor (S10) has detected the top face of the stack tray.

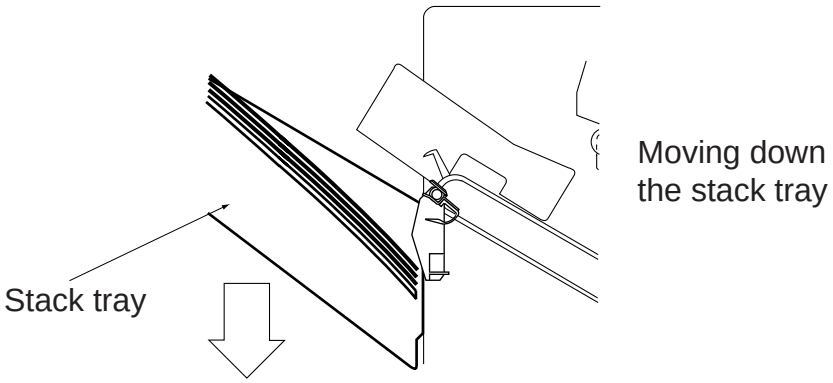


Figure 2-602

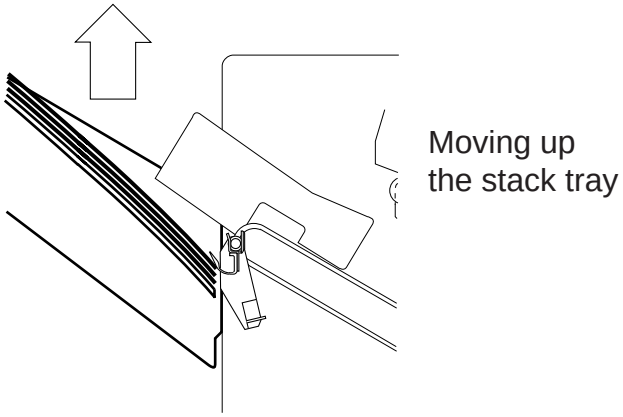
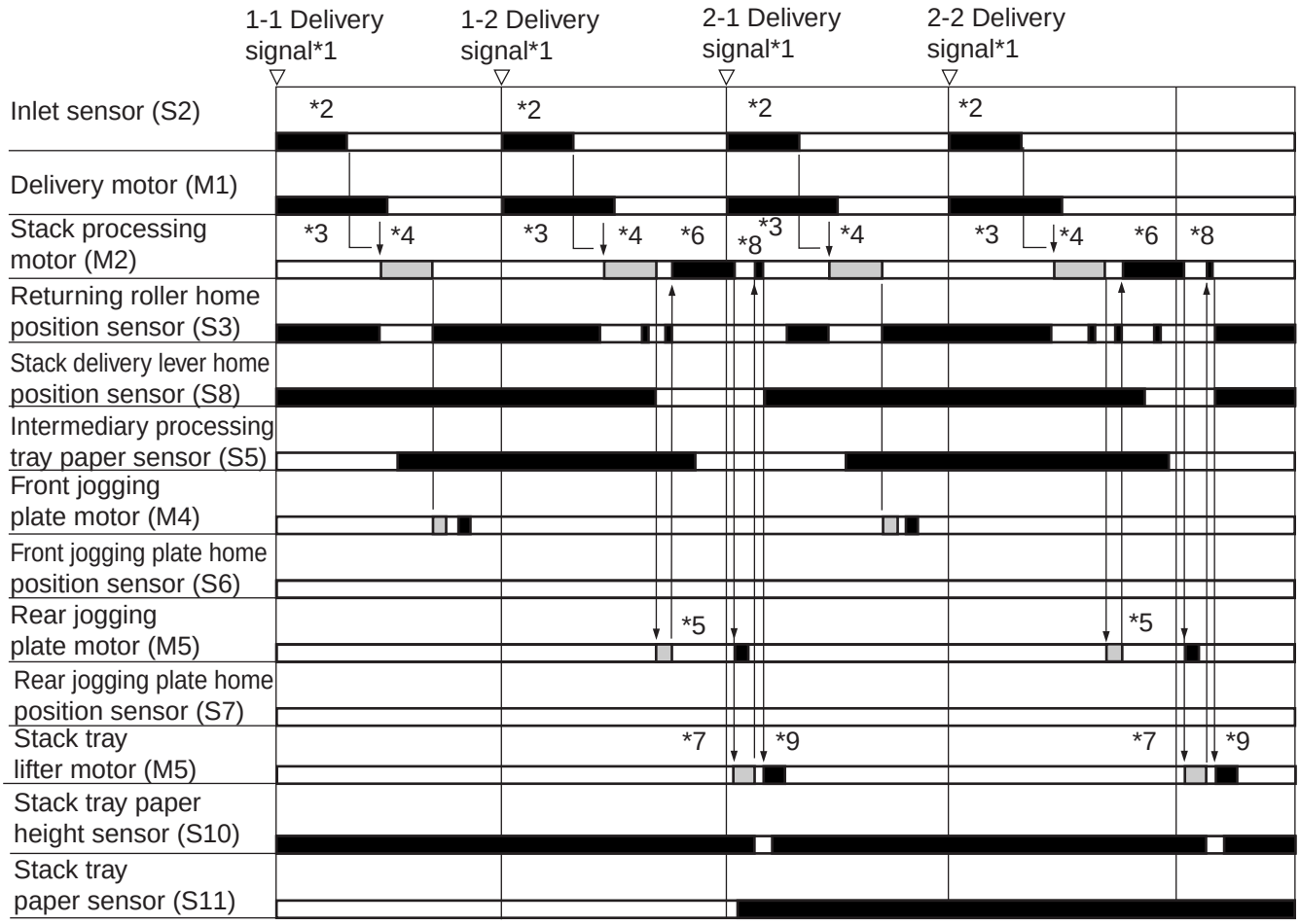


Figure 2-603

c. Sequence of Operations

The following figure shows the sequence of operations used to move up/down the stack tray.



: CW rotation : CCW rotation

Stack processing motor: CW → stack delivery/CCW → returning
Front jogging plate motor: CW → move to front/CCW → move to rear
Rear jogging plate motor: CW → move to rear/CCW → move to front
Stack tray lifter motor: CW → move up/CCW → move down

*1: A-B delivery signal (n number of stack, nth sheet).
*2: Varies depending on the length of paper.
*3: 0.2 sec.
*4: 0.3 sec.
*5: Varies depending on the size of paper.
*6: 0.5 sec.
*7: Moves down until the stack tray paper height sensor turns off.
*8: Driven until the stack delivery lever reaches the home position.
*9: Moves up 12.5mm after the stack tray paper sensor turns on.

Figure 2-604

2. Checking the Height of the Stack on the Stack Tray

In all modes, the height of the stack on the stack tray is identified in reference to the height of the stack on the tray using the stack tray paper height sensor (S11).

After a stack has been delivered, the stack tray moves down until the stack tray paper sensor (S10) turns off, and then stops; thereafter, it moves up 12.5 mm after the paper height sensor (S10) has detected the top of the paper on the stack tray.

If the stack tray lower limit sensor detects the stack tray while the stack tray paper height sensor is detecting the top of the stack, the finisher controller PCB communicates an overstacking condition to the copier; the stack tray then starts to move up when the stack has been removed from the stack tray in preparation for the next sheet.

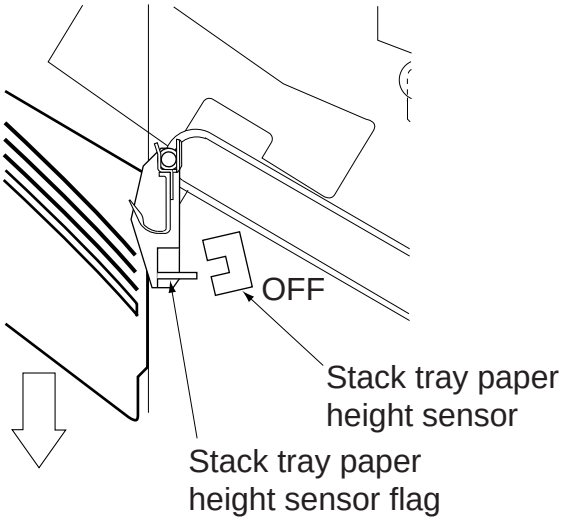


Figure 2-605a

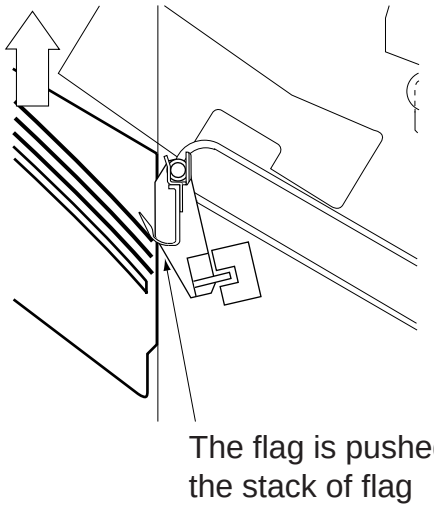


Figure 2-605b

3. Counting the Sets on the Stack Tray

Table 2-602 shows the maximum number of sheets allowed on the stack tray.

In staple mode, the number of sets on the stack tray is checked to identify the stacking limit in addition to the result of detecting the height of the stack.

Each single stack is counted as one, and a stack tray overstacking condition is identified when the total reaches 30, upon which a communication is sent to the copier. In response, the copier indicates a message on its control panel prompting removal of the stacks.

If staple sort is selected while paper exists on the stack tray, the copier will indicate a message on its control panel requesting the removal of the paper. If the Copy Start key is pressed without removing the paper, the sheets may not always be put into order or stapled correctly.

If the Copy Start key is pressed without removing the paper, the count will be cleared at the press and a new count is started.

	Stacking limit
Small-size	30 (30 stacks max.)
Medium-size	30 (20 stacks max.)
Large-size	30 (15 stacks max.)

Table 2-602

4. Operation of the Paper Holding Lever

The paper holding lever is found to the side of the stack tray paper height sensor. The paper holding lever is designed to prevent wrong detection of the height of paper otherwise caused by curling of paper.

The paper holding lever is driven by the stack tray lift motor (M5), and it operates as follows:

When a stack of sheets is delivered to the stack tray, the stack is deposited on the paper holding arm.

When sheets have been put onto a stack, the stack tray moves down until the stack tray paper height sensor (S10) turns off, and then stops.

At this time, the paper holding lever moves inside the finisher, leaving the stack of sheets.

The stack tray then moves 12.5 mm from the point at which the stack tray paper height sensor (S10) has detected the top of paper.

At this time, the paper holding lever which has been inside the finisher moves out to the top of the stack to hold down the stack against the stack tray.

The above operations are repeated to keep sheets in place.

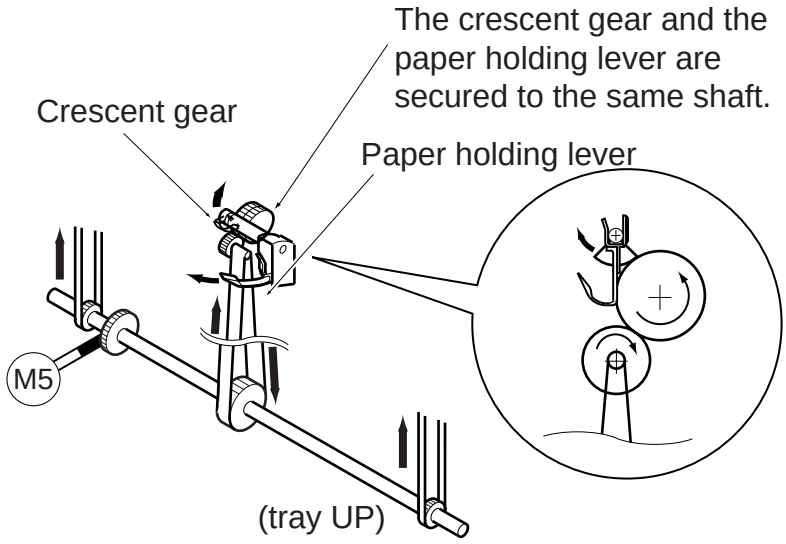


Figure 2-606

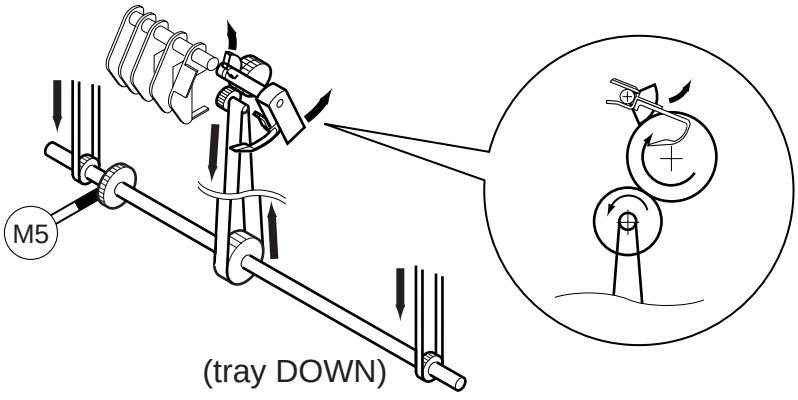


Figure 2-607

5. Controlling the Tray Lift Motor

a. Outline

Figure 2-608 is a block diagram showing the tray lift motor (M5) drive circuit.

The tray lift motor is a DC motor, and the direction of its rotation is switched by signals (Table 2-603) from the finisher controller PCB Q1 (CPU) to the motor drive circuit.

When the stack tray reaches the stack tray upper limit sensor (S13) and the sensor sends signals (S13D) to Q5, STCTCW2 will be cut off, and the motor stops to rotate clockwise.

Likewise, when the stack tray reaches the stack tray lower limit sensor (S12) and the sensor sends signals (S12D) to Q5, STCTCCW2 will be cut off, and the motor stops to rotate counterclockwise.

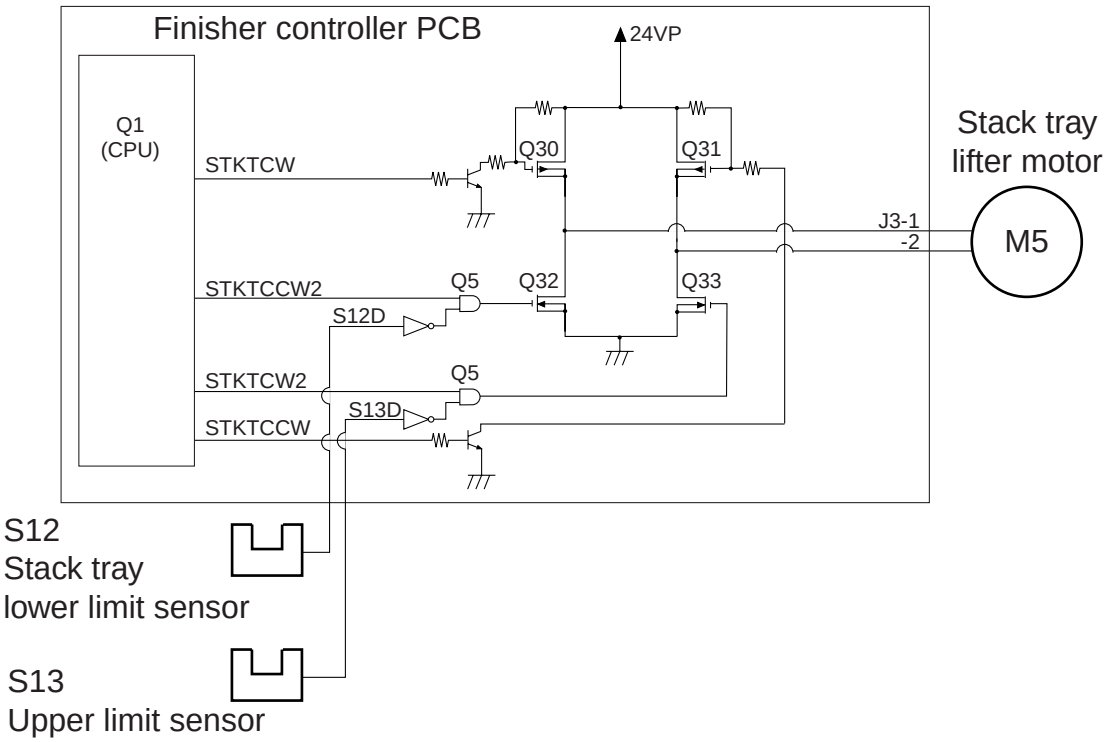


Figure 2-608

Direction	Output signal
Clockwise	STKTCW/STKTCW2
Counterclockwise	STKTCCW/STKTCCW2

Table 2-603

VII.DETECTING JAMS

A. Outline

The following sensors are used to check the presence/absence of paper as well as to find out whether paper is being moved properly:

- Inlet sensor (S2)
- Returning roller home position sensor (S3)
- Stack delivery lever home position sensor (S8)

Further, the following sensor is used to find out whether stapling is performed correctly:

- Stapling home position sensor (S17)

A check is made for a jam at such times as programmed in the CPU on the finisher controller PCB. When a jam is detected, the ongoing delivery operation is stopped, and a Jam message is indicated on the control panel.

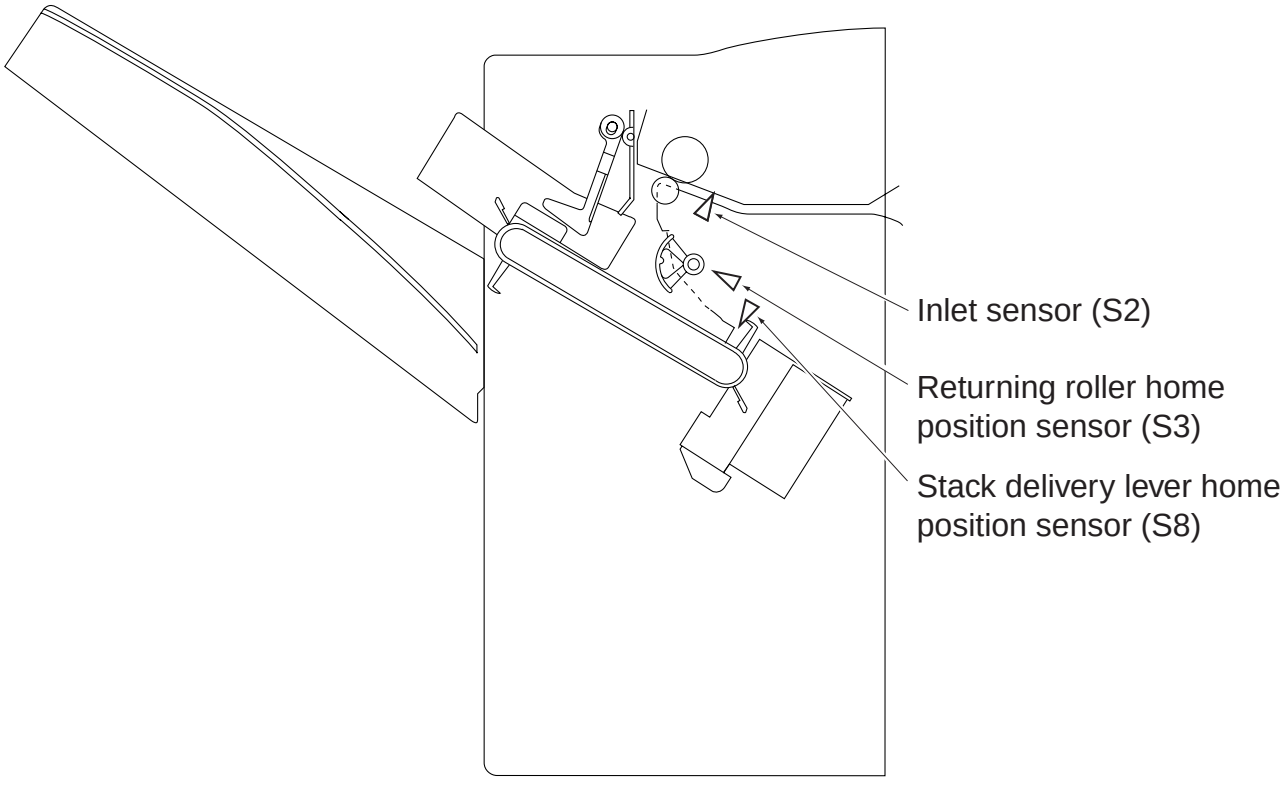


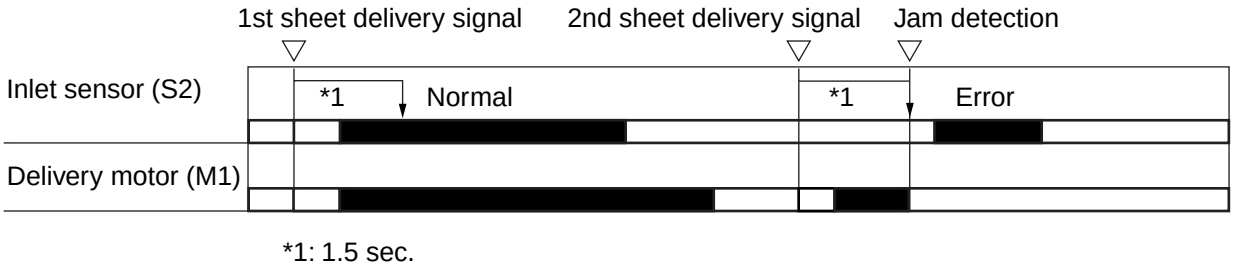
Figure 2-701

B. Detecting Paper Jams

A paper jam may be any of the following:

1. Inlet Sensor Delay Jam (03H)

The inlet sensor (S2) does not detect paper within 1.5 sec after the finisher controller PCB has detected the paper delivery signal from the copier.

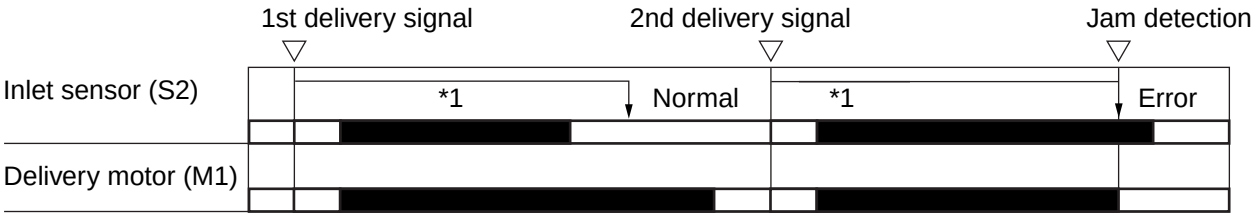


*1: 1.5 sec.

Figure 2-702

2. Inlet Sensor Stationary Jam (04H)

The inlet sensor (S2) does not turn off after it has turned on and paper has supposedly been moved until its trailing edge should have left the delivery roller (paper size + 26 mm) and then for an additional length of 24 mm.



*1: paper length + 50mm.

Figure 2-703

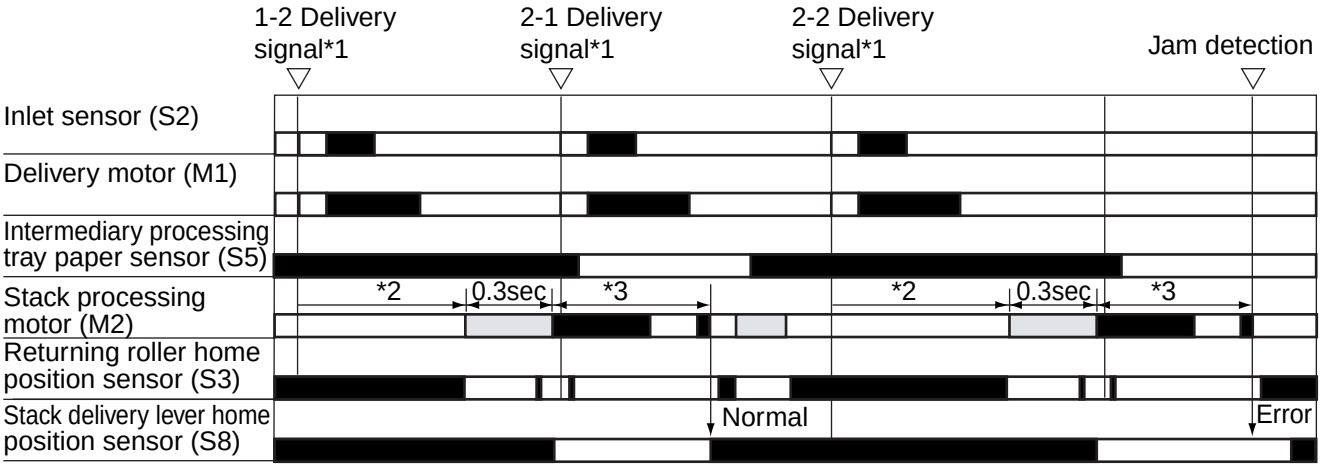
3. Power-On Jam (7H)

The inlet sensor (S2) of the finisher is on when the power is turned on or the finisher is connected to the copier.

4. Stack Delivery Jam (81H)

The stack delivery lever does not reach the stack delivery lever home position sensor (S8) after it has supposedly been moved over the distance. Or, it does not leave the stack delivery lever home position sensor after it has supposedly been moved over the distance.

A check for this type of jam is made while paper is being moved. If the foregoing condition is detected during initialization, it will be identified as an error.



: CW rotation (stack delivery) : CCW rotaion (returning operation)

*1: A-B delivery signal (n number of stack, nth sheet).
*2: Varies depending on the length of paper.
*3: Driven until the stack delivery lever reaches the home position.

Figure 2-704a (not reaching home position)

: CW rotation (stack delivery) : CCW rotation (returning operation)

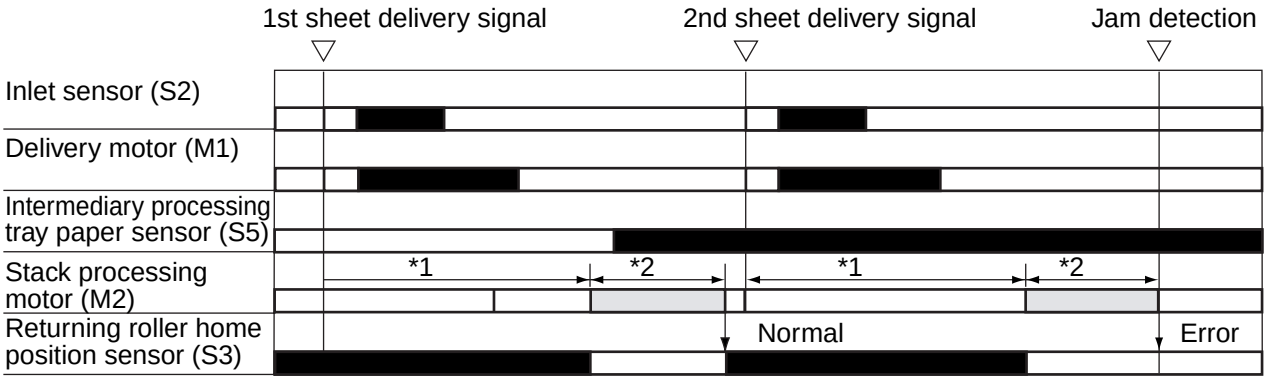
*1: A-B delivery signal (n number of stack, nth sheet).
*2: Varies depending on the length of paper.
*3: Driven until the stack delivery lever leaves its home position.

Figure 2-704b (not leaving the home position)

5. Stack Return Jam (82H)

The returning roller does not reach the returning roller home position sensor after it has supposedly been moved over the distance by the stack processing motor (M2). Or, it does not leave the returning roller home position sensor after it has supposedly been moved over the distance.

A check for this type of jam is made while paper is being moved. If the foregoing condition is detected during initialization, it will be identified as an error.



*1: Varies depending on the length of paper.
*2: Driven until the returning roller reaches the home position sensor

Figure 2-705a (not reaching the home position)

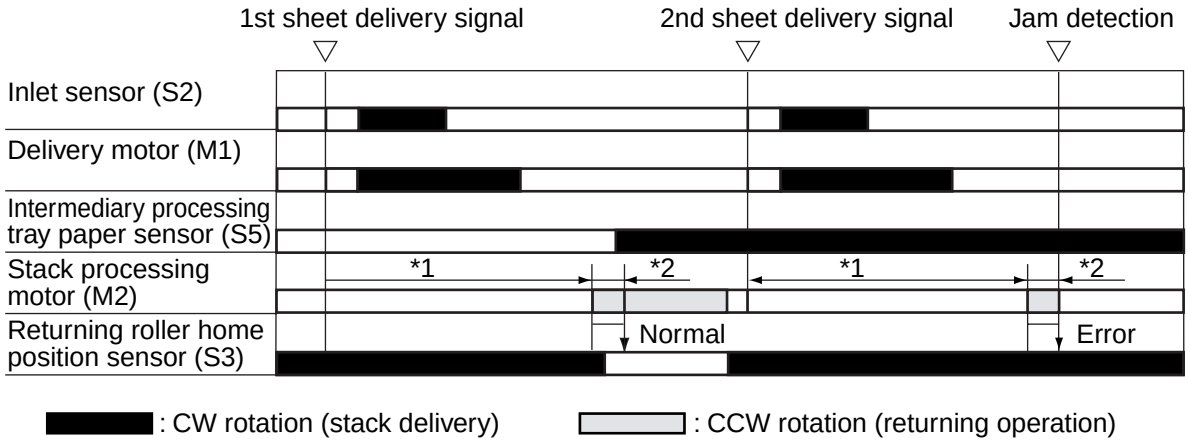


Figure 2-705b (not leaving the home position sensor)

C. Stapler Jam

A staple jam is detected as follows:

1. Stapler Staple Jam (06H)

A stapler staple jam is identified as follows: stapling starts; the stapler leaves the stapling home position sensor (S17); it moves back without reaching the stapling home position sensor but returns to the stapling home position sensor within 0.5 sec.

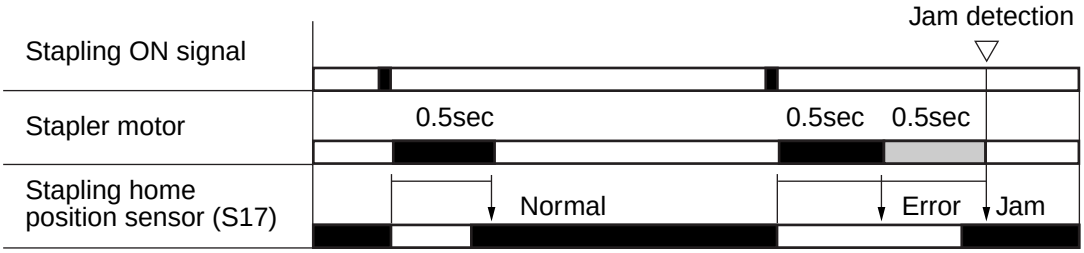


Figure 2-706

VIII. POWER SUPPLY

1. Outline

When the copier is turned on, it supplies the finisher controller PCB with two channels of 24 VDC: one is for driving the motors, and the other is used by the regulator IC (Q8) on the finisher controller PCB to generate 5 VDC for sensors and ICs on PCB.

The 24 VDC power used to drive the staple motor is cut when the stapler safety switch (S14) opens.

Figure 2-801 is a block diagram showing the distribution of power.

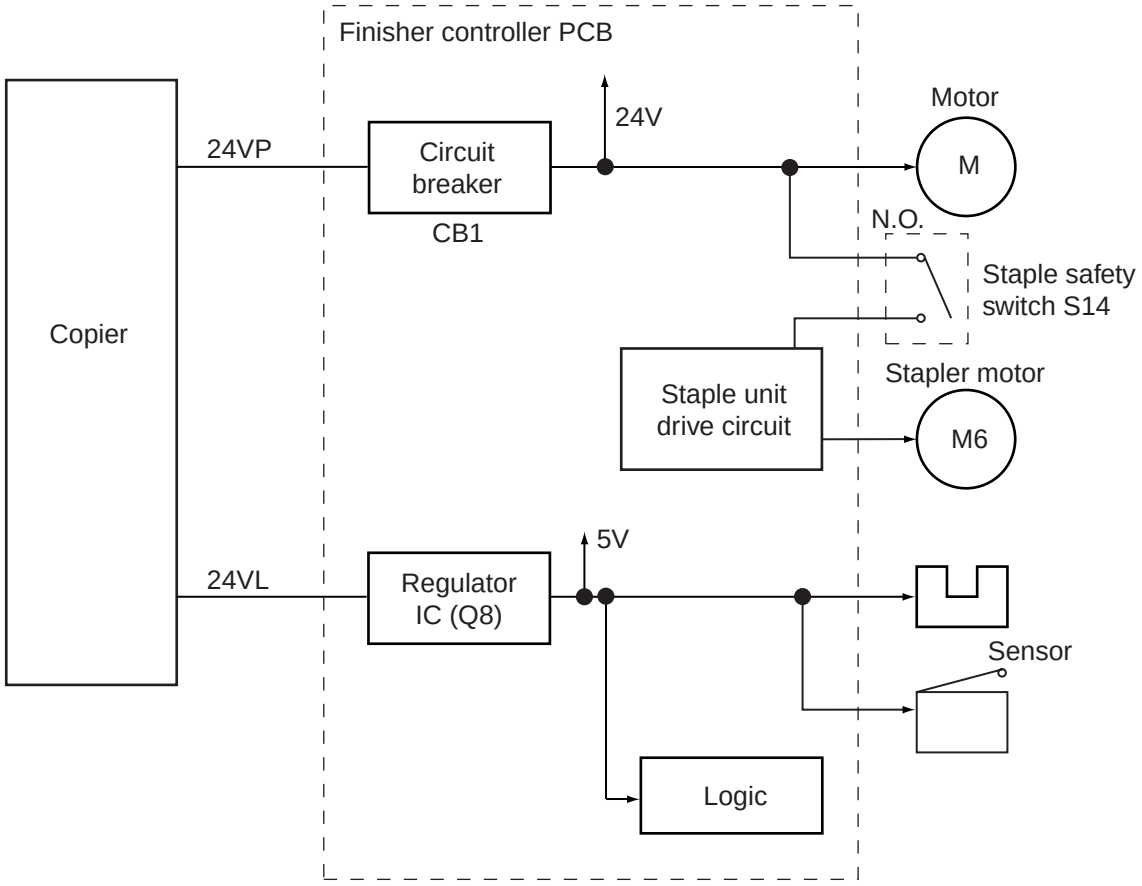


Figure 2-801

2. Protection Mechanism

The finisher is equipped with a circuit breaker (CB1) designed to protect against overcurrent, cutting off 24 VDC to the motor.

CHAPTER 3

MECHANICAL SYSTEM

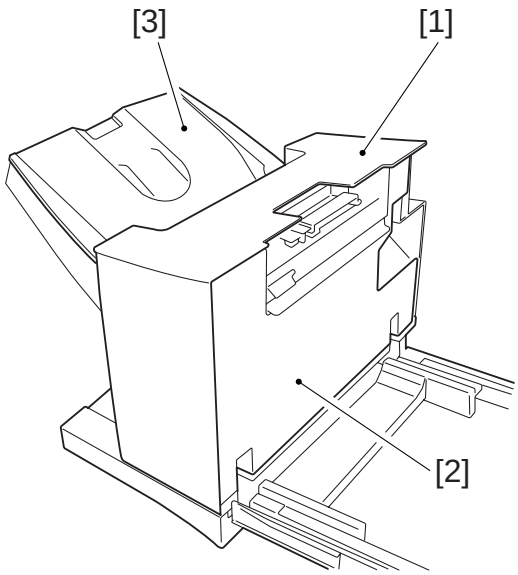
 CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. EXTERNALS AND CONTROLS

A. External Covers

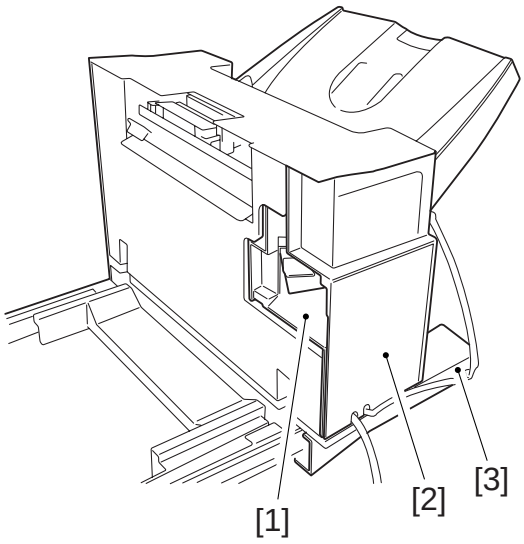
Remove the covers as necessary when cleaning, inspecting, or repairing the inside of the machine.

Those covers that may be detached by merely removing their mounting screws are omitted from the discussions.



[1] Body frame
[2] Right inside cover (7)
[3] Stack tray (4)

Figure 3-101



[1] Stapler cover (2)
[2] Rear cover (2)
[3] Mount

Figure 3-102

The number in parentheses indicates the number of mounting screws used.

B. Removing the Inside Right Cover and the Rear Cover

When detaching the inside right cover [1], remove the five mounting screws; then, remove the two mounting screws [4] of the rear cover [3] (they are tightened on top of each other).

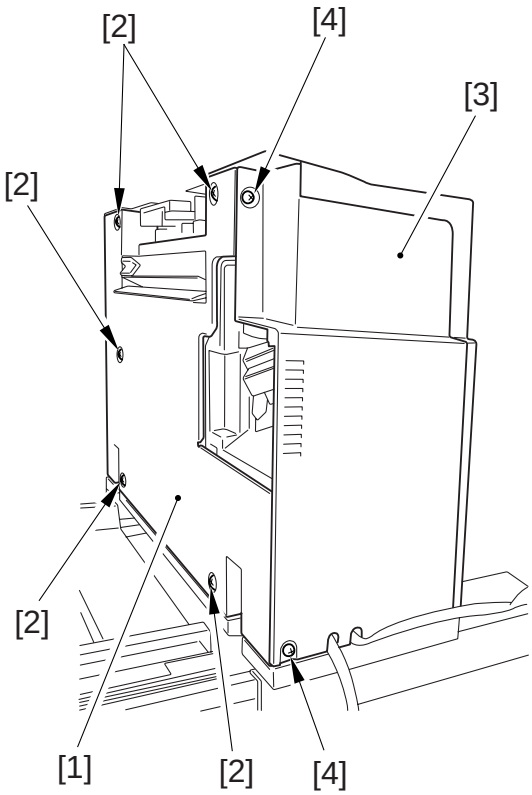


Figure 3-103

C. Removing the Static Eliminator

1) Lift the upper guide plate [1] to the upper limit position, and tape it in place.

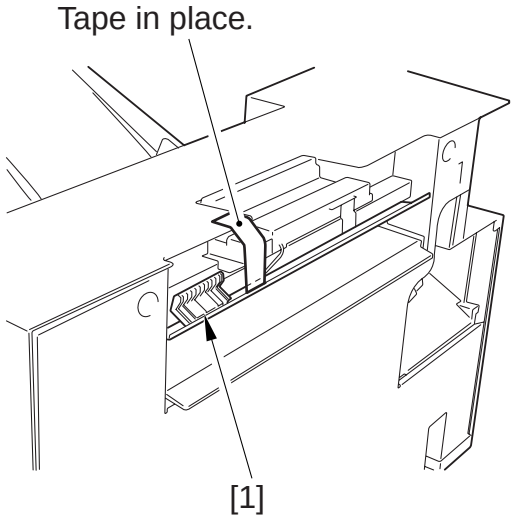


Figure 3-104

2) While pulling up the six paper feeding guides A [2] and the paper feeding guide B [3], tape them in place.

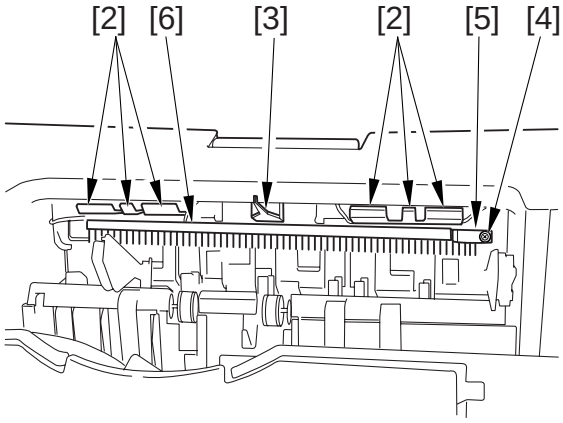


Figure 3-105

3) Remove the two screws [4], and detach the static eliminator [5].

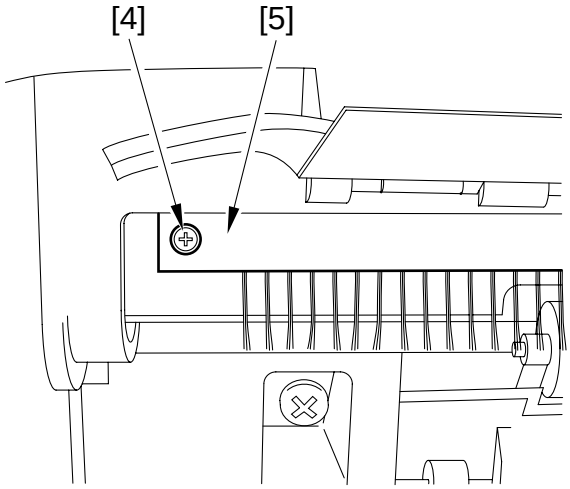


Figure 3-106

D. Points to Note When Tightening the Self-Tapping Screws

1) Match the tip of the screw against the screw hole, and turn the screw counterclockwise until a click is felt when the screw and the screw hole (thread and tap) engage.
2) Turn the screw clockwise.

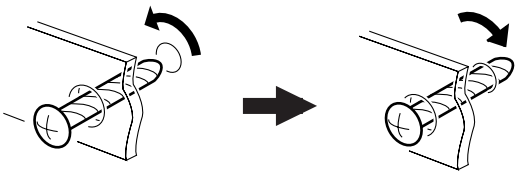


Figure 3-107

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E. Points to Note When Handling the Stacking Wall

Handle the stacking wall rail [1] with care so as to avoid scratches or dents, which can affect stacking performance.

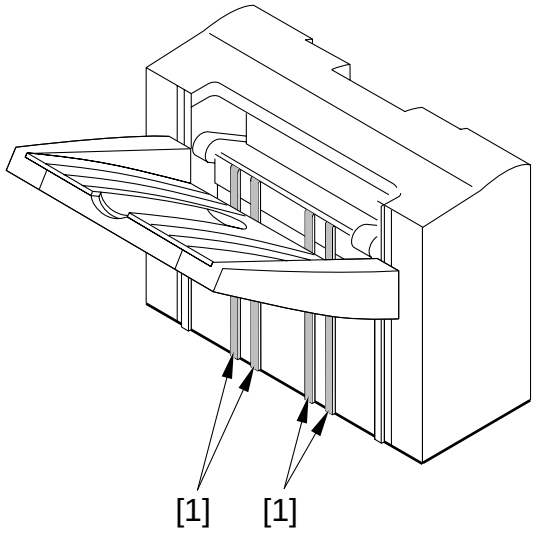

Figure 3-107a

II. FEEDING SYSTEM

A. Removing the Feeder Motor

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Disconnect the connector J4 [2] from the finisher controller PCB [1], and remove the two mounting screws [3]; then, detach the feeder motor [4].

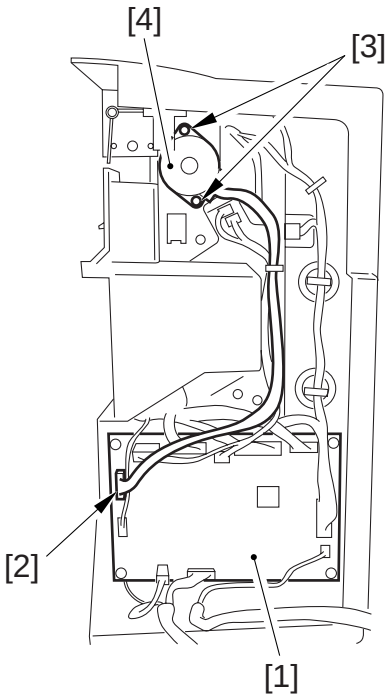

Figure 3-201

III. PROCESSING TRAY

A. Removing the Processing Tray

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the stapler cover. (Figure 3-619)
3) Remove the stapler. (Figure 3-619)
4) Remove the mounting screw [1], and remove the inlet sensor [2].

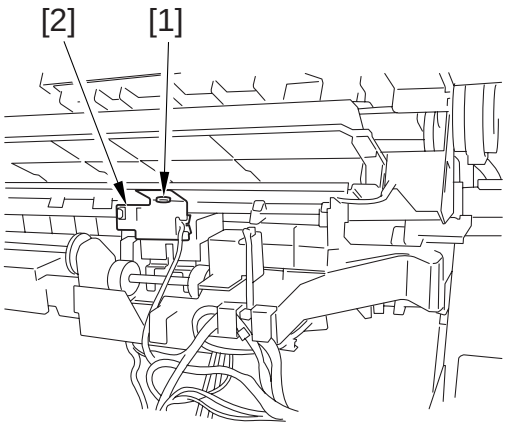

Figure 3-301

5) Remove the E-ring [4] from the rear of the linking shaft [3]; then, shift the gear [5] and the bushing toward the front.

Caution:
When sliding the gear, take care not to drop the parallel pin from the shaft.

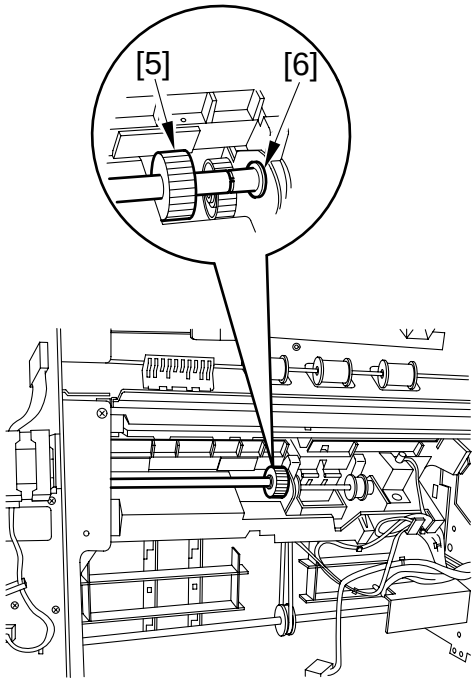

Figure 3-302

6) Detach the belt [8] from the pulley [7] at the front of the linking shaft [3], and pull out the linking shaft [3].

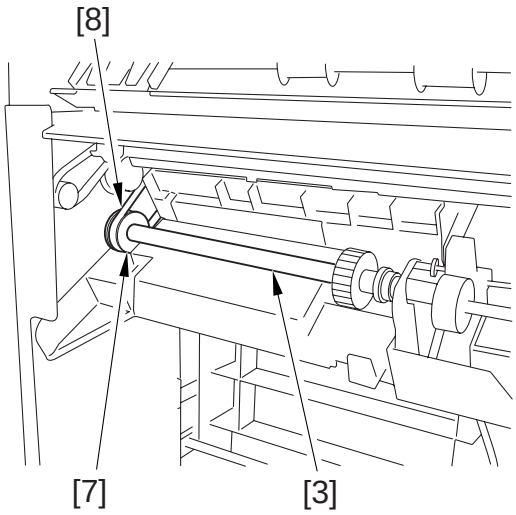

Figure 3-303

7) Disconnect the two connectors (J6 and J9) [10] from the finisher controller PCB [9], and remove the two mounting screws [11] from the inside of the body and the two mounting screws [12] from the body frame*; then, detach the processing tray unit [14] by moving it toward the copier.

*At this time, the grounding plates [13] will also come off.

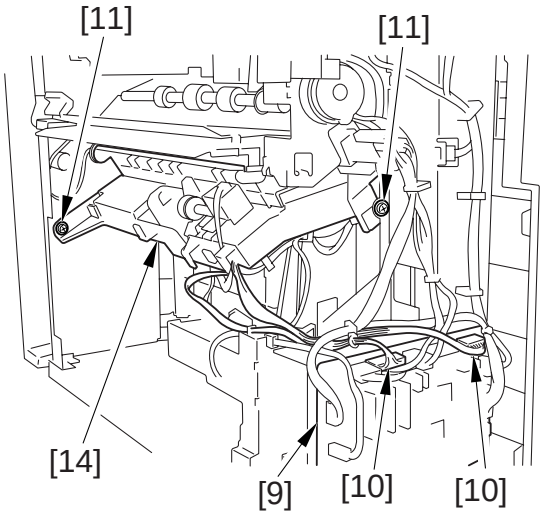

Figure 3-304

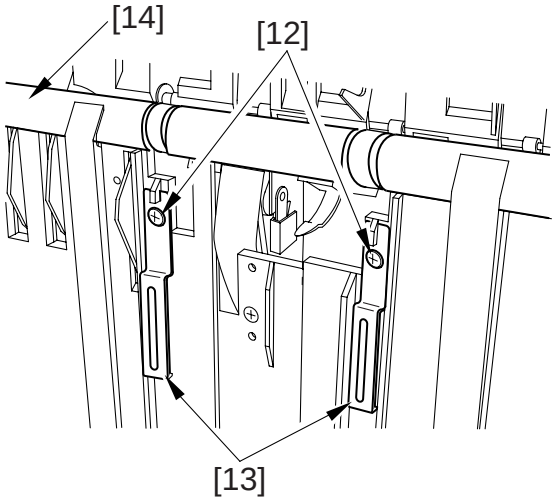

Figure 3-305

Caution1:

The stack tray is likely to interfere when the mounting screws are removed from the body frame. To avoid interference, turn the clock plate of the stack tray shift motor clockwise so that the tray will move down to allow removal of the mounting screws as shown in Figure 3-306a.

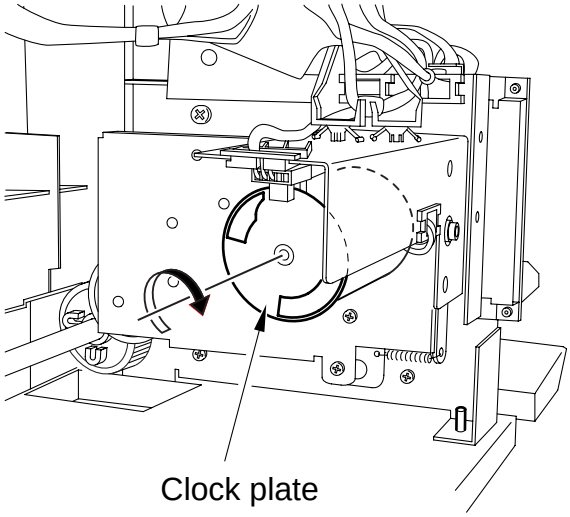

Figure 3-306a

Caution 2:

When mounting the processing tray, check to make sure that the four stacking wall rails [15] are fitted in the processing tray unit [14] as shown in Figure 3-306b.

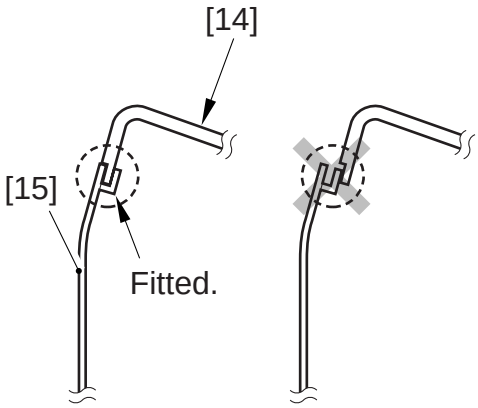

Figure 3-306b

B. Removing the Jogging Plate Motor

1) Remove the processing tray unit. (Figures 3-301 through -306)
2) Remove the two mounting screws [1], and disconnect the connector [2]; then, detach the jogging plate motor. (You can remove both jogging plate motors in the same way.)

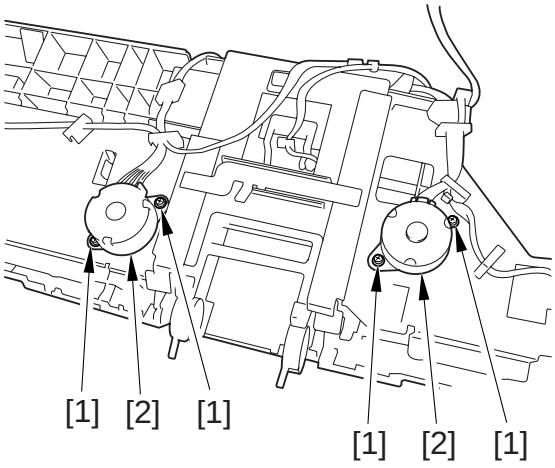

Figure 3-307

C. Adjusting the Jogging Plate Width

Caution:

If you have performed D. "Adjusting the Angle of the Jogging Plate" or E. "Adjusting the Overlap of the Sensor Flag," be sure to perform the following adjustments:

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Adjust the front jogging plate to the home position.
2-1) Set DSW1 on the finisher controller PCB as shown in Figure 3-308.
2-2) Press SW1 on the finisher controller PCB.
- The front jogging plate moves to the home position.

3) Adjust the rear jogging plate to the home position.
3-1) Set DSW1 on the finisher controller PCB as shown in Figure 3-309.

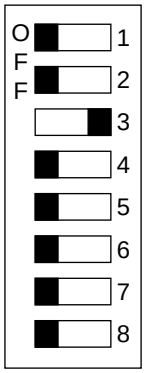

Figure 3-308

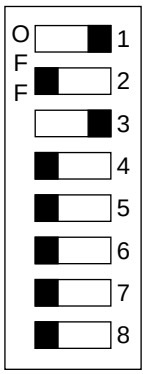

Figure 3-309

3-2) Press SW1 on the finisher controller PCB.
- The rear jogging plate moves to the home position.

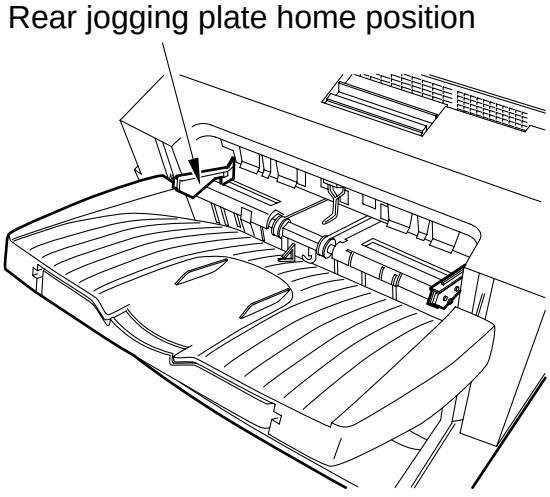

Figure 3-310

4) Measure the jogging width (standard at 317 mm).
5) Remove the processing tray. (Figures 3-301 through -306)
6) Loosen the screw [2] on the home position sensor plate [1] at the front.

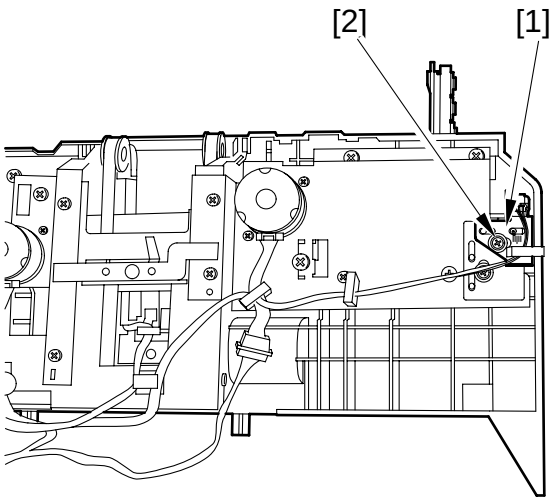

Figure 3-311

7) Adjust the position of the front jogging plate home position sensor (S6) with reference to the index.
   EX 1
   If the width is 319 mm in step 2), the difference from the standard is +2 mm, requiring relocation of the sensor [3] in the direction of arrow A by 2 mm.
   EX 2
   If the width is 316 mm in step 2), the difference from the standard is -1 mm, requiring relocation of the sensor [3] in the direction of arrow B by 1 mm.

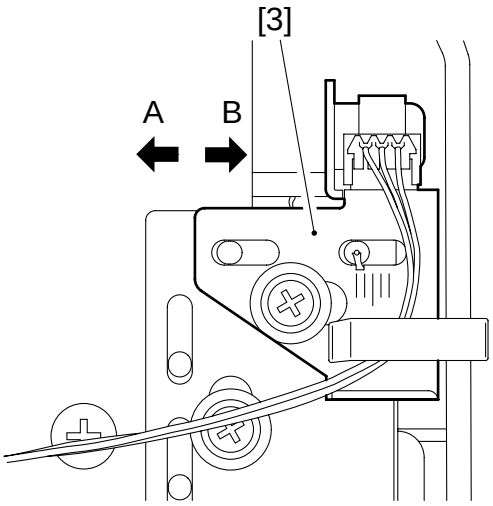

Figure 3-312

Reference:

A guide [4] is provided on the back of the inside right cover (standard alignment width of 317 mm). You may fold large-size paper in reference to the guide, and use the result when measuring the jogging plate width.

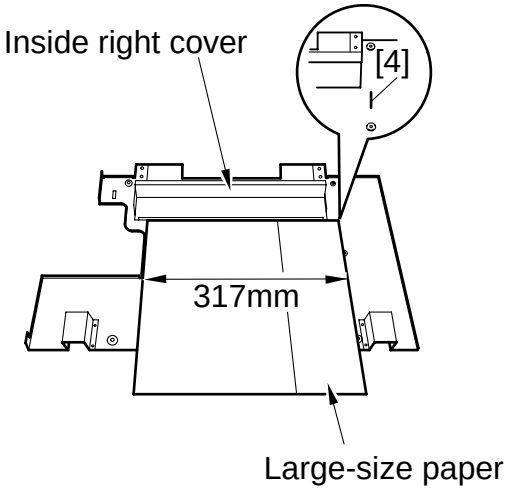

Figure 3-313

D. Adjusting the Angle of the Jogging Plate

1) Without removing the processing tray unit, loosen the two mounting screws [2] of the rear jogging plate.

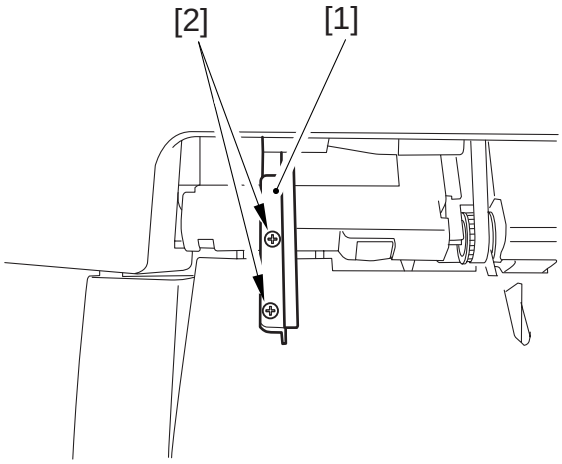

Figure 3-314

2) Place several sheets of A4/LTR paper on the processing tray, and adjust the rear jogging plate. (At this time, adjust the gap between the paper and the front end of the rear jogging plate so that it is 0 to 0.5 mm.)

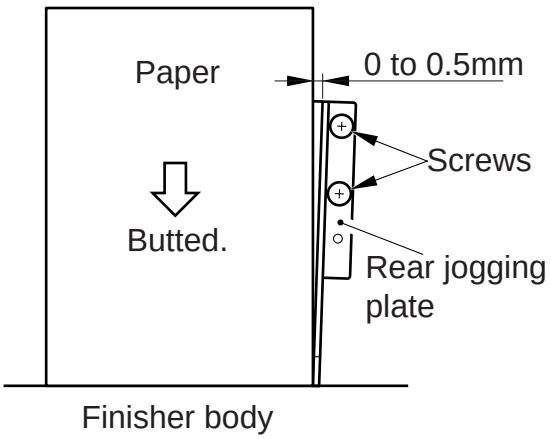

Figure 3-315

3) Remove the processing tray unit. (Figures 3-301 through -306)
4) Loosen the mounting screw [4] on the adjusting plate [3] of the front jogging plate found behind the processing tray unit.

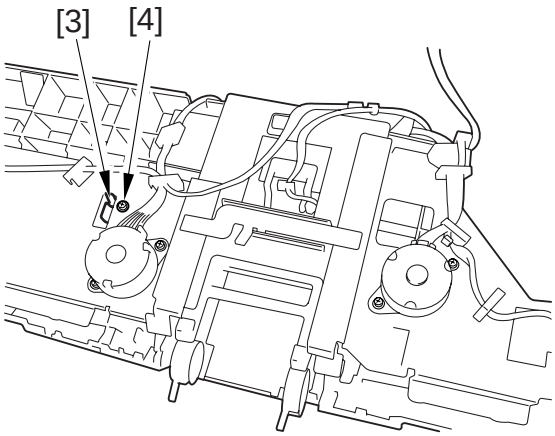

Figure 3-316

5) With reference to the rear jogging plate adjusted in step 2), adjust the front jogging plate (by making the gap between the A4/LTR paper and the front end of the front jogging plate to from 0 to 0.5 mm); then, tighten the mounting screw loosened in step 4).

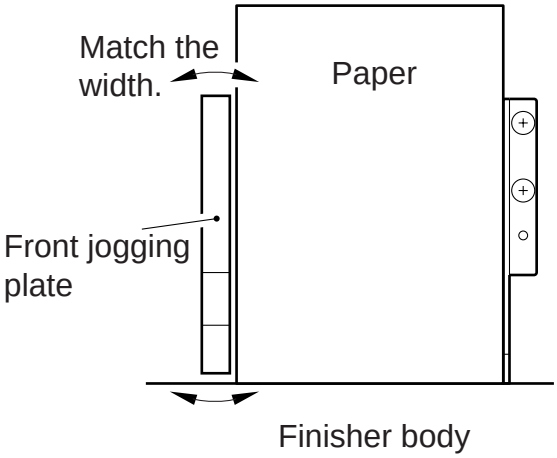

Figure 3-317

E. Adjusting the Overlap of the Sensor Flag

Normally, position any machine parts to the initial graduations shown in Figure 3-312. If the overlap between the sensor and the flag is wrong for some reason, perform the following:

1) Remove the processing tray unit. (Figures 3-301 through -306)
2) Loosen the mounting screw [2] of the front/rear jogging plate adjusting plate [1]; then, move the adjusting plate left and right.

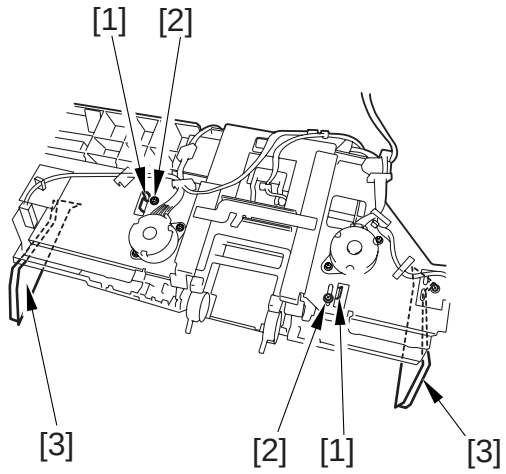

Figure 3-318

3) Tighten the screw so that the overlap between the flag of the front/rear jogging rack plate and the sensor is 1.5 to 2.0 mm.

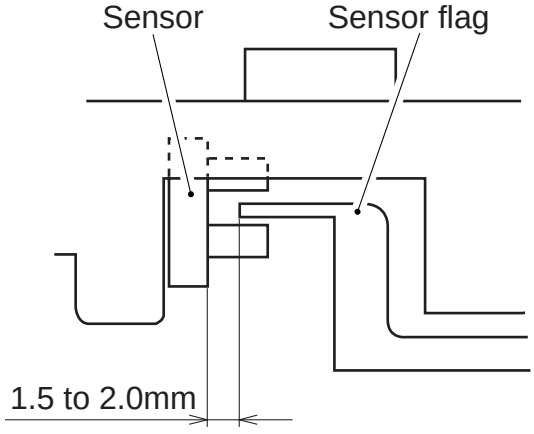

Figure 3-319

IV. RETURNING ROLLER

A. Removing the Returning Roller Unit

1) Remove the processing tray unit. (Figures 3-301 through -306)
2) Remove the mounting screw [1], and detach the returning roller home position support plate [2].

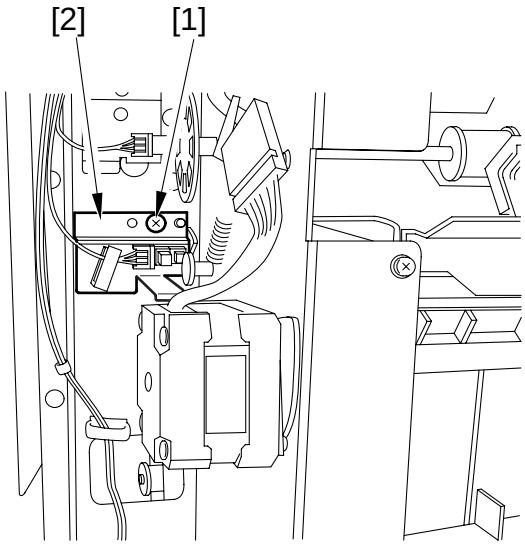

Figure 3-401

3) Remove the three mounting screws [4] of the lower guide [3], and detach the returning roller unit [5] together with the lower guide.

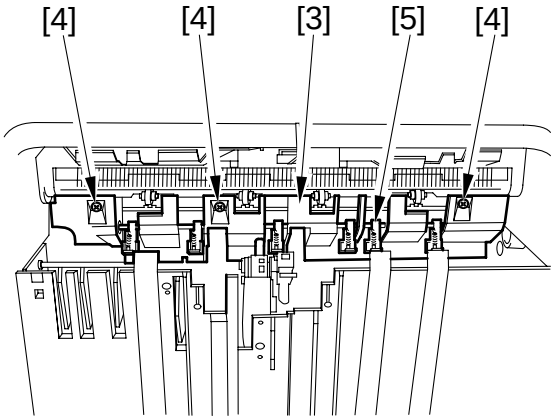

Figure 3-402

4) Turn the roller shaft [7] until the returning roller [6] is not in contact with the lower guide [3], and pull out the returning roller unit.

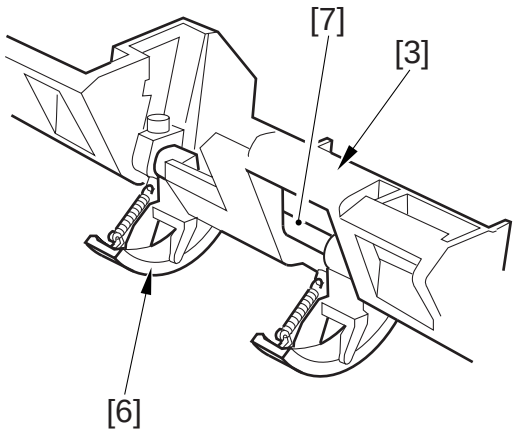

Figure 3-403

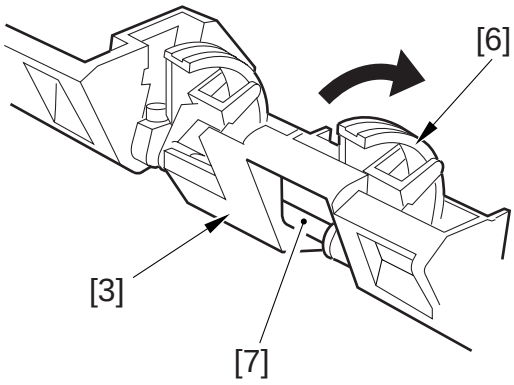

Figure 3-404

B. Removing the Returning Roller Rubber

1) Remove the returning roller rubber [1] from the return roller [2] as if to peel it off.

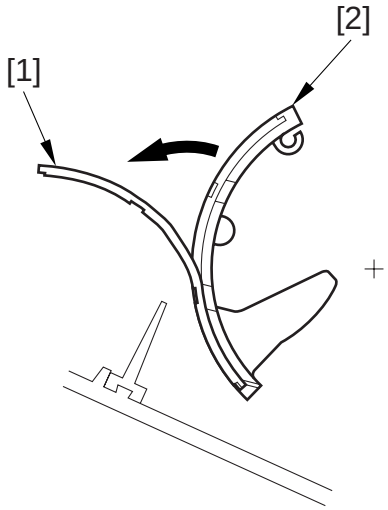

Figure 3-405

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C. Mounting the Returning Roller Rubber

1) Fit the returning roller rubber [2] into the surface groove of the returning roller [1] starting at the bottom and working upward.
At this time, try rotating the returning roller gradually in the paper feeding direction to facilitate the work.

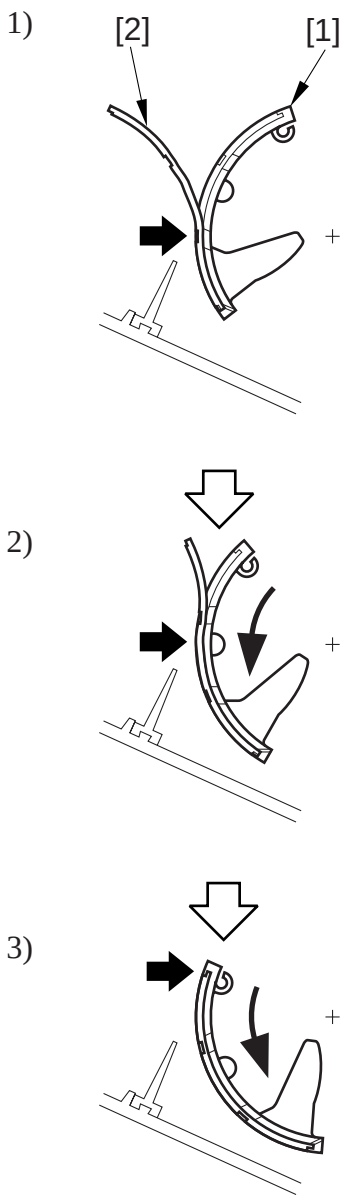


Figure 3-406

Reference:

To rotate the returning roller [1], try moving the feeding belt [3] in small increments.
If you rotate the feeding belt [3] counter-clockwise only, the feeding belt arm [4] can interfere with the feeding belt home position sensor [5] as shown in Figure 3-407b.
When moving the feeding belt [3], do not hold the intermediary tray stacking auxiliary plate [6] as shown in Figure 3-407c.

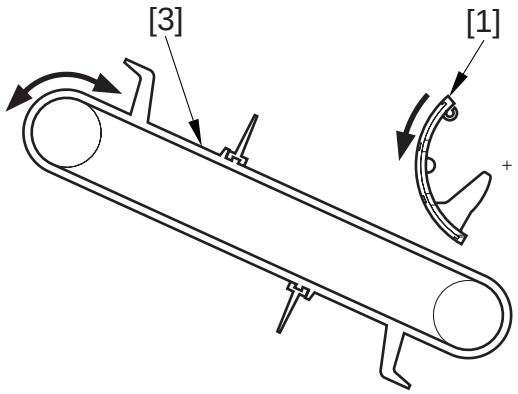


Figure 3-407a

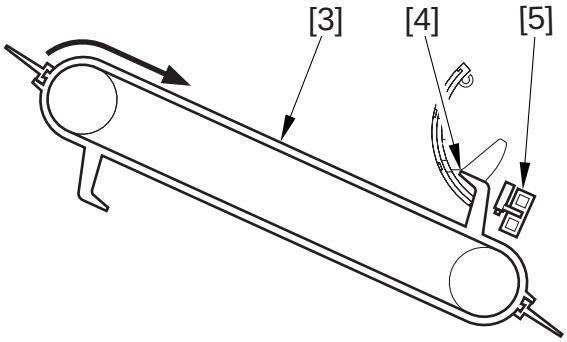


Figure 3-407b

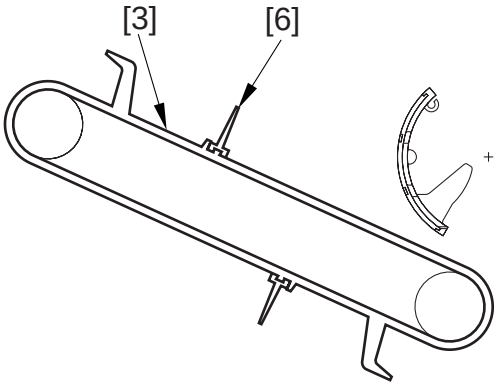


Figure 3-407c

D. Adjusting the Tension of the Stack Processing Motor Belt

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Using 64 g/m^2 paper, prepare a sheet of about 10 x 200 mm; then, fold it in four.

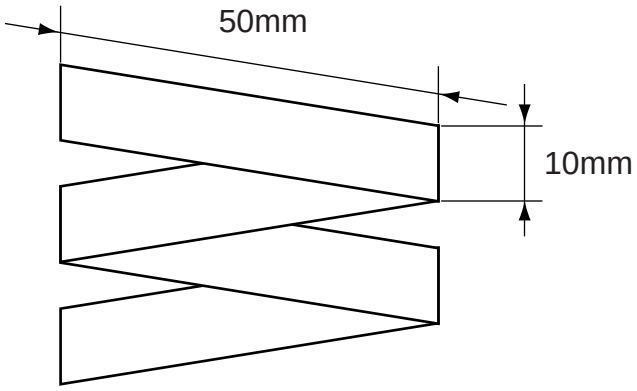


Figure 3-408

3) Turn the motor spindle [1] so that the sheet [4] is between the belt [2] and the tension roller [3].

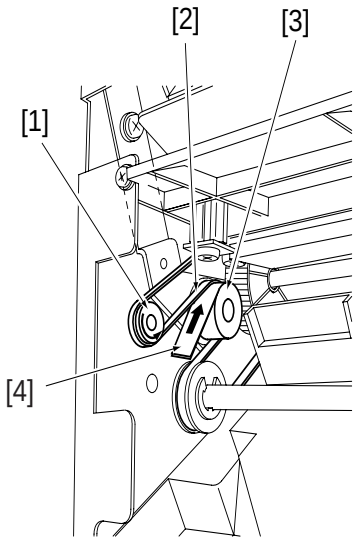


Figure 3-409

4) Loosen the screw [6] on the tension arm plate [5]. (The tension arm plate will be pulled under tension by the tension spring.)

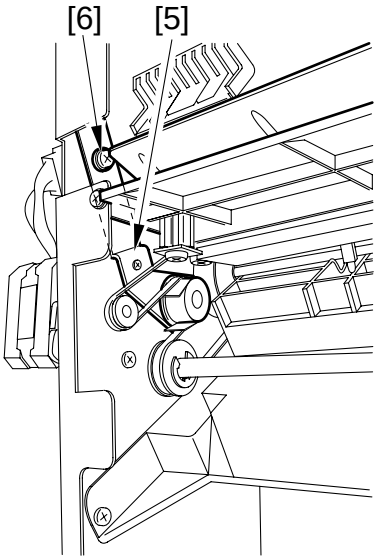


Figure 3-410

5) Keeping the sheet as it is, move the returning roller shaft [7] to its lower limit; then, tighten the screw [6] on the tension arm plate [5].

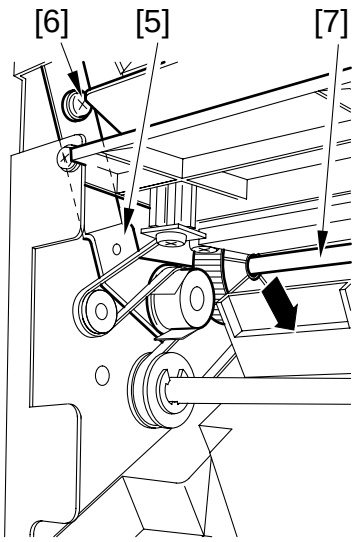


Figure 3-411

6) Remove the sheet from between the belt and the tension roller.
7) Check to make sure that the returning roller shaft [7] moves smoothly. If not, readjust or apply grease to the friction part.

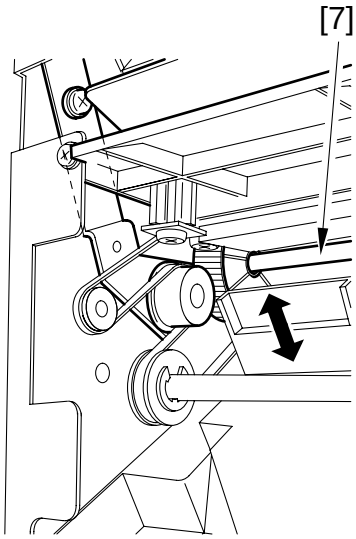


Figure 3-412

V. STACK TRAY

A. Removing the Stack Tray

1) Remove the four mounting screws [1] from behind the stack tray, and detach the stack tray [2].

Caution:
After removing the stack tray, take care not to damage the harness used to connect the stack tray and the finisher controller PCB.

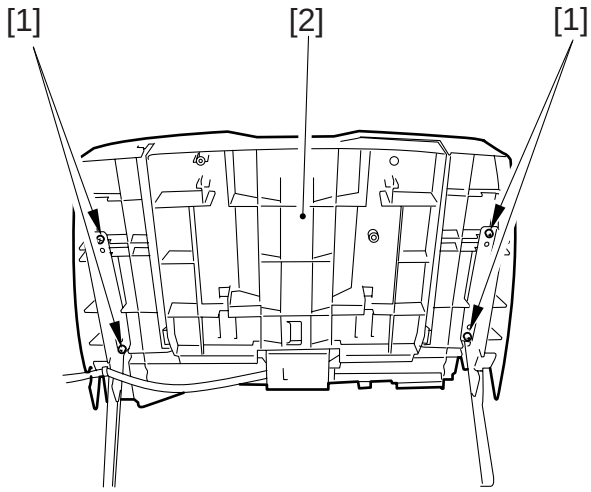


Figure 3-501

VI. STACK TRAY LIFTER UNIT

A. Removing the Stack Tray Lifter Unit

1) Remove the inside right cover, rear cover, and stapler cover. (Figure 3-103)
2) Remove the processing tray unit. (Figures 3-301 through -306)
3) Remove the mounting screw [1], and detach the height sensor unit [2] by moving it toward the copier.

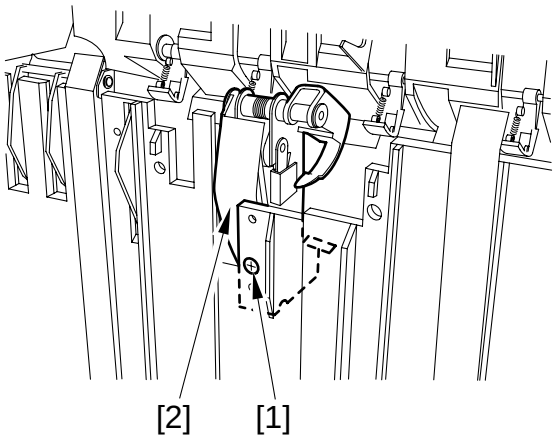


Figure 3-601

4) Remove the returning roller unit. (Figures 3-401 and -402)
5) Remove the finisher controller PCB. (See VIII. “PCBs.”)
6) Release the front/rear stack tray guide lever fixing plate. (See D. “Releasing the Stack Tray Guide Lever Fixing Plate.”)
7) Remove the mounting screw [1], and detach the joint sensor support plate [2]; then, remove the two screws [3], and detach the delivery motor [4].
8) Remove the harness guide [5].

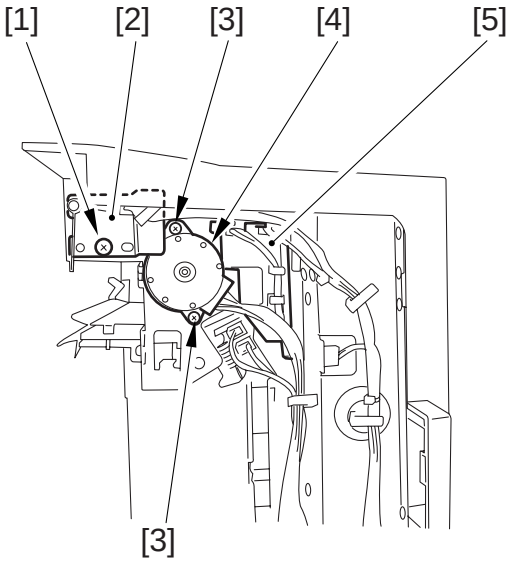


Figure 3-602

9) Remove the mounting screw [8] from the front side plate, and detach the lower limit sensor support plate [9].

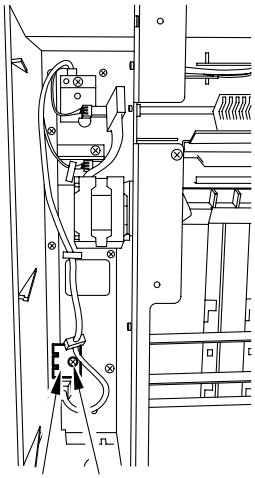


Figure 3-603

10) Remove the two mounting screws [10], and detach the grip unit [11].

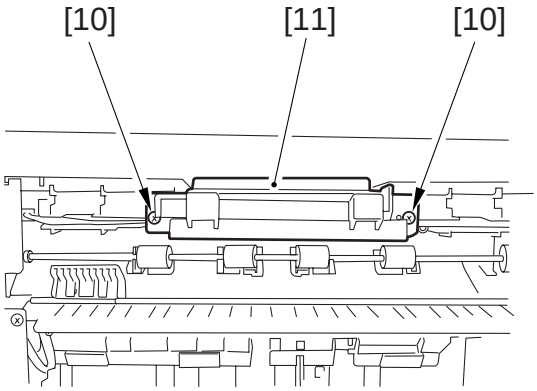


Figure 3-604

11) Remove the mounting screw [12], and detach the grounding wire [13].
12) Remove the six mounting screws [14] from the rear side plate.

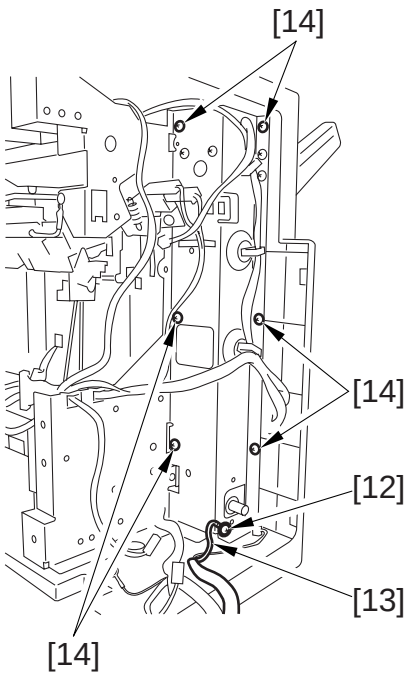


Figure 3-605

13) Remove the six mounting screws [15] of the front side plate.

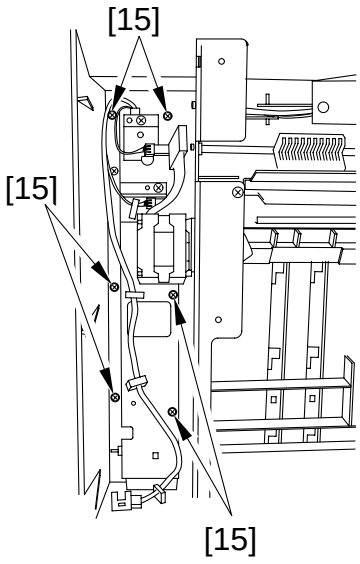


Figure 3-606

14) Mount the inside right cover [17] with five mounting screws [16].

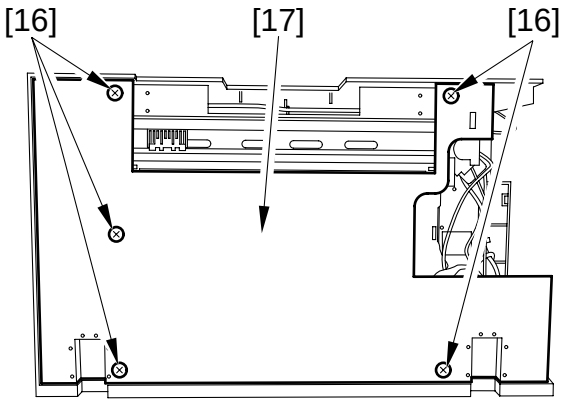


Figure 3-607

15) Remove the five mounting screws [19] of the bottom of the body frame [18], and detach the stack tray lifter unit together with the inside right cover.

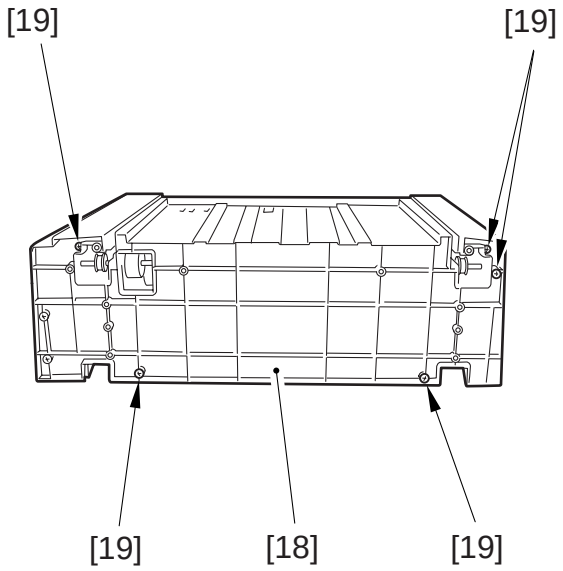


Figure 3-608

Caution 1:
Before mounting the stack tray lifter unit, make sure that the stack tray guide lever (front, rear) is hooked on the tension spring.

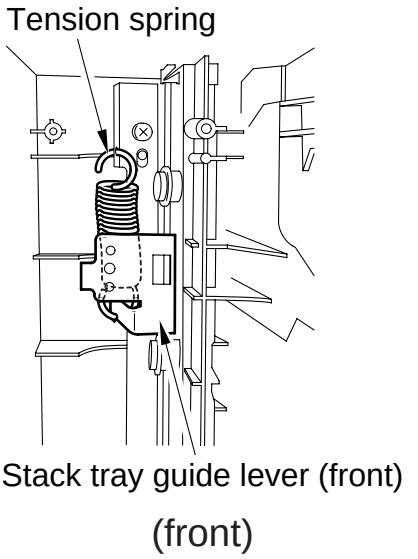


Figure 3-609a

Caution 2:
When mounting the paper height sensor, make sure that the linkage of the sensor flags 1 and 2 is engaged.

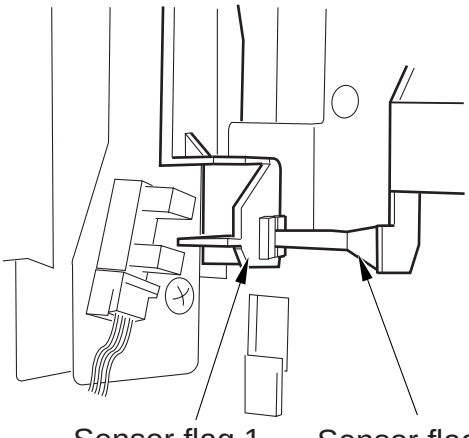


Figure 3-609b

B. Removing the Stack Tray Drive Unit

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the stapler cover.
3) Remove the mounting screw [1], and detach the stack tray lifter motor clock sensor support plate [2].

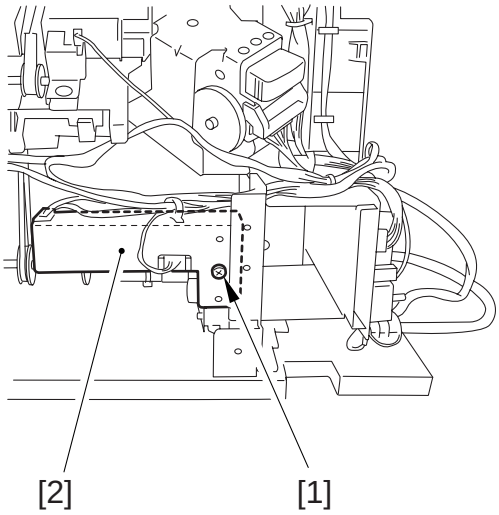


Figure 3-610

4) Remove the three mounting screws [3], and disconnect the connector [4]; then, detach the stack tray drive unit [5].

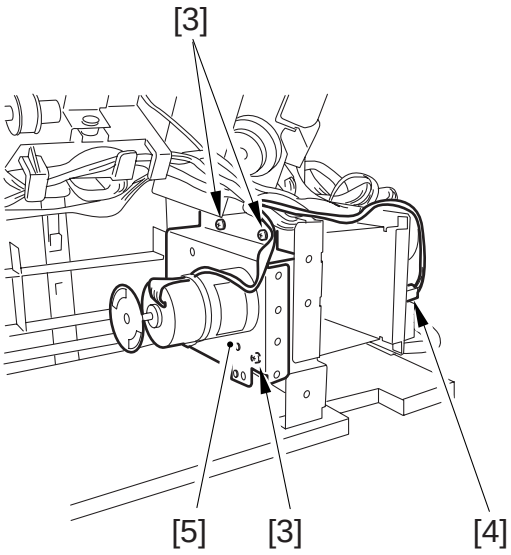


Figure 3-611

C. Adjusting the Tension of the Stack Tray Drive Unit

1) Remove the inside right cover.
2) Remove the stack tray lifter motor clock sensor support plate. (Figure 3-610)
3) Remove the stack tray drive unit. (Figure 3-611)
4) Loosen the adjusting screw [2] of the tension arm [1]. (At this time, the tension arm must be under pressure.)

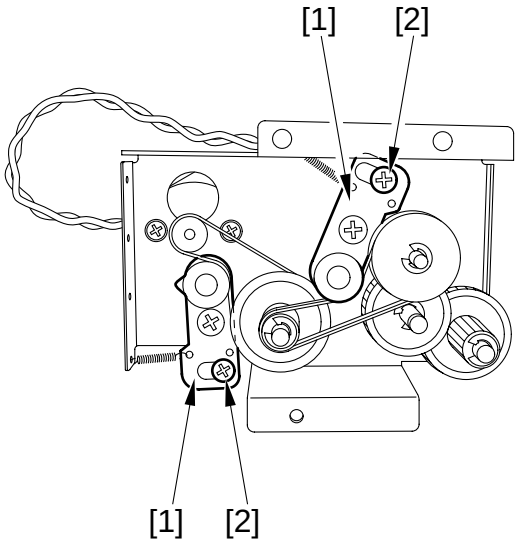


Figure 3-612

5) When the tension arm [1] is back at its initial position, tighten the adjusting screw [2].

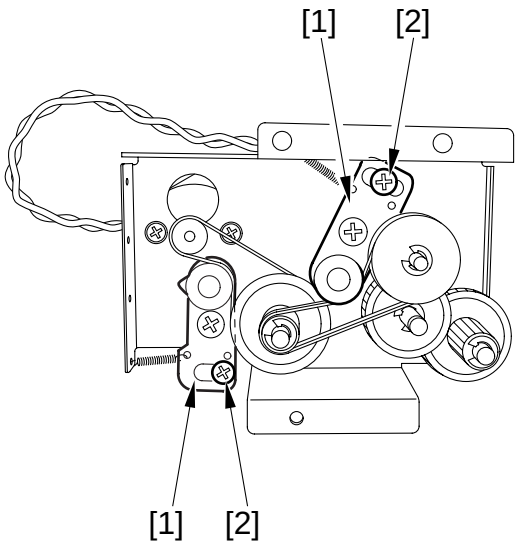


Figure 3-613

D. Releasing the Stack Tray Guide Lever Fixing Plate

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the stapler cover.
3) Remove the stack tray. (Figure 3-501)
4) Rotate the clock plate of the tray shift motor so that the stack tray guide lever fixing plate [1] is in view through the hole in the side plate (front, rear; clockwise to lower and counterclockwise to raise it); then, remove the fixing screw [2], and free the hook of the fixing plate from the stack tray guide lever [3]. (Perform the same for the front and the rear.)

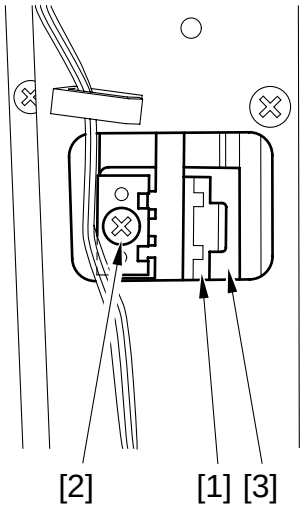


Figure 3-614

Caution:
When removing the mounting screw [2], be sure to hold down the stack tray guide lever from above.

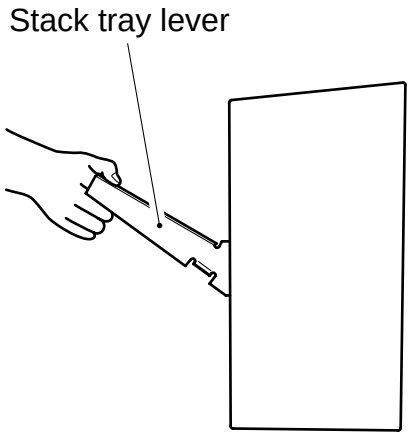


Figure 3-615

E. Mounting the Stack Guide Fixing Plate

1) Loosen the mounting screw [2] on the belt pulley plate [1] found above the front/rear side plate; then, loosen the tension of the stack tray guide lever belt [4].

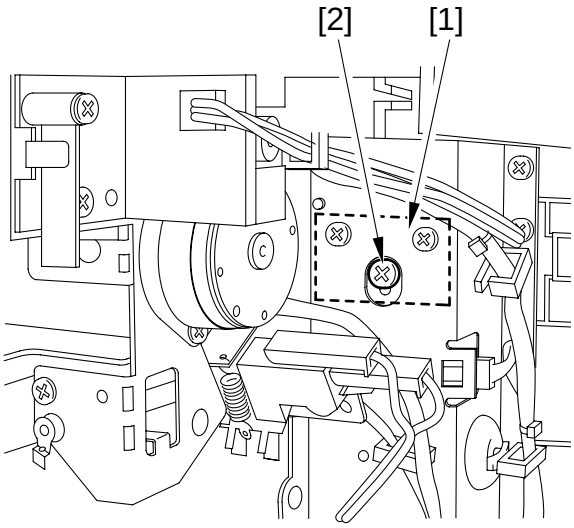


Figure 3-616

2) Mount the stack tray guide lever fixing plate [3] to the stack tray guide lever through the hole in the front/rear side plate.

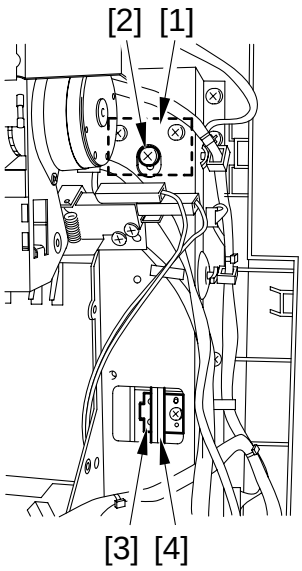


Figure 3-617

3) Tighten the mounting screw [2] of the belt pulley plate to fix the belt pully plate [1].

Caution:

Mount the stack tray guide lever fixing plate (front, rear) when the bottom end of the stack tray guide lever matches the marking on the frame so that the phase of the stack tray guide lever will be correct at both front and rear.

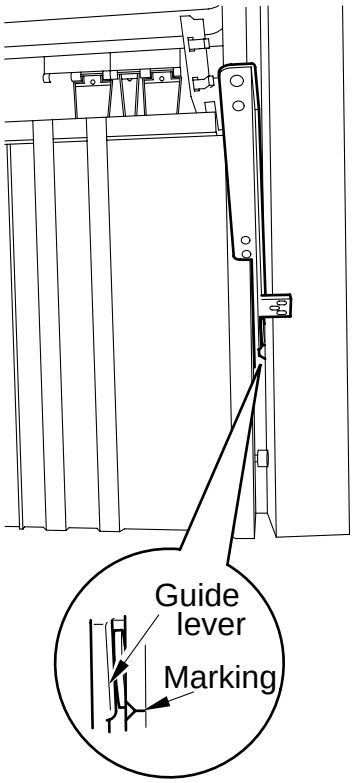


Figure 3-618a

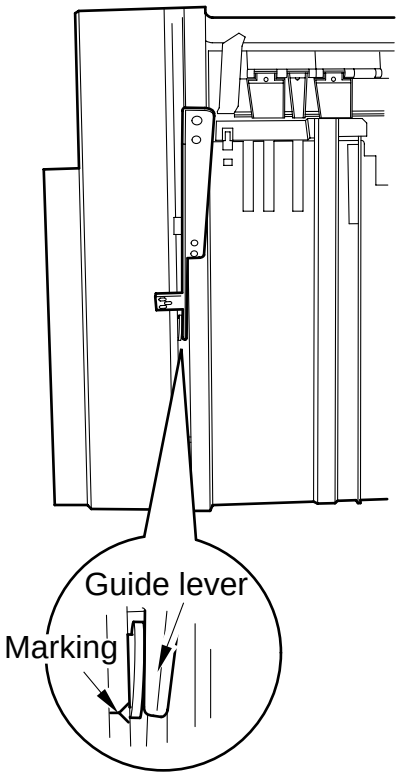


Figure 3-618b

VII.STAPLER

A. Removing the Stapler

1) Remove the inside right cover and the stapler cover. (Figure 3-103)
2) Disconnect the connector J8 [1] of the finisher controller PCB [2].
3) Remove the two mounting screws [3], and detach the stapler [4].

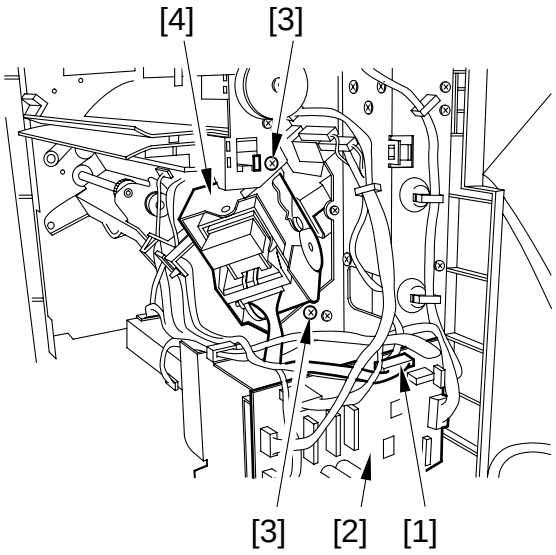


Figure 3-619

VIII. PCBs

A. Removing the Finisher Controller PCB

1) Remove the rear cover. (Figure 3-103)
2) Disconnect the 12 connectors [1], and remove the four mounting screws [2]; then, detach the finisher controller PCB [3].

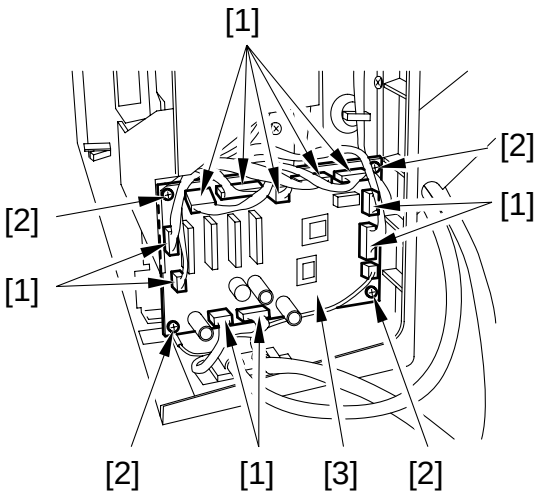


Figure 3-701

CHAPTER 4

MAINTENANCE AND INSPECTION

 CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. PERIODICALLY REPLACED PARTS

The finisher does not have parts that require replacement on a periodical basis.

II. CONSUMABLES AND DURABLES

No.	Parts name	Parts No.	Q'ty	Life	Remarks
1	Stapler	FB5-0725-000	1	200,000 times	
2	Static eliminator	FB5-0590-000	1	1,000,000 sheets	
3	Returning roller rubber	FB5-0635-000	2	1,000,000 sheets	

III. SCHEDULED MAINTENANCE

The finisher does not have items that require maintenance on a periodical basis.

 CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

CHAPTER 5

TROUBLESHOOTING

 CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

I. ADJUSTMENTS

A. Adjusting the Jogging Plate Width

1) Remove the front jogging plate and the rear cover. (Figure 3-103)
2) Adjust the front jogging plate to the home position.
2-1) Set DSW1 on the finisher controller PCB as shown in Figure 5-101.
2-2) Press SW1 on the finisher controller PCB.
- The front jogging plate moves to the home position.

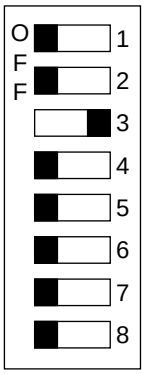


Figure 5-101

3) Adjust the rear jogging plate to the home position.
3-1) Set DSW1 on the finisher controller PCB as shown in Figure 5-102.
3-2) Press SW1 on the finisher controller PCB.
- The rear jogging plate moves to the home position.

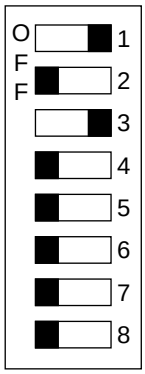


Figure 5-102

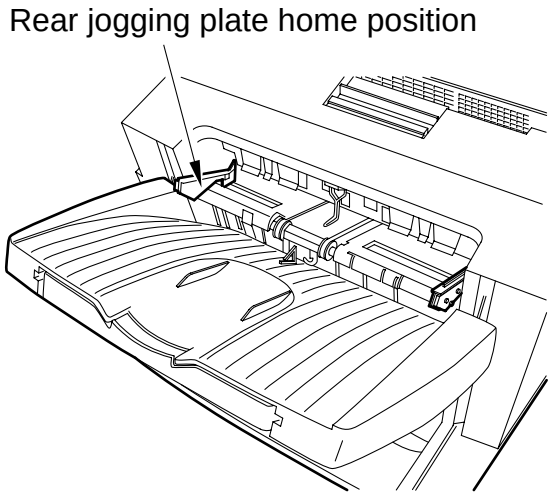


Figure 5-103

4) Measure the jogging width (standard at 317 mm).
5) Remove the processing tray. (Figures 3-301 through -306)
6) Loosen the screw [2] on the home position sensor plate [1] at the front.

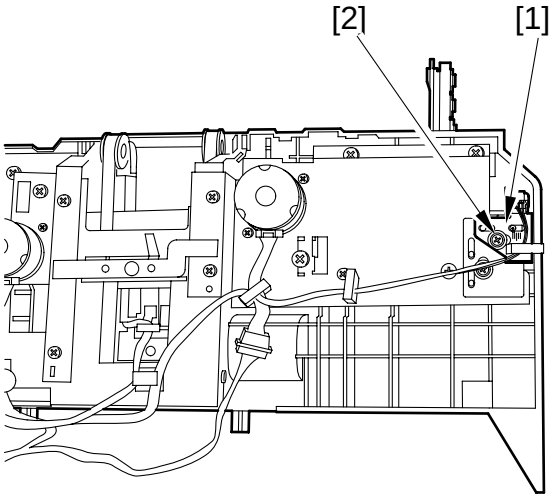


Figure 5-104

7) Adjust the position of the front jogging plate home position sensor (S6) with reference to the index.
EX 1
If the width is 319 mm in step 2), the difference from the standard is +2 mm, requiring relocation of the sensor [3] in the direction of arrow A by 2 mm.
EX 2
If the width is 316 mm in step 2), the difference from the standard is -1 mm, requiring relocation of the sensor [3] in the direction of arrow B by 1 mm.

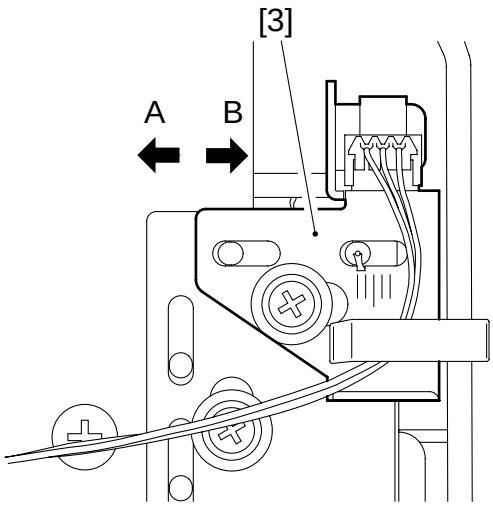


Figure 5-105

Reference:

A guide [4] is provided on the back of the inside right cover (standard alignment width of 317 mm). You may fold large-size paper in reference to the guide, and use the result when measuring the jogging plate width.

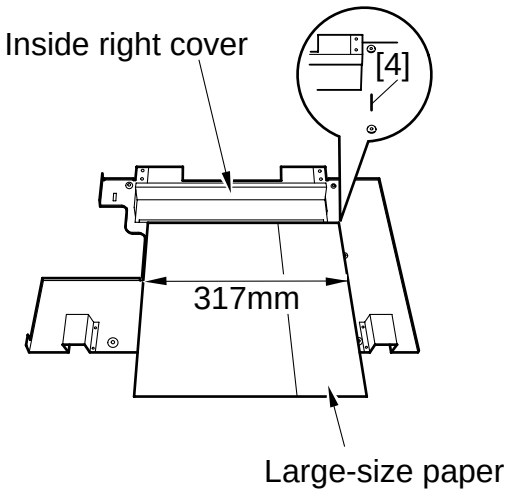


Figure 5-106

B. Adjusting the Angle of the Jogging Plate

1) Without removing the processing tray unit, loosen the two mounting screws [2] of the rear jogging plate.

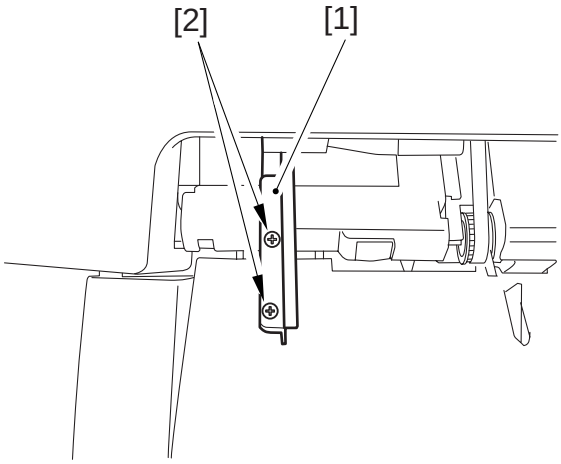


Figure 5-107

2) Place several sheets of A4/LTR paper on the processing tray, and adjust the rear jogging plate. (At this time, adjust the gap between the paper and the front end of the rear jogging plate so that it is 0 to 0.5 mm.)

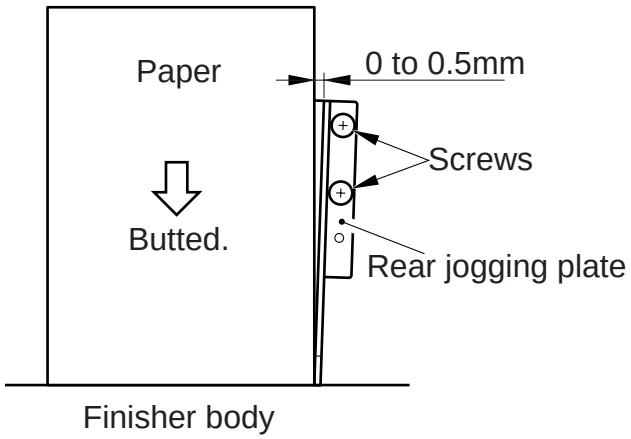


Figure 5-108

3) Remove the processing tray unit. (Figures 3-301 through -306)
4) Loosen the mounting screw [4] on the adjusting plate [3] of the front jogging plate found behind the processing tray unit.

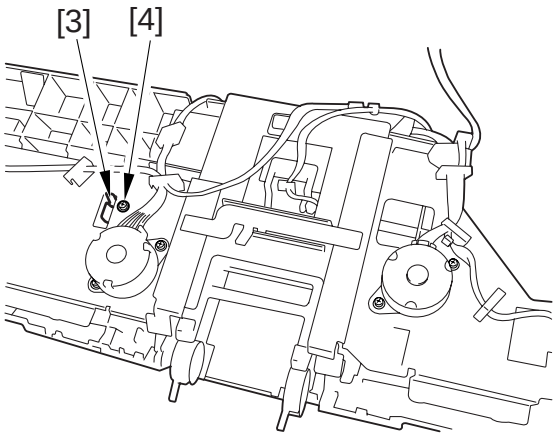


Figure 5-109

5) With reference to the rear jogging plate adjusted in step 2), adjust the front jogging plate (by making the gap between the A4/LTR paper and the front end of the front jogging plate from 0 to 0.5 mm); then, tighten the mounting screw loosened in step 4).

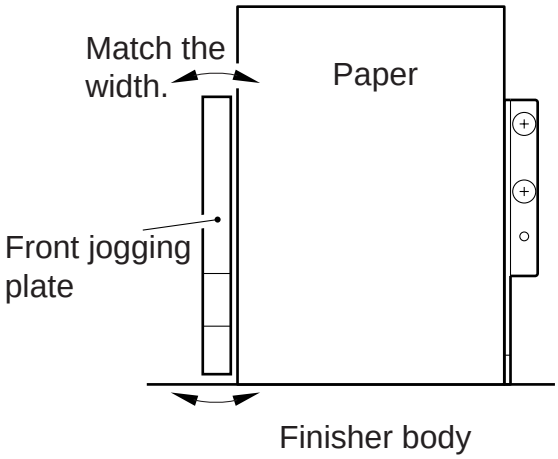


Figure 5-110

C. Adjusting the Overlap of the Sensor Flag

Normally, position any machine parts to the initial graduations shown in Figure 3-312. If the overlap between the sensor and the flag is wrong for some reason, perform the following:

1) Remove the processing tray unit. (Figures 3-301 through -306)
2) Loosen the mounting screw [2] of the front/rear jogging plate adjusting plate [1]; then, move the adjusting plate left and right.

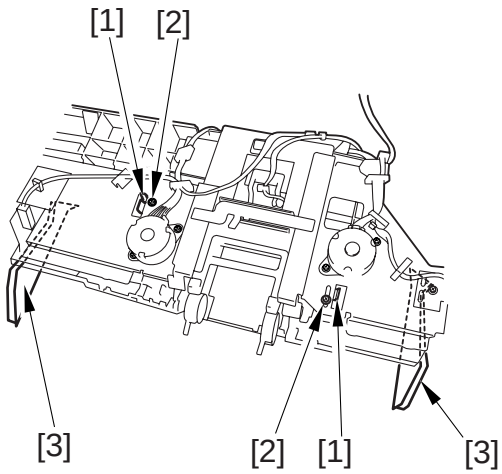


Figure 5-111

3) Tighten the screw so that the overlap between the flag of the front/rear jogging rack plate and the sensor is 1.5 to 2.0 mm.

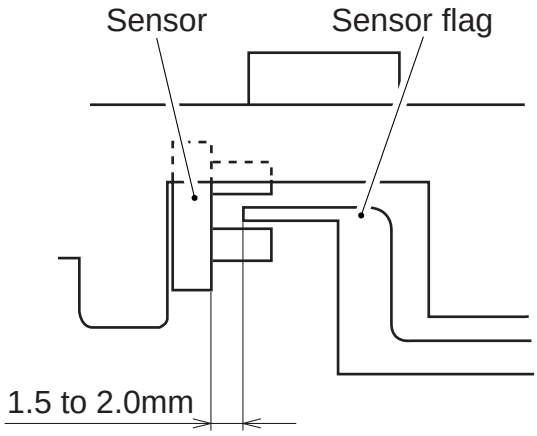


Figure 5-112

D. Adjust the Tension of the Stack Processing Motor Belt

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Using 64 g/m^2 paper, prepare a sheet of about 10 x 200 mm; then, fold it in four.

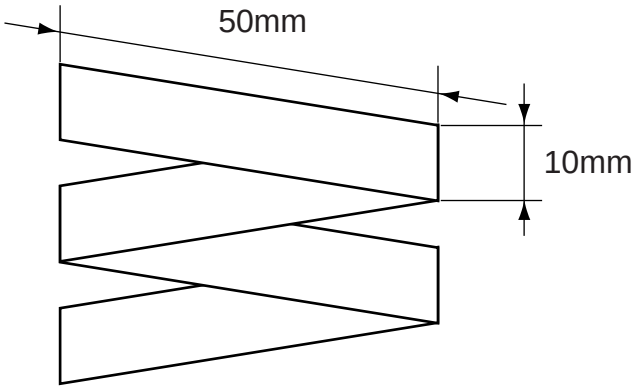


Figure 5-113

3) Turn the motor spindle [1] so that the sheet [4] is between the belt [2] and the tension roller [3].

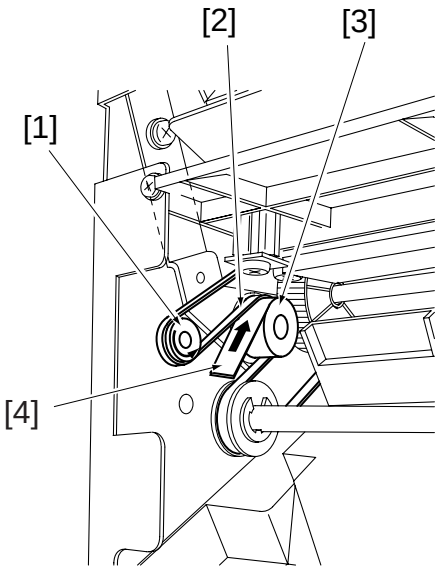


Figure 5-114

4) Loosen the screw [6] on the tension arm plate [5]. (The tension arm plate will be pulled under tension by the tension spring.)

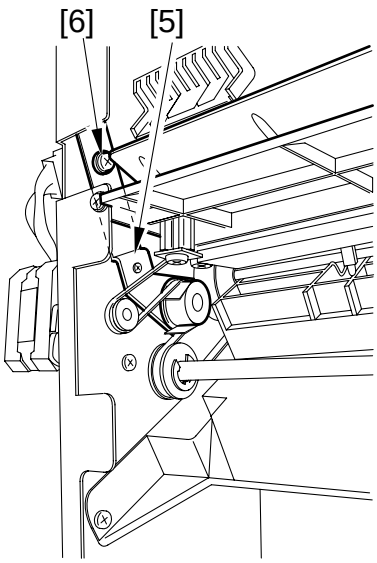


Figure 5-115

5) Keeping the sheet as it is, move the returning roller shaft [7] to its lower limit; then, tighten the screw [6] on the tension arm plate [5].

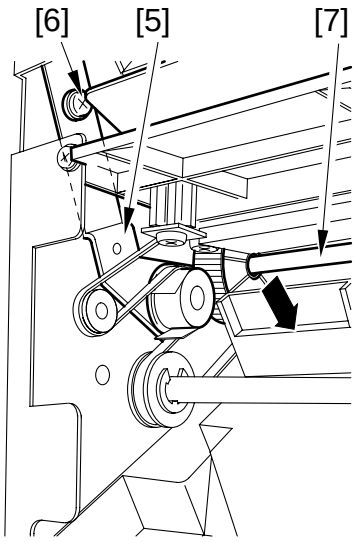


Figure 5-116

6) Remove the sheet from between the belt and the tension arm.
7) Check to make sure that the returning roller shaft [7] moves smoothly.

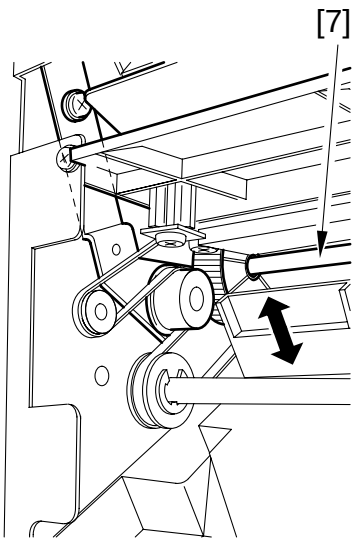


Figure 5-117

E. Adjusting the Tension of the Stack Tray Drive Unit

1) Remove the inside right cover.
2) Remove the stack tray lifter motor clock sensor support plate. (Figure 3-610)
3) Remove the stack tray drive unit. (Figure 3-611)
4) Loosen the adjusting screw [2] of the tension arm [1]. (At this time, the tension arm must be under pressure.)

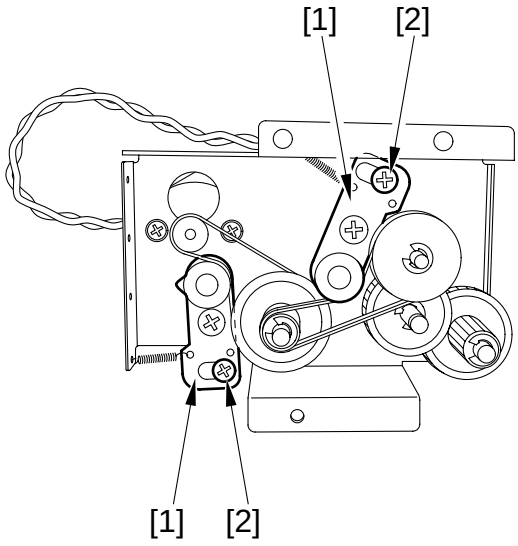


Figure 5-118

5) When the tension arm [1] is back at its initial position, tighten the adjusting screw [2].

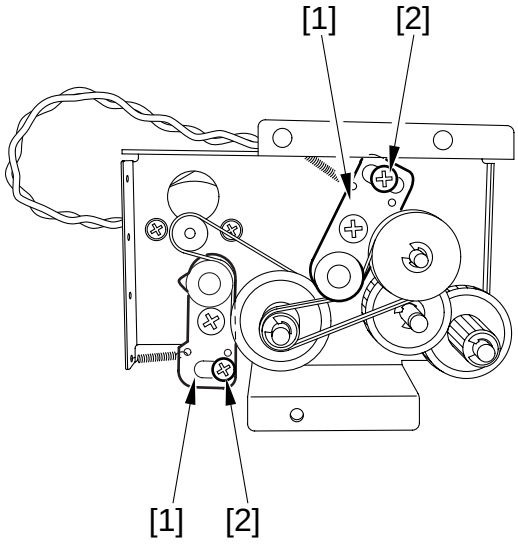


Figure 5-119

F. Releasing the Stack Tray Guide Lever Fixing Plate

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the stapler cover.
3) Remove the stack tray. (Figure 3-501)
4) Rotate the clock plate of the tray shift motor so that the stack tray guide lever fixing plate [1] is in view through the hole in the side plate (front, rear; clockwise to lower and counterclockwise to raise it); then, remove the fixing screw [2], and free the hook of the fixing plate from the stack tray guide lever [3]. (Perform the same for the front and the rear.)

Caution:
When removing the mounting screw [2], be sure to hold down the stack tray guide lever from above.

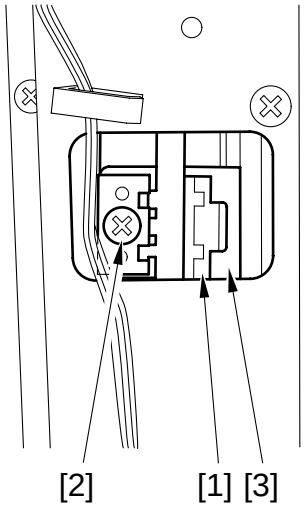


Figure 5-120

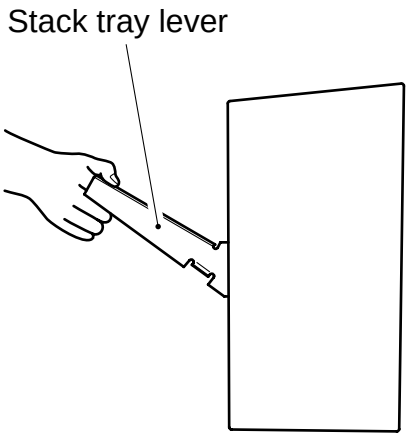


Figure 5-121

G. DIP Switch Functions

You can simulate various functions by setting the DIP switch (DSW1) on the finisher controller PCB appropriately.

■ Initiating Operations

1) Remove any obstacles from the area of operation.
2) Set the DIP switch (DSW1) as shown, and turn on the power (so that LED1 will start to flash).
3) Press the push switch (SW1) to initiate the operation in question. (LED2 will remain on during operation).

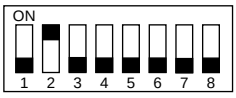
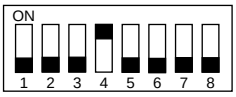
Setting	Item	Operation		To stop
	Delivery motor	The delivery roller rotates for a specific time, and stops.		• Press SW1. • Turn off the joint sensor (S4).
	Stack processing motor (stack delivery lever)	The stack delivery lever moves to its home position and stops.		• Turn off the joint sensor (S4).
	Stack processing motor (returning roller)	The returning roller moves to the home position and stops.		• Turn off the joint sensor (S4).
	Front jogging plate motor	When at home position	The front jogging plate moves to its home position and stops.	• Turn off the joint sensor (S4).
		When not at home position	The front jogging plate moves over a specific position and stops at the home position.	• Turn off the joint sensor (S4).
	Rear jogging plate motor	When at home position	The front jogging plate moves to the home position and stops.	• Turn off the joint sensor (S4).
		When not at home position	The front jogging plate moves over a specific distance and stops.	• Turn off the joint sensor (S4).
	Stack tray motor (up)	The stack tray moves up and stops when the stack tray upper limit sensor turns on.		• Press SW1. • Turn off the joint sensor (S4).
	Stack tray motor (down)	The stack tray moves down and stops when the stack tray lower limit sensor turns on.		• Press SW1. • Turn off the joint sensor (S4).
	Stapler motor	The stapler motor stops after stapling operation.		• Press the stapler safety switch (S14). • Turn off the joint sensor (S4).

Figure 5-119

II. ARRANGEMENT OF ELECTRICAL PARTS

1. Arrangement of Electrical Parts

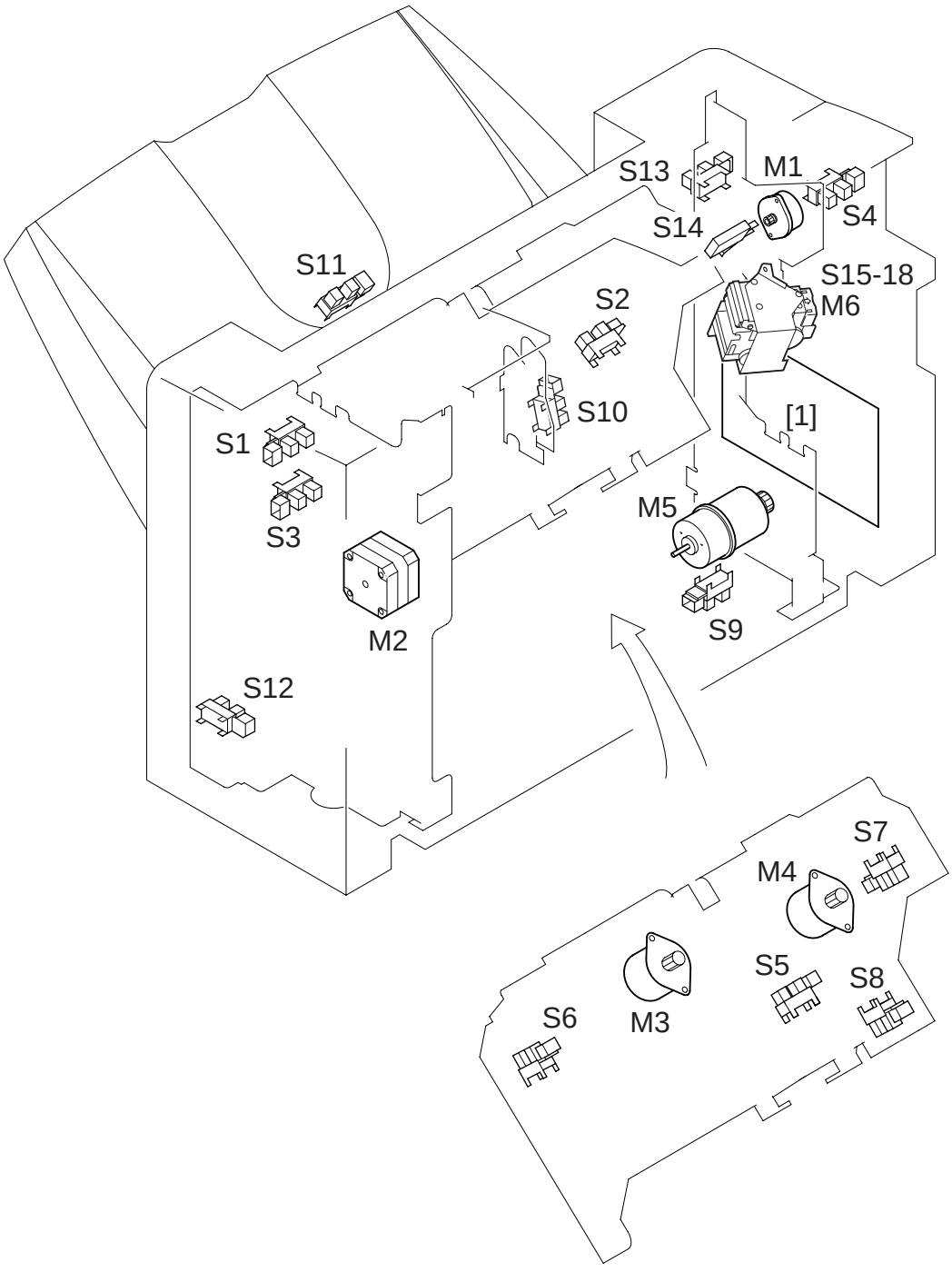


Figure 5-201

1. Sensors

Name	Notation	Description
Photointerrupter	S1	Delivery motor clock detection
	S2	Inlet paper sensor
	S3	Returning roller home position detection
	S4	Finisher joint detection
	S5	Intermediary processing tray paper detection
	S6	Front jogging plate home position detection
	S7	Rear jogging plate home position detection
	S8	Stack lever home position detection
	S9	Stack tray lifter motor clock detection
	S10	Stack tray paper height detection
	S11	Stack tray paper detection
	S12	Stack tray lower limit detection
	S13	Stack tray upper limit detection
	S16	Stapler edging staple detection (inside stapler unit)
	S17	Stapling home position detection (inside stapler unit)

Table 5-201

2. Motors

Name	Notation	Description
Motor	M1	Delivery motor
	M2	Stack processing motor
	M3	Front jogging plate motor
	M4	Rear jogging plate motor
	M5	Stack tray lifter motor
	M6	Stapler motor

Table 5-202

3. Microswitches

Name	Notation	Description
Microswitch	S14	Stapler safety detection
	S15	Stapler staple detection (inside stapler unit)
	S18	Stapler cartridge detection (inside stapler unit)

Table 5-203

4. PCBs

Ref.	Description
Microswitch	Finisher controller PCB

Tale 5-204

2. LEDs and Check Pins on the Finisher Controller PCB

Of the LEDs and check pins used in the finisher, those needed in the field are discussed.

Caution:
1. Some LEDs emit dim light even when OFF because of leakage current. This is a normal condition and must be kept in mind.
2. Those check pins not shown in the table are for the factory only, and require special tools and high accuracy. Do not touch them in the field.

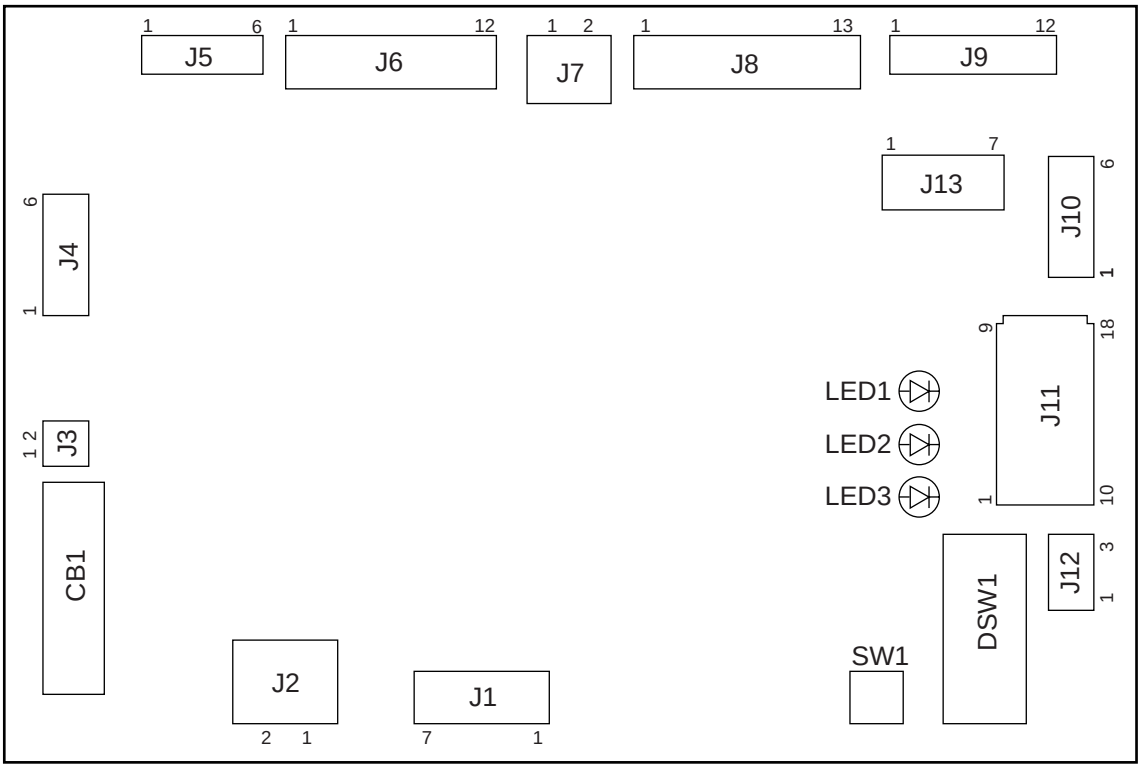


Figure 5-202

DW1: for setting test mode.
SW1: for starting test mode.
LED1: for test mode.
LED2: for test mode.
LED3: for test mode.
J13: for ROM data downloading (connector).

III. TROUBLESHOOTING

1. E500 (fault in communication between copier and finisher)

Cause	Step	Checks	Yes/No	Action
Finisher controller PCB, DC controller (copier)	1	Turn on and off the copier's power switch. Is the problem corrected?	Yes	End.
Wiring	2	Is the wiring of the finisher controller PCB and the DC controller PCB of the copier normal?	No	Correct the wiring.
Finisher controller PCB, DC controller (copier)	3	Replace the finisher controller PCB and the DC controller PCB of the copier. Is the problem corrected?	Yes	End.

2. E512 (fault in the delivery motor M1)

Cause	Step	Checks	Yes/No	Action
Delivery roller	1	Turn the delivery roller by hand. Does it rotate smoothly?	No	Correct the mechanical workings.
Wiring	2	Is the wiring between the finisher controller PCB and the delivery motor (M1) normal?	No	Correct the wiring.
Delivery motor clock sensor (S1)	3	Is the delivery motor clock sensor (S1) normal?	No	Replace the sensor.
Delivery motor (M1)	4	Replace the delivery motor (M1). Is the problem corrected?	Yes	End.
Finisher controller PCB			No	Replace the finisher controller PCB.

3. E514 (fault in the stack processing motor M2; stack delivery (CW) direction)

Cause	Step	Checks	Yes/No	Action
Stack processing motor (M2)	1	Is the tension of the drive belt proper?	No	Loosen the screw on the tensioner and adjust the tension.
	2	Does the returning roller bushing slide up and down?	No	Apply grease to the friction part.
	3	Is the returning roller spring displaced?	Yes	Correct the returning roller spring.
Wiring	4	Is the wiring between the finisher controller PCB and the stack processing motor (M2) normal?	No	Correct the wiring.
Stack lever home position sensor (S8)	5	Check the stack delivery lever home position sensor (S8). Is it normal?	No	Replace the sensor.
Stack processing motor (M2)	6	Replace the stack processing motor (M2). Is the problem corrected?	Yes	End.
Finisher controller PCB			No	Replace the finisher controller PCB.

4. E530 (fault in the rear jogging plate motor M5)

Cause	Step	Checks	Yes/No	Action
Rear jogging plate home position sensor (S7)	1	Check the rear jogging plate home position sensor (S7). Is it normal?	No	Replace sensor.
Wiring	2	Is the wiring between the finisher controller PCB and the rear jogging plate motor (M4) normal?	No	Correct the wiring.
Rear jogging plate	3	Is the rack found overriding the collar of the roll?	Yes	Correct it.
Rear jogging plate motor (M4)	4	Replace the rear jogging plate motor (M4). Is the problem corrected?	Yes	End.
Finisher controller PCB			No	Replace the finisher controller PCB.

5. E531 (fault in the staple motor M6)

Cause	Step	Checks	Yes/No	Action
Wring	1	Is the wiring between the stapler unit and the finisher controller PCB normal?	No	Correct the wiring.
Stapler unit	2	Replace the stapler unit. Is the problem corrected?	Yes	End.
Finisher controller PCB			No	Correct the finisher controller PCB.

6. E537 (fault in the front jogging motor M5)

Cause	Step	Checks	Yes/No	Action
Front jogging plate home position sensor (S6)	1	Check the front jogging plate home position sensor (S6). Is it normal?	No	Replace the sensor.
Wiring	2	Is the wiring between the finisher controller PCB and the front jogging motor plate normal?	No	Correct the wiring.
Front jogging plate	3	Is the rack found riding over the collar of the roll?	Yes	Correct it.
Front jogging plate motor (M3)	4	Replace the front jogging plate motor (M3). Is the problem corrected?	Yes	End.
Finisher controller PCB			No	Replace the finisher controller PCB.

7. E577 (fault in the stack processing motor M2; returning (CCW) direction)

Cause	Step	Checks	Yes/No	Action
Stack processing motor (M32)	1	Does the returning roller bushing slide up and down in relation to the sliding area of the front side plate?	No	Apply grease to the sliding area.
	2	Is the returning roller spring displaced?	No	Correct the returning roller spring.
	3	Is the tension of the stack processing motor drive belt proper?	Yes	Adjust the screw on the tensioner.
Returning roller home position sensor (S3)	4	Check the returning roller home position sensor (S3). Is it normal?	Yes	Replace the sensor.
Stack processing motor (M2)	5	Replace the stack processing motor (M2). Is the problem corrected?	No	End.
Finisher controller PCB				Replace the finisher controller PCB.

8. E580 (fault in the stack tray lifter motor M5)

Cause	Step	Checks	Yes/No	Action
Stack tray lifter motor (M5)	1	Turn the flag of the stack tray lifter motor clock sensor (S9) by hand. Does it rotate smoothly?	No	Correct the mechanical workings.
Wring	2	Is the wiring between the finisher controller PCB and the stack tray lifter motor (M5) normal?	No	Correct the wiring.
Tray (phase)	3	Is the phase (discrepancy in height) between the front and the rear of the stack tray correct?	No	Make adjustments so that the phase is correct.
Stack tray lifter motor clock sensor (S9)	4	Check the stack tray lifter motor clock sensor (S9). Is it normal?	No	Replace the sensor.
Stack tray paper height sensor (S10)	5	Check the stack tray paper height sensor (S10). Is it normal?	No	Replace the sensor.
Stack tray upper limit sensor (S13), Stack tray lower limit sensor (S12)	6	Check the stack tray upper limit sensor (S3) and the stack tray lower limit sensor (S12). Are they normal?	No	Replace the sensor.
Finisher controller PCB	7	Does the voltage between J3-1 and -2 on the finisher controller PCB change to 24 V as soon as the stack tray lifter motor (M5) starts to rotate?	No	Replace the finisher controller PCB.
Stack tray lifter motor (M15)			Yes	Check the wiring from the stack tray lifter motor (M5) to the finisher controller PCB; if normal, replace the motor.

IV. SELF DIAGNOSIS

A. Self Diagnosis

Code	Cause	Description
E500	• The copier harness is faulty (disconnect connector, open circuit). • The finisher controller PCB or the DC controller PCB of the copier is faulty.	The communication between the copier and the finisher was interrupted and did not recover within 5 sec.
E512	• The delivery motor (M1) is faulty. • The delivery clock sensor (S1) is faulty or the connector is disconnected or has an open circuit. • The finisher controller PCB is faulty.	The signal from the delivery clock sensor (S1) could not be detected even when the delivery motor (M1) had been driven for a specific time (70 mm, 80 pulses).
E514	• The stack processing motor (M2) is faulty. • The stack delivery lever home position sensor (S8) is faulty or the connector is disconnected or has an open circuit. • The stack processing motor (M2) relay harness is faulty. • The stack delivery belt is faulty. • The returning roller is faulty.	The stack delivery lever did not reach the stack delivery lever home position sensor (S8) even when the stack processing motor (M2) had been driven for a specific time. **Reference:** If detected during stack delivery, the same condition will be identified as a jam (stack delivery jam; VI. “Detecting Jams” in Chapter 2).
E530	• The rear jogging plate motor (M4) is faulty. • The rear jogging plate home position sensor (S7) is faulty. • The rear jogging plate motor relay harness is faulty. • The rear jogging plate load is faulty.	• The jogging plate did not reach the jogging plate home position sensor (S7) even when the rear jogging plate motor (M4) had been driven for a specific time. • The jogging plate did not leave the jogging plate home position sensor (S7) even when the rear jogging motor (M4) had been driven for a specific time.
E531	• The stapler (M6) is faulty. • The stapling home position sensor (S17) is faulty. • The stapler harness is faulty. • The finisher controller PCB is faulty.	• The stapler did not leave the stapling home position sensor (S17) within 0.5 sec after the stapler motor had been driven clockwise. • The stapler did not return to the stapling home position sensor (S17) within 0.5 sec after the stapler motor had been driven clockwise; then, it did not return within 0.5 sec when the motor had been driven counterclockwise.

Code	Cause	Description
E537	• The front jogging motor (M3) is faulty. • The front jogging plate home position sensor (S6) is faulty. • The front jogging plate motor relay harness is fauly. • The front jogging plate load is faulty.	• The jogging plate did not reach the jogging plate home position sensor (S6) when the front jogging motor (M3) had been driven for a specific time. • The jogging plate did not leave the jogging plate home position sensor (S6) when the front jogging motor (M3) had been driven for a specific time.
E577	• The stack processing motor (M2) or the finisher controller PCB is faulty. • The returning roller home position sensor (S3) is faulty, or the harness is disconnected or has an open circuit. • The stack processing motor relay harness has a fault. • The stack delivery lever has a fault. • The returning roller has a fault.	The returning roller did not reach the returning roller home posiotion sensor (S3) when the stack processing motor (M2) had been driven for a specific time. **Reference:** If identified while sheets are jogged in feeding direction, the condition will be identified as a jam (stack returning jam; VI. "Detecting Jams" in Chapter 2).
E580	• The stack tray lifter motor (M5) is faulty. • The stack tray paper height sensor (S10) is faulty or the harness connector is disconnected or has an open circuit. • The stack tray lifter motor clock sensor (S9) is faulty, or the connector is disconnected or has an open circuit. • The stack tray lifter motor load is faulty. • The finisher controller PC is faulty.	• The stack tray upper limit sensor (S13) turned on while the stack tray lifter motor (M5) was operating. • The clock signal from the stack tray lifter motor clock sensor (S9) was not detected 15 times or more within 0.8 sec while the stack tray lifter motor (M5) was operating. • The stack tray lifter motor (M5) did not reach the stack tray paper height sensor (S10) within 4 sec after the stack tray lifter motor (M5) had started to operate to move up the stack tray. • The stack tray did not leave the stack tray paper height sensor (S10) within 4 sec after the stack tray lifter motor (M5) had started to operate to move down the stack tray.

B. I/O Display

The finisher's service mode is limited to I/O display mode, whose indications appear on its host copier's control panel. To make use of I/O display mode, start the copier's service mode and select COPIER>I/O>SORTER.

Caution:
The machine operations in question are not guaranteed while I/O display mode is on.

Service Mode (COPER>I/O>SORTER)

Address	Bit	Description	Notation	Connector	Remarks
P001	BIT0	Stack tray home position detection	S10D	J11-15	if '1', at home position
	BIT1	Inlet paper detection	S2D	J11-18	if '1', paper present
	BIT2	Stack tray lower limit detection	S12D	J11-3	if '1', at lower limit
	BIT3	Stack tray upper limit detection	S13D	J11-6	if '1', at upper limit
	BIT4	Stack tray paper detection	S11D	J12-3	if '1', paper present
	BIT5	Copier-finisher connection detection	S4D	J11-12	if '1', disconnected
	BIT6	Processing tray paper detection	S5D	J9-9	if '1', paper present
	BIT7	Returning roller home position detection	S3D	J10-6	if '1', at home position
P002	BIT0	–	–	–	–
	BIT1	–	–	–	–
	BIT2	–	–	–	–
	BIT3	–	–	–	–
P003	BIT0	Front jogging plate home position detection	S6D	J9-3	if '1', at home position
	BIT1	Rear jogging plate home position detection	S7D	J9-6	if '1', at home position
	BIT2	Stack delivery lever home position detection	S8D	J9-12	if '0', at home position
	BIT3	–	–	–	–
	BIT4	Staple cartridge detection	S18D	J8-7	if '1', cartridge absent
	BIT5	Staple detection	S15D	J8-8	if '1', staple absent
	BIT6	Stapling home position detection	S17D	J8-9	if '0', at home position
	BIT7	Staple edge detection	S16D	J8-13	if '1', staple edge not found
P004	BIT0	Delivery motor clock pulse detection	S1D	J10-3	if '1', rising edge detected
	BIT1	–	–	–	–
P005	BIT0	Stack tray lifter motor rotation 1 (output)	M5D1	–	if '1', up
	BIT1	–			
	BIT2	Stack tray lifter motor CCW rotation 1 (output)	M5D2	–	if '1', down
	BIT3	–	–	–	–
	BIT4	Stack tray lifter motor clock pulse detection	S9D	J11-9	if '1', falling edge detected
	BIT5	Stapler safety detection	S14D	J7-2	if '1', obstacle present

Address	Bit	Description	Notation	Connector	Remarks
P006	BIT0	–	–	–	–
	BIT1	–	–	–	–
	BIT2	Front jogging plate motor enable signal (output)	–	–	if ‘1’, enabled
	BIT3	Rear jogging plate motor enable signal (output)	–	–	if ‘1’, enabled
	BIT4	–	–	–	–
	BIT5	–	–	–	–
	BIT6	Stapler motor rotation 2 (output)	M6DA	–	if ‘0’, CW rotation
	BIT7	Stapler motor CCW rotation 2 (output)	M6DB	–	if ‘0’, CCW rotation
P007	BIT0	Stapler motor rotation 1 (output)	M6DA	–	if ‘0’, CW rotation
	BIT1	Stapler motor CCW rotation 1 (output)	M6DB	–	if ‘0’, CCW rotation
	BIT2	Stack tray lifter motor rotation 2 (output)	M5D1	–	if ‘1’, up
	BIT3	Stack tray lifter motor CCW rotation 2 (output)	M5D2	–	if ‘1’, down
	BIT4	–	–	–	–
	BIT5	–	–	–	–
	BIT6	–	–	–	–
	BIT7	Delivery motor OFF signal (output)	–	–	if ‘0’, current ON
P008	BIT0	Push switch (output)	–	–	if ‘0’, ON
	BIT1	–	–	–	–
	BIT2	–	–	–	–
	BIT3	–	–	–	–
	BIT4	–	–	–	–
	BIT5	–	–	–	–
	BIT6	–	–	–	–
	BIT7	24 VP detection	–	–	–
P009	BIT0	–	–	–	–
	BIT1	–	–	–	–
	BIT2	–	–	–	–
	BIT3	–	–	–	–
	BIT4	–	–	–	–
	BIT5	–	–	–	–
	BIT6	–	–	–	–
	BIT7	–	–	–	–

Address	Bit	Description	Notation	Connector	Remarks
P010	BIT0	Delivery motor current switching (output)	–	–	1: current small, 0: current large
	BIT1	Stack processing motor current switching 1 (output)	–	–	1: current small, 0: current large
	BIT2	Stack processing motor current switching 2 (output)	–	–	1: current small, 0: current medium
	BIT3	Front jogging plate motor current switching (output)	–	–	1: current small, 0: current large
	BIT4	Rear jogging plate motor current switching (output)	–	–	1: current small, 0: current large
	BIT5	LED1	–	–	if ‘0’, ON
	BIT6	LED2	–	–	if ‘0’, ON
	BIT7	LED3	–	–	if ‘0’, ON
P011	BIT0	Mode setting switch 1	–	–	if ‘0’, ON
	BIT1	Mode setting switch 2	–	–	if ‘0’, ON
	BIT2	Mode setting switch 3	–	–	if ‘0’, ON
	BIT3	Mode setting switch 4	–	–	if ‘0’, ON
	BIT4	Mode setting switch 5	–	–	if ‘0’, ON
	BIT5	Mode setting switch 6	–	–	if ‘0’, ON
	BIT6	Mode setting switch 7	–	–	if ‘0’, ON
	BIT7	Mode setting switch 8	–	–	if ‘0’, ON

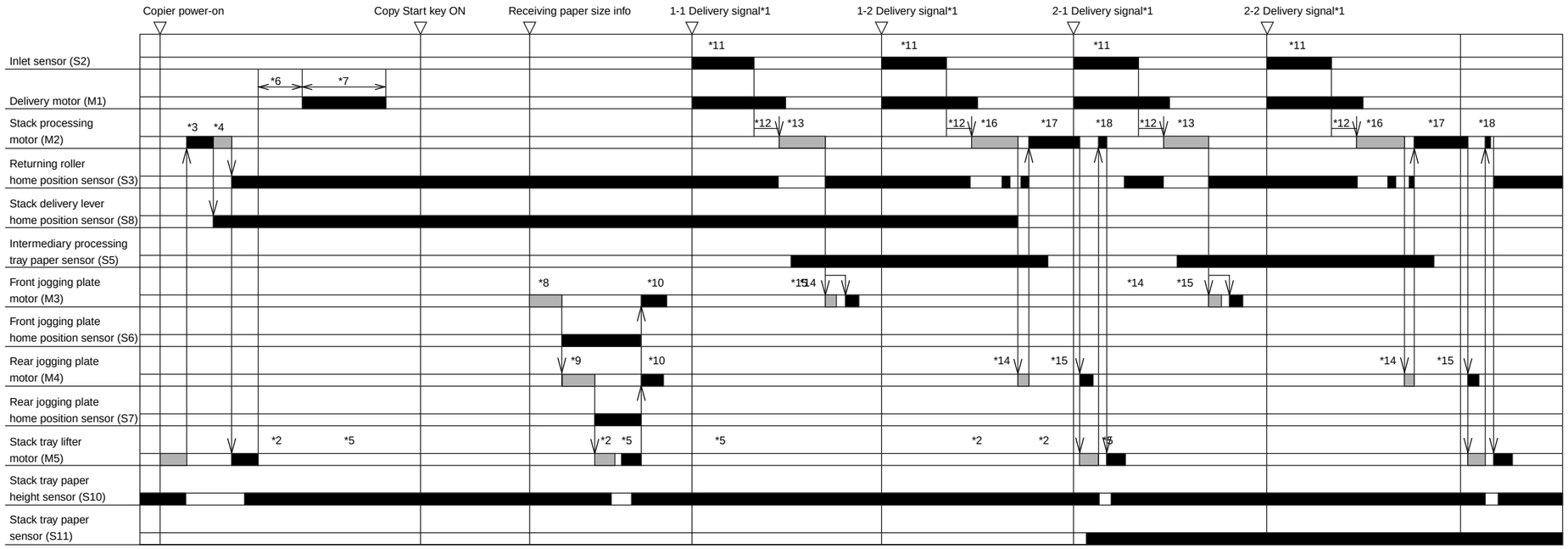
APPENDIX

 CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

A. SIGNALS AND ABBREVIATIONS

S1D DELIVERY MOTOR CLOCK DETECTION signal
S2D INLET PAPER DETECTION signal
S3D RETURNING ROLLER HOME POSITION signal
S4D JOINT DETECTION signal
S5D INTERMEDIARY PROCESSING TRAY PAPER DETECTION signal
S6D FRONT ALIGNMENT PLATE HOME POSITION signal
S7D BACK ALIGNMENT PLATE HOME POSITION signal
S8D STACK DELIVERY LEVER HOME POSITION signal
S9D STACK TRAY UP/DOWN MOTOR CLOCK signal
S10D STACK TRAY PAPER HEIGHT DETECTION signal
S11D STACK TRAY PAPER DETECTION signal
S12D STACK TRAY LOWER LIMIT DETECTION signal
S13D STACK TRAY UPPER LIMIT DETECTION signal
S14D STAPLER SAFETY DETECTION signal
S15D STAPLER EMPTY DETECTION signal
S16D STAPLE SELF PRIMING DETECTION signal
S17D STAPLE OPERATION HOME POSITION signal
S18D STAPLE CARTRIDGE DETECTION signal

General Timing Chart
(2 original, 2 sets)

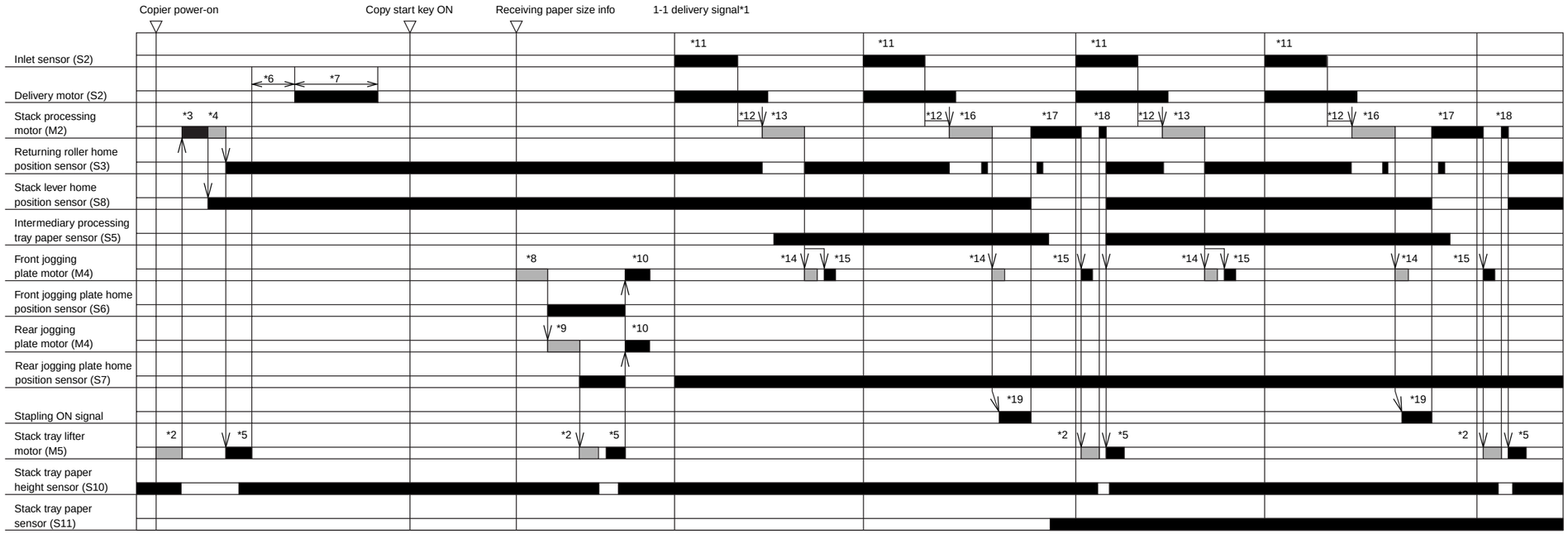


■ : CW rotation ▨ : CCW rotation

Stack processing motor: CW → stack delivery/CCW → returning
Front jogging plate motor: CW → move to front/CCW → move to rear
Rear jogging plate motor: CW → move to rear/CCW → move to front
Stack tray lifter motor: CW → move up/CC → move down

*1: A-B delivery signal (n number of stack, nth sheet).
*2: Moved down until the stack tray paper height sensor turns off.
*3: Driven until the stack delivery lever home position sensor turns on.
*4: Driven until the returning roller home position sensor turns on.
*5: Moved up 12.5mm after the stack tray paper height sensor turns on.
*6: 0.7 sec.
*7: 4 sec. (approx.)
*8: Driven until the front jogging plate home position sensor turns on.
*9: Driven until the rear jogging plate home position sensor turns on.
*10: The front/area jogging plate is moved to the wait position.
*11: Varies depending on the length of paper.
*12: 0.2 sec.
*13: 0.35 sec. (approx.)
*14: Varies depending on the size of paper.
*15: Returned to wait position (*10) for jogging.
*16: To prevent interference with the stack during delivery, the returning roller is given a 1/8 turn after it has reached its home position.
*17: 0.5 sec.
*18: Driven until the stack delivery lever reaches its home position.

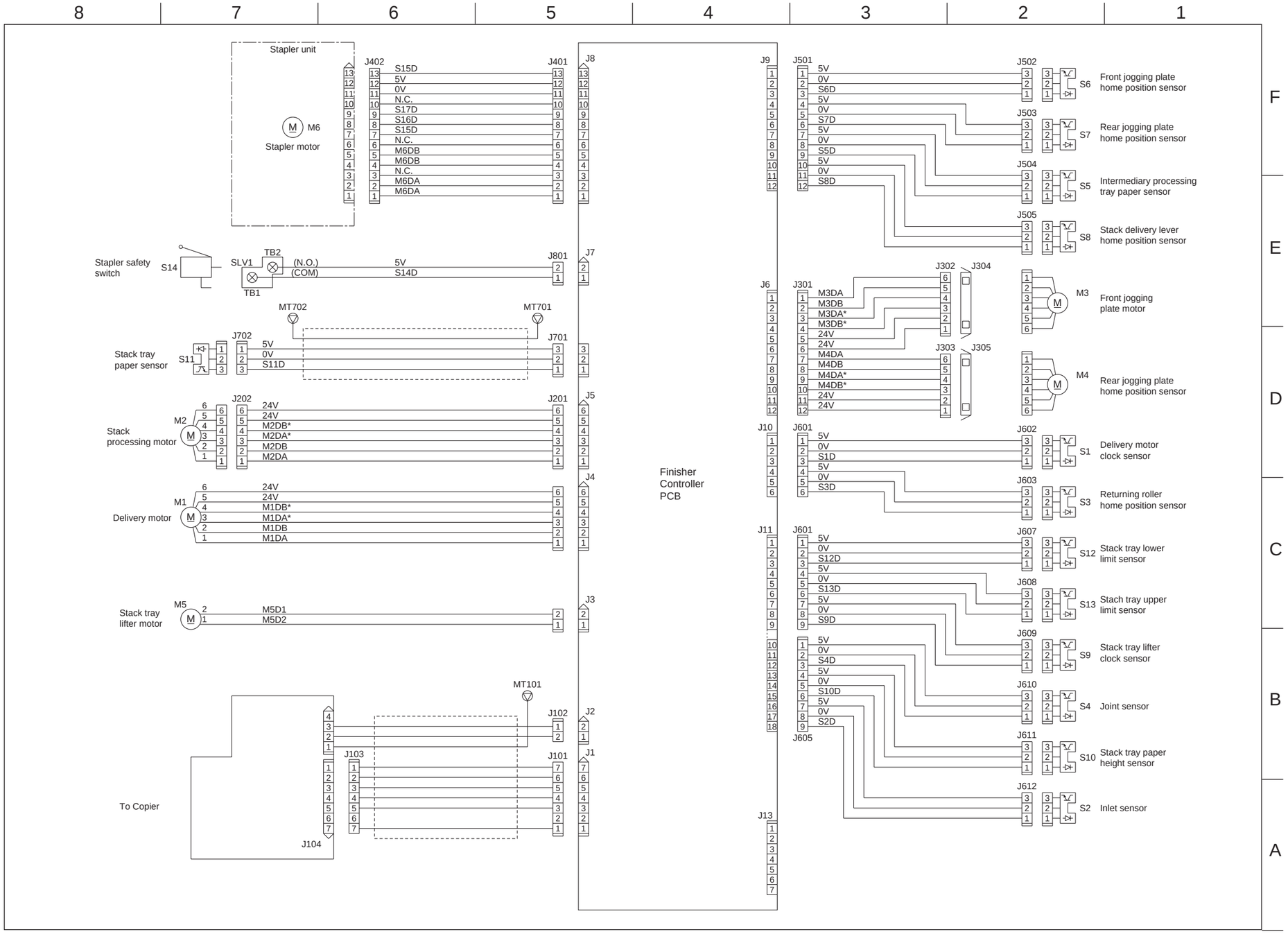
General Timing Chart
(2 originals, 2 sets; stapling ON)



■: CW rotation ▨: CCW rotation

Stack processing motor: CW stack delivery/CCW returning
Front jogging plate motor: CW → move to front/CCW → move to rear
Rear jogging plate motor: CW → move to rear/CCW → move to front
Stack tray lifter motor: CW → move up/CCW → move down

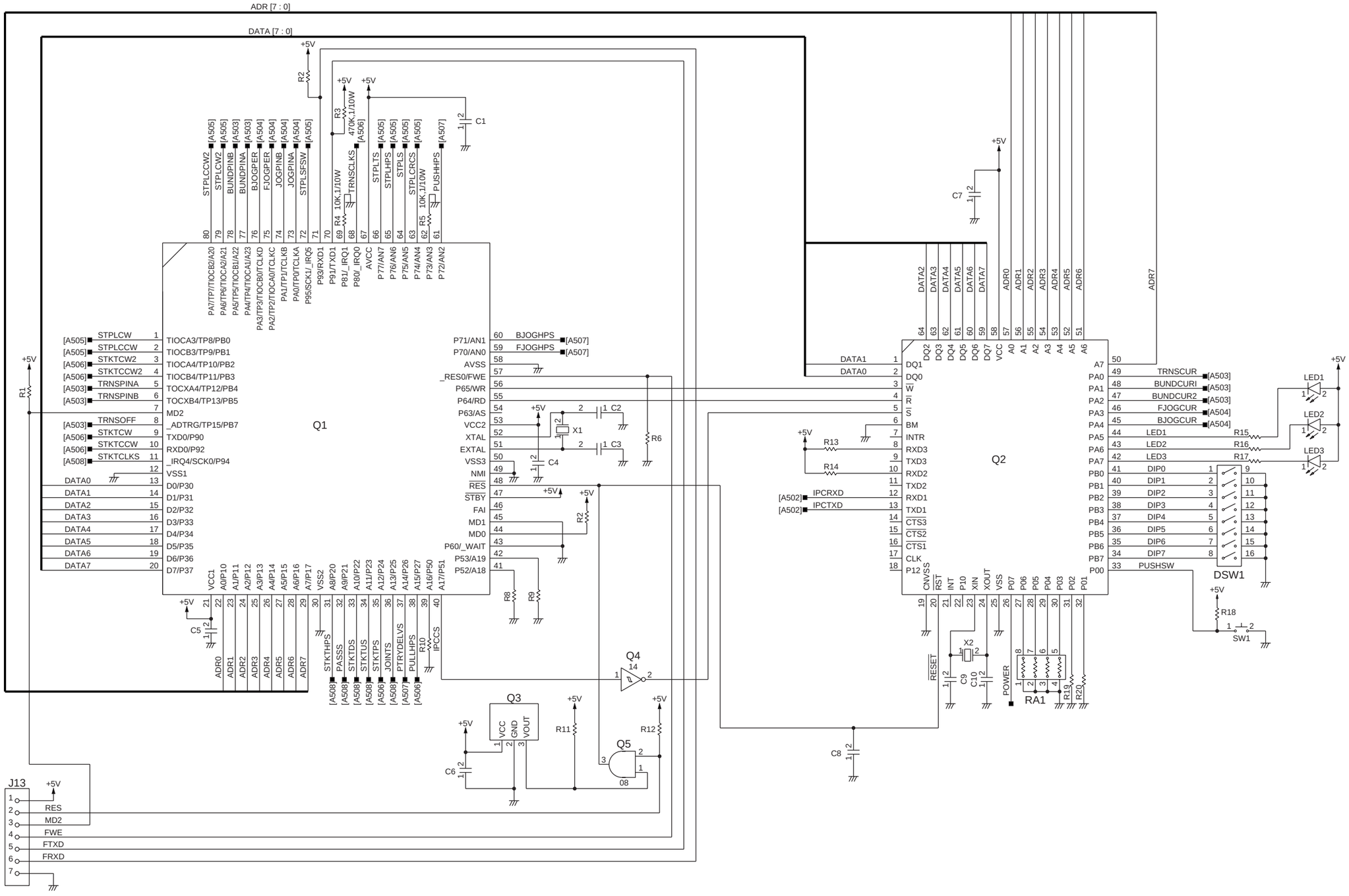
*1: A-B delivery signal (n number of stack, nth sheet).
*2: Moved down until the stack tray paper height sensor turns off.
*3: Driven until the stack delivery lever home position sensor turns on.
*4: Driven until the returning roller home position sensor turns on.
*5: Moved up 12.5mm after the stack tray paper sensor turns on.
*6: 0.7 sec.
*7: 4 sec. (approx.)
*8: Driven until the front jogging plate home position sensor turns on.
*9: Driven until the rear jogging plate home position sensor turns on.
*10: The front/rear jogging plate is moved to the wait position.
*11: Varies depending on the length of paper.
*12: 0.2 sec.
*13: 0.35 sec. (approx.)
*14: Varies depending on the size of paper.
*15: Returned to the wait position (*10)
*16: To prevent interference with the stack during delivery, the returning is given roller a 1/8 turn after it has reached its home position.
*17: 0.5 sec.
*18: Driven until the stack delivery lever reaches its home position.
*19: Turned on 0.1 sec after the returning roller turns off.



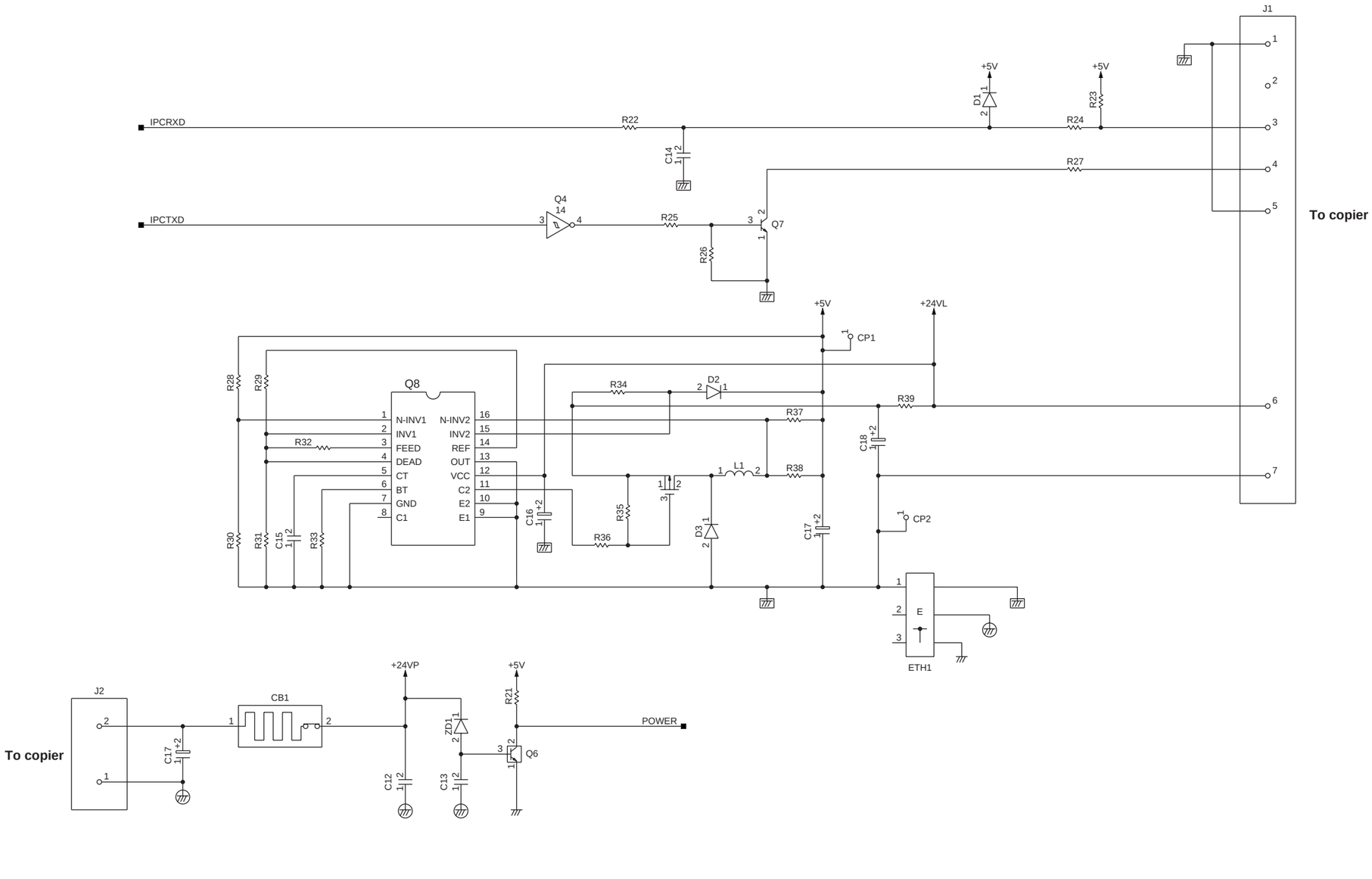
CANON FINISHER-E1 REV.0 JAN. 1999 PRINTED IN JAPAN (IMPRIME AU JAPON)

D. FINISHER CONTROLLER CIRCUIT DIAGRAM

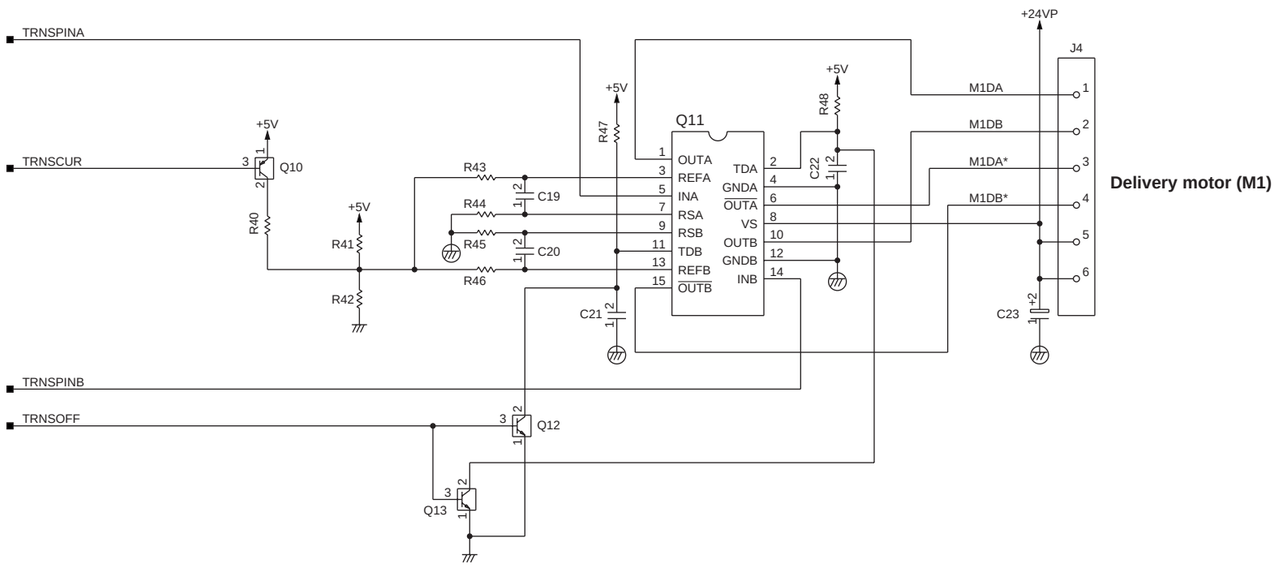
Finisher Controller Circuit Diagram (A501: 1/9)



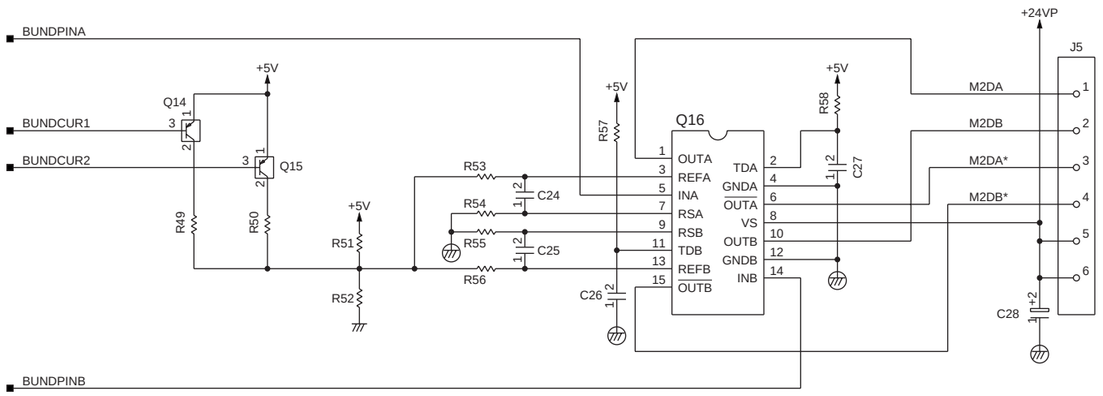
Finisher Controller Circuit Diagram (A502: 2/9)



Finisher Controller Circuit Diagram (A503: 3/9)

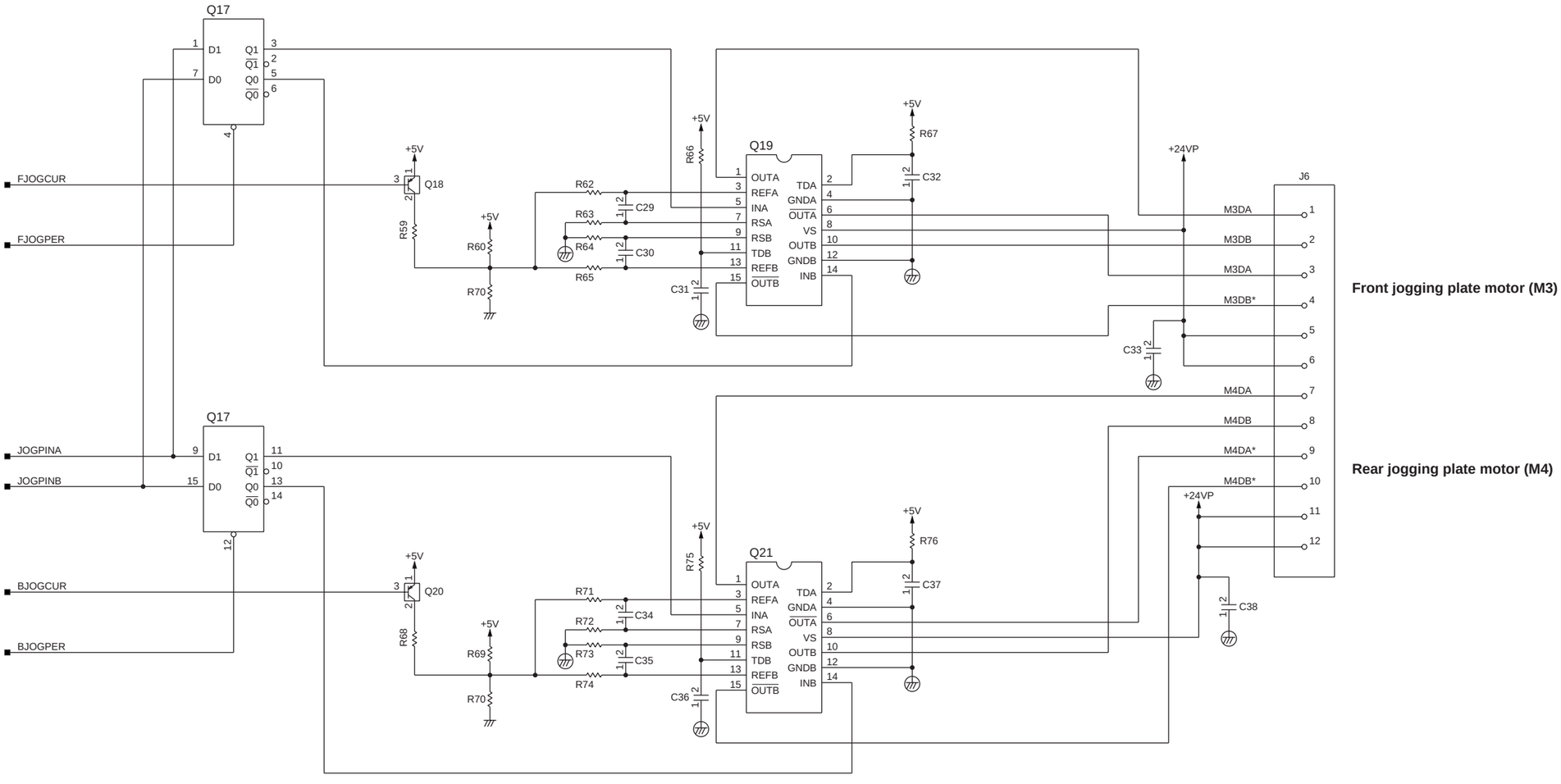


Delivery motor (M1)



Stack processing motor (M2)

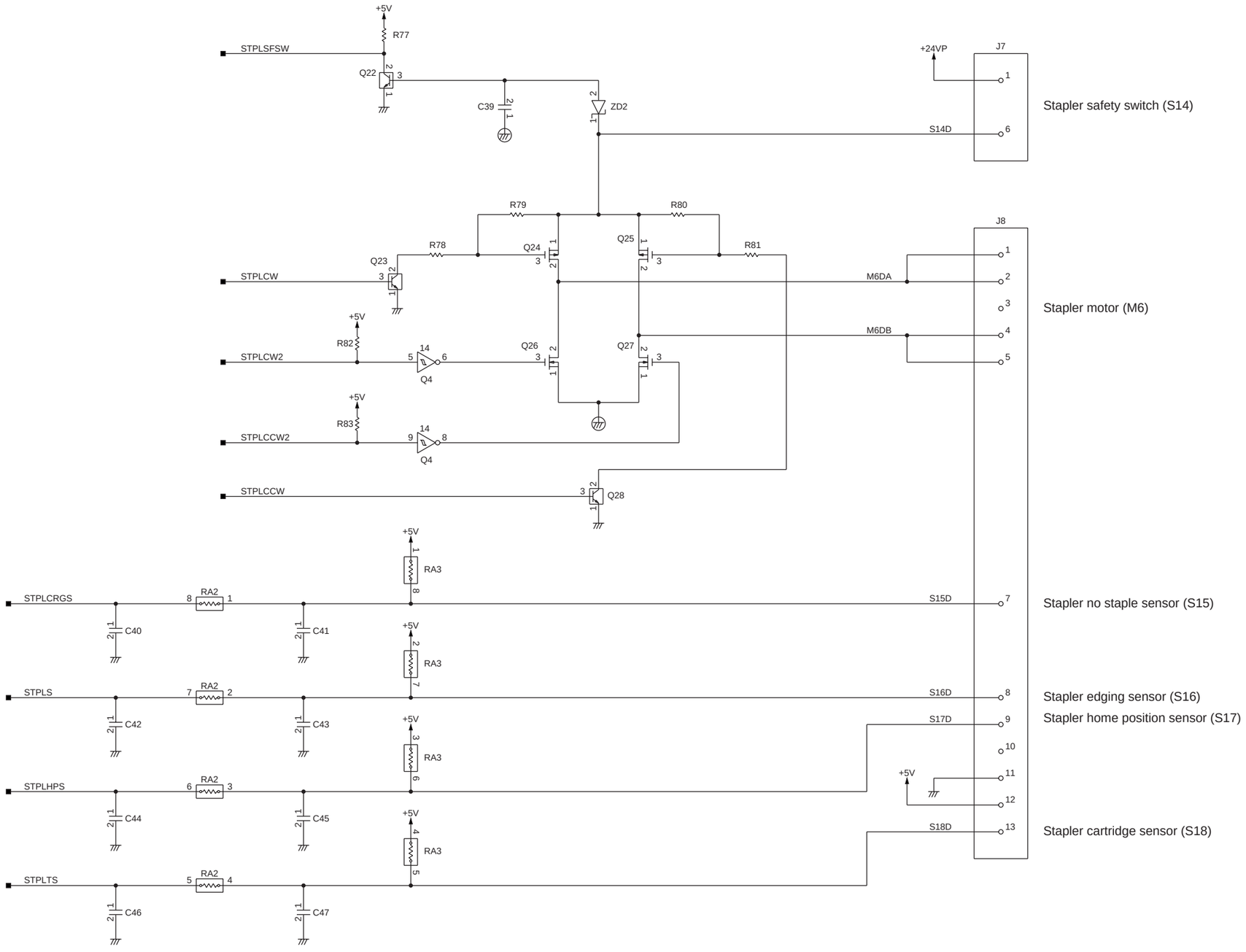
Finisher Controller Circuit Diagram (A504: 4/9)



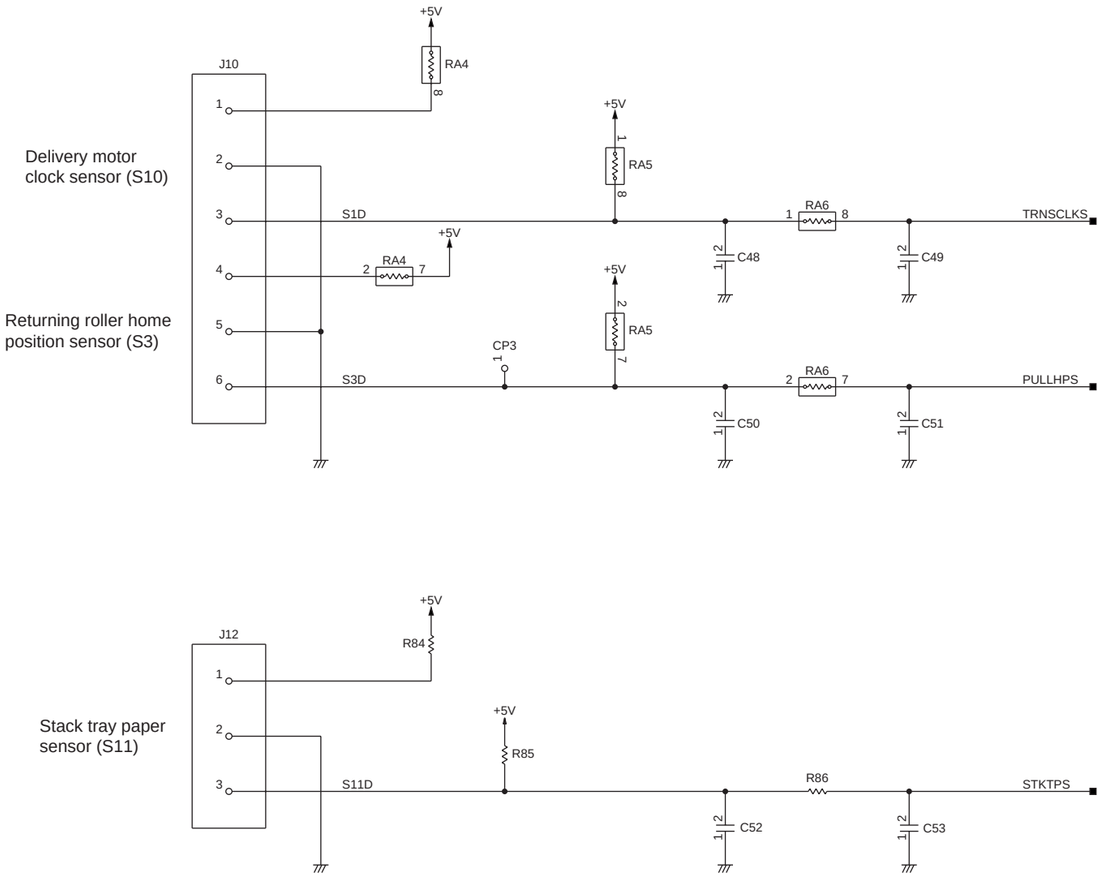
Front jogging plate motor (M3)

Rear jogging plate motor (M4)

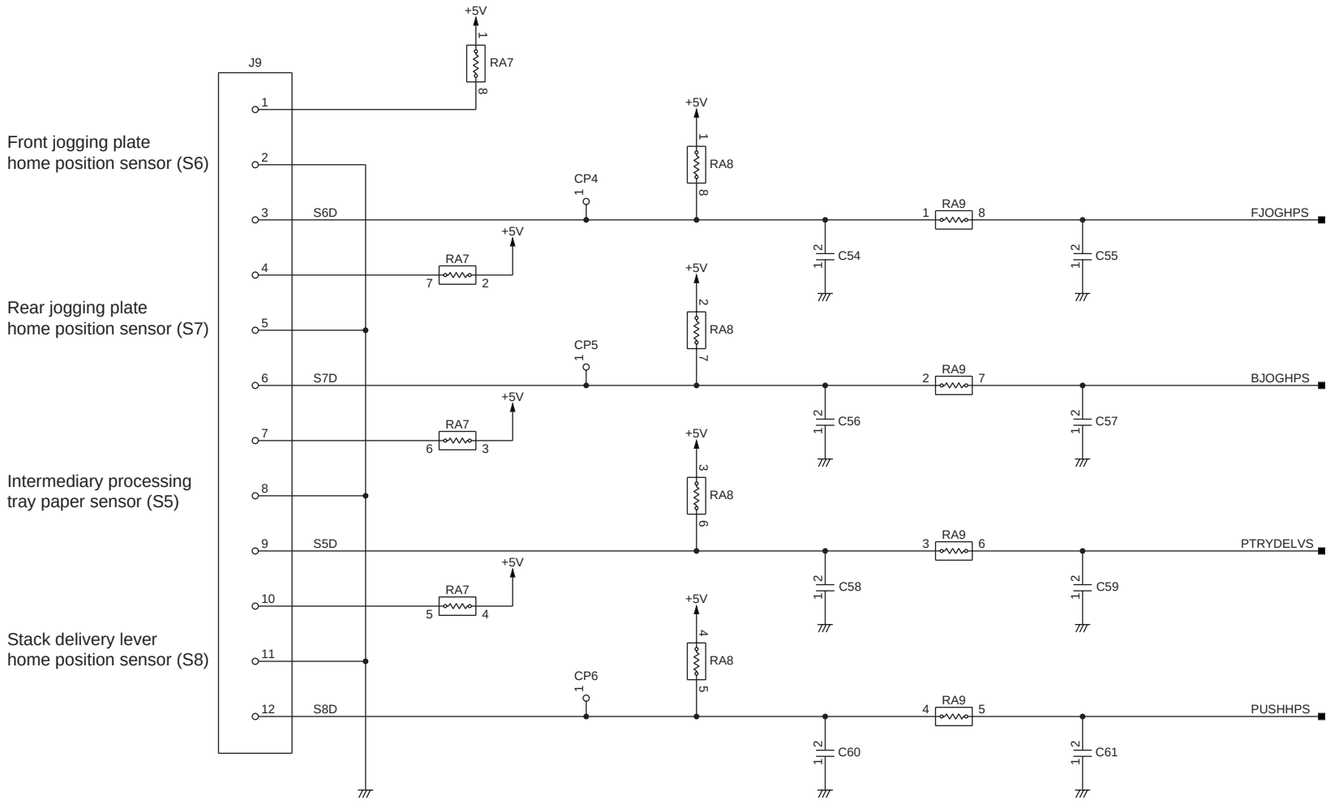
Finisher Controller Circuit Diagram (A505: 5/9)



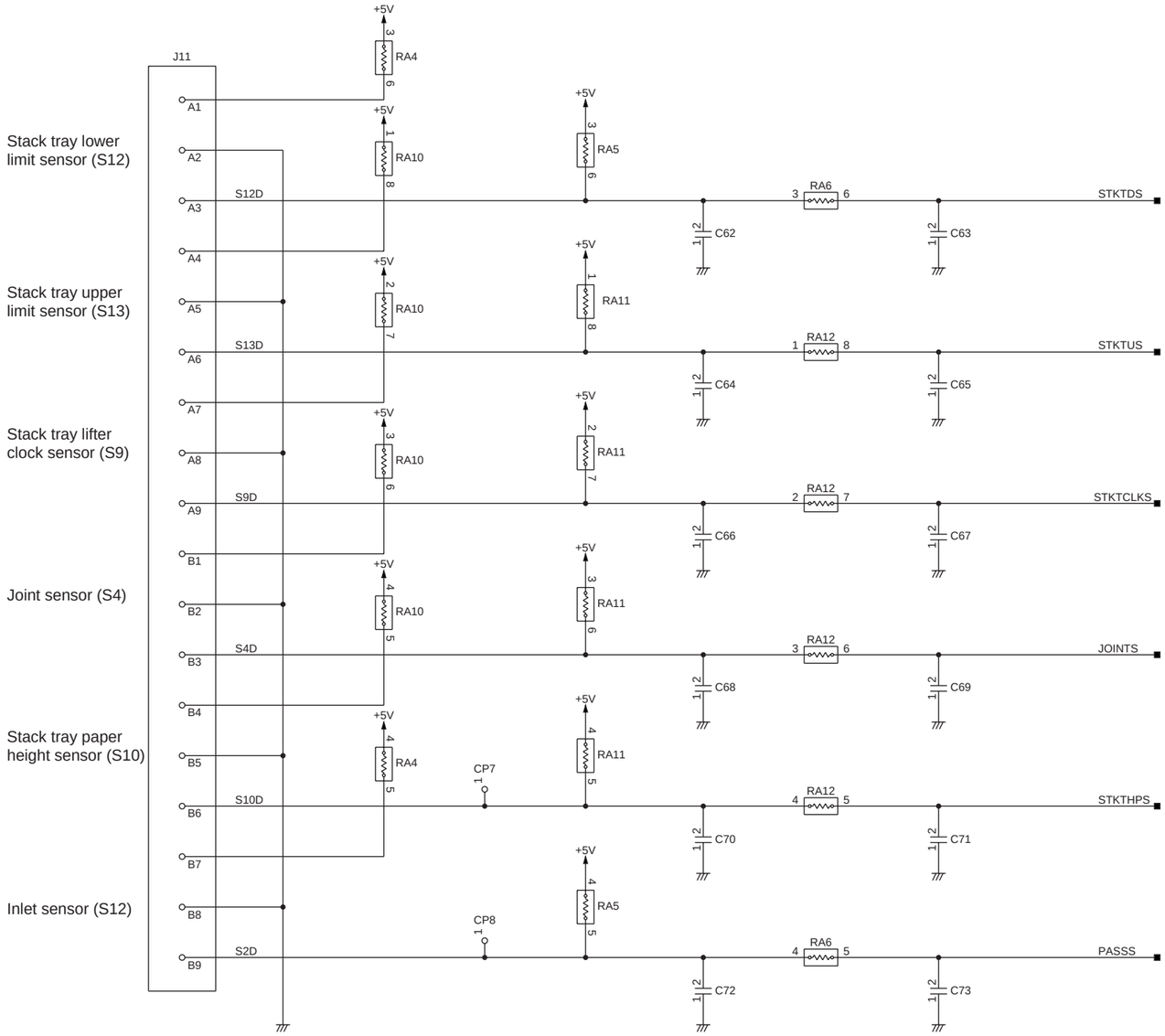
Finisher Controller Circuit Diagram (A506: 6/9)



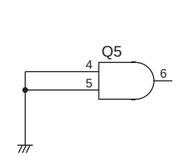
Finisher Controller Circuit Diagram (A507: 7/9)

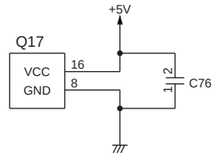


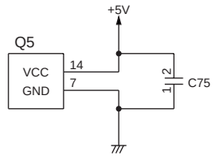
Finisher Controller Circuit Diagram (A508: 8/9)

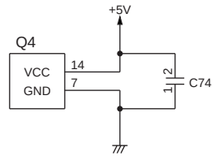


Finisher Controller Circuit Diagram (A509: 9/9)









E. SOLVENTS AND OILS

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning: e.g., glass, plastic, rubber; external covers.	Fluorine family hydrocarbon Alcohol Surface activating agent Water	• Do not bring near fire. • Isopropyl alcohol
2	Lubricant	Lubricating: e.g., drive parts, friction parts; lead cam.	Silicone oil	

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